Overview of ONC's Workforce Development Program

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OVERVIEW OF ONC'S WORKFORCE DEVELOPMENT PROGRAM

Evaluation of the IT Professionals in Health Care ("Workforce") Program

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Executive Summary

As the nation moves toward a more technologically advanced health care system, providers will require more highly skilled health IT experts to support them in the adoption and meaningful use of electronic health records (EHRs). To help address this growing demand, the Office of the National Coordinator for Health Information Technology (ONC) developed the Workforce Development Program (referred to as the "Workforce Program"). This Program is authorized under Section 3016 of the Public Health Service Act (PHSA), as added by Title XIII in Division A of the American Recovery and Reinvestment Act of 2009, which calls for "assistance to institutions of higher education (or consortia thereof) to establish or expand medical health informatics education programs, including certification, undergraduate, and masters degree programs, for both health care and information technology students to ensure the rapid and effective utilization and development of health information technologies (in the United States health care infrastructure)."

The goal of the Workforce Program is to train a new workforce of health information technology (IT) professionals who will be ready to help providers implement and maintain EHRs to improve health care quality, safety, and cost-effectiveness. The ONC workforce-development programs are designed to graduate high-caliber health IT professionals interested in supporting the growing and evolving health IT industry.

To assess the impact of this Program, ONC also contracted with NORC at the University of Chicago to conduct a multi-year evaluation of the Program. After providing a brief overview of the Workforce Program, this paper summarizes early findings from this evaluation. It describes the implementation status of the different facets of the Workforce Program, as well as early challenges and lessons learned. The paper concludes with a more in-depth description of the evaluation questions and next steps for data collection.

Program Overview

The Workforce Program is comprised of four constituent programs: the Community College Consortia to Educate Information Technology Professionals in Health Care program (CCC program); the Program of Assistance for University Based Training (UBT program); the Curriculum Development Centers program; and the Competency Examination for Individuals Completing Non-Degree Training program (Competency Exam program). ONC has awarded a total of $116 million in funding across these four programs.[1] Appendix A includes a list of the institutions that received funding through this initiative.

In order to provide training in the appropriate areas needed in the growing health IT workforce, ONC defined 12 professional roles that the various training programs will target. The CCC and UBT programs will each target six of these roles, described in more detail below.

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[1] Additional information about the Workforce program can be found the ONC website:
http://healthit.hhs.gov/portal/server.pt?open=512&objID=1432&mode=2

- Community College Consortia (CCC) to Educate Information Technology Professionals in Health Care.[2] This program provides $68 million to five consortia, which currently support approximately 80 community colleges covering all 50 states, to establish or improve non-degree health IT training programs that can be completed within six months. The funded community colleges will ramp up to train more than 10,500 new health IT professionals by 2012. The training programs are designed for professionals with an IT or health care background and focus on training students for the following professional roles: Practice workflow and information management redesign specialists; Clinician/practitioner consultants; Implementation support specialists; Implementation managers; Technical/software support; and Trainers. The CCCs' efforts to develop or improve their health IT training programs are being supported by two additional grant programs, the Curriculum Development Centers and Competency Examination programs, described below.

- Program of Assistance for University-Based Training (UBT).[3] This program provides grant funds totaling $32 million to nine colleges and universities to create or expand health IT training programs focused on health IT roles that require a higher level of training. Over the course of the grants, these programs will help nearly 1,700 people receive certificates of advanced study or master's degrees in health IT. All of the certificate programs can be completed in one year or less, and all of the master's degree programs can be completed in two years or less. The UBTs are also offering distance learning options for students. The training programs focus on the following six professional roles: Clinician or public health leader; Health information management and exchange specialist; Health information privacy and security specialist; Research and development scientist; Programmers and software engineer; and Health IT sub-specialist.

- Curriculum Development Centers.[4] ONC awarded a total of $10 million in cooperative agreements to five universities to develop health IT curricula and educational materials for the Community College Consortia program. The five recipients of these grants were tasked with creating materials for members of the CCCs to use in training students in the six professional roles described above. The materials will also be made available to other schools outside the Workforce Program for wider use across the country.

- Competency Examination for Individuals Completing Non-Degree Training.[5] One two-year, $6 million, cooperative agreement was awarded to fund the design and initial administration of competency exams in health IT for the six professional roles that are the focus of the CCC program. Vouchers will be available to cover the cost of the exam for individuals who complete one of the CCC programs. Other health IT professionals will also be able to sit for the examination.

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[2] Based on information provided on the ONC CCC website and in the Funding Opportunity Announcement, both of which are available here: http://healthit.hhs.gov/portal/server.pt?open=512&objID=1804&mode=2

[3] Based on information provided on the ONC UBT website and in the Funding Opportunity Announcement, both of which are available here: http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov__university-based_training_program/1808

[4] Based on information provided on the ONC Curriculum Development Center website and in the Funding Opportunity Announcement, both of which are available here: http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov__curriculum_development_program/1807

[5] Based on information provided on the ONC Competency Examination website and in the Funding Opportunity Announcement, both of which are available here: http://healthit.hhs.gov/portal/server.pt/community/healthit_hhs_gov__competency_examination_program_%282%29/1809

In support of the Workforce Program, ONC funded NORC at the University of Chicago to perform an independent evaluation of the Workforce Program and all four of the constituent programs. This research study is being overseen by ONC's Office of Economic Analysis, Evaluation, and Modeling (OEM). The Workforce Program is likely to face significant challenges, including integrating evolving and newly developed curricula, recruiting and training faculty and prospective students, and coordinating among the four grant programs and with other efforts that have been funded through the Health Information Technology for Economic and Clinical Health (HITECH) portion of the American Recovery and Reinvestment Act (ARRA) of 2009 (such as the Regional Extension Centers or RECs), as well as with other prospective employers of students trained through the Program. The Workforce Program evaluation will explore these challenges through both formative and summative evaluation approaches, provide critical formative feedback to the grantee institutions on their activities, and offer perspectives on the Program's contributions in helping to build a skilled workforce equipped to meet the needs of employers.

Interdependencies with other HITECH programs

The HITECH Act of 2009 seeks to improve American health care delivery and patient care through an unprecedented investment in health IT. Along with the Workforce Program, HITECH also provided funding for the Beacon Community Cooperative Agreement Program; the State Health Information Exchange (HIE) Cooperative Agreement Program, the State HIE Challenge Grant Program, the Health Information Technology Regional Extension Center (REC) Program; and the Strategic Health IT Advanced Research Projects (SHARP) Program.

The provisions of the HITECH Act are specifically designed to work together to provide the necessary assistance and technical support to providers, enable coordination and alignment within and among states, establish connectivity to the public health community in case of emergencies, and assure the workforce is properly trained and equipped to be meaningful users of EHRs. Combined, these programs build the foundation for every American to benefit from electronic health records, as part of a modernized, interconnected, and improved system of care delivery.

The various grantees of the Workforce Program have reached out to the RECs, State HIE entities and others in designing their programs to learn about the skills that Workforce graduates will need. Specifically, the CCC and UBT grantees were included in the 2010 annual meeting of the REC grantees in order to ensure that both groups of grantees were aware of the other's activities. This meeting also offered a forum for the REC grantees to give suggestions to the CCC and UBT grantees regarding the skills that need to be taught in the training programs. Additionally, in designing the Competency Examinations, the developers gathered feedback from key stakeholders and potential future employers of program graduates—including grantees of other ONC programs such as RECs, State HIE entities, and leaders in selected Beacon Communities—to understand the core competencies they will be looking for and needing from future employees.

Implementation Status

In this section, an overview of the implementation status of the four Workforce programs is presented. All four of the constituent programs were funded in April 2010. The Community College Consortia, Curriculum Development Centers, and Competency Examination programs

are funded through two-year cooperative agreements, and the University-Based Training program is funded through grants of 39 months in duration.

Community College Consortia (CCC)

Funding was awarded to five community colleges to serve as the leads for each community college consortia. Across the five consortia, there are currently more than 80 member colleges. The table below presents the number of member colleges and training programs in each consortium, as well as information about the number of enrollees and graduates as of May 2011.[6]

Region	Lead College	Number of Colleges in Consortium[7]	Total Number of Enrollees to Date	Number of Current Enrollees	Number of Students Who Successfully Completed	Number of Students Expected to Complete by 5/31/2011	Percent Attrition
A	Bellevue College	8	694	454	144	258	13.8%
B	Los Rios Community College District	13	1,368	805	215	475	25.4%
C	Cuyahoga Community College District	17	1,979	1509	195	385	13.9%
D	Pitt Community College	20	2,595	1945	245	572	15.6%
E	Tidewater Community College	22	2,105	1150	475	744	22.8%
Total		**80**	**8,741**	**5,863**	**1,274**	**2,434**	**18.4%**

University Based Training

Grants for the UBT programs were awarded to nine universities to provide two types of training programs. Type 1 programs are typically one year or less, and lead to the award of an institutional certificate or a master's degree *without* a thesis. Type 2 programs are a maximum of two years in duration, and lead to the award of a master's degree *with* a thesis. Four of the grantees have also formed small consortia with other schools and universities to train health IT professionals. The table below details the number and type of programs set up by each university/partner using UBT funds.

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[6] Based on analysis of data provided by the universities as part of their routine reporting to ONC.

[7] Includes Lead College

Grantee* (*Bold denotes lead grantee)	Certificate Programs	Masters Programs	Total
Columbia University	1	1	**3**
Cornell	1	0	
Oregon Health Sciences University	1	1	**2**
University of Minnesota (UM)	■	■	
UM-Twin Cities	2	4	**11**
UM-Crookston	2	0	
College of St. Scholastica	2	1	
Indiana University	5	1	**6**
Texas State University	2	0	
University of Texas-Austin	3	0	**6**
University of Texas-School of Health Information Sciences at Houston	0	1	
Johns Hopkins University	3	0	**3**
Duke University	1	2	**6**
University of North Carolina	3	0	
George Washington University	4	0	**4**
University of Colorado Denver College of Nursing	5	1	**6**
Total	**36**	**12**	**47**

As illustrated in the table below, these universities had enrolled 640 students as of May 2011.[8] Sixty-six of those student had already completed the program and it is anticipated that, by the end of August 2011, more than 400 students will have graduated from UBT programs.

Grantee	Workforce Role							Total
	Clinician Leader	Public Health Leader	Health Information Management & Exchange Specialist	Health Information Privacy & Security Specialist	Research & Development Scientist	Programmer & Software Engineer	Health IT Sub-specialist	
Columbia University	0	0	55	13	0	6	0	74
Duke University	7	2	22	■	2	0	0	33
George Washington University	25	18	21	7	■	5	■	76

Grantee	Workforce Role							Total
	Clinician Leader	**Public Health Leader**	**Health Information Management & Exchange Specialist**	**Health Information Privacy & Security Specialist**	**Research & Development Scientist**	**Programmer & Software Engineer**	**Health IT Sub-specialist**	
Indiana University	7	1	9	3	1	1	■	22
Johns Hopkins University	11	14	24	■	1	4	9	63
Oregon Health & Sciences University	35	10	25	0	3	4	16	93
Texas State University	7	0	63	29	1	3	0	103
University of Colorado Denver	20	1	28	■	0	■	6	55
University of Minnesota	32	5	54	14	2	10	4	121
Total	**144**	**51**	**301**	**66**	**10**	**33**	**35**	**640**

Curriculum Development Centers

The general purpose of the five Curriculum Development Centers is to develop, revise, and share curriculum materials covering a specific set of health IT content areas. These materials are meant to be integrated into the courses taught at the community colleges and are not meant to serve as stand-alone courses in and of themselves. Given this, the Curriculum Development Centers have been working to develop a total of 20 "components." Each component is equal to approximately one typical semester course in length, and is broken down into between 4-17 topic areas, called "units." By developing the materials in this way, instructors at the CCCs are able to pick and choose which units they would like to integrate into their courses.

The initial versions of all 20 of the components had been developed by November 2010, with each of the Curriculum Development Centers developing four components. These materials have already undergone one round of revision and will be revised again by fall 2011. The following table displays the grantee responsible for the development of each component.

Component #	Grantee Responsible for Development	Component Name
1	Oregon Health & Science University	Introduction to Health Care and Public Health in the U.S.
2	Oregon Health & Science University	The Culture of Health Care
3	University of Alabama at Birmingham	Terminology in Health Care and Public Health Settings

Component #	Grantee Responsible for Development	Component Name
4	Oregon Health & Science University	Introduction to Information and Computer Science
5	University of Alabama at Birmingham	History of Health Information Technology in the U.S.
6	Duke University	Health Management Information Systems
7	Johns Hopkins University	Working with Health IT Systems
8	Duke University	Installation and Maintenance of Health IT Systems
9	Duke University	Networking and Health Information Exchange
10	Duke University	Fundamentals of Health Workflow Process Analysis & Redesign
11	Oregon Health & Science University	Configuring EHRs
12	Johns Hopkins University	Quality Improvement
13	Columbia University	Public Health IT
14	Columbia University	Special Topics Course on Vendor-Specific Systems
15	Columbia University	Usability and Human Factors
16	University of Alabama at Birmingham	Professionalism/Customer Service in the Health Environment
17	Johns Hopkins University	Working in Teams
18	University of Alabama at Birmingham	Planning, Management and Leadership for Health IT
19	Johns Hopkins University	Introduction to Project Management
20	Columbia University	Training and Instructional Design

In addition to developing some of the components, one grantee, the Oregon Health & Science University (OHSU), received additional funding to serve as the National Training and Dissemination Center for the program. In order to effectively train faculty at the community colleges on the materials developed by the CDCs, OHSU held a three-day training event in August 2010 to present the materials to the CCC members. CCCs were asked to send faculty from member colleges who would be teaching the curriculum that fall. Because the colleges had not yet hired all of their instructors, the training took a "train the trainers" approach, and assumed that faculty members who were present would then pass on information to additional faculty members at each community college. Team members from each of the Curriculum Development Centers were present to conduct the training sessions and to answer questions.

Competency Exam

Northern Virginia Community College (NoVA), the recipient of the two-year Competency Exam cooperative agreement, has partnered with the American Health Information Management Association (AHIMA) to develop a competency exam for each of the six CCC-targeted roles. NoVA and AHIMA are also working with Pearson VUE to secure test locations and widespread dissemination of the examinations.

In order to develop the six competency exams, NoVA and partners have reached out to experts in the field, as well as potential employers. An Advisory Committee comprised of experts has been working with the NoVA team throughout development of the exams. Additionally, the developers conducted a job analysis though an online survey of employers to gauge the appropriateness of the six workforce roles. Based on this feedback, six exams were developed, each of which will be comprised of 125 questions and will take approximately three hours to complete.

The developers conducted an Alpha test of the exams to ensure that any problems were addressed before the exams are launched. The first cohort of exam takers will participate in a Beta test—they will complete the exam just as they would after the full launch. However, they will not receive their scores immediately after completing the test. Instead, the performance of those initial exam takers will serve as the basis for establishing the scoring mechanism that will be used going forward. The timeline for launching of the competency exams is presented below.

Activity	Date
Alpha Test of Exams	February 2011
Beta Test of Exams	May 2011
Exam Launched	September 2011

Early Challenges and Lessons Learned

In the early phases of the evaluation, NORC held discussions with the leads of each of the grantees. These conversations provided an overview of the early experiences implementing the Program and any challenges that grantees encountered, as well as lessons learned about the most effective ways to implement this type of large-scale workforce-development program.

Initiating the programs

CCC and UBT grantees' experiences recruiting students and faculty members varied. These differences reflect, in part, the fact that some grantees are expanding existing programs while others are making more substantial changes to their health IT training programs or are starting programs for the first time.

Among the UBTs, several new programs are being developed; for example, Columbia is creating a certificate program and the program at the University of Texas will also be created as a result of the grant. Many of the universities are also using these funds to enhance and/or modify already existing programs. In some cases, the funds are being used to increase the number of students enrolling in well-established programs. As such, it is often the case that the majority of courses are already in existence. In several instances, one of the main ways in which existing programs are being enhanced is by converting courses to online training opportunities. Some universities are also shifting some of the focus of their programs from preparing students to conduct research to fostering the skills needed to work in industry. Because of this change in emphasis, one university grantee noted that directing the program to the intended audience has been the biggest implementation challenge.

The picture is somewhat different among the community colleges. While many of those institutions already had programs in health IT and/or health information management, the

content of the Workforce-funded classes might look quite different from their current offerings. As will be discussed below, the CCC leads indicated that their member institutions are using the curriculum materials developed as part of the Workforce Program. This required the schools to establish a new set of courses that correspond with those materials and the workforce roles.

For both the UBTs and the CCCs, having an established program provided an advantage in recruiting students to enroll in the ONC-funded program. As the lead at one CCC lead explained, "This program has been in operation for a number of years so we have a systematic way to recruit students." This strategy includes working closely with professional organizations (e.g., the state chapter of HIMSS), calling and sending postcards to physician practices, and using electronic communications extensively. The other grantees NORC spoke with also mentioned the following recruitment activities: exhibiting at conferences, using websites and other online resources (e.g., Facebook), contacting other colleges and universities, reaching out to health information exchanges and Regional Extension Centers, placing TV and radio advertisements, and working with local workforce-development boards.

As demonstrated in the early enrollment numbers described above, many schools have been successful in recruiting an initial cohort of students. However, some mentioned challenges and opportunities for improvement. One CCC lead noted that, despite the fact that most of the programs are offered online and are therefore available to students across a broad geographic region, many students look only to their local community college in considering whether to apply to a program. In that scenario, the particular labor market conditions in that local area might affect the extent to which potential students view a career in health IT as a viable option. Another grantee mentioned that additional coordination across the ONC-funded projects would have been valuable in effectively advertising to potential students. As that individual pointed out, rather than having each school create its own marketing materials, it might have been more efficient if schools had access to video clips and other materials that could be tailored for use in recruiting students at each school.

In addition to recruiting students, community colleges also needed to recruit instructors to teach the courses. Many have chosen to use adjunct professors who can draw on their professional experiences as employees of provider organizations or vendors. While bringing this real-world experience into the classroom was seen as beneficial, at least one CCC lead expressed concern about colleges' ability to attract the caliber of instructor they would prefer because academic salaries are substantially lower than salaries in the private sector. Many of the schools also described some initial difficulties in hiring instructors because of the condensed timeline for ramping up their programs. Delays in accessing funding made some colleges reluctant to hire instructors until just before the beginning of the semester. In addition, because the CCCs are using curriculum materials that were not available until the end of the summer, some of the schools mentioned that it was challenging to hire instructors without knowing the curricula for the classes they would be teaching.

Coordinating across the four Workforce Program components

One of the defining features of the Workforce Program is its approach of coordinating across several different funding programs. Rather than each community college developing its lesson plans de novo, the community colleges have the opportunity to use curriculum materials specially created as part of this Program. In addition, individuals who complete the community college program will receive vouchers to take the Competency Exam, which is designed based on the same six roles that form the structure of the CCC programs. While there are advantages to

this comprehensive approach, some challenges have emerged in coordinating across the components, primarily related to the sequencing of the various grant activities.

According to the CCC leads,[9] all of the community colleges are using the curricula provided by the Curriculum Development Centers, although some instructors may supplement those materials as necessary. Grantees enumerated several benefits to using these materials. For one, to the extent that the Competency Exam will assess individuals on a national standard—which may correspond with the content of the Curriculum Development Centers materials—the colleges believe that it is important to provide their students with the information that has been deemed appropriate as part of this national initiative. Second, at least one CCC lead explained that the use of these existing materials will help the colleges establish programs in a cost-effective manner.

However, the grantees expressed concerns that they did not receive the materials until August—and some of the materials were not available until even later. As mentioned above, some colleges were unsure of which instructors to hire because they did not have the course materials on hand. Others were not sure the best way to market the program to prospective students without a more thorough understanding of what the curricula would look like. One CCC lead expressed concern that as a result of this lack of familiarity with the curricula, some colleges may have accepted students who were "not ideally suited for the program." Several of the colleges had intended to have a pre-assessment process to determine not only if students are appropriate for the program, but also if they have the relevant knowledge to place out of some courses. Many of the schools had to postpone that type of assessment activity until a later cohort of students so that they could design their assessment process based on the curriculum materials. Finally, one grantee explained that establishing a for-credit program requires additional lead time. Given the timing of when the curricula were available, some programs began offering courses in a non-credit format, despite their intentions to offer credits for the certificate program.

Similar concerns were raised by the CCC leads with regard to the Competency Exam. At the time they launched their programs, the community colleges had not seen the competencies that are incorporated into the Competency Exam. Although the schools are aware that it is not appropriate to "teach to the test," the CCC leads believe it is important to teach curricula that align well with the Competency Exam, so that their students can excel on that examination.

Meeting the needs of employers and defining the Workforce roles

The Workforce Program was established to fill the demand for a robust health IT workforce. To ensure that the training, curricula, and exam are focused on the appropriate skills and competencies, the grantees engaged in a variety of activities to gain the employer perspective. The grantees' efforts to reach out to employers in designing their programs, as well as some of the feedback they received from providers, health IT vendors, Regional Extension Centers, and other potential employers are described below.

While some UBTs gathered feedback from employers about their hiring needs through informal means, others have established advisory councils with representation from local

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[9] In the initial round of data collection about the community college programs, the leads of the consortia were our primary data source. This report may therefore more accurately reflect the perceptions of the CCC leads than of other institutions participating in this program. Future evaluation activities will entail discussions with some of the member institutions. In addition, in upcoming site visits and interviews, the research team will probe further to learn about the extent to which the community college programs have been implemented consistently across the member institutions within a single consortium.

employers. Several of the UBT grantees mentioned talking with RECs and health information organizations in the state. One spoke of looking at current job postings and mapping the Workforce roles to those postings. Another UBT expressed interest in locating resources to conduct a more formal workforce needs assessment.

Based on its understanding of the health IT labor market, one UBT expressed concern about whether the 12 roles cover the breadth of local workforce needs. Another UBT pointed out that there is "considerable amount of interpretation" around the different roles and that schools may develop curricula that reflect different understandings of the scope of the roles.

All of the CCC leads are focused on employment outcomes and are dedicated to designing their programs such that all graduating students will have the skills and competencies necessary to be attractive employees for a range of health IT positions. To help prepare their training programs, the leads of many CCCs have held discussions with local employers about the types of employees they need and what competencies hirable employees should have.

Based in part on feedback from employers, one of the CCCs has taken a very different approach to preparing students for the Workforce roles. Rather than having each student learn just one role, students enrolled in colleges in this consortium select between two tracks. The engineering track covers two of the six roles, while the consulting track covers the remaining four roles. Individuals who enroll in the engineering track must demonstrate that they have an IT background. Without a clear grasp of IT concepts, the CCC lead does not believe that graduates can be prepared for these more technical roles after a six-month training program. In conversations with industry representatives, representatives from the CCC have received feedback that an individual who is trained in either both of the engineering roles or all four of the consulting roles will be much more desirable to an employer. That grantee has heard that small providers, in particular, are not interested in hiring four different people to cover all the tasks associated with the four consulting tracks; they prefer to hire one individual who has all of those skills.

The grantees developing the curricula for the CCCs are also very focused on the needs of local employers. All of the Curriculum Development Centers had advisory committees, which included industry representatives such as clinicians, vendors, and other health IT experts. Most of these advisory committees reviewed the blueprints used in the design of the components and offered input at the beginning of the development process. Additionally, at two of the Curriculum Development Centers, members of the advisory committees were more active in the actual development of the components.

Similarly, the Competency Exam developers engaged in an extensive process to receive feedback from employers. Working with experts (including prospective employers), they defined knowledge and task statements for each role. They also conducted a pilot survey to gain feedback from a broader range of experts. According to the grantee, the employers who participated in this process agree that the skills they need align well with the Workforce roles, but note that there is some overlap among these roles.

Key Questions and Next Steps for the Evaluation

As described above, the Workforce Program is likely to face significant challenges. This evaluation will help ONC learn more about how grantees overcome these challenges. By gathering information from the grantees, participating students and instructors, and employers, the evaluation will collect critical formative feedback that can inform grantee activities. This

three-year evaluation will also assess the degree to which grantees meet their objectives and the extent to which students who complete the training programs find employment in health IT.

Research questions

NORC will use a variety of data-collection mechanisms to address three key evaluation questions, each of which is discussed below.

1. What processes did the grantees use to implement the programs and meet program goals? Under this research question, NORC will explore the ways the community colleges and universities delivered their programs. NORC will learn about how they recruited and selected students; what career placement activities they offered; and whether they delivered lessons online, in person, or a hybrid approach. The evaluation will address why schools selected the models they did and what implementation challenges they faced and lessons they learned. An important component of this research topic will also be to understand the interactions among the various grant programs that comprise this initiative.

2. To what extent did the grantees meet their respective requirements of the Workforce Program? It will be critical to learn if the community colleges and the universities are able to enroll and graduate the target number of students. NORC will investigate whether any of the characteristics of the schools (e.g., whether they are primarily offered online) are correlated with greater success in enrolling and graduating students. In addition, the evaluation will track whether curriculum materials are developed to cover all of the designated topics, as well as how many individuals (both students who completed one of the community college programs and individuals who did not) participate in the competency exam.

3. To what extent did the students enrolled in funded community colleges and universities gain employment in health IT? To understand the impact of the Workforce Program, it is crucial to understand the employment outcomes of the individuals who participated in the training programs. NORC will collect employment information for a sample of the students at two or more time periods.

Data Collection

To address these questions, the evaluation team will gather the perspectives of a variety of participants in the Workforce Program. Several of the approaches that will be used to collect data as part of this evaluation are described below.

Student surveys. NORC will conduct web-based surveys of students who are enrolled in the community college and university-based training programs. A representative sample of students will be surveyed at the time they are scheduled to complete the program. All individuals identified in the sample will also receive a follow-up survey approximately six months later. The initial survey will gather information about the backgrounds of the students who participate in the Workforce Program, their motivations for taking classes, and their impressions of the program. Both surveys will provide a critical opportunity to gather information about employment outcomes. The questionnaires ask for information about whether individuals have found a job in health IT and, if so, in what setting they are working. Additional questions explore students' experiences in their job search and their perceptions of how well their educational program prepared them for job responsibilities. Some individuals who are currently employed in

health IT settings may enroll in the program to gain additional skills; the surveys will include questions about whether those individuals received greater job responsibilities or other benefits from their participation in the Workforce Program.

Focus groups and site visits. To gather additional information about the processes the grantees engaged in to operate their programs, NORC will conduct a series of site visits to the community colleges and universities. As part of the visits, NORC will speak with program directors, students, instructors, and career counselors. NORC will use these discussions to gain a better understanding of how the grantees have structured their programs and any implementation challenges they have faced. Our conversations with students will help us gauge satisfaction with the program, as well as their recommendations for program improvements. NORC will supplement these visits with a series of focus groups with students and faculty members. These online discussion groups will allow individuals representing a wide array of the training programs to provide their insights on program successes and challenges.

Faculty survey. An online survey of community college instructors will be a valuable source of information on the materials developed by the Curriculum Development Centers. This survey will explore the extent to which the instructors used the materials that were created by ONC grantees. It will also provide insights on how satisfied the end users of the curriculum materials were.

Employer perspective. The Workforce Program seeks to meet the demands of employers for a strong health IT workforce. For this reason, it is important to learn about employers' views of the program. NORC will gain employers' perspectives on how familiar they are with the Workforce Program, how accurately they believe the 12 workforce roles correspond with their needs, and how satisfied they are with any Program graduates they have hired. These discussions will contribute to ONC's understanding of the Program's impact on meeting the demand for highly qualified health IT workers.

Conclusion

While still early in the evaluation and in the life of the Program, the Workforce grantees across the four Program components have made great progress in a short amount of time in terms of getting the Programs up and running, recruiting students and faculty, and implementing the new curricula. As lessons learned from the first year of the Program are synthesized and incorporated into the next round of materials and applied to new populations of students, NORC will continue to gather critical data using the range of methodologies detailed above to provide additional feedback to ONC and the grantees, as necessary. These ongoing and future data-collection activities—which will include additional surveys, focus groups, site visits, and discussions with potential employers of Program graduates—will both assess the extent to which the Program is fulfilling its mission of helping to generate a health IT workforce capable of meeting the growing and evolving demands of the current environment and help ensure the longer-term sustainability of the Program as a whole.

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Appendix A: Institutions Receiving Funding as Part of the Workforce Program

Community College Consortia

Grantee	Member Institutions
Bellevue Community College	Bellevue Community College, Dakota State University, Lake Region State College, Montana Tech, North Idaho College, Portland Community College, Pueblo Community College, Salt Lake Community College
Los Rios Community College District	Butte College, College of Southern Nevada, Cosumnes River College, East LA College, Fresno City College, Maricopa College, Mission College, Orange Coast College, Pima College, San Diego Mesa College, Santa Barbara City College, Santa Monica College, University of Hawaii College - Kapiolani
Cuyahoga Community College	Cincinnati State Technical and Community College, Columbus State Community College, Cuyahoga Community College, Delta College, Des Moines Area Community College, Johnson County Community College, Kirkwood Community College, Lansing Community College, Macomb Community College, Madison Area Technical College, Metropolitan Community College, Milwaukee Area Technical College, Moraine Valley Community College, Normandale Community College, Sinclair Community College, St. Louis Community College, Wayne College
Pitt Community College	Atlanta Technical College, Broward College, Catawba Valley Community, Central Piedmont Community College, Chattanooga State Community College, Dallas County Community College District, Delgado Community College, Dyersburg State Community College, Florence/Darlington Technical College, Hinds Community College, Houston Community College, Indian River State College, Itawamba Community College, Jefferson Community and Technical College, Midland College, National Park Community College, Pitt Community College, Santa Fe College, Tulsa Community College, Walters State Community College
Tidewater Community College	Bristol Community College, Bronx Community College, Brookdale Community College, Burlington Community College, Camden County College, Capital Community College, Community College of Allegheny College, Community College of Baltimore County, Community College of DC, Community College of Vermont, Essex County College, Gloucester County College, Kennebec Valley Community College, Northern Virginia Community College, Ocean County College, Passaic County Community College, Raritan Valley Community College, Southern Maine Community College, Suffolk County Community College, Tidewater Community College, West Virginia Northern Community College, Westchester Community College

University-Based Training Program

Grantee	Sub-award recipient
Columbia University	Cornell University
University of Colorado Denver College of Nursing	
Duke University	University of North Carolina

Grantee	Sub-award recipient
George Washington University	
Indiana University	
Johns Hopkins University	
University of Minnesota	College of St. Scholastica
Oregon Health & Science University	
Texas State University	University of Texas at Austin; University of Texas, School of Health Information Sciences at Houston

Curriculum Development Centers

Oregon Health & Science University (National Training and Dissemination Center)
University of Alabama at Birmingham
Johns Hopkins University
Columbia University
Duke University

Competency Examination Program

Northern Virginia Community College