

Information Technology Tools for Public Health Preparedness and Response

University of Minnesota

School of Public Health

2004 Public Health Institute

June 7,8,9 and 11, 2004

1.0 credit

Course Description:

With the rapid development and implementation of information technology tools for emergency preparedness, response, and recovery, public health professionals may find themselves in the position of managing, purchasing, and using technology they know little about. This course takes an applied approach to discussing tools and methods that public health professionals can use to support the implementation of information systems for public health preparedness and response. This will include: A background and introduction to public health informatics, IT project management including decision process for purchase, and descriptions of new IT tools. Basic practical information regarding security, computer network issues, and Internet bandwidth will also be included.

Learning Objectives:

At the completion of this course, participants will be able to:

1. Describe the steps involved in managing an IT project;
2. Identify the role and responsibilities of the public health professional/manager in the design, development, and implementation of an IT project;
3. Identify challenges in communicating with IT staff and devise strategies to overcome those challenges
4. Describe how the informatics competencies for public health professionals relate to the emergency response core competencies for public health workers;
5. Discuss three case studies of information technology tools used for public health preparedness, response and recovery;
6. Describe how each of CDC's standards, functions, and specifications have relevancy in the participants work environment;
7. Discuss the emerging field of public health informatics (PHI) and how PHI principles and practices can help implement and use technology for public health

8. Describe 3 methods and tools participant was previously unfamiliar with that strengthen decision-making and evaluation of information infrastructure and related information system projects.

Methods of Instruction and Expectations:

Grading: S/N. A satisfactory will be awarded based on class attendance, completion of pre-course assignments, and course participation. Students will be asked to sign into a class web site to access course syllabus, announcements, discussion questions, and to complete an informatics competency self-assessment.

Course Faculty:

Deb Boyle DVM, PhD
Director Integrated Information Systems Unit
Infectious Disease Epidemiology, Prevention, and Control
Minnesota Department of Health
612-676-5765
deb.boyle@health.state.mn.us

Debora Boyle is the supervisor for an information technology unit within the Infectious Disease Epidemiology, Prevention and Control division. This unit currently supports the CDC National Electronic Disease Surveillance System (NEDSS) program as well as developing and maintaining applications related to the Bioterrorism and Preparedness efforts. She has worked at the MDH for 14 years. She was an occupational and injury epidemiologist for ten years within the Chronic Disease and Environmental Epidemiology Section and was the supervisor for the Center for Occupational Safety and Health, before managing the information technology unit.

Gary Jones
Information Systems Manager
Public Health Laboratories
Minnesota Department of Health
612-676-5241
gary.l.jones@health.state.mn.us

Mr. Jones has been with the Minnesota Public Health Laboratory since August, 2001, where he has participated in information system projects to improve the laboratories capability to respond to new health threats and potential bioterrorism events. Mr. Jones has over 25 years of experience in project management, systems development, and IT strategic planning in the manufacturing, engineering, and distribution industries. Mr. Jones has a Bachelor of Science in Accounting, and Bachelor of Arts minor in English.

Martin LaVenture, MPH, PhD
Public Health Informatics Advisor and Manager
Bureau of Health Protection, Minnesota Department of Health
612 676-5017
martin.laventure@health.state.mn.us

Marty LaVenture is public health informatics advisor to the Commissioner's office at the Minnesota Department of Health. He has been involved with the planning, design, implementation and evaluation of various public health information systems including: Immunization Registries; Public health Information Network (PHIN); Bio-terrorism preparedness and response systems; the Health Alert Network, the Minnesota Health Information Infrastructure Initiative, and others.

Marty's academic and training background includes a master's degree in infectious disease epidemiology and a PhD in Health Informatics from the University of Minnesota. Previously, Marty served as the assistant State Epidemiologist for the Wisconsin Department of Health and Director of software development for a private medical software corporation. Marty serves on the editorial board for the *Journal of Biomedical Informatics*. He serves as a technical reviewer for the *National Library of Medicine* and as an invited expert for the *National Health Information Infrastructure* meetings in Washington. He has authored or co-authored numerous articles including several appearing recently in the *Journal of Public Health Practice*, the *Journal of the American Medical Informatics Association* and other journals with recommendations for a national agenda for Public Health Informatics.

Myrlah Olson B.S.N., M.P.H. Course Coordinator
Health Alert Network Office of Emergency Preparedness
Minnesota Department of Health
3rd Floor Golden Rule Building
P.O. Box 64882
St. Paul MN 55164-0882
651-215-8829

myrlah.olson@health.state.mn.us

Myrlah Olson is the Supervisor of Focus Area E of the CDC Bioterrorism and Preparedness and Response grant: Health Alert Network, Communications and Information Technology. She has worked at MDH for 8 years on a variety of projects including *Got Your Shots: A provider's guide to immunizations in Minnesota*, immunization registries, and the Food Safety Center. Prior to coming to MDH, Myrlah worked for the University of Minnesota Hospitals and Clinics in the Community Services Department, and for the American Red Cross as a disaster health services supervisor.

Presenters:

Ginny Baresch RN, MPH
State Coordinator
Strategic National Stockpile Program
Minnesota Department of Health
Office of Emergency Preparedness
651-755-6153

ginny.baresch@health.state.mn.us

Ginny Baresch is the statewide coordinator for the Strategic National Stockpile program with the Minnesota Department of Health, Office of Emergency Preparedness. She most

recently worked as a bioterrorism preparedness planner for the Community Health Department at Hennepin County. In addition to being a nurse for 27 years, she has extensive experience in public health, refugee camps and primary health care in Thailand, Hawaii and Minnesota. She has held a wide variety of positions, Executive Director of the Hawaii State Primary Care Association, Chief Legislative Clerk at the Hawaii House of Representatives, Case Manager at Hennepin County, Clinical Nursing Instructor, Research Analyst, Program Manager of a Community Health Clinic, Regional Perinatal Planner, Medical Coordinator and Public Health Coordinator of four refugee camps in addition to multiple clinical health care experiences.

Jessica Buck, MPH
Epidemiologist
Minnesota Department of Health
Jessica.buck@health.state.mn.us

Jessica works in the Infection Control and Antimicrobial Resistance unit at the Minnesota Department of Health. Her current projects include assisting in coordinating methicillin-resistant *Staphylococcus aureus* (MRSA) surveillance at 12 sentinel hospital laboratories throughout the state of Minnesota and planning a community MRSA colonization study. I have been involved in SARS preparedness planning and was one of two epidemiologists involved in the design and construction of a system to record information for persons in isolation or quarantine in the event of a large-scale communicable disease outbreak such as Severe Acute Respiratory Syndrome (SARS).

Eric Christenson
Chief Information Security Officer
Minnesota Department of Health
Eric.Christensen@health.state.mn.us

Eric is the Chief Information Security Officer for the Minnesota Department of Health. A graduate of Hennepin Technical College in Electronics Technology, he has over 10 years of computer system and security administration experience. For the past 8 years, Eric has had primary security administration roles in school district, county and state government organizations, including incident detection, response, and investigation. He has designed, installed, and administered numerous data network firewalls and network monitoring solutions. Eric has the primary role of the coordination, implementation and enforcement of information security policies and issues for the MN Dept of Health and is currently coordinating a project to complete a Security Assessment for MDH.

Peter Edstrom
Peter Edstrom recently acquired his Project Management Professional certification in March and has been using those PM techniques to lead the development of two projects for the Minnesota Department of Health. The first addresses adding functionality to an existing portal that houses the core Health Alert Network system. The second project addresses some of the "back-end" inefficiencies that have developed over the life of that system.

Peter has been involved in Internet technologies for almost 10 years, and has worked with many companies in Minnesota to define their World Wide Web strategy and presence. He also spent some time designing and building a number of extranet and intranet applications for the 3M Corporation. Peter is a true geek at heart - he wrote his first computer program when he was six years old.

David Haberman MBA

David is the Business Analyst and Project Manager for the Strategic National Stockpile Management System in the Office of Emergency Preparedness at the Minnesota Department of Health. With over twenty years of experience in information technology, David first came to MDH to assist in the development of Version 1 of the MDH Workspace.

Michelle Hanson

Michelle B. Hanson received her master's degree from the University of Minnesota's School of Public Health in 2001 and has worked as an epidemiologist for Hennepin County Public Health Protection since October 2002. Her primary roles are to follow-up on cases of reportable infectious diseases in Hennepin County, conduct day-to-day disease control and prevention activities as well as investigate outbreaks. She is also responsible for coordinating the Health Alert Network system at the County and working with emergency planners to develop an epidemiological response to a major outbreak or bioterrorism event. Previous to her work at Hennepin County, Michelle completed a fellowship with Management Sciences for Health in the Republic of Georgia studying the prevalence of sexually transmitted diseases and anemia in Georgian women. She is currently president-elect of the Minnesota Public Health Association.

Lowell R. Johnson BS, MPA

Deputy Director, Washington County Department of Public Health and Environment
Lowell has 19 years of experience at Washington County including roles of Emergency Management Director, Supervisor of Environmental Health, Senior Program Manager for Planning and Data Analysis and now Deputy Director.

Wendy Nelson BS, PhD, MPH, BS

651-282-3885

wendy.nelson@state.mn.us

Wendy Nelson is currently the Chief Information Officer at the Minnesota Department of Health. Prior to her CIO responsibilities, she was the Assistant Director of the Health Policy and Systems Compliance Division at MDH, where she provided oversight and support for IT and Research staff as well as budget and management support for the entire division. In addition to her nine years at MDH, she has 13 years of experience at the Minnesota Legislature where she held a variety of positions including managing IT staff responsible for user support, infrastructure, and programming activities.

Jane A. Norbin, RN, MS

Director of Health Policy and Planning

St. Paul-Ramsey County Department of Public Health

651-266-2410

jane.norbin@co.ramsey.mn.us

Jane is the current Section Manager for the Epidemiology, Policy, Planning and Preparedness Section in the St. Paul-Ramsey County Department of Public Health. In this capacity, she is responsible for overall public health policy development for the County and as well as public health planning efforts. This includes tracking and analysis of health data and reporting trends, issues and concerns to the public, elected officials and department staff. Jane is also responsible for planning and implementation of a Public Health Emergency Preparedness Plan and has been involved in this effort for the past 4 years. She works with local, state and regional partners to enhance the public health response to emergencies. She frequently represents the local public health viewpoint on committees, task forces and work groups.

Ann Seefeldt, BS

Public Health Preparedness Grant Manager

Minnesota Department of Health

651-296-8914

ann.seefeldt@health.state.mn.us

Ann received her bachelor's degree in Finance from Metropolitan State University. She has worked for the State of Minnesota for twenty years, and has held budget management positions with the Departments of Administration, Corrections, Natural Resources and Health. Her current position is with MN Dept. of Health, Office of Public Health Practice where she works as a Grant Manager for the CDC's Public Health Preparedness and Response to Bioterrorism Grant.

Steven Ring

Director, Systems Architecture and Application Development

Information Systems and Technology Management

Minnesota Department of Health

651-215-5814

steve.ring@health.state.mn.us

Steve Ring is the coordinator of systems architecture and the director of application development within the centralized information technology area at the Department of Health. He has worked for more than 15 years in various areas of information technology. He supervised the development of the Public Health Laboratory's information system, and he is currently directing the development of systems for the administrative areas of the Department. He is also coordinating the on-going development of technical standards and a technical architecture for the Department. Prior to his IT work, he was a supervisor and analyst in the Microparticulate Unit of the Department's Public Health Laboratory.

Christina Tamondong

Project Manager, Clinical LIMS

Minnesota Department of Health

Christina Tamondong is a Project Manager for the Minnesota Department of Health, and currently working on a Clinical LIMS (Laboratory Information Management System)

redesign project, along with various small projects. She has worked for MDH for 2 years and has over 10 years of experience in Information Technology within various industries, including financial, retail, pharmaceutical, and insurance. Christina has a Bachelor of Science degree from Northern Illinois University in Math with an emphasis in Statistics, and a minor in German.

Sandra L. Tubbs, BSN, PHN
Director, Douglas County Public Health
320-763-6018

sandy.tubbs@mail.co.douglas.mn.us

A graduate of the College of St. Catherine, Sandy is the Director of Douglas County Public Health. Prior to that, she was Director of Stevens Traverse Public Health. Sandy is active in statewide public health issues and has been on the Health Alert Network Advisory Group for four years.

Monday, June 7, 2004

8:00-9:15 a.m.: Institute Orientation

9:15-9:45 a.m.: Myrlah Olson: Introductions and overview of course

- Class introductions: Introduce yourself including the following information:
 - Name
 - Your work including emergency preparedness and/or IT responsibilities
 - Your interest in learning about information technology
 - Expectations for this course
- Major content threads
 - Introduction to public health informatics
 - The role of the public health professional in information technology
 - Electronic communication
 - Project management
 - Collaborating with IT staff
 - Security
 - Future directions in public health information technology applications
- Course design
 - Content related to two sets of public health competencies
 - Informatics
 - Emergency preparedness and response
 - Presentations of major content threads
 - Case studies of IT projects developed to respond to health emergencies
 - Class exercises
 - Panel discussion
 - Self-assessment
- Grading
 - Attendance
 - Participation
 - Completion of self-assessment

9:45-10:15 a.m.

Review of informatics competencies and emergency response competencies

- Competency <http://cpmcnet.columbia.edu/dept/nursing/institute-centers/chphsr/ERDelphi.html>
 - A complex combination of knowledge, skills and abilities demonstrated by organization members that are critical to the effective and efficient function of the organization (Center for Public Health Practice, Emory University).
- Informatics competencies are defined as observable or measurable performance, skill or knowledge by a public health worker related to the systematic application of information and computer science and technology to public health.
<http://healthlinks.washington.edu/nwcphp/phi/comps/competencies.html>
 - This course includes two sessions about public health informatics.
 - Review and discussion of course participant self-assessments
- Public health emergency response competencies from Columbia School of Nursing

<http://cpmcnet.columbia.edu/dept/nursing/institute-centers/chphsr/ERMain.html>

10:15-10:30 Break

10:30-11:00 a.m. Martin LaVenture. Public Health Informatics Part 1.

11:00-11:55 a.m. Myrlah Olson. Using technology to communicate

- Principles of using technology to communicate
 - Choices regarding the use of technology should flow from the content and the requirements of the thinking task.
 - Don't allow a software or technology to determine how you will present your content.
 - Don't give up control of your content to IT staff.
 - Don't underestimate the intelligence of your audience.
 - Question common wisdom.
- General principles of Web design
 - Web page real estate is precious. Don't waste it on design or content that doesn't help communicate. Center for the Study of Bioterrorism, St. Louis University <http://www.bioterrorism.slu.edu/> Stanford Hospital <http://www.stanfordhospital.com/forPhysiciansOthers/bioterrorism/bioterrorism.html>
 - Don't strive to be original. Strive to be right. <http://www.nmsi.ac.uk/index.asp?flash=yes> <http://www.artmuseums.harvard.edu/>
 - Web content should always be up to date. AHRQ <http://www.bioterrorism.uab.edu/EIPBA.html>
 - Don't feel the need to reinvent the wheel. If there's a definitive source, link to it.
 - Use color carefully: The National Academies. <http://www.nap.edu/firstresponders/> Nova Online <http://www.pbs.org/wgbh/nova/bioterror/>
 - Images should add clarity/content. Texas Department of Health <http://www.tdh.state.tx.us/bioterrorism/default.htm> National Library of Medicine <http://www.nlm.nih.gov/> Medline Plus <http://www.nlm.nih.gov/medlineplus/biodefenseandbioterrorism.html> New York State Department of Health <http://www.health.state.ny.us/nysdoh/bt/bt.htm>
- Web design should be accessible to all
 - Vision disabilities http://www.terrorismfiles.org/weapons/biological_weapons.html
 - Hearing impairments
 - Language MDH <http://www.health.state.mn.us/bioterrorism/index.html>
 - DisabilityInfo.Gov <http://www.disabilityinfo.gov/digov/public/DisplayPage.do?parentFolderId=185>

- Web Accessibility Initiative <http://www.w3.org/WAI/Resources/>
- Bobby <http://bobby.watchfire.com/bobby/html/en/index.jsp>
- Color blindness <http://www.visibone.com/colorblind/>
<http://www.vischeck.com/vischeck/vischeckURL.php>
- Class discussion
 - <http://www.linuxwaves.com/>
 - <http://www.francisfrancis.com/>
 - <http://www.cuttingedgebankcard.com/>
 - <http://www.thebeatles.com/html/index.html>

Use of PowerPoint

- What PowerPoint does well:
 - Organizes the speaker
 - Allows on the spot editing of slides
- What: PowerPoint doesn't do well
 - Communicate complex information
 - Communicate the relationship of pieces of information
 - Present data
- Edward R. Tufte. *The Cognitive Style of PowerPoint*. Graphics Press LLC. 2003.
<http://www.edwardtufte.com/tufte/>
- Edward Tufte. *PowerPoint is evil*. Wired. September 2003
<http://www.wired.com/wired/archive/11.09/ppt2.html>
- The Gettysburg Address in PowerPoint by Peter Norvig
<http://www.norvig.com/Gettysburg/>

Online meeting/training applications

11:55-12 noon

Review and preview

Tuesday, June 8, 2004

- 8:00-8:10 a.m. Martin LaVenture: Introduction to Day 2
- 8:10-9:00 a.m. Martin LaVenture. Public Health Informatics: Part 2
- 9:00-9:30 a.m. Case study: MDH Workspace. Myrlah Olson
- 9:30-10:00 a.m. Case study: Financial accounting for bioterrorism grants management. Ann Seefeldt and Peter Edstrom
- 10:00-10:30 a.m. Gary Jones. Project Management. Part 1
- 10:30-10:45 a.m. Break
- 10:45-11:15 a.m. Project management continued
- 11:15-11:55 a.m. Case study. Deb Boyle and Jessica Buck. Isolation and quarantine
- 11:55-12 noon
Review and preview

Wednesday, June 9, 2004

- 8:00-8:10 a.m. Deb Boyle.
Review and preview
- 8:10-9:00 Deb Boyle. CDC and industry standards
- 9:00-9:30 a.m. Wendy Nelson. IT as a second language
- 9:30-10:00 a.m. Christina Tamondong . Evaluating software
- 10:00-10:30 a.m. Gary Jones. Project Management 2
- 10:30-10:45 a.m. Break
- 10:45-11:15 a.m. Wendy Nelson. Why does IT cost so much? Class exercise.
- 11:15-11:55 a.m. Eric Christensen. Security.
- 11:55-12 noon
Review and preview

Friday, June 11, 2004

- 8:00-8:10 a.m. Gary Jones. Review and preview
- 8:10-9:00 a.m. Case study. Strategic National Stockpile Management System. Ginny Baresch and David Haberman

9:00-9:50 a.m. Lowell Johnson. Health emergency scenario: response from an IT perspective

9:50-10:15 a.m. Myrlah Olson. Review of self-assessment and identification of resources to fill the gaps.

10:15-10:30 a.m. Break

10:30-11:00 Steve Ring. Future of Public Health Information Technology.

General emphasis on more computer to computer communications

- Messaging
- Business Processes (ebXML, BPEL)

Application Development

- Service Oriented Architecture
- Web Services

Increased use of Geographical Information Systems (GIS)

Increased use of analytical processing tools

Foundation Technologies

- XML
- SOAP
- Directory Servers (LDAP)
- Wireless
- Security
- Coverage
- Evolving standards

11:00-11:55 a.m. Sandy Tubbs, Jane Norbin, and Michelle Hanson. Panel. Local public health perspective of challenges and rewards of public health information technology.

11:55-12 noon. Summary. Course evaluation.