

**MEASURING AWARENESS OF THE IMPACTS OF CHANGE IN THE PUBLIC HEALTH WORKFORCE: A PRECURSORY STEP IN PROMOTING A SHARED VISION VIA CROSS-SECTORAL COLLABORATION**

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**Abstract:**

Public health is currently undergoing significant changes and becoming increasingly dependent on one another to achieve their missions. The restructuring is forcing public health stakeholders to reexamine their present and future roles. This case study examines a local health department's staff and its awareness of the department's epidemiology program as a practical framework for thinking about and implementing cross-sectoral collaboration. An OEB (Office of Epidemiology and Biostatistics) Awareness Survey was developed and administered to 492 participants at the Allegheny County Health Department. Cross-sectional analysis examined associations between demographics, behavioral and cultural factors, and help seeking (attempts at collaboration). Results indicate an awareness deficiency for the epidemiology program and collaboration attempts among employees (only 54% of respondents were familiar with the OEB, and only 8% could identify an OEB employee). Strong implications suggest that collaborative relationships can help public health professionals deal with the challenges they face in today's turbulent environment.

**Introduction:**

The success of modern public health is increasingly dependent upon inter-organizational (or inter-sector) collaborations, professional networks, and the development and exchange of knowledge from a multidisciplinary set of sources. Inter-sector collaboration is defined by Barnes et al (1995) as, "integration and interaction of community sectors toward mutually defined economic, social, health, and political goals" (p. 11). Hogue (1993) describes the benefits of collaboration as, "accomplishing a shared vision and impact benchmarks" while building "interdependent systems to address issues and opportunities." In the public health workforce, agents may have competing interests and priorities, dramatically different skill sets and knowledge of issues, and varying capacities to act on available information or knowledge. Because of these differences, it is necessary to have collaboration promoting a shared vision that will in turn shape the future of the organization and ensure a common goal among employees.

An example of the need for collaboration in the public health workforce that most Americans are familiar with was the anthrax threat of 2001-02. During this state of emergency members of law enforcement, the media, community health officials, and public safety officials were all required to communicate and collaborate with each other in order to provide information and treatment to the public (Gebbie, Merrill, and Hugh, 2002). Without the collaboration and shared vision to protect the health of the people that was expressed during this time of emergency, the American public may have gone into a state of panic.

The Committee on Assuring the Health of the Public in the 21<sup>st</sup> Century (2002) further illustrates the need for collaboration to promote a shared vision with their recommended areas of action to ensure population health. The Committee promotes partnerships that share perspectives and resources in communities as well as better communication in the public health workforce, including government, public health officials, and the community. Without collaboration and communication in the public

health workforce, there tends to be an inefficient use of resources that do not ensure the health of communities (IOM, 2002).

The modern public health workforce as a whole has developed in recent years a overarching vision of, “healthy people in healthy communities” (DHHS, 2000), but because of the competing interests within so many public health work settings today it becomes a difficult task to share a vision that is viewed as a common goal. Therefore, as a precursor to developing vision, the public health workforce must establish awareness of the organization’s role and functions among its staff. If the staff is not enlightened on the roles and functions of the organization, they cannot align themselves with its purpose for being. Hence, without awareness, staff cannot have shared vision.

Creating a shared vision is not an easy task, and usually cannot be created or achieved by one person alone. In other words, one person is enough to initiate change, but a group of people is required to keep the change going and make sure the change is successful in an organization. Developing a shared vision requires many things including openness, willingness to accept differing ideas, promoting communication among all stakeholders, and identifying commonalities in everyone’s ideals and objectives. A shared vision is achieved when the personal visions of all stakeholders are incorporated into the overall vision of the organization (Clark, 2008).

To illustrate the need for collaboration promoting a shared vision, the researchers developed and administered a survey to estimate the awareness of epidemiology and epidemiological operations, roles, and functions of the Office of Epidemiology and Biostatistics (OEB) at the Allegheny County Health Department (ACHD).

### **Background:**

Epidemiology and biostatistics have been known throughout history as the core of public health (Levinson, 1998). As part of the public health workforce epidemiologists study disease and injury patterns in communities and apply their studies to reduce health problems and disparities. Biostatisticians in public health use statistical reasoning to analyze and solve problems (ASPH, 2005). With the ongoing transition from infectious to chronic diseases happening in America, epidemiology and biostatistics seem more vital to health promotion than ever before (Srinivasan, Dearry, and O’Fallon, 2003; Gostin, Boufford, and Martinez, 2004).

The Association of Schools of Public Health (ASPH) has predicted that by the year 2020, the public health workforce will be facing a shortage of up to 250,000 public health professionals, and one major group included in that shortage is epidemiologists. Furthermore the ASPH predicts that schools training the future public health workforce will have to train three times the current number of students over the next 11 years to meet the increasing need (ASPH, 2008). The Council of State and Territorial Epidemiologists (CSTE) has been assessing the use of epidemiologic surveillance in state health departments since 2001 and has found that the number of epidemiologists working in state health departments has decreased. This decrease in the number of epidemiologists has led to a lessened ability to identify health problems in communities, to monitor and investigate health problems in communities, and to evaluate the effectiveness of health programs provided by state departments of health. Furthermore,

the program area in which state employed epidemiologists had the most substantial decrease in employment was emergency preparedness and bioterrorism (CDC, 2009).

The Allegheny County Health Department (ACHD), established in 1957, is a viable unit of the Allegheny County government in Western Pennsylvania. As the local public health agency, ACHD has a protracted history of carrying out its mission: to assure quality public health services by promoting individual and community wellness, preventing injury, illness and premature death or disability, and protecting the population from harmful effects of chemical, biological, and physical hazards within the environment. The ACHD offers a full gamut of public health and environmental services (ACHD, 2010). While the services offered by the ACHD do support the agency's mission, an employee providing one service does not share the same vision as another employee providing a different public health service. Basically, the separate departments are lacking awareness or positive attitudes regarding the benefits of interorganizational collaboration to promote a shared vision.

For several years, the ACHD has engaged and carried out its mission by individual programs without the assistance of epidemiologists. Due to the changing nature of ACHD's operations and demand for a more specialized workforce, the ACHD has embarked on reorganization efforts to include an Office of Epidemiology and Biostatistics (OEB). These efforts have led to the creation of a small team dedicated to surveillance and epidemiological activities that support all ACHD programs and initiatives. The current case study was conducted one year post establishing this office. ACHD staff, in general, had 11/2 years to acquaint themselves with the new office before they were queried about their awareness of its role and functions.

The ACHD programs have struggled with the purpose of having a defined epidemiologic unit. These programs have been without any epidemiologic support as part of their daily operations for more than 10 years. The programs engaged in epidemiologic tasks, for the most part, only during crises. Done in a piecemeal fashion, these efforts were often uncoordinated and ill-focused. There was no clarity as to the direction the organization was going and the essence of what the staff could expect.

The OEB was established in 2004 by the ACHD through funding from a local foundation. The purpose of the office was to re-establish an office of epidemiology that had been missing for years from the organizational structure. The office allowed concerted efforts by trained professionals to provide epidemiological support for all ACHD programs. Its role has been questionable and its reach limited. Most of its activities appeared to be carried out in a vacuum, and it was apparent there was an absence of shared vision between the other ACHD programs/departments and the OEB.

The overarching question is if the OEB is effective? It is hypothesized that the majority of the ACHD workforce is not involved in collaboration with other departments (especially the OEB) and therefore does not have a shared vision. The goal of this project was to examine the ACHD staff's knowledge of the OEB as a precursor to developing a shared vision among ACHD programs and operations. A survey was developed and sent via email to the ACHD staff and contracted workers to assess their knowledge of the OEB's operations, role, and functions. These survey questions had content and face validity, and were pretested with a small cohort of ACHD staff. The Cronbach alpha for scale items used in the instrument was good ( $\alpha = .92$ ).

## Methods and Analysis:

To gauge awareness of OEB's operations, role, and functions, 793 questionnaires were sent out in mass via email to ACHD staff and contracted workers. The email was sent by one of the Ph.D. epidemiologists from OEB, a mid-management staff. Recipients of the questionnaire were comprised of 65% permanent workers and 35% contracted workers. Sixty-two percent of all questionnaires were completed and returned.

Demographic variables included age, gender, education and union membership. Working status (employment group) was divided into two groups (employees who worked 40 hours or less per week and employees who worked more than 40 hours per week). Full time employment at the ACHD was defined as working 40 hours per week. Because of the nature of the work engaged by the Department, there were employees that worked more than 40 hours weekly (e.g., employees paid salaries instead of hourly wages). As proxy measures of acculturation, length of employment with ACHD was analyzed. However, because acculturation and staff being able to define the term epidemiology were highly associated ( $X^2 = 42.56$ ,  $p < .001$ ), only length of employment was included in the final model.

To examine probability of having knowledge of the OEB among ACHD staff and contracted workers, logistic regression was used to access various levels of predictors. Interactions between variables were tested based on the literature (Blanchard and Stoner, 2004; Yuki and Fabel, 1993; Recio-Adrados, 1993; Vygotsky, 1978) and behavioral plausibility. Finally, analyses were performed to identify the most important predictors of having knowledge of the OEB while controlling for socio-demographic characteristics (gender, program affiliation, and role), acculturation (length of employment at ACHD), and help seeking (contacts made/ collaboration with the OEB within the past year).

**Results:****Characteristics of the ACHD Staff**

Table 1. Characteristics of ACHD Staff from 2006 OEB Survey (n = 492)

Characteristics	% (SE)
<b>Demographics</b>	
Age, y (mean = 49.5)	
18-49	31.4 (1.98)
50-81	68.6 (1.98)
Gender	
Female	58.1 (2.36)
Male	41.9 (2.36)
<b>Acculturation (Length of time of employment with the ACHD)</b>	
≤ 10	15.1 (2.11)
11-20	11.7 (1.93)
21-30	13.6 (2.58)
≥ 31	59.5 (2.83)
<b>Socioeconomic Status</b>	
Highest Education Level	
≥ 4 years of College	54.0 (3.14)
Some College	14.2 (2.40)
High School Graduate or Less	31.8 (2.79)
<b>Working Hours Per Week</b>	
≤ 40	38.0 (2.97)
> 40	18.1 (2.88)

Table 1 shows characteristics of the ACHD staff. The 492 eligible respondents represented approximately 62% of an estimated total staff of 793 employees and contracted workers at ACHD. Approximately 58% of the sample was women. The mean age of all respondents was 49.5 years of age; 68.6% were aged 50 years or older. ACHD staff was highly educated: 54% had at least four years of college education, 14% had some college education, and 32% had a high school or less than high school education. Approximately 68% of all staff and contracted employees were working at least 40 hours per week. Just over 59% of all eligible respondents had been employed with the ACHD for 31 years or more. About 64% of respondents were members of labor unions (data not shown).

**Awareness of the OEB and Staff Differences**

Table 2 shows staff differences in awareness of the OEB. Although 54% stated they were familiar with the OEB, approximately 38% of all staff and contracted workers knew the location of the OEB, and only 8% could identify one staff member of the OEB. The researchers found that other staff (i.e., those staff or contracted workers not a part of

the public health programming staff) was more likely to be familiar with the OEB staff and location than program staff ( $X^2= 19.56, p< .001$ ).

Table 2. Awareness of the OEB in ACHD Staff

Awareness of the OEB	Program Staff	Other Staff	Total, % (SE)	$X^2df$	P Value
Familiarity with the OEB	64.09 (3.68)	40.30 (4.47)	54.11 (2.81)	$X^2_2 =19.56$	<.001
Location of OEB's office	30.69 (3.82)	49.03 (4.99)	38.38 (2.95)		
Able to I.D. OEB Staff	5.22 (1.31)	10.67 (2.82)	7.51 (1.36)		

**Awareness of the OEB and Social, Behavioral, and Cultural Factors**

Table 3 shows the number of working hours, length of time of employment (acculturation) with the ACHD, and seeking help (collaboration) from the OEB were associated with the likelihood of being familiar with the OEB. Bivariate analysis showed two statistically significant interactions: (1) between levels of education and the number of hours worked, and (2) between help seeking (number of contacts made with the OEB) and membership in labor unions. However, these two interactions were not significant within the multivariate analysis; thus, they were not assessed in the multivariate analyses.

Education, role (e.g., worked as a staff member of public health programs or not), and acculturation were associated with the likelihood of having knowledge of the OEB. Familiarity with the OEB was entered as a dichotomous variable (yes or no) based on responses to a question of whether or not the respondents were familiar with the OEB (e.g., are you familiar with the Office of Epidemiology and Biostatistics?). Staff and contracted workers not a part of the ACHD public health programming were more likely to have knowledge of the OEB than the ACHD public health programming staff (OR, 2.89; 95% confidence interval [CI], 1.57-5.30). Staff and contractors who had been employed with the ACHD for longer periods of time were less likely to have knowledge of the OEB (OR, 0.50; 95% CI, 0.25-0.98) than staff and contractors who had been with the local health department for shorter periods of time.

When examining the relationship between employee's role at the ACHD and contacts made with the OEB, staff members affiliated with public health programs who had closer relationships with specific functions engaged by the OEB (e.g., disease outbreak mitigation) were approximately 2.8 times more likely to have made contact with the OEB (OR, 2.77; 95% CI, 1.19-6.49) during the past twelve months than staff members not directly related to such functions.

A higher level of acculturation was associated with a higher level of not seeking help (collaboration attempts) from the OEB. Staff who had worked with the ACHD for

26 or more years had more than twice the likelihood of not seeking help from the OEB (OR, 2.45; 95% CI, 1.01-6.04) than staff employed by the ACHD fewer than 10 years.

Table 3. Social and Behavioral Characteristics and Perceived Awareness of the OEB among ACHD Staff and Contractors (n=492), 2006 OEB Survey

Variable	Likelihood of Having Awareness of OEB	
	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
<b>Age, y</b>		
18-49	Ref	Ref
50-81	1.20 (0.75-1.93)	1.02 (0.49-2.10)
<b>Gender</b>		
Female	Ref	Ref
Male	2.64 (1.63-4.29)	2.89 (1.57-5.30)
<b>Education</b>		
≥ 4 years of College	Ref	Ref
Some College	0.67 (0.39-1.14)	0.67 (0.34-1.35)
<b>Number of contacts made to OEB w/in past 12 months (help seeking)</b>		
≤ 5	Ref	Ref
6-10	1 (0.59-1.70)	1.09 (0.59-2.04)
11 or more	1.58 (0.78-3.20)	2.77 (1.19-6.49)
<b>Working hours per week</b>		
≤ 40	Ref	Ref
>40	1.61 (1.04-2.51)	1.15 (0.67-1.97)
<b>Length of time of employment with the ACHD (acculturation)</b>		
≤ 10	Ref	Ref
11-20	2.22 (0.82-5.99)	2.53 (0.77-8.24)
21-30	2.85 (0.95-8.51)	3.14 (0.85-11.62)
≥31	2.19 (1.13-4.25)	2.45 (1.01-6.04)
<b>Awareness of OEB's Relationship to ACHD Programs</b>		
Horizontal	Ref	Ref
Circular	1.25(0.65-2.43)	1.36(0.60-3.04)
Vertical	0.85 (0.43-1.67)	0.50 (0.25-0.98)
<b>Awareness of OEB's Relationship to ACHD Programs During Crisis</b>		
Horizontal	Ref	Ref
Integrated	2.20 (0.94-5.17)	2.18 (0.82-5.78)

CI, confidence interval; Ref, reference group

### Awareness of the OEB's Relationship to ACHD Programs

ACHD staff and contracted employees who described the OEB's relationship to programs as one that rotated around the programmatic needs (i.e., wrap around-like services) were statistically more likely to be aware of the OEB's role and functions (OR,



1.36; 95% CI, 0.60-3.04) than staff who responded that the relationship was horizontal (i.e., common services shared at different levels across programs). During crises (e.g., disease outbreaks, bioterrorist threats, toxic releases, etc.), staff and contracted employees who described the OEB's relationship as rotational and integrated were twice as likely to have awareness of the OEB's role and functions (OR, 2.18; 95% CI, 0.82—5.58) than staff who responded that the relationship was horizontal.

### **Discussion:**

Current changes in the public health system necessitate planning for organizational change. This process emphasizes the importance of knowing the composition of the present workforce and being able to describe the workforce providing essential public health services to community members. Knowing which professionals are currently performing specific public health functions is integral in projecting what types of public health professionals will be required in the future and the allowance of cross-sectoral collaboration among these professionals.

Cross-sector partnerships do not happen; they are built. To trigger the relationship there generally needs to be an emotional connection with the social purpose. But connecting with the social purpose is not enough. The key staff involved in the collaboration must also be compatible. Bad interpersonal chemistry can quickly kill an alliance. Therefore, a “getting acquainted” period and process is needed to ascertain compatibility and develop a positive relationship. Other barriers to building effective cross-sector partnerships include lack of time and minimal involvement with other departments. Although it is not an easy task, creating a vision requires the type of collaboration that can get beyond these barriers in order to integrate experiences and promote a healthy community (Warner and Amato, 1998).

Despite the difficulty in attempting to create collaboration and shared vision, a few sectors of public health have succeeded. In the United Kingdom nurses have pulled together to create organizational structures promoting shared vision, partnerships, patient empowerment, and collaboration. To do this they have adopted a unified approach that allows every nurse to work in the same direction, for the same cause (Clark, 2008). In Horton, Kansas, community members pulled together to promote public health by adopting the primary health care model (developed by WHO, 1981) that included access, essentiality, empowerment, and inter-sector collaboration. Because of their adoption of this model, they are now able to work together for the good of all and not just for the good of some (Hornberger and Kuckelman Cobb, 2001). The Federal Collaboration on Health Disparities Research (FCHDR) was even developed in 2006 in response to Healthy People 2010's limited success in reducing health disparities. The FCHDR works to reduce health disparities with the idea of a broad collaborative approach in mind (Rashid, et. al, 2009).

This case study showed there was little awareness of the OEB and its functions. This finding could reflect the little time (e.g., 1 ½ years) employees had to familiarize themselves with the new office and the lack of staff training/ orientation activities to explain roles and functions. Any “shared vision” from the administration was not disclosed at the time the survey was administered. ACHD employees were not privy to

why the office was created or the need for such an office. Anecdotal reports share that top administrators made the assumption that public health professionals would clearly understand the need for a strong epidemiological component and the OEB was what was warranted. Results do not support fully this assumption.

Other findings indicated that staff and contracted employees who had been working at the ACHD the longest had the least amount of awareness of the OEB's role and functions. The study also suggests the non-program staff were more familiar with the OEB staff and location than program staff, which would presumably be more likely to benefit from collaboration with the OEB.

The OEB was designed to support all ACHD programs and initiatives by providing surveillance and epidemiological activities with a specialized team. Although 54% of respondents were familiar with the OEB, only 8% could identify a member of the OEB staff. Public health program staff was more aware of the OEB's existence than non-program staff, but the non-program staff was more likely to be familiar with the OEB's location and personnel. Several possible explanations exist for the significant difference in help-seeking (collaborating) behavior based on level of acculturation, as measured by length of employment at the ACHD. Staff who had worked at the ACHD for less than 10 years comprised 15% of respondents, and they were twice as likely to seek help from the OEB as staff who had worked at the ACHD for 31 or more years (nearly 60% of the respondents). Longer-term employees may have bought in to an organizational culture that promotes interdepartmental "turf wars" and thus be unwilling to collaborate with a newer program such as the OEB. In today's economic decline, health departments are receiving inadequate funding for programs and therefore turf wars are becoming more common as employees are protecting their "turf" in order to produce greater results with less money. Instead of focusing on organizational goals, employees are working hard to outwork and outwit anyone threatening their territory (Simmons, 1998). Alternatively, people tend to become used to performing tasks a certain way and are unwilling to change. Thus, staff with higher levels of acculturation might not think about collaborating with departments outside of their program.

The collaborative paradigm influences the way public health professionals think and work. The comprehensive framework helps them understand the perspective of their colleagues in other sectors. That framework, and a willingness to allow other partners to provide support, facilitates better integration of resources and skills. Today, continuing on separate tracks is no longer a viable option. Public health professionals like ACHD employees must look beyond "turf wars" and become increasingly dependent on one another—in achieving their missions, in addressing challenging public health problems, and in responding to economic and performance pressures. At the same time, new incentives and organizational structures are making cross-sectoral interactions more rewarding and more feasible than they have been in the past. By combining their resources and skills in various ways, public health professionals and organizations are able to achieve benefits that none of them can accomplish alone. These benefits often are different for different partners, addressing important problems that each partner faces. This understanding can help build a stronger constituency to support public health funding and activities—especially for community-wide public health services about which many people are unaware.

Clearly, cross-sectoral collaboration offers public health professionals powerful strategies for dealing with current challenges. The staff of the Office of Epidemiology and Biostatistics at the Allegheny County Health Department, the focus of this case study, must employ this paradigm if a shared vision and creation of “healthy people in healthy communities” (DHHS, 2000) is to ever be realized.

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