

# Public Health Informatics Fellows Training Program

An RWJF national program

# SUMMARY

The National Library of Medicine, Bethesda, Md., runs a biomedical informatics training program that supports 18 universities in providing two-year fellowships to predoctoral, doctoral and postdoctoral students. Biomedical informatics studies the collection, organization and application of information in health care and medical research. The National Library of Medicine, part of the National Institutes of Health (NIH), is the world's largest biomedical library and the developer of electronic information services that millions of people use every day.

From 2005 through 2010, the Robert Wood Johnson Foundation (RWJF) supported the National Library of Medicine to oversee a new *Public Health Informatics Fellows Training Program* at four of its 18 informatics training sites. The purpose was to:

- Catalyze the development of the public health informatics field
- Create a sustainable pipeline of future leaders in public health informatics

Public health informatics is the systematic application of information, computer science and technology to public health practice, research and learning. Training was needed because the public health system—more than 3,000 federal, state and local health agencies and departments that work to prevent disease and promote health—needed to be able to use information in a sophisticated way. However, public health trailed other fields in adopting and using information technology, and many public health agencies and departments were struggling with outdated systems.

National Library of Medicine staff, RWJF staff and a national advisory board chose four sites already engaged in biomedical informatics to participate in the public health informatics program:

- Columbia University, New York
- Johns Hopkins University, Baltimore
- University of Utah, Salt Lake City

• University of Washington, Seattle

## **Key Results**

The National Library of Medicine reported the following results to RWJF:

- The four participating universities established formal public health informatics programs to:
  - Develop new public health informatics courses and create a public health informatics track
  - Provide a practicum of on-site experiences and interaction with public health departments
  - Provide students with research methodology and/or program evaluation experience through courses and research projects
  - Provide training and information in public health informatics to other informatics students as well as students in their institution's public health schools
- Some 17 fellows (two predoctoral, 11 doctoral and four postdoctoral) completed the informatics training program at the four universities. See Appendix 3. Nine of these fellows are pursuing careers in public health informatics, encompassing academic positions and public health practice. For example:
  - Jessica Ancker, PhD, who was an RWJF Public Health Informatics Fellow at Columbia University, is an assistant professor at Weill Cornell Medical College. She is using public health informatics in several research projects, including one to monitor the effect of personal health records on patient rehospitalizations. Read her profile.
  - Patricia Swartz, MPH, who was an RWJF Public Health Informatics Fellow at Johns Hopkins University, is a public health informatician for the Maryland Department of Health and Mental Hygiene. She oversees projects to assist laboratories to use electronic health records rather than paper records to report communicable diseases and other required reporting topics to the public health department. Read her profile.

Six of the fellows are completing or have recently completed doctorates; one fellow is working as a knowledge engineer in the private sector.

• Ten of the 18 participating National Library of Medicine informatics programs now have a public health informatics track.

#### **Program Management**

The National Library of Medicine managed the program under the direction of Valerie Florance, PhD.

## Funding

RWJF funded the program for \$3.43 million from July 2005 through June 2010.

# CONTEXT

Public health plays a critical role in preventing disease and promoting the health of people in communities across the country. More than 3,000 federal, state and local health agencies and departments (called collectively governmental public health) form the backbone of the public health system, working together and with partners from the private sector, including public health institutes. See Progress Report.

At the federal level, agencies such as the Centers for Disease Control and Prevention (CDC) and the Health Resources and Services Administration monitor disease outbreaks, maintain national health statistics, safeguard the food and drug supply, provide immunization services, improve access to health care services and much more. State and local public health departments also monitor disease outbreaks.

State public health departments enforce laws related to health, monitor health status, diagnose and investigate health problems, inform and educate the public and more. At the local level, public health departments provide programs to control communicable diseases, offer immunizations and health screenings, test and counsel for sexually transmitted diseases, conduct community health assessments and offer primary care services.

#### **Threats to the Public Health System**

The major threats faced by the public health system, such as natural or man-made disasters, disease outbreaks and bioterrorism, demand the sophisticated use of information. According to the Foundation for the National Institutes of Health, public health practitioners need to:

- Quickly capture and rapidly analyze clinical data to detect disease outbreaks
- Immediately alert clinicians and the public about communicable diseases such as influenza or chicken pox as well as other public health concerns such as bioterrorism
- Perform complex analyses to determine the associations between risk factors and diseases in order to develop ways to improve the health of the public

To do this, they need to:

• Exchange information seamlessly with one another, communicating rapidly and securely in emergency situations and exchanging standards-based data for aggregation and analysis

• Aggregate data across jurisdictions to create regional databases or registries that yield insights into disease or risk factor patterns

# **Barriers to Public Health's Sophisticated Use of Information**

But public health has historically trailed other fields in adopting sophisticated information technology solutions, and many public health agencies and departments are struggling with outdated systems. Among the barriers:

- Tight public health budgets, particularly at the local level, despite new federal funding to improve the nation's public health infrastructure following the September 11th attacks
- The low priority that funders typically give to information systems
- A public health workforce that has lacked the training and experience to make sound strategic investment decisions about information technology or to implement such systems

# **The Emergence of Public Health Informatics**

The need for public health agencies and departments to develop more sophisticated information capabilities has led to the emergence of public health informatics—the systematic application of information, computer science and technology to public health practice, research and learning.

For public health agencies and departments to efficiently do their jobs, they will need a substantial group of individuals who understand public health informatics. In 2004 there were few individuals trained in public health informatics and fewer faculty members to train additional practitioners.

#### **RWJF Interest in the Area**

RWJF has been an early supporter of public health informatics. It sponsored a pivotal conference in 2001 to develop a national agenda for public health informatics (see Program Results on ID# 040138). It also created the *Public Health Informatics Institute* to strengthen the information systems used in public health practice and to promote collaborative strategies for that effort (see Program Results on ID# 053531).

In the midst of this work, Stephen J. Downs, assistant vice president at RWJF and deputy director of its Health Group, reported that a public health practitioner told him that the field faced two challenges:

• Few public health practitioners had a vision for using informatics in public health.

• Where those public health practitioners existed, they lacked the staff to carry out their vision. Simply put, there were not enough people being trained in public health informatics.

As Downs and Pamela Russo, MD (RWJF senior program officer), looked for ways that RWJF might address this problem, they contacted the National Library of Medicine's University-based Biomedical Informatics Research Training Program, which was well-known as the top informatics program in the country. The National Library of Medicine, in Bethesda, Md., was supporting 18 universities that provided two-year fellowships to predoctoral, doctoral and postdoctoral students in biomedical informatics—the collection, organization and application of information in health care and medical research. It had already developed specialty tracks in the field, such as in dental informatics.

The National Library of Medicine, part of NIH, is the world's largest biomedical library and developed electronic information services that millions of people use every day.

Downs and Russo decided that RWJF would support the National Library of Medicine to oversee the *Public Health Informatics Fellows Training Program*, rather than create a national program office, which is usually the case with RWJF programs that seek to train leaders in a field, such as the *Robert Wood Johnson Foundation Clinical Scholars*<sup>®</sup> *program* or the *Harold Amos Medical Faculty Development program* (links are to Program Results). See also the program websites: Clinical Scholars and Harold Amos.

In addition, in 2006—about a year after this program started, RWJF funded *Common Ground: Transforming Public Health Information Systems*, a three-year, \$15 million program which supported 31 state and local public health departments to collaborate to better respond to public health threats, especially those related to chronic disease and emergencies, by improving their use of information systems. The *Public Health Informatics Institute* served as the national program office.

# **THE PROGRAM**

From 2005 to 2010, RWJF supported the *Public Health Informatics Fellows Training Program*, funding four National Library of Medicine informatics training programs to:

- Catalyze the development of the public health informatics field
- Create a sustainable pipeline of future leaders in public health informatics

The Foundation for the National Institutes of Health served as the program's fiscal agent.

In announcing the program, RWJF President and Chief Executive Officer Risa Lavizzo-Mourey, MD, MBA, said, "The health of our communities is threatened if we cannot effectively analyze and share critical information among public health agencies, hospitals and community health providers. This collaboration will help prepare new leaders to be the architects of sophisticated information systems that can help public health officials respond to emergencies and save lives."

National Library of Medicine staff, RWJF staff and a national advisory board chose the following sites to participate in the public health informatics program:

- Columbia University, New York
- Johns Hopkins University, Baltimore
- University of Utah, Salt Lake City
- University of Washington, Seattle

All of these sites had already been providing some training in public health informatics but did not have a fully developed track. Their biomedical informatics programs were based at medical schools and they worked closely with their schools of public health. The University of Utah did not have a school of public health so faculty worked with the state public health department.

Each site received funding to support faculty salaries, faculty development, curriculum development, stipends for fellows, tuition and other expenses.

Between 2004 and 2006 (shortly before and during the program), the Centers for Disease Control and Prevention selected all four sites as CDC Centers of Excellence in Public Health Informatics, which provided them with additional funding to carry out this work. These centers contribute to the efforts of CDC's Public Health Informatics Program by advancing the ability of health care professionals to communicate health recommendations to consumers and by making the use of electronic information systems easier.

The RWJF grants may have helped the universities secure the CDC grants, according to RWJF's Downs. "We gave those universities a leg up and they had these established public health informatics tracks," Downs said. "That gave them more capacity to compete for the CDC Centers of Excellence grants."

#### Management

The National Library of Medicine managed the program. Valerie Florance, PhD, served as program director. The National Library of Medicine administered the funding to the four sites, including the fellowship stipends. The organization also held annual meetings for all of its informatics sites and fellows and included half-day or daylong sessions in conjunction with those meetings for the public health informatics sites and fellows.

RWJF staff, in collaboration with National Library of Medicine staff, held an additional meeting for the public health informatics sites and fellows each year so that the fellows

could network, learn more about public health informatics and present papers on the research they were conducting. Faculty and fellows from other universities participating in the National Library of Medicine informatics training program could attend those meetings as well.

RWJF subcontracted with the *Public Health Informatics Institute* for help with the public health informatics meetings. In 2006 the institute developed a workshop on health information technology and its role in public health (Grant ID# 052829). From 2007 through 2009 the institute organized and coordinated all meetings (Grant ID# 061406). See Appendix 1 for a list of workshops.

# National Advisory Committee

National Library of Medicine staff worked with a national advisory committee, which reviewed 11 applications for the program and recommended four universities to receive grants. See Appendix 2 for a list of the members.

# Challenges

In late 2008 as the program drew to a close, Program Director Florance saw that the program had unspent funds. Working with the four participating universities, Florance submitted a proposal to RWJF for a transition supplement grant to make use of these unspent funds for a joint project to be carried out by the four universities. They planned to develop easy-to-use modules that other public health schools could plug into an existing course to teach their students about public health informatics, rather than trying to create a new course in an already crowded curriculum. RWJF agreed to the proposal. However, because of changes in strategic direction at the foundation and confusion over financial requirements by the fiscal agent, the Foundation for the National Institutes of Health, RWJF never released the grant funding.

Several of the project directors believed that the lack of funding limited the program's impact. It is also diminished trust between the schools of medicine, where these projects were based, and the schools of public health, which the project directors had hoped to persuade to offer more public health informatics in their curriculum, according to some participants.

"Although we felt like we were doing a good job of training and teaching people in informatics about public health, in order to make a real difference we would have to incorporate informatics into public health training," said Anne Turner, MD, MPH, project director at the University of Washington. "That's where you make the biggest impact: training the next generation of public health professionals in informatics."

When RWJF approved the transition funding, Harold Lehmann, MD, MPH, project director at Johns Hopkins University, began working closely with public health faculty to

create a new required course in public health informatics for MPH students there. He believes that the trust he had worked hard to develop with school of public health officials diminished when the funding did not materialize.

# **PROGRAM RESULTS**

The National Library of Medicine reported the following results to RWJF:

- Columbia University, Johns Hopkins University, the University of Utah and the University of Washington established formal public health informatics programs. The two-year, full-time programs included:
  - Training in informatics and public health
  - A practicum at a state or local public health department
  - Research methodology and/or program evaluation experience through courses and research projects

Specifically, each university:

- **Created a public health informatics track as part of its informatics program.** Fellows and other informatics students could complete those tracks. Three schools also created or revised public health informatics courses and made them required classes for all informatics students (Johns Hopkins University, University of Utah and the University of Washington). For example:
  - The University of Utah recruited a new department head for the public health informatics track who also oversaw the RWJF Public Health Informatics Fellows.

The department also made the public health informatics course a requirement for all first-year students in the biomedical informatics program. The course provides an overview of public health informatics and includes a research project to evaluate an existing surveillance system or standardize the communications between clinicians and public health practitioners.

University of Utah students also participated in an ongoing Research in Progress in Population and Public Health Informatics seminar to develop critical research skills.

The public health informatics track consists of six courses required of all informatics students. The track also includes advanced courses in topics such as using geographic information systems and simulation in public health.

 As part of the public health informatics track at *Johns Hopkins University*, faculty developed a Health Information Systems course that teaches the six levels of standards for information technology in public health and clinical informatics. That course is required for all public health informatics students.

- Johns Hopkins also began to develop an online certificate program that public health professionals could participate in while continuing to work (see Afterward for details).
- **Provided a practicum of on-site experience and interaction with state or local health departments.** For example:
  - Columbia University worked with the New York City Department of Health and Mental Hygiene to provide practicums to fellows that included working on a \$30 million rollout of public health-enabled electronic health records to 1,500 community health centers in New York City.

Public health-enabled electronic health records are electronic health records that have functions important to public health, such as alerts to provide prevention and counseling services and the ability to develop population-level reports that can define the health status of a population, such as how many patients have their blood pressure under control.

— The University of Utah worked with the Utah Department of Health to provide practicums that focused on evaluating surveillance systems. One student worked with a county health department to create a system where laboratories would report abnormal microbiology culture results to the county health department so that staff knew about results that might require follow-up. In another case, the practicum experience led to doctoral research projects for students not funded by RWJF.

For example, if a laboratory receives a spinal fluid sample from an ill child that shows evidence of a bacterial infection, the health department would use this information to plan or mobilize resources to identify people who need treatment to prevent disease.

- Recruited predoctoral, doctoral and postdoctoral students with an interest or a background in public health. The sites used advertising and announcements about the fellowship to reach current students and others. For example:
  - The University of Washington focused on recruiting students with public health experience to provide informatics training for public health practitioners interested in obtaining a master's degree in biomedical and health informatics. As it turned out, few public health practitioners were able to take two years away from their jobs and most students who joined the program were postdoctoral fellows with a background in public health. Many predoctoral students interested in public health informatics chose to go through the regular National Library of Medicine predoctoral fellowship program.
  - Columbia University focused on recruiting doctoral and postdoctoral students with an interest in public health informatics research because research (rather than practice) is the focus of the National Library of Medicine's informatics program.

- Provided training in and information on public health informatics to other informatics students as well as public health students. For example:
  - The University of Washington sponsored three public health informatics 12-week seminars and two one-week summer workshops, which provided an opportunity for students to learn about ongoing public health informatics research projects at the university and in the public health practice community. These training opportunities continue to be offered.

In addition, approximately 25 students who were not public health informatics fellows from a variety of graduate programs enrolled in public health informatics courses each year.

 To publicize the importance of public health informatics, *Johns Hopkins University* held a half-day retreat at the school of public health on April 5, 2006, when the RWJF program began. On the same date, faculty hosted a public health informatics symposium entitled "Public Health Information Technologies: Improving Competencies." More than 100 faculty, students and public health practitioners and decision-makers attended.

Faculty also held regular brown bag lunches and weekly division of health sciences informatics seminars at the school of public health on topics about public informatics to further publicize the field to public health students and faculty.

- Some 17 fellows (two predoctoral, 11 doctoral and four postdoctoral) completed the *Public Health Informatics Training Program* at the four universities (see Appendix 3):
  - Columbia University: Three fellows (two doctoral and one postdoctoral)
  - Johns Hopkins University: Six fellows (two predoctoral, three doctoral and one postdoctoral)
  - University of Utah: Five fellows (four doctoral and one postdoctoral)
  - University of Washington: Three fellows (two doctoral and one postdoctoral)

Some of the fellows had been working in public health, others were already enrolled in informatics or other doctoral programs, and still others were medical doctors and were seeking a postdoctoral fellowship. See Appendix 3 for a list of fellows by school.

- Nine fellows who completed the program are pursuing careers in public health informatics. Those careers encompass both academic positions in teaching and research and public health careers overseeing and carrying out projects to enhance the use of information technology to monitor, detect and respond to disease. For example:
  - Jessica Ancker, PhD, a fellow at Columbia University, is an assistant professor at Weill Cornell Medical College. She is using public health informatics in several

research projects, including one to monitor the effect of personal health records on patient rehospitalizations. Read her profile.

— Christine Dean, DO, MPH, a fellow at the University of Washington, is a pediatric emergency medicine physician at the Children's Hospital at Legacy Emanuel in Portland, Ore., and at Legacy Salmon Creek Hospital in Vancouver, Wash. Since completion of the fellowship, she has worked with the team designing and modifying the emergency medicine modules of the electronic medical record system for use throughout the Legacy Health System.

Once the system is in place, she and her colleagues hope to use the data to give immediate feedback to providers on evidence-based care of patients in the pediatric emergency department. One example would be to evaluate the use of CT scans in closed head injuries in children, with the goal of limiting radiation exposure to the developing brain.

- Patricia Swartz, MA, MPH, a fellow at Johns Hopkins University, is a public health informatician for the Maryland Department of Health and Mental Hygiene. She oversees projects to assist laboratories in using electronic health records to report communicable diseases and do other required reporting to the public health department. Read her profile.
- Shannon Sims, MD, PhD, a fellow at the University of Utah, is director of clinical informatics at Rush University Medical Center, Chicago, where she is an assistant professor. As part of her work, she leads Rush's implementation of a system that sends mandatory reportable infectious disease data to the state of Illinois and oversees Rush's participation in the Chicago Health Information Technology Regional Extension Center—a Chicago-wide effort to foster implementation of electronic medical records.
- Paulina Sockolow, MBA, DrPH, a fellow at Johns Hopkins University, is an assistant professor at the School of Nursing at Drexel University, Philadelphia.

In a recent research project, she compared clinician satisfaction with electronic health records versus paper records in a nurse-managed gerontology practice. She found that satisfaction increased when the electronic health records were introduced and then diminished over the next six months. She believes the findings demonstrate the need to tailor electronic health records so that they are easy for clinicians to use.

Six of the fellows are completing or have recently completed doctorates; one fellow is working as a knowledge engineer in the private sector. One fellow at Johns Hopkins has not provided information on her employment status.

• Ten of the 18 participating National Library of Medicine biomedical informatics programs now have a public health informatics track. Public health informatics

"seems to be becoming a legitimate and recognized branch of informatics," said RWJF's Downs.

"Maybe we encouraged people in biomedical informatics to focus on public health informatics," said National Library of Medicine Program Director Florance. This includes universities participating in the University-based Biomedical Informatics Research Training Program that had applied for the RWJF fellowship program but were not selected and may have decided to pursue a public health informatics track anyway.

Florance added that heightened interest in public health informatics because of September 11th as well as increased funding opportunities may also have encouraged more schools to formally focus on public health informatics. She noted that in the past, some of these schools may have had public health informatics courses but that they did not publicize those courses as they are doing now.

The six additional National Library of Medicine informatics programs with a public health informatics track are:

- Yale University, New Haven, Conn.
- Indiana University, Bloomington, Ind.
- Harvard University, Boston
- Oregon Health & Science University, Portland, Ore.
- University of Pittsburgh, Pittsburgh
- Rice University, Houston

# **LESSONS LEARNED**

1. When a program is trying to influence a particular field, it should work closely with other professional schools. In this case, all of the programs were housed in schools of medicine, where the informatics departments were located, rather than in schools of public health. The National Library of Medicine program director and some project directors said that it was difficult to change the curriculum in the school of public health, where most future public health practitioners will study.

Establishing formal relationships with the schools of public health from the start of this program was not emphasized. Doing this would have made it easier to add public health informatics to the public health curriculum. (Program Director/Florance)

2. Make it easy for practitioners to gain knowledge in a field that a program is seeking to promote. The transition supplement grant, which did not get funded, would have provided easy-to-use modules that public health school faculty could have easily plugged into an existing course or courses, rather than trying to create a new course in an already-crowded curriculum. Beginning during the program, two

project directors created online courses and certificate programs that people in the public health field could take while continuing to work. (Program Director/Florance)

# **AFTERWARD**

Columbia University, Johns Hopkins University, the University of Utah and the University of Washington continue to train students in public health informatics. Johns Hopkins University and the University of Utah have developed and implemented online or distance learning curriculums on public health informatics that public health practitioners and others can take while continuing to work.

#### Johns Hopkins University's Online Certificate Program

In April 2010 Johns Hopkins University received a three-year, \$3.75 million federal grant to develop post-baccalaureate and masters-level health information technology workforce-training programs at their schools of medicine, public health and nursing. As part of that grant, the university will fund students to participate in an online masters of public health/postgraduate public health informatics certificate program that was developed with RWJF funding. The program started in August 2010.

To earn the certificate in public health informatics, public health students and practitioners must take a sequence of six courses and carry out a project. The federal grant provides tuition subsidies of \$10,000 for 70 public health students. The tuition for the certificate is \$18,000.

#### The University of Utah's Distance Learning Course and CDC Grant

In January 2010 faculty members at the University of Utah, in conjunction with the American Medical Informatics Association, began offering a distance learning course on public health informatics that includes a six-module Web-based course, a half-day inperson session and a project in which all students participate. The course is based on the one developed through the RWJF grant.

In addition, in October 2009, the CDC selected the University of Utah as one of only four Centers for Excellence in Public Health Informatics nationwide. Through this five-year, \$5 million grant, the University of Utah will develop and test novel systems to advance core public health missions, such as detection and response to known and emerging disease threats.

# The Applied Public Health Informatics Curriculum

In July 2009 the Public Health Informatics Institute in Decatur, Ga., convened a working group composed of academic informatics experts, most of whom had been faculty in the Informatics Fellows Training Program schools, along with nationally recognized public

health informatics practitioners from state and local public health agencies to develop a competency-based curriculum aimed at the needs of public health agencies.

The group produced the Applied Public Health Informatics Curriculum or APHIC. This curriculum was developed out of the CDC's Informatics Competencies, which itself was the result of several years of work by CDC and the University of Washington. Using the CDC Competencies as its foundation, the expert workgroup was guided to create a curriculum of 10 modules that detailed the specific kinds of competencies and degree of competence that graduate or post-graduate training would need to instill in trainees to make them effective contributors to and leaders of informatics within public health agencies.

The curriculum was published in summer 2010 and has since been presented at the American Medical Informatics Association annual meeting as well as at the annual meetings of the Association of State and Territorial Health Officials (ASTHO), the National Association of County and City Health Officials (NACCHO) and the Council of State and Territorial Epidemiologists (CSTE).

# **Public Health Informatics Academy**

The curriculum enabled a new approach to training the broader, non-informatics professional, public health workforce, according to Dave Ross, ScD, the director of the Public Health Informatics Institute. "The RWJF investment in building a solid foundation of academic public health informatics programs and its investment in creating the Applied Public Health Informatics Curriculum made it possible for the Public Health Informatics Institute to develop a professional certificate training program," he said in 2011. Within the academic community, programs like this are typically known as continuing education.

The Applied Public Health Informatics Curriculum laid the sound foundation for a competency-based approach and made possible the Informatics Academy, started by the Public Health Informatics Institute with funding from the de Beaumont Foundation. Its first offering is Informatics for Public Health Program Managers. This educational offering, says Ross, will be delivered through a network of delivery partners made up of universities, community colleges and public health institutes.

"Without this curriculum the de Beaumont Foundation would not have funded the creation of the Academy," said Ross. "The Informatics Academy represents a leverage of the RWJF investment in training and has led to an acceleration of national and global training in public health informatics for specialists and for general public health practitioners."

# A Far Reaching Investment

Ross continued: "The *Public Health Informatics Fellows Training Program* has proven to be a far-sighted and far-reaching strategic initiative. CDC followed RWJF's lead and created the Centers of Excellence in Public Health Informatics program, which has funded eight major universities over the past five years to advance public health informatics science. The Informatics Academy's training program is now being requested by multiple states and countries. And the Applied Public Health Informatics Curriculum has been adopted in whole by several universities as their curriculum for a MPH with emphasis on informatics. The RWJF investment was catalytic and strategic.

"I am particularly jazzed about this because the Informatics Institute just completed the annual week-long CDC Public Health Informatics conference, attended by over 1000 people in-person and about 1500 on-line around the world. The Informatics Academy was a hit. We are now being pressured to bring the program to many states. The National Network of Public Health Institutes (NNPHI) wants to play the role of training delivery partner. And the U.S. Global AIDS program (PEPFAR) wants the Institute to move the Academy to African countries. None of this would have been possible without the Applied Public Health Informatics Curriculum, and it would not have been possible without the National Library of Medicine informatics fellows training program. That is why I say the Fellows program was a strategic and far-reaching investment."

#### ...Reaches Even Further

In 2013, Ross wrote RWJF the following update: "The Applied Public Health Informatics Curriculum (APHIC) has been used by universities in the states in various ways. For example:

- Emory used it to create an informatics track within their career MPH program.
- The University of North Carolina is using it to guide formation of their informatics degree and certificate training.
- The University of Minnesota used pieces of it for their public health informatics courses."

In addition, he wrote, "It has now been used by Makerere University in Uganda as the core for their two-year masters in public health informatics.

"The simple fact is that as [RWJF's] funded projects create these kinds of openly available intellectual properties, others from around the world who are working to catch up with us in the United States, tend to find them and borrow liberally. This is the case with APHIC. I'm here in Uganda this week [January 7–13, 2013]. As I watched the faculty today use the APHIC curriculum, it pointed out to me how much [RWJF has] helped this university accelerate its learning curve. Simply making APHIC open source,

has jump started informatics education in central Africa. Who'd have believed this would happen when the *Public Health Informatics Fellows Training Program* was being formulated?"

Prepared by: Susan G. Parker Reviewed by: Lori De Milto and Molly McKaughan Program officer: Stephen Downs RWJF Team: Public Health

# **APPENDIX 1**

## **Public Health Informatics Workshops**

The Public Health Informatics Institute held the following workshops:

- A workshop on health information technology and its role in public health in Nashville, Tenn., on June 26, 2006. About 30 students and 12 faculty members attended.
- Workshop in conjunction with the National Library of Medicine Training Conference in Palo Alto, Calif., on June 25, 2007. Thirty students and seven faculty members from seven different institutions attended. The topics of the presentations and discussion centered on public health preparedness.
- Workshop prior to the AMIA (American Medical Informatics Association) annual symposium in Chicago on November 10, 2007. Thirty-one trainees from six institutions including the CDC Public Health Informatics Program attended. Keynote presentations and discussions were held about potential partnerships between public health practice and academia.
- Workshop in Washington in November 2008. The meeting was attended by 25 fellows and three directors. The meeting focused on the benefits and challenges of using clinical information systems for automated reporting to public health agencies for notifiable diseases.
- Workshop in Portland, Ore., on June 22, 2009. The meeting was attended by 24 fellows and three faculty members. The meeting featured a presentation on the development of a framework to guide the development of information systems at a national and international level.

# **APPENDIX 2**

#### **National Advisory Committee Members**

#### **Stephen J. Downs**

Assistant Vice President Deputy Director, Health Group Robert Wood Johnson Foundation Princeton, NJ

John Holmes, PhD Assistant Professor Center of Clinical Epidemiology and Biostatistics University of Pennsylvania Philadelphia, PA Public Health Consultant Portland, OR

**Bruce Miyahara** 

**David Ross, ScD** CEO Public Health Informatics Institute Decatur, GA

Harold Schoolman, MD (deceased) Deputy Director for Research and Education National Library of Medicine Bethesda, MD

#### **Betsy Humphreys** Deputy Director National Library of Medicine Bethesda, MD

# **APPENDIX 3**

#### **RWJF Public Health Informatics Fellows, by School**

(Year is when they started the program)

#### Columbia University

- Jessica Ancker, MPH, PhD, 2005; doctoral student
- Yalini Senathirajah, MA, PhD, 2005; doctoral student
- Paul Teixeira, MA, MPH, DrPH, 2007; post-doctoral

#### Johns Hopkins University

- Pammie Crawford, SM, 2009; doctoral student
- Octavis Lampkin, MA, 2007; doctoral student
- Yakabu Owolabi, DVM, 2007; post-doctoral
- Paula Soper, MS, 2007; pre-doctoral student
- Paulina Sockolow, MBA, DrPH, 2008; doctoral student
- Patricia Swartz, MS, MPH, 2005; pre-doctoral student

# University of Utah

- Scott Duvall, PhD, 2005; doctoral student
- Reid Holbrook, MD, MPH, 2005; post-doctoral
- Laverne Snow, MPA, 2005; doctoral student
- Shannon Sims, MD, PhD, 2005; doctoral student
- Kristina Brinkerhoff, BS, 2008; doctoral student

## University of Washington

- Christine A. Dean, MD, 2006; post-doctoral
- Lynne Harris, MS, 2006; doctoral student
- Rebecca Hills, MPH, 2007; doctoral student

# **PROFILE LIST**

- Jessica Ancker, PhD
  Fellow at Columbia University
  Assistant Professor
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- Patricia Swartz, MS

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