

Building Capacity of Environmental Health Services at the Local and National Levels with the 10-Essential-Services Framework

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Abstract

The authors present a case study on the use of the 10-essential-services framework to build capacity in a local environmental health agency. The framework can be applied to conduct an environmental health assessment, make organizational change, and expand environmental health capacity at the local level in a way that has a national impact. Examples of environmental health capacity-building efforts include vector surveillance, community education and outreach, workforce development, and research. The case study highlights the lessons learned from use of the 10-essential-services framework to improve environmental health services in Multnomah County, Oregon.

Introduction

The 10 essential public health services, referred to here as “the 10 essential services,” constitute an organizing framework that describes the public health activities critical to all local public health systems (Public Health Functions Steering Committee, 1994). Developed in the mid-1990s by U.S. Public Health Service agencies and other major public health organizations, the 10-essential-services framework was designed to address the “disarray of public health” described in the seminal 1988 Institute of Medicine (IOM) report titled *The Future of Public Health* (IOM Committee for the Study of the Future of Public Health, 1988). In recent years, a growing research base has linked the 10-essential-services framework to performance standards as a

quantifiable way of documenting the effectiveness of public health programs (Bakes-Martin, Corso, Landrum, Fisher, & Halverson, 2005). This article describes how the Multnomah County Environmental Health Section (MCEH) used the 10-essential-services framework to a) assess the strengths and weaknesses of environmental health programs and services, b) implement organizational changes to align department programs with the 10 essential services, and c) expand program capacity to create a comprehensive program benchmarked against the 10 essential services. Taking the MCEH experience as a basis, the article concludes with broad lessons learned that may be of benefit to other health jurisdictions considering the use of the 10-essential-services framework.

Context

Multnomah County is the most populous county in Oregon with 19 percent of the state’s population. From 1990 to 2002, the population of the county grew 15 percent to comprise an estimated 677,626 residents. Data from 2000 indicate that at that time 13 percent of Multnomah County residents had incomes at or below the poverty level and 30 percent had incomes less than twice the poverty level. A recent Multnomah County Health Department report profiled the health of the growing population and compared health data of the residents with the national Healthy People 2010 indicators. The study found that Multnomah County’s performance is comparable to health data trends seen in other states (Multnomah County Health Department, 2004).

The Multnomah County Environmental Health Section (MCEH) promotes health by preventing disease and injury. The program also protects the public from diseases related to food, water, vectors, and other environmental health threats. MCEH services include inspections, vital records, food handler training, lead-poisoning management and prevention, community outreach and education, vector control, code enforcement, and disaster preparedness. In recent years the department has grown significantly, both in scope of services offered and in the complexity of the environmental health issues being addressed. This growth has contributed to an increase in staffing. Since 1999, MCEH has increased its full-time staff from 29 to 49.

Assessment of Environmental Health Services

In 2002, MCEH adopted the 10-essential-services framework to assist in systematically and systemically managing department growth. Strategically, it made sense to organize the MCEH programs and services around the three core functions of public health and the associated 10 essential services. MCEH used the 10-essential-services framework to assess the strengths and weaknesses of its environmental health programs and services. Results of the assessment were used to improve existing programs and services and build capacity to support new programs and services.

To guide this process, MCEH used the training modules, tools, and exercises that became part of the *Essential Services of Environmental Health* training program developed by the Northwest Center for Public Health Practice at the University of Washington School of Public Health and Community Medicine (Osaki, 2004). The critical gaps identified by the assessment were prioritized for importance. MCEH identified four priority areas for improvement, each of which correlated to one or more of the 10 essential services: 1) monitoring, diagnosing, and investigating environmental health hazards and problems; 2) informing, educating, and empowering people about environmental health issues; 3) assuring a competent environmental health workforce; and 4) identifying new insights and innovative solutions to environmental health problems. Actions directed toward these priorities have directly improved or expanded the services and programs of MCEH.

Over the next three years, MCEH targeted funding and resources that would help the agency address the identified gaps. Among the resources obtained was funding under a three-year CDC Essential Services Capacity Building Initiative grant, which allowed MCEH to address critical gaps identified in its assessment by reinforcing and expanding program infrastructure. The specific programs involved and the outcomes achieved under the grant illustrate how MCEH is addressing the identified gaps in essential services. Representative projects include vector surveillance, environmental health education/outreach, a post-secondary internship program, and research on restaurant risk rating.

Capacity Building

Vector Surveillance

The emergence and re-emergence of a disease may be due to the spread of a new agent or may be attributable to other factors, including demographics, behavior changes, changes in land use, technology, trade, travel, microbial adaptation, climate change, harmful intent, the gap between rich and poor, and the breakdown in public health (Kimball, 2004). The MCEH assessment recognized that the equipment of the vector program surveillance laboratory was not sufficient to effectively monitor, diagnose, and investigate new and re-emerging diseases that threatened the community. MCEH was not able to accurately and efficiently identify the species and gender of mosquitoes, share findings about disease identification with partners, or conduct vector research that could potentially reduce vectorborne illness.

Once the specific need was identified, resources from the CDC essential-services grant provided the means to enhance the vector laboratory with state-of-the-art technology, including a microscope, digital camera, and monitor. As a result of this investment, MCEH was able to thoroughly understand the species and distribution of mosquitoes in the local environment. Identification efficiency increased by 1.5 times; the program analyzed over 75,000 mosquitoes and identified 25 mosquito species, including five new exotic species previously undetected. The increased understanding of the types and distribution of mosquito species within the county has improved our ability to prevent and respond to vectorborne disease threats. With the discovery of five new exotic species of mosquitoes, MCEH has broadened local surveillance practices and implemented a comprehensive integrated pest management plan that is based on scientific data. The Integrated Pest Management plan now includes ongoing surveillance of the 25 mosquito species, source reduction techniques, community education, and vector population suppression. MCEH has shared its research findings with other vector agencies, has engaged in innovative collaborative research, and has disseminated findings through professional publications and conference presentations.

Environmental Health Education/Outreach

The 10-essential-services gap analysis revealed that MCEH needed to strengthen public involvement, especially among racial and eth-

nic minority populations, in the planning and delivery of environmental health program and educational outreach. It also indicated that the department needed to improve public awareness and understanding of environmental health risks and concerns in the community. The CDC funding gave MCEH the capacity to create a Vector Control Advisory Group to assist in prioritizing vector control services with broad-based community input. The funding made it possible to hire a full-time health educator and a half-time community outreach worker to develop and implement an online food handler training and testing Web site with materials in seven languages (www2.co.multnomah.or.us/FoodHandlerCard/).

The increase in capacity helps the agency inform, educate, and work with diverse community members in two ways. First, it provides the staffing resources to create needed educational materials, including curricula, brochures, fliers, and posters, and to participate in outreach events such as workshops, health fairs, and conferences. Second, the agency has had the opportunity to work with various ethnic communities to pilot health education messages in different formats, such as oral history for the Somali community, in an effort to provide culturally competent education services. As a result, community members have improved their knowledge and their day-to-day environmental health practices relating to lead-poisoning prevention, vectorborne disease prevention, indoor air quality, contaminated fish, and other emerging environmental health issues.

Post-secondary Internship Program

The emergence in the last 50 years of many new environmental health issues and threats, such as food and water security issues, exposures to hazardous chemicals, built-environment issues, radiation, vectorborne diseases such as West Nile virus, and biological and infectious waste, significantly contributes to the need for an educated and well-prepared environmental health workforce. Evidence is growing, however, that assuring a qualified workforce is perhaps one of the most difficult challenges that public health agencies face (Council of State Governments, Association of State and Territorial Health Officials, & National Association of State Personnel Executives, 2004; American Public Health Association, 2006). Sharing in this challenge, MCEH has had an ongoing struggle to find qualified and trained staff to fill positions in its programs.

To address this 10-essential-services gap, MCEH has focused on leadership development to encourage individuals to enter public health professions through a robust post-secondary internship program. The internship program improved our ability to recruit, train, and strengthen our environmental health workforce. It was formed through development of strong partnerships with local colleges and universities. Students participate in environmental health projects, observe environmental health professionals in the field, and practice applicable job skills that will prepare them to enter the environmental health workforce. In addition, they gain substantive information about environmental health career opportunities. There are signs that the internship program is beginning improve the local environmental health workforce. Twenty-two percent of the interns in the program have been hired into available environmental health positions upon graduation. The program has also begun to create among college students an awareness of and interest in the environmental health field that did not exist prior to this program.

Restaurant Risk-Rating Research Project

In Oregon, the current licensing/fee system is based on restaurant seating capacity; the more seats the restaurant provides, the larger the licensing fee. MCEH suspected that critical food safety violations were a better predictor of foodborne illness than seating capacity and that data to this effect would support policy arguments for realignment of licensing fees according to a critical violations–based system instead of a capacity-based system. To that end—and reflecting the commitment to using research for new insights into health problems—MCEH conducted a study of restaurant risk rating.

The purpose of this research project was to determine if categorization of restaurants on the basis of menu complexity (low, medium, or high complexity) could indicate the potential for a restaurant to cause foodborne illness (risk). A second purpose was to identify a restaurant licensing and fee system that could further reduce the threat of foodborne illness.

Two hypotheses were formed at the beginning of the study: 1) that the average number of critical violations would increase for each level of menu complexity (i.e., medium-risk restaurants would have more critical violations than low-risk restaurants, and high-risk

restaurants would have more critical violations than medium-risk restaurants) and 2) that risk level based on menu complexity would be a better predictor of critical violations than seating capacity.

Environmental health specialists inspected 2,658 restaurants and assigned each restaurant to a low-, medium-, or high-risk category according to the level of complexity of its menu and the processes used to prepare and serve food. A time study was performed for each inspection, measuring how long the inspection took, including travel time. Using statistical methods, we compared the inspection times for all three risk categories with the inspection times for the four seating-capacity categories. In addition, we analyzed the number of critical violations by risk category and by seating-capacity category.

The study did confirm the hypothesis that critical violations would increase for each level of menu complexity. The second hypothesis, that risk is a better predictor of critical violations than seating capacity, was not confirmed to the degree anticipated. The research findings did, however, suggest that risk categorization should be used in conjunction with seating capacity and history of previous violations to determine fees and inspection frequencies. As a result of this research, we now have scientific data based on current practices that place the public at risk for foodborne illnesses and that can be used to support change in food safety policies.

Lessons Learned from Capacity Building

The enumeration of MCEH's accomplishments under its CDC Essential Service Capacity Building Initiative grant provides insight into how MCEH applied the 10-essential-services framework to its programming efforts. Many of the MCEH assessment, planning, programming and evaluation efforts predated or were developed parallel to the capacity-building grant. For example, MCEH hired staff to address the identified 10-essential-services gaps, received additional grant money to improve related services and develop new programs aligned with the 10 essential services, and developed partnerships with community groups and other government agencies to jointly address unmet 10-essential-services needs. Below, this article describes a series of broad lessons learned by MCEH in the process of creating a comprehensive 10-essential-services approach to environmental health programs and services.

Adequate Staffing Enables Capacity Development

Much of the work of MCEH is defined by existing programs, inspections, and regulatory work. The first step in the capacity-building process was for MCEH to identify how the agency could conduct nonregulatory work such as data analysis, education and outreach, research, and grant writing. Specifically, MCEH created and funded a program development specialist to focus on building the capacity and resources necessary to move the agency closer to achieving a long-term vision and to respond to the increase in need for environmental health services. In addition, MCEH developed a Community Services Outreach team tasked with addressing unmet 10-essential-services gaps. Concurrently with the hiring of new staff and the creation of the Community Services Outreach team, MCEH also aggressively sought fiscal resources to support the change. The CDC Essential Service Capacity Building Initiative grant was one of the cornerstone grants that enabled program improvement and expansion to occur. Collectively, these changes broadened staff skills, experiences, and organizational support that could help the agency implement the long-term vision created through the 10-essential-services assessment.

Building Long-Term Infrastructure Is Critical

The work of aligning MCEH programs and services with the 10-essential-services framework began in 2002 and continues to this day. Unprecedented funding shifts, both locally and nationally, continue to negatively affect the systematic and systemic planning of local health agencies (Congressional Quarterly, 2004). MCEH has been able to make demonstrated progress toward addressing gaps in the 10 essential services, even in the face of short-term obstacles, by staying focused on the 10-essential-services assessment data, pursuing organizational changes that are sustainable, and identifying clear and measurable milestones. The guiding principles are to establish and disseminate evidence-based programming, to conduct small pilot projects that help build program competencies, to track and develop proposals related to specific content areas and federal grant programs, and to develop the business case for specific target initiatives.

Developing Partnerships Magnifies Program Efforts

MCEH understood that aligning its programs and services with the 10 essential ser-

vices would require building strong internal and external partnerships. The purpose of creating partnerships is to foster innovation, create efficient administrative structures, and reach out to partners outside the usual governmental arena. The Vector Control Advisory Group is one example of how MCEH developed partnerships to broaden support for MCEH programs and services. Internal and external partnerships have enabled MCEH to develop collaborative programs, coordinate services, and jointly advocate for policy change.

Implications for National Practice

Valuable time, energy, and financial resources are wasted when jurisdictions recreate systems and solutions that already exist in other parts of the country. A major goal of the MCEH capacity-building efforts has been to document, package, and disseminate products that could be a resource to other environmental health jurisdictions with similar environmental health prob-

lems. For example, some agencies have used our online food handler Web site or development components in their food handler education programs. Other state and local environmental health agencies have modeled their foodborne-illness databases and manuals on those developed through our capacity-building efforts. MCEH created a workforce development manual that provides the tools and instructions to develop and implement a post-secondary environmental health internship program. The impact of this dissemination for MCEH is that even the most modest steps taken to market and disseminate program successes, solutions, and tools have resulted in an increased demand for coaching and technical assistance to help other health jurisdictions adapt or replicate solutions to similar environmental health problems.

Conclusion

MCEH recognizes that its ability to provide strong leadership in the areas of assessment,

policy development, and assurance is proportional to its ability to effectively implement the 10 essential services. This article has outlined MCEH's approach to systematically improving its ability to align programs and services with the 10 essential services and to addressing the environmental health needs of the county. While we recognize that each health jurisdiction provides a unique context that will influence organizational-change efforts, the 10 essential services provide a useful framework for assessing gaps and improving services. The MCEH approach to change provides a case study illustrating the successful application of the 10 essential services to a county environmental health department. ■■■

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