One Health Collaboration across Epidemiology Academic and Practice Boundaries

Millicent Eidson, MA, DVM, DACVPM
meidson@albany.edu

Former Acting State Epidemiologist, Research Scientist, and Public Health Veterinarian, NYSDOH

Emerita Professor and former Associate Chair, Department of Epidemiology & Biostatistics
UAlbany School of Public Health

Vermont Dept. of Health Grand Rounds, 3/28/19
One Health

Non-communicable diseases  Human Medecine
Infectious diseases  Public Health
Antimicrobial resistance  Social network
Multifactorial diseases  Evolutionary Medecine
Zoonoses & Epizooties  Urbanisation
Veterinary Medecine  Cycles & Reservoirs
Domestication  Ecology
Human-animal relation  Ecotoxicology
Cultural practices  Legal framework

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5816263/
Academic-Practice Linkages

• Efforts in recent years have focused on ‘academic health departments’ and academic-practice linkages

• Public Health Foundation’s Council on Linkages Between Academic and Public Health Practice

http://www.phf.org/programs/council/Pages/default.aspx
Institute of Medicine (IOM), iom.edu

  http://books.nap.edu/openbook.php?record_id=1091

  http://books.nap.edu/openbook.php?record_id=10548

  http://books.nap.edu/openbook.php?record_id=10542
Association of Schools of Public Health (ASPH) Reports, asph.org

- Strong Schools, Strong Partners: A Report on Practice Activities of Schools of Public Health
- Demonstrating Excellence in Academic Public Health Practice, June 1999
- Demonstrating Excellence in Practice-Based Teaching for Public Health, October 2004
- Demonstrating Excellence in Practice-Based Research for Public Health, Fall 2006
- Demonstrating Excellence in the Scholarship of Practice-Based Service for Public Health, Spring 2009


Public Health Reports, 2005, v. 120(Supp.1)

- MacDonald PDM. Team Epi-Aid: Graduate Student Assistance with Urgent Public Health Response, pp. 35-41.
History of Collaboration, NYSDOH and SPH

- School of Public Health (SPH) created in 1985 by a Memorandum of Understanding (MOU) between NYSDOH and UAlbany
- Faculty initially primarily NYSDOH staff
- NYSDOH continues as an academic health department with an emphasis on science and public health

Science and SPH Initiatives to Promote Scholarship and Research

• Office of Science and Public Health (OSPH) created in 2001 to foster integration of science with applied public health needs
• Dr. Dale Morse, Assistant Commissioner and Director, Office of Science, developed Initiatives concepts and convened meetings in 2007 to gauge staff interest
• Committees focused on mentoring (staff, students), data sharing, research, grants, publications, infrastructure/support, recognition
• Summary of SPH partnership began in 2009
2009 Study Objective

• Summarize collaborative activities of NYSDOH staff with the SPH, as an example of an academic health department and unique model of a DOH/SPH partnership

• Primary focus:
  – Teaching
  – Student advising/mentoring
  – Service through committee work
  – Research publications

• Include activities of NYSDOH staff who are SPH faculty and those who are not SPH faculty
Methods

• Study began summer, 2009
• Determined 2009 NYSDOH faculty members
• Notified NYSDOH staff by emails and Lotus Notes News
• UAlbany staff provided trainings on Faculty Activity Report (FAR) system in 2009 and 2010
• NYSDOH faculty members given option of completing survey form or entering data into their FAR reports
  – If completed survey form, that data was used
• Non-faculty NYSDOH staff completed survey form
• Data review began summer, 2010 when UAlbany closed FAR database for 2009
• Student internships collected from MPH coordinator
• Publications collected through OVID search of Medline and Current Contents
Proportion of Academic Department Faculty Who are NYSDOH Staff Members, 2009

- **EPI/STA**: Approximately 40% NYSDOH, 60% non-NYSDOH
- **HPM**: Approximately 30% NYSDOH, 70% non-NYSDOH
- **BMS**: Nearly 100% NYSDOH
- **EHS**: Approximately 20% NYSDOH, 80% non-NYSDOH
NYSDOH Faculty by Academic Rank, 2009

- Assistant Professor
- Associate Professor
- Full Professor
- Clinical
- Clinical Associate
- Research Assistant
- Research Associate
- Adjunct
Student Advising/Mentoring
Public Health Leaders of Tomorrow (PHLOT)

- Began in 2006, with funding from NYSDOH to SPH
- Strengthen current public health infrastructure in NYS and train the next generation of public health leaders
  - Tuition awards for state and local health department staff
  - Internship awards for current students to intern in state or local health departments
  - Scholar award for LHD employees to complete degrees in public health
  - Post-graduate Fellowship Program for recent graduates to work in state or local health departments
- NYS Grant: $554,000 in 2009-2010
NYSDOH Sources of Student Project Funding

• Maternal and Child Health: 15 students each of 3 semesters/year
• Special short-term funding:
  – H1N1 funding: 15 students, fall 2009
• Funding through individual grants
• Hiring may be either done directly by NYSDOH through HRI, or in partnership with the SPH and Research Foundation for recruiting and hiring
Number of NYSDOH Faculty Advising/Mentoring Students in 2009 by Academic Department

Academic Advising

- EPI/STA
- HPM
- BMS
- EHS

Not Reported
Yes
Number of NYSDOH Staff Members Offering Mentoring in 2009

By Academic Department

- EPI/STA: 30
- HPM: 10
- BMS: 60
- EHS: 20

By Semester

- Spring: 25
- Summer: 15
- Fall: 25
- Unknown: 10

Legend:
- Not Reported
- Yes
Number of NYSDOH Faculty Providing Dissertation/Thesis/Research Practicum Supervision in 2009

By Academic Department

- EPI/STA: 10 (Not Reported), 15 (Yes)
- HPM: 5 (Not Reported), 5 (Yes)
- BMS: 25 (Not Reported), 25 (Yes)
- EHS: 15 (Not Reported), 15 (Yes)

By Semester

- Spring: 35 (Not Reported), 15 (Yes)
- Summer: 30 (Not Reported), 20 (Yes)
- Fall: 25 (Not Reported), 25 (Yes)
- Unknown: 20 (Not Reported), 20 (Yes)
Number of NYSDOH Student Projects in 2009 by Academic Department and Semester

By Academic Department

<table>
<thead>
<tr>
<th>Academic Department</th>
<th>Number of Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPI/STA</td>
<td>50</td>
</tr>
<tr>
<td>HPM</td>
<td>120</td>
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<tr>
<td>BMS</td>
<td>10</td>
</tr>
<tr>
<td>EHS</td>
<td>20</td>
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</table>

By Semester

<table>
<thead>
<tr>
<th>Semester</th>
<th>Number of Projects</th>
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</thead>
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<tr>
<td>Spring</td>
<td>70</td>
</tr>
<tr>
<td>Summer</td>
<td>80</td>
</tr>
<tr>
<td>Fall</td>
<td>30</td>
</tr>
</tbody>
</table>
Number of 2009 NYSDOH Student Interns Employed at NYSDOH/HRI, 2011
Teaching/Guest Lectures

“DOH Teaching Benefits Students”, 2012

- SPH Faculty
- Unqualified DOH Faculty Appointments
- Qualified DOH Faculty Appointments
- DOH Nonfaculty Staff

0% 20% 40% 60% 80% 100%
Number of NYSDOH Members Teaching in 2009 by Academic Department and semester

By Academic Department

- EPI/STA
- HPM
- BMS
- EHS

By Semester

- Spring
- Summer
- Fall
- Unknown

Not Reported
Yes
Number of NYSDOH Members Guest Lecturing in 2009 by Academic Department and Semester

**By Academic Department**
- EPI/STA
- HPM
- BMS
- EHS

**By Semester**
- Spring
- Summer
- Fall
- Unknown

Legend:
- Not Reported
- Yes
Collaborative Research Benefits, 2012

Student projects benefit DOH

[Bar chart showing percentage benefit for SPH, U-DOH, Q-DOH, NonF] 100% 50% 0%

Partnership projects supported by DOH funds

[Bar chart showing percentage support for SPH, U-DOH, Q-DOH, NonF] 60% 40% 20% 0%

Published with DOH/SPH nonstudent partners

[Bar chart showing percentage publications for SPH, U-DOH, Q-DOH, NonF] 60% 40% 20% 0%

Partnerships outside DOH/SPH provide benefits

[Bar chart showing percentage benefits for SPH, U-DOH, Q-DOH, NonF] 100% 50% 0%

232 peer-reviewed pubs by 95 DOH faculty in 2009
Publish Outbreak Reports!

Seneca Lake State Park Sprayground, New York

425 confirmed and 1,374 probable Cryptosporidium cases Aug.-Sept., 2005 according to 2006 EIS Conference abstract
## External Funding for NYSDOH Faculty, July, 2009 – June 2010

<table>
<thead>
<tr>
<th>Academic Dept.</th>
<th>Number of Federal Awards</th>
<th>Number of Non-Federal Awards</th>
<th>Direct Expenditures</th>
<th>Indirect Expenditures</th>
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</thead>
<tbody>
<tr>
<td>EPI/STA</td>
<td>124</td>
<td>13</td>
<td>$65,109,509</td>
<td>$8,901,843</td>
</tr>
<tr>
<td>HPM</td>
<td>9</td>
<td>1</td>
<td>$1,732,919</td>
<td>$174,077</td>
</tr>
<tr>
<td>BMS</td>
<td>109</td>
<td>26</td>
<td>$11,687,032</td>
<td>$4,275,097</td>
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<tr>
<td>EHS</td>
<td>61</td>
<td>18</td>
<td>$4,963,449</td>
<td>$1,685,608</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>303</strong></td>
<td><strong>58</strong></td>
<td><strong>$83,492,899</strong></td>
<td><strong>$15,036,624</strong></td>
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</table>
### Funding for SPH from HRI/NYSDOH, 2009

*(not including funding for NYSDOH/SPH faculty on previous slide)*

<table>
<thead>
<tr>
<th>Acad Dept.</th>
<th>HRI</th>
<th>NYSDOH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Awards</td>
<td>No. of Awards</td>
</tr>
<tr>
<td></td>
<td>Direct Expenditure</td>
<td></td>
</tr>
<tr>
<td>HPM</td>
<td>5</td>
<td>$327,488</td>
</tr>
<tr>
<td>EPI</td>
<td>2</td>
<td>$176,217</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>$51,075</td>
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<tr>
<td>Total</td>
<td>8</td>
<td>$554,780</td>
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</tbody>
</table>

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Number of NYSDOH Faculty Reporting Service on FAR, 2009

Academic department services

- Not Reported
- Yes

School/college services

- Not Reported
- Yes

University, SUNY, or statewide services

- Not Reported
- Yes

Professional services

- Not Reported
- Yes
Service, 2012 Perceptions

DOH mentoring/advising benefits students

- SPH
- U-DOH
- Q-DOH
- NonF

Worked with students on DOH funding

- SPH
- U-DOH
- Q-DOH
- NonF

Included students as co-authors

- SPH
- U-DOH
- Q-DOH
- NonF

Worked with non-SPH students

- SPH
- U-DOH
- Q-DOH
- NonF
### Summary Comparison of NYSDOH Faculty Participation by Academic Department, 2009

Significant differences between lab-based academic departments with 3/4 of faculty being NYSDOH employees and non-lab-based academic departments with fewer NYSDOH faculty

<table>
<thead>
<tr>
<th>Activity</th>
<th>Non-lab-based depts., fewer NYSDOH</th>
<th>Lab-based depts., most NYSDOH</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advising</td>
<td>42%</td>
<td>21%</td>
<td>0.0137</td>
</tr>
<tr>
<td>Teaching</td>
<td>22%</td>
<td>57%</td>
<td>0.0002</td>
</tr>
<tr>
<td>Guest Lectures</td>
<td>28%</td>
<td>7%</td>
<td>0.0026</td>
</tr>
</tbody>
</table>
Faculty Activity Report Limitations

• Completing FARs is a challenge for faculty
• No penalties/incentives for NYSDOH faculty completion
  – Form is complex and confusing, information can be entered in multiple fields, which are not well-defined
• Absence of information in FAR fields may indicate no activity OR not completing those fields
Student Database Limitations

• The MPH program has excel file of student projects
  – Fields are not structured to facilitate easy analysis
  – MPH students supply project information through required internship forms
  – Other students are unlikely to provide information

• NYSDOH established a database of student projects by asking students to give their presentations at Friday Student Seminars
  – Low level of student participation in the Friday Seminars

• No easily implementable system for comparing information on NYSDOH students with eventual employment by NYSDOH, HRI, or LHDs
Research Publication Limitations

• No database has complete information, so multiple databases (Medline and Current Contents) need to be searched
• Each database has advantages and disadvantages in information collected
  – All institutions of authors listed (Current Contents)
  – Complete names of all authors (Medline)
• Several search terms need to be utilized
  – New York State Department of Health
  – Various spellings/abbreviations
• Deduplication decisions need to be made
• Database from search needs to be compared to list of NYSDOH staff and/or faculty members
AHD Partnership Contributions and Drawbacks

- DOH faculty assist in key SPH positions or committee assignments
- Professional abilities/perspectives expanded by DOH collaboration
- DOH faculty contribute to SPH academic reputation
- DOH provides funding for infrastructure, offices, and research
- Some DOH faculty have insufficient knowledge of academic procedures
- DOH faculty miss scheduled teaching or meetings due to DOH work conflicts
- Off-campus location of DOH makes contribution challenging
- Fewer SPH faculty due to reliance on DOH
Partnership Summary, 2012 Perceptions
Mean rating (5=strongly agree to 1=strongly disagree)

<table>
<thead>
<tr>
<th></th>
<th>SPH</th>
<th>U-DOH</th>
<th>Q-DOH</th>
<th>NonF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partnership benefits state public health mission</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>DOH provides sufficient support</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>
“You can’t use up creativity. The more you use, the more you have.”
Maya Angelou
Labor Day Gastrointestinal Disease Outbreak

- People staying at a camp in separate cabins
- Camp owners not ill, but high attack rate in customers
- No common food source: would you use a standard food history questionnaire?

- Water system: from ‘underground spring’
  - Inspected, just a pipe with mesh in a stream
  - Big storm at beginning of weekend

- Goes into central tank with chlorine
  - Having disinfectant is not enough, need contact time
  - Camp full, lots of people drawing lots of water

- Questionnaire focused on amount of water drunk
  - Found dose-response relationship
Statewide meeting held over 2 days at hotel
Most stayed at hotel but a few were local
Initial investigation indicated that all attendees did all the same things together
  – All meals in common at hotel, limited choices
G.I. illness started as meeting attendees drove home: vomiting, diarrhea severe enough to pull over
  – Incredibly high attack rate among meeting attendees
  – No illnesses reported in hotel staff or guests
Where to go next in investigation?
  – Usually, look for commonalities among ill people
  – Here, we focused on finding the “outliers”
Choosing Controls

• Why do some cats get plague and others don’t?
  – Use household and neighbor controls
  – Assess length of time outside, flea control, catching and eating rodents

• Why do some people get injured or die in tornadoes and others don’t?
  – Use household and neighbor controls, matching on amount of home damage (# of walls/roof remaining)

• Call from medical resident about 3 cases with ↑ eos and severe myalgia
  – Noted L-tryptophan in medical records
  – How to determine if this is unusual?
Public Health Surveillance

• One Health includes animals!
  – Livestock: agriculture agencies
  – Wildlife: wildlife/environmental agencies
  – Pets?
  – Vectors: mosquito control districts

• West Nile Virus crosses boundaries
  – First NYS, and then CDC, incorporated animal and vector surveillance as a core component of the human surveillance system
  – https://wwwnc.cdc.gov/eid/article/7/4/01-7402_article
Keep Sense of Humor/Awe

Chamatrain.rec