
HR Series

46

PUBLIC HEALTH WORKFORCE SELECTED LITERATURE REVIEW

Washington, D.C.
2006



HUMAN RESOURCES FOR HEALTH UNIT
HEALTH SYSTEMS STRENGTHENING AREA

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The last five years have been marked by an increasing interest in human resources in the health sector. Because of mounting evidence of the deficiencies of public health practice, government bodies and sector stakeholders have come to realize more and more that the key to consistent quality, equitable health services, lies in the human resources that provide those services.

Not only is the health sector particularly labor intensive, but so much of health care is embodied in the public health professionals or workers that deliver the services. The skills that the worker has, the capacity to meet his or her responsibilities, and the interaction and communication between the health care workers and the population have the primary influence on how communities perceive the quality of care they are receiving.

Moreover, for national authorities, the health workforce is the essential conduit through which health policies are carried out and public health objectives are achieved.

In 2005 the Pan American Health Organization (PAHO) endeavored to reach some kind of consensus on the definition of what the public health workforce is, including its makeup, its competencies, and its job descriptions, and to propose specific plans for its characterization and improvement.

To this end, a review of the literature that addresses public health workforce issues and human resources in health in the 1990s and a compilation of the most significant literature into a comprehensive summary, have been performed with the support of the United States Agency for International Development (USAID).

This literature review contributes to systematize available pertinent information and observations on the public health workforce, to learn from national experiences, and to provide a basis for discussion of these findings with experts in the field.

Pertinent publications reviewed have been grouped into four categories.

A. PUBLIC HEALTH WORKFORCE - CHARACTERIZATION

B. PUBLIC HEALTH WORKFORCE - DEVELOPMENT

C. HUMAN RESOURCES IN HEALTH - CHARACTERIZATION AND DEVELOPMENT

D. RELATED HUMAN RESOURCES ISSUES

Approximately 70 publications were analyzed and included in the review. This document puts together the executive summaries or the abstracts of the most pertinent literature in the first three groups, and introduces each grouping with a brief overview of those readings contained.

The anticipated next phase in this line of action is to develop a strategy, based on the available knowledge and information, and to promote and implement its characterization and development recommendations. This strategy is expected to be developed in 2005, and implemented in pilot projects in 2006 and 2007.

PUBLIC HEALTH WORKFORCE

C H A R A C T E R I Z A T I O N

INTRODUCTION

Since the beginning of this century, governments have begun efforts to more clearly define the role of human resources in the health system. This process has aimed to:

- identify the workforce with regards to numbers and categories,
- describe this workforce according to competencies, skill sets, responsibilities and education requirements;
- to find the gaps or needs where the workforce needs to be strengthened or brought more closely in alignment with public health objectives.

These assessments were carried out in order to understand the current workforce and thus to fund it and manage it more adequately, as well as to begin to recognize trends in demographic shifts or intervention needs, and thus plan ahead for a more sustainable improved work force, and ultimately a better health system.

All studies reviewed here, in the United States, the United Kingdom, and Latin America found that an analysis of the public health workforce poses unique challenges. Particularly in the United States where the workforce is not only varied in job description, but also it is supported and managed at many levels from community and county funding, to state responsibility, to federal coordination. In addition, the public health sector is made up of a combination of partnerships between public agencies, private hospitals, community clinics, and non-profit organizations. Employees in the U.S. and England include both full time staff and flexible consultants and specialists. All studies cited variances in the people's access to the service and worker roles in the service, depending on whether the community assessed was rural or urban.

As these studies pointed out, the tracking and enumeration of traditional professions, such as physicians, nurses and oral hygienists, within the public health workforce, is much more straightforward than the wider complexities of the less traditional public health workers such as clerical staff, educators, environmentalists and technology specialists. Moreover, within all of these groups the roles and responsibilities that defined (or less clearly defined) what positions might include or define these roles changed depending on the location, community and workforce combination of the area.

Overall findings emphasized the importance of consistent tracking and evaluation of workforce makeup, including numbers, skill sets and responsibilities. The common themes reflected a need for better coordination between academia and public health objectives, with a need for improved alignment between curriculum and population needs.

The studies also revealed the need for a stronger emphasis in public health expertise. Although some public health programs exist, there need to be more public health education programs—particularly in areas of developing public health leadership. Not only does a strong public health curriculum need to be more widely developed, but public health curriculum should be included in the education and training of all health professions—including doctors, nurses, and dentists. Public health, as a professional track, has not been clearly developed or refined, and studies show the need for an emphasis in this area, meaning more effective recruitment efforts by educational institutions to attract students to the field, stronger career tracks and remuneration offered by the public health agency for public health specialists, and a clearer partnership between public health, the health sector, and other sectors that are associated and included in public health responsibilities.

Overall the studies showed a need for:

- A common taxonomy to define the positions included in public health workforce, the responsibilities included in each position, and the recognition of non-traditional and/or peripheral members of the workforce.

- A well-developed data collection process with consistent tracking and evaluation of the status of the public health workforce, the changes and trends in the responsibilities and demographics of the workforce, and the clarification of differences between rural and urban areas and local, state and federal agencies.
- A more targeted development of the public health workforce through cooperation between academia and public health authorities to recruit students and professionals into the sector.
- Stronger public health education and training, where the public health curriculum is aligned with the population health needs and policy objectives, with a solid, defined core curriculum for public health and an incorporation of public health curriculum in all health education.
- Leadership in public health. Health agencies need to recognize and promote the role of the public health specialist in the sector and to develop specific public health professional tracks.
- Cooperation and partnership among government levels, private and public health institutions, and community and national interests.

RESOURCE LIST

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3. Perlman, F. and Gray, S.; "The Specialist Public Health Workforce in the UK: A Report for the Board of the Faculty of Public Health;" Faculty of Public Health of the Royal Colleges of Physicians of the United Kingdom; March 2004: http://www.fphm.org.uk/prof_affairs/downloads/workforce/workforce_report_march_04_in_full.pdf.
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1. "PUBLIC HEALTH WORKFORCE STUDY"

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS)
BUREAU OF HEALTH PROFESSIONS
HEALTH RESOURCES AND SERVICES ADMINISTRATION (HRSA)
JANUARY 2005

EXECUTIVE SUMMARY

Background

An adequate supply of well-prepared public health professionals is essential to an effective public health system in America. Concerns about bio-terrorism and terrorist attacks as well as the outbreak of Sudden Acute Respiratory Syndrome (SARS) have made the country more acutely aware of the important responsibilities of the Nation's public health system. At the same time, there is concern about the adequacy of the public health workforce, both in terms of the number of workers and their skills and competencies.

Over the past decade, a number of significant studies of the public health workforce were conducted, designed to help the health community better understand the composition of the workforce, its availability, its functions and the adequacy of its preparation to carry out required duties. However, these efforts have been complicated by the fact that the public health workforce is not easily defined or measured. It is a very diverse workforce, found in many settings and providing a wide range of services. Public health workers are not generally licensed which would facilitate counting and studying this workforce. Responsibilities are shared between public agencies, voluntary hospitals and others in the health sector. In addition, within the public sector, responsibility is shared between different levels of government and several agencies. There are also major State-by-State variations in responsibility among State and local government and private groups, compounding the difficulty of counting and tracking the public health workforce. Additionally, functions and responsibilities can vary within a State between rural and urban locations.

The National Center for Health Workforce Analysis of the Bureau of Health Professions in the Health Research and Services Administration commissioned the New York Center for Health Workforce Studies at the SUNY School of Public Health to conduct a study of the public health workforce. The study focused on workers in State and local governmental public health agencies, particularly public health physicians, dentists and nurses, as well as other workers with formal public health training. The study also examined the role that schools of public health play in assisting these public health agencies to recruit, retain or provide continuing education to their workforce. Major goals of this study included:

- assessing the adequacy of the supply of these public health workers in relation to the demand for them;
- quantifying differences in staffing in light of organizational responsibilities and relationships as well as the size of the population served by the agency; and
- understanding the role that schools of public health play in addressing public health workforce needs of these agencies.

Methodology

The study had three components:

1. A Project Advisory Committee to provide guidance on the overall study methodology, the issues to be discussed and the questions to be asked of State and local public health agencies, and to assist with the interpretation of findings.
2. Identification and analysis of available data on the workforce of public health agencies in the six States studied.
3. A six State case study that included surveys and interviews with staff of State and local public health agencies in those States on their most pressing health workforce issues.

The six States selected for study were New Mexico, Montana, Georgia, California, Texas, and New York. The States were selected to assure representation of the four organizational models which represent different relationships between the State and local public health agencies. The four models are:

- Centralized - a State operated public health system (New Mexico);
- Decentralized - a public health system operated by local government (Montana);
- Shared - a public health system jointly operated by State and local government (Georgia); and
- Mixed - a public health system with differing levels of State and local involvement (California, Texas, New York).

Findings

The study yielded a number of findings regarding the public health workforce, the most important of which are presented below.

- The single biggest barrier to adequate staffing of governmental public health agencies was budget constraints.
- Public health agencies in all six States reported difficulty recruiting public health nurses (PHNs), especially in rural areas, but less difficulty retaining them.
- Public health physicians and dentists comprise a very small part of the public health workforce; they can be hard to recruit when vacancies arise, particularly in rural areas.
- In addition to the difficulty they experienced recruiting public health nurses and to a lesser extent, physicians and dentists, governmental public health agencies in the case study States reported difficulty recruiting for a variety of occupations, including: health educators, nutritionists, social workers, clerical staff, epidemiologists, dental hygienists, dental assistants, laboratory personnel, and home health aides.
- Public health agencies in border counties identified unmet need for public health workers who are bilingual; are culturally competent; and have up-to-date knowledge of tropical diseases, such as dengue and murine typhus.
- Beyond budget constraints, recruitment difficulties were attributed to general shortages of workers within an occupation (e.g., registered nurses, nutritionists), non-competitive salaries, and lengthy processing time for new hires. Rural public health agencies in most States reported drawing their staff from the local labor market and had more difficulty recruiting more educated, skilled public health workers than their urban or suburban counterparts.
- The variation in public health workers per capita in the three case study States with local public health workforce data (Georgia, New Mexico and New York) suggests differences in public health service delivery among these States.

- Rural health offices in the three States with data on the local public health workforce (Georgia, New Mexico and New York) tended to have more public health workers per capita, particularly public health nurses.

TABLE 1. RURAL AND URBAN PUBLIC HEALTH WORKFORCE IN THREE STATES

	NEW YORK		NEW MEXICO		GEORGIA	
	PH WORKFORCE	PER 100,000 POP.	PH WORKFORCE	PER 100,000 POP.	PH WORKFORCE	PER 100,000 POP.
State	5,430	29	388	21	633	10
Local	7,272	38	721	40	7,387	90
Local Urban	4,992	30	216	16	2,378	41
Local Rural	2,280	96	505	111	5,009	216
Total	12,702	67	1,109	61	8,020	98

- Public health workers with formal public health training, such as a Master of Public Health (MPH), most commonly worked in State health departments or as leaders of large public health agencies; they were needed in small public health agencies, but rarely available.
- Staff of small public health agencies who obtained MPHs often left their agencies to work in larger organizations that offered better opportunities. A wide range of training needs for the existing public health workforce was identified, including training on clinical topics and management and supervision. The greatest unmet need reported was for training in core public health concepts.
- Public health agencies in the six States reported greater need for training in core public health concepts for staff without formal public health training.
- Lack of access to advanced education, including baccalaureate nursing and graduate studies, was a significant barrier to upgrading existing staff, particularly in rural areas.
- While there are a few examples of successful collaborations between schools of public health and public health agencies at the local level, schools of public health, in general, have done a poor job of partnering with these agencies.
- Public health agencies in some of the case study States were concerned about losing senior staff to retirement in the next five years and reported a need for better succession planning.

RECOMMENDATIONS

Based on the findings, the study produced nine recommendations for consideration by national, state, and local public policy makers.

- Learn more about what attracts potential public health workers to the field and use this information to develop innovative recruitment and marketing strategies for careers in public health.
- Provide more opportunities for public health training and education that are accessible to senior staff of district and local health offices, particularly those in leadership positions.
- Provide public health workers with support and assistance to further their education, both graduate and undergraduate, related to critical public health skills and competencies. This could include tuition reimbursement, release time, and increasing the availability of distance education or web-based course offerings.

- Create a service obligated scholarship or loan repayment program modeled after the National Health Service Corps that provides scholarship or loan repayment support in return for a commitment to work in local public health offices/agencies with shortages of public health workers.
- Identify and describe effective ‘career ladders’ within State public health systems that could assist other States in developing similar upgrading opportunities, particularly in shortage occupations.
- Encourage schools of public health, public health training centers, and other educational programs to be more responsive to the recruitment and training needs of local public health agencies, particularly those in remote locations. Identify and describe models of collaboration or ‘best practices’ between academia and public health practice. Provide incentives to encourage collaboration between relevant educational programs and local public health agencies.
- Support the development of a model public health curriculum that could help prepare public health professionals for contemporary public health practice and make the curriculum available to schools of public health, medicine, nursing, and other health professions.
- Provide dental public health training to more dentists and dental hygienists to work in local public health departments to run comprehensive preventive dental programs including fluoridation, screenings, sealants, and oral health education and advocacy.
- Monitor the size and composition of the public health workforce on a regular basis, with a focus on ‘functional’ enumeration, i.e., understanding the public health workforce within a State based on the roles and responsibilities of the public health system within the State.

2. "PUBLIC HEALTH CAPACITY: THE CHALLENGES FOR PUBLIC HEALTH"

FACULTY OF PUBLIC HEALTH
ROYAL COLLEGES OF PHYSICIANS OF THE UNITED KINGDOM
EDITED BY SIÂN GRIFFITHS AND JENNY WRIGHT
MAY 2004

SUMMARY AND ACKNOWLEDGEMENTS

This report draws on a series of three workshops organized by the Faculty of Public Health for senior public health professionals held across England in early 2004. The Faculty thanks the Department of Health for England, the Health Protection Agency and the Health Development Agency for their support of the workshops. Thanks also go to PHRU and Allison Thorpe for their hard work.

Workshop Objectives

- To develop a clearer understanding of how public health specialists, particularly Directors of Public Health, can be most effective in influencing the health of their populations.
- To explore public health systems and how they can best be structured to meet public health and health inequalities targets.
- To review issues related to specialist public health capacity and suggest ways forward.
- To capture examples of good practice to share with the Department of Health (DH).
- To advise the Faculty of Public Health (FPH) on how it can best support specialist public health practice.

The seminars took place in advance of the publication of the Wanless review and the launch of the White Paper public health consultation. They form one part of a suite of FPH activities, including reviews of the public health workforce [1] and academic public health [2].

Context

In light of the increasingly positive public health policy environment in England there is a need to review specialist capacity in public health. The implementation of changes associated with *Shifting the Balance of Power and Getting Ahead of the Curve* had led to a major reorganization of the public health workforce. As the full impact of these changes become apparent, there is a need to better understand the implication for the future shape of specialist public health practice, particularly with regards to career pathways, working environments and support systems to develop robust specialist public health. A clear understanding of the capacity gap and the measures needed to address this is required if we are to meet the challenges of the increased expectations of public health delivery.

Within this context the workshops were focused on finding ways to strengthen specialist public health practice and support delivery within existing policies and constraints, whilst at the same time recognizing the important and essential contribution of the many different professions in improving health.

Participants

Invitees to the workshops included representatives from:

- directors of public health (DPH) at regional, strategic health authority (SHA) and primary care trust (PCT) levels
- Health Protection Agency (HPA)
- Health Development Agency (HDA)
- Faculty of Public Health board members and advisers
- regional specialist advisers and program directors
- managed public health network leads
- public health observatories (PHO)

Main Themes

1. Working differently

- public health programs should cut across different sectors and engage local communities as part of mainstream delivery;
- public health structures need to be simplified and aligned as a public health system;
- there needs to be increased emphasis on public health in performance management in PCTs with both local and national targets;
- the new GP contract has the potential to be a lever for greater focus on prevention and public health;
- new and imaginative ways of working must be developed to liberate time and capacity;
- the role of SHAs should be developed;
- the longer term preventative agenda and increased capacity should be given higher priority;
- The Healthcare Commission has a key role in developing public health.

2. Developing public health in primary care by engaging PCTs

- There is a need to better understand and resolve:
 - ♦ tension between corporate and public health agendas for DPHs;
 - ♦ difficulty in fulfilling public health engagement role within PCTs and maximizing the capacity of the wider public health workforce;
 - ♦ challenges to the commissioning role;
- DPHs need adequate support at PCT level to enable them to serve their communities more effectively, so they in turn can support health professionals (particularly local practitioners) in making prevention and health improvement a part of their daily work;
- public health programs must be fully integrated into performance management;
- Support is needed to develop effective public health teams.

3. Health protection

- greater clarity is needed on levels of autonomy, responsibility and accountability in health protection between PCTs, the HPA, SHAs and local government;
- baseline skills should be developed in all public health staff;
- there is a need to develop roles/competencies/standards of practice;
- availability of robust data is essential to support effective practice.

4. Partnership with local government

- local government has a public health role – its engagement with the broader health agenda is essential;
- co-terminosity with population boundaries facilitates joint-working;
- the public health capacity within local government needs to be more effectively harnessed;
- there is a need to utilize existing powers and opportunities e.g. scrutiny, local strategic partnerships, DPH joint appointments, DPH annual reports;
- common performance measures should be developed
- all policy should be assessed for its health impact

5. Public health networks

- networks need a minimum capacity to be effective in providing the critical mass of public health resource for health economies;
- work programs with clear outcomes and accountability arrangements are essential to ensure delivery;
- closer working between public health networks and academic departments could be beneficial;
- PHOs should have formal links with networks as well as with PCT and SHA public health teams.

6. Professional roles, including directors of public health

- the model of a single-handed DPH is not sustainable;
- focus of the DPH role should be engaging with the local community and advocating as a local 'champion' for public health;
- there is a recognition for the need for further training for the DPH in leadership, multi-agency working, management, confidence building and media training;
- joint appointments with local authorities are welcomed.

7. Developing capacity

- public health needs to attract more people through clearly defined career paths, roles and competencies;
- public health should be clearly presented as a career option early on in health education and training;
- SHAs must play a stronger role in performance development of the public health workforce;
- a workforce plan should be developed, with clear guidance on roles and new career pathways should be mapped out.

8. Training and research

- specialist training needs to be reviewed to ensure it is fit for purpose;
- more focus should be given to the public health training of the wider workforce, not only in the NHS but in other sectors;
- academic departments need to work with service departments more effectively to capture good practice and share this widely;
- PHOs should play an active role in disseminating evidence and sharing learning;
- there is a need to make better use of the existing evidence base.

3. "THE SPECIALIST PUBLIC HEALTH WORKFORCE IN THE UK: A REPORT FOR THE BOARD OF THE FACULTY OF PUBLIC HEALTH"

DR. FRANCESCA PERLMAN AND DR. SELENA GRAY
FACULTY OF PUBLIC HEALTH OF THE ROYAL COLLEGES OF PHYSICIANS
OF THE UNITED KINGDOM
MARCH 2004

SUMMARY

This report uses information from a survey undertaken by the Faculty of Public Health in 2003 and other sources to describe the state of the current specialist public health workforce. Target numbers of consultants and specialists in public health are modeled using different approaches. Information from qualitative surveys is used to examine some of the issues affecting the workforce in more detail.

- The impact of recent changes in the public health systems in all four countries in the UK has raised widespread concerns about shortages of specialist public health practitioners. This has been a particular issue in England with the creation of PCTs following Shifting the Balance of Power and in England and Wales with the creation of the Health Protection Agency as a result of Getting Ahead of the Curve.
- There is a shortage of public health specialists in the UK at a time when their role is expanding with the increasing emphasis on public health within health policy. There is strong evidence to suggest that the current numbers of consultants and specialists in public health, health protection and academic public health in the UK are insufficient for the work that is required.
- If each region were to achieve the same as the highest this would require an increase of approximately 20% of trainees, 25% more consultants and specialists, and 50% more public health academics in the UK. If the rates in London were to be applied, these numbers would be even higher.
- "Bottom up" modeling in England, derived by defining the number of consultants and specialists in public health required per organization suggests that a minimum of 25 WTE per million (or a minimum of 2.5 WTE per 100,000 population) are needed to deliver a safe and effective public health service, an increase in the current workforce of approximately 40%.
- Numbers of new appointments to public health training schemes have fallen in the last two years, although the total number of trainees is fairly constant. The number of trainees is highly correlated with the number of public health specialists, and thus the capacity to train. Up to 3% of the present public health workforce plan to leave before retirement age. Without the addition of public health specialists from a variety of backgrounds joining the Voluntary Register, the present specialist public health workforce will reduce in numbers in the next 5 years. Further reductions are occurring through appointment of consultants and specialists in public health to new national organizations e.g. NICE, CHAI, NCCA and HPA Director posts. Top up training and additions to the Voluntary Register are likely to provide only a short-term solution. Many of those joining the Register will already be contributing substantially to the public health function, and the real gain in public health

capacity from their voluntary registration as specialists may be small. In addition this will not increase the number of senior public health academics.

- Public health skills are in short supply within PCTs with widespread reporting of staff shortages and significant numbers of vacant PCT DPH posts. These organizations may also get public health capacity from public health networks, observatories and academic departments. However, in practice these links are not working well in all areas, and experience suggests that networks need to be resourced and managed properly if they are to function effectively. There are problems with recruitment and retention of public health specialists, and these include lack of suitably qualified applicants for posts, lack of funding, losses during reorganization, professional isolation, and discouragement arising from a high workload and lack of capacity.
- There is a shortage of academic public health specialists, with a lack of capacity and differing agendas from the NHS in academic departments. Indeed many PCTs see no need to support academic public health.
- The shortage of consultants in health protection and its detrimental effect on service delivery has been known since the national survey of communicable disease function undertaken for NHSE in 1997. The important deficiencies in staff numbers have not generally been rectified despite the addition of significant new responsibilities for these consultants. This under provision has a direct relationship on the robustness of health protection services and limits the scope for implementation of the four national action plans announced by the Chief Medical Officer for England in *Getting Ahead of the Curve*.
- Training and management (including addressing skill mix) are important in maximizing the effectiveness of the public health workforce, and are part of workforce development together with planning and leadership development.
- Major changes in medical training are currently taking place with the establishment of the Postgraduate Medical Education and Training Board, and with the implementation of Modernizing Medical Careers.
- The opportunities of these changes in creating new career opportunities and training pathways for public health as well as increased specialization needs to be proactively developed. The impact on the public health workforce will need to be monitored and carefully considered in future. An additional factor is the implementation of the new consultant contract which is already identifying a number of individuals currently working over and above contracted hours, and may well lead to a reduction from their current contribution.

RECOMMENDATIONS

1. All parties should adopt and promote the Faculty of Public Health's national targets of a minimum of 25 WTE consultants and specialists in public health per million population (a minimum of 2.5 WTE per 100,000 per population at local level) to be achieved by 2006. This target and its implementation are needed to ensure the delivery of a safe and effective public health service. It includes the health protection function but excludes academic public health and assumes that specialists will be supported by fully functioning public health teams.
2. In line with recommendations of the Wanless report, a strategic workforce plan should urgently be drawn up at national level to support the development of a long term development and sustainability of service and academic public health, taking into account the needs of all countries in the UK.

3. The Faculty of Public Health should:
 - a) with SHAs and RDsPH identify and address factors influencing recruitment and retention for the specialist workforce
 - b) with deaneries model the potential impact of increasing the number of future careers which involve combining public health expertise with clinical practice e.g. general practice, community pediatrics, nursing
 - c) with program directors identify and address the factors which prevent completion of specialist public health training
 - d) promote open debate about the ratio of medically and non-medically qualified public health specialists required to deliver an effective public health function
 - e) promote action as necessary to ensure continued recruitment and retention of the medical public health workforce
4. SHAs, RDPHs and Deaneries need to:
 - a) increase recruitment to public health training schemes and set and achieve targets for each region based on the rates of the highest regions
 - b) set targets for increasing the numbers of academic trainees and fund academic training posts appropriately
 - c) ensure that there are effective top up schemes in each region in the short term that are properly integrated into public health training schemes
 - d) work jointly with universities to increase the effectiveness of links between PCTs and networks, observatories, HPA teams and academic departments.
5. Government should:
 - a) assess the impact of those choosing to work part time, particularly women when calculating total workforce numbers
 - b) ensure the inclusion of public health in the national workforce planning processes.

CONCLUSIONS

This report uses information from a survey undertaken by the Faculty of Public Health in 2003 and other sources to describe the state of the current specialist public health workforce. Target numbers of consultants and specialists in public health are modeled using different approaches. Information from the qualitative surveys is used to examine some issues affecting the workforce in more detail.

1. The impact of recent changes in the public health systems in all four countries in the UK has raised widespread concerns about shortages of specialist public health practitioners. This has been a particular issue in England with the creation of PCTs following Shifting the Balance of Power and the creation of the Health Protection Agency as a result of Getting Ahead of the Curve.
2. There is a shortage of public health specialists in the UK, at a time when their role is expanding with the increasing emphasis on public health within health policy. There is strong evidence to suggest that the current number of consultants and specialists in public health, health protection and academic public health in the UK are insufficient for the work that is required.
3. If each region were to achieve the same as the highest this would require an increase of approximately 20% of trainees, 25% more consultants and specialists, and 50% more public health academics in the UK. If the rates in London were to be applied these numbers would be even higher.

4. "Bottom up" modeling in England, derived by defining the number of consultants and specialists in public health required per organization suggests that a minimum of 25 WTE per million (or a minimum of 2.5 WTE per 100,000 population) are needed to deliver a safe and effective public health service, an increase in the current workforce of approximately 40%.
5. Numbers of new appointments to public health training schemes have fallen in the last two years, although the total number of trainees is fairly constant. The number of trainees is highly correlated with the number of public health specialists, and thus the capacity to train. Up to 3% of the present public health workforce plan to leave before retirement age. Without the addition of public health specialists from a variety of backgrounds joining the Voluntary Register, the present specialist public health workforce will reduce in numbers in the next 5 years. Further reductions are occurring through appointment of consultants and specialists in public health to new national organizations e.g. NICE, CHAI, NCCA and HPA Director posts. Top up training and additions to the Voluntary Register are likely to provide only a short-term solution. Many of those joining the Register will already be contributing substantially to the public health function, and the real gain in public health capacity from their voluntary registration as specialists may be small. In addition this will not increase the number of senior public health academics.
6. Public health skills are in short within PCTs with widespread reporting of staff shortages and significant numbers of vacant PCT DPH posts in England. These organizations may also get public health capacity from public health networks, observatories and academic departments. However, in practice these links are not working well in all areas, and experience suggests that networks need to be resourced and managed properly if they are to function effectively. There are problems with recruitment and retention of public health specialists for a variety of reasons including lack of suitably trained applicants for posts, lack of funding, losses during reorganization, professional isolation, lack of management support, and discouragement arising from a high workload and lack of capacity.
7. There is a shortage of academic public health specialists, with a lack of capacity and differing agendas from the NHS in academic departments. Indeed many PCTs see no need to support academic public health.
8. The shortage of consultants in health protection and its detrimental effect on service delivery has been known since the national survey of communicable disease function undertaken for NHSE in 1997. The important deficiencies in staff numbers have not been generally rectified despite the addition of significant new responsibilities for these consultants. This under provision has a direct relationship on the robustness of health protection services and limits the scope for implementation of the four national action plans announced by the Chief Medical Officer for England in Getting Ahead of the Curve.
9. Training and management (including addressing skill mix) are important in maximizing the effectiveness of the public health workforce, and need to be part of workforce development together with the planning and leadership development.
10. Major changes in medical training are currently taking place with the establishment of the Postgraduate Medical Education and Training Board, and the implementation of Modernizing Medical Careers. The opportunities of these changes in creating new career opportunities and training pathways for public health as well as increased specialization needs to be proactively developed. The impact on the public health workforce will need to be monitored and carefully considered in future. An additional factor is the implementation of the new consultant contract which is already identifying a number of individuals currently working over and above contracted hours, and may well lead to a reduction from their current contribution.

FINAL RECOMMENDATIONS

1. All parties should adopt and promote the Faculty of Public Health's national target of a minimum of 25 WTE consultants and specialists in public health per million population (a minimum of 2.5 WTE per 100,000 per population at local level) to be achieved by 2006. This target and its implementation are needed to ensure the delivery of a safe and effective public health service. It includes the health protection function but excludes academic public health and assumes that specialists will be supported by fully functioning public health teams.
2. In line with the recommendations of the Wanless report, a strategic workforce plan should urgently be drawn up at national level to support the development of a long term development and sustainability of service and academic public health, taking into account the needs of all countries in the UK.
3. The Faculty of Public Health should:
 - a) with SHAs and RDsPH identify and address factors influencing recruitment and retention for the specialist workforce
 - b) with deaneries model the potential impact of increasing the number of future careers which involve combining public health expertise with clinical practice e.g. general practice, community pediatrics, nursing.
 - c) with programme directors identify and address the factors which prevent completion of specialist public health training
 - d) promote open debate about the ratio of medically and non-medically qualified public health specialists required to deliver an effective public health function
 - e) promote action as necessary to ensure continued recruitment and retention of the medical public health workforce.
4. SHAs, RDPHs and Deaneries need to:
 - a) increase recruitment to public health training schemes and set and achieve targets for each region based on the rates of the highest regions.
 - b) set targets for increasing the numbers of academic trainees and fund academic training posts appropriately
 - c) ensure that there are effective top up schemes in each region in the short term that are properly integrated into public health training schemes
 - d) work jointly with universities to increase the effectiveness of links between PCTs and networks, observatories, HPA teams and academic departments.
5. Government should:
 - a) assess the impact of those choosing to work part time, particularly women when calculating total workforce numbers
 - b) ensure the inclusion of public health in the national workforce planning processes.

4. "IMPROVING COMMUNITY PUBLIC HEALTH SYSTEMS DATA"

PROJECT REPORT 2001

PROJECT CARRIED OUT BY NATIONAL ASSOCIATION OF COUNTY AND CITY HEALTH OFFICIALS (NACCHO)

PROJECT FUNDED BY ROBERT WOOD JOHNSON FOUNDATION

SUMMARY / GRANT RESULTS REPORT

The Project

Public health is in a period of rapid change brought about by such factors as the increase of managed care, reorganization of state health and social welfare agencies, federal and state funding reductions and, most recently, the threat of bioterrorism. Current data on public health infrastructure can aid public health organizations as they enter into new relationships, roles and functions in the health care system, and monitor the outcomes of public health programs.

This grant from RWJF supported the National Association of County and City Health Officials (NACCHO) in a pilot project to profile local public health infrastructure: the systems, competencies, relationships and resources available to carry out public health activities in a community.

Under this grant, NACCHO conducted a national survey of local public health agencies in order to improve the quality and character of datasets on local public health systems and identify the strengths and deficits of local health systems. The 1999 Local Health Department Infrastructure Survey built on existing questions from the National Profile of Local Health Departments Surveillance Series, national surveys of local public health departments' activities, capacities and services conducted in 1990, 1993 and 1997, with support from the Centers for Disease Control and Prevention (CDC). The new survey included questions on the workforce, partnerships and collaboration, community health assessment, challenges and strengths. An expert advisory committee provided oversight for this project.

Methodology

Mathematica Policy Research (Princeton, N.J.) was subcontracted to design and conduct the survey, and to assist the association with its analysis of the data. The survey was mailed to a random sample of 1,100 local public health agency directors nationwide. The sample was stratified by size of population served by the agency, to better differentiate between metropolitan and non-metropolitan areas. The response rate was 63%.

In year two of the project, RWJF requested that the association move the survey's emphasis away from partnerships and collaborations to look more closely at service areas and workforce issues. The project's research questions were revised in order to provide more general baseline data on local public health systems.

Findings

The National Association of County and City Health Officials published its results from the survey in a report entitled *Local Public Health Infrastructure: A Chartbook*. Findings included:

Overall Characteristics

- Sixty percent of local public health agencies are county-based; 69 percent of all agencies serve jurisdictions with a population of less than 50,000.
- Annual agency expenditures are extremely varied, ranging from no expenditures to over \$836 million.
- The median annual agency expenditure in constant 1999 dollars was \$621,100.
- The largest portion of local public health agency budgets comes from local sources (county, city or town), followed by state sources. Funding streams varied by metropolitan and non-metropolitan area agency, and by the size of the population served.

Programs and Services

- The most common programs and services provided by local public health agencies include: adult and child immunizations, communicable disease control, community assessment, community outreach and education, environmental health services, epidemiology and surveillance, food safety, health education, restaurant inspections and tuberculosis testing.
- The least common services provided included the provision of primary care or direct medical care services, including treatment for chronic diseases such as cardiovascular disease or diabetes, behavioral or mental health services, programs for the homeless and veterinary public health.
- Program and service area priorities were consistent across the diverse population of local public health agencies. Priorities included communicable disease control, environmental health services and child health programs.

Workforce

- The occupations local public health agencies most commonly employ are public health nurses, environmental scientists and specialists and administrative/clerical staff.
- The average agency staff size in full-time equivalents (FTEs) is 67, with a median of 13 FTEs.
- Due to reasons ranging from a lack of qualified applicants to agencies' inability to offer competitive pay, the types of employees local public health agencies most need are consistent across agencies. They include public health nurses, environmental scientists and specialists, administrative support, health educators and epidemiologists.
- It is projected that in the next five years the public health occupational needs will not change compared with today's needs.

Partnerships and Collaborations

- State health departments, other local public health agencies and other state agencies were most commonly selected as partners by the agencies in this study.
- Managed care organizations/health maintenance organizations and federal government agencies were least commonly selected as partners by the agencies in this study.
- There were few differences in terms of their partnerships and collaborations based on metropolitan versus non-metropolitan area agencies, population of jurisdiction served and local public health

agency types. Overall, agencies in larger population jurisdictions reported a wider variety of partnerships compared to those in smaller population jurisdictions.

Community Health Assessment

- Fifty percent of local public health agencies have conducted a community health assessment in the past three years. Of the 45 percent that have not, almost half plan to complete a community health assessment within the next three years.
- More than half of the nation's local public health agencies have developed or participated in the development of a community health improvement plan. The majority indicated that the plan was formulated using the results of a community health assessment, and more than half indicated the plan was linked to their state's health improvement plan.
- About half of the local public health agencies that conducted a community health assessment used an established tool or model, such as the federal Healthy Communities 2000: Model Standards, or a state-specific tool, for completing the assessment

Strengths and Challenges

- Local public health officials consistently indicated their workforce as one of their greatest strengths. They saw their personnel as caring, committed and able to do their best given scarce resources. Partnerships with the community were also seen as strengths.
- Overall, local public health agencies cited funding as one of their biggest challenges. Program-specific challenges and workforce funding issues, additionally, were listed as major challenges. The challenges surrounding workforce issues deal directly with training, recruiting and retaining public health workers. Needed staff cannot be hired due to budgetary restrictions.

Project Lessons

1. Surveys of local public health agencies need to ask questions and provide enough response categories for each question so that responses capture the variety in a sample. One size does not fit all for local public health agencies. The variety of agency characteristics between and within states—for instance with budgets, which ranged from \$0 to \$836 million—calls for caution in designing research. (Program Officer/RWJF)
2. Making public health agencies regional may enhance their effectiveness. Additional work is needed to define what a local health department is. The National Association of County and City Health Officials, in the 1999 national survey of public health infrastructure, considered very small units to be local public health agencies, and discovered that in some cases these units may not have the capacity to be a local health department. The capacities needed to provide the essential services of public health may need to be addressed and defined. (Project Director)
3. Through their assurance role, local health departments may be a strategic point of entry for achieving certain public health goals. Public cooperation may be more easily garnered by agencies that have already earned public trust. (Project Director)
4. Recent emphasis on preparedness for bioterrorism makes the workforce a greater priority for local public health systems, and increases their need for funding. "Anecdotal data and suggestions from the field," the project director observed, "center on the questions, 'how are we going to deal with the workforce needs? How are we going to prepare for surge capacity?'" Many public health officials state that their current staff size is insufficient for the tasks related to preparedness. An additional concern is training. With the need for more staff and specialized training come the need for more funding, which, prior to the threat of anthrax in 2001, was the highest priority (Project Director)
5. Finding ways to encourage collaboration among local organizations dedicated to public welfare will improve local response to health emergencies. Partnerships, collaboration and communication

among public health agencies, hospitals, fire departments and other public service organizations are key to an effective systems approach to bioterrorism planning. Local public health officials, informally, cite organizing and communicating with the community as their first concern in being prepared for bioterrorism. (Project Director)

5. "CDC GUIDING ASSESSMENT EFFORTS: COUNTRIES IMPROVE HEALTH BY EXAMINING THEIR SYSTEMS"

THE NATION'S HEALTH
MARCH 2004

SELECT PARAGRAPHS CHOSEN TO SUMMARIZE

In its largest international assessment effort to date, CDC collaborated with the Pan American Health Organization to help 2,000 health workers in 41 countries in Latin America and the Caribbean carry out evaluations of their public health systems. (Wade Hanna, MD, MPH, was the deputy director for the World Health Organization Collaborating Center for Public Health Practice, which is based at CDC).

Conducted from 2001-2002, the Latin American and Caribbean assessments used a survey instrument developed specifically for the regions. Based on the essential functions of public health—such as surveillance, research and health promotion—the instrument queried users on their health system's ability to offer public health services. CDC and PAHO personnel trained officials on the use of the instruments, then each country held national workshops with its health workers, educators and administrators to complete its evaluation.

The results showed that many of the Latin American and Caribbean countries were performing well in the traditional roles of public health—such as monitoring, surveillance and outbreak control. For example, 70 percent of the countries that took part in the assessments found they had guidelines in place for measuring health status on a national or intermediate level.

However, the countries discovered gaps in many of the newer areas of system development, such as workforce development, research and enforcement of public health laws—many of the same areas U.S. health officials are struggling with, Hanna noted.

6. "CONNECTICUT DEPARTMENT OF PUBLIC HEALTH"

OFFICE OF PUBLIC HEALTH WORKFORCE DEVELOPMENT
2001 REPORT
STATE OF CONNECTICUT
DEPARTMENT OF HEALTH
MARCH 2002

EXECUTIVE SUMMARY

This report describes the establishment and first year initiatives of the Office of Public Health Workforce Development.

Connecticut and many states across the nation face shortages of essential personnel in the public health and health care delivery sectors. They also face a widening gap between the challenges to safeguard and improve the public's health and the capacity of the workforce to meet those challenges.

In January 2001, as part of Governor John Rowland's efforts to strengthen the state's overall workforce, Dr. Joxel Garcia, Commissioner of the Department of Public Health established the Office of Public Health Workforce Development.

Connecticut's goal is a diversified, well-prepared health workforce with expertise in its areas of specialty, interest and responsibility. This Office was established to study, monitor and evaluate public health and health care workforce issues, including workforce shortages and public health workforce core competencies.

The Office worked collaboratively with other state agencies and stakeholders, including health care providers, employers, educational facilities, professional organizations and representatives of labor, to begin to achieve these objectives. Significant collaborations in calendar year 2001 included:

- The establishment of *Health Tracks* through a partnership with the State Department of Education and with local school systems.
- *Public Health Partnerships*, a collaboration between the Department and the Hartford public high schools. This initiative uses a variety of strategies and activities targeted to urban youth including a summer youth internship and training program at the DPH, a mentoring and a tutoring program by DPH staff volunteers, and opportunities for "career shadowing" with public health staff.
- A survey of nurses in Connecticut to determine why nurses were not working in nursing positions done collaboratively with the Connecticut Department of Labor. And
- Development of a survey to assess the core competencies of the Department's public health staff was developed through its work with the Connecticut Partnership for Public Health Workforce Development (Connecticut Partnership).

Other initiatives and achievements in calendar year 2001 included:

- Incorporation of information about career opportunities in public health and in today's health care environment into the Department's urban health initiative, *Door to Door*.
- Funding and completion of a two-part nursing study that examined the causes underlying the current shortage of nurses in this state (December 2000) and discussed data elements to study the relation between nurse staffing patterns and the quality of health care (May, 2001).
- Publication of "*Health Workforce Shortages: A Review of Available Data and Measures for Selected Professions*," (Connecticut Department of Public Health, 2001) a report that identifies and reviews the data available in Connecticut to measure workforce shortages for five selected health care professions.
- Development of a speakers bureau utilizing Department staff and speakers from professional associations, industry groups, health care facilities and local health departments to promote health careers to different audiences; and
- Placement of twenty foreign medical graduates in medically underserved areas in Connecticut through the Department's J1-Visa Waiver Program (also known as the Conrad State 20 Program).
- In collaboration with the Office of Rural Health, the awarding of five \$2,000 grants to high schools in rural communities to support emergency medical technician (EMT) training for 125 students.

As the Office moved into 2002, its second year of operation, plans and initiatives include:

- An assessment of health care workforce shortages in Connecticut through the Connecticut Area Health Education Center (AHEC).
- Assessment of core competencies in public health and in emergency preparedness among the Department's public health workforce using the study designed by the Connecticut Partnership.
- Development and piloting of educational and training opportunities for Department staff based on the results of the Connecticut Partnership training needs assessment.
- A major statewide initiative to improve the readiness of public health and the health care delivery system to respond to acts of bioterrorism, epidemics and emerging infections through federal funding for public health preparedness.
- Efforts to diversify the health workforce through collaboration with the Department's Office of Multicultural Health and the Advisory Commission on Multicultural Health.
- Expansion of *Health Tracks* and related marketing and outreach programs (mentoring, career shadowing, tutoring, health fairs) to attract youth and others to health careers.
- With the Capitol Region Industry Council, develop a "health cluster" for the new Hartford Job Corps Center; and
- Enhancement of the Department's website to include information on health careers and available workforce development opportunities.

7. "THE PUBLIC WORKFORCE ENUMERATION 2000"

KRISTINE GEBBIE, PRINCIPAL INVESTIGATOR
CENTER FOR HEALTH POLICY
COLUMBIA UNIVERSITY, SCHOOL OF NURSING
DECEMBER 2000

INTRODUCTION

The public health workforce in this current best estimate is composed of 448,254 persons in salaried positions or one public health worker for every 635 persons, supplemented by at least 2,864,825 volunteers. This community is large and complex. Public health organizations form a network linked by common interest and in some cases, by law, in pursuit of improved health for all. The workers come from commonly identified health professions, from many technical backgrounds, or have been trained on the job. Entry to this workforce may require advanced education and board certification in a specialty requiring a dozen years of advanced education, or high school diploma and a willingness to learn. The size and composition of this workforce should be identified, and should be tracked over time in order to develop appropriate plans for workforce development, recruitment and retention. Such analysis is possible for some components of the nation's health workforce such as physicians and nurses, some of whom work in public health. It has not been realistic for the public health workforce as a whole, because there has been no systemic accumulation of the necessary information.

It may come as a surprise that the current estimated number of public health workers is less than the oft-cited half-million number developed in the 1970s. At the time that number was developed, it represented a public health worker to population ratio of one worker to each 457 persons, a ratio noticeably better than the current estimate. Given the new public health challenges of the intervening decades, the change represents substantial erosion in public health capacity.

Background

Discussions among leaders of the public health community during the 1993-1994 national health reform debates focused on ways to improve communication within the public health community and between that community and policy-makers at all levels. A key product of those discussions was the statement Public Health in America (PHA) [See Appendix A]. This document developed the broad discussion of core functions of public health presented earlier by the Institute of Medicine into a more complete presentation of the mission, vision, responsibilities and essential services of public health.

One of the essential services public health was charged with was to "assure a competent public health...workforce." The Public Health Functions Steering Committee, author of PHA, subsequently commissioned a group to develop specific plans for meeting this commitment to the public health workforce.

The work group on public health workforce was charged with providing a profile of the current public health workforce and making projections regarding the workforce of the 21st century.

[Appendix B, with a summary of public health workforce enumeration efforts is not included in this summary] The subsequent report, The Public Health Workforce: an Agenda for the 21st Century (PH Workforce) made a number of important points regarding the workforce that influenced this project. For example, the report attempted to clarify who should be considered a part of the public health workforce.

For purposes of this discussion, the public health workforce includes all those responsible for providing the services identified in the Public Health in America statement regardless of the organization in which they work.

As an example, all members of the U.S. Public Health Service Commissioned Corps, whether currently assigned to the Department of Health and Human Services (DHHS) or elsewhere are included. At the State level, many workers in environment, agriculture, or education departments have public health responsibilities and are included. This expansive definition does not include those who occasionally contribute to the effort in the course of fulfilling other responsibilities.

The report offered no profile of the workforce, however. It did include a discussion of enumeration that highlighted the following methodological concerns: occupational classifications in use have rarely reflected the duties and qualifications expected of the incumbents; boundaries between public health occupational categories have not been delineated; available categories are not mutually exclusive and overlap extensively with regard to knowledge base, skills, and tasks; existing classification systems lack consistency, with some occupations defined by what people do, and others defined by the populations they serve or by the required underlying skills; the many position descriptions/ job titles used to employ public health professions lack uniformity across States and organizations; and there is no comprehensive public health professional licensure or certification requirement for public health workers. The report ended the discussion of workforce enumeration with this recommendation:

- A standard taxonomy should be used to regularly identify the size and distribution of the public health workforce in official agencies (health, environmental health and protection, mental health, and substance abuse; local, State, and national) and private and voluntary organizations. [Emphasis added]
- The decision to develop this enumeration, a current best estimate of the size and composition of the public health workforce at the local, state and national level, is only a first step toward a comprehensive, accessible and current data source on the public health workforce.
- As PH Workforce was being published, work was also underway on a new edition of Healthy People 2010, the national statement of health objectives that has driven much public health investment in recent decades. Healthy People 2010 included a new chapter on public health infrastructure, demonstrating recognition that if the infrastructure was not in place, accomplishments of all other objectives were in jeopardy. The public health infrastructure chapter identified workforce as one of the three essential components of infrastructure, the other two being data/information and systems/relationships. Three objectives relate specifically to the public health workforce:
 - ♦ Objective 23-8. (Developmental). Increase the proportion of federal, tribal, state, and local agencies that incorporate specific competencies in the essential public health services into personnel systems.
 - ♦ Objective 23-9. (Developmental). Increase the proportion of schools for public health workers that integrate into their curricula specific content to develop competency in the essential public health services.
 - ♦ Objective 23-10. (Developmental). 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.

While none of these specifically require the enumeration of the public health workforce, knowledge of the size and composition of the workforce would enhance our understanding of the scope of work needed to accomplish each, and would facilitate monitoring success. It is also worth noting that each of these is developmental, that is, there are currently no data that would allow the objective to be quantified.

Interested Parties

The potential audiences for a good public health workforce database include:

- Leadership of public health agencies making budget and administrative decisions
- Evaluators of public health programs at all levels
- Schools of public health and other health professions schools contributing to the public health workforce
- Policy analysts in legislatures and executive branch policy offices at all levels of government
- Workforce researchers in general, including the Department of Labor

Interest in enumerating the public health workforce has come from multiple directions. Two major agencies of the US Department of Health and Human Services have an ongoing interest in public health workforce and regularly collaborate. The Health Resources and Services Administration (HRSA) has a public health unit within the Bureau of Health Professions (BHP), which has supported a number of the previous efforts to understand the public health workforce.

Other offices within the BHP, such as the nursing unit, have a long-standing interest in the development of the public health portion of the profession. As an active participant in the Public Health Functions Project, HRSA was recognized as the likely leader in activities regarding public health workforce enumeration.

The Centers for Disease Control and Prevention (CDC) has also had a long-standing interest in the development of the public health workforce and has sponsored efforts to identify local public health workers. Since the publication of HP2010, CDC has begun developing a strategic plan for public health workforce development. This plan identifies the regular enumeration of the workforce as necessary if workforce development activities are to be effectively planned and evaluated.

States that have done public health improvement planning in recent years have identified the need to develop worker competencies in public health practice. Their focus, however, appears to have been more on professional staff than on the entire public health workforce. For instance, several states in the southeastern US have joined together to develop a common approach to workforce development. A survey conducted to identify training needs focused exclusively on staff at the professional level; no numbers regarding the technical or support level staff were developed. While professionals may be the most expensive public health workers to recruit, retain and keep current, and they have the most extensive pre-employment education, the entire public health workforce, at all levels, is critical to meeting community needs effectively and efficiently.

More complete knowledge about the educational preparation, career patterns, turnover rates, and mobility within states and across the country would facilitate planning for education, recruitment and retention. While job title-based information may be helpful, there are other considerations. For example, many members of important public health disciplines (physicians, nurses, environmental health specialists, health educators, laboratory scientists) are hired as administrators (health official, director), for some special skill (epidemiology, health education) or into positions with general public health titles (public health program specialist).

Beyond agencies interested in their own staff, or in the individuals they may wish to employ in the future, academic institutions have an interest in quantifying the workforce. The schools of public health could more effectively plan their educational programs if they knew, for example, the average annual rate of retirement of members of key disciplines. At least as important is the contribution workforce information would make to research and analysis of important public health issues. With epidemiology as its core science, public health thinking is often identified as thinking that always requires a denominator. That is, no item such as the number of newborns or cases of a disease, or admissions to a hospital, or licensed physicians is considered apart from some other figure that can put it in perspective, such as the size of the population within which the events occurred. There is no reason that health workforce studies should not follow the same rule. In fact, in extensively studied areas of the health workforce, such as distribution of primary care providers in rural and underserved areas, ratios of physicians to population are regularly considered. Other

areas of health services research may include, as one of the resource investments in various efforts, the staffing pattern associated with an intervention. But for public health, such descriptive or evaluative research is nearly impossible.

Practicalities

Preparing a current best estimate of the public health workforce was done with awareness of both technical issues to be clarified and some of the potential long-term policy issues. The burden of response being created for reporting entities became an important consideration.

The questions considered included the following:

- What range of the governmental public health workforce should be included in a database? Only those in the single, official public health agency of a jurisdiction? Those in any agency with significant public health responsibilities? If the latter, how identified? The Public Health Functions Project routinely has considered general public health, environmental health, mental health and substance abuse agencies as the necessary components for study or analysis.
- What range of public health workers outside of governmental public health should be included, if any? At every presentation of the work in progress, questions have been asked about the inclusion of these numbers, even while the questioners have not been able to define exactly whom they mean, or how one would go about locating the information.
- What level of specificity should be sought? A database that uses every possible job title would be prohibitively expensive. The Bureau of Health Professions listing has been amended through this project to encompass 55 public health occupational titles. For repeated use, it needs validation. How should jurisdictions that report but cannot provide the desired level of detail be included?
- Are there some public health professions that are sufficiently important that they should be reported in detail, regardless of what job title they hold, or what public health service they deliver? If so, which?
- Who should be looked to as the data source by whatever entity gathers and manages the database? Any single entity, office or contact within each state may have only some of the relationships or information needed to report fully on the state. Some associations have profession-specific or program-specific information, but it may not be compatible with state generated reports.
- What time period should be used to limit information? That is, if a jurisdiction has available reports, but they date from 5 years ago, or 10 years ago, should they be considered for inclusion?

In 1983, the American Public Health Association developed a comprehensive methodology for PH workforce enumeration but it was never put into use. Recently, researchers at the University of Texas, Houston applied this methodology in a state workforce study which includes community partners from many settings (see Figure 1). However, this single-state study was a result of 2 years of effort, and data gathering from nearly 400 different sources.

For this current national enumeration project, only Wisconsin was able to furnish information on what are believed to be all workers with public health responsibilities in all agencies of the state. This was possible because in the recent past the health agency had completed a legislature-mandated (and thus funded) project on the range of public health law.

Because this project identified its goal as a "current best estimate" it is also possible to describe the approach as one of sufficing. That is, to cite an old saying, the governing principle was that the perfect was not allowed to become the enemy of the good. Data were not discarded if they failed to match expectations perfectly; adjustments were made in the data system to accommodate the information. From another perspective, this approach is qualitative research using quantitative data. One of the distinguishing features of qualitative research is the process of allowing data to speak for themselves, without the imposition of preconceived categories or hypotheses. Reading the history of the APHA and Kennedy et al. work described above, or the recent work funded by HRSA that attempted to use PHA as a data organizing framework, it was

clear that the collective lack of experience with a national public health workforce data base, and thus the lack of agreement regarding data categories, made it impossible to determine in advance what level of detail or vocabulary would be used for the report. Therefore, material was accepted in any format or level of detail available. In cycles of review that lasted throughout the project, data were examined and reexamined to arrive at the final approach to presentation.

Methodology

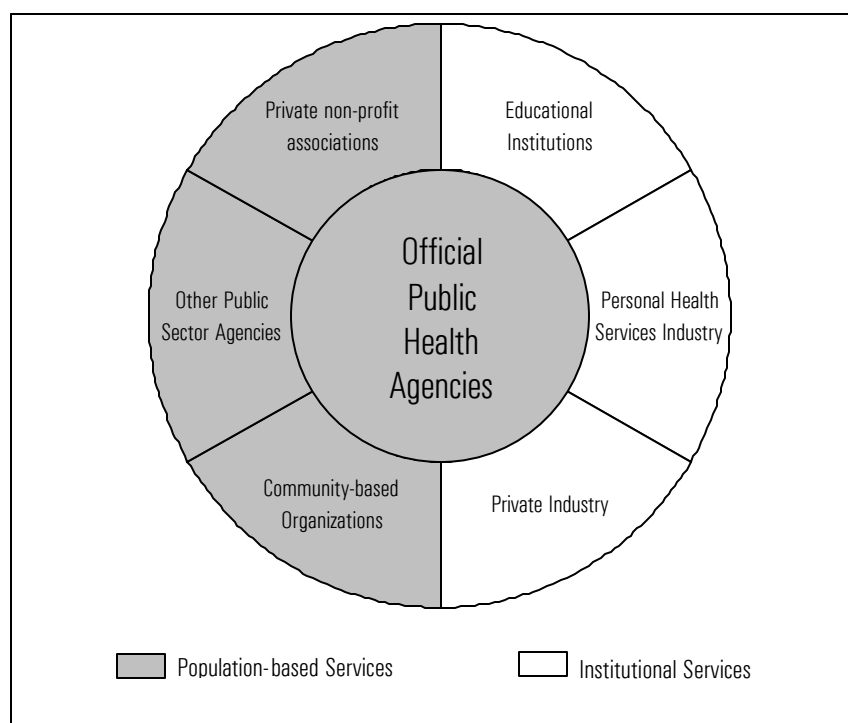
As a first step an extensive review of literature on the public health workforce was conducted. An important product of this investigation is the bibliography that includes previously un-catalogued resources regarding workforce composition and training needs. It is included in this report on page 279.

Simultaneously, the chief health official of each of the 57 states and territories was contacted with a request for any existing report, survey or summary on the public health workforce in the jurisdiction. A staff member with workforce development or planning responsibility was generally identified as the contact for additional information or clarification.

In addition to current enumeration reports, these contacts also identified historical reports or analytic publications that were entered into the project bibliography.

Five months of intensive phone and email contact was required before the project had usable information on 100% of the states and territories. Preliminary spreadsheets were made available for on-line review by submitting jurisdictions. Sixty percent responded with approval, corrections, or clarifications of the preliminary numbers.

FIGURE 1. COMPONENTS OF THE PUBLIC HEALTH SYSTEM



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The request for existing workforce data elicited varying types of information, from internal infrastructure reports to workforce planning surveys to Turning Point Initiative public health capacity summaries. States

with centralized systems were able to provide information on public health workers at both the state and local level. States with decentralized systems frequently have an office of local public health able to provide local workforce numbers. In some cases (Pennsylvania, Kentucky, Tennessee and Virginia), project staff was referred directly to individual localities. In all states, other agencies beyond the identified official public health agency contribute to the delivery of essential public health services. These agencies include, but are not limited to, departments of environmental health, mental health, alcohol and substance abuse, agriculture, education, labor, health planning and insurance. In some cases, such as education and insurance, an independently elected official may direct the agency. Others such as mental health and substance abuse may be related units within the same umbrella agency as the state health department. None of these other agencies were contacted directly, but the state health agency was urged to provide whatever information was available about the wider circle of contributors to public health.

Data

Data differed from jurisdiction to jurisdiction in several ways. The time period reported was not consistent; some were a current fiscal or calendar year but others were up to 10 years old. Some reported individual workers, and others described full-time equivalents.

Some included every individual job title within the jurisdiction and others grouped workers by categories that were unique to that location. The most generalized response was a single number reported to encompass all state and local public health workers within a state, with no detail as to job title, occupation or setting; the most specific was a person-by-person listing of every position within every local agency within the state. Federal civilian public health workers are included in federal civilian workforce statistics compiled by the US Office of Personnel Management (OPM) and available on the Web.

The OPM classifies the federal civilian white-collar workforce in 446 occupations and 26 agencies. Decision rules on which of these workers to include were developed by the Center for Health Policy through a criteria based consensus process, based on the agency's mission in relation to the essential public health services and considered the likelihood that offices or divisions within an agency would provide one or more of the essential services of public health. From 26 federal agencies on which the OPM provides workforce data, only agencies clearly without a public health mission were eliminated from consideration.

Appropriate offices within the Department of Defense provided data on the military public health workforce.

While interest in the public health workers found in non-governmental and community partner agencies is high, states reported almost nothing about this component of the workforce. Limited detail on numbers of volunteers and salaried staff were obtained by contact with the national headquarters of major voluntary agencies, including the American Cancer Society, American Lung Association, American Red Cross, and the March of Dimes. The range of partner organizations involved in essential public health services is clearly much greater than this, so that both staff and volunteers are undercounted.

Data Classification

The project goal was to describe as much of the workforce as possible using the latest listing of public health professions used by the Bureau of Health Professions, HRSA, and the Bureau of Labor Statistics. Absence of standardization in existing workforce documentation required the design of an adequately structured system to organize the data in a sensible and comprehensible manner, while at the same time incorporating flexibility to accommodate the varying specificity and detail that emerged as each additional report was received and analyzed. To accomplish this, the project developed the classification scheme illustrated in Figure 2.

The US Office of Personnel Management utilizes standard categories to classify occupational titles as administrative, professional, technical, or clerical support. Each category is defined regarding education and level of responsibility, and includes examples of the type of work performed in the category. These were the least detailed occupational categories used by the project. The US Equal Employment Opportunity

Commission uses an eight level worker classification scheme for its bi-annual reports mandated by Title VII of the Civil Rights Act of 1964. These reports, known as EEO-4 Reports, are required from public agencies employing more than 100 persons. As with the OPM system, each EEO-4 occupational category is described and defined. The eight EEO-4 categories correspond to and can be mapped into the OPM categories. These occupational classification systems provided a valid and reliable core for classifying existing public health workforce information.

The core scheme provided by combining the OPM and EEO-4 categories was made specific to public health workforce by using the taxonomy of public health occupational titles developed by the Bureau of Health Professions, HRSA (BHP+ as part of efforts to add public health occupations to the Bureau of Labor Statistics Standard Occupational Codes (SOC). The BHP+ taxonomy had the advantage of previous use by other public health workforce researchers. The Center for Health Policy added eight additional titles and included nine new 1998 SOC public health titles. The complete list is provided in Table 1. The enhanced BHP+ taxonomy of titles was smoothly mapped into OPM and EEO-4 occupational categories and provided the final level of a collapsible three-tier classification scheme that accommodated most data.

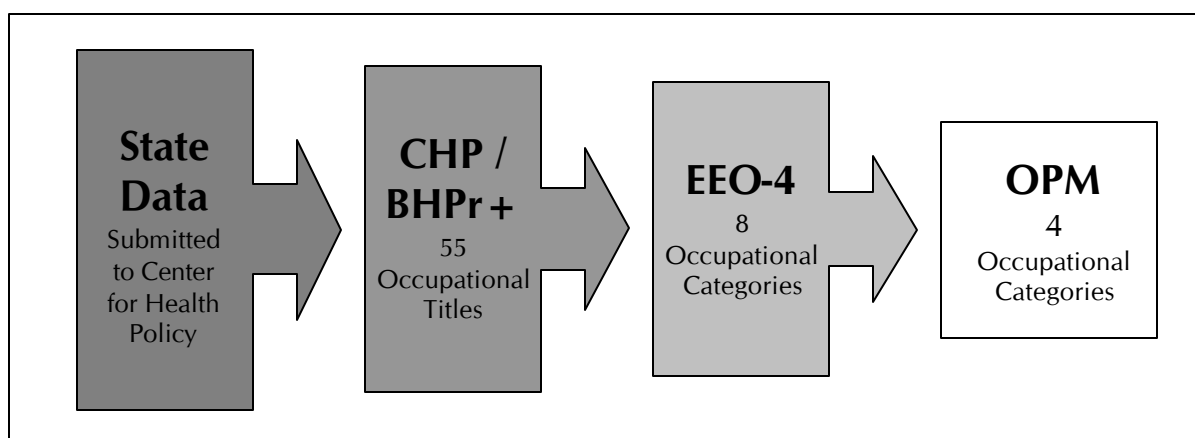


FIGURE 2. ENUMERATION 2000 CLASSIFICATION SCHEME

States and territories that did not provide reports by job title or category typically provided the number of workers by program. Therefore "Programs" became an additional category for workforce numbers unspecified by occupational title or category. States were asked to separate program staff numbers into at least the four OPM categories whenever possible. A category was also created for the volunteers reported by national voluntary agencies. As a final level of categorization, workforce data from each jurisdiction were identified as describing state workers, local workers or other workers, others being those employed by voluntary organizations, schools of public health faculty or students, and volunteers. Workers that could not be associated with any specific level are reported as 'agency unspecified'. These include workers attributed to the state by national association reports (i.e. Association of Public Health Laboratories, Association of State and Territorial Public Health Nutrition Directors) that could not be identified in other information the project received from the state.

Once a categorization scheme was in place decision rules were developed to guide the mapping of job titles into the scheme. The occupational category definitions provided by EEO and OPM and the Bureau of Labor Statistics standard occupational structure provided guidance. A numeric coding system was created with OPM classifications as the highest level and CHP/BHP+ occupations as the most discrete. The decision on classifying a specific job title was based on a combination of known occupational qualifications (e.g., RN or MD licensure), the level of responsibility indicated by the job title (e.g. data systems administrator, data entry supervisor, data entry clerk), and finally by the research team's knowledge of the tasks generally

performed by those with a given job title. Appendix C includes the complete list of job titles and decision rules for their application.

TABLE 1. CHP/BHPr+ CLASSIFICATION SCHEME

ADMINISTRATIVE
Officials and Administrators
Health Administrator
PROFESSIONAL
Professionals
Administrative/Business Professional
Attorney/Hearing Officer
Biostatistician
Clinical, Counseling, and School Psychologist
Environmental Engineer
Environmental Scientist & Specialist
Epidemiologist
Health Economist
Health Planner/Researcher/Analyst
Infection Control/Disease Investigator
Licensure/Inspection/Regulatory Specialist
Marriage and Family Therapist
Medical & Public Health Social Worker
Mental Health/Substance Abuse Social Worker
Mental Health Counselor
Occupation Safety & Health Specialist
PH Dental Worker
PH Educator
PH Laboratory Professional
PH Nurse
PH Nutritionist
PH Optometrist
PH Pharmacist
PH Physical Therapist
PH Physician
PH Program Specialist
PH Student
PH Veterinarian/Animal Control Specialist
Psychiatric Nurse
Psychiatrist
Psychologist
Public Relations/Media Specialist
Substance Abuse & Behavioral Disorders Counselor
Other Public Health Professional
TECHNICAL
Technicians
Computer Specialist
Environmental Engineering Technician
Environmental Science and Protection Technician
Health Information Systems/Data Analyst
Occupational Health and Safety Technician
PH Laboratory Specialist
Other Public Health Technician
Protective Service Workers
Investigations Specialist
Other Protective Service Worker
Paraprofessionals
Community Outreach/Field Worker
Other Paraprofessional
CLERICAL/SUPPORT
Administrative Support
Administrative Business Staff
Administrative Support Staff
Skilled Craft Workers
Skilled Craft Worker
Service / Maintenance
Food Services/Housekeeping
Patient Services
Other Services/Maintenance
Volunteers
Volunteer Health Administrator
Volunteer PH Educator
Volunteer Other Paraprofessional
Programs
Unidentifiable
KEY
Office of Personnel Management categories (OPM)
Equal Employment Opportunity categories (EEO-4)

Data Quality: Cautions

The number of public health workers reported here is far from exact, given that it is constructed out of reports that cover different time periods, use different categories and definitions, and do not cover all components of the public health practice community. The first and most obvious issue is the inclusion of volunteers, inflating the number by a factor of nearly 6.5. While many have expressed an interest in describing the contribution made to public health by volunteers, the number is so large as to obscure information about the paid workforce of 448, 254. Because of this, no volunteers are included in calculations of public health worker to population ratios.

Even this smaller number includes some over counting. For example, including every employee of the DHHS means individuals working solely on aspects of welfare policy unrelated to health issues are included, even though they are not performing an essential public health service. Individuals concerned with health services financing might be described as "linking people to needed personal health services" and "assuring the provision of care when otherwise unavailable," both essential public health services. Or they might be simply defined as running an insurance program, not eligible to be included in the public health workforce. However, the mission of the DHHS, to protect health and provide essential human services, is consistent with the mission of public health, so all DHHS workers were included. In this agency all clerical and support workers were included in the count and it is expected that their number as part of the federal public health workforce is overestimated.

From a comprehensive perspective, the greater issue is that there are major areas of undercounting. Federal job titles were chosen for inclusion only if the title clearly suggested public health functions (such as public health educator). No general clerical or administrative titles were selected, so it is expected that their number, as part of the public health workforce in federal agencies other than DHHS, is underestimated. For example, omitted are all of the generalists working on public health programs in labor, agriculture, environmental protection and others.

At the state and local level, the organization of services related to environmental health, mental health, addictions and substance abuse into separate agencies has meant that many of the received state reports do not include these workers. For example, there are at least 41 state environmental agencies responsible for environmental health and protection programs, as reported in the most comprehensive examination of this subject, a number that far exceeds the number of environmental agencies included in data received for this report.

Because there is no nationally agreed upon set of definitions for the public health workforce, this project created them, as described above. Reported job titles, or categories of jobs, were then fit into the definitions established by the project staff. Until a national data dictionary is validated, or until every agency employing public health workers agrees to use a standard set of job titles, it is quite possible that a number of workers are reported in the wrong category. Given the commonality of titles, and the experience of the team making the assignments, it is unlikely that this has resulted in misclassification of large numbers of individuals. But the available classes do present some difficulties. The category 'dental worker', for example, includes workers who are professionals, but also a range of technicians and paraprofessionals. In other apparently similar areas such as occupational health, there are separate categories for professional and technical staff.

The job titles used in occupational health, however, do not always make the distinction clear, and some individuals may have been erroneously classified.

Faculty reported by schools of public health are included, and classified to an occupational title when possible. For example, faculty of a department of bio-statistics are all classified as biostatistician. Members of departments with extremely general names such as maternal and child health, however, are included as other public health professionals. There is a specific category for public health students. The numbers included here represent an undercount of those who teach about and study public health practice, however. They do not include preventive medicine residents not currently enrolled in a master of public health program or

graduate students in environment, health education, mental health or nursing studying in other than a school of public health.

A particular warning is in order about comparison across jurisdictions. The information about the public health workforce is presented not only as reported totals, but also as ratios to population, both on a national level, and state-by-state. However, the ratio of worker to population in any one state is clearly related to at least two factors: the decisions made in that state about what is to be funded and organized as public health programs, and the availability of documents to be used in constructing this report. A state that has made comprehensive home health services a part of the public health endeavor will have a larger public health workforce than a state in which all or most home health care is delivered by non-public agencies. A state in which the local health authority carries out general public health, mental health, and environmental health programs will report a larger workforce than a state in which independent local agencies have no common tie to the state level. A state that can provide only aggregate numbers for state and local health agencies is likely to undercount, lacking information on public health workers in other agencies.

On the other hand, a state in which public health is included within an umbrella agency and the workforce report was obtained for the agency as a whole, may lead to an over count and the appearance of a stronger public health workforce. The narrative and notes provided with each set of numbers attempt to make clear what cautions should be exercised in interpretation. Users of this report wishing to make comparisons across jurisdictional lines are encouraged to read the full report and all notes carefully before selecting entities for comparison, and to exercise great caution in drawing any conclusions.

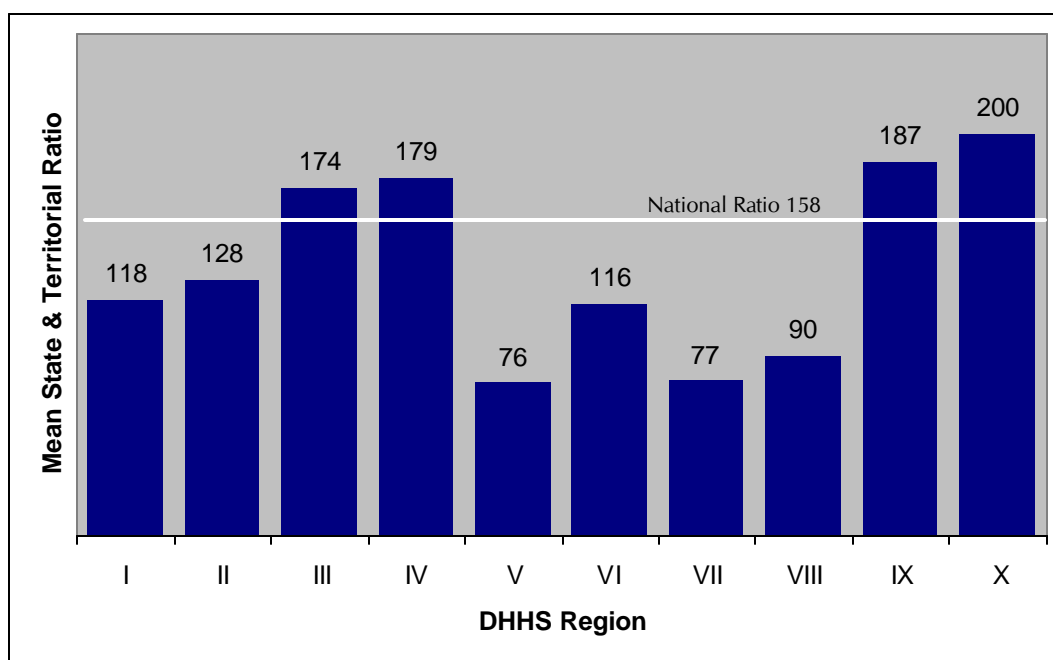
NATIONAL PERSPECTIVE ON THE PH WORKFORCE

The estimated national public health workforce, including federal employees and the salaried staff of a limited number of voluntary agencies, is 448,254 employed workers, a ratio of 158 per 100,000 population. Of this workforce, 3.6% are identified as holding official/administrative positions, 44.6% in professional positions, 13.9% in technical positions and 12.9% in clerical/support positions. The remaining 25% could not be assigned to a specific category.

Considered from another perspective, the public health workforce is 34% local, 33% state, and 19% federal. 14% of the workforce is located in other settings, such as schools of public health. Caution should be exercised in interpreting this information about governmental level. In a number of states it is not possible to distinguish between state and local workers, either because all public health workers are state employees even when assigned to local communities, or because available information did not allow the distinction.

A major limitation of this report is that approximately one quarter of the identified workers cannot be assigned to any worker category. This is either because the available data are organized by programmatic area (e.g., HIV program) without specifying worker category, or because only an aggregate number is available for an entire jurisdiction or agency. This latter point is the case, for example, in states for which no local health department data was available from the state and a local workforce estimate was based on the aggregate number recently reported to the National Association of County and City Health Officials (NACCHO).

FIGURE 7. ESTIMATED RATIOS OF PUBLIC HEALTH WORKERS PER 100,000 POPULATION



National: 50 states, 6 territories, District of Columbia, federal civilians and military, and selected voluntary agency staff.

As discussed in the introduction, the estimated national figure includes both over counting and undercounting. Over counting occurs when an entire agency has been included in the enumeration, even though some part of it performs work other than essential public health services. This is definitely the case for the U.S. Department of Health and Human Services (DHHS), though the public health portion of the agency is larger than its other units.

Undercounting is probably more pervasive for the workforce as a whole. Groups undercounted include:

- Leaders and administrators of public health functions in other than the main public health agency
- Business, clerical and other staff supporting public health functions in other than the main public health agency
- Environmental health, mental health, substance abuse, behavioral health or occupational health workers in other than the main public health agency
- Workers of all levels delivering essential public health services in community partner organizations, including voluntary organizations and health provider organizations
- Volunteers serving on boards and commissions with public health authority

Despite these problems, this report is a current best estimate of the size and composition of the public health workforce. Key observations about this workforce estimate include:

- Public health physicians are a relatively small part of the workforce, 1.3%. This is similar to the proportion reported as occupational health specialists (some of whom are physicians) or nutritionists. There are, at least 54 physicians identified working in positions with administrative titles among the 9,393 administrators.
- Epidemiologists, those working specifically in what is described as the core science of public health, comprise far less than 1% of the total workforce. Taken together, epidemiologists, biostatisticians

and infection control/disease investigators are just over one-half of one percent of the workforce. Given the centrality of the activities encompassed by these occupations, the small proportion of identified workers supports the common observation that at the local level much of public health work is performed by generalists rather than by full-time specialists.

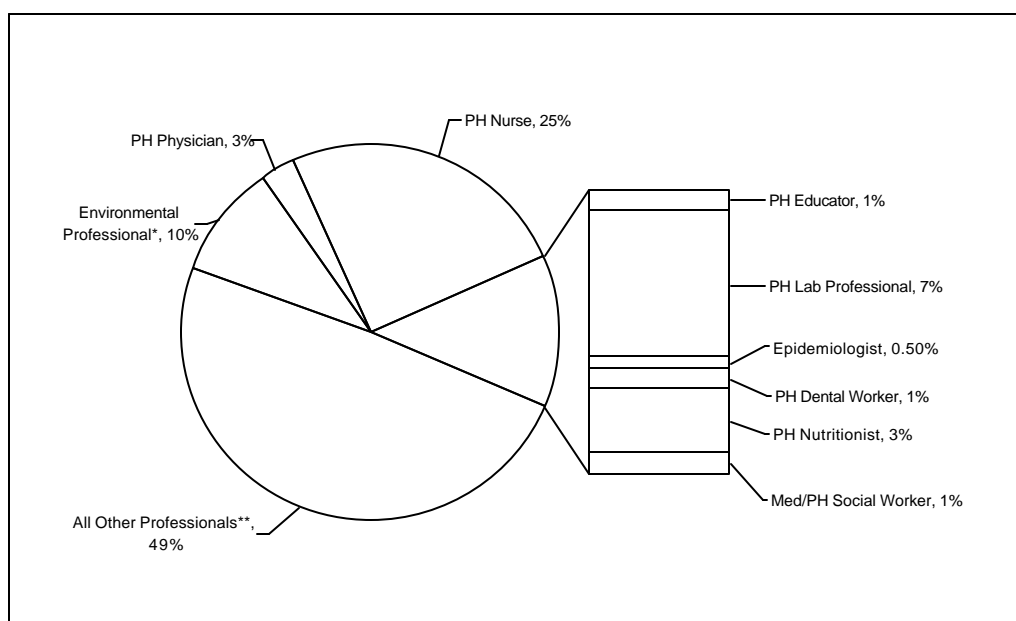
- Public health nurses (many of whom are registered nurses not identified as public health nurses) are the largest identified professional group at 49,232 or 10.9%. The nursing workforce is particularly large in states with a record of strong commitment to primary care and home care, suggesting that many of these nurses are working in personal care as well as, or instead of, population-focused services. The number of local jurisdictions for which only aggregate numbers are available means that the number and proportion of nurses would increase with more specific enumeration methods.
- Only 19,431 environmental health professionals (and 915 environmental technicians) could be identified. This is likely due to the fact that many environmental health activities are organizationally separated from other parts of public health, and their numbers were not included in submitted information. It is also likely that local environmental health numbers would increase with more specific enumeration methods.
- The numbers of laboratory professionals (14,088 or 3.1% of the workforce) and nutritionists (6,680 or 1.5% of the workforce) may be the most accurate of numbers in the professional category, because of special enumeration efforts undertaken by their professional associations. This made it possible to extricate numbers of these professionals from some state and local aggregate reports. Similar work has been contemplated by public health social workers, and any such efforts would help in understanding specific occupational areas.
- Two of the largest clusters of workers are in the technical (62,358 or 13.9%) and administrative support (49,431 or 11%) categories. While not a majority of the workforce, the professional and leadership activities of public health are strongly influenced by the availability and quality of technical and administrative support in the laboratory, the records management process and elsewhere.

Comparison of any one jurisdiction or agency to these aggregate national figures should be attempted with caution. Significant gaps in data combined with wide variation in organizational structure across states could lead to misleading conclusions. Any comparative discussion should be accompanied by a review of the context for the agency or worker category being considered.

TABLE ?. ESTIMATED PH WORKERS BY EEO-4 OCCUPATIONAL CATEGORY AND SETTING: NATIONAL SUMMARY

CATEGORY	FEDERAL AGENCIES	VOLUNTARY AGENCIES	STATE AND TERRITORIAL AGENCIES	TOTAL
Officials and Administrators	1,152	-	14,768	15,920
Professionals	58,897	8,012	133,116	200,025
Technicians	11,695	-	29,815	41,510
Protective Service	429	-	841	1,270
Paraprofessionals	1,236	-	18,342	19,578
Administrative Support	11,841	-	40,071	51,912
Skilled Craft	17	-	1,166	1,183
Service/Maintenance	44	-	4,676	4,720
Category Unreported	443	7,373	104,320	112,136
Volunteers	-	2,864,825	5	2,864,830
Total w/ Volunteers	85,754	2,880,210	345,120	3,313,084
Total w/o Volunteers	85,754	15,385	347,115	448,254

FIGURE 7. ESTIMATED PUBLIC HEALTH PROFESSIONALS BY SELECTED OCCUPATIONAL TITLE: NATIONAL SUMMARY



*Includes Environmental Engineers and Environmental Scientists & Specialists.

**Includes professionals in other titles and professionals unidentified by title.

Percentages may not add to 100% due to rounding.

FIGURE 8. ESTIMATED PUBLIC HEALTH WORKERS BY EEO-4 OCCUPATIONAL CATEGORY: NATIONAL SUMMARY

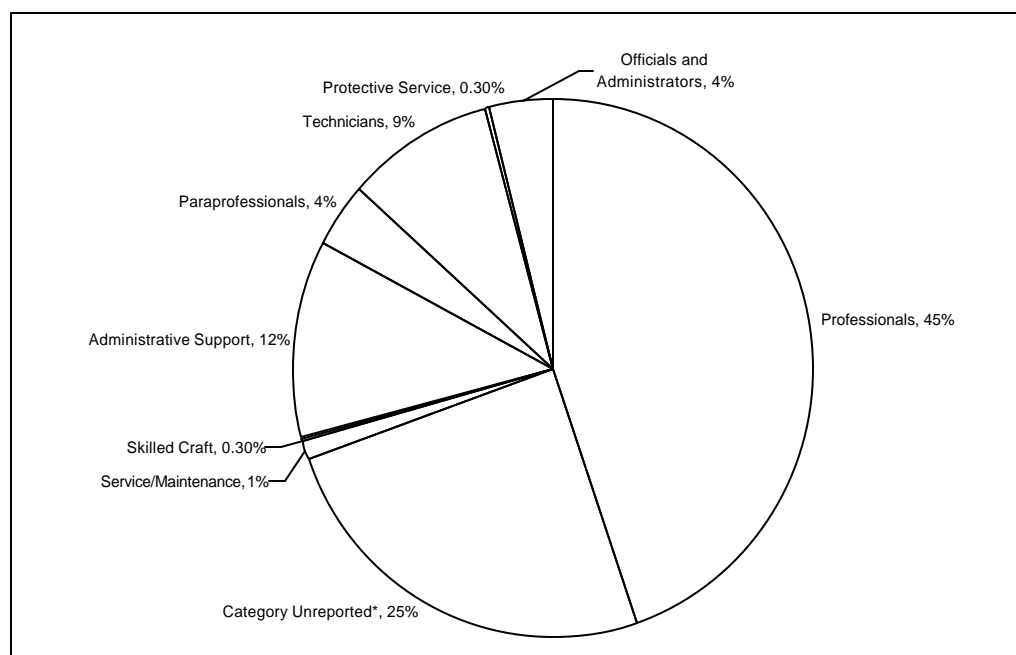


Chart does not include volunteers.

*Indicates public health workers not identified by occupational category or title.

Percentages may not add to 100% due to rounding.

TABLE 2. ESTIMATED PUBLIC HEALTH WORKFORCE: NATIONAL SUMMARY

Occupation	Federal Agencies	Voluntary Agencies	State and Territorial Agencies	Total
Administrators				
Health Administrator	1152	-	14,768	15,920
Professionals				
Administrative/Business Professional	3133	-	1,592	4,725
Attorney/Hearing Officer	351	-	250	601
Biostatistician	684	-	480	1,164
Clinical, Counseling, and School Psychologist	1	-	1	2
Environmental Engineer	3,092	-	1457	4,549
Environmental Scientist & Specialist	3,951	-	10,931	
Epidemiologist	5	-	922	927
Health Economist	86	-	19	105
Health Planner / Researcher / Analyst	2,074	-	1,499	3,573
Infection Control / Disease Investigator	2	-	781	783
Licensure / Inspection / Regulatory Specialist	9,625	-	4,155	13,780
Marriage and Family Therapist	-	-	-	-
Medical & Public Health Social Worker	170	-	2,006	2,176
Mental Health Counselor	113	-	673	786
Occupation Safety & Health Specialist	3,619	-	1,974	5,593
PH Dental Worker	1,240	-	792	2,032
PH Educator	126	-	2,104	2,230
PH Laboratory Professional	9,603	-	4,485	14,088
PH Nurse	4,311	8,000	36,921	49,232
PH Nutritionist	269	-	6,411	6,680
PH Optometrist	5	-	4	9
PH Pharmacist	1,180	-	316	1,496
PH Physical Therapist	12	-	60	72
PH Physician	4,055	-	1,953	6,008
PH Program Specialist	3,836	-	3,984	7,820
PH Student	37	-	14,996	15,033
PH Veterinarian / Animal Control Specialist	1,929	-	108	2,037
Psychiatric Nurse	-	-	4	4
Psychiatrist	-	-	1	1
Psychologist	688	-	67	755
Public Relations / Media Specialist	448	12	115	575
Substance Abuse & Behavioral Disorders Counselor	2	-	36	38
Other Public Health Professional	4,250	-	9,788	14,038
PH Professional, Title Unspecified	-	-	24,231	24,231
Technicians				
Computer Specialist	2,565	-	1,761	4,326
Environmental Engineering Technician	294	-	120	414
Environmental Science and Protection Technician	228	-	273	501
Health Information Systems / Data Analyst	172	-	433	605
Occupational Health and Safety Technician	93	-	2	95
PH Laboratory Specialist	4,262	-	1,438	5,700
Other Public Health Technician	4,081	-	22,872	26,953
Technician, Title Unspecified	-	-	2,916	2,916
Protective Service				
Investigations Specialist	326	-	50	376
Other or Unspecified Protective Service Worker	103	-	791	894
Paraprofessionals				
Community Outreach / Field Worker	102	-	574	676
Other or Unspecified Paraprofessional	1134	-	17,768	18,902
Administrative Support				
Administrative Business Staff	2,498	-	1,285	3,783
Administrative Support Staff	9,343	-	28,462	37,805
Unspecified Clerical / Support	-	-	10,324	10,324
Skilled Craft Worker				
Skilled Craft Worker	17	-	1,166	1,183

Occupation	Federal Agencies	Voluntary Agencies	State and Territorial Agencies	Total
Service / Maintenance				
Food Services / Housekeeping	12	-	313	325
Patient Services	-	-	-	-
Other or Unspecified Service / Maintenance	32	-	4,363	4,395
Category Unreported				
Programs	-	7,202	7,052	14,254
Unidentifiable	443	171	97,268	97,882
Volunteers	-	2,864,825	5	2,864,830
Total w / Volunteers	85,754	2,880,210	347,120	3,313,084
Total w / o Volunteers	85,754	15,385	347,115	448,254

THE STATE AND TERRITORIAL PUBLIC HEALTH WORKFORCE

The following pages provide information about the public health workforce in each of the 50 states, 6 territories and the District of Columbia. The information presented is the compilation of material from every source identified as relevant to the jurisdictions, and is displayed at the most detailed level possible. It is important to remember that with no common national conventions regarding enumeration of the public health workforce, the reported data differ a great deal across jurisdictional lines.

Each presentation is introduced by a discussion of the organization of public health within the jurisdiction, based primarily on Centers for Disease Control and Prevention documents. This is essential context for any interpretation of the available information, as decisions made at the state level about the scope, organization and size of a public health authority will have a great impact on the size and composition of the workforce. It is especially important to note that with few exceptions, the information is from an official state health agency that is not responsible for all aspects of environmental health, mental health or substance abuse services, generally considered to be necessary for a state to fulfill comprehensive public health responsibilities.

The states also vary widely with regard to the relationship between state and local public health responsibilities, which affects the distribution of staff.

No cross-state comparison should be undertaken without considering the impact contextual issues (such as the role of public health in primary care) have on the reported workforce.

However, the ratio of reported workers to population has been calculated for each jurisdiction, and is presented together with the range and median ratios for all jurisdictions and for other jurisdictions in that region. This facilitates some perspective on available public health resource.

July 1999 US Census Bureau estimates were used to calculate all ratios. The data are displayed based on occupational categories defined by the US Office of Personnel Management (OPM) Occupational Categories [Appendix C, Part 1 omitted in this summary], the US Equal Employment Opportunity Commission Occupational Categories (EEO-4) [Appendix C, Part 2 omitted in this summary], and the Center for Health Policy adapted Bureau of Health Professions taxonomy of occupational titles (CHP/BHPr+) [Appendix C, Part 3 omitted in this summary].

A complete description of the classification system and methods used to classify the data can be found in the Introduction on page 18. (Technical Notes on page 275 are not included in this summary).

For each jurisdiction, a combination of charts and tables is used to display the distribution of the workforce across the categories, and across state, local and other organizations. Because of the importance of the professional staff to the mission of public health, the information on these workers is presented when available. Dental health workers, environmental health professionals, health educators, laboratory professionals, nurses, nutritionists, physicians and social workers are specifically identified, if possible. The

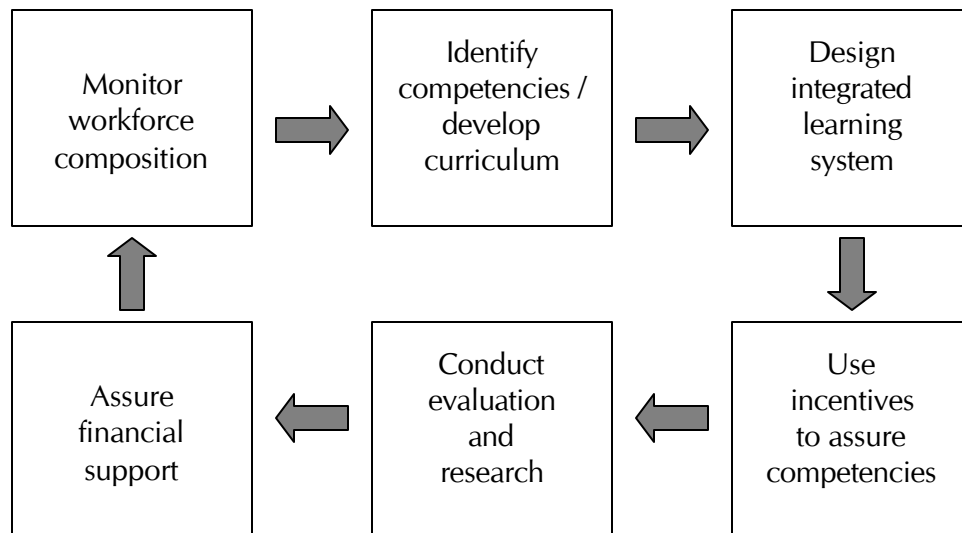
figures do not include the Federal workforce or national level staff of voluntary agencies, which are presented separately, and included in the comprehensive national discussion. They do include faculty and students of schools of public health.

SUMMARY

The data from this project provide the beginnings of a 21st century database on the size and composition of the public health workforce. It is clear that letting over 20 years elapse between enumeration efforts and the absence of a clear national policy on definitions complicates the process. Analysis of trends is virtually impossible. Information is now available, however, that can influence planning in a number of ways. For example, those familiar with day-to-day operations in health agencies recognize the critical role a staff member such as a vital records clerk, a receptionist, a laboratory assistant or a transportation worker play in both ordinary and emergency operations.

These workers need a basic understanding of the mission of public health and at least some preparation for emergency response. The information that at least 57,815 workers are identified in clerical and support positions affects the scope of the training effort required. Similar numbers are needed for every component of the current federal effort to develop a strategic plan for preparing and sustaining a competent public health workforce (see Figure).

FIGURE ?. STRATEGIC ELEMENTS FOR PUBLIC HEALTH WORKFORCE DEVELOPMENT



(from CDC/ASTDR Strategic Plan for Public Health Workforce Development, April 2000).

As another example, the extremely small number of workers identified as public health educators (2,230) should raise questions, given the current focus on improving health literacy in the population to support healthy choices. It may be that this job title is not in common use, and that many professionals providing health education are hidden within 'public health program specialist', 'other public health professional', or unspecified professional titles. This may also reflect the fact that public health organizations have yet to create the necessary number of positions in this important practice area, or that there is not an adequate supply of persons prepared to take such jobs. The answer to these questions will require further study.

This effort has revealed a number of questions of both a policy and a technical nature that must be answered before the next enumeration is begun. At the policy level, the key questions are: How often? What universe? How detailed? Differing cycles of budget and staffing decision-making across the country mean that the exact composition of the public health workforce is a moving target. Some states make major changes only every second year; in others, annual decision-making cycles at the local level may have substantial impact on workforce. An annual enumeration is probably not a cost-effective approach to monitoring trends, while a five-year interval may be too extended to be of value. A policy decision on interval to be regularly used would allow reporting units to plan ahead and build up the internal systems to assure an accurate report. Classification decisions and methodology should be documented to build an institutional memory of the process.

The universe to be included must be determined in advance for a regular reporting system to be accurate and valuable. If limited only to official state health agencies and their local partners, it will clearly under report the size of the workforce. Directors of the other agencies involved (e.g., environmental health, mental health, substance abuse, occupational safety), however, may not understand their role in the same way, and may not see the importance of contributing to a regular reporting system. Data gaps in this report reflect this concern. It may be that collaboration with the National Governors Association and the National Association of Counties will be necessary to develop an effective plan.

At every step of this project, interested parties asked about the size of the workforce in community organizations committed to a public health goal, such as private and voluntary agencies. A clear agreement on how far to reach into these partner circles will facilitate the development of methods for including them in the process.

In addition to defining the universe of job sites a policy decision must be made about the level of detail to accumulate. Is it enough to know about the workforce only by eight EEO-4 categories? Is that sufficient for some of the categories, as long as the professional and technical areas are specified in greater detail? Does every occupation or job within public health need to be accounted for at the same level of detail, or is detail on some of them more critical than on others? Are there professions for which workforce development planning is so critical that they must be tracked no matter what job category or title they might be in? One example is public health nurses, who, in addition to the specific public health nurse occupational title, can be found in administrator, epidemiologist, public health program specialist, investigator, occupational health and probably several other categories. Is it important to know what level of education these nurses have achieved? What services they provide? As the single largest professional group, and in some small agencies the sole professional employee, it may be critical to know these details, but it would add significantly to the reporting burden.

It is noteworthy that workforce numbers about physicians and nurses developed in this process do not match well with the usual numbers reported in other documents for physicians practicing in public health or public health nurses. This appears to be due to the lack of common definitions and the discrepancies that arise because of differences between agency reports about workers, and workers' self-reports. Some effort should be made to explain the differences, if not eliminate them, by mutual agreement with other reporting systems.

The present enumeration does not accumulate detailed information about the workforce that is often studied to identify trends. Items that might be considered for future inclusion are educational background, gender, age, ethnicity, length of employment and job function. Adding any one of these would mean a significant difference in workload to the reporting agency, and should only be considered if knowing that information would make a difference in subsequent policy deliberations. For this to be realistic, any established public health workforce database must be maintained with ready access for legislators, planners and policy makers at local, state, and national levels.

The reporting structure is an area where policy and technical decision-making converge. Should state health agencies report for the entire public health workforce within the state? If not, to whom should the collecting body turn? What about federal public health workers within a state? The present approach does not allow for counting them by state, but simply as a national workforce, as if they did not relate to the states

within which they work. They may not. What about local data? Not all local public health agencies are accustomed to reporting through the state agency, yet maintaining individual reporting relationships with nearly 3,000 local units could be a prohibitive national expense. Finally, who should be held responsible for reporting on the nongovernmental part of this workforce, if that is to be included? And exactly how is that non-governmental component to be defined?

At a more technical level, a final data dictionary must be validated for use by applying approaches that match what has been done in standard occupational classifications. Every effort should be made to use electronic methods both for data collection and reporting. Those managing reporting or data entry at the state or local level should receive adequate support and training to assure quality and consistency of all entries.

This experience with developing a current best estimate of the public health workforce has been a revealing one. It has documented an apparent erosion of public health capacity over a 20-year period. Useful information about the composition of the workforce and its distribution across the states and territories is now available. The groundwork has been laid for an essential policy debate about the type of workforce information needed on a regular basis for policymaking. As a result the public health community can move efficiently toward a regular documentation of the public health workforce for use in planning for education, recruitment and retention of a qualified workforce.

PUBLIC HEALTH WORKFORCE

D E V E L O P M E N T

INTRODUCTION

After assessing the situation of the public health human resources—both of the makeup of the workforce and the enumeration of the various responsibilities, and of the areas where the workforce needs to be strengthened—the next step in developing an effective public health system that meets the health needs of the population is to explore the avenues and methods for strengthening the workforce.

The priority development objective emphasized throughout the literature is the need to build workforce competencies through education and training. Studies have shown that 40% or less of people working in public health roles have education specifically in the theory and practice of public health. The science of public health has been clearly under-valued or seen as not critical to the career track of the public health worker. The literature suggests that with the complex interactions of the public health responsibilities and workforce activities, and with the continually changing demographics and health needs of the population, that workers in the public health field should be aware of their role in the larger context of providing quality health care to the population. Public health workers in all capacities would benefit from some education in the science of public health—not only to empower them individually in their wider understanding of their roles—but also to broaden their abilities in the delivery of public health services.

The literature went further to recommend that there should be a higher number of graduates from Masters programs in public health. Higher education in the field of public health prepares health leaders more fully for addressing the varied and complex multiplicity of interests and responsibilities in the sector. In addition, a more focused specialty in public health gives graduates a broader skill set in the field to be able to make policy decisions and strategic plans to manage human resources and needs and develop stronger public health systems.

The literature suggested that not only should public health be taught to a larger percentage of the public health workforce, at both undergraduate and graduate level, but that public health themes need to be integrated into other traditional health education programs as well. Moreover, the public health curricula should be coordinated to the needs of the population and in accordance with the national policies directed to address public health issues, such as those for prevention, control, and management of health problems. Most literature urged that the health and the education ministries/government agencies work closely to align the curricula design, the in-service training, and the academic education with the public health objectives. It was suggested that faculty contribute to health policy decisions, and that the government give more financial and leadership support to education efforts in public health.

Beyond the general need for undergraduate and graduate programs in public health, it was emphasized that curricula design needs to be needs-based, meaning that first the competencies that are needed in the public health workforce must be identified, and then the curricula should be designed to develop and strengthen these competencies.

Competencies included as essential to a strong public health workforce included:

- Hard Skills: epidemiology, informatics, genomics, technology, financial planning, analysis, research, law
- Soft Skills: communication, cultural sensitivity, advocacy, strategic thinking, ethics, values
- Leadership Skills: coalition building, management, team building, entrepreneurial thinking

These skills need to be developed not only through traditional academic education, as programs, but also through continuing education and in-service training that keeps those workers who are already employed up to date on new policies, trends, and skill sets.

Education and continued training, supported by policies and financing, are the foundation of a quality effective public health workforce. Building competencies in the human resources is the single most important investment that can be made toward the public's health. Even so, the building of the human resources is not enough on its own for a strong public health workforce. The infrastructure that supports this workforce must be well-developed. Distribution/allocation, management, recruitment and retention, and monitoring infrastructure must be in place to ensure that public health workers are distributed according to the needs of the areas they serve, and that their competencies continue to meet the population needs.

Recruitment and retention of public health workers is part of the management infrastructure. Employees that are well-managed and trained to have competencies that fit their responsibilities are more motivated and are more apt to deliver quality services than those who are not. In addition, attention must be paid to incentives, salaries, and working conditions, and resources (such as proper equipment) to ensure a stable workforce.

Finally, planning—projecting and preparing for future financial needs, competency requirements, and distribution challenges—is part of the development of an effective and quality public health workforce.

To summarize, the literature on development emphasized education to build competencies as the main focus for creating an effective health workforce, and infrastructure as the second priority.

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1. "A RESEARCH AGENDA FOR PUBLIC HEALTH WORKFORCE DEVELOPMENT"

JOAN CIOFFI, MAUREEN LICHTVELD, AND HUGH TILSON
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ABSTRACT

In the past decades, public health research has focused on categorical rather than cross-cutting or systems issues. Little research has been carried out on the infrastructure required to support public health programs. This article describes the results of an interactive process to develop a research agenda for public health workforce development to inform all those with stakes in the public health system. This research is defined as a multidisciplinary field of inquiry, both basic and applied, that examines the workforce in terms of costs, quality, accessibility, delivery, organization, financing, and outcomes of public health services to increase knowledge and understanding of the relationships among workforce and structure, processes, and effects of public health services. A logic model and five priority research areas resulted from meetings of expert panels during 2000 to 2003. Innovative public and private partnerships will be required to advance cross-cutting and systems-focused research.

2. "THE PUBLIC HEALTH WORKFORCE"

DR. HUGH TILSON AND DR. KRISTINE GEBBIE

ANNUAL REVIEW OF PUBLIC HEALTH

(VOLUME PUBLICATION DATE APRIL 2004)

VOL. 25: 341-356

ABSTRACT

The development of a fully-competent public health workforce as a key component of the nation's public health infrastructure has become the focus of increasing attention. The subject is included in one, and is the major topic of a second, report from the Institute of Medicine published late in 2002. Workforce issues have stimulated the convening of the majority of public health-related associations in a range of collaborations on the subjects of defining, enumerating, credentialing, educating, and studying the workforce. The authors review the major questions confronting the field and introduce key components of current thinking about approaches to improvement.

3. "LEADERSHIP DEVELOPMENT FOR GLOBAL HEALTH"

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A JOINT LEARNING INITIATIVE:
HUMAN RESOURCES FOR HEALTH AND DEVELOPMENT
JLI WORKING PAPER 6-1
APRIL 2004

THE CONTEXT

There is no doubt that today we are at the cutting edge of scientific and medical advancement. More than ever, we have the knowledge, tools and the resources to promote health, prevent illness and fight disease. Global communication has and will continue to facilitate immediate transmission of vital information. Health is now a powerful political platform and, more than ever, there is recognition that it is central to sustainable economic development (the Commission on Macroeconomics and Health (CMH)).

Despite these facts, each year more than half a million women die from preventable causes during pregnancy and childbirth. This is unacceptable. Health infrastructures in the majority of countries have not been developed, and there are large underserved population groups where priority health needs are unmet. This is unacceptable. Vitamin deficiencies, malnutrition, infectious diseases and anemia are widespread health issues affecting large portions of the populations of the developing world in spite of food surpluses, available technology and scientific breakthroughs. This also is unacceptable. New challenges of chronic disease, mental health, and accidents and injuries will require action.

In view of the multitude of activities that have already been undertaken, what is it that would make a difference and achieve results? Is it more of the same on a larger scale? Is it looking at problems in a different way? Or is it analyzing the environment in which we find ourselves today in a manner that compels us to come up with a different set of activities altogether? In the end, our work has been driven by these questions, especially the latter.

THE NEED FOR LEADERSHIP DEVELOPMENT FOR HEALTH SYSTEMS AND HEALTH

Leadership development should not be supported for its own sake, but because it contributes to the achievement of a goal—in this case, improvements in global health. There is evidence on specific needs for leadership at country and global levels, and there are two additional ways in which leadership development is critical: in addressing the uncertainty involved in delivering technical and policy solutions to improve global health in complex health systems and in leading innovation.

4. "PUBLIC HEALTH WORKFORCE DEVELOPMENT: PROGRESS, CHALLENGES, AND OPPORTUNITIES"

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PUBLIC HEALTH MANAGEMENT PRACTICE
NOV-DEC 9(6); PAGES 443-450
2003

ABSTRACT

The public health workforce is key to strengthening public health infrastructure. National partners have articulated a vision of a sustainable and competent workforce prepared to deliver essential public health services. Six strategic elements provide a framework for action: monitoring workforce composition; identifying competencies and developing related curriculum; designing an integrated life-long learning delivery system; providing individual and organizational incentives to ensure competency development; conducting evaluation and research and assuring financial support. Partners convened in January 2003 to review progress and to re-evaluate strategies in light of the recently released Institute of Medicine reports on infrastructure and workforce issues. Although significant challenges remain, there is convergence on priorities for competency development, research questions to be addressed and next steps in the national dialogue on certification and credentialing in public health.

5. "PUBLIC HEALTH WORKFORCE: CHALLENGES AND POLICY ISSUES"

ROBERT BEAGLEHOLE AND MARIO DAL POZ
HUMAN RESOURCES FOR HEALTH
JULY 2003

ABSTRACT

This paper reviews the challenges facing the public health workforce in developing countries and the main policy issues that must be addressed in order to strengthen the public health workforce. The public health workforce is diverse and includes all those whose prime responsibility is the provision of core public health activities, irrespective of their organizational base. Although the public health workforce is central to the performance of health systems, very little is known about its composition, training or performance. The key policy question is: Should governments invest more in building and supporting the public health workforce and infrastructure to ensure the more effective functioning of health systems? Other questions concern: the nature of the public health workforce, including its size, composition, skills, training needs, current functions and performance; the appropriate roles of the workforce; and how the workforce can be strengthened to support new approaches to priority health problems.

The available evidence to shed light on these policy issues is limited. The World Health Organization is supporting the development of evidence to inform discussion on the best approaches to strengthening public health capacity in developing countries. WHO's priorities are to build an evidence base on the size and structure of the public health workforce, beginning with ongoing data collection activities, and to map the current public health training programs in developing countries and in Central and Eastern Europe. Other steps will include developing a consensus on the desired functions and activities of the public health workforce and developing a framework and methods for assisting countries to assess and enhance the performance of public health training institutions and of the public health workforce.

CONCLUSION

A long-term effort is now required to rebuild the public health workforce; this will require major support from national and a wide variety of international agencies. A strengthened public health workforce will be in a better position to ensure that evidence on the effectiveness of health interventions and the new resources coming into the health sector lead to improvement of the health of all populations, not just the most advantaged.

6. VARIOUS MEETING REPORTS FROM “PUBLIC HEALTH WORKFORCE DEVELOPMENT: THIRD ANNUAL MEETING”

CENTERS FOR DISEASE CONTROL
ATLANTA, GEORGIA
JANUARY 22-23, 2003

PURPOSE (OF MEETING)

The purpose of this meeting is to facilitate the implementation of a national action agenda for strengthening the public health workforce, which builds upon previous expert panel recommendations (November 2000 and June 2001) and re-evaluates priorities and strategies in light of recently released Institute of Medicine reports on public health and workforce issues as well as national preparedness activities

EXPECTED OUTCOMES (OF MEETING)

The meeting will result in specific recommendations and partner commitments related to: front line public health workers.

- Development and implementation of competency-based learning opportunities for front-line public health workers
- Testing feasibility of a three-tiered framework for voluntary certification and credentialing in public health.

OBJECTIVES (OF MEETING)

1. Review progress to date on public health workforce development including recommendations from IUOM reports on public health infrastructure and workforce.
2. Analyze implications of IOM report recommendations on priorities for implementation.
3. Discuss issues related to competency development and certification / credentialing.
4. Discuss how partner organizations can contribute to national agenda for workforce development in the coming year.

WORKING GROUPS

- Incentives Workgroup
- Curriculum and Competency Workgroup
- Research Workgroup

BACKGROUND

Public health infrastructure can be conceptualized by Figure 1. The workforce is a foundation element of the infrastructure. The capacity and readiness of a public health system is defined, in part, by both the governmental agency workforce and community partners. A strong infrastructure enables the public health system to prepare for and respond to both acute and chronic threats to the nation's public health, whether they are bioterrorism attacks, emerging infections, disparities in health, or increases in chronic disease and injury rates.

Only 20% for the nation's estimated 400,000 to 500,000 public health professionals report having formal public health education. Public health workforce development is chronically under-funded. The current national focus on preparedness has highlighted the importance of having a sustainable system to assure a workforce competent to perform essential services and respond to public health threats and emergencies. Criticism of workforce training and preparation was strong in the original IOM report (1988). Schools of public health, employers, federal agencies, and professional groups were called upon to remedy the situation. In response, federal, state, and local initiatives were developed with some success. However, recently released IOM reports (2003) suggest that while some progress has been made, much work remains. Table 1 shows competency/content requirements for the public health workforce described in major documents (1988-2002). The arrival of the long awaited new Institute of Medicine reports, "The Future of the Public's Health in the 21st Century," and its companion report, "Who Will Keep the Public Healthy: Educating Public Health Professionals for the 21st Century," should re-invigorate the dialogue and focus the action agenda for workforce development. Table 2 lists topics about which the 21st century public health workforce must be knowledgeable.

The challenges of new and emerging threats, plus the current nationwide budget shortfalls at state and local levels, have put pressure on public health agencies to look for new approaches to train and re-train, and assure a competent workforce. Schools and programs of public health are engaged in educating undergraduates and graduate students, and some of these graduates will enter the public health workforce, but many will pursue academic careers or careers in fields other than governmental public health. Further, many of these schools and programs do not offer the continuing education or lifelong learning opportunities needed by the existing workforce. This "disconnect" between workforce needs and educational offerings, as well as the lack of focused approaches, were noted in both reports. These issues, among other barriers, have limited the progress in workforce development.

PROGRESS TO DATE

In November 1999, a 40-member task force was convened by CDC/ASTDR to develop a Strategic Plan for Public Health Workforce Development to better align agency resources with external workforce partner needs. The report included a vision and framework to address the lack of basic skills for responding to current and emerging public health threats. Significant accomplishments to date include:

- Established an organizational locus at CDC for external workforce issues in the Public Health Practice Program Office (March 2000).
- Identified six strategic elements to frame implementation strategies in collaboration with partners:
 1. Monitor the workforce
 2. Identify competencies / develop curriculum
 3. Design an integrated learning delivery system
 4. Provide incentives to assure competence
 5. Conduct evaluation and research
 6. Assure financial support

- Convened expert workgroups to provide guidance on issues of science, policy and practice related to six elements
 1. First Annual Public Health Workforce Development Meeting, October 31-November 2, 2000, Pine Mountain, Callaway Gardens, Georgia
 2. Progress Meeting Workshop, June 18-19, 2001, Atlanta Georgia
 3. Second Annual Public Health Workforce Development Meeting, September 11-13, 2001, Athens, Georgia (cancelled)

ISSUES AND BARRIERS

Workforce development is the responsibility of a variety of segments of the public health system. Since the beginning of official public health in the United States, local and state training and preparation of the workforce has lacked consistency. The need for greater national standardization while allowing for local customization is recognized by many partners. In considering education and training for frontline public health professionals, several questions remain:

- Who defines national standards?
- How are these standards translated into competencies/curriculum?
- Who provides the training?
- What methods will be used?
- What rewards and incentives will be offered?
- Who will conduct research and evaluation?
- Where will resources come from?
- How will cultural competency and ethical issues be handled?
- What constitutes an appropriate continuum of life long learning for public health professionals who enter the field from a broad array of disciplines and educational backgrounds?

In addition, many challenges remain including those listed below:

- Developing new competencies
- Testing competencies in the work setting
- Identifying gaps in knowledge
- Defining workable incentives
- Using multiple teaching/learning methodologies
- Forming new partnerships
- Strengthening alliances
- Recruiting and retaining the workforce
- Connecting practice and academic public health
- Developing and answering appropriate research questions
- Providing support

EXPECTED RESULTS OF THE ANNUAL MEETING

The expected outcome is specific recommendations and partner commitments related to:

- Development and implementation of competency-based learning opportunities for front line public health workers
- Testing feasibility of a three-tiered framework for voluntary certification and credentialing in public health

FIGURE 1. PUBLIC HEALTH PYRAMID
CDC AND PARTNERS' PREVENTION PROGRAMS

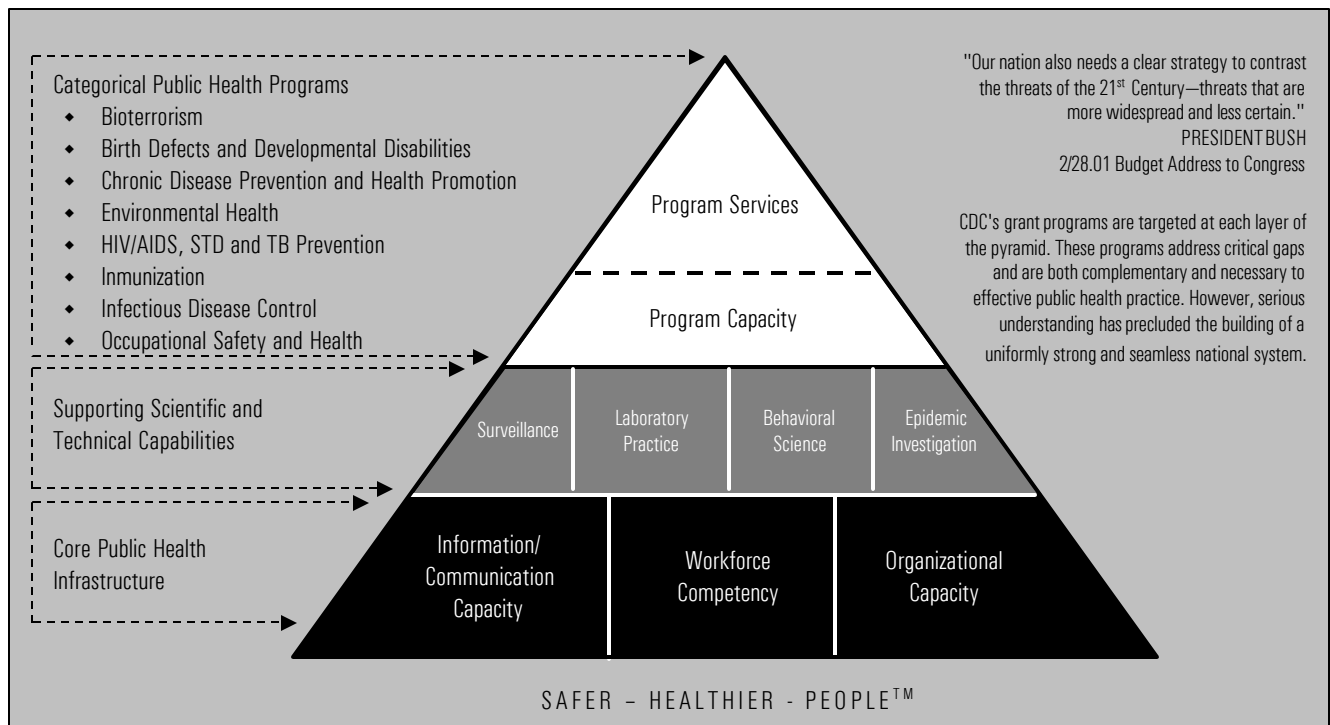


TABLE 1. IDENTIFIED NEEDS FOR PUBLIC HEALTH WORKFORCE

Competency/ Content	IOM '88	Healthy Communities 1996	Faculty Agency Forum	Competencies Developed 2001- 02 Council on Linkages	Performance Standards Core Functions Essential Services	The Future of the Public Health in the 21 st Century (2003)	Who Will Keep the Public Healthy? (2003)
Managerial Skills	✓		✓		Performance Standards Core Functions Essential Services	✓	✓
Leadership Skills	✓	✓		✓	Performance Standards Core Functions Essential Services	✓	✓
Technical Professional Skills	✓						
Citizen Participation	✓	✓				Community- based Participatory Research	Community- based Participatory Research
Minority Health	✓					Health Disparities	Health Disparities
International Health	✓					Global Health	Global Health
Modern Disease, i.e., AIDS	✓						
Assessment Skills	✓	✓	✓	✓	Performance Standards Core Functions Essential Services	✓	MPH
Policy Skills	✓	✓	✓	✓	Performance Standards Core Functions Essential Services	✓	MPH
Assurance Skills	✓	✓		✓	Performance Standards Core Functions Essential Services	✓	MPH
Law	✓	✓		✓	Performance Standards	✓	✓
Managed Care		✓				Private Sector	Private Sector
Partnerships and Interactions		✓				✓	
10 Essential Services		✓		✓		✓	
Communication Skills			✓				✓
Cultural Skills			✓				✓

TABLE 2: A COMPARISON

TOPICS	THE FUTURE OF THE PUBLIC'S HEALTH (IOM 2003) What the public health workforce needs to know.	WHO WILL KEEP THE PUBLIC HEALTHY? What should be included in graduate level public health study?
♦ Model/Framework	Ecological approach	Ecological approach
♦ Basic	<ul style="list-style-type: none"> ♦ EPID ♦ BIO ♦ Health Services / Administration ♦ Health Behavior / Education ♦ Environment 	MPH core and basic public health training in medical schools
♦ New Knowledge/Skills	<ul style="list-style-type: none"> ♦ Genomics ♦ Policy / Law ♦ Ethics ♦ Informatics ♦ Cultural Competency ♦ Global Health ♦ Community-based Participatory Research ♦ Communication 	<ul style="list-style-type: none"> ♦ Genomics ♦ Policy / Law ♦ Ethics ♦ Informatics ♦ Cultural Competency ♦ Global Health ♦ Community-based Participatory Research ♦ Communication
♦ Audience	Public health agencies (all levels and workforce)	Persons who are being educated in public health or related discipline working in population health.
♦ Other knowledge/skills		✓
♦ Population Health	✓	✓
♦ Intersectoral Partnerships	✓	✓
♦ Accountability		
♦ Evidence-based Decision Making	✓	✓
♦ Credentialing	✓	
♦ Accreditation System		
♦ Healthy People 2010 Goal	✓	
♦ Community Partnership		✓
♦ Health Care Finance / Delivery		✓
♦ Health Literacy		
♦ Evidence-based Practice		✓
♦ Media Relations	✓	✓
♦ Health Messages	✓	✓
♦ Multidisciplinary / Interdisciplinary Work	✓	✓
♦ Evaluation	✓	✓
♦ Prevention Agenda	✓	
♦ Health System Organizations	✓	

7. "CORE COMPETENCIES FOR PUBLIC HEALTH PROFESSIONALS"

COMPETENCIES FEEDBACK PROJECT

ADMINISTRATED BY COUNCIL ON LINKAGES BETWEEN ACADEMIA AND PUBLIC HEALTH PRACTICE

FUNDED BY HEALTH RESOURCES AND SERVICES ADMINISTRATION (HRSA)

UNITED STATES DEPARTMENT OF HEALTH AND HUMAN SERVICES (HHS)

2001

PROLOGUE TO CORE COMPETENCIES

The Council on Linkages Between Academia and Public Health Practice is committed to assisting the U.S. Public Health Service in efforts to implement components of “The Public Health Workforce: An Agenda for the 21st Century” report pertaining to public health competencies. To this end the Council developed a list of core competencies for public health professionals. This list represents ten years of work on this subject by the Council and numerous other organizations and individuals in public health academia and practice settings. Their work has been compiled from various source documents and cross-walked with the Essential Public Health Services. This cross-walk ensures that the competencies help build the skills necessary for providing these essential services.

The list has also been reviewed by over 1,000 public health professionals during a public comment period. The Council utilized several mechanisms to receive feedback from reviewers, including e-mail, focus groups, sessions at various conferences, and the competencies website. The comments from public health professionals in a broad array of disciplines and practice settings have led to this **consensus set of core competencies** for guiding public health workforce development efforts. These competencies will ultimately help guide curriculum and content development of public health education and training programs for preparation of practitioners and for the ongoing development of practitioners in the field. The competencies may also be used by those in practice settings as a framework for hiring and evaluating staff.

The core competencies represent a set of skills, knowledge, and attitudes necessary for the broad practice of public health. They transcend the boundaries of the specific disciplines within public health and help to unify the profession. However, because the list only captures the cross-cutting competencies for public health practice, it may not contain competencies that are specific to certain disciplines within the field. Discipline specific competencies are necessary for specialized roles within public health. These core competencies for all public health professionals may be used to drive the development of such discipline specific competencies. Moreover, because this list is meant to represent the core, it may not contain many skills that are necessary for the performance of certain jobs within certain practice settings. Individuals, employers, educators, and trainers should **use this list as a starting point** for developing a modified list of competencies that matches their needs. When applied in the work setting, the competencies listed here as separate are, in fact, practiced in combinations that are dynamic. Therefore, for hiring, performance evaluation, or training, users of the competency list will begin to recognize typical or recurring clusters of competencies that define performance quality in various programs and job categories.

The competencies are divided into the following eight domains: Analytic Assessment Skills, Basic Public Health Sciences Skills, Cultural Competency Skills, Communication Skills, Community Dimensions of Practice Skills, Financial Planning and Management Skills, Leadership and Systems Thinking Skills, Policy Development/Program Planning Skills. Skills and knowledge levels are listed first within each domain,

followed by important attitudes relevant to the practice of public health. While attitudes may be more difficult to measure, they can be part of what is taught and should be included in curriculum and content development efforts.

This effort of the Council focuses on core competencies as they apply to **frontline staff, senior level staff, and supervisory and management staff**. Definitions for these job categories follow. The Council acknowledges that these job categories are defined broadly and the lines of distinction between them are not always clear. However, the categories are meant to be flexible and adaptable to the evolving profession. While core competencies for clerical or support staff (e.g. clerks; dental, lab, or nursing assistants; data entry staff; etc.) are also important, they are not part of this current effort. Including clerical and support staff would extend the project beyond its scope. The Council also recognizes that, in many public health settings, job category is often related to educational background. However, educational level and years of experience are not included in the job category definitions because they do not necessarily dictate function within an organization.

Levels of skill have been assigned to each competency based on the job category of the public health professional. The three skill levels are **aware, knowledgeable, and proficient**. The skill levels for each competency by job category represent the majority opinion of reviewers of the web site. When almost an equal number of responses for two consecutive skill levels occurred, the Council has indicated this by reporting both skill levels. In these cases the actual level of skill for that competency falls along the continuum between the two skill levels. A difference of 10% or less between the number of responses for two consecutive skill levels was used as the threshold to determine what is an equal number of responses. Although skill levels do vary by job category, all public health professionals should at least be aware of these core competencies.

DOMAIN #1: ANALYTIC ASSESSMENT SKILL

SPECIFIC COMPETENCIES	FRONT LINE STAFF	SENIOR LEVEL STAFF	SUPREVISORY AND MANAGEMENT STAFF
Defines a problems	Knowledgeable to proficient	Proficient	Proficient
Determines appropriate uses and limitations of both quantitative and qualitative data	Aware to knowledgeable	Proficient	Proficient
Selects and defines variables relevant to defined public health problems	Aware to knowledgeable	Proficient	Proficient
Identifies relevant and appropriate data and information sources	Knowledgeable	Proficient	Proficient
Evaluates the integrity and comparability of data and identifies gaps in data sources	Aware	Proficient	Proficient
Applies ethical principles to the collection, maintenance, use, and dissemination of data and information	Knowledgeable to proficient	Proficient	Proficient
Partners with communities to attach meaning to collected quantitative and qualitative data	Aware to knowledgeable	Proficient	Proficient
Makes relevant inferences from quantitative and qualitative data	Aware to knowledgeable	Proficient	Proficient
Obtains and interprets information regarding risks and benefits to the community	Aware to knowledgeable	Proficient	Proficient
Applies data collection processes, information technology applications, and computer systems storage / retrieval strategies	Aware to knowledgeable	Knowledgeable to proficient	Knowledgeable to proficient
Recognizes how the data illuminates ethical, political, scientific, economic, and overall public health issues	Aware	Knowledgeable to proficient	Proficient

DOMAIN #2: POLICY DEVELOPMENT / PROGRAM PLANNING SKILLS

SPECIFIC COMPETENCIES	FRONT LINE STAFF	SENIOR LEVEL STAFF	SUPREVISORY AND MANAGEMENT STAFF
Collect, summarizes, and interprets information relevant to an issue	Knowledgeable	Proficient	Proficient
States policy options and writes clear and concise policy statements	Aware	Knowledgeable to proficient	Proficient
Identifies, interprets, and implements public health laws, regulations, and policies related to specific programs	Aware	Knowledgeable to proficient	Proficient
Articulates the health, fiscal, administrative, legal, social, and political implications of each policy option	Aware	Knowledgeable	Proficient
States the feasibility and expected outcomes of each policy option	Aware	Knowledgeable	Proficient
Utilizes current techniques in decision analysis and health planning	Aware	Knowledgeable to proficient	Proficient
Decides on the appropriate course of action	Aware	Knowledgeable to proficient	Proficient
Develops a plan to implement policy, including goals, outcome and process objectives, and implementation steps	Aware	Knowledgeable to proficient	Proficient
Translates policy into organizational plans structures, and programs	Aware	Knowledgeable to proficient	Proficient
Prepares and implements emergency response plans	Aware to knowledgeable	Knowledgeable to proficient	Proficient
Develops mechanisms to monitor and evaluate programs for their effectiveness and quality	Aware to knowledgeable	Proficient	Proficient

DOMAIN #3: COMMUNICATION SKILLS

SPECIFIC COMPETENCIES	FRONT LINE STAFF	SENIOR LEVEL STAFF	SUPREVISORY AND MANAGEMENT STAFF
Communicates effectively both in writing and orally, or in other ways	Proficient	Proficient	Proficient
Solicits input from individuals and organizations	Knowledgeable to proficient	Proficient	Proficient
Advocates for public health programs and resources	Knowledgeable	Proficient	Proficient
Leads and participates in groups to address specific issues	Knowledgeable	Proficient	Proficient
Uses the media, advanced technologies, and community networks to communicate information	Aware to knowledgeable	Proficient	Proficient
Effectively presents accurate demographic, statistical, programmatic, and scientific information for professional and lay audiences	Knowledgeable	Proficient	Proficient
Attitudes			
Listens to others in an unbiased manner, respects points of view of others, and promotes the expression of diverse opinions and perspectives	Proficient	Proficient	Proficient

DOMIAN #4: CULTURAL COMPETENCY SKILLS

SPECIFIC COMPETENCIES	FRONT LINE STAFF	SENIOR LEVEL STAFF	SUPREVISORY AND MANAGEMENT STAFF
Utilizes appropriate methods for itneracting sensitivity, effectively, and professionally with persons from diverse cultural, socioeconomic, educational, racial, ethnic and professional backgrounds, and persons of all ages and lifestyle preferences	Proficient	Proficient	Proficient
Identifies the role of cultural, social, and behavioral factors in determining the delivery of public health services	Knowledgeable	Proficient	Proficient
Develops and adapts approaches to problems that take into account cultural differences	Proficient	Proficient	Proficient
Attitudes			
Understands the dynamic forces contributing to cultural diversity	Knowledgeable	Knowledgeable	Proficient
Understands the importance of a diverse public health workforce	Knowledgeable	Proficient	Proficient

DOMAIN #5: COMMUNITY DIMENSIONS OF PRACTICE SKILLS

SPECIFIC COMPETENCIES	FRONT LINE STAFF	SENIOR LEVEL STAFF	SUPREVISORY AND MANAGEMENT STAFF
Establishes and maintains linkages with key stakeholders	Knowledgeable	Proficient	Proficient
Utilizes leadership, team building, negotiation, and conflict resolution skills to build community partnerships	Aware to proficient	Proficient	Proficient
Collaborates with community partners to promote the health of the population	Knowledgeable to proficient	Proficient	Proficient
Identifies how public and private organizations operate within a community	Knowledgeable	Proficient	Proficient
Accomplishes effective community engagements	Aware to knowledgeable	Proficient	Proficient
Identifies community assests and available resources	Knowledgeable to proficient	Proficient	Proficient
Develops, implements, and evaluates a community public health assessment	Knowledgeable	Proficient	Proficient
Describes the role of government in the delivery of community health services	Knowledgeable	Proficient	Proficient

DOMAIN #6: BASIC PUBLIC HEALTH SCIENCES SKILLS

SPECIFIC COMPETENCIES	FRONT LINE STAFF	SENIOR LEVEL STAFF	SUPREVISORY AND MANAGEMENT STAFF
Identifies the responsibilities of the individual and the organization within the context of the Essential Public Health Services and core functions	Knowledgeable	Proficient	Proficient
Defines, assesses, and understands the health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of health services	Knowledgeable	Proficient	Proficient
Understands the historical development, structure, and interaction of public health and health care systems	Aware	Knowledgeable	Proficient
Identifies and applies basic research methods used in public health	Aware	Proficient	Proficient
Applies the basic public health sciences including behavioral and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic and infectious diseases and injuries	Knowledgeable	Proficient	Proficient
Identifies the limitations of research and the importance of observations and interrelationships	Knowledgeable	Proficient	Proficient
Attitudes			
Develops a lifelong commitment to rigorous critical thinking	Knowledgeable to proficient	Proficient	Proficient

DOMAIN #7: FINANCIAL PLANNING AND MANAGEMENT SKILLS

SPECIFIC COMPETENCIES	FRONT LINE STAFF	SENIOR LEVEL STAFF	SUPREVISORY AND MANAGEMENT STAFF
Develops and presents a budget	Aware	Knowledgeable	Proficient
Manages programs within budget constraints	Aware	Knowledgeable to proficient	Proficient
Applies budget processes	Aware	Knowledgeable	Proficient
Develops strategies for determining budget priorities	Aware	Knowledgeable	Proficient
Monitors program performance	Aware to knowledgeable	Proficient	Proficient
Prepares proposals for funding from external sources	Aware	Proficient	Proficient
Applies basic human relations skills to the management of organizations, motivation of personnel, and resolution of conflicts	Aware to knowledgeable	Proficient	Proficient
Manages information systems for collection, retrieval, and use of data for decision-making	Aware	Knowledgeable to proficient	Proficient
Negotiates and develops contracts and other documents for the provision of population-based services	Aware	Knowledgeable	Proficient
Conducts cost-effectiveness, cost-benefit, and cost utility analyses	Aware	Knowledgeable	Proficient

DOMAIN #8: LEADERSHIP AND SYSTEMS THINKING SKILLS

SPECIFIC COMPETENCIES	FRONT LINE STAFF	SENIOR LEVEL STAFF	SUPREVISORY AND MANAGEMENT STAFF
Creates a culture of ethical standards within organizations and communities	Knowledgeable to proficient	Proficient	Proficient
Helps create key values and shared vision and uses these principles to guide action	Aware to knowledgeable	Knowledgeable to proficient	Proficient
Identifies internal and external issues that may impact delivery of essential public health services (i.e. strategic planning)	Aware	Knowledgeable to proficient	Proficient
Facilitates collaboration with internal and external groups to ensure participation of key stakeholders	Aware	Knowledgeable to proficient	Proficient
Promotes team and organizational learning	Knowledgeable	Knowledgeable to proficient	Proficient
Contributes to development, implementation, and monitoring of organizational performance standards	Aware to knowledgeable	Knowledgeable to proficient	Proficient
Uses the legal and political system to effect change	Aware	Knowledgeable	Proficient
Applies the theory of organizational structures to professional practice	Aware	Knowledgeable	Proficient

8. "WHO WILL KEEP THE PUBLIC HEALTHY: EDUCATING PUBLIC HEALTH PROFESSIONALS FOR THE 21ST CENTURY"

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DR. SUSAN ALLAN, DR. KAYE BENDER
SPONSORED BY INSTITUTE OF MEDICINE (IOM)
JANUARY 2003

REPORT BRIEF

In a world where public health threats range from AIDS and bioterrorism to an epidemic of obesity, the need for an effective public health system is as urgent as it has ever been. The extent to which we are able to address the complex challenges of the nature and make additional improvements in the health of the public depends, in large part, upon the quality and preparedness of our public health workforce, which, in turn, is dependent upon the relevance and quality of public health education and training. A new Institute of Medicine report examines the education of public health professionals, who are an essential component of the public health workforce. This report provides a framework and recommendations for strengthening public health education, research, and practice that can be used by the institutions and organizations responsible for educating public health professionals and supporting public health education.

AN ECOLOGICAL MODEL

Public health professionals receive education and training in a wide range of disciplines, come from a variety of professions, work in many types of settings, and are engaged in numerous kinds of activities. For purposes of this study the Committee defines a public health professional as *a person educated in public health or a related discipline who is employed to improve health through a population focus*. Regardless of their backgrounds, public health professionals must have a framework for action and an understanding of the forces that impact on health, a model of health that emphasizes the linkages and relationships among multiple determinants affecting health. Such an ecological model, the Committee believes, is key to effectively addressing the challenges of the 21st century.

The report also recommends that eight content areas be included in graduate-level public health education programs and schools of public health: informatics, genomics, communication, cultural competence, community-based participatory research, global health, policy and law, and public health ethics. These areas are natural outgrowths of the traditional core public health sciences as they have evolved in response to ongoing social, economic, technological, and demographic changes.

SCHOOLS OF PUBLIC HEALTH

The Committee determined that schools of public health have six major responsibilities.

1. Educate the educators, practitioners, and researchers, as well as to prepare public health leaders and managers.
2. Serve as a focal point for multi-school transdisciplinary research, as well as traditional public health research to improve the health of the public.
3. Contribute to policy that advances the health of the public.
4. Work collaboratively with other professional schools to ensure quality public health content in their programs.
5. Assure access to life-long learning for the public health workforce.
6. Engage actively with various communities to improve the public's health.

Among the report's recommendations for schools of public health:

- Schools of public health should embrace as a primary educational mission the preparation of individuals for positions of senior responsibility in public health practice, research and training.
- They should emphasize the importance and centrality of the ecological approach.
- Curricula and teaching approaches should incorporate enhanced participation in the educational process by those in senior practice positions or with comparable experiences, experts in medicine or its practice, or those with unique skills in areas such as communication, cultural competence, leadership development, policy, or planning;
- *Supervised* practice opportunities and sites (e.g., community-based public health pro-grams, delivery systems, and health agencies) should be expanded.
- Schools should establish new relationships with other health science schools, community organizations, health agencies, and groups within their region to foster transdisciplinary research.
- Faculty should be involved in policy development and implementation for relevant issues and play a leadership role in public policy discussions about the future of the United States health care system.
- Schools should foster scientific and educational collaborations with other academic schools and departments, and should actively participate in community-based research, learning, and service.

OTHER PROGRAMS AND SCHOOLS

Although the primary focus of this report is on schools of public health, other programs, schools, and institutions play major roles in educating public health professionals. This report examines the potential contributions these other institutions and programs can make to educating public health professionals. Among the report's recommendations:

- Graduate M.P.H. programs in public health should develop curricula emphasizing the importance and centrality of the ecological approach; they should also address the critical areas listed above.
- All students in medical schools should receive *basic* public health training in the population-based prevention approaches to health.
- A significant proportion of medical school graduates should be *fully* trained in the eco-logical approach to public health at the M.P.H. level.

- Schools of medicine and of public health should support research collaborations linking public health and medicine in the prevention and care of chronic diseases.
- Schools of nursing should encourage an understanding of the ecological model of health; the public health community should collaborate in making appropriate sites available for clinical experience, and should consider ways to assure that nursing education does not occur in a vacuum apart from the full range of professionals practicing in public health.
- “Health literacy” can and should be a goal of our educational system as a whole (St. Leger, 2001).

PUBLIC HEALTH AGENCIES

Governmental public health agencies at the local, state, and federal level have a major interest in educating and training the current public health workforce and future public health workers. Among the report’s recommendations for local, state, and federal health agencies:

- Health agencies should actively assess the public health workforce development needs in their own state or region.
- Engage in faculty and staff exchanges and collaborations with schools of public health and accredited public health education programs.
- Assure that those in public health leadership and management positions within federal, state, and local public health agencies are public health professionals with M.P.H. level education or experience in the ecological approach to public health.
- Federal agencies should provide increased funding for the development of curricula, fellowship programs, academic/practice partnerships, and the increased participation of public health professionals in the education and training activities of schools and programs of public health.

Further, the report recommended that there be significant increases in research on population health, primary prevention, and public health systems, as well as increased emphasis on community-based participatory research.

CONCLUSION

At no time in the history of this Nation has the mission of promoting and protecting the public’s health resonated more clearly with the public and the government than now. To improve health in our communities, we need high-quality and well-educated public health professionals. Previous efforts to design truly effective systems of public health education generally fell short because of a lack of political will, public disinterest, or a paucity of funds. At present, the opportunity exists to strengthen public health education, research, and practice if we act appropriately. The report’s recommendations are sometimes incremental, occasionally quite radical, but always grounded in the realization that if we lose sight of who will keep the public healthy, we will miss an opportunity to improve the public’s health in the 21st Century.

9. "PUBLIC HEALTH IN THE AMERICAS: CONCEPTUAL RENEWAL, PERFORMANCE ASSESSMENT, AND BASES FOR ACTION"

CHAPTER 15 (PAGES 285-305)
"DEVELOPMENT OF THE PUBLIC HEALTH WORKFORCE"
PAN AMERICAN HEALTH ORGANIZATION (PAHO),
PAN AMERICAN SANITARY BUREAU
REGIONAL OFFICE FOR THE AMERICAS
WORLD HEALTH ORGANIZATION (WHO)
2002

INTRODUCTION

This paper provides the conceptual, methodological and programmatic elements for preparing plans for the development of the public health workforce (highlighting PAHO/WHO's programmatic responsibility in educational and professional development), with the goal of contributing to the improvement of institutional capacity at the national level in the performance of the essential public health functions.

ESSENTIAL FUNCTION 8

As previously mentioned, EPHF 8 (Development of Human Resources and Training in Public Health) shows a low performance level with a mean of 0.40 for the Region. Despite the fact that all five indicators performed poorly, some point out deficiencies that deserve further comment given their importance for the development of plans that will improve the national capacity to offer public health services.

Description of the public health workforce profile

- Improving the quality of the workforce
- Continuing education and graduate training in public health
- Improving workforce to ensure culturally-appropriate delivery of services
- Technical assistance and support to the sub-national levels in human resources development

PERTINENT GRAPHS FROM CHAPTER 15

FIGURE 1. PROGRAMATIC PROPOSAL FOR THE DEVELOPMENT OF THE PUBLIC HEALTH WORKFORCE

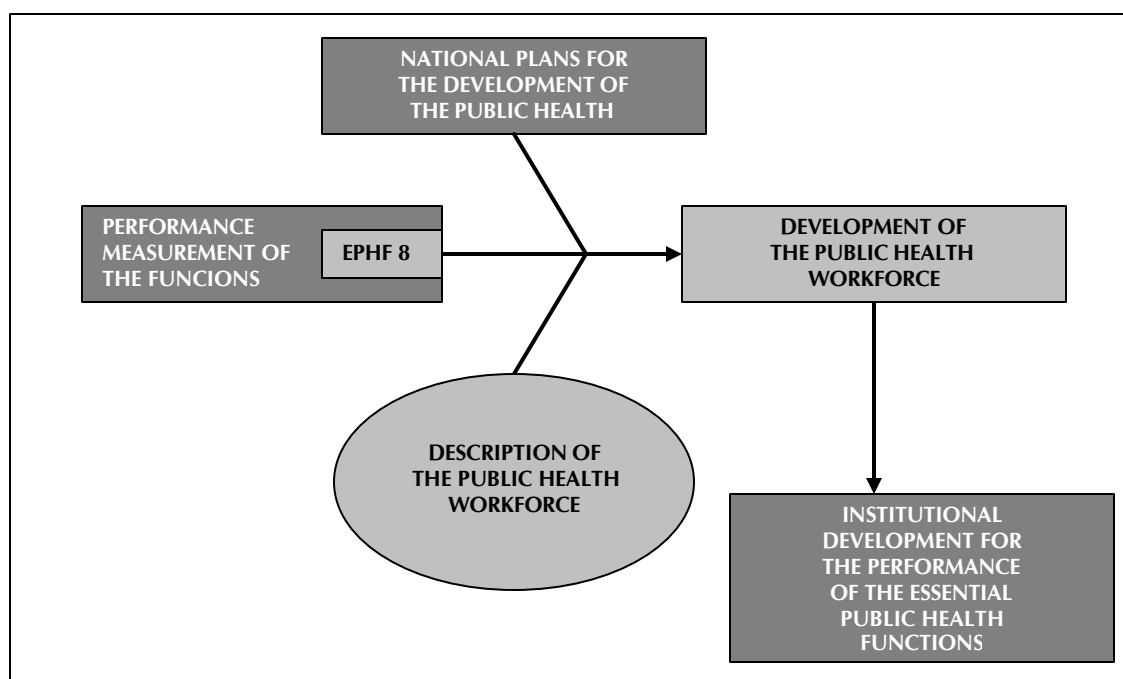
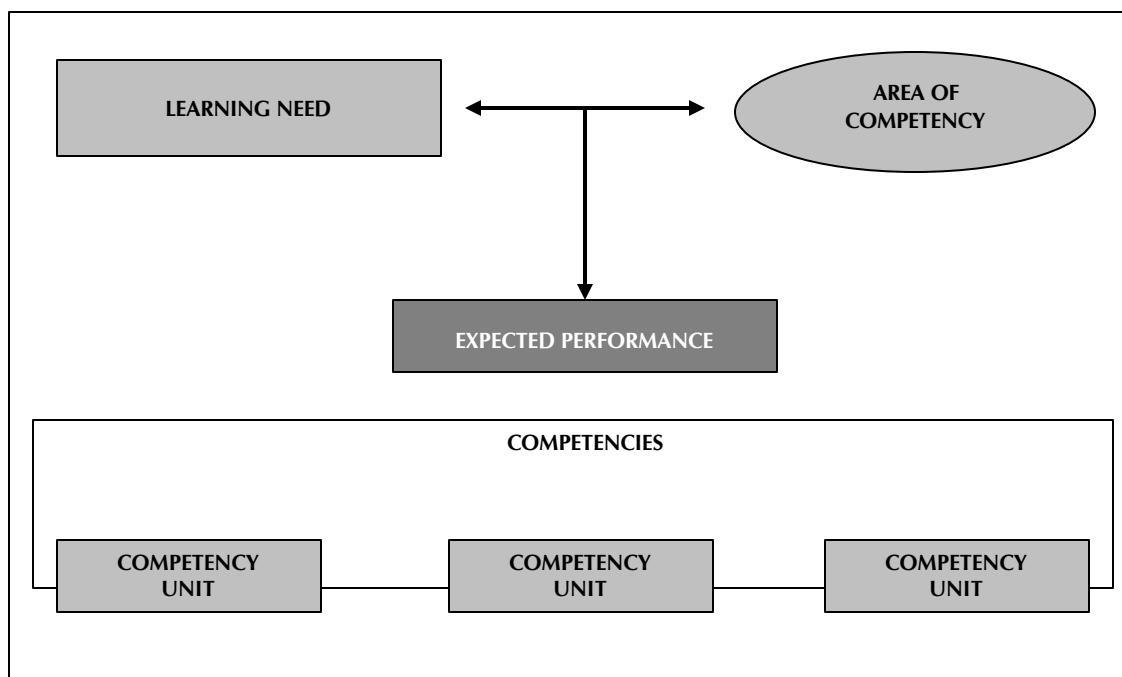


TABLE 2. MAP OF ISSUES FOR THE PREPARATION OF A WORKFORCE DEVELOPMENT PLAN

AREA INTERVENTION	EDUCATION —TRAINING OF THE PHWF	WORK OR PERFORMANCE OF THE PHWF	LABOR MARKET	PROFESSIONALIZATION
Public health workforce development policy	It is a set of ideas and definitions that generate and shape efforts, considering the State and society, in order to create plans and institutional conditions to improve the contribution of the PHWF in the performance of essential public health functions (EPHF).			
Planning	Systematic prevision of the political conditions, institutional capacities and resources to meet the quantitative and qualitative needs of the workforce at a given time. Basically, it is the preparation of PHWF Development Plan. Efficiency in the placement of staff to improve its distribution.			
Regulation	Accreditation of schools and programs. Quality strategies.	Regimens of work, modalities of hiring, labor protection	Regimens of remuneration and incentives Regulatory efficiency in the management and development of workforce	Recertification? Organization and representation of the public health practitioners
Professional and technical education	Development of competency based in the EPHF in professional and technical careers	Orientation of training according to performance requirements	Structural and dynamic analysis of the labor markets for educational planning	Participation of professional agents in the definition of plans of curricula
Professional and technical training and development	Participation of the public health academic institutions in the continuing education of the PHWF	Development of PHWF competencies based on EPHF	Continuing education and development of employability	Participation of organizations of public health practitioners in continuing professional development

AREA INTERVENTION	EDUCATION —TRAINING OF THE PHWF	WORK OR PERFORMANCE OF THE PHWF	LABOR MARKET	PROFESSIONALIZATION
Management of the workforce	Use of continuing education as a strategy for the development of PHWF Access to continuing education as a condition of and definition of career development Non monetary incentives system	Management of individual and collective work relations Criteria and normative frameworks for selection, recruitment, induction, and assignment Management of the quality of productivity and performance	Design and implementation of incentives systems Distributive efficiency to revert the concentration of staff in urban areas	Participation in the definition of criteria for the professional career Assurance of good environment and working conditions

FIGURE 8. IDENTIFICATION OF THE WORK COMPETENCE



10. "INFORMATICS COMPETENCIES: FOR PUBLIC HEALTH PROFESSIONALS"

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2002

EXECUTIVE SUMMARY

Public health informatics has been defined as the systematic application of information and computer science and technology to public health practice, research, and learning. In recent years, a variety of training resources have been developed that address one or more aspects of informatics. However, to date these resources have been developed in relative isolation, and no consensus has been established as to specific informatics competencies that various public health professionals should have. To address this issue, the Centers for Disease Control and Prevention (CDC) initiated the formation of a working group of public health "informaticians" and educators (see Appendix A for a list of working group members) to draft a consensus set of public health informatics competencies. These informatics competencies are designed to complement the more general set of *Core Competencies for Public Health Professionals*, developed by the Council on Linkages Between Academia and Public Health Practice.

The Working Group developed and refined the competencies (presented in this document in Appendices B and C) during 2001-2002. The Working Group intends the competencies to be applicable to currently practicing public health professionals in the United States, though they may be applicable to public health professionals in other countries as well. Three classes of informatics competencies are defined: those related to (a) **the use of information** *per se* for public health practice; (b) **the use of information technology** to increase one's individual effectiveness as a public health professional; and (c) **the management of information technology projects** to improve the effectiveness of the public health enterprise (e.g., the state or local health department). For each competency, expertise levels are suggested for three professional workforce segments: front-line staff, senior-level technical staff, and supervisory and management staff.

The informatics competencies presented here should provide a useful starting point in the development of new learning resources for public health professionals. Proficiency in these competencies would directly assist today's public health professionals to harness the power of modern information technology to the practice of public health.

APPENDIX B: PUBLIC HEALTH INFORMATICS COMPETENCIES

Class 1. Effective Use Of Information

With one exception, the competencies in this Class were drawn verbatim from the "Core Competencies for Public Health Professionals" compendium developed by the *Council on Linkages Between Academia and Public Health Practice*.

These core competencies may be thought of as informatics competencies as well, and thus are included here. The single additional competency in this Class is competency #24, in bold, in the Leadership and Systems Thinking domain.

DOMAIN	COMPETENCY
Analytic Assessment Skills	<ol style="list-style-type: none"> 1. Determines appropriate uses and limitations of both quantitative and qualitative data 2. Evaluates the integrity and comparability of data and identifies gaps in data sources 3. Applies ethical principles to the collection, maintenance, use, and dissemination of data and information 4. Partners with communities to attach meaning to collected quantitative and qualitative data 5. Makes relevant inferences from quantitative and qualitative data 6. Obtains and interprets information regarding risks and benefits to the community 7. Applies data collection processes, information technology applications, and computer systems storage/retrieval strategies 8. Recognizes how the data illuminates ethical, political, scientific, economic, and overall public health issues
Policy Dev't / Program Planning	<ol style="list-style-type: none"> 9. Collects, summarizes, and interprets information relevant to an issue 10. Utilizes current techniques in decision analysis and health planning
Communication Skills	<ol style="list-style-type: none"> 11. Communicates effectively both in writing and orally, or in other ways 12. Uses the media, advanced technologies, and community networks to communicate information 13. Effectively presents accurate demographic, statistical, programmatic, and scientific information for professional and lay audiences
Community Dimensions of Practice	<ol style="list-style-type: none"> 14. Develops, implements, and evaluates a community public health assessment
Basic Public Health Sciences	<ol style="list-style-type: none"> 15. Defines, assesses, and understands the health status of populations, determinants of health and illness, factors contributing to health promotion and disease prevention, and factors influencing the use of health services 16. Identifies and applies basic research methods used in public health 17. Applies the basic public health sciences including behavioral and social sciences, biostatistics, epidemiology, environmental public health, and prevention of chronic and infectious diseases and injuries 18. Identifies and retrieves current relevant scientific evidence 19. Identifies the limitations of research and the importance of observations and interrelationships
Financial Planning and Management	<ol style="list-style-type: none"> 20. Manages information systems for collection, retrieval, and use of data for decision-making 21. Conducts cost-effectiveness, cost-benefit, and cost utility analyses
Leadership and Systems Thinking	<ol style="list-style-type: none"> 22. Identifies internal and external issues that may impact delivery of essential public health services (i.e. strategic planning) 23. Promotes team and organizational learning 24. Manages the information of the public health organization as a key strategic resource and mission tool

Class 2: Effective Use of Information Technology

This class of competencies has to do with the ability to use various kinds of information technology to improve one's individual professional effectiveness. Certain basic competencies in this Class are relevant to all public health workers (including purely clerical and administrative staff). All of the competencies in this Class are relevant in some degree to all public health professionals.

DOMAIN / TOPICAL AREA	COMPETENCY
Digital Literacy	1. Utilizes personal computers and other office information technologies for working with documents and other computerized files
Electronic Communications	2. Utilizes modern information technology tools for the full range of electronic communication appropriate to one's duties and programmatic area
Selection and use of I.T. tools	3. Appropriately selects and utilizes state-of-the-art software tools in support of public health data acquisition, entry, management, analysis, planning, and reporting
On-line information utilization	4. Utilizes modern information technology tools to identify, locate, access, assess and appropriately interpret and use on-line public health-related information and data
Data and System Protection	5. Utilizes information technology so as to ensure the integrity and protection of electronic files and computer systems 6. Applies all relevant procedures (policies) and technical means (security) to ensure that confidential information is appropriately protected
Distance Learning	7. Utilizes modern distance-learning technologies to support life-long learning appropriate to programmatic needs
Strategic use of I.T. to promote health	8. Utilizes modern information science and technology as a strategic tool to promote public health (e.g., through community education, behavior modification, collaborative policy development, issue advocacy and community mobilization)
Information and knowledge development	9. Combines data and information from multiple sources, to create new information to support public health decision-making

Class 3: Effective Management of Information Technology Projects

This class of competencies has to do with the ability to effectively develop and manage information systems to improve the effectiveness of a public health enterprise. The focus here is not limited to improving one's individual professional effectiveness, although that is often a natural consequence of effective systems development. Instead, the focus is on harnessing the power of modern information technology to improve the functioning and scope of the public health agency.

DOMAIN / TOPICAL AREA	COMPETENCY
System development	1. Composes and manages systems development teams in a manner that demonstrates a recognition of the appropriate roles and domains for computer scientists, epidemiologists, policy makers and programmers and other IT specialists in information systems development 2. Leads and advocates for, or otherwise actively participates in, the development of integrated, cost-effective public health information systems within the public health enterprise, ensuring that new applications and information systems are built in conformance with a larger (enterprise-level) information architecture 3. Recognizes, participates in, and applies accepted models and processes for developing information systems and for managing information resources
Cross-disciplinary communication	4. Actively, effectively engages and communicates with information technology specialists as well as public health colleagues regarding proven information technologies and their potential application to public health practice
Databases	5. Participates in the development of new and enhanced databases for public health, and applies principles of good database design
Standards	6. Utilizes (or ensures the utilization of) data standards for storage and transmission, and is able to find the relevant standards specifications as needed
Confidentiality and Security Systems	7. Applies and participates in developing confidentiality and privacy policies for the enterprise, and ensures the development of adequate security systems to support the implementation of those policies

DOMAIN / TOPICAL AREA	COMPETENCY
Project management	8. Utilizes proven informatics principles and practices when managing information technology projects
Human resources management	9. Utilizes proven informatics principles and practices when managing information technology staff and other IT specialists
Procurement	10. Procures appropriate cost-effective, information technologies for the public health enterprise
Accountability	11. Uses information technology to assure openness of public health agency processes and responsiveness to the electorate and the public
Research	12. Monitors informatics research findings and public health information systems development efforts, and applies these findings and experiences as appropriate to public health practice

CONCLUSION

We hope this set of informatics competencies will be useful in the development of new learning resources for public health professionals. Given the tremendous range in the size and capacity of local and state health departments, we do not expect all public health professionals to be proficient in all of these informatics competencies in all public health settings. Nevertheless, we believe that these competencies are realistic and attainable for most public health professionals in mid to large-sized health departments. We firmly believe that proficiency in these informatics competencies would directly assist today's public health professionals to harness the power of modern information technology to the practice of public health.

11. "CORE LEGAL COMPETENCIES FOR PUBLIC HEALTH PROFESSIONALS"

CDC COLLABORATING CENTER PROMOTING PUBLIC HEALTH THROUGH LAW
CENTER FOR LAW AND THE PUBLIC'S HEALTH
AT JOHNS HOPKINS UNIVERSITY AND GEORGETOWN UNIVERSITY;
SEPTEMBER 2001

INTRODUCTION

This document presents a statement of Public Health Law Competencies developed by the Center for Law and the Public's Health at Johns Hopkins and Georgetown Universities with support from the Centers for Disease Control and Prevention (CDC), in collaboration with the Public Health Foundation (PHF).

In the preparation of this final statement, the Center received input from a multi-disciplinary panel of experts that convened on June 19, 2001, multiple respondents to a national electronic survey conducted by the PHF, and several national public health and public policy organizations, including the Association of State and Territorial Health Officials (ASTHO), the National Association of Country and City Health Officials (NACCHO), the American Public Health Association (APHA), the National Association of Local Board of Health (NALBOH), and the National Council of State Legislatures (NCSL).

The Public Health Law Competencies represent a set of law-specific skills and legal knowledge desirable for the practice of public health. These competencies are intended to serve as guides to workforce development efforts for public health leaders who have specialized roles related to public health law, as well as for frontline staff who need a basic understanding of the role of law in protecting the public's health.

Public health agencies, professional associations, universities, and continuing education programs may find these competencies helpful in assessing professional training needs, developing training and leadership programs, evaluating existing curricula, and improving performance related to using and understanding public health law.

12. "COMPETENCIAS PROFESIONALES Y SALUD PÚBLICA: ANÁLISIS DE LA LITERATURA Y BIBLIOGRAFÍA ANOTADA"

ORGANIZACIÓN PANAMERICANA DE LA SALUD (OPS/OMS)
DIVISIÓN DE DESARROLLO DE SISTEMAS Y SERVICIOS DE SALUD
DICIEMBRE 2000

OBJETIVO

Analizar la producción y distribución de la literatura generada entre 1995 y 2000 sobre competencias profesionales y salud pública que pueda ser utilizada por las instituciones de educación en salud pública e instituciones de salud en los procesos de diseño, evaluación e implantación de programas de formación de recursos humanos.

METODOLOGIA

El análisis de la literatura sobre competencias profesionales y salud pública se realizó en base a una revisión de la información ingresada durante el periodo 1995-2000 en las siguientes bases de datos: a) MEDLINE de la National Library of Medicine, b) Latin American and Caribbean Health Sciences Database (LILACS), el Sistema de Documentación sobre Recursos Humanos en Salud (SIDORH/OPS) y MedCarib. De estas bases de datos fueron revisados los resúmenes de artículos publicados en revistas de salud pública, libros y compilaciones. También fueron revisadas las publicaciones de la Biblioteca de OPS/OMS en Washington, particularmente las revistas de salud pública, trabajos presentados en seminarios, congresos, reuniones nacionales e internacionales y bibliografías anotadas. Se identificaron otras referencias a través de comunicaciones directas con salubristas de la Región, vinculados a universidades, centros de investigación y organismos de cooperación internacional.

En cuanto a la revisión de las bases de datos, en total se identificaron 180 títulos en MEDLINE, 5 en LILACS, 1 en SIDORH y ninguno en MedCarib correspondiente al periodo analizado. De otras fuentes se obtuvieron 53 textos completos de los cuales se seleccionaron los títulos que fueron incluidos en la bibliografía anotada. De estos, 25 estaban escritos en español y 28 en inglés.

13. "THE PUBLIC HEALTH WORKFORCE: AN AGENDA FOR THE 21ST CENTURY"

A REPORT OF THE PUBLIC HEALTH FUNCTIONS PROJECT
U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
PUBLIC HEALTH SERVICE
1997

EXECUTIVE SUMMARY

Today our Nation faces a widening gap between challenges to improve the health of Americans and the capacity of the public health workforce to meet those challenges. Deeply concerned with this trend, the Public Health Functions Steering Committee in September 1994 commissioned the Subcommittee on Public Health Workforce, Training, and Education, charged to: provide a profile of the current public health workforce and make projections regarding the workforce of the 21st century.

The Subcommittee should also address training and education issues including curriculum development to ensure a competent workforce to perform the essential functions of public health now and in the future. Minority representation should be analyzed, and the programs to increase representation should be evaluated. Distance learning should be explored. The Subcommittee should examine the financing mechanisms for curriculum development and for strengthening the training and education infrastructure.

The plan presented here builds on work already in place with a call to practical action of federal, state, and local public health agencies*; academic public health departments; community health coalitions and organizations; philanthropies; and all others concerned with the health of Americans. This report uses as an analytic framework the statement *Public Health in America*, with its enumeration of 10 essential services of public health, incorporating and building upon previous discussions of public health functions. The public health workforce includes all those providing essential public health services, regardless of the nature of the employing agency. The report endorses individual and organizational excellence as the only standard acceptable to the public and decision-makers who must play a vital role in realizing the vision of "Healthy People in Healthy Communities." The Subcommittee divided its efforts into:

- Enumerating the current workforce in public health function positions and assessing future changes in workforce roles and the impact of these changes on the workforce composition;
- Identifying training and education needs for core practices/essential public health services; and
- Developing a strategic plan for using distance learning approaches to provide high-priority public health education and training.

The specified action items listed below, and elaborated upon in the full report, represent essential first efforts and will require the concerted attention of all partners on the Public Health Functions Steering Committee and many others if they are to have the desired impact. **These steps are not sequential, and work on all of them should proceed concurrently.**

* By "federal, state, and local public health agencies" this report means any health, substance abuse, environmental health and protection, or public health agency charged with some portion of the roles encompassed in the statement.

The necessary actions include:

1. National Leadership

The Public Health Functions Steering Committee should continue to serve as the locus for oversight and planning for development of a public health workforce capable of delivering the essential public health services across the Nation, including support for any legislative authorization or financing mechanisms needed to fully implement this report and a commitment to ensure that current workforce development resources are wisely invested in achieving identified goals. Each partner organization is encouraged to develop specific plans and policies that complement this collaborative effort.

2. State and Local Leadership

In order to ensure that programs are appropriately tailored to the unique configuration of needs and resources in each State and in each local jurisdiction, a mechanism to develop State public health workforce planning and training should be developed and implemented. This mechanism should include not only development of identified leaders, but also cultivation of leadership qualities throughout the workforce. The State, or where appropriate regional, efforts should emphasize possible partnerships among practice and academic entities involved in public health. These efforts should be responsive to and provide input into those at the national level. In addition, these efforts must involve local public health entities and be responsive to their needs.

3. Workforce Composition

A standard taxonomy should be used to identify the size and distribution of the public health workforce in official agencies (health, environmental health and protection, mental health and substance abuse; local, State, and national) and private and voluntary organizations. This effort should be coordinated with the Bureau of Labor Statistics to enhance uniformity in occupational classification reporting. To the extent possible, the taxonomy should be consistent with *Public Health in America*, recognizing that specific occupational titles will vary across organizations. Using the same taxonomy, the Steering Committee should recommend and support a mechanism to quantify the future demand for public health workers, paying particular attention to issues of diversity and changing demographics in the workforce.

4. Curriculum Development

The statement of competencies for the public health workforce developed by the Subcommittee should be refined and validated, identifying the subset(s) of competencies associated with each of the various professions that make up the workforce. Basic, advanced, and continuing education curricula to train current and future public health workers in the identified competencies should be supported (where existing) and developed (where not yet in place). Implementation should be coordinated with the State planning efforts (above) and make maximum use of new technologies (below).

Improved methods (such as certification) of identifying practitioners who have achieved competency should be identified and implemented if demonstrated effective.

5. Distance Learning

All partners in the effort to strengthen the public health workforce should make maximum use of evolving technologies such as distance learning. A structure should be established to develop an integrated distance learning system building on existing public and private networks and making information on best practices readily available.

The agenda presented in these recommendations only partially fulfills the original charge to the Subcommittee. In its continuing leadership role, the Steering Committee should identify other tasks that need continuing attention and make plans for their completion. With the continued attention of the Public Health

Functions partners, the public health workforce will be strengthened to contribute even more to the health of communities in the 21st century.

14. "CURRENTLY EMPLOYED PUBLIC HEALTH ADMINISTRATORS: ARE THEY PREPARED?"

STEVEN BOEDIGHEIMER AND KRISTINE GEBBIE
DELAWARE DEPARTMENT OF HEALTH AND SOCIAL SERVICES
DOVER, DELAWARE, USA
JANUARY 2001

ABSTRACT

Challenges to the public health system come from shifting expectations of government, economic cycles, and demographic changes. Public health administrators, charged with the responsibility of both leading and managing their agencies, those who are recognized as having significant management responsibility and influence over programs and hold positions of leadership, must be prepared. The skills needed by administrators were identified using a focus group approach. The critical skills identified include public health values, epidemiology and advocacy, organizational management, cultural competency, coalition building, communications, managing change, strategic thinking and planning, Informatics, and team building. Potential action steps were also identified.

PUBLIC HEALTH WORKFORCE

CHARACTERIZATION
and
DEVELOPMENT

INTRODUCTION

In the previous sections of this literature review, we have examined the public health workforce in both its definition and its needs for further development.

The public health workforce is a subset of the larger health workforce. The larger health human resources system must be healthy in order for the public health workforce to be improved. Preserving and strengthening this important resource is not only *important* in maintaining an effective health system, but it is essential as the workforce is the key component, or cornerstone, to a successful health system. That being said, this undertaking of strengthening the larger health human resource system is a complex project that integrates efforts across sectors (finance, education, labor, health and even international relations), incorporates both macro policy strategies and focused intervention efforts, and addresses immediate needs and long-term projections.

The reading of this literature collection explores the wide range of variables and the complexities of forces that influence, effect and respond to national human resources policies in health. It is clear from this reading that the landscape of health care needs is rapidly changing, and that our models for health care must adapt to meet these new challenges. In addition, the responsibilities of the health care worker—providing primary care and frontline response—crosses over so often with public health care responsibilities and long-term planning, that a public health care workforce cannot be improved unless the underlying health human resources are strengthened.

The predominant theme throughout this reading is that policy makers and stake holders cannot address only one aspect of human resources development – namely individual and collective competencies of the health workforce, but must take a holistic approach that encompasses funding, education and training, labor issues, data management, epidemiological trends, demographic shifts, and even the larger economic and political issues that promote or inhibit a country's development and viability.

POLITICAL WILL AT NATIONAL LEVELS

First and foremost, country leaders and stakeholders must make a conscious decision to put human resources at the top of the agenda. In many instances this commitment will require a paradigm shift because, as much of the literature has emphasized, the focus has long been on efforts to respond to specific disease threats or to reach out to particularly needy population groups—without investing the time and foresight to longer-term sustainability efforts that reach further into roots of the systems and thus create possibilities for long-term development and more successful targeted interventions.

What will this type of paradigm shift require?

- Financial commitment
- Policies that address the most urgent problems as well as that plan for long term improvements
- Strategies that integrate sectors—education, financial, labor, and others
- Recruitment of partners—international donors who can provide badly needed financial support, NGOs with technical expertise, community members who offer political support and participation in the implementation of policies.

COLLECTION AND USE OF DATA

Infrastructures must be developed and implemented so information is collected to measure the health needs of the population, the epidemiological trends in that population, demographic changes that affect unique cultural aspects of care delivery as well as numbers of people that are needed to deliver care. Data is also needed to measure workforce issues specifically: Where are numbers of workers increasing or decreasing and why? Where does the insufficient number of care givers have negative effects? When skills decline or numbers decrease, what are the other common variables that may be affecting or causing these crises? Without the ability and organized process to collect, analyze and respond to information and data, health workforce strategies cannot be developed or implemented.

Data is also imperative in creating quality standards and best practice base lines. Measuring results, developing specific indicators for productive practices, and sharing experiences in best practices all lead to a continued movement to improve the quality of care and the heightening of standards for delivery. Here, too, health systems must establish the means by which to collect, measure, and respond to data on successful practices, improved health outcomes, and patient/service provider relationships to continue to expand and improve access to quality care throughout the population.

TECHNICAL SKILLS AND MANAGEMENT ABILITIES

The literature on workforce development emphasizes capacity development, skills improvement, and education. In Section B, Public Health Workforce Development, we addressed the priority need for training and education in the development of an effective public health workforce. Overarching this need is the improvement of the education and training—curriculum design and delivery systems—for all health workers. Academic education begins at the primary and secondary school levels, where critical thinking and scientific aptitudes are encouraged.

Specific health education at the more advanced levels, then, must address the current and anticipated needs of the population so that the students coming out of academic institutions are prepared for the reality that they will face. Continued education or “permanent” education must update the current workforce so that they are able to incorporate technology advancements and medical information into their work.

Not only does the workforce need appropriate skills, but the members of that workforce must develop competencies in leadership. All levels of responsibility require some decision making and ability to respond to unexpected situations. A workforce empowered with leadership training and benefiting from the example of strong management and leadership in their workplace and sector will provide for a more sustainable and balanced workforce that delivers a higher quality of care.

Education must also include attention to research. To enable a sustainable health workforce that can respond to the evolving health needs of the population and the changing epidemiological challenges, research must be promoted and supported.

NUMBERS OF SKILLED, MOTIVATED WORKFORCE MEMBERS

Attraction—Numbers are important. Studies have shown that although there are many factors that combine to affect child mortality rates, the numbers of health workers is directly related to infant and child mortality rates. Incentives, therefore, are important in attracting students to choose a career in the health sector, and also to influence health workers to move to geographical areas where a higher health worker density is needed or into a particular health field that may be less attractive without pro-active incentives. For example, in many countries it is difficult to recruit health workers to practice in HIV/AIDS care because workers are often stretched too thin due to growing patient demands, limited resources, and a perceived heightened risk to the disease for those who work with HIV/AIDS patients. Therefore, this sector is a good

example where incentive policies are needed to attract workers. Incentives are also needed to redistribute workers from the urban concentrations to the rural areas, which are usually the areas that are most in need of health services.

Gender specific—or ethnic specific incentive programs may also be effective in balancing the workforce so that it more accurately reflects the demographic makeup of the population it serves.

Retention—Specific policies can address retention immediately. For example, in many countries, where resources are limited and even exhausted, increased salaries are a challenge. However, with political will, a reprioritization can bring the salaries in the health field more in line with other sectors. In addition, retirement age requirements can be re-evaluated so as to maintain those already skilled, experienced professionals who can mentor and manage the newer workers. Other retention strategies are addressed in the literature that contribute to long-term sustainable retention—including professional opportunities, improved supportive working environments, better management skills for supervisors, and professional growth opportunities.

Migration—Migration of the workforce presents a particularly serious threat to under-developed countries because the need to keep health providers is so dire and the motivation for these workers to leave is so great. Workers not only leave their rural communities to seek better paying jobs and opportunities in urban centers, but they also leave their economically-challenged countries to seek a variety of increased opportunities in more developed countries. Many of these workers are actively recruited and assisted in their moves. Current literature stresses the need for cooperation among international stakeholders to manage the migrations in a way that will protect the rights of the workers and, at the same time, address the needs of the populations.

LABOR ISSUES

Many of the publications include labor issues in their list of human resources development concerns. Even if a workforce is well-trained and well-allocated, it is essential that these individuals are also committed to the mission of the health authorities. Attention to labor concerns, such as a safe workplace, professional development opportunities, adequate equipment and infrastructure contribute to the integrity and cohesiveness of the workforce. Including labor representatives and union members in decision making discussions and policy debates leads also to more cooperative working relationships over time, and thus more easily resolved disputes.

INTERNATIONAL COOPERATION

Finally, it has become clear, that not only migration, but many of the other human resources issues that face individual countries ultimately face all countries collectively. As seen in the devastation of HIV/AIDS in Africa, that requires resources and commitment from the entire global community, epidemics can ravage human beings, countries, regions and continents. Moreover, as our global community becomes more interdependent and interconnected, epidemics such as SARS or the Avian Flu can spread rapidly, causing political and economic instability. Human resource development is not only a national concern. The integration of efforts and combination of resources must be committed to grow and sustain effective, productive health workforces that can support changing needs, evolving demographics, unexpected crises, and target interventions successfully.

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1. "ENVIRONMENTAL SCAN OF CURRENT VIEWS ON HEALTH HUMAN RESOURCES IN CANADA: IDENTIFIED PROBLEMS, PROPOSED SOLUTIONS AND GAP ANALYSIS"

FADI EL-JARDALI AND CATHY FOOKS

JUNE 23, 2005

EXECUTIVE SUMMARY

The Health Council of Canada strongly believes that the health care renewal goals established by the First Ministers cannot be achieved without a collaborative and coordinated approach to resolving the complex issues of health human resources. Successful health care reform will depend on the provision of effective, efficient, accessible, sustainable, high-quality services by a workforce that is present in sufficient numbers, appropriately trained for the new models of delivery, and equitably distributed across the country. This reality highlights the urgent need to modernize how we manage health human resources in Canada.

Effective management of health human resources requires a committed and sustained effort. Leaders responsible for educating, training, employing, regulating, and funding the health care workforce must work together, along with researchers and experts in the field of health human resources. To this end, the Health Council has convened a Health Human Resources Summit to initiate dialogue and examine solutions and success stories. In preparation for the Summit, the Health Council staff has conducted an environmental scan of current views on health human resource issues in Canada. Specifically, the scan:

- identifies the key policy positions of stakeholder organizations and governments related to four theme areas (education and training, scopes of practice, workplace issues, and health human resource planning);
- highlights the solutions proposed by stakeholders and governments; and
- explores the range of gaps between identified problems and the proposed solutions.

The scan is not meant to be a comprehensive inventory of initiatives across the country nor is it a literature review. The following matrix summarizes the findings of the environmental scan. More detail can be found in the full report and its appendices.

	Education and Training	Scopes of Practice	Workplace Practices	Planning
Identified Problems	<p>Lack of self-sufficient supply in all professions.</p> <p>Not enough reliance on international graduates already in Canada.</p> <p>Lack of infrastructure to support increased enrolments and assessments of international graduates.</p> <p>Too few training positions.</p> <p>High tuition costs.</p> <p>Lack of multidisciplinary education programs (pre-professional) and training opportunities (continuing education).</p> <p>Lack of workplace training in general.</p> <p>Lack of culturally appropriate education and training programs.</p>	<p>Scopes of practice differ across jurisdictions as do titles.</p> <p>Lack of clear statements of scopes within team practice.</p> <p>Lack of clarity about accountability and liability within team practice.</p> <p>Changing practice patterns have created service gaps (e.g. obstetrics).</p>	<p>Burnout, heavy workload and overtime, high absenteeism.</p> <p>Early retirement for some groups (e.g. nurses).</p> <p>Insufficient recruitment and retention programs.</p> <p>Lack of attention to health, safety and wellbeing of workers.</p> <p>Inequitable distribution of personnel.</p> <p>Shortage of information for most professions, other than doctors and nurses.</p>	<p>Lack of needs-based planning frameworks.</p> <p>Shift to new models of care without consideration of HHR impacts.</p> <p>Aging health care workforce.</p> <p>Changing work/life balance expectations of young professionals.</p>

	Education and Training	Scopes of Practice	Workplace Practices	Planning
Proposed Solutions	<p>Increase number of funded education and training positions for all professions.</p> <p>Regulate tuition increases and increase student financial support; subsidize tuition (through the institutions or directly).</p> <p>Increase number of multidisciplinary university and college programs; standardize requirements for core competencies.</p> <p>Standardize credential assessment and establish bridging programs.</p> <p>Increase number of faculty members and preceptors.</p> <p>Integrate culturally appropriate curriculum and training opportunities.</p>	<p>Harmonize relevant legislation and regulations across jurisdictions.</p> <p>Develop new models of liability insurance.</p> <p>Reform tort law.</p> <p>Create mechanisms to facilitate collaboration.</p>	<p>Improve working conditions including workload issues, flexible work hours and benefits.</p> <p>Expand recruitment and retention options to include opportunities for spouses, support and continuing education.</p> <p>Target bursaries to areas of undersupply.</p> <p>Create mechanisms to facilitate collaboration.</p>	<p>Develop a pan-Canadian planning framework.</p> <p>Link supply management to population health needs.</p> <p>Improve data collection for all professional groups, regulated and unregulated.</p>

	Education and Training	Scopes of Practice	Workplace Practices	Planning
Gap Analysis	<p>No agreement on balance between self-sufficient of supply, recruitment of international graduates, and upgrading of international graduates already in Canada but not working in health care.</p> <p>Faculty and infrastructure requirements not factored into funding.</p> <p>Effects of increased tuition unknown.</p> <p>Educational requirements and licensure criteria not consistent.</p> <p>Multidisciplinary education and training programs not widely available.</p> <p>Implications of new delivery models on HHR requirements not clear.</p> <p>Contributions of different professions not well understood.</p> <p>Level of support for workplace training unclear.</p>	<p>No sense yet of how much of the shortfall will be mitigated once professions are working at their full scope of practice.</p> <p>Unclear how much overlap currently exists as scopes evolve and practice patterns change (e.g. midwives, family physicians and obstetricians all do low risk delivery).</p> <p>Extent of current under-utilization or over-utilization of skills not well understood.</p>	<p>Lack of consensus on strategies, incentives and actions.</p>	<p>No clear linkage between new delivery models and planning efforts.</p> <p>Lack of mechanisms to bring players together, despite recognition of need for collaborative approach.</p>

There is a great deal of activity in Canada focused on our health care workforce. Learning from history, governments and stakeholders recognize that health human resource management is not a one-time effort but requires careful and ongoing attention. There is also recognition that simple or quick solutions mask the complexity of the enterprise. As governments chart the course of health care renewal, health human resource requirements need to move in parallel. Changes to the way health care professionals are educated, trained, employed, funded and regulated are needed to support the First Ministers' commitments on national health care renewal.

2. "PREPARING THE 21ST CENTURY GLOBAL HEALTHCARE WORKFORCE"

"TO MEET THE GROWING GLOBAL DEMANDS OF CARING FOR THE INCREASING NUMBERS OF PATIENTS WITH CHRONIC
CONDITIONS, WE NEED TO DEVELOP A NEW APPROACH TO TRAINING"

SHERI D. PRUITT AND JOANNE E. EPPING-JORDAN

BRITISH MEDICAL JOURNAL

MARCH 2005

INTRO PARAGRAPH AND SUMMARY DIAGRAMS

Chronic conditions currently account for more than half of the global disease burden and are a primary challenge for 21st century healthcare systems. This is a dramatic shift from the health concerns of the 20th century, when acute infectious diseases were the primary focus in every country. While the world is experiencing a rapid transition from acute diseases to chronic health problems, training of the healthcare workforce, however, relies on early 20th century models that emphasize diagnosis and treatment of acute diseases. Educational leaders, health professional bodies, and the World Health Organization recognize such models as inadequate for health workers caring for a growing population of patients with health problems that persist across decades or lifetimes. Training should be restructured to include a new set of core competencies (knowledge, skills, abilities, personal qualities, experience, or other characteristics)—new "tricks" that prepare 21st century health workers to manage today's most prevalent health problems.

BOX 1: THE FIVE BASIC COMPETENCIES

- Patient centered care
- Partnering
- Quality improvement
- Information and communication technology
- Public health perspective

BOX 2: WHAT HEALTHCARE WORKERS SHOULD DO AS PART OF TRAINING

- Learn how to move from reactive care to proactive, planned, and preventive care, using several of the new competencies outlined above
- Learn how to negotiate individualized care plans with patients, taking into account their needs, values, and preferences
- Learn how to support patients' efforts at self management
- Learn how to organize and implement group medical visits for patients who share common health problems
- Care for a defined group of patients over time
- Work as a member of a healthcare team
- Work in community based setting
- Design and participate in quality improvement projects
- Develop information systems (for example, patient registries) and use available technology and communication systems to exchange information on patients
- Learn to think beyond caring for one patient at a time to a "population" perspective
- Develop a broad perspective of care of patients across the continuum from clinical prevention to palliative care

SUMMARY POINTS

- Traditional models of acute care are inadequate for training a workforce to manage today's most prevalent health problems: chronic conditions
- WHO has led an effort to identify a new set of core competencies that will yield better outcomes for patients with chronic conditions
- These competencies apply to everyone who cares for patients with chronic conditions
- Several influential health professional bodies and patients' associations support these competencies
- The competencies must now be translated into reality by initiating reform in training institutions and centers of higher education

3. "HUMAN RESOURCES: THE CINDERELLA OF HEALTH SECTOR REFORM IN LATIN AMERICA"

NÚRIA HOMEDES AND ANTONIO UGALDE

HUMAN RESOURCES FOR HEALTH

3:1

Doi: 10.1186 / 1478-4491 - 3 - 1

2005

ABSTRACT

Human resources are the most important assets of any health system, and health workforce problems have for decades limited the efficiency and quality of Latin America health systems. World Bank-led reforms aimed at increasing equity, efficiency, quality of care and user satisfaction did not attempt to resolve the human resources problems that had been identified in multiple health sector assessments. However, the two most important reform policies – decentralization and privatization – have had a negative impact on the conditions of employment and prompted opposition from organized professionals and unions. In several countries of the Region, the workforce became the most important obstacle to successful reform.

This article is based on fieldwork and a review of the literature. It discusses the reasons that led health workers to oppose reform; the institutional and legal constraints to implementing reform as originally designed; the mismatch between the types of personnel needed for reform and the availability of professionals; the deficiencies of the reform implementation process; and the regulatory weaknesses of the Region.

The discussion presents workforce strategies that the reforms could have included to achieve the intended goals, and it presents the need to take into account the values and political realities of the countries. The authors suggest that autochthonous solutions are more likely to succeed than solutions imported from the outside.

4. "AN APPROACH TO ESTIMATING HUMAN RESOURCE REQUIREMENTS TO ACHIEVE THE MILLENNIUM DEVELOPMENT GOALS"

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ABSTRACT

In the context of the Millennium Development Goals, human resources represent the most critical constraint in achieving the targets. Therefore, it is important for health planners and decision-makers to identify what are the human resources required to meet those targets. Planning the human resources for health is a complex process. It needs to consider both the technical aspects related to estimating the number, skills and distribution of health personnel for meeting population health needs, and the political implications, values and choices that health policy- and decision-makers need to make within given resources limitations. After presenting an overview of the various methods for planning human resources for health, with their advantages and limitations, this paper proposes a methodological approach to estimating the requirements of human resources to achieve the goals set forth by the Millennium Declaration. The method builds on the service-target approach and functional job analysis.

5. "A GUIDE TO RAPID ASSESSMENT OF HUMAN RESOURCES FOR HEALTH"

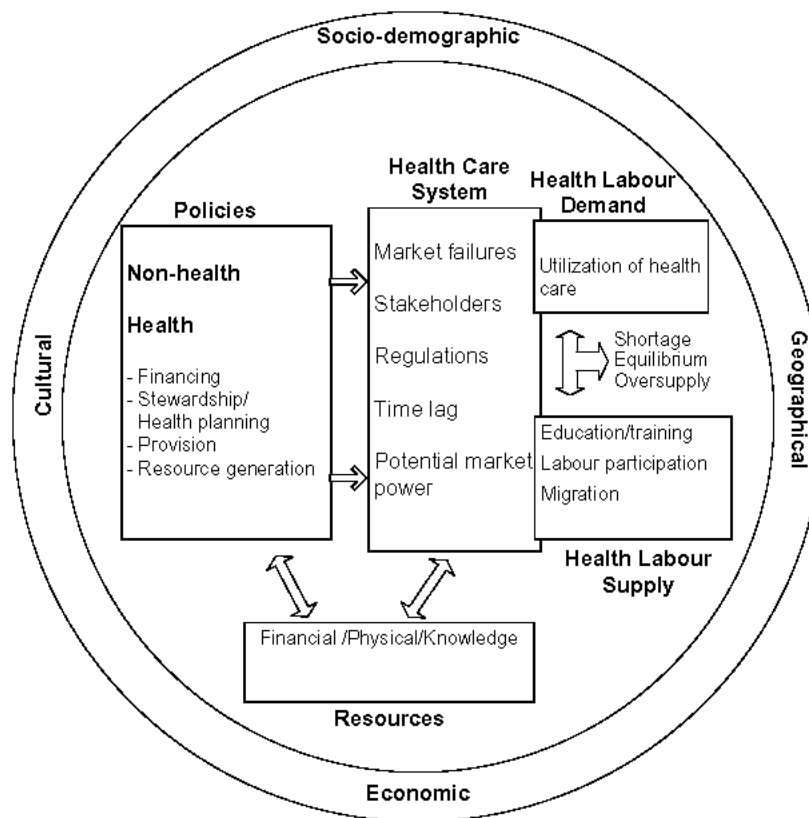
WORLD HEALTH ORGANIZATION
GENEVA 2004

A GUIDE TO RAPID ASSESSMENT OF HUMAN RESOURCES FOR HEALTH

The World Health Organization, through its Department of Human Resources for Health (HRH) works with Member States to strengthen their capacity to educate, plan and manage their health workforce so that health services can meet health needs. The Department fosters HRH policies within each country's health policies in the context of the country's overall development policies. This involves forging a global consensus on HRH, by means of pursuing in-depth work in countries and building networks.

The Department has developed tools to analyse and address the various issues to better assist countries. These tools lay out a general framework built in collaborations with partners, including staff of ministries of health, health training institutions, professional associations and bilateral and international partners.

HRH CONCEPTUAL FRAMEWORK



This framework points out the importance of placing health workforce issues in a broad perspective that takes into account the influence of globalization and national and subnational factors. It includes cultural as well as political, sociodemographic, economic and geographical factors in health workforce issues. It is based on the premise that population health should drive the planning, actions and management of the health system. It emphasizes the importance of linking HRH with outcomes of the health system.

To translate this framework into a practical and operational tool for countries to use, the Department has developed a template of perspectives through which HRH should be assessed at the country level. This HRH lens cuts across the main HRH issues such as policy, education, recruitment and retention, migration, incentives and the various initiatives, mechanisms and developmental policies and plans being conducted at the country level such as MTEF, PRSP, SWAps¹ and priority health programmes (including HIV/AIDS, TB and malaria).

HRH LENS

Interventions and process	HRH policy	Health labour market	Education/ training	Recruitment	Retention	Migration	Incentives	Regulation	Distribution/ equity
Development plan									
PRSP									
MTEF									
Public sector reform									
Civil service reform									
SWAps									
Health investment plan (CMH)									
Health policy									
Health information system									
Child survival									
MPR									
HIV/AIDS									
Malaria									
TB									
Other									

ABOUT THIS GUIDE

This rapid-assessment guide is designed to help users arrive at a global overview of a country's HRH situation.

- It addresses only issues generally recognized as major challenges for most countries.

¹ MTEF: Medium-Term Expenditure Framework; PRSP: Poverty Reduction Strategy Paper; SWAps: Sector-Wide Approaches.

- It is intended to be user-friendly and applicable quickly: the data collection and analysis should not last more than four weeks.
- It will combine both quantitative and qualitative information and methods.
- It is neither a data-collection instrument nor a step-by-step guide to data analysis.
- Each section specifies the type of information to be elicited and why.

Included is a list of tools and sources of additional information for in-depth analysis of specific HRH issues.

The guide is designed to help users assess current HRH constraints and challenges to "scaling up" health interventions. Users include:

- health policy-makers
- planners
- national and local health managers
- those responsible for monitoring and evaluation
- researchers
- professional associations
- regulatory bodies
- training institutions and donors
- consultants in the preceding areas.

Not all the indicators and answers may be available or even necessary for a given country situation. But the issues and dimensions that follow show what kinds of information can be assembled regularly to track developments affecting human resources for health.

MAIN ISSUES AND DIMENSIONS

HRH main issues

1. Policy, regulation and planning
2. Management and performance improvement
3. Labor market
4. Education, training and research
5. HRH and priority health programs
6. Monitoring and evaluation

Dimensions

1. Policy, regulation and planning
 - ♦ Policy
 - ♦ Legislation and regulation
 - ♦ Planning
 - ♦ Financing

- ♦ Stakeholders
- 2. Management and performance improvement
 - ♦ Motivation/incentives
 - ♦ Recruitment/retention
 - ♦ Imbalances in deployment and equity
 - ♦ Migration
 - ♦ Supervision, leadership and performance assessment
 - ♦ Job description
 - ♦ Working conditions
- 3. Labor market
 - ♦ Employment/employers
 - ♦ Wages/salaries
 - ♦ Workload
 - ♦ Sector of work (public/private)
 - ♦ Unions/ghost workers
- 4. Education, training and research
 - ♦ Health professions educational institutions
 - ♦ Health training programs and institutions
 - ♦ Educational staff
 - ♦ Number of entrants and graduates
 - ♦ Continuous education
 - ♦ Research on HRH
- 5. HRH and priority health programs
 - ♦ HIV/AIDS
 - ♦ TB
 - ♦ Malaria
 - ♦ Reproductive health/IMCI
 - ♦ Other national or regional priority programs
- 6. Monitoring and evaluation
 - ♦ Information/data availability
 - ♦ Staffing numbers
 - ♦ Uses of the information
 - ♦ Monitoring methods
 - ♦ Sources

QUESTIONS

This section proposes crucial questions for each of the issues and dimensions.

POLICY, REGULATION AND PLANNING	
DIMENSION	QUESTIONS
Policy	<p>Q1. Is there a national health policy (or equivalent)? Briefly describe it, including the building process, content, last update and other relevant issues.</p> <p>Q2. Does the country have an HRH policy (or equivalent)? Is it written down?</p> <p>Q3. Is HRH acknowledged in broader development policies (PRSP, MEFF, etc.)?</p> <p>Q4. Are there HRH policies at each level, from national to local (i.e. a decentralized HRH policy)?</p> <p>Q5. Are there strategies to ensure that the most vulnerable populations receive services?</p>
Planning	<p>Q1. Does the country have a strategy or plan for HRH? Is it periodically updated? Does it include staffing targets?</p> <p>Q2. Does the existing staff correspond to the target staffing levels?</p> <p>Q3. What tools/methods of planning are used in the country (WHO's Workload Indicators for Staffing Needs, etc.)?</p> <p>Q4. Does the country have an HRH planning or management unit within the MoH?</p> <p>Q5. In the planning units at national and local level, are there enough personnel with adequate HRH planning skills?</p> <p>Q6. Does an established cycle exist for planning, implementation and evaluation in the health sector?</p>
Financing	<p>Q1. Who are the main actors involved in funding HRH policies and plans?</p> <p>Q2. What is the share of the government health expenditure (national, state, local and social security) in the total health expenditure?</p> <p>Q3. What share of government health expenditure is devoted to health personnel?</p> <p>Q4. Do HRH plans correspond to the available resources? If not, has the gap been measured?</p> <p>Q5. What are the education costs of each of the main HRH categories?</p>
Regulations	<p>Q1. What are the main regulatory bodies in the area of HRH?</p> <p>Q2. What categories of HRH are required to be registered in order to practise?</p> <p>Q3. What professional associations exist? What are their criteria for membership?</p> <p>Q4. What authorization is required for private and traditional facilities? What authorization is required for private and traditional providers to practise?</p> <p>Q5. Besides the national regulations, are there specific regulations at the local level?</p> <p>Q6. What accreditation and licensing requirements and procedures now exist? Are they adhered to?</p>
Stakeholders	<p>Q1. Who are the key national and external players in HRH?</p> <p>Q2. What groups (MoH, other ministries, professional associations, universities, etc.) are involved in formulating and implementing national policies for HRH development?</p> <p>Q3. On what basis do external partners support HRH activities? That is, do they base their support on the country's policy documents?</p> <p>Q4. How do key national and international actors relate to each other?</p> <p>Q5. Does a Country Cooperation Strategy exist? If yes, does it include HRH issues?</p>

MANAGEMENT AND PERFORMANCE IMPROVEMENT	
DIMENSION	QUESTIONS
Motivation / incentives	<p>Q1. Are there any pay or non-pay incentive schemes to work in difficult/underserved locations or with particular patient groups or health needs?</p> <p>Q2. What types of working environment incentives (flexible working hours, work autonomy, etc.) and other types of incentives exist in the country?</p> <p>Q3. What is known about motivation levels? Have there been surveys? If yes, by whom?</p>
Recruitment/retention	<p>Q1. What level (national, subnational) is in charge of recruitment of HRH?</p> <p>Q2. What is the level of vacancy and absenteeism rates for the main HRH categories?</p> <p>Q3. Is there a specific recruitment policy (such as zero-growth recruitment)?</p> <p>Q4. Can you estimate the number of public HRH staff leaving for the private or non-health sector?</p> <p>Q5. What are the main reasons for leaving the public sector for the private or non-health sector?</p> <p>Q6. Do current rules and procedures for hiring affect the ability to recruit and deploy staff where needed?</p> <p>Q7. Is there a clear career structure for lower-level cadres?</p>
Inbalance/equity	<p>Q1. Is there a national staff deployment strategy?</p> <p>Q2. How does it fit with the needs of poor/vulnerable settings and people?</p> <p>Q3. Is there a significant HRH distributional imbalance across settings?</p> <p>Q4. Are there major segments of the population that are seriously underserved?</p> <p>Q5. Are human resources distributed appropriately among the different types and levels of health services (hospital, ambulatory, home care, preventive care, etc.)?</p>
Migration	<p>Q1. Is international migration perceived as a major problem in the country?</p> <p>Q2. How do you count the health professional (physicians and nurses) who migrate overseas each year?</p> <p>Q3. For the total health workforce in the country, what share of the main HRH categories (including physicians, nurses, midwives, dentists and pharmacists) are not nationals?</p> <p>Q4. To what extent does internal migration of staff create distributional imbalance of HRH?</p> <p>Q5. Does internal and international migration affect the decision to train new types of providers?</p> <p>Q6. What are the main factors causing international migration?</p>
Supervision, leadership and performance assessment	<p>Q1. Is there any effort to set standards and supervise staff and monitor provider performance? By whom?</p> <p>Q2. What management and supervision system/mechanisms now exist? Are they adhered to?</p> <p>Q3. How are these mechanisms used to improve performance and optimize productivity?</p> <p>Q4. Are there incentives based on staff performance?</p> <p>Q5. Are there regular management meetings at the facility levels and follow-up procedures for decisions taken at these meetings?</p> <p>Q6. Are programme managers themselves trained in leadership? Are needs identified in leadership training? Are there programmes to train health leaders and managers?</p>
Job description	<p>Q1. Are there detailed job descriptions for the main categories of personnel at each of the health care delivery system?</p> <p>Q2. What categories of health workers do not have job descriptions?</p> <p>Q3. Are job descriptions discussed by staff and periodically revised?</p> <p>Q4. Are performance assessments based on job descriptions?</p> <p>Q5. What is the share of administrative activities in the job descriptions of the main categories of HRH?</p> <p>Q6. Are there procedures to improve the quality of care, including patient safety?</p>
Working conditions	<p>Q1. Are the living and working conditions of health workers adequate to attract, retain and motivate them and for them to be used effectively?</p> <p>Q2. Did the staff experience delayed payment in the last 12 months?</p> <p>Q3. Did health workers go on strike in the last 12 months?</p> <p>Q4. What is the level (%) of job satisfaction?</p>

LABOUR MARKET	
DIMENSION	QUESTIONS
Employment	Q1. How many funded vacant post are there? Q2. What is the unemployment rate for main categories of HRH? Q3. What is the share of the staff working part-time in the main categories? Q4. Does the country have a "ghost workers" problem? Q5. What is the share of staff in the main HRH categories performing a second health care-related job?
Wages/salaries	Q1. What are the average annual salaries of each category of HRH in comparison to salaries of comparable categories of other non-manual employees? Q2. Do other forms of income supplementation significantly increase HRH earnings? Q3. What methods are used for salary disbursement, and how efficient are they? Q4. What is the pay structure? Q5. Is there a zero-growth policy for health-sector wages?
Workload	Q1. How many hours per week do the main HRH categories work (including on-call hours)? Q2. How does this compare to the official number of hours per week? Q3. What are the trends in average numbers of patients seen weekly for each of the main HRH categories?
Sectors of activity/employers	Q1. What is the proportion of public government-employed health workers in each occupational category? Q2. Who are the main employers of HRH in the public sector? In the private sector? Q3. What is the share of self-employed workers for the main categories of HRH? Q4. What is the share of social-security workers among the general government employees?
Unions	Q1. What categories of HRH have their own unions? Q2. Is there a common union of all HRH? Q3. To what extent are there unions involved in developing policy and plans?
ECUATION, TRAINING AND RESEARCH	
DIMENSION	QUESTIONS
Education and Health training institutions	Q1. Is there a national HRH education and training strategy? Q2. What mechanisms exist to link supply of trainees to demand (quantitative and qualitative) of the health sector? Q3. Does the country have education and training institutions for the main HRH cadres? How many? Where are they? Q4. What types of training activities for the health workforce predominate? Who organizes them? What is their coverage? Q5. What are the accreditation criteria for health schools? Q6. Do you have a unit working on education of non-professional HRH?
Educational staff	Q1. Are there enough full-time-equivalent teachers for the main HRH categories? Q2. In which HRH disciplines are there shortages of teachers? Q3. Is the migration of HRH teachers a problem? In what sense? Q4. Is there a system for evaluating teachers' performance?
Graduates and entrants	Q1. Are data for total entrants and graduates available for recent years? Can these data be disaggregated by sex, age and citizenship? Q2. Does the current number of yearly graduates cover the needs for the main categories of HRH? Q3. What is the proportion of entrants who have successfully graduated, in recent years? Q4. What is the policy for admission to health professions schools?
Continuous education (CE)	Q1. Is there a strategy for providing continuous education? Q2. Do CE programmes exist in all the major areas where they are needed? Q3. Are the education and training programmes designed to match national health needs? Q4. Does the current and projected capacity of the available CE programmes match projected needs?

	<p>Q5. Are there recent evaluations of these training activities?</p> <p>Q6. What share of staff in the main HRH categories benefit from CE programmes?</p>
Research	<p>Q1. Have the planning units tried to identify their research needs?</p> <p>Q2. Are results of research used for policy development and planning?</p> <p>Q3. Who performs research on HRH issues in the country?</p>
HRH AND PRIORITY HEALTH PROGRAMMES	
DIMENSION	QUESTIONS
HIV/AIDS	<p>Q1. Is HIV/AIDS a big health concern in the country?</p> <p>Q2. Is there an HIV/AIDS programme in the country? Is HRH a specific issue in that programme?</p> <p>Q3. Are there enough trained HRH staff to treat people?</p> <p>Q4. If not, are training and other needs identified? Who does the training?</p> <p>Q5. What strategies now exist to meet these needs? Are they adhered to?</p> <p>Q6. To what extent are community health workers or new types of health workers being considered to improve the supply of HRH?</p> <p>Q7. What share of the main HRH categories' time is devoted to treating HIV?</p>
TB	<p>Q1. Is TB a major health concern in the country?</p> <p>Q2. Is there a TB programme in the country? Is HRH a specific issue in that programme?</p> <p>Q3. Are there enough trained HRH staff to treat people?</p> <p>Q4. If not, are training and other needs identified? Who does the training?</p> <p>Q5. What strategies now exist to meet these needs? Are they adhered to?</p> <p>Q6. To what extent are community health workers or new types of health workers being considered to improve the supply of HRH?</p> <p>Q7. What share of the main HRH categories' time is devoted to treating TB?</p>
Malaria	<p>Q1. Is malaria a major health concern in the country?</p> <p>Q2. Is there a malaria programme in the country? Is HRH a specific issue in that programme?</p> <p>Q3. Are there enough trained HRH staff to treat people?</p> <p>Q4. If not, are training and other needs identified? Who does the training?</p> <p>Q5. What strategies now exist to meet these needs? Are they adhered to?</p> <p>Q6. To what extent are community health workers or new types of health workers being considered to improve the supply of HRH?</p> <p>Q7. What share of the main HRH categories' time is devoted to treating malaria?</p>
Reproductive health and child health	<p>Q1. Are reproductive health or IMCI major health concerns in the country?</p> <p>Q2. Is there a reproductive health or IMCI programme in the country? Is HRH a specific issue in that programme?</p> <p>Q3. Are there enough trained HRH staff to treat people?</p> <p>Q4. If not, are training and other needs identified? Who does the training?</p> <p>Q5. What strategies exist to meet these needs? Are they adhered to?</p> <p>Q6. To what extent are community health workers or new types of health workers being considered to improve the supply of HRH?</p> <p>Q7. What share of the main HRH categories' time is devoted to treating reproductive health or IMCI diseases?</p>
Other national or regional priority health programmes	<p>Q1. Are there any regional or national priority programmes in addition to the above? (If so, describe it/them.)</p> <p>Q2. What are the specific needs for HRH posed by this programme/these programmes?</p>

MONITORING AND EVALUATION	
DIMENSION	QUESTIONS
Information/data availability	<p>Q1. What HRH information/data is available?</p> <p>Q2. Is the available HRH information/data nationally representative? Does it cover the private sector?</p> <p>Q3. Is there information at the subnational level? If yes, specify at what level (e.g. province, district).</p> <p>Q4. Is there a problem of shortage or oversupply of HRH?</p>
Staffing numbers	<p>Q1. How many categories of HRH are there? How many workers are in each category? Please provide all that you have.</p> <p>Q2. With the available information/data is it possible to distinguish gender or levels of qualification?</p> <p>Q3. Does the country have staffing norms such as number of nurses per doctor or per facility type according to the levels of care?</p>
Uses of information	<p>Q1. Is any office or body collecting this HRH information?</p> <p>Q2. Is any office or body using this information for HRH planning? If yes, which body?</p> <p>Q3. Are HRH plans or policies based on evidence?</p> <p>Q4. Is there a network of HRH information users or providers?</p> <p>Q5. Are stakeholders basing their activities in HRH on collected evidence?</p>
Monitor methods	<p>Q1. Has the country identified core indicators in order to monitor and evaluate HRH? Are there written down?</p> <p>Q2. Does the country have core indicators for some specific occupations, especially nurses?</p> <p>Q3. Besides staffing numbers, does the country collect information on education, employment and migration? Please list what is available.</p> <p>Q4. Does the Ministry of Health conduct HRH surveys or health censuses? If yes, when was the last one?</p> <p>Q5. Do you have an HRH information system? Is it included in the health information system?</p> <p>Q6. Cite an example of a best practice in your country in collecting HRH information?</p>
Sources	<p>Q1. Do the central office of statistics or professional associations have information on HRH?</p> <p>Q2. Does the country have population censuses or labour-force surveys? Do these sources make it possible to analyse HRH information?</p> <p>Q3. Are there available administrative records for HRH?</p> <p>Q4. What mechanisms exist for the systematic collection, analysis and feedback of health personnel information?</p> <p>Q5. Is there a HRH evidence network?</p>

6. "PANORAMA DE LA FUERZA DE TRABAJO EN ENFERMERÍA EN AMÉRICA LATINA"

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PRESENTACIÓN

En los últimos años la salud ha adquirido un lugar privilegiado en la agenda global al entenderse como cuestión central del desarrollo. El aumento de la pobreza e inequidades en el mundo globalizado, el aumento de los riesgos debido a los cambios ecológicos, demográficos y socio-económicos, la comprensión de los macro determinantes, los efectos negativos de las reformas y su impacto en la salud pública, han determinado esta prioridad así como la generación de alianzas globales para el desarrollo social, el control de enfermedades y una renovada acción a favor de la atención primaria de salud.

En ese contexto, adquieren también relevancia los recursos humanos en salud, aspecto desfavorecido por las reformas sectoriales, cuya desatención en los últimos diez años provocó consecuencias negativas en el desarrollo de la atención de salud. Actualmente, tanto en las Américas, como en el resto del mundo, la situación de recursos humanos en salud atraviesa por una triple problemática que reúne viejos problemas junto a los derivados de la Reforma de los 1990 y los consecuentes de la globalización. En estas definiciones se inscribe la denominada crisis de la fuerza de trabajo en enfermería que, atravesada por dificultades de toda índole, demanda análisis complejos, sinergias y alianzas para pronunciarse e intervenir políticamente identificando cuestiones centrales y orientando rumbos estratégicos de transformación a favor de asegurar servicios de enfermería a las poblaciones.

El presente documento incluye una visión panorámica de **la fuerza de trabajo en enfermería en América Latina** y ha sido elaborado por la Organización Panamericana de la Salud como base para el análisis de esta importante dimensión de la salud en la Región. Axial mismo, representa una contribución al Consejo Internacional de Enfermeras (CIE) para obtener una mirada global sobre la estructura y dinámica de la fuerza de trabajo de la enfermería en el mundo.

El análisis de la fuerza de trabajo en enfermería que se ha realizado, toma como marco la concepción de Pedro Brito Quintana (OPS/OMS, 2002) de *campo de recursos humanos en salud* entendiendo que aquella estructura y dinamiza el campo en todas sus dimensiones activando procesos, tensiones y conflictos inherentes a la entrega del servicio de salud. Las cuatro dimensiones centrales están constituidas por el *trabajo* (contexto, naturaleza organización y condiciones), la *educación* (producción y transferencia de conocimientos), el *mercado laboral* y los *procesos de profesionalización*. Dichas variables están, a su vez, sujetas a y son productoras de políticas, regulaciones y mecanismos de gestión, dinámicas todas en las que participan activa o pasivamente actores sociales con diversos intereses, capacidades y grados de poder en el contexto de la dinámica social y de salud.

El estudio se refiere a la categoría "enfermeras," que según el país, se reconocen con denominaciones diferentes (licenciadas o enfermeras) y hace también alusión al grupo de auxiliares y técnicos medios en enfermería.

Los datos cuantitativos incluidos en este informe corresponden fundamentalmente a información oficial de la Organización Mundial de la Salud, Organización Panamericana de la Salud, la Organización Internacional del Trabajo, el Banco Interamericano de Desarrollo y los Ministerios de Salud de los países. Información complementaria proviene de resultados de investigaciones publicadas y en proceso de publicación en revistas científicas, tesis doctorales y memorias de eventos científicos referenciadas en la bases de datos de BIREME – LILACS (OPS/OMS) y revelan aspectos cualitativos tales como las condiciones de trabajo, el impacto de las cuestiones relacionadas a la reforma sectorial, la cultura, las migraciones y el proceso de trabajo en enfermería.

Se consultaron informes de reuniones de expertos en enfermería publicados y en proceso de publicación por la Unidad de Recursos Humanos de la OPS; informes sobre política, regulación y planificación de los recursos humanos en salud de la Organización Mundial de la Salud, la Organización Panamericana de la Salud y el Observatorio de Recursos Humanos de la OPS en Washington los que se encuentran disponibles en Internet o pueden ser solicitados. Se visitaron portales de instituciones y organizaciones de enfermería. Aspectos referidos a salarios fueron consultados a miembros de los Consejos Directivos de colegios de enfermeras y asociaciones académicas y gremiales de la Región y a los Observatorios de Recursos Humanos de la OPS de los países. Artículos de prensa y de revistas de salud disponibles en Internet y en papel, sirvieron para conocer situaciones específicas en países y regiones sobre problemas como la escasez de enfermeras, conflictos laborales, impactos de las reformas de salud y migraciones.

La búsqueda de información confirma carencias, insuficiencias, subregistro en variables fundamentales y, a menudo, disparidad en los años de información. Esta situación evidencia la importancia de monitorear la dinámica de la fuerza de trabajo de enfermería y de producir evidencias relacionadas a dimensiones clave sobre la cuales existe poca o ninguna información sistematizada; entre ellas la oferta anual de profesionales, la dinámica de aspirantes y matriculados; el número de vinculados a las instituciones públicas y privadas, cargos vacantes, migración, deserción y desempleo.

El documento presenta la primera parte sobre trabajo y fuerza de trabajo en enfermería, la segunda sobre educación, la tercera sobre ciencia, la cuarta sobre organizaciones profesionales de enfermería y la quinta sobre políticas de enfermería. Concluye con los principales desafíos a enfrentar en los próximos años para abordar deficiencias y producir reorientaciones a favor de la salud de los pueblos de América Latina.

7. "GENDER AND ACADEMIC MEDICINE: IMPACTS ON THE HEALTH WORKFORCE"

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INTRODUCTION

To be effective, the campaign to revitalize academic medicine must address the gender dimensions of how doctors are selected, trained, and promoted. Existing research on gender and academic medicine has primarily examined the role of female physicians, the "feminization of medicine," and the needs of female patients.⁴ Although these are important, they do not represent the spectrum of gender dimensions affecting academic medicine and the range of challenges facing decision makers. Furthermore, issues of gender and academic medicine also concern developing countries around the world.

Academic medicine has the opportunity to improve the quantity and quality of the health workforce as a means of strengthening the broader health system. To support this approach, the field must recognize that healthcare providers are not a homogeneous group but individuals facing choices throughout their careers that influence their selection of specialty and where and how they provide health care. Gender plays an important role in this decision process. The concept of gender is rooted in societal beliefs about the appropriate roles and activities of men and women and in the behaviors and status that result from those beliefs. We believe that the goal is not just ensuring equal numbers of men and women (gender equality) but also guaranteeing fairness and justice in the professional opportunity structure (gender equity).

Academic medicine must address the gender dimensions of enrolment, curriculum, and promotion to have a positive impact on human resources for health around the world. "Human resources for health" refers to the range of personnel that deliver the public health, clinical, and environmental services that make up the health system. Academic medicine plays a critical role in human resources for health by training students to become accredited practitioners. Thus, fundamentally, academic medicine contributes to the public health system by creating the "stock" of individuals who subsequently form a large part of the health labor market. While in many parts of the world, health care is provided within the informal sector, this article focuses on physicians trained within the academic medical system.

Incorporating gender dimensions into enrolment, curriculum, and promotion practices will illuminate new mechanisms for how academic medicine can improve the number, distribution, and skill mix of the health workforce. This is especially important in the context of increasing pressure to achieve the World Health Organization's millennium development goals, to scale up vertical public health programs, and to address the increasing "brain drain" of doctors and nurses who migrate from developing to developed countries, from rural to urban areas, and from the public to the private sector.

SUMMARY POINTS

- Improving the health workforce through increased numbers and improved distribution and skill mix of providers is contingent on identifying and addressing the gender dimensions of enrolment, curriculum, and promotion in academic medicine
- Gender equality in enrolment and graduation rates is not enough; gender equity will improve the extent, distribution, and skill mix of the health workforce
- A better evidence base related to gender and academic medicine is needed
- A more focused mentoring and support system throughout the academic medical process is also required
- Both male and female leaders of academic medicine should rethink their traditional values

FINAL WORDS

Gender presents challenging issues and critical questions for decision makers at all levels of academic medicine. As a conservative, male dominated institution, academic medicine may not easily examine the gender dimensions of its operations and values. However, it is critical to view the issues raised by gender as an opportunity to help revitalize academic medicine and strengthen its contributions to the health system rather than as a threat to the profession. Improving gender equity is essential to the future of academic medicine; ensuring the health system's most effective response to the public health challenges of the future may well depend on it.

8. "HUMAN RESOURCES FOR HEALTH: OVERCOMING THE CRISIS"

CHEN, L.; EVANS, T.; ANAND, S.; BOUFFORD, JI.; BROWN, H.; CHOWDHURY, M.; CUETO, M.; DARE, L.; DUSSAULT, G.; ELZINGA, G.; FEE, E.; HABTE, D.; HANVORAVONGCHAI, P.; JACOBS, M.; KUROWSKI, C.; MICHAEL, S.; PABLOS-MENDEZ, A.; SEWANKAMBO, N.; SOLIMANO, G.; STILWELL, B.; DE WAAL, A.; WIBULPOLPRASERT, S.

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ABSTRACT

In this analysis of the global workforce, the Joint Learning Initiative—a consortium of more than 100 health leaders—proposes that mobilization and strengthening of human resources for health, neglected yet critical, is central to combating health crises in some of the world's poorest countries and for building sustainable health systems in all countries. Nearly all countries are challenged by worker shortage, skill mix imbalance, mal-distribution, negative work environment, and weak knowledge base. Especially in the poorest countries, the workforce is under assault by HIV/AIDS, out-migration, and inadequate investment. Effective country strategies should be backed by international reinforcement. Ultimately, the crisis in human resources is a shared problem requiring shared responsibility for cooperative action. Alliances for action are recommended to strengthen the performance of all existing actors while expanding space and energy for fresh actors.

9. "HUMAN RESOURCES AND HEALTH OUTCOMES: CROSS-COUNTRY ECONOMETRIC STUDY"

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THE LANCET

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SUMMARY

Background

Only a few studies have investigated the link between human resources for health and health outcomes, and they arrive at different conclusions. We tested the strength and significance of density of human resources for health with improved methods and a new WHO dataset.

Methods

We did cross-country multiple regression analyses with maternal mortality rate, infant mortality rate, and under-five mortality rate as dependent variables. Aggregate density of human resources for health was an independent variable in one set of regressions; doctor and nurse densities separately were used in another set. We controlled for the effects of income, female adult literacy, and absolute income poverty.

Findings

Density of human resources for health is significant in accounting for maternal mortality rate, infant mortality rate, and under-five mortality rate (with elasticities ranging from -0.474 to -0.212 , all p values ≤ 0.0036). The elasticities of the three mortality rates with respect to doctor density ranged from -0.386 to -0.174 (all p values ≤ 0.0029). Nurse density was not associated except in the maternal mortality rate regression without income poverty ($p = 0.0443$).

Interpretation

In addition to other determinants, the density of human resources for health is important in accounting for the variation in rates of maternal mortality, infant mortality, and under-five mortality across countries. The effect of this density in reducing maternal mortality is greater than in reducing child mortality, possibly because qualified medical personnel can better address the illnesses that put mothers at risk. Investment in human resources for health must be considered as part of a strategy to achieve the Millennium Development Goals of improving maternal health and reducing child mortality.

INTRODUCTION

Human resources for health are clearly a prerequisite for health care, with most medical interventions needing the services of doctors, nurses, or other types of health worker. In turn, health care is one of the determinants of population health, with other determinants including socioeconomic, environmental, and behavioral factors. These two relations generate a link between human resources and population health, even if the link might be weakened by the presence of non-health care factors. Here, we test the extent to which human resources affect population health outcomes. The population health outcomes that we focus on are the standard measures of maternal, infant, and under-five mortality. All three have been incorporated as indicators of the United Nations Millennium Development Goals (MDGs), and various exercises are underway by national governments, international agencies, and others to investigate how the mortality rate reduction targets can be achieved by the year 2015. The results of this study will help to assess the role of human resources for health in achieving the health MDGs, including tradeoffs with other factors.

The few cross-sectional studies that have studied the effect of health workers on health outcomes have reached differing conclusions. To our knowledge, there are five cross-country studies that use either doctor density or doctor and nurse densities as independent variables to account for mortality outcomes. Robinson and Wharrad found that a high density of doctors has a beneficial effect on maternal, infant, and under-five mortality. By contrast, Cochrane and colleagues showed doctor density had an adverse effect on infant and perinatal mortality (they call it a doctor anomaly), but no effect on maternal mortality.

Conversely, Kim and Moody recorded no significant association between doctor density and infant mortality, and Hertz and co-workers did not note an association between doctor density and either infant or maternal mortality. Three of these five studies also investigated the link between nurse density and health outcomes, and all recorded a nurse invisibility—in other words, no association between nurse density and maternal mortality, infant or under-five mortality, and infant mortality.

All five studies have relevant shortcomings, which stem from the methods, variables, and procedures they use. They all used national income per person as an independent variable, but they all measured national income in US\$ at market exchange rates rather than in international dollars at purchasing power parity (PPP) rates. This method will exaggerate the real income gap between richer and poorer countries and lead to a biased estimate of the income coefficient. None of the studies included absolute poverty as an explanatory variable, which has been shown to have an effect on health outcomes independent of average income per person.

Furthermore, all five studies used stepwise regression to choose their independent variables from larger sets of variables, which might, according to the authors, be relevant. In selecting final independent variables by use of statistical criteria rather than a priori argumentation, all studies probably overfit the data, and the equation(s) chosen by stepwise regression from the sample(s) used might not generalize well to the population.

Thus, for example, Hertz and colleagues drop national income per person from their final equations but include instead total fat residual and total fat calories consumed, even though income is a proxy for many (other) factors that affect infant and maternal mortality.

In addition to these cross-country studies, a few within country studies have investigated the link between densities of human resources for health (per population or per patient) and mortality or intermediate health outcomes. Some report no association whereas others find that high densities can be associated with better or worse health outcomes. No “generalizable” conclusion emerges from these within-country studies, which use different methods, levels of analysis (facility vs geographical unit), and explanatory variables.

The aim of our study is to investigate the cross-country relation between maternal and child mortality and human resources for health using a parsimonious framework that allows us to control for the main socioeconomic determinants of health. Our aim is simply to test the strength and significance of density of human resources for health, not to provide an exhaustive set of independent variables to maximize explanatory power—even if reliable and comparable cross-country data were available to enable us to do so.

Our study improves on the previous five cross-country studies because we use a new WHO dataset on human resources for health, which is both more reliable and more comprehensive than any hitherto available. Moreover, unlike previous studies, we measure national income per person in PPP\$, we include absolute poverty (the proportion of a country's population living below PPP\$1-a-day) as an explanatory variable, and we adopt an improved model specification and regression procedure.

TABLES

TABLE 1: MEANS (SDs) OF VARIABLES

	Regressions without income poverty (n = 117)	Regressions with income poverty (n = 83)
Maternal mortality rate (per 100,000 livebirths)	404.9 (488.6)	424.7 (508.5)
Infant mortality rate (per 1000 livebirths)	57.7 (51.8)	59.9 (51.3)
Under-five mortality rate (per 1,000 children under five)	16.5 (15.6)	17.1 (15.6)
Gross national income per person (PPP\$)	5688.5 (5336.3)	4629.3 (3702.2)
Income poverty (% population living below PPP\$ 1-a-day)	...	19.8 (21.2)
Female adult literacy rate (% of female population age 15 years and older)	73.8 (24.6)	74.2 (25.7)
Doctor density (per 10,000 population)	22.1 (24.5)	23.1 (27.2)
Human resources for health density (per 10,000 population)	34.4 (34.9)	35.3 (37.5)

TABLE 2: MULTIPLE REGRESSION EQUATIONS WITH HUMAN RESOURCES FOR HEALTH AS AN INDEPENDENT VARIABLE

Dependent variables	Regressions without income poverty			Regressions with income poverty		
	Maternal mortality	Infant mortality	Under-five mortality	Maternal mortality	Infant mortality	Under-five mortality
Independent variables						
Constant	14.978	11.183	10.274	12.071	9.809	8.653
	(16.810)	(19.295)	(16.862)	(9.915)	(11.093)	(9.237)
	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Gross national income per person	-0.881	-0.710	-0.741	-0.558	-0.570	-0.583
	(-8.504)	(-10.539)	(-10.466)	(-4.022)	(-5.657)	(-5.461)

TABLE 3: MULTIPLE REGRESSION EQUATIONS WITH DOCTORS AND NURSES AS SEPARATE INDEPENDENT VARIABLES

Dependent variables	Regressions without income poverty			Regressions with income poverty		
	Maternal mortality	Infant mortality	Under five mortality	Maternal mortality	Infant mortality	Under five mortality
Independent variables						
Constant	13.596	10.362	9.234	10.302	9.009	7.598
	(13.999)	(16.264)	(13.996)	(8.390)	(9.573)	(7.741)
	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Gross national income per person	-0.776	-0.647	-0.660	-0.403	-0.500	-0.488
	(-7.326)	(-9.307)	(-9.174)	(-2.959)	(-4.784)	(-4.484)
	<0.0001	<0.0001	<0.0001	0.0041	<0.0001	<0.0001
Income poverty	0.158	0.103	0.129
				(1.925)	(1.633)	(1.972)
				0.0580	0.1065	0.0522
Female adult literacy	-0.292	-0.245	-0.256	-0.309	-0.272	-0.281
	(-1.351)	(-1.726)	(-1.742)	(-1.471)	(-1.689)	(-1.670)
	0.1793	0.0872	0.0843	0.1454	0.0952	0.0990
Doctor density	-0.325	-0.183	-0.225	-0.386	-0.174	-0.216
	(-4.450)	(-3.822)	(-4.534)	(-5.230)	(-3.079)	(-3.657)
	<0.0001	0.0002	<0.0001	<0.0001	0.0029	0.0005
Nurse density	-0.162	-0.062	-0.047	-0.102	-0.044	-0.024
	(-2.034)	(-1.186)	(-0.874)	(-1.250)	(-0.702)	(-0.364)
<i>n</i>	117	117	117	83	83	83
<i>R</i>	0.808	0.827	0.835	0.823	0.799	0.808
<i>F</i>	117.628	133.807	141.218	71.695	61.331	64.855
<i>p</i>	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Note: All dependent and independent variables were transformed into natural logarithms for the regressions. The numbers in the cell are *b* (regression coefficient), *t_b* (t value of *b*), and *p* value.

DISCUSSION

Our findings are consistent across all model specifications used. Thus, investment in human resources can be expected to contribute significantly to the achievement of the MDGs—in addition to and independently of policies that bring about income growth, poverty reduction, and expansion of female education. As we expected, the human resources for health elasticity of the maternal mortality rate is higher than that of the infant and the under-five mortality rate. The effect of human resources for health is greater in reducing maternal mortality than either infant or child mortality because qualified medical personnel are able to address a larger proportion of conditions that put mothers at immediate risk of death compared with infants or children. The higher human resources for health elasticity of under-five mortality than of infant mortality might be the result of similar considerations: infants may face fewer medical conditions that put them at risk of death than children between 1 and 4 years of age, because infants may be relatively better protected by breastfeeding and other behaviors of mothers.

In view of these broad findings for our aggregate measure of human resources for health, we proceeded to investigate the effect of specific types of health workers, and disaggregated the human resources for health variable into what we judged to be fairly homogeneous categories. Thus, instead of aggregate human resources for health, doctors and the combined category of nurses and midwives were entered separately in a parallel set of regressions.

As was the case for human resources in aggregate, doctor density was important in accounting for all three health outcomes. Thus, we reject any notion of doctor anomaly or invisibility, as indicated in some earlier studies. Our estimated elasticity of doctor density ranged from -0.174 to -0.386 (table 3). Further, the coefficient of nurse density was significant ($p=0.0443$) when maternal mortality rate was the dependent variable in the regression without income poverty. In the other regressions in table 3, the coefficient on nurse density did not differ much from zero. However, in view of the measurement error in our nurses' variable (as discussed in Data sources), we would expect the coefficients on nurse density to be biased towards zero. Hence, the insignificant coefficients recorded for nurse density in table 3 cannot be taken to conclude that nurses do not matter.

Our range of estimates for the elasticity of health outcomes with respect to gross national income per person in tables 2 and 3 (-0.403 to -0.881) is within the range reported across other studies. We included income poverty in the regressions to take account not only of average income but also of its distribution between the poor and non-poor. Holding average income per person constant, we noted that a reduction in income poverty significantly reduced maternal, infant, and under-five mortality rates (p values 0.0522 – 0.1065). While income per person remains significant, its elasticity is diminished by the introduction of income poverty.

By contrast, the size of the coefficients on aggregate density of human resources for health, doctor density, and female adult literacy remain substantially unaffected by the inclusion of income poverty. Female adult literacy has the predicted negative coefficient in the regression equations for maternal, infant, and under-five mortality rates, with or without income poverty. Although the coefficient of female adult literacy was significant for the infant and under-five mortality regressions (p values 0.0799 – 0.1147), its significance is lower for maternal mortality rate. The higher significance of female adult literacy in accounting for infant and under-five mortality rates seems plausible since the causes of maternal mortality are less likely to be affected by individual behavior and lifestyle choices than are the causes of infant and child mortality.

Our results seem to be consistent and robust across the 12 regression equations estimated. As more comprehensive and disaggregate data become available on the health workforce, more detailed analyses will be possible to undertake. For example, the categories of community health workers, social workers, and alternative and complementary medicine practitioners should be included in the regressions since they might have an effect on health outcomes. Such health workers exist in all countries, although their relative proportions might differ between the developing and developed countries. Thus, in relative terms, community health workers may be more numerous in developing countries whereas social workers are more common in developed countries. A priori, we have no reason to expect a strong correlation across countries between the total numbers in the omitted categories and our more narrowly defined human resources for health variable(s). Their exclusion will, thus, not necessarily bias the coefficient(s) of our variable(s). The extent of any bias depends on the size of the effect of the omitted variable and its correlation with the included variable.

In this article, we have not adjusted for differences in skill level or occupational mix across countries or for the geographical—eg, urban or rural—distribution of human resources within countries. Again, omission of geographical distribution as an explanatory variable might not have much effect on the coefficient of our density of human resources for health because urban bias in distribution of these resources is likely to arise across the range of countries with different densities of human resources for health. Nonetheless, including it as a separate independent variable, when data become available, should help us to quantify the health losses from mal-distribution of human resources for health.

We did not adequately account for the degree of substitutability or “complementarity” between the different types of health workers. It would be an interesting exercise to incorporate different substitutability

assumptions—for example, between doctors and nurses—through appropriate choice of functional form for the regression equations.

Further within-country analyses of human resources for health should clearly be undertaken. It is possible that the strength of the relation between human resources density and health outcomes is different in different countries or regions. For instance, worker deficit regions such as sub-Saharan Africa¹ may show a particularly large effect of human resources for health. Within-country, cross-district or time-series, studies are also likely to avoid definitional and comparability difficulties arising from non-standard definitions of health-worker categories across countries. Finally, district-level or local-level studies might help to account for the actual health-service activities of health workers and to explain their relative effect on different outcomes—eg, of doctors and nurses on maternal and child mortality.

Our cross-country results strongly confirm the importance of human resources for health in affecting health outcomes. Although the performance of human resources in attaining health-system goals will be dependent on their distribution across occupations and geographical regions, and other factors such as incentive and decision-making structures, our findings confirm that human resources for health densities affect health outcomes independently of other determinants.

An implication of our results is that investing in human resources for health should be explicitly considered as part of a strategy to achieve the MDGs—in addition to raising national income per person, reducing absolute poverty, and expanding female education. Ignoring human resources for health will, at best, overlook an important determining factor in achieving the health MDGs; at worst, it could disregard a constraint that renders these goals unattainable.

10. "RESPONDING TO THE GLOBAL HUMAN RESOURCES CRISIS"

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SUMMARY

The global community is in the midst of a growing response to health crises in developing countries, which is focused on mobilizing financial resources and increasing access to essential medicines. However, the response has yet to tackle the most important aspect of health-care systems—the people that make them work. Human resources for health—the personnel that deliver public-health, clinical, and environmental services—are in disarray and decline in much of the developing world, particularly in sub-Saharan Africa. The reasons behind this disorder are complex. For decades, efforts have focused on building training institutions. What is becoming increasingly clear, however, is that issues of supply, demand, and mobility (transnational, regional, and local) are central to the human-resource problem.

Without substantial improvements in workforces, newly mobilized funds and commodities will not deliver on their promise. The global community needs to engage in four core strategies: raise the profile of the issue of human resources; improve the conceptual base and statistical evidence available to decision makers; collect, share, and learn from country experiences; and begin to formulate and enact policies at the country level that affect all aspects of the crisis.

Health crises around the world, especially that of HIV/AIDS in sub-Saharan Africa, have energized the response of the international community. Reversing four decades of stagnation, foreign aid for health is finally increasing, as shown by enhanced financial flows now coalescing around the UN Millennium Development Goals. Parallel efforts are underway to increase access to essential vaccines and drugs, as indicated by advocacy campaigns to lower the price of antiretroviral drugs for HIV/AIDS.

Although these mobilization efforts deserve praise, the most important aspect of health systems—the people that make them work—has yet to be tackled. Stated simply, in most low-income countries, there is insufficient human capacity to absorb and apply newly mobilized resources because the workforce is unavailable. Furthermore, where the workforce is available and competent to undertake the tasks, there are several forces, both within the health-care system and external to it, which diminish their potential contribution. All types of health personnel are needed to deliver health interventions from public-health to clinical services, from primary to tertiary care. In different systems of health care, there are also different cadres of health workers, from professionals to indigenous healers, who contribute to the promotion and protection of health. Without a motivated, competent, and well-funded workforce, there is a danger that the infusion of new money and drugs to address health problems of national and global importance will be either misused or wasted, or both.

Challenges with respect to human resources vary greatly between and within countries, and are associated with the political context of a country. Reports from sub-Saharan Africa underscore the depth and extent of the challenge in the Region. Senior officials in Ethiopia, Nigeria, and Uganda have all cited lack of health personnel as a main constraint to mobilizing responses to health challenges. The commitment of

Botswana, a comparatively rich African country, to provide free antiretroviral therapy to all eligible citizens is being hindered, not by lack of money but by lack of health personnel.⁴ Notably, the gaps in the workforce do not generally relate to doctors, but to nurses and other classes of health worker who constitute the bulk of the workforce. The difficulties caused by low staff numbers are compounded by morale problems, skill imbalances, and geographical mal-distribution, most of which are related to poor human-resource management. Doctors and, more importantly, nurses and allied medical professionals are increasingly on the move within their countries, within regions, and across the international labor market. Health challenges, such as the HIV/AIDS epidemic, impose additional pressures on health workers in their workplaces and at home, exposing them to contagious hazards, which adversely affect the morbidity and mortality of the workforce. How can countries grapple successfully with the demands of health crises and the requirements of transformed health sectors if they lack the very foundation of health systems—motivated, trained, and supported people?

Human resources, unfortunately, rank low on the health policy agenda of both national governments and international agencies. Although difficulties with workforces frustrate most social sectors, health workers have been particularly neglected. The workforce in many low-income countries is adversely affected by severe underinvestment from the national funds, as well as from external sources.

Training and human-resource management do not compete well for policy attention with elite science or macroeconomic issues. Reform of the health sector has not fully addressed the necessary human infrastructure, and has assumed that workers will be available, motivated, and able to undertake newly assigned functions. Furthermore, fiscal discipline depends on restriction of staff numbers and compensation levels, with staff salaries now consuming 60–80% of diminished public budgets in the health sector. Driven by financial limitations, workforce planning by ministries of health has been unable to match staff requirements, the needs of the population, and the health system as a whole. The quality of the work environment is deteriorating and, in general, educational and training institutions in low-income countries are starved of funds. Donors and development agencies, important forces shaping the policy agenda, lack coherent and integrated investment strategies to strengthen the workforce, resulting in an overemphasis on workshops and training sessions that have an unclear effect. In summary, investment strategies remain inefficient and misallocated in order for real capacity building to take place within countries.

In a series of international meetings in 2002–2003, including the Global Forum on Health Research, human resources repeatedly emerged as the most important constraint in responding to health crises. An informal global network of health leaders has, therefore, begun to search for fresh understanding and new solutions. Here, we provide a preliminary analysis of the challenge, review our knowledge base, and propose some approaches that deserve early attention. We adopt a global perspective but focus on sub-Saharan Africa, where health needs are greatest and health sector responses have been insufficient.

CONCLUSION

To address the problems that face global health, an increase in money and drugs, although positive, is insufficient. Far more important is the need to strengthen the health-care workforce in communities, districts, and nations to address the health challenges and to use the resources and interventions for effective care and management of systems. Human-resource development is a long-term process, needing years of steady investment but yielding high and sustained returns. Today's challenges are due in no small measure to previous neglect. Ongoing health crises, such as the HIV/AIDS epidemic, however, cannot wait for long-term returns.

A dual-track approach is indicated—initiating immediate actions while investing now for the long-term. Development and support of the people who constitute the human infrastructure of health-care systems is essential for achieving better health. To reverse decades of neglect, decision makers should begin now, first by recognizing the problem and second by fixing it through the immediate implementation of potentially effective strategies. Human resources do not exist in a vacuum, and great investment must be made to facilitate the systems to support and foster the efficacy of human resources for health. Donors can support

these developments by acknowledging the importance of human resources in efforts to achieve equity in health, and by stepping up their investments in this endeavor. National leadership at the highest level is essential and will only come with heightened awareness of the fundamental importance of human resources and the development of new methods and strategies. The road is long, there are few short cuts, but the time to begin is now.

11. "COMPLEXITY AND HEALTH FORCE ISSUES"

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MARCH 03, 2004
(DRAFT OF JLI WORKING PAPER 6-2)

INTRODUCTION

Improving health is a frustrating issue. Today, we have the knowledge and tools to tackle most of the major health problems we face. There is increasing political interest in health improvement that stems from the growing realization of the long term costs to society from epidemics (e.g., SARS), lifestyle-related illness (e.g., as a consequence of smoking or obesity), and the effectiveness of drug and surgical therapies that have turned once killer diseases into chronic conditions (e.g., many heart ailments). The pace of change in technology is creating ever-growing expectations of health systems. To address some of these issues and the disparities in health outcomes worldwide, donor organizations such as the World Bank have also increased investment in health system development.

Despite the knowledge, resources, and will that have been aimed at the issue, there is real frustration at the difficulties encountered in implementing programs of health improvement. One of the major and often overlooked factors in the success or failure of such efforts is the health care workforce.

Common to all health systems and countries is their dependence on an effective workforce able to deal with the challenges of health improvement. With need and demand increasing, countries are concerned about the workforce supply for the future. In an increasingly global society, with skills that can cross national barriers, this has become an issue for international attention. In many countries the attitudes of younger generations to work are different to those of current health workers. Access to the Internet, awareness of alternative cultures, and attitudes towards work and employment have led to changes that health policy makers and employers need to consider.

These are among the many examples of "wicked" issues [Rittel and Webber, 1973] in health workforce planning and development. Wicked issues are those that seem to defy solution, or where seemingly sound interventions turn out to have unexpected consequences and results. Solutions that worked in one place fail when imposed on others. Ideas that remedy one problem can create a new set of circumstances, often with unintended consequences that then need resolution.

Whilst not always the case, it is often workforce factors that create some of this complexity. A better understanding of complexity and the workforce will help countries to better handle some of these wicked issues.

Some examples of these experiences, with a particular emphasis of how they relate to workforce issues, are given in the scenarios set in boxes. These situations will be common and are compiled from the experiences of many countries. These scenarios are generalized to enable readers to adapt them to their own situations.

- Scenario 1 highlights experiences in the use of financial allocations and incentives, describing an all too common scenario of how financial incentives can create or exacerbate a wicked issue.
- The experiences in Scenario 2 show how innovation can be blocked by thinking the way we, health policy makers and health workers, always have. They illustrate the need for an element of bravery and openness of mind in confronting current ways of thinking; combined with building on current effective systems, even if messy, unusual, and unstructured.

- Scenario 3 gives some examples of new types of workers and illustrates how rigidity in job roles and regulation can hamper progress. Staff will become more dependent on the self-esteem they get from their profession if they don't get it from their job, and regulatory and educational frameworks can exacerbate this territorial behavior.
- Scenario 4 highlights experiences faced by many who have tried to impose organizational structures to achieve changes in output and outcome. They illustrate the rather common scenario of seemingly logical, national directed changes to organizational structures, eroding patterns and processes needed for effective delivery.
- The supply of staff, covered in Scenario 5, revolves around the frustrating theme of health professionals making unanticipated career choices and the difficulty of ensuring the right number of staff, with the right skills, at the right time, in the right place.

We see these “wicked” scenarios, experiences, and situations as examples of well-documented phenomena in complex systems.

CONCLUSION

Health workforce issues are “wicked” issues; and they are likely to become even more so as time goes by. Addressing such complex issues will require us to be willing to question some of our underlying mental models. To paraphrase Einstein, we cannot solve our current health workforce issues using the thinking and mental models that created them in the first place. While there is clearly a need for further dialogue, research, and testing, we believe that new ways of thinking that borrow from the science of complex adaptive systems hold great promise for improving our approach to these issues.

ILLUSTRATIONS

FIGURE 1: KEY CONCEPTS FROM COMPLEXITY SCIENCE

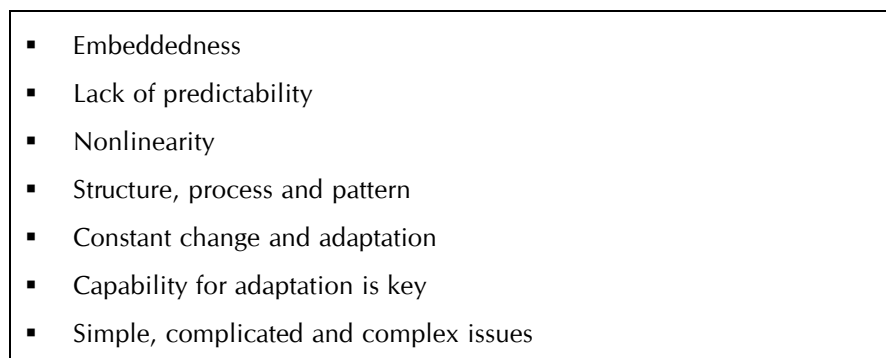


FIGURE 2: SYSTEMS ARE EMBEDDED WITHIN SYSTEMS

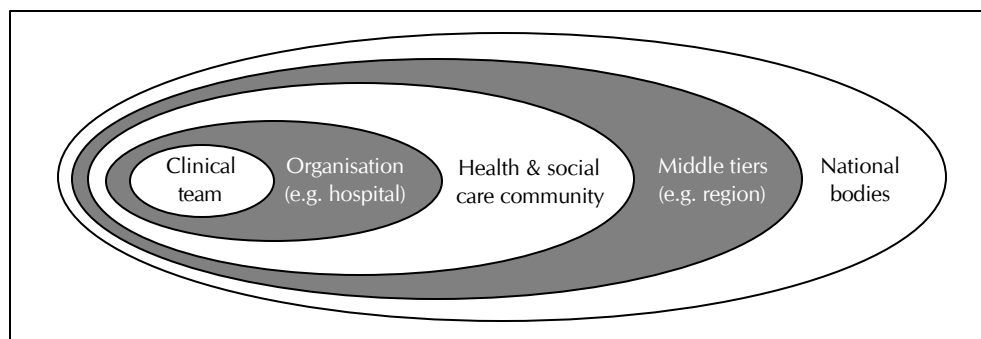


FIGURE 3: KEY THEMES FOR HEALTH WORKFORCE PLANNING

- Design jobs that people want to do; that is, jobs that are consistent with what we know about the attractor patterns in the system.
- Recognise and work with other, local patterns in the system in job design.
- Design jobs and workforce development programs that place a premium on flexibility and adaptability.
- Recognise the importance of local context—the particular structures, processes, and patterns that are already in place—when spreading successful practices.
- Education, regulatory and organisational systems must support the above themes.
- Techniques of workforce planning must see the system through the lens of complexity.

12. "HUMAN RESOURCES FOR HEALTH AND DEVELOPMENT: A JOINT LEARNING INITIATIVE"

WORKING GROUP INNOVATION MEETING;
PART II – REPORTS ON COUNTRY CONSULTATIONS"
MARCH 11-12, 2004
CRISTAL PALACE
DIPUTACIÓN 257
BARCELONA, SPAIN

CONCLUSION

At the end of the day, the entire group was asked to collectively answer the following question: **What would be the most important HRH messages to the JLI and WHO, on actionable steps needed in the Region?**

Summary of Key Proposed Messages from Participants:

- Need to increase support for education/training programs
- Need a more qualitative approach to research in HRH, tool box for qualitative methods (including social cost of reforms on HRH and better planning)
- WB/WHO/donors: please collaborate on HRH strategy, work with each other and with country (do not compete), take a 'Hippocratic oath' and realize there could always be negative repercussions of policy decisions
- Need to decrease fragmentation at a global level re: support to country HRH planning – guidelines/structure to approach
- Need HR models for intersectoral collaboration in global health, or even from other sectors if not available in HRH specifically
- Help us build database of evidence for this region, and include NGOs/others in analysis being conscious of political influence
- Be sure to go beyond doctors and nurses in workforce planning
- Increase use of local experts as opposed to outside experts
- Need long-term perspective and engagement
- Global attention to ethical dimensions of workforce migration

13. "TACKLING THE CRISIS IN HUMAN CAPACITY DEVELOPMENT FOR HEALTH SERVICES"

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SUMMARY

Human resources are central to planning, managing, and delivering health services. In most countries personnel account for a high proportion of the national budget for the health sector—often 75 percent or more. Despite the importance of human resources to the functioning of health systems, there have been few concerted efforts to address the severe staff shortages facing the health sector in many countries.

This issue of *The Manager* provides a comprehensive framework for addressing human capacity development and presents steps for developing a strategy that will help managers sustain a supply of adequately trained health staff. It examines four components of planning and managing the workforce: policy and financial requirements, human resource management, partnerships, and leadership. The accompanying case scenario may be used for staff development and training.

14. "IMPROVING COMMUNITY PUBLIC HEALTH SYSTEMS DATA"

REPORT ON STUDY CONDUCTED BY
THE NATIONAL ASSOCIATION OF COUNTY AND CITY HEALTH OFFICIALS (NACCHO)
FUNDED BY THE ROBERT WOOD JOHNSON FOUNDATION
1999

SUMMARY

The National Association of County and City Health Officials (NACCHO), a national organization of local health officials, conducted a 1999 national survey of local public health agencies in order to profile local public health infrastructure. Local health departments have played major roles over the last century in protecting the public's health, yet limited data characterize the various components of the current system and how the interplay among these elements safeguards public health. The Robert Wood Johnson Foundation (RWJF) provided a \$357,792 grant for the 1999 survey.

The Project. The 1999 Local Health Department Infrastructure Survey, building on existing questions from a series of surveys NACCHO conducted in 1990, 1993 and 1997, included questions on the workforce, partnerships and collaboration, community health assessment and agency challenges and strengths. Mathematica Policy Research (Princeton, N.J.) was subcontracted to design and conduct the survey and to assist the association with its analysis of the data.

Findings. NACCHO staff disseminated project findings in a report, *Local Public Health Infrastructure: A Chartbook* and on its Web site, www.naccho.org/PROJECT1.cfm. (See the Key Products.) Findings include:

- 60 percent of local public health agencies are county-based; 69 percent of all agencies serve jurisdictions with a population of less than 50,000.
- The median annual local public health agency expenditure in constant 1999 dollars was \$621,100.
- The most common programs and services provided by local public health agencies include adult and child immunizations, communicable disease control, community assessment, community outreach and education, environmental health services, epidemiology and surveillance, food safety, health education, restaurant inspections and tuberculosis testing.
- Currently, the greatest workforce needs are consistent across local public health agencies, and include public health nurses, environmental scientists and specialists, administrative support, health educators and epidemiologists.
- Overall, local public health agencies cited funding as one of the biggest challenges facing them.

The Project

Public health is in a period of rapid change brought about by such factors as the increase of managed care, reorganization of state health and social welfare agencies, federal and state funding reductions and, most recently, the threat of bioterrorism. Current data on public health infrastructure can aid public health organizations as they enter into new relationships, roles and functions in the health care system, and monitor the outcomes of public health programs.

This grant from RWJF supported the National Association of County and City Health Officials (NACCHO) in a pilot project to profile local public health infrastructure: the systems, competencies, relationships and resources available to carry out public health activities in a community.

Under this grant, NACCHO conducted a national survey of local public health agencies in order to improve the quality and character of datasets on local public health systems and identify the strengths and deficits of local health systems. The 1999 Local Health Department Infrastructure Survey built on existing questions from the National Profile of Local Health Departments Surveillance Series, national surveys of local public health departments' activities, capacities and services conducted in 1990, 1993 and 1997, with support from the Centers for Disease Control and Prevention (CDC). The new survey included questions on the workforce, partnerships and collaboration, community health assessment, challenges and strengths. An expert advisory committee (Appendix not included) provided oversight for this project.

Methodology

Mathematics Policy Research (Princeton, N.J.) was subcontracted to design and conduct the survey, and to assist the association with its analysis of the data. The survey was mailed to a random sample of 1,100 local public health agency directors nationwide. The sample was stratified by size of population served by the agency, to better differentiate between metropolitan and non-metropolitan areas. The response rate was 63 percent.

In year two of the project, RWJF requested that the association move the survey's emphasis away from partnerships and collaborations to look more closely at service areas and workforce issues. The project's research questions were revised in order to provide more general baseline data on local public health systems.

FINDINGS

The National Association of County and City Health Officials published its results from the survey in a report entitled *Local Public Health Infrastructure: A Chartbook*. Findings included:

Overall Characteristics

- Sixty percent of local public health agencies are county-based; 69 percent of all agencies serve jurisdictions with a population of less than 50,000.
- Annual agency expenditures are extremely varied, ranging from no expenditures to over \$836 million.
- The median annual agency expenditure in constant 1999 dollars was \$621,100.
- The largest portion of local public health agency budgets comes from local sources (county, city or town), followed by state sources. Funding streams varied by metropolitan and non-metropolitan area agency, and by the size of the population served.

Programs and Services

- The most common programs and services provided by local public health agencies include: adult and child immunizations, communicable disease control, community assessment, community outreach and education, environmental health services, epidemiology and surveillance, food safety, health education, restaurant inspections and tuberculosis testing.
- The least common services provided included the provision of primary care or direct medical care services, including treatment for chronic diseases such as cardiovascular disease or diabetes, behavioral or mental health services, programs for the homeless and veterinary public health.

- Program and service area priorities were consistent across the diverse population of local public health agencies. Priorities included communicable disease control, environmental health services and child health programs.

Workforce

- The occupations local public health agencies most commonly employ are public health nurses, environmental scientists and specialists and administrative/clerical staff.
- The average agency staff size in full-time equivalents (FTEs) is 67, with a median of 13 FTEs.
- Due to reasons ranging from a lack of qualified applicants to agencies' inability to offer competitive pay, the types of employees local public health agencies most need are consistent across agencies. They include public health nurses, environmental scientists and specialists, administrative support, health educators and epidemiologists.
- It is projected that in the next five years the public health occupational needs will not change compared with today's needs.

Partnerships and Collaborations

- State health departments, other local public health agencies and other state agencies were most commonly selected as partners by the agencies in this study.
- Managed care organizations/health maintenance organizations and federal government agencies were least commonly selected as partners by the agencies in this study.
- There were few differences in terms of their partnerships and collaborations based on metropolitan versus non-metropolitan area agencies, population of jurisdiction served and local public health agency types. Overall, agencies in larger population jurisdictions reported a wider variety of partnerships compared to those in smaller population jurisdictions.

Community Health Assessment

- Fifty five percent of local public health agencies have conducted a community health assessment in the past three years. Of the 45 percent that have not, almost half plan to complete a community health assessment within the next three years.
- More than half of the nation's local public health agencies have developed or participated in the development of a community health improvement plan. The majority indicated that the plan was developed using the results of a community health assessment, and more than half indicated the plan was linked to their state's health improvement plan.
- About half of the local public health agencies that conducted a community health assessment used an established tool or model, such as the federal Healthy Communities 2000: Model Standards, or a state-specific tool, for completing the assessment.

Strengths and Challenges

- Local public health officials consistently indicated their workforce as one of their greatest strengths. They saw their personnel as caring, committed and able to do their best given scarce resources. Partnerships with the community were also seen as strengths.

Overall, local public health agencies cited funding as one of their biggest challenges. Program-specific challenges and workforce funding issues, additionally, were listed as major challenges. The challenges surrounding workforce issues deal directly with training, recruiting and retaining public health workers. Needed staff cannot be hired due to budget restrictions.

PROJECT LESSONS

1. Surveys of local public health agencies need to ask questions and provide enough response categories for each question so that responses capture the variety in a sample. One size does not fit all for local public health agencies. The variety of agency characteristics between and within states—for instance with budgets, which ranged from \$0 to \$836 million—calls for caution in designing research. (Program Officer/RWJF).
2. Making public health agencies regional may enhance their effectiveness. Additional work is needed to define what a local health department is. The National Association of County and City Health Officials, in the 1999 national survey of public health infrastructure, considered very small units to be local public health agencies, and discovered that in some cases these units may not have the capacity to be a local health department. The capacities needed to provide the essential services of public health may need to be addressed and defined. (Project Director)
3. Through their assurance role, local health departments may be a strategic point of entry for achieving certain public health goals. Public cooperation may be more easily garnered by agencies that have already earned public trust. (Project Director)
4. Recent emphasis on preparedness for bioterrorism makes the workforce a greater priority for local public health systems, and increases their need for funding. "Anecdotal data and suggestions from the field," the project director observed, "center on the questions, 'how are we going to deal with the workforce needs? How are we going to prepare for surge capacity?'" Many public health officials state that their current staff size is insufficient for the tasks related to preparedness. An additional concern is training. With the need for more staff and specialized training comes the need for more funding, which, prior to the threat of anthrax in 2001, was the highest priority. (Project Director)
5. Finding ways to encourage collaboration among local organizations dedicated to public welfare will improve local response to health emergencies. Partnerships, collaboration and communication among public health agencies, hospitals, fire departments and other public service organizations are key to an effective systems approach to bioterrorism planning. Local public health officials, informally, cite organizing and communicating with the community as their first concern in being prepared for bioterrorism. (Project Director)