EU*US eHealth Work Foundational Curriculum Overview

By Cluster, Module and Unit, with Student Instructional Guide and Objectives for each Unit

FC-C0M0U1

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Overview and Background

- Electronic health record (EHR) systems are now reported in 47% of countries.
  - EHRs have the potential to provide clinical decision-makers with complete and accessible information for every patient at the point of care,
  - EHRs work to improve care, safety and quality, augment timeliness of care, provide more targeted and valuable data, increase opportunities for care interventions, and ultimately effect better health outcomes

- However, healthcare systems and technologies cannot work without people.
  - Healthcare systems require a robust supply of highly skilled professionals who are digitally skilled in eHealth/health IT (information technology).
  - The development and advancement of a healthcare workforce equipped with eHealth skills will assure that systems keep working functionally, that clinical workflows are incorporated into technology, and that healthcare is delivered in a manner that is safe, secure and quality infused.

- According to recent data from the European Union, 37% of labour force have insufficient digital skills and of those, 26 million have no digital skills at all.
  - In an effort to discover what effect this statistic has on the healthcare workforce, in support of health and health-related fields to ensure healthy lives and promote well-being for all at all ages, the EU*US eHealth Work Project undertook a *Survey of Current State of Needs* of the eHealth Workforce.

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Overview and Background (cont'd)

- The *Survey of Current State of Needs* is included as part of this project to measure, quantify and project the need, supply, demand and trends for workforce skills and competences for all eHealth actors.
  - Data acquisition from this survey is being used to inform gap analyses, case studies and stakeholder engagement events and help the project form a better picture of the state of the eHealth workforce, now, and where we will aim to be by the year 2020 and beyond.
- The *Survey of Current State of Needs* captured the data for the *Gap Analysis*.
  - This gap analysis does not analyse all data from the survey, but is a broad analysis of the gaps between current state and future needs related to the status, demands and trends of the skills, knowledge and working structure, composition and environment of the eHealth workforce community with the European states, the United States and globally.

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Overview and Background (cont'd)

- The *Gap Analysis* relies on findings of closed questions and free texts of the EU*US eHealth Work Survey. It reflects the opinion of experts who oversee the entire field (closed questions) as well as the voice of the broad field of health professionals (free text).

- Ten major gaps were identified:
    - **GAP 1**: eHealth knowledge and skills of healthcare professionals
    - **GAP 2:** eHealth knowledge and skills of informal care givers
    - **GAP 3:** Knowledge and skills of teachers and trainers
    - **GAP 4:** Availability of courses and programmes at various levels and for various professions
    - **GAP 5:** Quality and quantity of eHealth training material
    - **GAP 6:** Adaptation of job descriptions, training on the job, staff development
    - **GAP 7:** eHealth infrastructure
    - **GAP 8:** eHealth usage
    - **GAP 9:** Acceptance and usability of systems
    - **GAP 10:** Shortage of health professionals and gender disparities

- The first five gaps center on eHealth knowledge, skills and training and show the importance and necessity of foundational eHealth training for all actors in eHealth.
    - This, combined with the need for creation of training material to support the competencies in the HITComp Tool and Repository, made the need for development of a comprehensive foundational curriculum in eHealth a necessary component to the project's work

Instructional Guide

- The EU*US eHealth Work Foundational Curriculum is designed as an online learning program

- From beginning to end, it is a 60-hour course and requires at least 60 hours of viewing time plus additional time require to complete exercises, take quizzes, and complete the final examination

- You as an individual may not need all components of this course

- You are invited to peruse the list of course components and decide which units are pertinent to your needs for study

Success Tips for This Course

- Students who will excel in this program are independent and self-motivated to see things through from beginning to end

- These types of learners are typically highly organized with their time and are able to prioritize their daily schedules based on their learning needs, work, and family

- We would suggest carving out one to two uninterrupted hours each week day for 12 weeks in order to complete the entire course

Content

- The following slides show the content of the EU*US eHealth Work Foundational Curricula in eHealth

- There are 10 clusters, 21 modules and 60 units

- The content loosely translates to the equivalent of a 60 unit/60 hour online course

Foundational Curriculum

Clusters:

eHealth
Clinical Process
ICT Process
Informatics
EHR Systems
System Connectivity
Patient and Device Integration/ Research and Biomedicine
Data
Quality, Safety & Security
Leadership & Management

Modules:

Introduction to eHealth	
Clinical Practice and Documentation	Patient Centered Interactions, Population Management and Public Health Informatics
Business Process and Clinical Workflow Design	Research, Biomedicine, and Device Development
Information and Communication Technology Overview	Collection of Data and Knowledge Management
Information Systems Overview	Data Analytics, Modeling and Reporting
Health Information Management	Quality and Safety in eHealth
The Informatics Process and Principles of Health Informatics	Data Protection and Security in eHealth
Working with Health IT Systems	Administration, Leadership and Management of eHealth
EHR Modules: Medications, Allergies, Clinical Decision Support and Order Entry	Project and Resource Management
Interoperability, Interfaces and Integration of eHealth	Issue and Communication Management (includes Change and Stakeholder Management)
Telematics, Telehealth and mHealth	Teaching, Training and Education in eHealth

Foundational Curriculum (cont'd)

– Each unit is introduced in context to its related cluster and module

– Each unit cover page states the number of the current unit out of the entire course (X/60), so you can keep track of your progress

– All unit learning objectives are presented in *SMART* format, meaning they are specific, measurable, achievable, relevant and timely

– The objectives also correspond to HITComp competencies

Foundational Curriculum (cont'd)

– All new terms are introduced with definitions, and are printed in **boldface** type

  • There is an accompanying glossary unit to the FC, where all terms are defined

Foundational Curriculum (cont'd)

– Graphics are used to demonstrate all relationship concepts, processes and cycles

– Each unit includes a variety of learning techniques
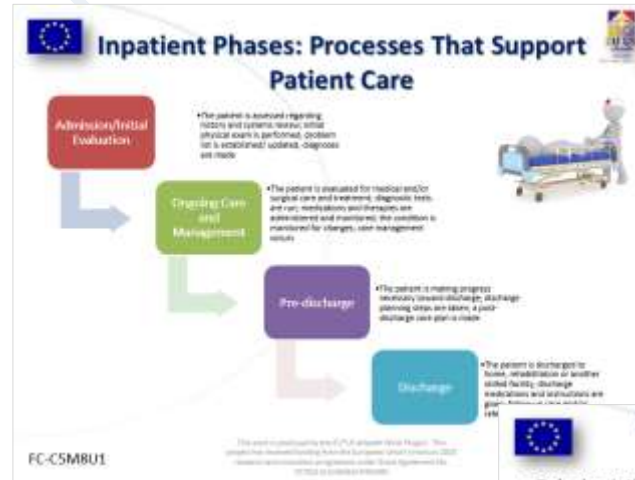
Foundational Curriculum (cont'd)

- Each unit includes review exercises and activities at the end of the unit

- The review exercises and activities are meant to engage the student in interactive real-life application of concepts learned, using research, investigation and discovery activities

Unit Review Exercise/Activity

Match the life cycle process an informaticist follows on the left with its correct feature on the right

1. Research & Advise
2. Analyse & Model
3. Design & Develop
4. Test & Train
5. Implement & Activate
6. Maintain & Support
7. Assess & Evaluate
8. Improve & Optimize
9. Reassess & Plan

a. composing and executing usability, satisfaction, device, needs and readiness assessments
b. planning of new staff needs and workflows due to system and/or technology implementations
c. creating and carrying out a set of instructions to be performed on the system in a test environment, forming the foundation for training materials
d. taking longitudinal data, learning from it, and folding that knowledge back into the EHRs and other information systems technology tools
e. providing arm-chair training, back-fill staffing for clinicians in training, and other help and assistance immediately after go-lives
f. utilizing data obtained from systems to support quality improvement initiatives
g. providing evidence that helps inform policies and procedures, and guides innovation and design of health care technologies
h. helping ensure go-live planning incorporates topics such as change management, user engagement and organization
i. assessing and integrating into the design all aspect including device needs, system usage and ergono

FC-C4M7U3

Unit Review Exercise/Activity

On the timeline below, list a major event in the evolution of health informatics for each of the decades given:

1950s   1970s   1990s   2010s

1960s   1980s   2000s

FC-C4M7U2

Foundational Curriculum (cont'd)

– All units feature a review of the objectives, which tie directly (in most cases) to HITComp competencies

– The codes listed can be searched and found directly as HITComp codes

  • The EU*US eHealth Work team vets all newly created objectives from the FC and incorporate them into HITComp as well

Unit Review Checklist

❑ Described how technology, process and people intersect in the discipline of informatics in health information/eHealth (FFL02)

❑ Conveyed the importance of informatics in the design, development, implementation, training, testing, support and optimization of health IT/eHealth (FFL01)

FC-C4M7U3

Unit Review Checklist

❑ Identified components of the HIT environment (JB06)

❑ Discussed the functionality of health information technology as it supports care processes (JB02)

❑ Described ambulatory and inpatient processes and explained how they support each health IT component (JB09)

FC-C5M8U1   14

Foundational Curriculum (cont'd)

– Finally, there is a quiz at the end of each unit

- The quiz covers all concepts learned throughout the unit

- You can review how much information regarding the unit you have retained by taking the quiz and seeing your results

Unit Exam

1. "The application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information for communication and decision making" can be defined as:
   a) Technology as a component of health information technology
   b) Information as a component of health information technology
   c) Systems as a component of health information technology
   d) All of the above

2. Data used in HIT includes which of the following?
   a) Departmental healthcare applications
   b) Clinical decision support notifications, allergy alerts
   c) Interoperable personal health and pop
   d) The intersection of people, process and planning, adoption, implementation

FC-CSM8U1

Unit Exam (cont'd)

3. Functionality is defined as:
   a) The ability to perform one or more tasks well
   b) Interoperable population health applications
   c) Electronic medical and health records and other structured data
   d) Tools and machines that can be used to solve real-world problems

4. Wellness checks and yearly physical exams occur and ongoing conditions are followed during which phase of care process?
   a) Inpatient, ongoing care and management
   b) Inpatient, discharge
   c) Outpatient, chronic and acute condition monitoring and treatment
   d) Outpatient, episodic care

FC-CSM8U1

Foundational Curriculum (cont'd)

- At the end of unit 29, there is a Mid-Course Examination

- Also, at the end of the course, there is a Final Examination
    - Both of these examinations are meant to review your cumulative knowledge of concepts learnt throughout the course
  - When a student has taken all units and completes the final examination at a level of 80% or greater, competency in eHealth is achieved
  - This competency signification is designed to align with certification programs
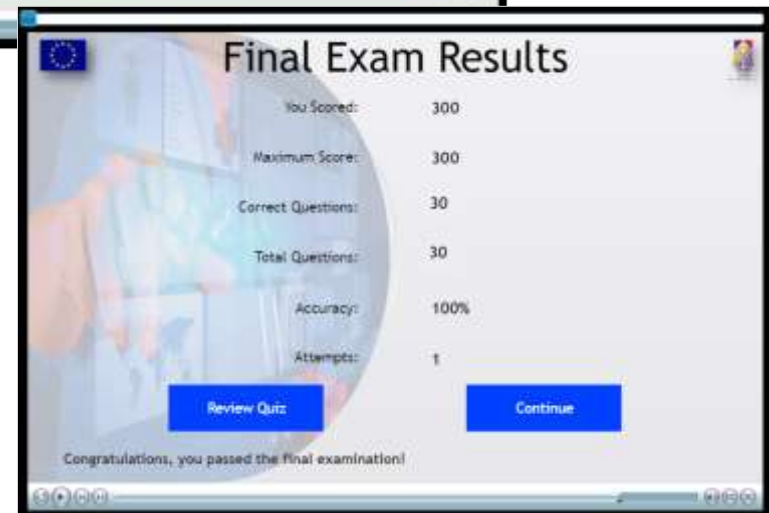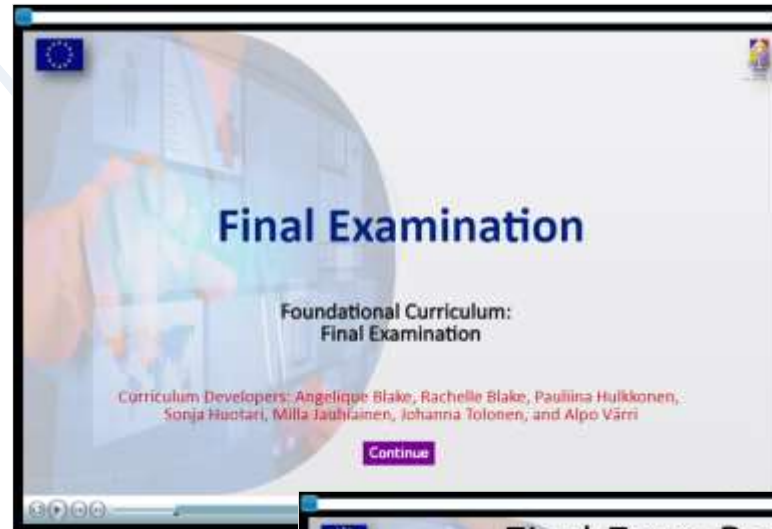
Listing of Clusters, Modules and Units

- On the following slides are the listing of all clusters, their associated modules, and each unit contained within each module

- From this listing, you can choose how you wish to pursue studying the course

- Some possible choices include:
  - Studying the entire course, including all 60 units, from beginning to end, including midterm and final exam
  - Picking which courses you might wish to study or learn new material from, based on their content listed in the objectives

Listing of Clusters, Modules and Units (cont'd)

- Using HITComp as a resource to aid you in selecting which courses to study, if you are somewhat familiar with eHealth
  - You can use the module or unit titles as a guide, and review the associated HITComp competencies in the associated areas to see if you have mastered them to a level of advanced or beyond
  - If you have done so, you may choose to skip that module or unit
- Keep in mind that competency in this course material is only demonstrable if you are able to pass the associated final examination

Cluster 1: eHealth

- Module 1: *Introduction to eHealth*: An overview of the people, places and processes of eHealth. This course includes an introduction to key concepts and components of eHealth and healthcare
  - Unit 1: An Overview of eHealth (FC-C1M1U1)
  - Unit 2: The People of eHealth: Roles of eHealth Workers (FC-C1M1U2)
  - Unit 3: The Places of eHealth: eHealth Settings (FC-C1M1U3)

FC-C0M0U1
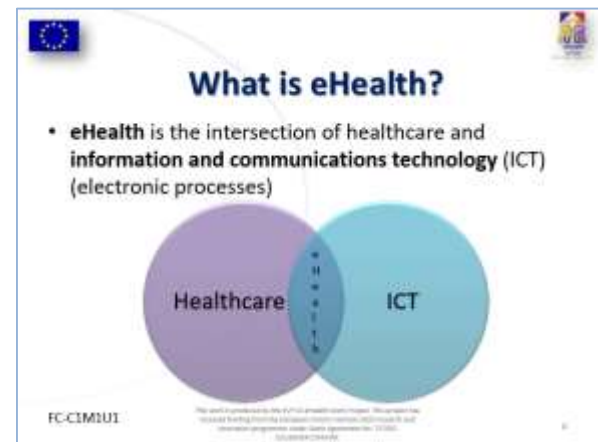
Cluster 2: Clinical Process

- Module 2: ***Clinical Practice and Documentation***: This module provides an overview of how clinicians practice medicine and document care, including doctors, nurses, pharmacists and others on the allied health team. It also covers clinical workflow basics. The module also includes medical terminology basics.

  – Unit 1: Clinical Practice and Workflows (FC-C2M2U1)

  – Unit 2: Clinical Documentation Basics (FC-C2M2U2)
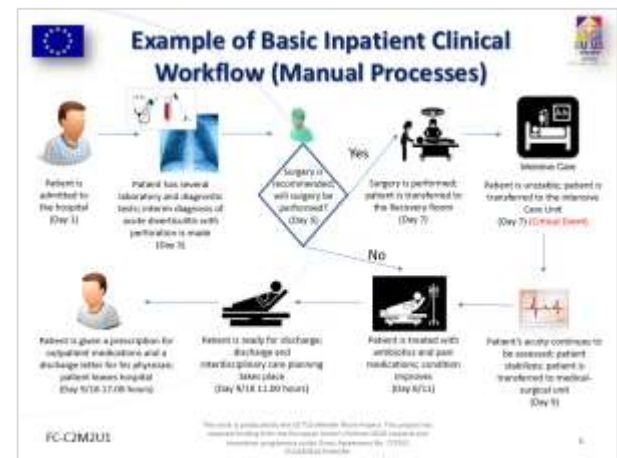
Cluster 2: Clinical Process (cont'd)

- – Unit 3: Clinical Documentation Principles (FC-C2M2U3)

- – Unit 4: Clinical Documentation Requirements (FC-C2M2U4)

- – Unit 5: Medical Terminology Basics (FC-C2M2U5)

- – Unit 6: Medical Terminology Concepts (FC-C2M2U6)
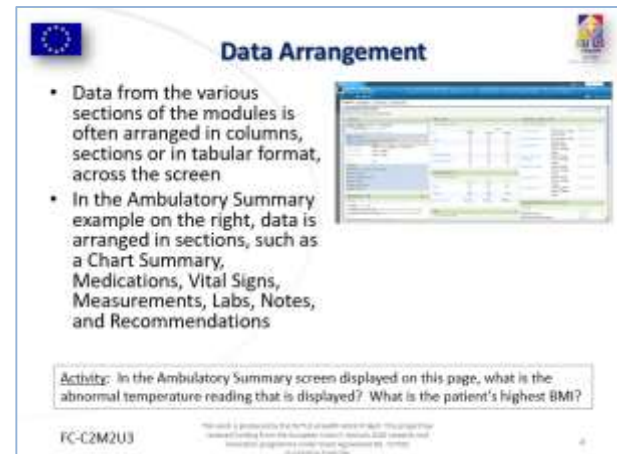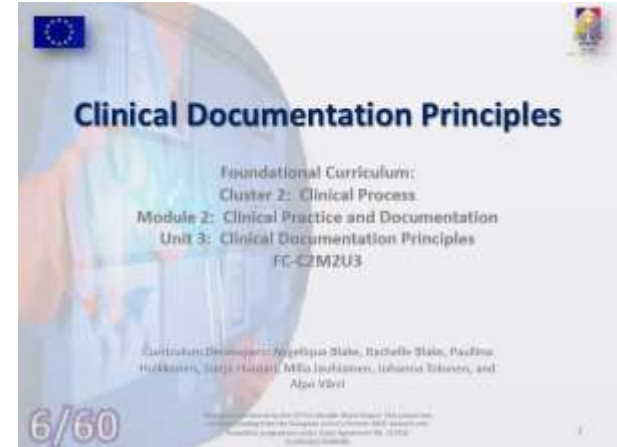
Cluster 2: Clinical Process (cont'd)

- Module 3: **Business Process and Workflow Design**: This module details the fundamentals of business workflows and process in a clinical environment, as well as clinical workflow design and redesign. Includes coordination of care, care planning and clinical pathways.

  - Unit 1: Business Process Design and Business Process Redesign (FC-C2M3U1)

  - Unit 2: Care Coordination as Part of the Clinical Workflow (FC-C2M3U2)

Cluster 3: ICT Process

- Module 4: ***Information and Communications Technology (ICT) and Information Systems Overview***: This module provides a basic overview of computer systems, software and hardware devices, including architecture, data organization and structure; networking and programming basics; as well as terms related to information systems and computing.

    – Unit 1: Information and Communications Technology Basics (FC-C3M4U1)

    – Unit 2: Information and Communications Technology Concepts (FC-C3M4U2)

Information and Communications Technology Concepts

Foundational Curriculum:
Cluster 3: ICT Process
Module 4: Information and Communications Technology (ICT) and Information Systems Overview
Unit 2: Information and Communications Technology Concepts

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13/60

Cluster 3: ICT Process (cont'd)

- Module 5: **_General HIT Knowledge/System Use_**: This module provides a continuation of the overview of computer systems with an expansion of general health information system knowledge, use and application into health information technology (HIT) and informatics

  - Unit 1: Information Systems and Programming Basics (FC-C3M5U1)

Cluster 4: Informatics

- Module 6: *Health Information Management, Legal and Coding Topics*:
  In this module the management of health information is explored, including access to information, protected health information, confidentiality and system management.

  – Unit 1: Health Information Management Basics (FC-C4M6U1)

  – Unit 2: HIM: Healthcare Administration (FC-C4M6U2)

  – Unit 3: HIM: Healthcare Finances and Revenue Cycle (FC-C4M6U3)

Cluster 4: Informatics (cont'd)

- Module 6 (cont'd): *Health Information Management, Legal and Coding Topics:* This module also includes legal, risk/compliance and ethics topics related to eHealth. It also includes medical coding concepts and billing and reimbursement, financial and account management.

  – Unit 4: HIM: Legal, Risk, Compliance, and Ethics Concepts (FC-C4M6U4)

  – Unit 5: Introduction to Medical Coding (FC-C4M6U5)

Cluster 4: Informatics (cont'd)

- Module 7: *The Informatics Process and Principles of Health Informatics*: This module is an overview of the informatics process with an introduction to the principles of health informatics

  - Unit 1: Health Informatics Basics (FC-C4M7U1)

  - Unit 2: Health Informatics Principles (FC-C4M7U2)

  - Unit 3: The Health Informatics Process (FC-C4M7U3)

Cluster 5: EHR Systems

- Module 8: ***Working with Health IT Systems***: This module provides an introduction to the electronic health/medical record system, including organization-wide as well as departmental systems. This also include system development and implementation/system lifecycle management.

    – Unit 1: Introduction & Overview: Components of Health IT Systems (FC-C5M8U1)

    – Unit 2: Types of EHR Systems: Acute Care Organizational and Departmental Systems, and Non-Acute Care Systems (FC-C5M8U2)

    – Unit 3: Principles of System Implementations, Optimizations and Upgrades (FC-C5M8U3)

    – Unit 4: System Maintenance (FC-C5M8U4)

FC-C0M0U1

Cluster 5: EHR Systems (cont'd)

- Module 9: ***EHR Modules – Medications, Allergies, Clinical Decision Support and Order Entry***: In this module clinical modules of the EHR will be covered, including medication administration, documentation and reconciliation; electronic prescribing; allergies documentation; clinical decision support including flags and alerts; and computerized provider order entry

    - Unit 1: Medication Administration, Delivery and Reconciliation Systems (FC-C5M9U1)

    - Unit 2: Allergies, Alerts and Flags – An Introduction to Clinical Decision Support Systems (FC-C5M9U2)

    - Unit 3: Provider Order Entry (FC-C5M9U3)

Cluster 6: System Connectivity

- Module 10: *Interoperability, Interfaces and Integration of eHealth*: This module provides a brief overview of data interoperability, including health information exchange, interfaces and integration. Also, includes standards and protocols including basic organizational methodologies of HL7, ISO and other standards organizations.

    – Unit 1: Interoperability (FC-C6M10U1)

    – Unit 2: Interfaces (FC-C6M10U2)

    – Unit 3: Integration of eHealth (FC-C6M10U3)

    – Unit 4: Standards and Protocols (FC-C6M10U4)

FC-C0M0U1

- Module 11: *Telematics, Telehealth and mHealth*: This module provides an overview of distance, remote and mobile health care interactions, techniques, systems and applications

  - Unit 1: Telematics and Telehealth (FC-C6M11U1)

  - Unit 2: mHealth (FC-C6M11U2)

Cluster 7: Patient and Device Integration/Research

- Module 12: *Patient Centered Interactions, Population Management and Public Health Informatics*: In this module, actions and engagement with patients, populations, and consumers in healthcare and eHealth is covered. Also includes informatics in active and healthy ageing.

  – Unit 1: Patient Identification, Enablement and Centered Interactions (FC-C7M12U1)

  – Unit 2: Population Management in eHealth (FC-C7M12U2)

  – Unit 3: Public Health and Public Health Informatics (FC-C7M12U3)

Cluster 7: Patient and Device Integration/Research (cont'd)

- Module 13: *Research, Biomedicine and Device Development*: This module covers research, biomedicine, and device development. Includes medical technology topics.

  - Unit 1: Research and Biomedicine Concepts in eHealth (FC-C7M13U1)

  - Unit 2: Medical Technology and Device Development (FC-C7M13U2)

Cluster 8: Data

- Module 14: *Collection of Data and Knowledge Management*: This module covers organizational knowledge management, including storage access and management of online medical libraries and knowledge collections.

  – Unit 1: Collection of Data (FC-C8M14U1)

  – Unit 2: Knowledge Management (FC-C8M14U2)

Cluster 8: Data (cont'd)

- Module 15: *Data Analytics, Modeling and Reporting*: This module provides an overview of analysis of health data, including reporting, modeling, benchmarking and dash-boarding.

  - Unit 1: Data Analytics (FC-C8M15U1)

  - Unit 2: Data Modeling (FC-C8M15U2)

  - Unit 3: Data Reporting (FC-C8M15U3)

Cluster 9: Safety and Security

- Module 16: *Quality and Safety in eHealth*: This module introduces the concepts of quality and safety in eHealth. It includes approaches to assessing patient safety issues and implementing quality improvement, assurance, management and reporting through electronic systems.

  - Unit 1: eHealth Quality Concepts(FC-C9M16U1)
  - Unit 2: eHealth Safety Concepts (FC-C9M16U2)

FC-C0M0U1

Cluster 9: Safety and Security (cont'd)

- Module 17: *Data Protection and Security in eHealth*: The focus of this module is on the protection and security of data in eHealth, including further discussion of privacy measures in eHealth, standards for electronic data protection, breach protocols, and safety measures. Also includes topics of system downtime measures, backup and restoration mechanisms.

    – Unit 1: Data Protection (FC-C9M17U1)

    – Unit 2: Data Security (FC-C9M17U2)

Cluster 10: Leadership & Management

- Module 18: *Administration, Leadership and Management of eHealth*: This module covers eHealth administration, leadership and management, including governance, policies and procedures involved in health information systems and management.

  – Unit 1: eHealth Management (FC-C10M18U1)

  – Unit 2: eHealth Administration and Leadership (FC-C10M18U2)

  – Unit 3: Policies and Procedures in eHealth (FC-C10M18U3)

FC-C0M0U1

Cluster 10: Leadership & Management (cont'd)

- Module 19: *Project and Resource Management*: This modules provides an overview of project management, and resource management techniques and methods.

    – Unit 1: Project and Program Management in eHealth (FC-C10M19U1)

    – Unit 2: Staffing and Resource Management (FC-C10M19U2)

- Module 20: *Management of Issues, Communication, Change and Stakeholders*: Issues resolution and management is covered in this module, along with communication management. The skills necessary to communicate effectively across the full range of eHealth roles are discussed.

  – Unit 1: Issue Management (FC-C10M20U1)

  – Unit 2: Communication Management (FC-C10M20U2)

FC-C0M0U1

- Module 20 (cont'd): *Management of Issues, Communication, Change and Stakeholders*: Also included are the topics of change and stakeholder management.

  - Unit 3: Change Management (FC-C10M20U3)

  - Unit 4: Stakeholder Management (FC-C10M20U4)

FC-C0M0U1

- Module 21: ***Teaching, Training and Education in eHealth***. This module provides an overview of learning styles and competencies, instructional and teaching techniques, and adult learning concepts especially pertinent to eHealth and the healthcare population.

  – Unit 1: Learning Concepts in eHealth (FC-C10M21U1)

  – Unit 2: Teaching and Training Concepts in eHealth (FC-C10M21U2)