



Public Health and Public Health Informatics

Foundational Curriculum:

Cluster 7: Patient and Device Integration/Research and Biomedicine

Module 12: Patient Centered Interactions, Population Management and Public Health Informatics

Unit 3: Public Health and Public Health Informatics

FC-C7M12U3

Curriculum Developers: Angelique Blake, Rachelle Blake, Pauliina Hulkkonen, Sonja Huotari, Milla Jauhiainen, Johanna Tolonen, and Alpo Värri

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Unit Objectives



- Define public health
- Describe public health informatics
- Identify the practitioners of public health informatics
- Describe major issues faced in the collection of public health data
- Describe public health data collection and health surveillance



Public Health

- **Public health**, as stated in the last unit, is the state of the entire people of a country, region or community's health. The purpose of public health is to promote and protect the health of people in their greater community. Whereas a healthcare facility diagnoses and treats different conditions, public health tries to prevent diseases and injuries and promote healthy behaviors to increase the quality of life for the people





Practitioners of Public Health Informatics



- All persons working in public health should have some basic knowledge of information technology. Still, the level of understanding depends on the person's occupation and its demands
 - For example, those working in first response may need less understanding of certain parts of informatics than researchers
- Public health professionals work in either practice, research, or academia. They use informatics tools to improve population health. There are both informatics experts working in the field as well as healthcare professionals assisting in the informatics tasks

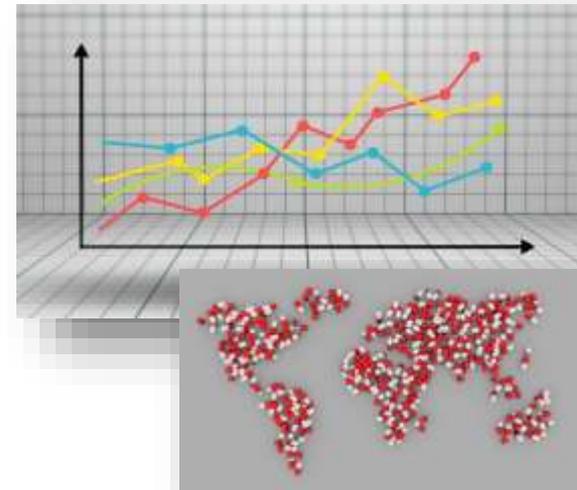




Public Health Informatics



- **Public health informatics** is the systematic application of the available knowledge on systems that capture, manage, analyze and use information to improve public health
- Public health informatics applies informatics principles and procedures to public health issues. Since the subject of public health is so diverse, public health informatics addresses a wide array of subjects. It analyses variables such as environment, construction, restaurants, as well as demographic variables such as gender, income level, and more
- It is important to study the statistics of diseases and threats in cooperation with healthcare providers and their community as disasters and infectious outbreaks are major threats to public health





Public Health Careers

- Public health careers include:
 - Health educators, scientists and researchers
 - First responders
 - Restaurant inspectors
 - Health educators
 - Scientists and researchers
 - Nutritionists
 - Community planners
 - Social workers
 - Epidemiologists
 - Public health Clinicians
 - Occupational health and safety professionals
 - Public policymakers
 - Sanitarians





Core Competencies of a Public Health Informatician



U.S Department on Health and Human Services has collected the core competencies for public health informaticians in 2009:

- A.** Supports development of strategic direction for public health informatics within the enterprise
- B.** Participates in development of knowledge management tools for the enterprise.
- C.** Uses informatics standards.
- D.** Ensures that knowledge, information, and data needs of project or program users and stakeholders are met.
- E.** Supports information system development, procurement, and implementation that meet public health program needs.
- F1.** Manages IT operations related to project or program (for public health agencies with internal IT operations).
- F2.** Monitors IT operations managed by external organizations.



Core Competencies of a Public Health Informatician (cont'd)



G. Communicates with cross-disciplinary leaders and team members.

H. Evaluates information systems and applications.

I. Participates in applied public health informatics research for new insights and innovative solutions to health problems.

J. Contributes to development of public health information systems that are interoperable with other relevant information systems.

K. Supports use of informatics to integrate clinical health, environmental risk, and population health.

L. Implements solutions that ensure confidentiality, security, and integrity while maximizing availability of information for public health.

M. Conducts education and training in public health informatics.

Source: <https://www.cdc.gov/informaticscompetencies/pdfs/phi-competencies.pdf>,
cited: 19.1.2018



Public Health Data Collection

- Data collection can be performed with various methods:
 - Inquiries filled at the healthcare center or sent home
 - Automatic information from civil registries and healthcare centers
 - e.g. number of births, deaths, marriages, divorces, accidents, diagnoses
- Cooperation with the local health departments is important to collect the data effectively and build national statistics of the health





Issues in Collecting Public Health Data



Despite the good cause, there are issues in collecting public health data

- Different practices in data collection and procedures make it difficult to produce statistics from larger areas (e.g. prevalence of a disease may vary based on the level of diagnosis)
- The quality of health information systems needs to be assured. Poor-quality data is an issue, especially in developing countries





Issues in Collecting Public Health Data (Cont'd)

- Under-reporting of public health information from practitioners is mainly caused by two reasons:
 - Disclosing data may violate the patients' privacy
 - Disclosed data may be used to evaluate the practitioner's performance



These issues can be addressed by ensuring both patient de-identification and provider anonymity



Public Health Surveillance

- **Public health surveillance** is the continuous, systematic collection, analysis and interpretation of health-related data needed for the planning, implementation, and evaluation of public health practice
- Public health surveillance is the subset of public health informatics used by public health officials
- Health surveillance can be required by law at such places as private as well as workplaces and include regular health check-ups
- Since public health surveillance is a public service, legal authority to conduct such research is given by state, regional, and country laws





Public Health Surveillance (Cont'd)



- Public health surveillance provides all gathered information for further use and application by public health personnel, government leaders, and the public itself to guide public health policy and programs
- Public Health surveillance can:
 - serve as an early warning system for health emergencies
 - document the impact of an intervention
 - track progress towards specified goals
 - monitor and clarify the epidemiology of health problems
 - Estimate severity and magnitude of health concerns, conditions, epidemics, endemics and more
 - Monitor changes in the status of public health



Unit Review Checklist

- Defined public health
- Described public health informatics
- Identified the practitioners of public health informatics
- Described major issues faced in the collection of public health data
- Described public health data collection and health surveillance (GB13)



Unit Review Exercise/Activity



1. Define public health informatics and search examples of your national public health data/statistics.
2. What fields in life does public health cover? You can also search other examples from online sources.



Unit Exam



1. Which of the following is not a purpose of public health?
 - a) To monitor a country, region or community's health
 - b) To promote and protect the health of people in their greater community
 - c) To minutely manage the private health affairs of individuals in the community
 - d) To prevent diseases and injuries and promote healthy behaviors to increase the quality of life for the people of the community
2. Which of the following is not an example of a public health career?
 - a) Restaurant inspector
 - b) Health educator
 - c) Manicurist
 - d) Scientist
 - e) Researcher
 - f) Nutritionist
 - g) Social worker
 - h) Epidemiologist



Unit Exam (cont'd)



3. Public health surveillance can do all of the following, except:
 - a) Monitor changes in the status of public health
 - b) Serve as an early warning system for health emergencies
 - c) Track risky individuals and their personal health data in order to protect them from the rest of society
 - d) Estimate severity and magnitude of health concerns, conditions, epidemics, endemics and more

4. Which of the following best describes public health informatics?
 - a) Public health informatics is a public health institution that uses data collected in population health management in order to manage diseases such as obesity, malaria, and any and all diseases
 - b) Public health informatics is the basic knowledge of health information technology
 - c) Public health informatics is the scientific field that focuses on medication-related data and knowledge within the continuum of healthcare systems in the delivery of optimal medication-related patient care and health outcomes
 - d) Public health informatics is the systematic application of the available knowledge on systems that capture, manage, analyze and use information to improve public health