**Resources for workforce capacity building in public health informatics, interoperability and FHIR for jurisdictions and their partners working in the NVSS modernization space**

**National Centers for Health Statistics, Division of Vital Statistics**

**NVSS Modernization Community of Practice**

**Note:** Below are selected online resources and training opportunities in (public) health informatics and interoperability offered by reputable sources (both free and at cost). NCHS is not positioned to financially support jurisdictions or their partners to take these training. The curated list is being offered as a starting point and are not an exhaustive list. Jurisdictions/partners are encouraged to do their own research before enrolling in a course to ensure goodness of fit. Within each provider link, using key search terms such as 'Public Health Informatics', 'Health Informatics', 'Interoperability 'and 'Data Analytics' may result in additional trainings of relevance.

If you have suggestions on trainings that could be added to the list or have questions, please send a note to NVSSmodernization@cdc.gov

The providers are not arranged in any order or priority and future iterations will be arranged in alphabetical order

| # | Provider | Description |
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| 1. | **America Medical Informatics Association (AMIA)** | AMIA aims to transform care through trusted science, education, and the practice of informatics. AMIA connects a broad community of professionals and students interested in informatics. AMIA is the bridge for knowledge and collaboration in health informatics from basic and applied research to the consumer and public health arenas. The AMIA 10 by 10 program utilizes curricular content from certified informatics training programs and other AMIA educational initiatives. Topics range from introductory health informatics courses to more specialized courses focusing clinical decision support. <br><br> The AMIA Knowledge Center is an informatics-specific collection of enduring content designed specifically for AMIA members and meeting attendees. The collection includes conference proceedings, slides, webinars, and other enduring education content. <br><br> Sample Resources: <br> • AMIA 10x10 Virtual informatics education: https://amia.org/amia10x10 |

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| | | • AMIA knowledge center: AMIA Knowledge Center |
| 2. | **HL7.org** | Health Level Seven International (HL7) is a not-for-profit, ANSI-accredited standards developing organization dedicated to providing a comprehensive framework and related standards for the exchange, integration, sharing, and retrieval of electronic health information that supports clinical practice and the management, delivery and evaluation of health services. HL7 offers a variety of trainings to include Live Online Classes & Webinars, self-Paced Courses, Education on Demand, Face-to-Face Events.<br><br>Sample Resources: (About Health Level Seven International \| HL7 International)<br><br>• HL7 FHIR fundamentals course: HL7 FHIR Fundamentals Course \| HL7 International<br>• HL7 intermediate course: http://www.hl7.org/training/fhir-intermediate.cfm?ref=nav<br>• HL7 FHIR prep exam: http://www.hl7.org/training/fhir-prep.cfm?ref=nav |
| 3. | **Coursera** | Offers free and paid opportunities to build skills with courses, certificates, and degrees online from reputable universities and companies.<br>• Coursera \| Build Skills with Online Courses from Top Institutions<br><br>Sample Resources:<br>• Health Informatics Specialization by Johns Hopkins University<br>Health Informatics \| Coursera<br>• Introduction to Digital Health by Imperial College, London<br>https://www.coursera.org/learn/introduction-to-digital-health<br>• HI-FIVE (Health Informatics for Innovation, Value & Enrichment) Training by Columbia University<br>HI-FIVE: Health Informatics for Innovation, Value & Enrichment (Clinical Perspective) \| Coursera<br>HI-FIVE: Health Informatics for Innovation, Value & Enrichment (Administrative/IT Perspective) \| Coursera |
| 4. | **Office of the National Coordinator (ONC)** | The purpose of ONC is to promote a national health information technology (HIT) infrastructure and oversee its development. For healthcare providers, ONC is associated with nationwide efforts to provide electronic health records ( EHR) to patients as a way to better curb medical errors and eliminate paper |

| | | records. ONC offers many trainings and tools on topics related to interoperability and electronic health exchange with EHRs. A few same courses are listed below.<br>Sample Resources:<br>• Interoperability training courses: https://www.healthit.gov/topic/interoperability-training-courses<br>• Interoperability and public health : Interoperability and Public Health Training Course (healthit.gov) |
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| 5. | **Informatics Academy** | A mix of free and paid online course on public health informatics, project management, systems design, training, and evaluation for practitioners at all levels from the Public Health Informatics Institute.<br><br>Informatics Academy: Informatics Academy<br><br>Sample Resources:<br>• Includes training on the fundamentals of internet information systems (IIS), Designing and managing public health information systems, Informatics for everyone, Communicating informatics and IT lifecycle fundamentals for public health informatics and guiding principles for contract management |
| 6. | **CDC TRAIN** | CDC TRAIN is a gateway into the TRAIN Learning Network, a comprehensive catalog of public health training opportunities. TRAIN is a free service for learners from the Public Health Foundation.<br>https://cdc.train.org/cdctrain/welcome<br><br>Sample Resources:<br>• Public health 101 series with a module on public health informatics<br>https://www.cdc.gov/publichealth101/e-learning/informatics/ |
| 7. | **Public Health Informatics Institute (PHII)** | Public Health Informatics Institute (PHII) has led the charge in establishing informatics as a recognized discipline critical to the field of public health. Its mission is to transform health practitioners' ability to use information effectively. PHII supports public health organizations in the U.S. and worldwide and serve as a strategic partner with major industry associations, foundations and government agencies. Their staff are professionals with expertise in public health, information systems, business analysis, training, project management and communications<br><br>Sample Resources:<br>• Introduction to Collaborative Requirements development approach: https://www.phii.org/crdm<br>• Carrying out a business process analysis with examples : https://www.phii.org/business-process-analysis |

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| | | • Planning Toolkit for Preparing to Access CMS 90-10 Funding for Public Health : https://www.phii.org/resources/view/9505/planning-toolkit-preparing-access-cms-90-10-funding-public-health <br> • Podcasts on emerging topics in public health informatics: https://www.phii.org/blog?search=&topic=1437&author= <br> • The informatics savvy health department assessment tool : https://www.phii.org/resources/view/9612/informatics-savvy-health-department-self-assessment-tool <br> • Informatics Workforce Position Classifications and Descriptions: https://www.phii.org/informatics-jobs |
| 8 | **Healthcare Information and Management Systems Society (HIMSS)** | Healthcare Information and Management Systems Society, Inc. (HIMSS) supports the transformation of the health ecosystem through information and technology. HIMSS offers a unique depth and breadth of expertise in health innovation, public policy, workforce development, research, and analytics to advise global leaders, stakeholders, and influencers on best practices in health information and technology. <br><br> HIMSS learning center offers a variety of on demand paid and no cost courses and training in the areas of informatics, interoperability, and innovation. Allows searches by topic, training type, etc. <br><br> https://www.himsslearn.org/browse?topic[]=81 <br><br> <u>Sample Resources:</u> <br> • HIMSS Learning Center: https://www.himsslearn.org <br> • How State HIEs are Innovating Interoperability During COVID-19- https://www.himsslearn.org/how-state-hies-are-innovating-interoperability-during-covid-19 <br> • Interoperability: How to measure data interoperability and communication across health systems https://www.himss.org/resources/interoperability-how-measure-data-interoperability-and-communication-across-health <br> • Determining measures of success for interoperability https://www.himss.org/resources/determining-measures-success-interoperability <br> • What is user centered design in health care https://www.himss.org/resources/what-user-experience-healthcare-it <br> • Nine Essential Principles of software usability for EMRs Nine Essential Principles of Software Usability for EMRs (himss.org) |

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| | | • COVID-19: The Role of Informatics and Best Practice Sharing In Pandemic Response https://www.himsslearn.org/covid-19-role-informatics-and-best-practice-sharing-pandemic-response<br>• |
| 9 | **Usability.gov** | Usability.gov is the leading resource for user experience (UX) best practices and guidelines, serving practitioners and students in the government and private sectors.  The site provides overviews of the user-centered design process  and various UX disciplines. It also covers the related information on methodology and tools for making digital content more usable and useful<br><br>Sample Resources:<br>• User centered design basics- https://www.usability.gov/what-and-why/user-centered-design.html<br>• Usability evaluation basics- https://www.usability.gov/what-and-why/usability-evaluation.html<br>• User interface design basics- https://www.usability.gov/what-and-why/user-interface-design.html |
| 10 | **National Association of City, County Health Officials (NACCHO)** | NACCHO University is a learning portal that connects local governmental public health professionals with virtual education and training. NACCHO University learning events help LHD staff develop their competencies in a variety of areas and keep up to date on best practices in the field.<br><br>Sample Resources:<br>• Change management for public health : Change Management for Public Health | NACCHO (pathlms.com)<br>• Implementing a quality improvement project: Implementing a Quality Improvement Project | NACCHO (pathlms.com) |
| 11. | **Council of State and Territorial Epidemiologists (CSTE)** | CSTE is an organization of member states and territories representing public health epidemiologists. CSTE works to establish more effective relationships among state and other health agencies. It also provides technical advice and assistance to partner organizations and to federal public health agencies such as the Centers for Disease Control and Prevention (CDC).<br><br>CSTE offers an abundance of resources that have been developed to support practicing epidemiologists in a wide range of areas including public health informatics.<br><br>CSTE Webinar library: https://www.cste.org/page/WebinarLibrary<br><br>Sample Resources: (https://www.cste.org/page/WebinarLibrary)<br>• Communicating the value of public health informatics (under category: Workforce Development) |

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| | | • Evaluation for public health informatics (under category: Workforce Development)<br>• Key concepts and terminology in public health informatics- (under category: Surveillance and Informatics) |
| 12. | **Association of State and Territorial Health Officials (ASTHO)** | ASTHO is the national nonprofit organization representing public health agencies in the United States, the U.S. Territories, and the District of Columbia, and over 100,000 public health professionals these agencies employ. ASTHO members, the chief health officials of these jurisdictions, formulate and influence sound public health policy and ensure excellence in state-based public health practice.<br><br>ASTHO has compiled informatics tools and examples to be utilized for the development of an informatics workforce or an informatics office.<br><br>Sample Resources:<br>• Informatics Workforce and Organizational Toolkit: Informatics Workforce and Organizational Toolkit \| State Public Health \| ASTHO |
| 13. | **Centers for Disease Control and Prevention (CDC)** | CDC 's Data Modernization Initiative marks the first comprehensive strategy to modernize data, technology, and workforce capabilities—together and at once. This initiative supports public health surveillance, research and, ultimately, decision making. Building on the momentum of its Data Modernization Initiative, CDC hosted a listening session on July 16, 2020, to discuss ways emerging standards could benefit public health. This meeting brought together key stakeholders from across public health and healthcare, including ONC, CDC, health systems and technology innovators.<br><br>Sample Resources:<br>• Public health data modernization initiative: https://www.cdc.gov/surveillance/pubs-resources/dmi-summary/index.html<br>• Public health modernization summary report : https://www.cdc.gov/surveillance/pubs-resources/dmi-summary/meeting-highlights.html<br>• CDC Data Modernization Initiative meeting highlight, July 2020: https://www.cdc.gov/surveillance/pubs-resources/dmi-summary/meeting-highlights.html |