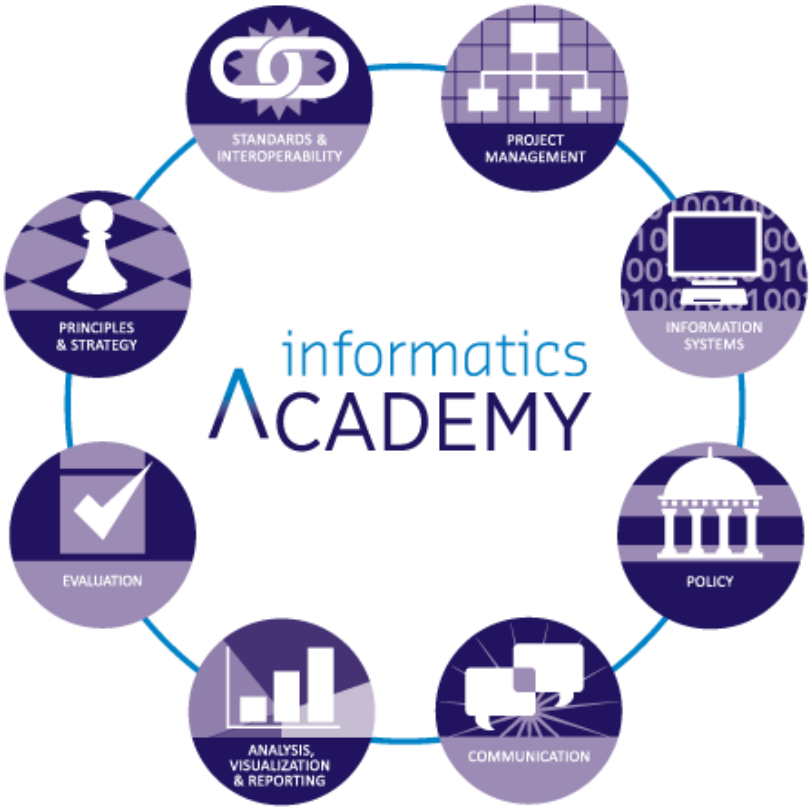
Applied Public Health Informatics Competency Model



informatics ACADEMY A PROGRAM OF Public Health Informatics Institute

Introduction

The Applied Public Health Informatics Competency Model was developed by the Informatics Academy at the Public Health Informatics Institute (PHII). It frames the knowledge, skills, and abilities that public health practitioners need to address the informatics challenges at their agencies. The target audience for this competency model is the general public health workforce across core functions of public health (e.g., epidemiology, biostatistics, behavioral health, environmental health). The framework encompasses informatics–related responsibilities across a health department, and it is not meant to be specific to informaticians or other staff whose primary responsibilities fall under informatics.

The Informatics Academy drew on various inputs to develop this applied informatics competency model. We synthesized existing competencies, specifically the "Informatics Competencies for Public Health Professionals" developed in 2002[1] and the "Competencies for Public Health Informaticians" developed in 2009.[2] We then shared the model with internal subject matter experts for their feedback on which competencies were priorities for public health practitioners working in local and state public health agencies.

The resulting Applied Public Health Informatics Competency Model is a working framework to guide the Informatics Academy in identifying and creating informatics trainings to support in the public health workforce. As the 2002 and 2009 informatics competencies were the result of working groups with cross-agency representation and buy-in, PHII recommends that a new group be convened with representatives from state and local agencies, as well as other partners, to review, revise and update the exhaustive public health informatics competencies. This Applied Public Health Informatics Competency Model may serve as a framework for future updates and revisions.

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[1] O'Carroll PW, Public Health Informatics Competency Working Group. Informatics Competencies for Public Health Professionals. Seattle, WA: Northwest Center for Public Health Practice, 2002. Accessed June 16, 2016. https://www.nwcphp.org/docs/phi/comps/phi_print.pdf.

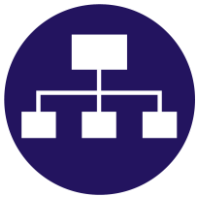
[2] Centers for Disease Control and Prevention and University of Washington's Center for Public Health Informatics. Competencies for Public Health Informaticians. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention. 2009. Accessed June 16, 2016. http://www.cdc.gov/InformaticsCompetencies.

Principles and Strategy
Ability to apply informatics principles and strategic thinking to public health information needs, ensuring organizational strategic alignment.

- Recommends public health informatics strategic decisions for the enterprise.
- Works with program managers to coordinate informatics needs and priorities among different organizations in the enterprise.
- Identifies key stakeholders and their interests and influence (stakeholder analysis).
- Identifies target outcomes and integration opportunities for enterprise informatics projects.
- Establishes a resource repository of people and their skills, software and productivity tools relevant to public health informatics for the enterprise.
- Recommends best practices and methodologies for systems development, testing, implementation and operation in the enterprise.
- Incorporates larger jurisdictional resources and constraints (e.g., a jurisdiction's IT management agency and policies) into enterprise planning.

Standards and Interoperability
Applies informatics standards to ensure interoperability between disparate information systems.

- Communicates the origin and role of standards relevant to informatics projects and information systems within the enterprise.
- Identifies relevant standards to support programmatic needs, including vocabulary and terminology standards, information content standards, information exchange standards, privacy and security standards, functional standards, and others as needed.
- Uses informatics standards in all projects and systems, where relevant standards exist.
- Implements selected standards according to approved implementation guides.
- Leverages standardized data and messaging for data reuse and workflow automation.
- Contributes to standards development efforts.
- Identifies gaps and overlaps in existing standards and develops recommendations for gap and overlap resolutions.
- Evaluates standards to provide feedback to standards development organizations.



Project Management
Practices project management techniques to engage stakeholders and achieve needs and expectations.

- Identifies, describes and engages diverse stakeholders to incorporate their expertise and input into project planning and decision-making.
- Applies the framework of the software development life cycle (SDLC) to shape planning and execution of software development projects.
- Uses appropriate communication strategies and methods to engage and disseminate information among cross-disciplinary team members and other project stakeholders.
- Describes appropriate processes for soliciting and selecting contracted services and supplies, managing contractor performance, and administering contractual agreements.
- Demonstrates appropriate management and leadership skills, such as problem solving techniques, conflict management, interpersonal skills, team development and strategic thinking.
- Coordinates appropriate initiation and planning of a project by leading the development of a project charter and a project plan, including definition of scope, schedule, budget and risks. Incorporates change management principles when appropriate.
- Manages and monitors project performance according to the scope, schedule, budget and risk management plans; initiates and implements any necessary changes to the plan.

Information Systems
Fundamental knowledge of hardware, software and network infrastructure essential to ensuring that public health requirements are met.

- Applies Informatics principles and methods to ensure effective design, use and management of information systems.
- Analyzes user and stakeholder information, knowledge and data needs.
- Engages user in business process analysis to negotiate changes to user workflows to improve processes.
- Applies user-centered design (as opposed to technology or agency-centered design) that takes into account how users do their jobs and involves users in definition of design requirements.
- Collaborates with other public health professionals to determine knowledge management approaches for groups within the enterprise.
- Ensures that information disseminated to users is useful and accessible (dissemination medium, format and tools).
- Assesses buy, build and modify options for each project.
- Follows enterprise policies for issuing and making decisions regarding RFPs for information systems and technology.
- Monitors IT operations managed by external organizations.
- Manages risks to information systems and applications including security (confidentiality, integrity, availability).

Communication
Practices active, effective communication between IT, public health and other relevant stakeholders.

- Provides information about public health informatics to enterprise stakeholders and community partners.
- Communicates both public health and economic return-on-investment for systems, technologies and best practices in the enterprise.
- Explains technical and non-technical issues effectively with staff across enterprise disciplines as well as with elected officials, policymakers and the public.
- Promotes the public health informatics profession.
- Communicates the commitment and practices of public health related to confidentiality and security to the public and other stakeholders.
- Adapts message to particular target audience using multiple communication media, including presentations, written articles and white papers.

Evaluation
Applies rigorous methods to evaluate the effectiveness of workflows and information technology.

- Conducts formative and summative evaluation to assess the effectiveness of the information system.
- Supports applied informatics research to determine how IT can change and improve public health practice.
- Identifies evaluation frameworks for public health information systems that address cost-effectiveness, data quality, conformance to requirements, scalability and ability to meet public health objectives.
- Identifies new concepts (e.g., semantic mapping and network associations) to improve public health practice, including public health decision support, modeling and simulations, and visualization, analysis, and alerts.
- Assesses data quality of information received, stored and transmitted.
- Assesses uses and value of different types of data to answer public health questions.
- Modifies program or project systems in response to post-implementation feedback and audit findings.

Analysis, Visualization, and Reporting (AVR)
Translates data to information and knowledge that leads to action.

- Establishes systems for public health decision support and situational awareness that use clinical care information.
- Establishes surveillance systems using clinical care information.
- Identifies technical solutions for electronic sharing of clinical data.
- Creates systems that support community health situational awareness (including environmental risks) using public health and environmental risk information.
- Creates targeted public health messages based on results of assessments and decision support systems that are useful to clinicians and other stakeholders.

Policy
Ensure that information projects adhere to relevant laws, rules and regulations.

- Adheres to local, state and federal privacy laws, rules and regulations (including the Health Insurance Portability and Accountability Act of 1996 [HIPAA]).
- Identifies legal, confidentiality, security, open records and other concerns that affect information collection, storage and access.
- Supports confidentiality and security with policies, data-use, and data-sharing agreements; de-identification or anonymization practices; training, audits, hardware and software management practices; and security exercises and prompt action to address deficiencies.
- Applies de-identification methods when necessary to protect personal privacy and to comply with local, state or federal laws.
- Establishes data sharing agreements with business partners and other organizations.
- Develops plans for continuity of operations in the event of system failure or unavailability.