Title Page

**EVALUATING AND IMPLEMENTING PUBLIC HEALTH WORKFORCE DEVELOPMENT INITIATIVES TO IMPROVE COMPETENCIES OF INFECTIOUS DISEASE STAFF AT A LOCAL HEALTH DEPARTMENT**

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**ABSTRACT**

A competent public health workforce is vital for delivering and protecting the health of the public. As infectious diseases continue to pose a threat, a trained workforce is of public health significance to provide high quality services in infectious disease programs. Three main sources of data contribute to the Allegheny County Health Department’s (ACHD) workforce development plans: core competency assessments, prior training evaluations, and results from qualitative interviews with deputy directors, program managers, and key informants throughout the department (ACHD, 2018). Qualitative interviews were conducted over the span of three months in all Allegheny County Health Department programs and bureaus to identify training needs. Multiple workforce development initiatives like the Core Competency Assessment, training evaluations, and qualitative interviews are necessary because they provide three layers of data to identify top needs. Qualitative interviews are a main source of data and provide a comprehensive look at what skill gaps exist and where overlaps occur. Trainings in the Analytical/Assessment Core Competency domains were identified as top priorities for all ACHD staff. Infectious disease programs need to prioritize trainings in the Communication and Cultural Competency domains. Mastering basic skills will be important for all staff moving forward for maintaining public health accreditation and for infectious disease employees to address the needs of a diverse population.

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PREFACE

I would like to thank my family and those close to me for supporting me throughout my entire graduate education. To my parents, thank you for your unconditional love and for making me the strong person I am today. I want to thank my essay advisor, Dr. Sarah Krier, and my essay readers, Gerald Barron and Jamie Sokol, for their guidance during this entire process. Finally, I would like to thank the University of Pittsburgh for providing me with an excellent education.

# INTRODUCTION

Public health affects individuals in every spectrum of the globe, connecting all of us through small and large events. For centuries, health threats were largely out of the public’s control. Infectious disease outbreaks devastated communities without any knowledge of how to control them. Throughout time, advances in public health efforts led to improved disease control, longer life expectancy, and an overall sense of public responsibility to tackle health threats (IOM, 1998). These public health achievements are a direct result of the actions of its own workforce.

A strong, competent workforce is vital for delivering and protecting the health of the public. Public health workforce development aims to improve the skills and competencies of those working in the public health sector. Current public health issues such as HIV/AIDS, aging populations, a rise in chronic diseases, and the opioid epidemic highlight the need for a highly-capable and adaptable public health workforce. Public health workforce development is imperative to tackling current and future major health concerns.

Local public health agencies are responsible for public health through provision of health services and guidance of other health agencies (APHA, 2018). Health departments operate under three core governmental public health functions: assessment, policy development, and assurance (CDC, 2018). With a growing number of non-governmental health agencies, the APHA recommends that local health departments take a lead in providing a health services framework for these independent agencies (APHA, 2018). Local health departments (LHD) carry out the core public health functions through front-line delivery of basic public health services (IOM, 2003). Local health departments vary in size, location, nature of population they serve, as well as many other factors. As of 2016, there are approximately 2,800 local health departments in the U.S. (NACCHO, 2016). Within these health departments, there are an estimated 147,000 employees carrying out health services and functions in local communities (NACCHO, 2016).

For the purpose of this essay, public health workforce development initiatives will be explored and implemented in a local health department. As workforce development increasingly becomes a high priority in the public health sector, it is important to examine different tools and resources that can be used to improve the capabilities of public health employees. At the Allegheny County Health Department, workforce development initiatives were implemented to evaluate the competencies of infectious disease program staff. This essay will identify general results among all health department staff and examine closely what improvements can be made to increase the competencies of infectious disease employees.

## HISTORY OF PUBLIC HEALTH WORKFORCE DEVELOPMENT

Concerns about the capability of the public health workforce to address rising public health issues arose in the 20th century (IOM, 1988). The public health workforce was growing in numbers; however, little was known about the capacity and skills they possessed (HRSA, 1984). *The Future of Public Health* reported in 1988 that governmental components of the public health system were in disarray (IOM, 1998). The committee in this report sought to provide direction to the public health workforce. They decided that improving governmental public health infrastructure was essential for organizing public health activities, governmental linkages, and public health capacity (IOM, 1998).

In 1990, the Health Resources & Services Administration funded Johns Hopkins University School of Hygiene and Public Health to form the Public Health Faculty/Agency Forum (Bialek, 2018; JHU School of Hygiene and Public Health, 1991). The forum declared four major goals:

* Strengthen relationships between public health academicians and public health practitioners in public agencies;
* Improve the teaching, training, and practice of public health;
* Establish firm practice links between schools of public health and public agencies; and
* Collaborate with others in achieving the nation’s Year 2000 health objectives. (PHF, 2019)

The Public Health Faculty/Agency Forum developed a list of “Universal Competencies” to direct the training and teaching of the public health workforce (PHF, 2019). This led to the emergence of the Council on Linkages Between Academia and Public Health Practice in 1992 (PHF, 2019). The Council on Linkages Between Academia and Public Health Practice was responsible for generating the first direct public health workforce development initiatives, including the Core Competencies for Public Health Professionals (PHF, 2019). The Core Public Health Functions Working Group was established soon after in 1994 through the Department of Health and Human Services (HHS), which led to the development of the 10 Essential Public Health Services.

### TEN ESSENTIAL PUBLIC HEALTH SERVICES

The 10 Essential Public Health Services were enacted in 1994 to provide a framework for the public health system to undertake in the provision of their respective public health services (CDC, 2018). These ten services represent three overarching core functions of public health: assessment, policy development, and assurance (CDC, 2018). The Essential Services were developed by the Core Public Health Functions Working Group, which included representatives from several major public health organizations (IOM, 2003). The committee’s goal was to clarify the three major functions of public health, thus creating the Essential Services (IOM, 2003). “Assure a competent public and personal health care workforce” is listed as the eighth Essential Public Health Service, as shown in Figure 1 (CDC, 2018). The other services include monitor health, diagnose and investigate, inform, educate, empower, mobilize community partnerships, develop policies, enforce laws, link to / provide care, and evaluate (CDC, 2018). The Essential Services provide a framework for development and implementation of the Core Competencies for Public Health Professionals and various workforce development initiatives.



Figure 1. The 10 Essential Public Health Services

### CORE COMPETENCIES FOR PUBLIC HEALTH PROFESSIONALS

The Core Competencies for Public Health Professionals are a set of skills desirable for the broad practice of public health that can be applied in practice, education and research (PHF, 2019). They were released in 2001, adapted in 2010 to represent three distinct tiers of public health professionals, and revised once more in 2014 (PHF, 2019). The Core Competencies will continue to be reviewed and revised to reflect the current need in public health skills. Core Competencies aid public health professionals in better understanding how to meet and prepare for changing public health priorities (PHF, 2019).

There are eight domains of different skill areas in the current version of the Core Competencies, all with three tiers representing career stages. The first tier represents entry level and front-line public health staff who carry out day-to-day tasks of public health organizations (PHF, 2019). Program management and supervisory level employees are represented in the second tier (PHF, 2019). Competencies in the third tier apply to executive level employees and senior leadership in public health agencies (PHF, 2019). The eight domains are as follows:

* Analytical/Assessment Skills;
* Policy Development/Program Planning Skills;
* Communication Skills;
* Cultural Competency Skills;
* Community Dimensions of Practice Skills;
* Public Health Sciences Skills;
* Financial Planning and Management Skills; and
* Leadership and Systems Thinking Skills (PHF, 2019)

The Core Competencies are used in various workforce development initiatives to assess, evaluate, and educate public health professionals. Core Competencies can be applied to workforce/training needs assessments, job description auditing, workforce development plans, and other professional development activities (PHF, 2019). Core Competencies play a large role in the development of workforce development plans, which is a key requirement of accreditation through the Public Health Accreditation Board (PHF, 2019).

### PUBLIC HEALTH ACCREDITATION

The Institute of Medicine’s 2003 report, *The Future of the Public’s Health*, discussed the potential of credentialing as a tool for public health workforce development (IOM, 2003). At the time, the CDC along with other public health agencies were exploring the feasibility of a competency-based credentialing system for public health workers (IOM, 2003). In the report, the committee made a recommendation for the Secretary of HHS to appoint a national commission on public health workforce credentialing (IOM, 2003). The *Exploring Accreditation* project was formed in 2005 to develop a national public health accreditation program (PHAB, 2019). The Exploring Accreditation Steering Committee established voluntary national accreditation to ensure high performance and continuous improvement in health departments (PHAB, 2019). The aim was to give accountability to health departments to uphold the highest standards in its workforce and services.

The Public Health Accreditation Board (PHAB) serves as the non-profit entity for overseeing and approving health department accreditation (PHAB, 2019). The PHAB was formed in May of 2007, but the process of health department accreditation officially began in 2011 (PHAB, 2019). The PHAB Assessment Process Workgroup, which included state, local, and national representatives, developed the accreditation process (PHAB, 2019). Standards and measures for accreditation were created by the PHAB Standards Development Workgroup (PHAB, 2019). The initial accreditation process was released in 2009 with a beta test occurring from fall of 2009 to the end of 2010 (PHAB, 2019). By 2013, 22 local health departments had attained the first national accreditation (PHAB, 2019). The final and official launch of public health accreditation took place in September of 2011 (PHAB, 2019). There are now 244 total health departments that have achieved five-year accreditation as of November 20th, 2018 (PHAB, 2019).

National accreditation has given local health departments across the nation the opportunity to be recognized for improving and maintaining the capacity of their workforce. Accreditation helps improve the delivery of health services in Tribal, state, local, and territorial public health departments (PHAB, 2019). It provides a framework for health departments to identify needs and opportunities for improvement within their agencies, thus proving its importance in public health workforce development.

## WORKFORCE DEVELOPMENT IN INFECTIOUS DISEASE PROGRAMS

The CDC (2018) states that “a well-trained public health workforce is our first line of defense to prevent disease, protect health, and keep people safe.” Prevention, education, and treatment of infectious diseases are common services provided by local health departments. A summary of infectious disease services provided by local health departments according to NACCHO’s *2016 National Profile of Local Health Departments* can be found in Table 1. Since 2008, there has been a 15% increase in LHDs that provide HIV/AIDS treatment (NAACHO, 2017).

Table 1. Percentage of Local Health Departments Providing Infectious Disease Services

|  |  |
| --- | --- |
| Program/Service | Percentage of LHDs Providing Infectious Disease Services |
| Adult Immunizations | 90% |
| Child Immunizations | 88% |
| TB Screening | 84% |
| HIV/AIDS Screening | 62% |
| Other STD Screening | 65% |
| TB Treatment | 79% |
| HIV/AIDS Treatment | 35% |
| Other STD Treatment | 63% |
| Infectious Disease Epidemiology and Surveillance | 93% |

Infectious disease treatment, control, and education remain a top priority in the U.S. as outbreaks of vaccine-preventable diseases rise, sexually transmitted infections persist, and influenza continues to threaten the health of the public. As of 2016, there were 9,272 new tuberculosis cases, 38,782 new HIV diagnoses, 88,042 new syphilis cases, 1,598,354 new chlamydia cases, and 468,514 new gonorrhea cases (CDC, 2016). Local health departments provide various services and programs for an array of infectious diseases. Infectious disease trends in the U.S. highlight the need for a competent workforce to provide high quality services in infectious disease programs.

## BACKGROUND ON THE ALLEGHENY COUNTY HEALTH DEPARTMENT

The Allegheny County Health Department (ACHD) provides public health services to approximately 1.2 million county residents.(ACHD, 2019). It serves the second most populous county in Pennsylvania with an estimate population of 1,225,365 (ACHD, 2018). The ACHD received national accreditation from the PHAB in September of 2017 (ACHD, 2019). There are five bureaus within the ACHD (Bureau of Administration, Bureau of Assessment, Statistics, and Epidemiology, Bureau of Community Health Promotion and Disease Prevention, Bureau of Environmental Health, Bureau of Public Policy and Community Relations). The department also maintains a Public Health Laboratory (ACHD, 2019) that is overseen by the Health Department Director.

Programs that provide infectious disease services include Immunization, Sexually Transmitted Diseases/HIV/AIDS and Tuberculosis. The Infectious Disease Programs fall under the Bureau of Community Health Promotion and Disease Prevention, along with Chronic Disease Prevention, Family and Child Health Programs, and Traffic Safety Education (ACHD, 2018). As of February 2019, the Bureau Community Health Promotion and Disease Prevention has the second largest number of employees (n =120), second only to the Bureau of Environmental Health (n=144) (ACHD, 2018). The Infectious Disease Epidemiology Program falls under the Bureau of Assessment, Statistics, and Epidemiology (ACHD, 2018). This program conducts surveillance of infectious reportable conditions, investigation of disease outbreaks, and monitoring of vaccination coverage (ACHD, 2018). Workforce development initiatives and recommendations were not directed at the Infectious Disease Epidemiology Program due to a lack of training needs.

### INFECTIOUS DISEASE PROGRAMS

The Immunization Program provides immunizations for adults, adolescents, and infants to prevent against specific diseases (ACHD, 2018), including all vaccines across the lifespan and travel vaccinations. In addition to immunizations, they perform animal bite surveillance, enforce school immunization regulations, provide educational programs, assist in infectious disease investigations, and maintain the immunization registry and tracking systems (ACHD, 2018) The program also oversees the Vaccines for Children program (ACHD, 2018). Educational materials about vaccine preventable illnesses, including rabies, toxoplasmosis, Lyme disease, and other zoonotic diseases are available as well (ACHD, 2018).

At the Immunization Clinic, influenza and pneumococcal vaccines are available as well as a range of other immunizations. Those seeking to join the Women, Infants, and Children (WIC) program can receive necessary screenings for certification and recertification at the clinic (ACHD, 2018). As of January 1, 2018, the universal lead testing regulation has been in effect and the Immunization Clinic provides blood lead level testing for children ages 9-12 months and retesting at the age of 24 months (ACHD, 2018).

The Sexually Transmitted Diseases/HIV/AIDS program provides screening and treatment for HIV, chlamydia, gonorrhea, syphilis as well as a various other sexually transmitted diseases (STD) (ACHD, 2018). In addition to STD services, the STD/HIV Clinic provides treatment for pubic lice and scabies for Allegheny County residents (ACHD, 2018). There are also ten community clinics placed in high risk or high incidence populations that provide chlamydia and gonorrhea testing in alliance with ACHD (ACHD, 2018). Program staff also provide education, conduct contact tracing and disease investigation services, participate in condom distribution, and collaborate with other community initiatives related to HIV and STDs (ACHD, 2018). Staff are trained in Pre-Exposure Prophylaxis (PrEP) and investigate, track, and monitor disease in the county. The STD/HIV program has several partnerships and collaborations throughout Allegheny County including HIV Collaborative and AIDS Free Pittsburgh (ACHD, 2018).

The Tuberculosis Program provides patient-centered case management for people with active or latent tuberculosis. Directly observed therapy (DOT) and contact follow-up services are provided for TB positive individuals (ACHD, 2018). Medication, home visits, and referrals are all offered in the treatment plan. The clinic also screens for TB using Mantoux tuberculin skin testing (ACHD, 2018). Routine screening is offered for at-risk individuals like refugees and for those who require it for employment or school purposes (ACHD, 2018). The program maintains a database of TB incidence and prevalence in Allegheny County and provides educational materials about the disease (ACHD, 2018). In the event of a large-scale exposure to tuberculosis, the TB program would take the lead in organizing community testing and prophylactic treatment.

## WORKFORCE DEVELOPMENT AT THE ACHD

The Allegheny County Health Department aspires to be the healthiest county in the country (ACHD, 2018). It upholds six major values to achieve this goal including professional integrity, respect, innovation and critical thinking, development the workforce, shared leadership, and community-centered (ACHD, 2018). Workforce development was identified as a priority area in ACHD’s 2015-2018 Strategic Plan (ACHD, 2015), and continues to be a focus in the newly released 2019 strategic plan (ACHD, 2019). The overarching goal for workforce development was to “increase staff competency and diversity required to successfully deliver the ten essential public health services through creation and implementation of a workforce development plan.” (ACHD, 2015). During the time period of the Strategic Plan, the ACHD received national accreditation from the PHAB in 2017 (ACHD, 2019).

### THE ACHD WORKFORCE DEVELOPMENT PLAN

The ACHD maintains an annual workforce development plan that covers training across all programs and services. Workforce development plans are an important component of accreditation and re-accreditation. Accreditation standard 8.2.1 requires that the health department maintains a competency-based workforce development plan that includes an assessment of the workforce with the Core Competencies. Three main sources of data contribute to ACHD’s workforce development plan: core competency assessments, prior training evaluations, and results from annual qualitative interviews with deputy directors, program managers, and key informants throughout the department (ACHD, 2018). Any county-wide or preparedness required trainings are incorporated into the plan as well.

It is recommended by the Public Health Foundation (PHF) that the Core Competency Assessment is conducted every five years for all staff at the health department. The Public Health Foundation is a non-profit organization that provides tools and resources for local health departments to implement workforce development, quality improvement, and performance management (PHF, 2019). A self-assessment tool was adapted from the PHF to identify workforce training needs (ACHD, 2018). The PHF self-assessment tool was adapted through an iterative process to better capture ACHD’s mission and services. Questions were re-worded to be more relevant to job functions; however, the key components of each competency were still addressed in order to meet accreditation requirements. Survey language remained consistent with that of accreditation standards. The tool was also adapted to suit the degree of training and experience of ACHD employees. The survey uses the PHF scale for participants to rate their own capabilities in performing the essential duties within the eight core competency domains. The adapted questions and rating scale can be found in Appendix A.

Training evaluations provide guidance for workforce development plans and allow for continuous improvement within existing training initiatives. Evaluations can affirm the value of current trainings, provide feedback on unsuccessful trainings, or open up avenues for new training needs. At the ACHD, trainings are evaluated on a case-by-case basis using appropriate methods and measurement goals (ACHD, 2018). Trainings are evaluated in various ways including participant interviews, de-briefings, qualitative or quantitative surveys, or instructor feedback (ACHD, 2018). Measurement of the Core Competencies are included whenever possible when conducting training evaluation. The Core Competency Assessment and Cultural and Linguistic Assessments, conducted as part of the accreditation process in 2015, provide guidance for training needs as well (ACHD, 2018).

Qualitative interviews with deputy directors, program managers, and key informants throughout the health department provide unique insight on training needs for each program. Key informants include the Chief Nursing Officer, Solicitor, and Information Technology staff. Qualitative interviews are conducted on an annual basis and provide validation of core competency self-assessment results. The qualitative interviews provide a secondary source of data for identifying trainings needs within programs. Key personnel can comment on training needs in their staff based on what is seen in everyday work. An example of a qualitative interview guide questions can be found in Appendix B.

# METHODS

Qualitative interviews were conducted over the span of three months in all Allegheny County Health Department programs and bureaus. Results from the 2014 Core Competency Assessment informed the development of interview questions. Interview questions were developed to provide a general guide but remained broad to allow for open conversation. The set included questions about existing skill gaps, identifying top training priorities, potential training tools to improve efficiency, and if prior trainings needed to be expanded on. An example set of interview questions can be found in Appendix B. The data collected varied in different programs based upon requested training needs from previous years and identified needs in the Core Competency Assessment results. Separate interviews were conducted in each program to evaluate training needs among all staff in these programs. Notes on training needs were recorded during the qualitative interviews and then compiled into an Excel spreadsheet. After all interviews were completed, training needs were organized by core competency domain and linked to a corresponding skill. The qualitative results were compared to the quantitative Core Competency Assessment data to identify similarities or differences. Top training priorities were identified for all ACHD staff and for infectious disease programs based off interview results.

# RESULTS

## CORE COMPETENCY RESULTS

ACHD has conducted two core competency assessments (2014 and 2018) to rate the capabilities of its workforce to carry out Core Competency skills on a scale of 1 to 4, None (1), Aware (2), Knowledgeable (3), and Proficient (4). All programs at the ACHD improved in average domain response from 2014 to 2018 (ACHD, 2018). ACHD staff were found to be strongest in self-reported Communication Skills (Domain 3) and weakest in Public Health Science skills (Domain 6) (ACHD, 2018). Overall, the infectious disease programs improved in all eight core competency domains from 2014 to 2018, as shown in Table 2 (ACHD, 2018). The greatest improvements were seen in Communication Skills and Leadership and Systems Thinking Skills (Domain 8) with average score increases of 0.541 and 0.407 respectively. The least amount of improvement was seen in Financial Planning and Management Skills (Domain 7) and Community Dimensions of Practice Skills (Domain 5) with average score increases of 0.123 and 0.146 respectively. Trends in domain response can be seen in Table 2 (ACHD, 2018).

Table 2. Infectious Disease Programs, Overall Domain Response

|  |  |  |  |
| --- | --- | --- | --- |
| Infectious Disease Programs | 2014 Result | 2018 Result | Trend |
| Domain 1: Analytical/Assessment Skills | 2.668 | 3.000 |  |
| Domain 2: Policy Development/Program Planning Skills | 2.732 | 2.985 |  |
| Domain 3: Communication Skills | 2.792 | 3.333 |  |
| Domain 4: Cultural Competency Skills | 2.981 | 3.303 |  |
| Domain 5: Community Dimensions of Practice Skills | 2.506 | 2.652 |  |
| Domain 6: Public Health Science Skills | 2.500 | 2.749 |  |
| Domain 7: Financial Planning and Management Skills | 2.529 | 2.652 |  |
| Domain 8: Leadership and Systems Thinking Skills | 2.638 | 3.045 |  |

Staff in infectious disease programs scored the lowest in Community Dimensions of Practice Skills and Financial Planning and Management Skills. Infectious disease staff scored highest in Communication Skills and Cultural Competency Skills. Administrators within infectious disease programs generally scored higher than other employees with all but one self-reported score average above 3.000 (ACHD, 2018). Clerical staff in these programs generally had the lowest self-reported score averages. Only 7 out of 37 questions had an average score above 3.000 (ACHD, 2018), indicating a need for training activities across all domains. Professional staff had self-reported average scores of 4.000 on four questions, two of which were in Analytical/Assessment Skills and the other two in Cultural Competency Skills (ACHD, 2018). No other staff had self-reported scores this high in any domain. A breakdown by overall response and response by title can be seen in Appendix C. Though improvement was seen in all infectious disease staff, overall average scores remain average and indicate a need for improvement in all eight domains.

## QUALITATIVE INTERVIEWS TRAINING NEEDS RESULTS FOR ALL ACHD STAFF

Results from all ACHD qualitative interviews are included to show what competencies need to be improved across the organization, and how infectious disease programs contribute to the general consensus. The results show that a variety of trainings can be integrated among several departments. Departments that use technology often, such as the Bureau of Assessment, Statistics, and Epidemiology require continuous training in the Analytical/Assessment domain. However, the Information Technology (IT) program recommended training on Windows 10 and Outlook for all staff. A common theme of needing training on basic computer skills was seen in nearly every department. Additionally, every program within ACHD requested training for supervisors and managers to improve skills within the Financial Planning and Management and Leadership and Systems Thinking domains. Specifically, leadership skills such as coaching, counseling, and documentation, progressive discipline, and managing high performing teams were requested. All program managers agreed that this type of training should be focused on new or upcoming supervisors and managers. Results from evaluations of previous trainings and qualitative interviews show a need for expanded sexual orientation, gender expression and gender identity training as well as cultural competency and health equity training for all staff. Despite all staff scoring weakest in Public Health Science skills on the Core Competency Assessment, few trainings were requested in this domain during qualitative interviews. Comprehensive qualitative interview results can be found in Appendix D.

### QUALITATIVE INTERVIEWS TRAINING NEEDS RESULTS FOR INFECTIOUS DISEASE PROGRAMS

Based on the Core Competency Assessment results, qualitative interviews were focused on identifying specific needs from key personnel in infectious disease programs. The Core Competency results indicate a need for improvement in all eight domains. Interviews provided better insight into what specific skill gaps exist and areas where training is needed most. The majority of trainings requested by all infectious disease programs, including nursing staff, were to improve skills in the Communication and Cultural Competency Domains. Among these programs, interview results demonstrate a need for increased training in customer service, cultural competency, and dealing with difficult conversations. Difficult conversations can occur both with patients receiving a diagnosis or with other employees on daily work-related issues. Providing these trainings will improve the client experience at the infectious disease clinics. Trainings were requested to improve general cultural competency skills, especially for those working in the clinics and directly interacting with the public. While infectious disease staff reported greatest ability to carry out the skills in Domain 4 (Cultural Competency Skills), the overall score for the bureau was average and thus, training in these skills will be valuable.

Infectious disease programs unanimously requested training for field workers on safety in the field as well as updates on past public health preparedness trainings, such as bloodborne pathogens and active shooter training. While the nursing supervisors did not mention this need specifically, nurses are included in infectious disease program staff and thus should be included in this training. Both STD/HIV nurses and Immunization nurses requested trainings to improve management skills. For Analytical and Assessment Skills, all infectious disease managers requested training for their staff on basic computer skills such as Microsoft applications, such as Outlook, Excel, and Word. TB nurses specifically requested a training that can assist in the transition from paper to electronic medical records. Finally, key personnel from the STD program suggested that a training on how to respond to agitated or angry patients could be beneficial to all infectious disease program staff, particularly since the program often delivers serious diagnoses.

# DISCUSSION

The results from the training needs qualitative interviews prove that workforce development should continue to be a priority for ACHD. Using several forms of measurement allows health departments to better determine priority training needs, especially when self-assessment data is being used. The Core Competency Assessment gives staff the chance to self-evaluate their own abilities to carry out public health competencies. However, the tool itself is subject to self-reporting bias. Participants likely overestimate or underestimate their abilities to carry out essential duties and functions. Qualitative interviews provide necessary insight on staff capabilities and skill-gaps. Qualitative interview results can reaffirm Core Competency Assessment results, or in some cases, refute them. Evaluations and feedback from prior trainings provide an additional layer of information to direct future workforce development initiatives.

Trainings are needed for all ACHD staff on basic computer skills and transitioning to Windows 10. Technology has become an integral part of delivering public health services, and enables health information to reach the public faster and improves the efficiency of health care. Existing skill gaps regarding technology can be a detriment to delivering these programs and services. High priority should be placed on training employees who use technology on a regular basis, such as clerical staff, clinical staff, and program administrators. Ensuring ACHD staff are competent and able to carry out competencies in the Analytical/Assessment domain now will allow future workforce initiatives to focus on improving more program-specific skills.

Top training priorities were identified for all employees, specific programs, and select staff members in the health department. Training on Windows 10 was recommended for all ACHD staff and was determined to be an overarching top priority for 2019. The entire health department is transitioning to this platform, which means staff needs to learn about the basics and navigation of Windows 10. Trainings on cultural competency skills, leadership skills, mandated reporting, and continued computer/software skills are top training priorities for all employees as well. The department should also continue to provide leadership development for new and upcoming managers, in order to help with succession planning and ensure continuity of operations in an emergency situation. Specific programmatic priorities were identified across the organization, including motivational interviewing for Dental staff, Tableau training for epidemiologists, and infographic training for Chronic Disease. It is important to include key results and top priorities from the ACHD staff as a whole because it affects what trainings can be implemented for infectious disease staff. If there are several baseline competencies that need to be improved upon for all staff, specific priorities in infectious disease programs may be put on hold.

Qualitative interviews revealed a unanimous need for training in communication skills across all infectious disease programs. Though staff within these programs rated themselves high within Domain 3, key personnel discussed the need to improve these skills and deemed it to be a top priority. Infectious disease employees in clinics were identified as staff members with the strongest need for training on customer service basics, which given the nature of their jobs, is expected. Trainings for cultural competency should focus on health equity, sexual orientation, gender expression and gender identity, and diversity. Key personnel from the immunization clinic suggested a secret shopper type initiative to identify exact customer service problems occurring in clinics. However, this initiative will likely be put on hold as improving basic computer skills and cultural competency skills are higher priorities for all staff.

Trauma-informed care training could address concerns in infectious disease departments about dealing with difficult conversations. Trauma is highly prevalent among HIV+ individuals and those with high risk of HIV (Brezing, Ferrara & Freudenreich, 2015). Trauma informed care helps people realize what trauma is, recognize the signs and symptoms, respond using a trauma-informed approach, and resist re-traumatization (Abuse, 2014). This training could be beneficial to all ACHD staff in addressing difficult conversations. Motivational interviewing is an additional training that should be explored further for infectious disease staff as it can help staff discuss behavior change in HIV+ individuals (Cook, Bradley-Springer & Corwin, 2009).

Similar to communication skills, having a staff that is culturally competent is highly important for infectious disease programs and clinics. The infectious disease staff see a diverse population in all three clinics. Disparities exist in the incidence and prevalence of disease in the U.S. (CDC, 2018). Infectious disease staff should have the capacity to recognize these disparities and provide comprehensive services to all members of the public. A culturally competent workforce can adapt to the needs of the public without losing efficiency or effectiveness. Based on the feedback and evaluation of a Sexual Orientation, Gender Identity and Gender Expression (SOGIE) training given to infectious disease staff during summer 2018, it is recommended that this training be implemented in other programs, and more in-depth training in this topic be offered to the infectious disease programs. On the SOGIE training evaluation, infectious disease staff reported that they had more to learn after the training and saw it as important to their daily work. The evaluation of this training gave validation to skill-gaps that were revealed in qualitative interviews.

The infectious disease field is everchanging and continuous improvement is necessary for infectious disease employees to address the current needs of the public. The nature of infectious disease work involves lifelong learning. Trainings in cultural competence and communication are expected in this field and should remain a top priority for workforce development. The ACHD’s annual workforce development plan gives infectious disease programs the opportunity to implement a lifelong learning model for their employees.

Developing a workforce development plan that supports the diversity of programs at ACHD is a challenge; however, utilizing this type of evidence-based approach will best prepare its workforce to address current and future public health issues. It is important to identify top training needs to inform the Workforce Development Plan due to time and financial constraints. Qualitative interviews provide a comprehensive look at what skill gaps exist and where overlaps occur. However, it is not realistic to incorporate every training request into the Workforce Development Plan. Often, training requests that come up across several programs become training priorities. Similarly, trainings that are requested for one or two staff members often do not become a priority.

# CONCLUSION

Trainings are necessary for a competent workforce to be able to deliver the 10 Essential Services of Public Health and they improve skills that directly tie into the Public Health Core Competencies. Results from the Core Competency Assessment and qualitative interviews prove a need for multiple workforce development initiatives. Implementing several forms of evaluation and self-assessment can reveal contradictory or reaffirming results and help identify true top training needs. The qualitative interviews revealed that infectious disease staff were lacking skills in competencies they self-reported as capable of carrying out. Multiple forms of workforce evaluation provide a check and balance system to address situations like this.

The infectious disease programs need to focus trainings on communication and cultural competency skills. Communication and cultural competency skills in the clinics are important as employees are charged with discussing serious health information with patients. People should feel comfortable walking into the STD/HIV clinic to get tested or into the Immunization clinic to learn more about vaccinations. For example, patients directed to the STD/HIV clinic may experience perceived stigma from a healthcare provider, which can discourage them from accessing important health care services (Kinsler, Wong, Sayles, Davis & Cunningham, 2007). Implementing trainings for infectious disease staff that improve cultural awareness and communication skills can reduce perceived stigma in a health care setting. Similarly, with the current issue of vaccine hesitancy and outbreaks of vaccine preventable diseases on the rise, it vital for immunization employees to possess the communication skills to have conversations with hesitant caregivers. The World Health Organization provides tools and training resources for guidance on health worker interactions on immunization that can be explored at the ACHD (WHO, 2018).

Overall, trainings in the next year should focus on ACHD staff mastering baseline skills so future workforce initiatives can move towards more complex public health skills. This will be important moving forward for reaccreditation. Mastering basic computer skills will be important for all staff, including infectious disease employees to improve clinic efficiency. Improving cultural competency skills was identified as a top priority for all staff, especially for infectious disease programs. The workforce development initiatives and results discussed in this essay should be incorporated into the ACHD’s 2019 Workforce Development Plan. A competent workforce is a crucial step for the Allegheny County Health Department to reach its goal of being the healthiest county in the country (ACHD, 2018).

APPENDIX A: CORE COMPETENCY ASSESSMENT RATING SCALE & QUESTIONS

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| --- |
| *ACHD Core Competency Assessment Rating Scale* (ACHD, 2018) |
| Rating Scale |
| **1 = None** (I am unaware, or have very little knowledge of the item); |
| **2 = Aware** (I have heard of it; limited knowledge and/or ability to apply the skill); |
| **3 = Knowledgeable** (I am comfortable with knowledge or ability to apply the skill);**4 = Proficient** (I am very comfortable, an expert, could teach this to others) |

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| *ACHD Core Competency Assessment Questions* (ACHD, 2018)*Domain 1: Analytical/Assessment Skills* |
| Question |
| 1. Describe a community's overall level of health and the factors that affect community health (e.g. quality, availability of health services, economic circumstances, environment) |
| 2. Identify sources of reliable public health data and information |
| 3. Use information technology (e.g. computers, data bases) and other appropriate tools to collect, store, and use data and information. |
| 4. Describe the use of data that measure public health conditions. |
| 5. Collect, use, and share data and information in an ethical manner. |

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| *Domain 2: Policy Development/Program Planning Skills* |
| Question |
| 6. Gather information that can be used for policy decisions in your program (e.g. healthinformation, fiscal information). |
| 7. Understand laws, regulations, and policies relevant to your work at the health department (e.g. HIPAA). |
| 8. Describe how policy can influence public health programs (e.g. funding, legal regulations). |
| 9. Identify ways to improve the quality and effectiveness of your work. |

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| *Domain 3: Communication Skills* |
| Question |
| 10. Identify the health literacy (understanding of health - related terms) of the populations your program serves. |
| 11. Communicate clearly and with cultural understanding in writing, speaking, and through other formats (e.g. community presentations, webinars). |
| 12. Use good communication skills with individuals and within groups (e.g. conflict resolution, active listening, risk communication). |

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| *Domain 4: Cultural Competency Skills* |
| Question |
| 13. Recognize that cultural, social, and behavioral factors impact how people access and use public health services. |
| 14. Describe the need for a diverse public health workforce. |
| 15. Work to interact effectively with persons from diverse backgrounds (e.g. cultural,socioeconomic, educational, racial, gender, age, ethnic, sexual orientation, professional, religious affiliation, mental and physical capabilities). |
| 16. Respond to the diverse needs that might result from cultural differences. |

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| *Domain 5: Community Dimensions of Practice Skills* |
| Question |
| 17. Identify stakeholders (people or organizations) and community assets that can helpyour program. |
| 18. Collaborate with the community and encourage community involvement within yourprogram. |
| 19. Describe the role of governmental and non-governmental organizations in thedelivery of public health services. |
| 20. Inform the population your program serves about policies, programs, and resources. |

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| *Domain 6: Public Health Science Skills* |
| Question |
| 21. Recognize the Core Public Health Functions and the Ten Essential Services of PublicHealth. |
| 22. Follow laws and procedures for the ethical conduct of research (e.g. HIPAA). |
| 23. Biostatistics |
| 24. Epidemiology |
| 25. Environmental Health |
| 26. Health Services Administration |
| 27. Social and Behavioral Health Sciences |

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| *Domain 7: Financial Planning and Management Skills* |
| Question |
| 28. Follow all Allegheny County Health Department policies. |
| 29. Describe the roles of local, state, and federal public health agencies. |
| 30. Identify potential funding sources (e.g. grants) that can help your program deliver services. |
| 31. Prioritize tasks in order to operate within your program's budget. |
| 32. Use feedback (individual and program) to improve performance. |
| 33. Report program performance. |

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| *Domain 8: Leadership and Systems Thinking Skills* |
| Question |
| 34. Recognize factors (both within and outside the health department) that affect thedelivery of the Ten Essential Services of Public Health. |
| 35. Interact in a professional manner with organizations, communities, and individuals. |
| 36. Describe how public health operates within a larger social, political, and economicenvironment. |
| 37. Participate in trainings and educational opportunities for personal and professionaldevelopment. |

APPENDIX B: INTERVIEW GUIDE FOR QUALITATIVE INTERVIEWS

**General Questions:**

1. If you or your team could choose your top three priority topics for employee training and
development this year, what would they be?
2. Are there certain skills that a consensus of employees’ lack?
3. What are some of the barriers you and your team face when it comes to participating in trainings?
4. Is there any tools or resources you can think of to help your staff work more efficiently?
5. Which method of training do you feel would be most effective: Classroom (lecture/interactive lessons); Video (demonstrative video); Internet (webinar); Workshop-style?
6. How much time realistically can be devoted to training?
7. Are there certain days/times that would be most convenient to implement trainings for your department?

APPENDIX C: INFECTIOUS DISEASE PROGRAMS CORE COMPETENCY RESULTS

Table 3. Infectious Disease Programs, Overall Response and Response by Title

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Domain 1: Analytical/Assessment Skills  | 1.1 | 1.2 | 1.3 | 1.4 | 1.5 |  |  |
| **Infectious Disease Programs (OVERALL)** | **2.909** | **2.848** | **3.152** | **2.818** | **3.273** |  |  |
| Administrator | 3.500 | 3.500 | 4.000 | 4.000 | 4.000 |  |  |
| Clerical | 2.714 | 2.429 | 2.857 | 2.286 | 2.857 |  |  |
| Professional | 2.941 | 2.824 | 3.118 | 2.706 | 3.235 |  |  |
| Program Manager | 2.500 | 3.000 | 2.500 | 2.500 | 3.000 |  |  |
| Supervisor | 2.667 | 3.333 | 4.000 | 3.667 | 4.000 |  |  |
| Technical or Trades | 3.500 | 3.000 | 3.000 | 3.500 | 3.500 |  |  |
| Domain 2: Policy Development/Program Planning Skills | 2.6 | 2.7 | 2.8 | 2.9 |  |  |  |
| **Infectious Disease Programs (OVERALL)** | **2.606** | **3.333** | **2.697** | **3.303** |  |  |  |
| Administrator | 3.500 | 4.000 | 3.500 | 4.000 |  |  |  |
| Clerical | 2.286 | 3.429 | 2.000 | 2.857 |  |  |  |
| Professional | 2.471 | 3.353 | 2.882 | 3.412 |  |  |  |
| Program Manager | 3.000 | 3.000 | 2.500 | 2.000 |  |  |  |
| Supervisor | 3.000 | 3.000 | 2.333 | 4.000 |  |  |  |
| Technical or Trades | 3.000 | 3.000 | 3.500 | 3.500 |  |  |  |
| Domain 3: Communication Skills  | 3.10 | 3.11 | 3.12 |  |  |  |  |
| **Infectious Disease Programs (OVERALL)****Table 3 Continued** | **3.303** | **3.182** | **3.515** |  |  |  |  |
| Administrator | 3.500 | 3.000 | 3.500 |  |  |  |  |
| Clerical | 2.714 | 2.714 | 3.143 |  |  |  |  |
| Professional | 3.471 | 3.294 | 3.647 |  |  |  |  |
| Program Manager | 3.000 | 3.000 | 3.000 |  |  |  |  |
| Supervisor | 3.667 | 3.667 | 4.000 |  |  |  |  |
| Technical or Trades | 3.500 | 3.500 | 3.500 |  |  |  |  |
| Domain 4: Cultural Competency Skills  | 4.13 | 4.14 | 4.15 | 4.16 |  |  |  |
| **Infectious Disease Programs (OVERALL)** | **3.273** | **3.273** | **3.394** | **3.273** |  |  |  |
| Administrator | 4.000 | 4.000 | 4.000 | 3.500 |  |  |  |
| Clerical | 2.714 | 2.714 | 3.143 | 2.714 |  |  |  |
| Professional | 3.412 | 3.412 | 3.471 | 3.471 |  |  |  |
| Program Manager | 3.000 | 3.000 | 3.000 | 2.500 |  |  |  |
| Supervisor | 3.333 | 3.333 | 3.333 | 3.667 |  |  |  |
| Technical or Trades | 3.500 | 3.500 | 3.500 | 3.500 |  |  |  |
| Domain 5: Community Dimensions of Practice Skills  | 5.17 | 5.18 | 5.19 | 5.20 |  |  |  |
| **Infectious Disease Programs (OVERALL)** | **2.515** | **2.424** | **2.636** | **3.030** |  |  |  |
| Administrator | 3.000 | 3.000 | 3.500 | 3.000 |  |  |  |
| Clerical | 2.000 | 2.000 | 2.000 | 2.571 |  |  |  |
| Professional**Table 3 Continued** | 2.471 | 2.412 | 2.706 | 3.176 |  |  |  |
| Program Manager | 3.000 | 2.000 | 3.000 | 3.000 |  |  |  |
| Supervisor | 3.333 | 3.333 | 2.333 | 3.667 |  |  |  |
| Technical or Trades | 2.500 | 2.500 | 3.500 | 2.500 |  |  |  |
| Domain 6: Public Health Science Skills | 6.21 | 6.22 | 6.23 | 6.24 | 6.25 | 6.26 | 6.27 |
| **Infectious Disease Programs (OVERALL)** | **2.636** | **3.576** | **2.333** | **2.667** | **2.576** | **2.667** | **2.788** |
| Administrator | 3.500 | 3.500 | 3.000 | 3.500 | 3.000 | 3.000 | 4.000 |
| Clerical | 2.143 | 3.429 | 1.571 | 1.857 | 1.857 | 2.143 | 1.571 |
| Professional | 2.647 | 3.647 | 2.529 | 2.824 | 2.765 | 2.765 | 3.118 |
| Program Manager | 3.000 | 3.500 | 2.000 | 3.000 | 2.000 | 3.000 | 3.000 |
| Supervisor | 2.333 | 4.000 | 2.333 | 2.667 | 2.667 | 3.000 | 2.667 |
| Technical or Trades | 3.500 | 3.000 | 3.000 | 3.000 | 3.500 | 2.500 | 3.000 |
| Domain 7: Financial Planning and Management Skills | 7.28 | 7.29 | 7.30 | 7.31 | 7.32 | 7.33 |  |
| **Infectious Disease Programs (OVERALL)** | **2.606** | **3.061** | **1.970** | **2.545** | **3.030** | **2.697** |  |
| Administrator | 4.000 | 3.500 | 2.500 | 4.000 | 4.000 | 4.000 |  |
| Clerical | 2.000 | 3.143 | 1.429 | 2.286 | 2.571 | 2.286 |  |
| Professional | 2.529 | 2.941 | 2.000 | 2.529 | 3.176 | 2.588 |  |
| Program Manager | 3.000 | 3.000 | 2.000 | 3.000 | 3.000 | 3.000 |  |
| Supervisor | 2.667 | 3.333 | 2.667 | 2.333 | 2.667 | 3.333 |  |
| Technical or Trades | 3.500 | 3.000 | 2.000 | 2.000 | 3.000 | 2.500 |  |
| Domain 8: Leadership and Systems Thinking Skills | 8.34 | 8.35 | 8.36 | 8.37 |  |  |  |
| **Infectious Disease Programs (OVERALL)** | **2.515** | **3.394** | **2.909** | **3.364** |  |  |  |
| Administrator | 3.000 | 3.500 | 3.500 | 3.500 |  |  |  |
| Clerical | 2.000 | 3.286 | 2.143 | 3.143 |  |  |  |
| Professional | 2.588 | 3.529 | 3.000 | 3.412 |  |  |  |
| Program Manager | 2.000 | 3.000 | 3.000 | 3.000 |  |  |  |
| Supervisor | 2.667 | 3.667 | 3.333 | 3.667 |  |  |  |
| Technical or Trades | 3.500 | 2.500 | 3.500 | 3.500 |  |  |  |

**Table 3 Continued**

APPENDIX D: SUMMARY OF 2018 ACHD TRAINING NEEDS QUALITATIVE INTERVIEWS RESULTS

Table 4. Training Requests by Core Competency Domain

|  |  |
| --- | --- |
| Domain | Number of Trainings Requested |
| Domain 1: Analytical/Assessment Skills | 20 |
| Domain 2: Policy Development/Program Planning Skills | 1 |
| Domain 3: Communication Skills | 8 |
| Domain 4: Cultural Competency Skills | 3 |
| Domain 5: Community Dimensions of Practice Skills | 3 |
| Domain 6: Public Health Science Skills | 5 |
| Domain 7: Financial Planning and Management Skills | 11 |
| Domain 8: Leadership and Systems Thinking Skills | 10 |

Figure 2. 2019 Training Requests by ACHD Bureau

Table 5. 2019 Infectious Disease Programs Training Requests by Core Competency Domain

|  |  |  |  |
| --- | --- | --- | --- |
| Domain | STD/HIV | Immunization | Tuberculosis |
| Domain 1: Analytical/Assessment Skills | 0 | 1 | 0 |
| Domain 2: Policy Development/Program Planning Skills | 0 | 0 | 0 |
| Domain 3: Communication Skills | 2 | 1 | 1 |
| Domain 4: Cultural Competency Skills | 2 | 2 | 2 |
| Domain 5: Community Dimensions of Practice Skills | 0 | 0 | 0 |
| Domain 6: Public Health Science Skills | 0 | 0 | 0 |
| Domain 7: Financial Planning and Management Skills | 2 | 1 | 1 |
| Domain 8: Leadership and Systems Thinking Skills | 1 | 1 | 1 |

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