Data Analytics and Stewardship: Key Components in Managing Health Information

Mervat Abdelhak – Pittsburgh, PA, USA
Angelika Handel – Erlangen-Nuremberg, Germany
Candace Gibson – London, Ontario, Canada
Claire Dixon-Lee – Chicago, IL, USA
Panel Goals – Data Stewardship

- Recognize need to manage, analyze vast sums of clinical data
- Ensure accuracy, consistency, reliability of health data
- Source of best data for each analytic purpose
- Improved quality outcomes and population health
- Health Information Management – complimentary professional field to medical and health informatics
- Educational initiatives from global perspectives to expand and strengthen this key workforce
DATA ANALYTICS AND STEWARDSHIP: EXPANDED ROLES FOR HIM AND NEW CURRICULUM REQUIREMENTS

By Mervat Abdelhak, PHD, RHIA, FAHIMA
Department Chairman and Associate Professor

School of Health and Rehabilitation Sciences
Department of Health Information Management
AGENDA:

I. ONC 2013 Report regarding EHR meaningful use.

II. The Health Information Management profession in a digital era – shift in workforce needs.


IV. New curriculum requirements in Data Analytics/Data Governance and Stewardship.

V. Are our accredited educational programs meeting curriculum requirements?
Where is Pittsburgh?
Digital Health Information

- Engaged Consumer
- Big Data
- Personalized Care
- Computational Power
- Connectivity
- Mobile Health
- EHR
- Meaningful Use
- ICD-10
- Telehealth
- HIE
- PHR

Engaged Consumer
Computational Power
Big Data
Connectivity
Personalized Care
Mobile Health
EHR
Meaningful Use
ICD-10
Telehealth
HIE
PHR

Healthy Life Road
Since the inception of the EHR Incentive Payment Program in 2011:

- 80% of eligible hospitals
- 50% of eligible professionals

Adopted EHR’s **AND** demonstrated meaningful use
ONC Data Shows EHR’s:

- Improved care coordination
- Reduced duplication of tests
- Reduced medication errors
- Enhanced patient safety
- Helped patients take control of their health
## ONC
Data Demonstrates Meaningful Use of EHRs

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>190 million+ electronic prescriptions have been sent</td>
<td>• Reduced medication error</td>
</tr>
<tr>
<td></td>
<td>• Enhanced patient safety</td>
</tr>
<tr>
<td></td>
<td>• Improved care communication</td>
</tr>
<tr>
<td>4.6 million patients received copies of their health information</td>
<td>• Engaged patient</td>
</tr>
<tr>
<td></td>
<td>• Improved compliance</td>
</tr>
<tr>
<td></td>
<td>• Improved patient outcome</td>
</tr>
<tr>
<td>13 million reminders about appointments, required tests, check-ups, sent to patients</td>
<td>• Improved compliance</td>
</tr>
<tr>
<td></td>
<td>• Improved follow-up care</td>
</tr>
<tr>
<td></td>
<td>• Engaged patient</td>
</tr>
</tbody>
</table>
## ONC
Data Demonstrates Meaningful Use of EHRs

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drug and medication interactions checked 40 million times</td>
<td>• Enhanced patient safety</td>
</tr>
<tr>
<td></td>
<td>• Improved patient care</td>
</tr>
<tr>
<td>4.3 million care summaries shared with other providers when patients</td>
<td>• Improved care communication</td>
</tr>
<tr>
<td>moved between care setting</td>
<td>• Improved patient outcomes</td>
</tr>
</tbody>
</table>
## The Health Information Management Profession in a Digital Era: Shift in Workforce Needs

<table>
<thead>
<tr>
<th>THEN</th>
<th>NOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper Record</td>
<td>EHR</td>
</tr>
<tr>
<td>Adoption and Implementation</td>
<td>Meaningful Use</td>
</tr>
<tr>
<td>Internal Data</td>
<td>Internal and External Data HIE</td>
</tr>
</tbody>
</table>
The Health Information Management Profession in a Digital Era: Shift in Workforce Needs

<table>
<thead>
<tr>
<th>THEN</th>
<th>NOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed Systems</td>
<td>Open system, patient portals, transparency of information &amp; decision making</td>
</tr>
<tr>
<td>Clinical Outcomes</td>
<td>Clinical/financial/performance outcomes</td>
</tr>
<tr>
<td>Data in Silos/HIM Department</td>
<td>Manage data across the organization Enterprise-wide information management</td>
</tr>
</tbody>
</table>
# University of Pittsburgh
## 2011 & 2012 Graduates Job Titles

<table>
<thead>
<tr>
<th>HIM Undergraduate</th>
<th>HIM Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems Analyst</td>
<td>Systems Analyst</td>
</tr>
<tr>
<td>Business Analyst</td>
<td>Clinical Content Specialist</td>
</tr>
<tr>
<td>Implementation Specialist</td>
<td>Senior Solutions Analyst</td>
</tr>
<tr>
<td>Information Systems Specialist</td>
<td>Educator</td>
</tr>
<tr>
<td>Process Improvement Specialist</td>
<td>Director of HIM</td>
</tr>
<tr>
<td>EHR Specialist</td>
<td>Director of Quality Improvement</td>
</tr>
<tr>
<td>Clinical Data Coordinator</td>
<td>Commercial Director of IT Sector</td>
</tr>
</tbody>
</table>
University of Pittsburgh
2011 & 2012 Graduates Job Titles

<table>
<thead>
<tr>
<th>HIM Undergraduate</th>
<th>HIM Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Content Specialist</td>
<td>Systems Architect</td>
</tr>
<tr>
<td>IT Consultant</td>
<td>Administrator</td>
</tr>
<tr>
<td>Workflow/Rules Consultant</td>
<td>Technical Writing &amp; User Training</td>
</tr>
<tr>
<td>Associate EMR Training Specialist</td>
<td>Vendor Liaison</td>
</tr>
<tr>
<td>Compliance Analyst</td>
<td>Director of Data Analytics, Use Case Research</td>
</tr>
<tr>
<td>Healthcare IT Analyst</td>
<td>Health Information Exchange Specialist</td>
</tr>
<tr>
<td>Enterprise Interface Analyst</td>
<td>Director of Privacy and Security</td>
</tr>
</tbody>
</table>
# Skills, Abilities, and Tasks Needed for Use Case Research

<table>
<thead>
<tr>
<th><strong>Tasks</strong></th>
<th><strong>Skills and Abilities</strong></th>
</tr>
</thead>
</table>
| • Gather and develop a scope of what is the overall use case goal/ the problem that needs to be solved.  
• Identification of a comprehensive list of data elements involved  
• Identify primary & secondary sources of data  
• Address data integrity and data validation | • Knowledge on the content areas as well as overall knowledge of the workflow  
• Use of data analytic tools  
• Compiling and analyzing data  
• Attention to detail  
• Effective organizational skills |
Skills, Abilities, and Tasks Needed for Use Case Research

<table>
<thead>
<tr>
<th>Tasks</th>
<th>Skills and Abilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Identify the workflow/process (primary and secondary users of the data)</td>
<td>• Time and project management</td>
</tr>
<tr>
<td>• Identify any risks and out-of-scope work</td>
<td>• Effective communication and presentation skills</td>
</tr>
<tr>
<td>• Identify the stakeholders (who are the individuals and departments involved)</td>
<td>• Report writing</td>
</tr>
<tr>
<td>• Identify the business justification and what is the overall value proposition to the organization</td>
<td>• Ability to communicate effectively with different department/ personnel</td>
</tr>
</tbody>
</table>
## HIM Graduate Level Curriculum Map - Draft

| I. Information Architecture: Data Content Structure and Standards | • Classification systems  
|                                                               | • Clinical vocabularies  
|                                                               | • Health record content & documentation requirements  
|                                                               | • Data governance & integration needs  
|                                                               | • Business/clinical analytics  
|                                                               | • Primary & secondary data sources  

| II. Information Protection: Access, Disclosure, Archival, Privacy & Security | • Health laws  
| • Regulations  
| • Policies & procedures – development & implementation  
| • Confidentiality  
| • Security  
| • Release of information  


III. Information, Analytics & Data Use

- Health information technology
- Data capture technologies
- Data base design
- Data mining
- Research methods
- Statistics
- Integration tools
- Data visualization
- Data integrity
- Data quality
- Trend analysis

IV. Revenue Management

Compliance
Risk management
Coding
Fraud surveillance
Clinical documentation improvement
### V. Leadership

- Critical thinking skills
- Communication skills
- Negotiation skills
- Human resource management
- Financial management
- Project management
- Ethics
- Training and development
Accredited HIM Educational Programs – Meeting the New Curriculum Requirements?

CAHIIM Accredited Educational Programs:

Baccalaureate: 57
Masters HIM: 6
Masters Health Informatics: 3
Accredited HIM Educational Programs – Meeting the New Curriculum Requirements?

<table>
<thead>
<tr>
<th>Database</th>
<th>Business Intelligence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Management Systems</td>
<td></td>
</tr>
<tr>
<td>Database Design</td>
<td></td>
</tr>
<tr>
<td>Data Analytics</td>
<td></td>
</tr>
<tr>
<td>Data Governance</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Data Structures</td>
<td></td>
</tr>
<tr>
<td>Health Data Management</td>
<td></td>
</tr>
</tbody>
</table>
Accredited HIM Educational Programs – Meeting the New Curriculum Requirements?

<table>
<thead>
<tr>
<th></th>
<th>Baccalaureate HIM</th>
<th>Masters (HIM)</th>
<th>Masters (HI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Database Management</td>
<td>21</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>27</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Business Intelligence</td>
<td>9</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>
Contact Information:

Mervat Abdelhak, PhD, RHIA, FAHIMA
Chair and Associate Professor
Department of Health Information Management

6052 Forbes Tower
Pittsburgh, PA 15260
412-383-6650
Fax: 412-383-6655
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Managing Health Information
New challenges and possibilities for HIM-workforce in Germany

Angelika Haendel, MA
University of Erlangen-Nuremberg
DVMD board member
President of IFHIMA
Some Facts

2-year full time education

3-year full time education

Bachelor-Degree

Master-Degree

Certificate “Medical Documentation“

Associate level / vocational training

Baccalaureate / graduate level (B.Sc., B.A.)

In development

Certificate from GMDS & DVMD

Equivalent knowledge (e.g. for career changers)
Health Information Management in Germany

Some Facts

Professional Fields

• ~ 50% work in the area of pharmacological trials, in the field of clinical research studies or are employed at contract research institutes

• ~ 40% are employed in hospitals, cancer registries or comprehensive cancer centers

• ~ 10% work in the public health sector, at IT-companies or are self employed (free lancer)
• Der Fachverband für Dokumentation und Informationsmanagement in der Medizin (DVMD)

• Founded 1972

• ~ 1,000 members

• Common Association Journal „mdi“ together with Medical Informatics Association (BVMI)

• Member of the International Federation of Health Information Management Associations (IFHIMA)
Example 1: Clinical trials

- New methodology: Comparative Effectiveness Research (CER)
- To provide evidence on the effectiveness, benefits, and harms of different treatment options
- The evidence is generated from research studies that compare drugs, medical devices, tests, surgeries or ways to deliver health care

 Variety of data sources and methods are required

 HIM has to overview the complete process including questioning of patients, identify conceptual gaps, prepare data in a clear and concise manner, generate graphics etc.
Health Information Management in Germany
Current Challenges

Example 2: Hospital Settings

- Reimbursement system based on Diagnosis Related Groups (DRG)
- Increasing competition between health care providers
- Integrated Health Care, Disease Management Programs etc.
- Extended Quality Assurance
- Shift Paper Based to Electronic Patient Record

HIM are involved in exact encoding of diagnosis, DRG-controling, master / manage different IT-Systems, or take over hospital management tasks
Health Information Management in Germany
Current Challenges

Example 3: Cancer Registration

• In April 2013, the new German ACT of Cancer Screening and Cancer Registries came into effect

• Establishment of German wide clinical cancer registries

• Purpose: Standardization of the work of these cancer registries

Consistent data collection for each cancer patient is prerequisite for comparative evaluation and analysis

HIM need deeper understanding of the different nomenclatures and classification systems (ICD / ICD-O, TNM)
Original Tasks of Medical Documentation

Data Capturing
- Paper
- Digital
- Barcode

Data Analysis
- Semantic
- Classification
- Indexing

Data Storage
- Data base
- File systems

Data Retrieval
- Data Mining
- Statistical Analysis

adapted from J. Bernauer, mdi 2011
Today’s Tasks of Health Information Management

Coordination tasks
• Project management / Quality management

IT-Management
• Network administration / Data privacy and data security

Management of IT application systems
• Operating, Maintenance, Customizing, Consultancy

Development of Documentation Systems
• Data modelling, data base design

Analysis
• Data base queries
• Process analysis

adapted from J. Bernauer, mdi 2011
Additional – Content of Teaching
Graduate Level

• Quality management and quality assurance in health care and clinical research

• Competencies in research methods and statistics
  - innovative interview techniques
  - outcome research
  - study design and evaluation

• Key competences
  • human resources management
  • advisory and training skills

• Advanced technologies and methods of data analysis

• Interdisciplinary research orientated project management
Paradigm Shift

Medical Documentation  Health Information Management

Association for Medical Documentation

Association for Documentation and Information Management in Medicine
New Degree Programs (B.Sc.)

- Traditional: Medical Documentation and Informatics
- New: Information Management in Medicine
Thank you very much for your attention
HIM Workforce Transformation
New Roles, New Skills

Candace J Gibson, PhD, CHIM
Assistant Dean
Schulich School of Medicine & Dentistry
London, ON
Past Chair, CHIMA
candaceg@uwo.ca
About CHIMA

The Canadian Health Information Management Association (CHIMA) represents approximately 5,000 Health Information Management (HIM®) professionals across Canada and is the certifying body and national association that represents leadership and excellence in health information management.

CHIMA supports continuing education and professional practice of HIM professionals; develops strategic partnerships to advance the development and integration of electronic HIM; and advocates for and strengthens the HIM role in health care settings across the continuum of care.
About CHIMA

- Original charter in 1928 with NAMRL; Canadian “letters patent” 1949: CAMRL
  - Established to represent (HIM) professionals in Canada
- Evolution to CHRA in 1976; CHIMA in 2003
  - Each represents a change in place and scope of practice
- CCHIM - College and National Certification Exam
  - Certifying body for HIM education programs
    - College Programs – 2 years (11) – 3 years (4)
    - Degree Programs – 4 years (2)
    - Credential maintenance = 36 CPEs / 3 year cycle
“New” CHIMA
Strategic Directions

1. Strengthen Member Relations
2. Evolve the College
3. Focus on Knowledge, Research and Business Development
4. Strengthen Capability in Marketing and Communications
New CHIMA is also: HIM Workforce Transformation

• Defining Future Roles
  • HI/HIM Human Resources Report
  • ICTC Competency Profiles
  • Workforce Transformation (AHS-HIM)
    *(HI*Ms currently working in field/Members)*

• Evolve the College
  • LOHIM Document – Task Force – 2010
  • Evolve the College – Advisory Committee recommendations
    *(Future Graduates/New Members)*
HI/HIM HUMAN RESOURCE REQUIREMENTS
Sector Study Report - 2009 Recommendations

1. Forecast of HI/HIM human resource requirements supported by expert consultations, strengthened data sources, and systematic industry validation

2. Strategies to address skills shortages through education, professional development, co-op and internship and the integration of international HI/HIM professionals

Both labor shortages AND skills shortages.
HI-HIM Human Resources Study
Projected Workforce Needs

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low Growth</td>
</tr>
<tr>
<td>HI &amp; HIM Employment</td>
<td></td>
</tr>
<tr>
<td>Total: All HI &amp; HIM Occupation Groups</td>
<td>32,540</td>
</tr>
<tr>
<td>Five Year Increase in Employment</td>
<td>2,480</td>
</tr>
<tr>
<td>Five Year Percentage Increase in Employment</td>
<td>7.6%</td>
</tr>
<tr>
<td>Five-Year Replacement Demand</td>
<td></td>
</tr>
<tr>
<td>Replacement Rate</td>
<td></td>
</tr>
<tr>
<td>Replacement Requirement</td>
<td></td>
</tr>
<tr>
<td>Hiring Requirement (Employment Growth + Replacement)</td>
<td></td>
</tr>
<tr>
<td>Hiring Requirement as percent of 2009 Employment</td>
<td>19.4%</td>
</tr>
</tbody>
</table>
HI-HIM Human Resources Study
Projected Workforce Skills

<table>
<thead>
<tr>
<th>Current Vacancy Rates by Occupational Group</th>
<th>HI &amp; HIM Human Resources Survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above 4.5% Average Vacancy Rate</td>
<td>Vacancy Rate</td>
</tr>
<tr>
<td>Health Information Management – Standards</td>
<td>23.0%</td>
</tr>
<tr>
<td>Health Information Management – Decision Support</td>
<td>14.4%</td>
</tr>
<tr>
<td>Information Technology – Quality Assurance/Testing</td>
<td>12.5%</td>
</tr>
<tr>
<td>Health Information Management – Privacy</td>
<td>11.6%</td>
</tr>
<tr>
<td>Management of Canadian Health System – Business Analysis</td>
<td>11.4%</td>
</tr>
<tr>
<td>Clinical Informatics – Senior Medical Information Officers</td>
<td>10.9%</td>
</tr>
<tr>
<td>Information Technology – Network, Storage, and Other Infrastructure Support</td>
<td>7.1%</td>
</tr>
<tr>
<td>Organizational and Behavioural Management – Change Management</td>
<td>7.0%</td>
</tr>
<tr>
<td>Information Technology – Help Desk</td>
<td>6.7%</td>
</tr>
<tr>
<td>Clinical Informatics – Clinician-Analysts</td>
<td>6.6%</td>
</tr>
<tr>
<td>Organizational and Behavioural Management – Product/Service Management</td>
<td>6.3%</td>
</tr>
<tr>
<td>Health Information Management – Data Quality Management</td>
<td>5.7%</td>
</tr>
<tr>
<td>Project Management – Senior Project Management</td>
<td>4.8%</td>
</tr>
</tbody>
</table>
CONCLUSION of the Study

“Electronic Health Information System technologies will reshape virtually all aspects of health information management...

EHIS technologies will increase the need for standard terminologies, privacy controls & compliance with policies and regulations”
Future Roles

New roles are defined based on the requirements and functions necessary to accomplish comprehensive and meaningful information management within a health care organization...

in an electronic environment
Transition Roadmap – New Roles
eHealth Competency Profile Clusters
ICTC - http://www.ictc-ctic.ca/?page_id=1798

- Architecture and Development
- Health Systems Integration and Deployment
- Clinical Informatics
- Decision Support
- eHealth Business Analysis
- eHealth Change & Transition Management
- eHealth Privacy Management
- eHealth Project Management
- eHealth Standards Management
- Health Application Implementation
- Health Information Management
- C-Suite Level
Alberta Health Services (AHS)

Workforce Transformation

moving beyond the “traditional”

- **Data Collection and Mining** – concurrent and supporting Clinical Decision Support
- **Data Quality** – in Source Systems; EHR, Registries
- **Standards** – demonstrate adoption of standards through audit and interoperability
- **Clinical Content Knowledge** – capture mechanisms, structured/semi-structured sources, natural language processing, mapping between terminologies, use of taxonomies
- **Data Repositories and Dictionaries** – metadata management; enterprise data dictionary maintenance/management
- **Terminologies and Classifications** – understanding language, classification and terminology frameworks by specialty, i.e. mapping between multiple document taxonomies (EMR, EHR, PHR); code mapping between SNOMED-CT, LOINC, ICD10-CD
- **Information Technology** – Support for applications, analysts, business process workflow, organizational change management, new systems
- **Privacy, Access and Security** - enterprise web-based education; supporting team-based breach investigations.
Future Career Opportunities

• **Information Management Governance**
  - Information Management Liaison
  - Standards Specialists
  - Policy Analysts

• **Data Capture**
  – Clinical Data Specialist
  – Medical Text Editor
  – Concurrent Coding Specialist
  – Central Intake Coordinator
• **Information Integrity**
  - Health Information Safety officer
  - Data Integrity Specialist
  - Risk Management Analyst

• **Identity Management**
  - Identity Management Coordinators – as Registry business owners – Integrity, maintenance and management – Client, Provider, Location...
  - Registry Data Quality Specialist, etc.

• **Access, Disclosure and Retention**
  - Privacy Specialist / Privacy Officer
  - Request Coordinator
  - Information Steward
  - Consent Management Specialist, etc.
• **Content Compliance**
  - Compliance Specialists
  - Content Management Expert

• **Knowledge Asset Management**
  - Semantics Content Experts
  - Clinical Terminology Standards Specialist
  - Data Modeler

• **Customer Support**
  - Information Brokers
  - Registry Agents
  - Portal Agents
  - Information Reconciliation Specialists
HIM Competencies – 2010 and beyond

• Biomedical Sciences
• Health Care System in Canada
• Health Information
  – Health Information Management
    • Data Collection and Grouping
    • Information and Data Standards
    • Data Quality
    • Records / Information Management
  – Health Information Analysis and Business Intelligence
    • Statistics
    • Research Design and Methodology
    • Epidemiology
    • Decision Support and Data Analytics
  – Health Information: Privacy, Confidentiality and Access
    • Privacy – Legal Basis and Requirements (Access, Collection, Use, Disclosure, Retention & Disposal); Management of Obligations
• Information Systems and Technology
• Management
• Ethics and Practice
Environment scan - findings

• Health records management includes “less doing and more oversight”

• HIMs are playing a bigger role in decision support

• HIM professionals are the leaders in the life cycle management of health information

• CHIMA will work with partners/alliances towards HIM standards setting within Canada
Four new certifications

• Coding classification and advanced coding classification

• Decision support

• Clinical documentation improvement

• Terminologies, standards
New Roles 2012-2017
How it all fits together

NEW HIM ROLES—Transition Roadmap

New ICTC role profiles

NEW HIM ROLES – AHS and Across Canada

Changing education of health information management professionals

Workforce shortages

Future HIM professionals
• Building on the role of a health information management workforce

• Key skill sets and education models (3 tiers)
  – Foundational knowledge – sciences, IT, statistics
  – Science of health Information management
  – Country-specific applications and practices

• Publicize models to guide other nations to develop this workforce adapted to their needs
The Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM)

"Advancing the Value of Health Informatics and Information Management through Quality Education"
Available to Accredited Programs

Designation of CAHIIM Accreditation
2012 Annual Report

Go to www.cahiim.org to access the report
We thank you very much!!

What questions or comments do you have?