

ENVIRONMENTAL SCAN REPORT

Disease Intervention Workforce



AUGUST 2025

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Executive Summary

Disease intervention specialists (DIS) and other disease intervention (DI) professionals are vital members of the national public health workforce, reducing community spread of infectious diseases, including sexually transmitted infections (STIs), human immunodeficiency virus (HIV), COVID-19, viral hepatitis, tuberculosis, and more, through contact tracing, partner services, health education, and facilitating access to care. While DI professionals are valuable players among the workforce, there is no clearly defined educational pathway for joining the DI workforce. With funding from the Centers for Disease Control and Prevention (CDC), the Association of Schools and Programs of Public Health (ASPPH) and the National Board of Public Health Examiners (NBPHE) will develop a national Certified in Disease Intervention (CDI) Certification. Certification will help to develop and train the DI workforce and strengthen pathways from educational institutions to a rewarding and impactful career in DI.

This environmental scan report reviews relevant contributions to the literature concerning DI work, highlighting the need for standardization of and training for the role. Relevant literature explores the populations who experience the greatest risk for infectious diseases addressed by the DI workforce. The literature pinpoints race/ethnicity, sexual orientation, and socioeconomic status as important contributors to disparate rates of infectious disease among diverse populations. Consistent with Raising the Bar's Framework for Promoting Equity and Excellence in Healthcare (Raising the Bar, 2022) and the U.S. Department of Health and Human Services' (HHS) Action Plan to Reduce Racial and Ethnic Health Disparities (U.S. Department of Health and Human Services, 2011), the literature supports increasing diversity among the public health workforce as a strategy for improving population-wide health outcomes. It also explores the unique challenges facing the DI workforce as they endure increasing workloads, stagnant pay, and lack the resources and training to perform their job duties in an ever-changing society.

In addition, this report analyzes DIS job postings across the nation, identifying differences in educational requirements, required skillsets, and compensation ranges. The report concludes with a scan of available training opportunities that support continuing education and professional development among the DI workforce. While there is no distinct educational pathway to become a DI professional, several infectious disease and epidemiology certificate programs and training opportunities do exist to support the DI workforce in improving knowledge and skills related to disease transmission, outbreak investigations, communication and interviewing techniques, cultural competence, and more.

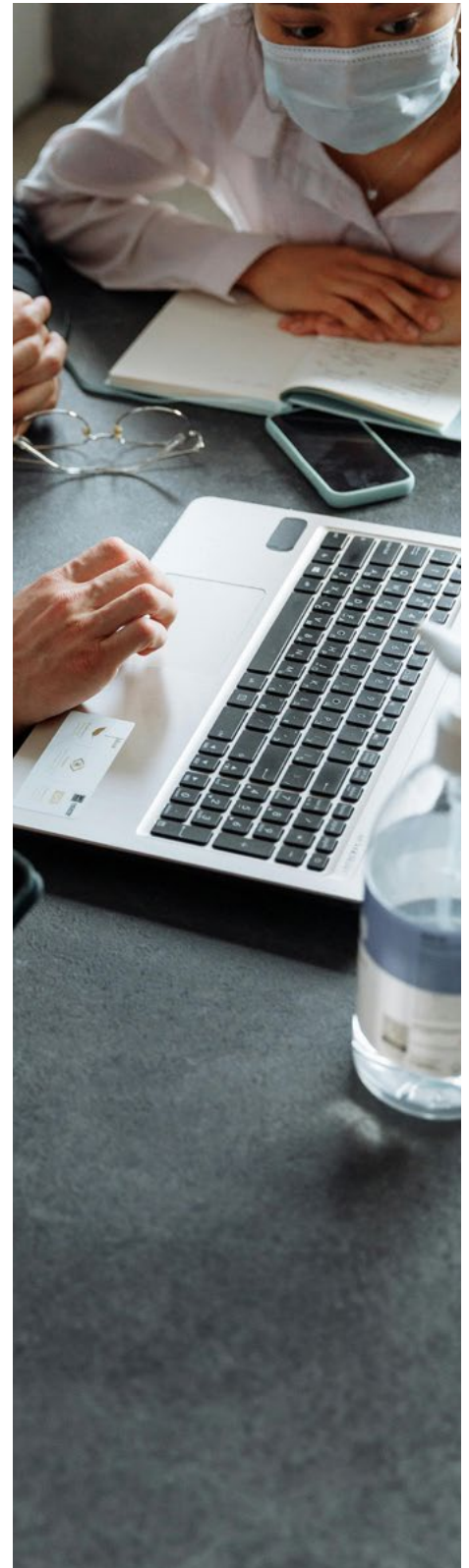
This report is intended to inform the development of a national CDI Certification program. It is anticipated that these recommendations will translate into identifying regional differences in infectious disease control, informing the development of educational pathways for CDI Certification, identifying training needs for the existing governmental public health workforce and entry-level practitioners, and strengthening pathways to jobs in governmental public health.

Introduction & Background

DI professionals play a vital role in the national public health workforce, working within communities to prevent and reduce the spread of sexually transmitted infections (STIs), human immunodeficiency virus (HIV), COVID-19, viral hepatitis, tuberculosis (TB), and other infectious diseases (Cope, et al., 2019). The CDI Certification Advisory Committee, led by the National Board of Public Health Examiners (NBPHE), updated the Public Health Accreditation Board's definition of a DIS, as follows: "A DIS is primarily a non-licensed public health professional with applied expertise in preventing the spread of infectious disease at the community level. DIS accomplish this by delivering a comprehensive array of person-centered services necessary to provide equitable access to recommended testing, treatment, and prevention resources. DIS apply their investigation and communication skills to collect surveillance and community health data, conduct interviews, provide education, motivate change, and gain the cooperation of others to identify, locate and inform people who are at risk of infection. Other DI activities often include contact tracing (sometimes called partner services); field investigation and other field-based activities, including specimen collection, directly observed therapy, and community engagement and outreach; counseling, case analysis, collaboration and engagement with medical providers, and navigation of health care systems to support patient evaluation and treatment. DIS most commonly work in public health programs that focus on STI, HIV, TB, hepatitis B and C, and emerging infectious diseases. In some instances, licensed professionals (e.g., nurses, social workers, etc.) may also work as DIS."

DI professionals have been on the frontlines of public health for decades, and their ability to reduce the transmission of infectious diseases within communities is well-regarded; however, there is no clearly defined educational pathway for becoming a DI professional. State and local health departments, as well as other agencies employing and/or educating DI professionals, now have the opportunity to convene as subject matter experts and develop a national CDI Certification to standardize training and professional development for the future of the DI workforce.

Funding was awarded by the Centers for Disease Control and Prevention (CDC) through CK20-2003, "Improving Clinical and Public Health Outcomes through National Partnerships to Prevent and control Emerging Infectious Disease Threats" to the Association of Schools and Programs of Public Health (ASPPH). This funding will be used by ASPPH working in collaboration with the National Board of Public Health Examiners (NBPHE) to develop a Certified in Disease Intervention (CDI) Certification program. As noted in the Disease Intervention Specialist Certification Project's final report to the CDC, prepared by the Public Health Accreditation Board, "The goal of certification of the DIS workforce is to improve public health services provided to communities by DIS through a high quality, standardized approach to the professional



development of the workforce. Certification can standardize and validate the knowledge, skills, and abilities of DIS; drive the standardization and improvement of training; increase the quality and consistency of service delivery and; increase recognition of the skills and abilities of DIS (Public Health Accreditation Board, 2017).”

DI positions, including DIS, originated in response to increasing STI rates across the nation (Cope, et al., 2019). Well-regarded as front-line public health workers, DI professionals work to control the spread of infectious diseases in medically underserved populations, ensuring those who experience risk are connected to the treatment they need. While DI services are available to all populations within the communities that their agencies serve, it is vital that the DI workforce possesses the necessary skills to prioritize the populations in most need of its services to reduce the transmission of infectious diseases within the community. While it is no surprise that there are differences in infectious disease rates across the nation, certain populations experience higher risk of infection (Ford & Browning, 2014; Hill & Holland, 2021; Khanijahani, et al., 2021; Operario, et al., 2015; Springer, et al., 2010).

Variations Among Specific Populations

RACE AND ETHNICITY

The DI workforce tracks and prevents the spread of STIs and other infectious diseases in all populations, but the burden of disease, especially those transmitted sexually, falls heavily on select racial/ethnic groups. Black or African-American populations frequently experience higher rates of STIs and other infectious diseases compared to other racial/ethnic groups, often faring worse outcomes than their counterparts. These patterns may be influenced by structural racism (Hill & Holland, 2021), stigma, and discrimination (Centers for Disease Control and Prevention, 2022a). The Black or African American population had the highest percentage (42%) of new HIV diagnoses in 2020 (Centers for Disease Control and Prevention, 2020) and an estimated one in 27 Black or African-American men will acquire HIV in their lifetime (Singh, et al., 2022). The rate of reported cases of chlamydia among the Black or African-American population in 2021 was 1081.9/100,000, compared to 184.9/100,000 among the White population (Centers for Disease Control and Prevention, 2023a), while the rate of reported cases of gonorrhea among the same populations was 652.9/100,000 and 78.9/100,000, respectively (Centers for Disease Control and Prevention 2023b). Despite representing 12.54% of the United States population, non-Hispanic Black or African-American persons represented 13.1% of COVID-19 related deaths as of August 20, 2023 (Centers for Disease Control and Prevention, 2023c), which demonstrates how this population may bear the burden of infectious disease at higher rates than other races/ethnicities.

Hispanic/Latino and Asian/Pacific Islander populations also experience an increased risk for contracting certain infectious diseases. The 2021 rate of reported chlamydia cases among Hispanic/Latino people was 349.4/100,000 compared to 184.9/100,000 among the White population (Centers for Disease Control and Prevention, 2023a), though it is important to note that while chlamydia infection rates among White populations remain lower than that of other racial/ethnic groups, they are increasing (Corcoran, et al., 2020). Similarly, cases of gonorrhea and syphilis in people who are Hispanic/Latino were 137.0/100,000 and 17.2/100,000, compared to a reported rate of 78.9/100,000 and 9.1/100,000 among the White population (Centers for Disease Control and Prevention, 2023c; Centers for Disease Control and Prevention, 2023d). Asian Americans comprise 6% of the United States’ population, but account for 58% of chronic hepatitis B cases, with a prevalence rate that is 31 times higher than in the non-Hispanic White population (Office of Infectious Disease and HIV/AIDS Policy, 2021). In 2021, racial/ethnic minority groups, including Hispanic/Latino, African American, and Asian populations, among others, accounted for more than 88% of tuberculosis cases in the United States (Centers for Disease Control and Prevention, 2022b). It is important that public health professionals monitor the upward trend in positivity rates across all races and ethnicities. Increasing DI services without considering racial inequities and the social determinants of health does a disservice to the communities with the highest needs.

SEXUAL ORIENTATION

Sexual orientation also plays a role in estimating one's risk for contracting infectious diseases, especially STIs. In the United States, the chlamydia infection rate for females is twice that of men, with White adolescent females experiencing rates five times than that of their White adolescent male counterparts (Corcoran, et al., 2020). Data show that persons who identify as lesbian, gay, bisexual, or non-heterosexual (i.e., not heterosexual, or characterized by sexual or romantic attraction to or between people of the opposite sex (Merriam-Webster, n.d.)), experience higher STI rates (Operario, et al., 2015). Seventy-one percent of new HIV diagnoses in the United States in 2020 were among men who have sex with men, while only 22% of HIV diagnoses in 2020 were attributed to infections acquired through heterosexual

contact (U.S. Department of Health and Human Services, 2022). In 2021, 36% of reported primary and secondary syphilis cases in the United States were among men who have sex with men only and men who have sex with both men and women (Centers for Disease Control and Prevention, 2023e). Unfortunately, there is still a lack of demographic surveillance data that incorporates sexual orientation. It is important that public health supports the integration of this demographic data into public health surveillance systems to monitor trends among these populations. It is also essential that the DI workforce continue to acquire knowledge and experience as to how to reach the specific populations that are most in need of their services.



COMMUNITIES OF PEOPLE WITH LOWER INCOME AND SOCIOECONOMIC STATUS

Where individuals live, the opportunities they are presented with, and the societal pressures that they face can have a direct impact on their health and their risk of contracting and/or transmitting infectious diseases (American Psychological Association, 2022). Poverty rates and income inequality can be considered potential contributing factors to disparate STI rates. One study found that women experience lower rates of gonorrhea and syphilis in states with higher minimum wages, noting that when minimum wage rates are lower and fewer women are employed, women may lack the ability to engage in more protective behaviors, including seeking STI testing and treatment and not participating in transactional sexual activities (Ibragimov, et. al., 2019). Areas of the country with high rates of poverty and lack resources, such as quality health care and educational institutions, are more likely to see STI clusters and high infection rates (Ford & Browning, 2014). Poverty is also a common driver for engagement in sex work, likely contributing to higher rates of STIs among the community (Marotta, 2017).

Regarding other infectious diseases, such as COVID-19, communities of people with lower income often experience higher risk of infection than their more affluent counterparts. Large percentages of individuals working in service-industry jobs in high population density locations are just two factors that put communities of individuals with low socioeconomic status at higher risk for infectious disease transmission. It is harder to stay healthy when housing is overcrowded, individuals are facing immense stress and societal pressure, and jobs do not allow for proper social distancing, nor do they provide proper personal protective equipment (PPE) (Khanijahani, et al., 2021). Populations experiencing homelessness also experience increased risk of infectious disease transmission. For example, person-to-person transmission of hepatitis A is significant among people who are experiencing homelessness, with 33% of outbreaks in California, Kentucky, Michigan, and Utah reported in this population in 2017 (Office of Infectious Disease and HIV/AIDS Policy, 2021).

High rates of infection among people whose self-reported income was in the lowest income bracket may be exacerbated by their community's lack of access to quality medical care or their provider's attitudes and behaviors toward economically

disadvantaged patients (Springer, et al., 2010). People who are uninsured or underinsured often face challenges in accessing free or low-cost screening services and, when diagnosed, may have trouble obtaining treatment or getting that treatment covered by their insurance provider. An analysis of chronic hepatitis C direct-acting antiviral treatment coverage by insurance status revealed that patients with Medicaid had longer wait times for insurance to approve treatment than did patients with Medicare or commercial insurance. Nearly 50% of patients with



Medicaid were absolutely denied treatment coverage, while only 5% of Medicare patients experienced the same treatment denial. Denial of this treatment puts patients at risk for adverse health outcomes, including cancer and end-stage liver disease (Lo Re, et al., 2016). Additionally, Thompson, et. al. revealed that individuals aged 18-29 years, as well as Medicaid recipients, have the lowest overall direct-acting viral treatment rates. Their further analysis of Medicaid data showed that the lowest direct-acting viral treatment rates were found among Medicaid recipients living in states with Medicaid restrictions and among individuals reporting their race as Black or African-American or Other (Thompson, et. al., 2022). The DI workforce can help address provider and insurance biases through compassionate and confidential communication and treatment practices.

The needs of communities may look different in rural and urban areas, and may vary between state, territorial, local, and Tribal jurisdictions. It is important that the DI workforce both understand and can meet the unique needs of the populations that they are serving. Raising the Bar's Framework for Promoting Equity and Excellence in Healthcare and the U.S. Department of Health and Human Services' (HHS) Action Plan to Reduce Racial and Ethnic Health Disparities (HHS Disparities Action Plan) describe

evidence-based approaches to improve cultural competency and -increase access to quality health care among all populations. The HHS Disparities Action Plan prioritizes the education, training, and development of the public health workforce with regards to improving cultural competency, noting that both professional and lay health workers are equally important as the workforce adapts to meet the country's evolving needs (Jackson & Gracia, 2014).

The DI workforce is uniquely positioned to affect change in the spread of infectious diseases among all populations, when they possess the skills necessary to not only reach but provide tailored communication and individualized care to the various races, ethnicities, genders, sexual orientations, and socioeconomic levels among the people that comprise their community. Ensuring the DI workforce is trained in cultural competency and participates in continuing education and professional development on how to properly support their communities' unique needs is critical when considering the development of a CDI Certification to standardize the role, as it is evident throughout the literature that the current DI workforce's training and experience varies dramatically.



Disease Intervention Workforce

The 2016 DIS enumeration survey, conducted by the National Association of County and City Health Officials (NACCHO), identified 1,661 DIS positions, plus 402 DIS supervisor positions. The survey also revealed that a larger number of staff vacated their positions (778) than were hired into the DIS workforce within the five years leading up to the survey (Public Health Accreditation Board, 2017). Expectations of the DI workforce continue to shift as the world responds to emerging public health threats. Demands on DIS in governmental public health agencies have increased in response to the ongoing COVID-19 pandemic, increases in STI incidence rates, and evolving methods and new technologies used to engage individuals in partner services, including the regular collection and entry of epidemiologic data into information systems (Cope, et al., 2019). These increasing demands are a contributing factor to the differences in compensation, training opportunities, and resources available to the DI workforce. National standardization of the DI professional role can help promote more equitable approaches to managing infectious diseases and ensure that prevention and response efforts are tailored to meet the needs of the nation's diverse populations. Current research and literature explore three key themes that highlight the need to standardize DI roles and responsibilities through national certification.

INCREASING WORKLOADS, STAGNANT COMPENSATION

The DI workforce is overworked and underpaid despite caseloads continuing to increase in response to rising STI and other infectious disease rates (Cope, et al., 2019). Many DI professionals in governmental public health agencies temporarily transitioned away from STI case management to serve on the frontlines during the height of the COVID-19 pandemic, performing contact tracing and COVID-19 case management instead. While pandemic response is a natural fit for most DI workers, when the demands on their time continue to rise without an increase in compensation or benefits, it may lead to low morale and high turnover.

The 2016 Public Health Workforce Gaps Study, which included a national survey of local and state health agencies, revealed that 88% of local health department respondents identified DIS as a high priority public health workforce need and 42% reported a need for more DIS positions in their own agency. Fifty percent of state health agencies reported a need for more qualified DIS candidates and 85% reported needing to provide more competitive salaries for DIS recruitment and retention (Beck, et al., 2017). It is evident that local and state health agencies value the service that the

DI workforce provides but are not currently providing the compensation and environment conducive to retaining quality employees, nor are they hiring additional DIS to match increasing workloads. Staff are seeking new positions where they are compensated fairly, have opportunities for career advancement through promotions and training, and are given a manageable workload (Cope, et al., 2019). Standardization of the DI professional role can lead to increased employer understanding of roles and responsibilities, fair compensation, and recruitment and retention of quality candidates to fulfill expanding caseloads. Increased employee retention will demonstrate to employers that the time and money invested into training their DI workforce is justified.



LACK OF STANDARDIZATION

While efforts to define the needs of the modern DI workforce are ongoing, the lack of role standardization is creating significant variation in workforce capacity and effectiveness across the country. State and local health departments both need and want to increase their DI workforce (Beck, et al., 2017), but the vital role the DI workforce plays on the frontlines of public health is often overlooked. Development of a standardized set of skills, competencies, and job tasks for the DI workforce will help shine a light on the critical importance of DI professionals in addressing STIs and other infectious diseases that threaten the health and livelihood of communities across the country (Cope, et al., 2019).

The 2016 Job Task Analysis of the DIS workforce revealed that a portion of the workforce do not possess an undergraduate or graduate degree (Public Health Accreditation Board, 2017); therefore, when developing standardized competencies for CDI Certification, it's important to recognize the many equally acceptable pathways to learn the skills necessary to join the DI ranks. While BSPH and MPH core curricula do align with some of the competencies and job tasks expected of the DI workforce, it is unrealistic to rely solely on degree-conferring academic programs to train incoming DI specialists. Training and certificate programs outside of public health academic institutions must be considered as viable educational pathways to working in DI spaces (Mase, et al., 2018). Gaining understanding of the current DI workforce's education and experience can help unearth common backgrounds, experience, and education that led individuals to this line of work.



UNIQUE TRAINING NEEDS

New resources are needed for today's public health workforce to conduct efficient and effective DI. The original DIS workforce, using paper and pencil, phone calls, and in-person meetings working in the field (Macke, et al., 1998), paved the way for modern-day contact tracing, linkages to care, and capacity building within communities affected by the spread of STIs (Cope, et al., 2019). Today's technological advancements strengthen this effort and DI professionals are using them to reach people diagnosed with or exposed to infectious disease, connecting them to care, and equipping communities with education and resources to stop the spread of infectious disease.

While in-person work is still a priority, the modern DI workforce has shifted much of its time in the field to office work, including data-entry and case management (Cope, et al., 2019). Interpersonal and communication skills are still vitally important skills for DI professionals to possess, but hiring managers are now looking for candidates with strong computer and data entry skills to meet the demands of advancing technologies in health care. For example, DIS supervisors at the North Carolina Department of Health and Human Services reported that DIS spent 20% of their time on data entry in 2006; by 2016, that percentage increased to 30%, or nearly a third of their working hours (Cope, et al., 2019). Staff have less time to focus on contact tracing and in-person interventions, yet their caseloads continue to increase without the benefit of hiring additional staff to assist.

Providing staff with adequate resources and training opportunities is one method of strengthening and retaining a quality DI workforce. The ways in which individuals are meeting sexual partners has changed in the past two decades, with social media and dating apps being a common communication method for potential partners. DI

professionals must be tech-savvy, with experience using smartphone apps, social media, and other web-based methods of communication among potential sexual partners. Many DIS do not have access to these essential technologies due to their jurisdiction's policies on smartphone app usage and social media and other website access (Cope, et al., 2019). Without access to these types of apps and websites, which in some instances may be the only way to locate and communicate with exposed partners, the DI workforce cannot properly do its job to the best of its ability (Cope, et al., 2019). The DI workforce needs to be trained in new and emerging technologies, and creative approaches to meet the needs of the communities they serve. A CDI Certification program that outlines specific skills and competencies essential for proficiency in DI will help employers justify the use of smartphone apps, social media, and other technologies in this line of work.



Current Roles and Responsibilities

While key roles and responsibilities of DI workforce are well-established, a clearly defined educational pathway to become a DI professional does not currently exist. A 2017 job task analysis (JTA) of DIS established that roles are primarily staffed by individuals with a bachelor's degree that perform key job tasks including planning and preparation for case and field work; investigation activities; encounters and interviews with people diagnosed with or exposed to infectious disease; surveillance support activities; health system collaboration and quality improvement; clinical support services; testing and field services; case analysis; and outbreak response and emergency preparedness (Public Health Accreditation Board, 2017).

ANALYSIS OF JOB POSTINGS

An August 2022 web search for national DIS job postings on an online job listing resource revealed major differences in educational requirements, prior work experience, anticipated job duties, and salary ranges by region, state, and even county, revealing the need for national standardization of DIS roles and responsibilities via a CDI Certification program. Eighteen states were represented among the 32 DIS job openings identified using the search term “disease intervention specialist” between August 4-5, 2022: five in the Midwest (Indiana, Kansas, Minnesota, South Dakota, and Wisconsin), one in the Northeast (Pennsylvania), eight in the South (Alabama, Florida, Georgia, Louisiana, North Carolina, Texas, Virginia, and West Virginia) and three in the West (New Mexico, Washington, and Wyoming). The 2016 NACCHO DIS enumeration survey reported an estimated 1,661 national DIS positions, with 257 vacancies (Public Health Accreditation Board, 2017); enumeration of the current DIS workforce is forthcoming.

Educational requirements for current DIS roles vary across the nation, ranging from requiring a high school diploma/GED to a bachelor's degree to qualify for consideration. One to two years of work experience, preferably in a public health or healthcare setting, is preferred according to the 32 postings reviewed in this analysis. The average salary for DIS ranges from \$44,173 to \$56,995; based on location and experience, DIS employees can expect their starting salary to fall in the range of \$29,047 (West Virginia) to \$63,764 (Washington state). Southern states have the lowest average salary range (\$40,794-\$54,301) while western states have the highest average salary range (\$49,982-\$63,331). The posting with the highest starting salary, though in a high-cost-of-living area (Seattle, King County, Washington), requires only a high school diploma and two years of related work experience for eligibility.

See Appendix C for more information about the August 2022 web-search for DIS job postings.



KEY SKILLS

The majority of DIS work is focused on STI prevention, but the primary skills of investigation, contact-tracing, case management, community outreach, and behavior modification are easily transferrable to all infectious disease outbreaks, including COVID-19, tuberculosis, HIV, foodborne illness, etc. Agencies employing DIS share a similar interpretation of the core function of DIS work, as related responsibilities and key words were found across all job postings reviewed in this analysis. These core functions include:



Providing partner services to people diagnosed with and/or exposed to STIs, including HIV



Interviewing individuals with STIs and their partners to ensure timely testing and treatment



Educating individuals on STI and infectious disease risk reduction, facilitating positive behavior change



Maintaining updated patient medical records/case files and completing timely data entry



Facilitating linkages to health care for clinical follow-up



Conducting community outreach to populations with an increased risk and high incidence of disease



Assisting epidemiologists and clinical staff with outbreak investigations

Employers across the nation also seek DIS candidates with experience in phlebotomy, as phlebotomy is often performed by the DIS to expedite medical management. Several postings reference phlebotomy certification as a preference, though it is not a requirement. Bilingual (English/Spanish) candidates are preferred, especially in southern states, to reach Spanish-speaking populations. Nearly all posted positions require a valid driver's license in the state in which job duties are performed due to the role's often extensive local travel requirements.

Training Programs

Results from an analysis of DIS job postings indicate no required pre-requisite training or credentialing for candidates. However, several quality training and continuing education programs are available to the DI workforce and those interested in entering the profession.

Certificate Programs

A web search identified 16 certificate programs focusing on infectious disease epidemiology and infection control (see Appendix B). Ten of these programs are offered at a graduate school. Three certificate programs are offered at a four-year college, two at a community college, and the remaining certificate program is offered through a charitable foundation. Five of these certificate programs are designed and developed by a for-profit company and later implemented in an online format through partnerships with universities, community colleges, and charitable foundations. The training content for these certificate programs focuses on infection control principles as well as transmission and prevention of infectious diseases, including influenzas, tuberculosis,

viral hepatitis, STIs, zoonotic diseases, and emerging infectious diseases.

Prerequisite requirements for the 16 certificate programs vary with six requiring dual enrollment in a graduate public health program and others having no educational requirements at all. Credit requirements range from six to 15 with the average certificate program requiring 12 credits to completion. Given that the certificate programs are marketed to full-time students and/or full-time working professionals, the programs require two semesters or one year to complete. Further, only one certificate program is delivered on-campus, with the remaining 15 delivered in a hybrid or fully online format.



Training and Professional Development Resources

Several educational courses and technical assistance resources are publicly available to support the workforce in building capacity for DI core competencies. Currently, resources to support workforce development for DI professionals include:

[CDC Disease Intervention Webpage](#)

The CDC Disease Intervention Webpage provides general information about DI, the role of DIS, and resources for DI professionals, including links to trainings.

[DIS Fundamentals Training Plan](#)

The DIS Fundamentals Training Plan is a 29-module self-paced training that provides fundamental DI skills for new DIS and/or those conducting partner service activities.

[Disease Intervention Training Plan with Outbreak Response](#)

The Disease Intervention Training Plan with Outbreak Response is a 131-hour self-paced training that is more comprehensive than the fundamentals course, and contains additional modules related to outbreak response.

[Introduction to Public Health Practice](#)

The Introduction to Public Health Practice training plan provides an introduction to public health for those new to or working in the field, and includes courses on health equity, communication skills, policy development, data analytics, and more from various public health organizations.

[Disease Intervention Specialist Training Academy](#)

Offered through a partnership between the University of South Florida Health and the Florida Department of Health, the Disease Intervention Specialist Training Academy (DISTA) is a competency-based short cycle program designed for professionals to develop DI skills and knowledge. The DISTA program is geared toward new DIS and those looking to advance their DI training.

[The National Network of STD Clinical Prevention Training Centers](#)

The CDC funded National Network of STD Clinical Prevention Training Centers provides health professionals with a spectrum of state-of-the-art educational opportunities, including experiential learning, with an emphasis on prevention.

[University of Washington STD Prevention Training Center Academy](#)

The CDC-funded National STD Curriculum is a free educational website from the University of Washington STD Prevention Training Center. The website's self-paced training modules address epidemiology, pathogenesis, clinical manifestations, diagnosis, management, and prevention of STDs.

[Tuberculosis Centers of Excellence for Training, Education, and Medical Consultation](#)

The CDC-funded Tuberculosis Centers of Excellence for Training, Education, and Medical Consultation (TB COEs) provide training activities related to tuberculosis (TB) knowledge and contact investigation, including the TB Contact Investigation Interviewing Skills Course.

[Tuberculosis Training and Resources](#)

The CDC Division of TB Elimination provides training activities and resources related to TB knowledge, including but not limited to:

- [TB 101 for Health Care Workers](#)
- [Self-Study Modules on Tuberculosis](#)
[Module 8: Contact Investigations for Tuberculosis](#)
- [Core Curriculum on Tuberculosis: What the Clinician Should Know](#)

[The National HIV Classroom Learning Center](#)

[The CDC Division of HIV Prevention](#) and [National HIV Classroom Learning Center](#) provide training and resources to help health care agencies reduce new HIV infections by implementing interventions that are evidence based and supported by CDC.

Recommendations

In summary, the DI workforce has a proven track record in disease prevention and is uniquely positioned to make an even greater and lasting impact on infectious disease transmission in the United States if uniform national standards are put into place. Exploration of the common educational and experiential pathways that individuals take to enter the DI workforce will help the certification body to best prepare a comprehensive CDI Certification program that will ensure these valued public health professionals are working at the highest capacity with consistency across the country. Understanding the value that the DI workforce provides to communities may lead to a larger investment in education and training of DI professionals and will better prepare the public health workforce to respond to disease outbreaks, especially if certification is made accessible to individuals without a college education. As threats to the health and well-being of the public continue to escalate, increasing the capacity of the DI workforce nationwide is an essential step to enhance the effectiveness of response.

This environmental scan was created using extant literature and publicly available data. ASPPH's CDI Certification Project Committees will utilize this report to provide recommendations and guidance as a CDI Certification program is developed. Such recommendations may include:



Monitoring United States regional differences in infectious disease control and the burden of disproportionate rates, co-morbidity, and mortality, and overall community health and well-being in infectious disease, including but not limited to, tuberculosis, STIs, HIV/AIDS, COVID-19, viral hepatitis, malaria, and meningitis.



Identifying gaps in DI training and educational pathways.



Adapting best practices and recommendations to fulfill the training needs of the existing DI workforce and entry-level DI practitioners.



Developing educational pathways for CDI Certification.



Establishing a national CDI Certification program.

References

- Raising the Bar. (2022). A Framework for Promoting Equity and Excellence in Healthcare. <https://rtbhealthcare.org/wp-content/uploads/2022/07/RWJF-RTB-Report-2022-EXECUTIVE-SUMMARY-FINAL-060622-1.pdf>
- U.S. Department of Health and Human Services. (2011). HHS Action Plan to Reduce Racial and Ethnic Health Disparities. https://cg-b88759ce-d31b-439a-9898-092a58f9927c.s3.us-gov-west-1.amazonaws.com/s3fs-public/documents/HHS_Plan_complete.pdf
- Cope, A.B., Mobley, V.L., Samoff, E., O'Connor, K., Peterman, T.A. (2019). The changing role of disease intervention specialists in modern public health programs. *Public Health Reports*, 134(1). 11-16. <https://doi.org/10.1177/0033354918813549>
- Public Health Accreditation Board. (2017, June). Disease Intervention Specialist Certification Project: Final report to the Centers for Disease Control and Prevention. <https://phaboard.org/wp-content/uploads/PHAB-DIS-Full-Report.pdf>
- Ford, J.L. & Browning, C.R. (2014). Neighborhoods and infectious disease risk: acquisition of chlamydia during the transition to adulthood. *Journal of Urban Health*, 91(1). 136-150. <https://doi.org/10.1007%2Fs11524-013-9792-0>
- Hill, L.H. & Holland, R. (2021). Health disparities, race, and the global pandemic of COVID-19: The demise of Black Americans. *New Directions for Adult and Continuing Education*, 2021. 55-65. <https://doi.org/10.1002/ace.20425>
- Khanijahani, A., Iezadi, S., Gholipour, K., Azami-Agdash, S., Naghibi, D. (2021). A systematic review of racial/ethnic and socioeconomic disparities in COVID-19. *International Journal for Equity in Health*, 20(248). <https://doi.org/10.1186/s12939-021-01582-4>
- Operario, D., Gamarel, K.E., Gri, B.M., Lee, J.H., Kahler, C.W., Marshall, B.D.L., van den Berg, J.J., Zaller, N.D. (2015). Sexual minority health disparities in adult men and women in the United States: National Health and Nutrition Examination Survey, 2001-2010. *American Journal of Public Health*, 105(10). e27-e34. <https://doi.org/10.2105/ajph.2015.302762>
- Springer, Y.P., Samuel, M.C., Bolan, G. (2010). Socioeconomic gradients in sexually transmitted diseases: a geographic information system-based analysis of poverty, race/ethnicity, and gonorrhea rates in California, 2004-2006. *American Journal of Public Health*, 100. 1060-1067. <https://ajph.aphapublications.org/doi/abs/10.2105/AJPH.2009.172965>
- Centers for Disease Control and Prevention. (24, May 2022). Diagnoses of HIV Infection in the United States and Dependent Areas 2020. Centers for Disease Control and Prevention. Retrieved August 23, 2023 from <https://www.cdc.gov/hiv/library/reports/hiv-surveillance/vol-33/index.html>.
- Singh S, Hu X, Hess K. Estimating the lifetime risk of a diagnosis of HIV infection in the United States. Presented at: Conference on Retroviruses and Opportunistic Infections; February 12-16, 2022; Virtual. Abstract 43. <https://www.croiconference.org/abstract/estimating-the-lifetime-risk-of-a-diagnosis-of-hiv-infection-in-the-united-states/>
- Centers for Disease Control and Prevention. (2023, April 11). Table 5B. chlamydia - rates of reported cases* by race/Hispanic ethnicity, age group, and sex, United States, 2021. Sexually Transmitted Disease Surveillance 2021. <https://www.cdc.gov/std/statistics/2021/tables/5b.htm>

Centers for Disease Control and Prevention. (2023, April 11). Table 10B. gonorrhea - rates of reported cases* by race/Hispanic ethnicity, age group, and sex, United States, 2021. Sexually Transmitted Disease Surveillance 2021. <https://www.cdc.gov/std/statistics/2021/tables/10b.htm>

Centers for Disease Control and Prevention. (2023, August 21). Demographic Trends of COVID-19 cases and deaths in the US reported to CDC. COVID Data Tracker. <https://covid.cdc.gov/covid-data-tracker/#demographics>

Corcoran, J.L., Li, P., Davies, S.L., Knight, C.C., Lanzi, R.G., Ladores, S.L. (2020). Adolescent chlamydia rates by region, race, and sex: trends from 2013-2017. *Journal of Pediatric Health Care*, 35(2). 172-179. <https://doi.org/10.1016/j.pedhc.2020.09.004>

Centers for Disease Control and Prevention. (2023, April 11). Table 16B. syphilis - rates of reported cases* by race/Hispanic ethnicity, age group, and sex, United States, 2021. Sexually Transmitted Disease Surveillance 2021. <https://www.cdc.gov/std/statistics/2021/tables/16b.htm>

Office of Infectious Disease and HIV/AIDS Policy (OIDP). (2021, January 6). Priority populations. HHS.gov. Retrieved December 28, 2022, from [https://www.hhs.gov/hepatitis/viral-hepatitis-national-strategic-plan/priority-populations/index.html#:~:text=Non%2DHispanic%20Blacks%20and%20a,whites%20\(3.35%20per%20100%2C000\)](https://www.hhs.gov/hepatitis/viral-hepatitis-national-strategic-plan/priority-populations/index.html#:~:text=Non%2DHispanic%20Blacks%20and%20a,whites%20(3.35%20per%20100%2C000))

Centers for Disease Control and Prevention. (2022, November 10). Health disparities in TB. Centers for Disease Control and Prevention. Retrieved December 28, 2022, from <https://www.cdc.gov/tb/topic/populations/healthdisparities/default.htm#:~:text=The%20percentage%20of%20TB%20cases,racial%20and%20ethnic%20minority%20groups>

Merriam-Webster. (n.d.). Nonheterosexual. In Merriam-Webster.com dictionary. Retrieved April 20, 2023, from <https://www.merriam-webster.com/dictionary/nonheterosexual>

U.S. Department of Health and Human Services. (2022, October 27). HIV & AIDS trends and U.S. Statistics Overview. U.S. Statistics. <https://www.hiv.gov/hiv-basics/overview/data-and-trends/statistics/>

Centers for Disease Control and Prevention. (2023, April 11). Syphilis & MSM (Men Who Have Sex With Men) - CDC Fact Sheet. Retrieved August 23, 2023 from <https://www.cdc.gov/std/Syphilis/STDFact-MSM-Syphilis.htm>

American Psychological Association. (April 2022). HIV/AIDS and Socioeconomic Status. Retrieved from <https://www.apa.org/pi/ses/resources/publications/hiv-aids>

Ibragimov, U., Beane, S., Friedman, S.R., Komro, K., Adimora, A.A., Edwards, J.K., Williams, L.D., Tempalski, B., Livingston, M.D., Stall, R.D., Wingood, G.M., and Cooper, H.L.F. (2019). States with higher minimum wages have lower STI rates among women: Results of an ecological study of 66 US metropolitan areas, 2003-2015. *PLoS ONE*. 14(10): e0223579. <https://doi.org/10.1371/journal.pone.0223579>

Marotta, P. (2017). Assessing spatial relationships between race, inequality, crime, and gonorrhea and chlamydia in the United States. *Journal of Urban Health*, 94. 683-698. <https://doi.org/10.1007/s11524-017-0179-5>

Lo Re, V., Gowda, C., Urick, P.N., Halladay, J.T., Binkley, A., Carbonari, D.M., Battista, K., Peleckis, C., Gilmore, J., Roy, J.A., Doshi, J.A., Reese, P.P., Reddy, K.R., Kostman, J.R. (2016). Disparities in absolute denial of modern hepatitis C therapy by type of insurance. *Clinical Gastroenterology and Hepatology*, 14. 1035-1043. <https://doi.org/10.1016/j.cgh.2016.03.040>

Thompson WW, Symum H, Sandul A, et al. Vital Signs: Hepatitis C Treatment Among Insured Adults — United States, 2019–2020. *MMWR Morb Mortal Wkly Rep* 2022;71:1011-1017. DOI: <http://dx.doi.org/10.15585/mmwr.mm7132e1>

Jackson, C.S. & Gracia, J.N. (2014). Addressing health and health-care disparities: the role of a diverse workforce and

the social determinants of health. Public Health Reports, 129(Suppl 2). 57-61. <https://doi.org/10.1177%2F00333549141291S211>

Beck, A.J., Leider, J.P., Coronado, F., Harper, E. (2017). State health agency and local health department workforce: identifying top development needs. American Journal of Public Health, 107(9). 1418-1424.

Mase, W.A., Hansen, A.R., Smallwood, S.W., Shah, G., Peden, A.H., Mulherin, T., Bender, K. (2018). Disease intervention specialist education for the future: an analysis of public health curricula. Public Health Reports, 133(6). 738-748. <https://doi.org/10.1177/0033354918792014>

Macke, B.A., Hennessy, M., McFarlane, M.M., Bliss, M.J. (1998). Partner notification in the real world: a four site time-allocation study. Sexually Transmitted Diseases, 25(10). 561-568. <https://doi.org/10.1097/00007435-199811000-00012>

Literature Review Methodology

The literature review was conducted by first identifying two key themes:

- 1 Infectious disease burden in historically marginalized populations
- 2 The disease intervention workforce

Given these two themes, researchers developed a matrix to inform the literature search, cataloging, and analysis. The matrix allowed for the identification of patterns, relationships, and connections across the available literature.

The matrix for the first key theme, infectious disease burden in historically marginalized populations, included the following criteria:

- Article title and authorship
- Infectious disease type
- Population(s) affected
- Theme 1: Diagnostic/treatment disparities
- Theme 2: Infection rate disparities by race/ethnicity
- Theme 3: Infection rate disparities by socioeconomic status
- Theme 4: Infection rate disparities by sex, gender, and/or sexual orientation
- Theme 5: Infection rate disparities by disability status
- Solutions presented
- Gaps/limitations/recommendations

The matrix for the second key theme, the disease intervention workforce, included the following criteria:

- Article title and authorship
- Theme 1: Disparities in DIS workloads versus salary and available resources
- Theme 2: Need for unique DIS training in a changing world
- Theme 3: Lack of standardized job tasks and knowledge competencies to become a DIS
- Theme 4: Improving partner notification and screening/treatment
- Gaps/limitations/recommendations

With this matrix established, researchers conducted a key word search of scholarly internet search engines and identified 61 articles for review and potential inclusion in the environmental scan.

Certificate Program Search Methodology

The certificate program search was conducted using a key word search in the Google search engine. Key words included disease intervention certification/certificate, infectious disease certification/ certificate, and similar search terms. Resulting web pages were analyzed and the following data were collected:

- Certificate program title
- Length of program (hours/credits)
- Institution name/provider
- State
- Education level
- Academic institution type (2-year, 4-year, etc.)
- Pre-requisites
- Program delivery type (online, in-person)
- Web address

Program content was briefly reviewed to determine relevance to the disease intervention workforce and their training needs. A qualitative analysis of program content was not conducted.

DIS Job Postings Search Methodology

ASPPH staff conducted a web search for national DIS job postings via an online job listing resource between August 4-5, 2022. The search term “disease intervention specialist” was used and resulted in 32 postings that included, at minimum, the term “disease intervention” in the job title. Postings that did not include “disease intervention” in the title were excluded from the environmental scan report.

The following information from all 32 postings that met the search criteria was collected:

- State
- County
- City
- U.S. region (Midwest, Northeast, South, West)
- Job title
- Minimum salary (if available)
- Maximum salary (if available)
- Minimum educational requirements
- Required and/or preferred years of experience
- Required and/or preferred work experience
- Key words
- Web link
- Posting source (i.e., online job board)
- Closing date

Seventeen states were represented among the 32 job postings: five in the Midwest (Indiana, Kansas, Minnesota, South Dakota, and Wisconsin), one in the Northeast (Pennsylvania), eight in the South (Alabama, Florida, Georgia, Louisiana, North Carolina, Texas, Virginia, and West Virginia) and three in the West (New Mexico, Washington, and Wyoming). The chart below shows the average minimum and maximum salary, if reported, by region.

Average Minimum and Maximum Salary Listed in Job Postings by Region

Region	Average Minimum Salary	Average Maximum Salary
Midwest	\$38,858.42	\$57,874.27
Northeast	\$51,453.00	\$67,060.00
South	\$43,283.13	\$53,158.11
West	\$48,919.00	\$63,696.70
All Postings	\$44,173.47	\$56,995.28

Educational requirements for DIS roles varied among the job postings included in the search, ranging from requiring a high school diploma/GED to a bachelor's degree to qualify for consideration. Seventeen postings required only a high school diploma/GED, two required an associate degree, and 13 required a bachelor's degree as a minimum educational requirement. The chart below shows average minimum and maximum salary categorized by minimum educational requirement for consideration.

Average Minimum and Maximum Salary Listed in Job Postings by Educational Requirement		
Region	Average Minimum Salary	Average Maximum Salary
High School Diploma/GED	\$44,514.81	\$55,103.29
Associate Degree	\$42,286.86	\$48,518.88
Bachelor's Degree	\$44,004.64	\$61,717.76

Key words and phrases in the postings included:

Assessment
 Behavior modification
 Case investigation
 Case management
 Case reporting
 Chlamydia
 Communicable diseases
 Communicate
 Community planning
 Contact management
 Contact tracing
 Control
 Coordinate
 Coordinated response
 Counselling
 Crisis intervention
 Customer service
 COVID-19
 Data analysis/interpretation
 Data entry
 Database management
 Directly observed therapy
 Disease intervention
 Educate
 Emergency planning
 Emergency response
 Epidemiological casework
 Etiology

Evaluate
 Field investigation
 First responder
 Foodborne illness
 Gonorrhea
 Harm-reduction
 Hepatitis
 HIPAA
 HIV/AIDS
 Homelessness
 Immunizations
 Infectious diseases
 Injection drugs
 Intervention
 Interview
 Laboratory
 Linkages
 Medical record review
 Medication adherence
 Monitoring
 Motivational interviewing
 Notify
 Operational planning
 Opiate overdose prevention
 Outbreaks
 Outreach
 Partner elicitation
 Patient navigation

Pertussis
 Phlebotomy
 PrEP
 Prevention
 Public Health Education
 Quality assurance
 Rapid testing
 Referrals (medical, social)
 Reporting
 Research
 Risk reduction
 Screening
 Specimen collection
 STD/STI
 Strategic planning
 Supervise
 Surveillance
 Syphilis
 Syringe services
 Technical guidance
 Testing
 Tracking
 Treatment
 Tuberculosis
 Vaccine-preventable diseases
 Venipuncture
 Waterborne illness
 Zoonotic disease