Process, Design, and Evaluation of the New Columbia MPH Curriculum

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Oregon State University
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Outline

1. Rationale and motivation for modifying the MPH curriculum
2. The previous MPH curriculum
3. New goals/objectives
4. The process behind change
5. The new Columbia MPH curriculum
6. Early evaluation and changes going forward
7. Lessons learned/In Retrospect
The central question

What do schools of public health need to teach their students to lead in public health knowledge creation and translation into practice in 2020, 2030 and 2050?
We are OLD.

We currently educate about **1300 students** across **6 departments**:
- Biostatistics (BIO)
- Environmental Health Sciences (EHS)
- Epidemiology (EPI)
- Health Policy and Management (HPM)
- Population and Family Health (PFH)
- Sociomedical Sciences (SMS)

All 6 departments offer the **MPH, our most commonly sought degree** (with MPH candidates comprising roughly 75-80% of the student body).

3 departments offer the **MS** (BIO, EPI, SMS)

5 departments offer doctoral degrees (**PhD** or **DrPH**)
MSPH Total Enrollment by Degree Program
Prior MPH “Core” curriculum

- 5 independent courses were taken in any order, at any time in a student’s program.
- “Siloed”
- Taught separately with few points of intersection and no attempts at integration across these areas of core knowledge, contrary to the way we work in public health.
- Students took the majority of their courses within their home departments.
- “Sub-specialization” via tracks (or concentrations), almost exclusively nested within individual departments, reflecting a strongly disciplinary emphasis (except Global Health).
The changing landscape of public health

- Globalization, urbanization, aging, disparities, … result in more complex public health challenges.
- Complex problems often require interdisciplinary solutions.
  - “Solving the puzzle of complex diseases, from obesity to cancer, will require a holistic understanding of the interplay between factors such as genetics, diet, infectious agents, environment, behavior, and social structures.” Zerhouni, Science, 2003.
  - “…The key to successful reform is a clear focus on the kinds of learning that students need for a complex world.” Association of American Colleges and Universities, 2002.
Calls for change

- From academic leaders:
  - “It is now up to the public health schools to reconceptualize the role and competency of the graduating professional.” (Fineberg et al. 1994)
  - “Health professionals have made huge contributions to health and socioeconomic development over the past century, but we cannot carry out 21st century health reforms with outdated or inadequate competencies.” (Frenk et al. 2010)
  - “The scale and complexity of today’s biomedical research problems increasingly demand that scientists move beyond the confines of their own discipline and explore new organizational models for team science.” (Zerhouni, 2003)

- From public health practitioners and employers:
  - “Few jobs in public health practice are so narrowly focused that employee success is solely dependent on the employee’s knowledge and skill in a single specialty area.” (Moser 2008).

- From our professional societies and accrediting agencies:
  - “ASPH aims to stimulate a national discussion on the competencies needed by MPH graduates in light of the new challenges of 21st century practice.” (Association of Schools of Public Health, August 2006)
Revised ASPH guidelines: *interdisciplinary* emphasis

Association of Schools of Public Health Core Competency Model for the MPH degree (August 2006)
“Few jobs in public health practice are so narrowly focused that employee success is solely dependent on the employee’s knowledge and skill in a single specialty area.” (Moser, 2008)

Core Academic Competencies for Master of Public Health Students: One Health Department Practitioner’s Perspective

The Association of Schools of Public Health (ASPH) has developed a comprehensive set of core academic competencies for master of public health (MPH) graduates. The ASPH core MPH competencies delineate fundamental knowledge, attitudes, and skills that every MPH student, regardless of their major field, should possess upon graduation.

From a public health agency perspective, this is a promise instance, when I hire an MPH graduate with an epidemiology major for an epidemiologist position, this person must have solid epidemiology skills, but it is no less important for him or her to possess fundamental skills and knowledge related to communication, leadership, and management. Few jobs in public health
What’s missing?
Implications for MPH education

- Extended/reconsidered set of core competencies
- Interdisciplinary/cross-cutting ASPH competencies
  - Communication skills
  - Diversity + culture
  - Leadership
  - Professionalism
  - Program planning
  - Public health biology
  - Systems thinking

WHAT SHOULD WE DO TO ADDRESS THESE GAPS AND REVITALIZE THE MPH CURRICULUM?
Curriculum Renewal (CR) Process at Mailman

April 2009......................... Faculty Assembly examines need for curriculum reform
February 2010................... Dean Fried charges school with developing new vision for MPH education and outlines a plan
March 2010....................... CR Task Force formed
March 2010-present.......... 10 primary subcommittees formed
~170 faculty, staff, students engaged
Surveys of alumni and employers
February 2011................... Outlines for new curricular components developed
Certificate proposals submitted to University Senate
MHA application submitted to University Senate
March-Summer 2011.......... Course materials developed & posted on CourseWorks
May-August 2011............. Core module syllabi development
Core syllabi posted on CourseWorks for public comment
Summer 2011.................... Transition form planning phase to implementation
September 2011.............. Course instructors for 2012 to be engaged; start developing additional materials for Core, IPE, ISP, L+I
Fall 2011-Fall 2012......... Extensive teacher training opportunities offered
Fall 2011-Fall 2012......... Review/integrate/finalize all curricular components
Fall 2012............................... LAUNCH COHORT 1
Design for Change: Inputs

Inputs
- Town Hall Meetings
- Environmental Scan
- SWOT Analysis
- Competitive Analysis
- Leaders in the Field
- Literature Review
- Course Evaluations
- Student Exit Surveys
- Alumni Surveys
- Employer Surveys

Curriculum Renewal Taskforce
Design for Change: 10 Sub-Committees

- Student Advisory Sub-Committee
- Core Curriculum
- Disciplines and Dual Degrees
- Certificates
- Department Operations and Implementation
- Integration of Science and Practice
- Ongoing Curricular Review
- Integrative Practicum Experience
- Leadership and Innovation
- Transforming the Educational Experience
Principles of a Renewed Curriculum

1. Offer a vision for the next generation of public health education
2. Align with the School’s strategic vision regarding societal needs
3. Educate students who can be leaders in domestic and global public health research and practice
4. Educate students in advanced technical skills and the critical thinking ability to apply them to improve population health
5. Create and implement an integrated interdisciplinary school-wide curriculum that ensures all of our graduates are aware of the breadth of expertise that constitute public health
6. Ensure continued excellence of departmental and disciplinary training
7. Seek optimal balance between departmental strengths and integrated core public health curriculum
Our goals:

To create an MPH curriculum characterized by:

- Core integration and interdisciplinary team teaching
- Broader/enhanced set of core skills/competencies to meet 21st century challenges
- Greater rigor/intellectual challenge
- More opportunity to practice and apply new knowledge (e.g., case method) as well as a focus on leadership and professional skill-building (e.g., communication)
- Smaller classes and community building through cohorts
- Shared academic/intellectual/professional experience
- Coordinated resources for a planned, supervised and evaluated practicum
- Certificates = a new credential for focus beyond discipline
Accelerated MPH

- Semester 1: Fall
  - Discipline
  - Core
  - Integration of Science and Practice

- Semester 2: Spring
  - Discipline
  - Leadership & Innovation
  - Integration of Science and Practice

- May–July
  - Practicum
Global Certificate

Global Health Certificate

CORE  DISCIPLINE  PRACTICUM  PRACTICUM  DISCIPLINE
INTEGRATION OF SCIENCE AND PRACTICE  LEADERSHIP & INNOVATION  INTEGRATION OF SCIENCE AND PRACTICE  CERTIFICATE

SEMESTER 1  SEMESTER 2  SUMMER  SEMESTER 3  SEMESTER 4
FALL  SPRING  SUMMER  FALL  SPRING
Components of the renewed curriculum

- Integrated Core Curriculum
- Disciplinary Studies
- ISP: Integration of Science and Practice
- L&I: Leadership and Innovation
- IPE: Integrative Practicum Experience
- Certificate Programs
- Class sizes of 100 & 20 (cohort model)
Columbia MPH

Semester 1 Fall         Semester 2 Spring         Summer         Semester 3 Fall         Semester 4 Spring
The Columbia Core Curriculum

- First semester, fulltime **CORE CURRICULUM** – a complete shift away from former model of isolation.
- The CORE represents an integrated, holistic approach to teaching public health in the same way we practice public health – in interdisciplinary teams, bringing to bear strong disciplinary skills, and integrating knowledge and practice across disciplinary boundaries to address complex health challenges.
- The Core is designed to provide a foundation, a framework for further thought, analysis, and work.
# CORE CURRICULUM 2013: Studios (6) & Modules (18)

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CORE CURRICULUM 2012: Studios (5) & Modules (18)
# A Week in the Life – week 8

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### A Day in the Life – week 8

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Disciplinary Coursework

- We will continue to emphasize the importance of disciplinary knowledge and the strengths and expertise of Mailman faculty.
- While interdisciplinary skills are key, we recognize the wisdom of the NSF IGERT program’s observation:
  - “To carry out interdisciplinary research, one must have both disciplinary capability and interdisciplinary conversance.”
- During the second semester, students focus on departmental coursework in Biostatistics, Epidemiology, Environmental Health, Health Policy & Management, Population & Family Health, and Sociomedical Sciences.
## Disciplinary Coursework: Samples by Department

<table>
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<tr>
<th>Biostatistics</th>
<th>Environmental Health Sciences</th>
<th>Epidemiology</th>
<th>Health Policy &amp; Management</th>
<th>Population &amp; Family Health</th>
<th>Sociomedical Sciences</th>
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<td>Probability with Statistical Applications</td>
<td>EHS Applications</td>
<td>Epidemiology II: Design &amp; Conduct of Observational Studies</td>
<td>Finance</td>
<td>Public Health Program Planning</td>
<td>Theories in Public Health Research &amp; Practice</td>
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<td>Fundamentals of Toxicology</td>
<td>Analysis of Categorical Data</td>
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<td>Research Design</td>
<td>Intervention Design</td>
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<td>Molecular Toxicology</td>
<td>Epidemiology III: Applied Epidemiologic Analysis</td>
<td>Managerial/Org Behavior</td>
<td>Human Rights</td>
<td>Survey Research</td>
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<td>The Randomized Clinical Trial</td>
<td>Toxicokinetics</td>
<td>Application of Epidemiologic Research Methods</td>
<td>Health Policy &amp; Political Systems</td>
<td>Public Health Aspects of Reproductive Health</td>
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Electives
Case-based course designed for students to gain practice when making decisions in the face of uncertainty

Example: In 2005, when the New York City Board of Health was debating whether or not to propose a ban on trans fats in city restaurants, it had to weigh the pros and cons of what was guaranteed to be controversial.

Key questions to grapple with:

- Trans fat was permitted as an ingredient by the federal Food and Drug Administration; were city health officials claiming to know better?
- Should individuals be allowed to make informed choices about their food intake, or should the state protect them from themselves? Was New York City on its way to becoming a "nanny state" – or the most health-progressive city in the nation?
- What, ultimately, would be the impact on both population health and small businesses' bottom line?
L&I: Leadership & Innovation

- Emphasizes the development of **knowledge and practical skills** that enable them to form effective working relationships with a range of colleagues in a variety of situations.

- **Leaders are individuals who facilitate the work of others to reach mission-driven goals.**

- Introduces students to the distinction between **critical thinking** and **creative thinking**.

- Team exercises focused on analyzing and fostering leadership, case studies, 360 assessments

- Culminating group project focused on a real public health problem, requiring innovation and presented to DOHMH for direct implementation.
IPE: Integrative Practicum Experience

- IPE places students in the field to apply, integrate, and sharpen the skills they have learned in the classroom as they address real-world problems in population health and health systems.

- Enables students to:
  - translate curriculum-based knowledge and skills to a real world context
  - bridge the gap between classroom-based learning and the action steps required in specific situations and settings
  - gain experience
Diversity and Culture

- Self, Social and Global Awareness (SSGA) – a program facilitated through a social justice framework
- Take students through a number of interactive activities that explore power, privilege in individual interactions, their work as public health practitioners and globally
- Full day training during orientation
- Small groups of 20
- Key faculty and administrators across the School
- Three follow up activities – two more events in fall and links to the Core (Globalization module)
- A program created and facilitated by a CU Social Work faculty
Columbia MPH

Semester 1 Fall  Semester 2 Spring  Summer  Semester 3 Fall  Semester 4 Spring
Certificate Programs (2-year MPH)

- Enable students to **specialize in an area beyond their disciplinary concentration/department.**
- Endorsed by Mailman **alumni** and **employers** of our graduates as a **valuable credential for new hires** – with the potential to increase attractiveness of our graduates in the job market.
- Augments disciplinary (i.e., department) training with a focus on a **complementary subject** that draws from resources across the Mailman School and Columbia University.
Example Certificate: Public Health Research Methods/
Department: EHS

Semester 1
- Foundations of Public Health (1.5 pts)
- Social, Behavioral, and Structural Determinants of Health (3 pts)
- Health Systems (2.5 pts)
- Quantitative Foundations, Evidence & Policy (4 pts)
- Systems and Methods for Public Health Planning (1.5 pts)
- Biological and Environmental Determinants of Health (2.5 pts)
- Integration of Science and Practice (1.5 pts)

Semester 2
- P8325 – Risk Assessment (3 pts)
- P8322 – Environmental Determinants of Human Health II (3 pts)
- P6360 – Analysis of Environmental Health Data (2 pts)
- P6080 - Leadership and Innovation (3 pts)
- P6071 - Integration of Science and Practice (1.5 pts)

Semester 3
- P8312 – Fundamentals in Toxicology (3 pts)
- Quantitative Selective*: P8777 Survey Research Methods (3 pts)
  OR
- P8623 Quantitative Data Analysis: Service Based Research II (3 pts)
- P8705 - Evaluation of Health Programs (3 pts)

Semester 4
- Capstone Course (4 pts)
- Departmental Elective (3 pts)
- Certificate Selective:
  - P8438 - Epidemiology II (3 pts)
  OR
  - P8771 - Community Based Participatory Research (3 pts)
  OR
- Qualitative Selective*: P8637 Qualitative Data Analysis (3 pts)
  OR
- P8785 Qualitative Research Design in Public Health (3 pts)
- Certificate Elective (3 pts)
Certificates currently offered

1. Advanced Epidemiology
2. Applied Biostatistics
3. Health of an Aging Society
4. Child, Youth, and Family Health
5. Climate and Health
6. Comparative Effectiveness & Outcomes Research
7. Environmental Health Policy
8. Epidemiology of Chronic Disease
9. Global Health
10. Health Care Management
11. Health Policy Analysis
12. Health Policy and Practice
13. Health Promotion, Research, and Practice
14. History, Ethics, and Law
15. Human Rights and Health
16. Infectious Disease Epidemiology
17. Molecular Epidemiology
18. Public Health and Humanitarian Assistance
19. Public Health Informatics
20. Public Health Research Methods
21. Sexuality, Sexual, and Reproductive Health
22. Social Determinants of Health
23. Toxicology
24. Injury Prevention
Columbia MPH: Main take-aways

- Students were intellectually engaged and perceived by faculty as academically prepared.
- Students enjoyed their cohorts.
- There was anxiety among students around logistics & demands; anxieties peaked around midterms/Sandy, then recovery began.
- The assessment/exam schedule was seen as onerous.
- For students, the workload was heavier than expected.
- Students found the content about right (they liked what they learned, even though the load was so heavy).
- Evaluations of courses (and instructors) were overwhelming positive, with few exceptions.
- Students performed well, and we saw fewer ‘incomplete’ ("I") grades.
- There are logistical issues to be addressed around testing, scheduling, CourseWorks, Calendars, etc.
We have more work to do…

- Reading Period before finals – increased to 2 days
- Fewer exams/more integrated assessment methods
- Fewer module sessions overall – wiggle room
- A mid-semester day off (catch-up day)
- Exams held on Wednesdays (not Fridays) with reduced number of class meetings on exam days
- Breakouts on Thursdays
- Typically run 3 classes/day – rare to have 4
- More consistency in day/time meetings of modules
- ISP “prep week” as launched in fall 2012 will go away and likely replaced with written assignments
In retrospect…

**Key elements to this venture:**

- Support and vision of the Dean
- Design phase led by respected school leader
- Decisions by faculty
- Broad “ownership” of the new curriculum:
  - Task Force
  - 10 subcommittees
  - Representation of faculty, staff, students, employers, alumni
- 2-3 years of preparation
- Dean found $$ support for Task Force faculty and all teaching faculty ONE FULL YEAR prior to launch
- Roles & the right people in these roles
In retrospect II....

- Open communication in design (town halls, discussion boards...)
- Best instructors
- Constant monitoring/communication during first year (town halls, discussion boards, surveys, focus groups, one-on-ones, etc.)
- Flexibility in implementation while maintaining vision
- Context of your current program (strengths, future direction, audience, resources)
- Tuition, credit system, advising structure
- Interdisciplinary models – how are they supported internally?
- Technology – creative and thoughtful use....
- Organizational Change – it is a wonderful, often wild ride