CDC Advisory Committee to the Director (ACD)

Data and Surveillance Workgroup (DSW)

Three Priority Areas to Addressing Workforce for Public Health Data Science and Informatics, Information Technology, and Epidemiology

Report of the Data and Surveillance Workgroup of the Advisory Committee to the Director

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Three Priority Areas to Addressing Workforce for Public Health Data Science and Informatics, Information Technology, and Epidemiology.

Bottom Line Up Front: To deliver a modern, responsive public health data infrastructure and to advance health equity, the Centers for Disease Control and Prevention (CDC) and state, tribal, local, and territorial (STLT) public health agencies need to build a workforce that includes staff appropriately trained in public health data science and informatics (including advanced analytics, data architecture, and engineering), information technology (IT), and epidemiology. To achieve that goal, we propose the following priority areas: 1) Address workforce shortage to support the Data Modernization Initiative (DMI) with a focus on assessing and filling near-term needs and providing structure for medium to long-term efforts; 2) Assemble a cohesive workforce training strategy with the goal of supporting the development of systematic programs that enable upskilling, recruitment, and retention; 3) Issue guidance on the use of Public Health Infrastructure funds to make clear how CDC and STLTs may budget to support workforce in public health data science, informatics, advanced analytics, data architecture, engineering, IT, and epidemiology. These recommendations are not exhaustive, nor do they

address the full scope of workforce-related concerns such as resource allocation. Rather, they focus on priority efforts to fulfill near-term workforce needs in relation to the CDC's public health data strategy and actions required to pave the way toward a strong, sustainable, and diverse workforce to support DMI in the medium and long term. In the long run, this will also strengthen CDC's work on addressing health equity.

Background: CDC has produced an action plan for data modernization with a strong focus on data infrastructure and interoperability. This plan also opens a window to understanding how to build the future public health data science and IT workforce. Specifically, the near-term, 2-year goals outlined in the public health data strategy should include a specific set of corresponding workforce needs. The CDC has an opportunity to clarify how the nation should mobilize the current public health workforce to fulfill the near-term public health data strategy, in a context where existing workforce capabilities and capacity fall short. It needs to identify what mechanisms could address the gaps in talent recruitment and retention. Given the variable landscape of current human resources and capabilities across STLT public health agencies, this level of clarity would inform key decision-making to prioritize workforce development and expansion in the near term and help ensure the success of the public health data strategy.

In addition, the CDC has an opportunity to align different workforce training strategies to match the priority areas outlined in the DMI. Some successful efforts to address data science upskilling exist in discrete training programs such as CDC's Data Science Upskilling (DSU) program and Data Science Team Training (DSTT) program. However, a more systematic approach led by the CDC would address all the skills and capabilities, specifically, skills in public health informatics and IT, required to deliver the DMI. This would also address the need for a linkage between current training programs and public health career development, which is currently an important contributor to the loss of trained staff from CDC and STLTs to the private sector. Similar opportunities exist for training programs aimed at academic trainees. The ability to build institutional training programs and grants to support trainees and research professionals would open up recruitment pipelines in academia that are currently unsustainable and underleveraged. Many successful collaborations with academic institutions have emerged during the COVID-19 pandemic.

Finally, grant guidelines for data infrastructure should prioritize DMI workforce. Specifically, issuing guidance for creating dedicated leadership roles at STLT levels can remove roadblocks for STLTs as they push for the creation of the future public health data science and informatics, IT, and epidemiology workforce within their jurisdictions. Additionally, CDC could give guidance on how funds should be allocated across different public health programs within STLTs. This will reduce the risk of developing separate data infrastructure workforces within the same agency instead of a centralized, interoperable team. Furthermore, STLTs are looking to understand how they could share resources across states, to boost and sustain cross-pollination and collaboration, with guidance and technical assistance from the CDC.

This report outlines three key areas for improving the public health data science and informatics, IT, and epidemiology workforce that the Advisory Committee to the Director (ACD)

should consider as recommendations to the CDC. These are echoed by the recent Report to the President by the President's Council of Advisors on Science and Technology on supporting the U.S. public health workforce, which made the recommendation to "expand recruitment, retention, training, and personnel exchanges to strengthen public health talent". We ask the ACD to recommend the CDC act on the approaches below, as these areas are critical to the success of DMI and may provide a level of specificity and concreteness needed to build a modern public health data science and informatics, IT, and epidemiology workforce.

The Data and Surveillance Workgroup proposes the following action steps for the ACD's consideration.

1. CDC, in collaboration with STLTs and public health partner organizations, should sponsor a granular landscape assessment of current public health data science, informatics, advanced analytics, data architecture, engineering, IT, and epidemiology capabilities. CDC should also work with STLT partners to identify the appropriate workforce models to fill the identified gaps. To do so, CDC should take action to help STLTs to fill near-term needs.

A clear understanding of gaps in the public health workforce in terms of the capabilities, skills, and FTEs required is critical to a successful implementation of the public health data strategy and DMI. Given the diverse workforce and expertise needs at CDC and across STLTs, a granular assessment of existing and needed competencies, as well as current and projected size of workforce shortages can provide clear guidance around resource allocation in the near-term and help build towards a cohesive workforce strategy in the medium to long term. For this, we propose the following actions for the ACD to consider in its recommendations to the CDC:

- Facilitate updating the public health informatics competencies by partner organizations (e.g., PHII, UW) against priorities identified in the public health data strategy and DMI.
- Sponsor a landscape assessment of workforce gaps at CDC and STLTs with a particular focus on:
    - Working with STLTs and relevant state agencies (e.g., state OIT) to develop specific workforce key performance indicators (KPIs) and goals (e.g., workforce size/efficiency/diversity).
    - Identifying opportunities in the private sector for public health workforce enhancement, including with academic, non-profit, and for-profit companies invested in public health.
    - Leveraging findings to inform a comprehensive workforce training strategy and fund use guidelines (priority areas 2 and 3 below, prioritizing near-term goals of the data strategy).
    - Identifying practices that promote equity and diversity in the workforce, including representation from historically and currently marginalized communities that are bearing the largest burden of health problems.
- Prepare and publish example workforce models including responsibility assignment matrices (e.g., RACI charts), clear role descriptions, and recommended salary levels

based on the assessment and in consultation with STLTs.

Given the magnitude of effort required to deliver DMI over the medium and long term beyond the two-year public health data strategy, change management capabilities at the STLT level should be of particular focus during the assessment process to ensure proper governance and ownership structures are put in place.

Beyond gaining an understanding of the size and scope of workforce gaps, it is also key for CDC to take action to fill near-term gaps and support workforce capacity-building in the medium to long term. To that end, we propose the following:

- Initiate a process to understand how best to support STLT workforce needs through both technical assistance and ways to augment workforce gaps in jurisdictions.
- Investigate the establishment of training-in-place programs for core public health informatics skills needed at CDC and STLTs in the near-term.
- Investigate and consider shared workforce models including public-private shared workforce (e.g., with community benefit hospitals, academia, and for-profit companies) and regional shared resources across states.
- Support cooperative agreements for staff training and engagement in standards development and health IT policy initiatives, to promote better input from public health in critical standards and policy development (e.g., FHIR, HELIOS, TEFCA, USCDI, USCDI+, HL7).
- Develop mechanisms to highlight and celebrate front-line public health heroes in the fields of informatics and data science/data modernization to support recruitment and retention.

2. CDC, in consultation with STLTs and ONC, should develop an understanding of the current landscape of training available for public health data science and informatics, IT, and epidemiology. It should create and publish a systematic workforce training strategy that meets the needs of the public health data strategy and DMI. Based on the training framework identified, CDC should work with STLTs, the private sector, and academia to expand the lineup of training opportunities within public health agencies and for trainees and to reduce barriers and increase incentives for upskilling and cross-training

Workforce training programs are essential to cultivating desired skill sets in public health data science and informatics, IT, and epidemiology. Beyond discrete skill acquisition, a robust and systematic training framework that includes a curated set of programs connected to career development can promote workforce recruitment and retention, build overarching capabilities, and shape organizational culture. This is particularly valuable to both CDC and STLTs as they take up reshaping public health data systems. In order to build towards that for DMI, we propose the following:

- Sponsor an evaluation of the landscape of public health data science and informatics training available today with a particular focus on:
    - Working with the Office of the National Coordinator for Health Information Technology (ONC), public health associations, and the private sector to understand existing efforts and resources available.
    - Identifying gaps to meet workforce needs identified in priority area 1, above.
    - Identifying core KPIs for training program development and operations in consultation with STLTs.
    - Addressing integration of health equity-related measurement and strategies into public health programs.
- Create a consistent CDC/STLT strategy for public health data workforce training based on the evaluation with consideration of the following:
    - Building a framework of training programs linked to professional development paths identified for priority area 1 in collaboration with public health associations, the private sector, and academia.
    - Evaluating the feasibility of creating regional Centers of Excellence (CoEs) and online communities of practice to allow "at the elbow" support and knowledge transfer.
    - Developing explicit components that will increase diversity in the public health data workforce, including collaboration with HBCUs and tribal colleges and universities, and other minority-serving data science initiatives.

Beyond the creation of a robust training strategy, the CDC should also consider actively supporting the expansion of public health informatics training programs. This could include the expansion of current training programs (e.g., DSU/DSTT), the creation of new training courses, and the establishment of new accreditation or certification programs in public health data science and informatics, IT, and epidemiology. In doing so, CDC and STLTs should leverage existing curricula in academia/industry and reference other successful governmental programs to make sure there is reduced duplication of efforts.

A final area the CDC should consider is practical training for trainees in academia and medicine. Growing practical training and research opportunities in public health data science and informatics, IT, and epidemiology will allow CDC and STLTs to tap into additional resources for strategic projects and serve as a line of workforce recruitment. To that end, we recommend the CDC:

- Evaluate the viability of building academic training grants similar to other successful governmental grant programs (e.g., NIH K grants and T programs)
- Create practical training programs for academic trainees in public health and relevant informatics fields with an entrance into CDC/STLTs, and in doing so:
    - Consider working with other agencies (e.g., elsewhere in HHS) to champion incentives such as loan forgiveness for students.
    - Expand centrally funded paid fellowships and internships in length and scale building upon existing CDC programs to support STLTs.

3. The CDC should develop and issue specific guidelines around how existing Epidemiology and Laboratory Capacity (ELC) and data infrastructure grants could be used to address workforce priorities. These guidelines should be informed by the assessments recommended in priority areas 1 and 2 above, in consultation with STLTs.

Clear guidance from the CDC on how existing grants and contracts can be used to address workforce priorities would help STLTs implement more effective and agile solutions to address workforce gaps. We propose that ACD consider recommending that CDC issue specific fund use guidelines informed by the workforce shortage and training gap assessments, with specific actions around:

- Clarifying that existing grants including the Epidemiology and Laboratory Capacity (ELC) and Public Health Infrastructure funds can be used towards creating a data modernization workforce that includes items such as:
  - Conducting a workforce gaps assessment.
  - Creating specific leadership roles (e.g., Chief of Public Health Informatics/Data Modernization Lead) within STLTs and the state IT governance structure.
  - A team that oversees data interoperability, bidirectional exchange, and data use agreements.
  - Supporting collaborations with academia and industry to bring in complementary expertise and technical capacity and help fill persisting workforce gaps.
- Evaluating and issuing guidance on how states could share public health informatics resources to support regional alignment and establishment of regional CoEs.
- Issue guidance on how DMI funding should be used across different programs within STLTs to ensure a cohesive informatics workforce can be formed at the department level.