The Curriculum Inventory: What Curriculum Deans Need to Know

Terri Cameron, AAMC (Moderator)
Robby Reynolds, AAMC
Marc Triola, New York University
Susan Albright, Tufts University
Sascha Cohen, University of California – San Francisco
MedAPS Overview

Robby Reynolds
Director, MedEdPORTAL
MedAPS: Suite of Services

Provide AAMC member medical schools with the tools necessary to assess, maintain and fulfill accreditation standards and promote continuous quality improvement.

Curriculum Inventory & Reports
(Replacing CurrMIT)

ASSET
(Accreditation Standards Self-Evaluation Tool)

ASSET Dashboard

www.aamc.org/medaps
Populating MedAPS

Data Sources
- LCME AQ Part I-A
- LCME AQ Part I-B
- Curriculum Inventory
- Graduation Questionnaire
- Student Record System
- Faculty Database

AAMC Data Warehouse

ASSET (1/3 Pre-Populated)

Curriculum Inventory Reports

ASSET Dashboard
Curriculum Inventory & Reports

- Streamline curriculum data collection and exchange utilizing internationally adopted standards

- Provide graphical interpretations of aggregate and historical curriculum-related data (includes LCME A/Q Part II data)

- Serve as the premier source for benchmarking and educational research in medical education

www.aamc.org/medaps
ASSET (Accreditation Standards Self-Evaluation Tool)

- Pre-populate online accreditation documentation
- Ensure consistent data reporting
- Facilitate school-side accreditation processes
- Foster qualitative data collection
- Facilitate the work of LCME survey teams and staff

www.aamc.org/medaps
Please review the following table containing data from the LCME Part I-A Annual Financial Questionnaires. You may use the open text box below to provide additional information.

<table>
<thead>
<tr>
<th></th>
<th>*2003-2004</th>
<th>**2011-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Revenue from Tuition and Fees</td>
<td>$8.0M</td>
<td>$12.0M</td>
</tr>
<tr>
<td>University and Government Appropriations</td>
<td>$2.6M</td>
<td>$3.4M</td>
</tr>
<tr>
<td>Research/Training Grants, Direct</td>
<td>$45.0M</td>
<td>$34.0M</td>
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<tr>
<td>Indirect Cost Recoveries</td>
<td>$3.4M</td>
<td>$5.3M</td>
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<tr>
<td>Practice Plan Income</td>
<td>$46.3M</td>
<td>$59.2M</td>
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<tr>
<td>Revenue from Clinical Affiliates</td>
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<tr>
<td>Other Revenues</td>
<td>$4.3M</td>
<td>$2.5M</td>
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<tr>
<td>Gifts and Endowment</td>
<td>$2.1M</td>
<td>$1.3M</td>
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<tr>
<td>**Total Revenues</td>
<td><strong>$136.7M</strong></td>
<td><strong>$153.2M</strong></td>
</tr>
</tbody>
</table>

*Data Source: 2003-2004 LCME Part I-A Annual Financial Questionnaire
Administered by: AAMC | Medical School Contact: Emily Wilkerson

**Data Source: 2011-2012 LCME Part I-A Annual Financial Questionnaire
Administered by: AAMC | Medical School Contact: Emily Wilkerson

Provide narrative for survey team (optional):
ASSET Dashboard

- Review performance on LCME standards annually
- Compare performance and curricula with national data
- Compare performance and curricula with peer institutions
- Link to AAMC tools and solutions to help address deficiencies

www.aamc.org/medaps
MedAPS: Timeline

Curriculum Inventory & Reports
Phase 1: Upload School Data

2013
Pilot ASSET

Curriculum Inventory & Reports
Phase 2: Launch Service

2014
Launch ASSET
ASSET Dashboard

2015
Launch

www.aamc.org/medaps
Curriculum Inventory and Reports

Terri Cameron
Director, Curriculum Management
AAMC
Curriculum data mapped to a competency hierarchy (competencies to course objectives to session objectives) are uploaded to the Curriculum Inventory (CI) from school systems using the Medbiquitous CI data exchange standard (www.medbiq.org).
Choose a specialty from the graph above to display additional information.
Potentially New Concepts

- Phase
- Event
- Resource (for Instructional and Assessment Methods)
- Sequence Block
- Competency
- Milestone / EPA
- Integrated clerkship/experience
- Longitudinal clerkship/experience
Potentially New Concepts

• How is the Curriculum Inventory different from CurrMIT?
  • No data entry – all data is uploaded using the MedBiquitous Curriculum Inventory Data Exchange Standard
  • More flexible – not locked into rigid curriculum structure
  • Less ‘local’ detail – the CI is being built to collect and provide aggregate data, not to support local curriculum management
    • No faculty data
Standardized Vocabulary

- Use local terms for institutional data entry and reporting; match to standardized vocabulary for upload to CIR for aggregate reporting
  - Instructional Methods
  - Assessment Methods
  - Resources
- Keywords
  - UMLS
    - UMLS ‘synonyms’ appended to keyword list
    - Can search using UMLS terms or free text

www.aamc.org/medaps
Competency Reference List

- Compared(mapped healthcare profession competency sets to create a set of ‘core’ competencies for aggregate reporting in MedAPS and MedEdPORTAL
  - ACGME
    - Including RRCs
  - CanMEDS
  - Scottish Doctor
  - Tomorrow’s Doctors
  - Healthcare Professions

www.aamc.org/medaps
Competency Reference List

- Match local competencies to Competency Reference List for aggregate reporting
  - Competencies being mapped across curriculum
  - Instructional methods used to teach competencies
  - Assessment methods used to assess achievement of competencies
  - Content areas in which competencies are taught

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Curriculum Inventory Process

• Submit Data
• Verify Data (MB CI Standard, Terminology, Competencies)
• Keyword Enhancement (Append Synonyms)
• Create Snapshot for previous academic year
  • Notification sent 06/01; data due 08/01
• Reports generated/updated/available 09/01
• Three versions (Public, Static, Enhanced)
• Only participating schools (by academic year) have access to Enhanced Reports
Curriculum Inventory and ASSET

- LCME ‘Database’ now called Data Collection Instrument (DCI)
- Curriculum Inventory data pre-populates each school’s data related to Accreditation Standard questions related to curriculum content and pedagogy
- Curriculum Inventory pre-populates ASSET Dashboard to allow benchmarking of curriculum data, with full demographic options for national and peer comparisons
CIR and ASSET

- **CIR**: Aggregate Reports (national and peer data)
- **ASSET**: School Reports related to Accreditation Standards
- **ASSET DASHBOARD**: School curriculum data compared to national/peer groups
Curriculum Inventory Timeline

• 2010 – 2011: Focus Groups
• 2010 – ongoing: Vendor Affiliations
• 2010 – 2012: MedBiquitious Curriculum Inventory Data Exchange Standard
• 2011 – 2012: Curriculum Inventory Business Analysis (AAMC)
• 2012 – 2013: Curriculum Inventory Development
• Summer 2013: Vendors and Schools begin uploading data
Curriculum Inventory Timeline

• Summer 2013: Access databases of CurrMIT data generated for schools (by request)
• Fall 2013/Winter 2014: Curriculum Inventory and Reports goes live
• Winter 2014: CurrMIT is taken off-line
The NYU Educational Data Warehouse

Marc Triola, MD
Associate Dean for Educational Informatics
NYU School of Medicine Division of Educational Informatics
Overview

• The Need
• Our Approach
• Implementation
• Lessons Learned and Next Steps
Needs

• Newly Implemented Curriculum
  o Learning analytics at the individual level
  o Curriculum mapping and management
  o Regulatory reporting

• Strategic operational dashboards
  o Admissions, Diversity Affairs, etc.
  o UME, GME and Biomedical Sciences graduate program
  o Educational Informatics
  o LCME
Benefits of an EduDW

• Integrates metrics from numerous heterogeneous sources and enables analysis across multiple systems & processes

• The EduDW architecture, based on dimensions and facts, promotes exploration:
  o provides single analytic view that is easier for users
  o insures high performance
  o is supported by a variety of query & reporting tools
  o facilitates creation of multidimensional cubes

• Preserves historical data

• Takes off the load of resource-intensive queries from operational systems
Education Data Warehouse

- Lecture Podcasting
- Sakai LMS
- ePortfolio
- PeopleSoft SIS
- Moodle Exams
- AMCAS Admissions
- Student Patient Log
- SIS ETL
- Reporting and Analytics
- Data Marts
- BI

NYU School of Medicine
NYU Langone Medical Center
<table>
<thead>
<tr>
<th>Academic Year</th>
<th>Program</th>
<th>Course</th>
<th>Effort Type</th>
<th>Role</th>
<th>Duration (days)</th>
<th>Contact Hrs</th>
<th>Effort Hrs</th>
<th>Self-Rep. Effort Hrs</th>
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<td>Basic Science</td>
<td>Practice of Medicine I</td>
<td>Teaching</td>
<td>Faculty Lecturer</td>
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<td>0.0</td>
<td>0.0</td>
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<td>Clerkship</td>
<td>Medicine Clerkship</td>
<td>Teaching</td>
<td>Faculty Leader, Small Group Session</td>
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<td>1.0</td>
<td>4.0</td>
<td>4.0</td>
<td>0.20</td>
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<td>2011</td>
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<td>Online Learning Module(s)</td>
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<td>2011</td>
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</table>

**Data Source**

- ALEX
- eValue
- ePortfolio
Curriculum Mapping

Stage 1A
- Core Foundations for Medicine
- MDBM - Trunk
- Practice of Medicine I

Stage 1B
- CPM: Cardiovascular
- CPM: Renal
- CPM: GI
- CPM: Pulmonary
- CPM: Endo & Repro

Stage 1C
- CPM: Musculoskeletal
- CPM: The Nervous System
- Practice of Medicine II
- MDBM - Head and Neck/Extremities

C21 Pillars
- Atherosclerosis/Cardiovascular Disease
- Colorectal Cancer/Cancer Biology
- Diabetes/Metabolism & Obesity
- M. tuberculosis/Microbial Pathogenesis

Medical School Course Catalog

Stage 1a
- Core Foundations for Medicine
  - Directors: Garabedian, Michael; Jelinek, Warren; Clarkson, Allen; Thomas, John; Lowenstein, Jerome; D’eustachio, Peter;
- MDBM - Trunk
  - Directors: Malyango, Avelin; Frenkel, Sally;
Curriculum Mapping

School of Medicine

Gene (Preferred Name, SNOMED Clinical Terms)
Genes (Synonym, Medical Subject Headings)
Genes, vif (Synonym, Medical Subject Headings)
Epistasis, Genetic (Synonym, Medical Subject Headings)
Animal gene (Preferred Name, SNOMED Clinical Terms)
Apolipoprotein gene (Preferred Name, SNOMED Clinical Terms)
ARAC gene (Preferred Name, SNOMED Clinical Terms)

Results provided by NCBO BioPortal

Calendar Event in CPM: Endo & Repro treatment) of type 2 diabetes (T2DM) the relationship between obesity and diabetes and the increasingly... as they relate to diabetes as well as...Pillars: Diabetes/Metabolism & Obesity; Keywords: Diabetes mellitus;

Calendar Event in CPM: Endo & Repro
Review Epidemiology of Diabetes ... Review Pathogenesis Type 2 Diabetes Mellitus...

Diabetes- Pathogenesis of Diabetes-2011.pptx
Operational Dashboards

ALEX Statistics Since May, 2007

ALEX Metrics

<table>
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<tr>
<th>Metric</th>
<th>Total</th>
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<tbody>
<tr>
<td>ALEX Courses</td>
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<tr>
<td>Calendar Events</td>
<td>25,458</td>
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<tr>
<td>Course Groups</td>
<td>1,350</td>
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<td>Learning Objects (PPT, pdf, etc.)</td>
<td>117,133</td>
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<tr>
<td>Number of log-ins in past 7 days</td>
<td>11,427</td>
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<tr>
<td>Total number of log-ins</td>
<td>1,769,729</td>
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<tr>
<td>Users who have logged in</td>
<td>10,913</td>
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</tbody>
</table>

Hourly Logins

ALEX Program Logins

<table>
<thead>
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<th>Program</th>
<th>Logins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Science</td>
<td>912,599</td>
</tr>
<tr>
<td>C21</td>
<td>116,172</td>
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<tr>
<td>Clerkship</td>
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<tr>
<td>Collections</td>
<td>1,832</td>
</tr>
<tr>
<td>Courseware</td>
<td>94,231</td>
</tr>
<tr>
<td>CTSI</td>
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</tr>
</tbody>
</table>
Lessons Learned

• Support within the organizational culture
  o Commitment from senior leadership

• Ongoing partnerships between Informatics/IT, faculty and administration
  o An iterative process!
Implementation
Curriculum Inventory at
Tufts University School of Medicine

Susan Albright,
Director, Technology for Learning in the Health Sciences, Tufts University
TUSK: Enterprise Educational System

- Curriculum delivery, management and assessment
- Course management
- Content management/Delivery (computer and mobile)
- Personalized Knowledge Management
- Tools for Clinical Teaching and active learning
- Publish to Opencourseware site
- Open Source - http://opentusk.org
Where in the World is TUSK?

**U.S.**
- New York Medical College
- Emory
- U. Hawaii
- Einstein Medical School
- University of Arizona
- Tufts (Medical, Dental, Vet, Public Health, Graduate Biological Sci’s)
- University of Arizona

**Africa**
- Uganda
- DRC
- Kenya
- Tanzaniz
- Ghana
- Ethiopia
- Rwanda

**Saudi Arabia**

**Southeast Asia**
- India
- Vellore
- Bangalore
- Thailand
TUSK Data Model

School-wide Competencies

Course Competencies

courses & events – controlled vocab

courses & events

Events’ Competencies

Schedule: Who, What Events, Event Types, When, Learning Obj’s, Faculty

National Competencies

Tools for Teaching & Learning &
Umls Keywords Selected by System added at the event level
Sorting Things Out

Building the XML File

• Sequence Blocks within Sequence Blocks – parent and child courses

• Levels of Courses are implied by the groups associated …

• What to do with 4th year courses?

• Resources?

• Missing Data?

• Missing elements?
TUSK : Multi-tenancy – One System – Many Schools

• Will other Tufts Health Sciences Schools want to use the inventory standard?
  – Will this standard work for other professions?
    • Dental School?
    • Veterinary School?
Challenges:

- Decentralized data entry – build a new workflow
- Multiple data entry points - will it be done comprehensively?
- Build tool that links competencies - one to many relationship.
- Build the tool so that is human readable an useful for curricular development
- Add missing data elements - some of which are implied
- Clerkship data
- What resources used

• At other institutions that use TUSK
  — Access to data from multiple systems
  — Access to data from proprietary systems (another black box)
Challenge: Tufts: Clerkship events
How to build the 3rd year

• We know that each site within a 3rd year clerkship shares the same competencies but the events that deliver the content is different at each site
• We would store the events and the competencies they are linked to at each site in the lowest level sequence block
• We would then put all these sites together in one sequence block that represents each clerkship
• We would then put together all the clerkships into a sequence block that represents all the sites in all the 3rd year clerkships
How to represent one event for each clerkship

• Aggregate multiple instructional methodologies for each competency
• Turn competencies into events?
• Make one instructional methodology primary by virtue of the numbers
This sequence block represents the events and competencies at one hospital in the Medicine clerkship.
This sequence block shows all sites (and therefore all their events and linked competencies) in the Medicine 3rd Yr Clerkship from May 2012 to April 2013. The sites include TMC, NWH, Lahey C., St. E’s, Maine, Faulkner, and Carney.
Third Year Clerkships
May 2012 – April 2013

- Medicine
- OB/GYN
- Peds
- Fam
- Psyc
- Surger
Benefits

• Visual picture of the curriculum for
  – Administrators
  – Faculty
  – Students
Benefits

• Provide information to faculty before the lecture
  – What competencies to teach to
  – What do the students already know
  – What can be pulled into the class from other sources
Thank You!

Susan Albright
Susan.albright@tufts.edu
Preparing for the Curriculum Inventory

Linking course and session objectives to competencies – overview of the process
(Best practice and practical action)

Prepared for the AAMC Annual meeting, November 2012

Sascha Benjamin Cohen
School of Medicine
University of California, San Francisco
Centralize All Data

- Has every item been mapped to its appropriate competency, and block?
- Has leadership driven the process?
- Has there been a communication feedback process?
Develop Skills

- Collecting
- Defining
- Writing
- Categorizing
Noise vs. Data

Be accurate and concise in deciding linkages: the less generic your objectives and the fewer their explicit relationships, the lower the ratio of noise to data. This also helps refine the modeling of sequence blocks for integration identification and alignment.
For more information

Project Website

http://iliosproject.org

UCSF Deployment

http://curriculum.ucsf.edu/

Technology Enhanced Learning
School of Medicine
University of California, San Francisco

irocket@ucsf.edu
415.502.2800
Issues/Challenges

- Creating a crosswalk for Standardized vocabulary
- Implementing the concept of Resources for Instructional and Assessment Methods
- Linking course and session objectives to competencies
- Clerkship data – what needs to be documented; where can the data be found?
- Electives data – what needs to be documented; where can the data be found?
- Documenting Integrated and Longitudinal Curricula
- Differentiating CI data from detail necessary for ASSET
Potential Curriculum Data Sources:

• **LMS (Sakai):**
  - includes extensive data on curricular events: topic, instructors, learners, methods, etc.
  - faculty teaching effort is captured via LMS
  - student grades, course usage, some assignments

• **Online learning modules:**
  - metadata for our asynchronous learning assignments
  - student usage and assessment data

• **iTunes U lecture podcasting**
  - metadata on our captured lectures
  - potentially in the future will use speech-to-text to generate additional key words
  - lecture virtual 'attendance'

•
Potential Curriculum Data Sources:

• Evaluation System
  • all evaluation data of courses, programs, people
  • used as a proxy of teaching effort for clinical faculty

• Exam System
  • all student exams
  • questions have metadata and linkages to the LMS events

• Patient Log
  • measures of case-mix, supervision, feedback
  • student-mentor pairings sometimes captured here that were not present in above

• Simulation Center
  • Metadata and outcome data on learning events at sim center (both sim and SP)
Discussion Questions:

• What are your biggest challenges in collecting curriculum data?
  • What are some potential solutions?
• What keywords are you using for curriculum mapping?
• What process are you using to link event (session), sequence block (course/module), and program objectives/competencies?
• What educational content/structure/pedagogy trends do you see on the horizon that we should be planning for?
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