



Teaching Population Health: Innovative Medical School Curricula on Environmental Health

June 2, 2015
1:00-2:30 p.m. ET

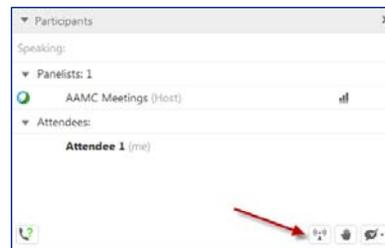
Learn
Serve
Lead



Association of American Medical Colleges

Housekeeping

- You will hear the audio through your computer speakers. Make sure your computer speakers are on and the sound is turned up.
- If you still have no sound once the webinar starts, please click on the audio broadcast icon (🔊) located in the Participants Panel on the right hand side of your screen.
- If you experience any technical or audio issues during the webinar, please send a message through the Chat panel to AAMC Meetings.



Welcome & Introductions

Moderator: Malika Fair, M.D., M.P.H.



- Director of Public Health Initiatives, AAMC
- Assistant Clinical Professor, Department of Emergency Medicine, The George Washington School of Medicine and Health Sciences
- MD, University of Michigan Medical School
- Emergency Medicine Residency, Carolinas Medical Center



Webinar Objectives

- Discuss the scope of environmental medicine and its relevance to clinical practice
- Discuss innovative ways to teach environmental health in clinically relevant scenarios and as the foundation for population health perspectives
- Understand the benefits and challenges of current curriculum models to improve medical students' training in population sciences
- Provide a forum for faculty and learners to collaborate and discuss opportunities for curriculum and clinical training improvement moving forward



The Environment and Health

- An estimated 24% of the global disease burden and 23% of all deaths can be attributed to environmental factors.¹
- Toxic agents were the fifth underlying cause of U.S. deaths in 2000.²
- Thirteen percent of the total disease burden in the U.S. is preventable through healthier environments.²

¹Prüss-Üstün A, Corvalán C. *Preventing disease through healthy environments*. Geneva, Switzerland: WHO, 2006.

²Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the U.S., 2000. *JAMA* 2005;293(3):293-4.



Environmental Health and Medical Education: Recognized Deficit

- The percent of graduating medical students who felt that their public health instruction was inadequate increased from 22.1% in 2013 to 27.1% in 2014.¹
- Between 2009-2013, 34-40% of each year's graduating medical students believed that their instruction in environmental health was inadequate.²
- Pediatricians are highly interested in pediatric environmental health but report low self-efficacy in taking and following up on environmental histories.³

¹Association of American Medical Colleges. *Medical School Graduation Questionnaire 2014 All Schools Summary Report*. (www.aamc.org/download/397432/data/2014gqallschoolsummaryreport.pdf)

²Association of American Medical Colleges. *Medical School Graduation Questionnaire 2013 All Schools Summary Report*. (www.aamc.org/download/350998/data/2013gqallschoolsummaryreport.pdf)

³Kilpatrick N, Frumkin H, Trowbridge J, Escoffery C, Geller R, Rubin L, Teague G, Nodvin J. The Environmental History in Pediatric Practice: A Study of Pediatricians' Attitudes, Beliefs, and Practices. *Environ Health Perspect* 110:823-827 (2002).



National Efforts

- IOM reports recommended the integration of environmental health concepts into all levels of medical education.^{1, 2}
- Funding from the National Institute of Environmental Health Sciences (NIEHS)
- Resources from federal agencies (ATSDR, EPA) and specialty organizations (AAP, ACMT, AOEC)

¹IOM. *Environmental medicine and the medical school curriculum*. Washington, DC: National Academy Press, 1993.

²Pope AM, Rall DP, eds. *Environmental medicine: integrating a missing element into medical education*. Washington, DC: National Academy Press, 1995.



Webinar Panelists



Rose Goldman, M.D., M.P.H.
Harvard Medical School



Robert Harrison, M.D., M.P.H.
University of California,
San Francisco

UCSF SCHOOL OF MEDICINE



Rose Goldman, M.D., M.P.H. Harvard Medical School



- Dir. of Faculty Affairs, Dept. of Medicine, Cambridge Health Alliance
- Associate Professor of Medicine, Harvard Medical School
- Associate Professor of Environmental Health Sciences, Harvard T. H. Chan SPH
- IM residency, Waterbury Hospital
- PM (occupational & environmental medicine) / MPH, Harvard SPH



What do we mean by “Environmental Medicine” or “Environmental Health?”

Although “environment” could include many factors, in this context, “environmental medicine” refers to:

- “Diagnosing and caring for individuals exposed to chemical and physical hazards in their homes, communities, and workplaces through media such as contaminated soil, water, and air. This definition excludes diseases caused by tobacco use, alcohol, diet or lifestyle factors as well as conditions that are direct consequence of genetics, nonoccupational infectious disease, violence or iatrogenically caused illness or injury.”

- *Institute of Medicine, 1993*



Environmental Health also means...

- Healthy, nurturing, and stimulating environments (positive influences) that further the health of individuals
- Within the category of “environment” is *occupation*, or the work environment, which is a subset of environment
- Another important aspect relates to children and environment, or “pediatric environmental health”



How do environmental factors relate to medical care and the role of the physician?

- Environmental factor(s) may be key to the correct diagnosis
 - Include occupational and environmental factors in history taking
 - Early recognition and prevention of (or control) can also decrease exposure (and illness) to others



How do environmental factors relate to medical care and the role of the physician?

- Prevention
 - Screen and provide guidance appropriate to job title or developmental stage of child
- Illness/Injury
 - How to relate to work or school status, accommodations or restrictions
- Population Exposures and Health Effects
 - What is our role as a physicians? Consider air pollution, climate change...



IOM "continuum of roles" highlights physician roles outside of the clinical space

- Be an advocate for individual patients by communicating with employers, landlords, local public health officials, and other relevant agencies as needed
- Become involved at the community level by advising and educating local citizens, groups...community leaders about environmental health
- Participate in public health policymaking at the local, national or international level



How do we incorporate relevant training about environmental health into medical school?

- Include key environmental health topics (a “theme”) that can be infused throughout the entire 4 year curriculum, in a developmentally relevant manner, so that all students gain a basic foundational knowledge and experience about the role of environmental factors in disease and health
- Stimulate and inspire some students’ interests in public health/environmental health and provide special experiences to further their interests

- Goldman RH, Rosenwasser S, Armstrong E. Incorporating an environmental/occupational medicine theme into the medical school curriculum. *J Occup Environ Med.* 1999;41:47-52.



Creating an Environmental Theme

TABLE 1

Steps for Design, Development, and Integration of Longitudinal Curricular Themes*

1. Establish goals for the content of the theme, including knowledge, skills, and attitudes
2. Analyze the existing relevant content in the 4-year curriculum
3. Sequence the goals in a developmentally appropriate order
4. Determine windows of opportunity in the existing curriculum
5. Design and implement teaching/learning strategies with course directors
6. Inform and involve students and faculty in the theme’s 4-year plan
7. Evaluate student competencies

* Adapted from Reference 10.

- Goldman RH, Rosenwasser S, Armstrong E. Incorporating an environmental/occupational medicine theme into the medical school curriculum. *J Occup Environ Med.* 1999;41:47-52.



Example of Development and Introduction of EOM Curriculum, Using Theme Approach

- Reviewed Harvard Medical School (HMS) curriculum in 1992
 - 2 designated hours of EOM
- Developed learning objectives and aims
- Identified “windows of opportunity” to develop and integrate new curriculum...

- Goldman RH, Rosenwasser S, Armstrong E. Incorporating an environmental/occupational medicine theme into the medical school curriculum. *J Occup Environ Med.* 1999;41:47-52.



Example of Development and Introduction of EOM Curriculum, Using Theme Approach

- Work arm strain: Anatomy
- Taking the environmental/occupational history: Patient Doctor I
- Lecture: occupational lung disease
- Inclusion of lead, malnutrition, water quality in cases for Prevention/Nutrition course
- Environmental reproductive hazards: Pediatric Environmental Health
- Worker compensation & disability – 3rd year course
- Special EOM rotation for especially interested students

- Goldman RH, Rosenwasser S, Armstrong E. Incorporating an environmental/occupational medicine theme into the medical school curriculum. *J Occup Environ Med.* 1999;41:47-52.



Looking Back 10 Years Later: What Have We Learned?

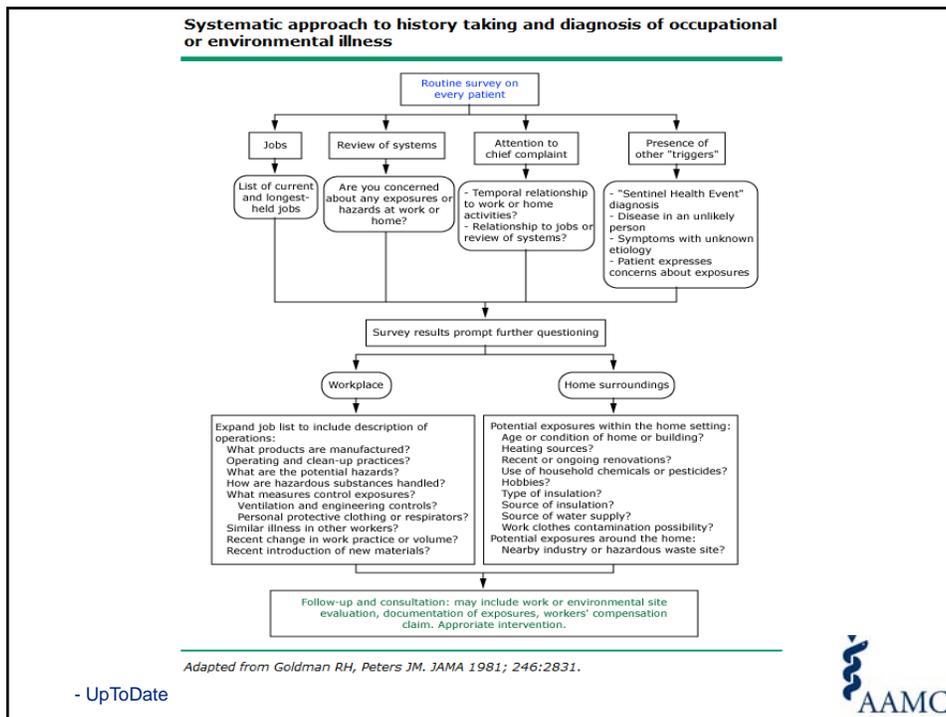
- Initial start up requires a dedicated “champion” and supportive institution
- Some content was dropped since courses or course leaders changed
- Some content remained, but needed to be updated
- In the context of another major curriculum change (2015) there are new opportunities to introduce new EOM material, and renewed interest
- Real challenge is continuing the attention to environmental factors during clinical rotations, when the focus is directed predominately on diagnosis and treatment



Take Home Messages and Tips

- Establish the key goals and topics for the EOM curriculum that you desire to introduce
- Some are basic and universal (like taking the EOM history)





Take Home Messages and Tips

- Some content may be particularly relevant to your specific location...use those for a “hook” and/or to attract interest:
 - Lead poisoning in older cities like Boston with houses built before the 1970’s
 - Wild fires in western states
 - Fracking in states where this is debated
 - Air pollution in places with a lot of smog and “bad air days”
 - Local water pollution incident or problem

Take Home Messages and Tips

- Look for others at your institution who might be interested in a specific environmental health issue with whom you could collaborate or partner with
 - e.g., a pulmonary physician concerned about environmental triggers for asthma
- Analyze the curriculum, looking for potential areas for inclusion, and approach course director with your ideas
- If case-based or problem-based teaching, look for opportunities to insert or develop the environmental aspect
- Arrange for activities for those who become interested in EOM and/or public health



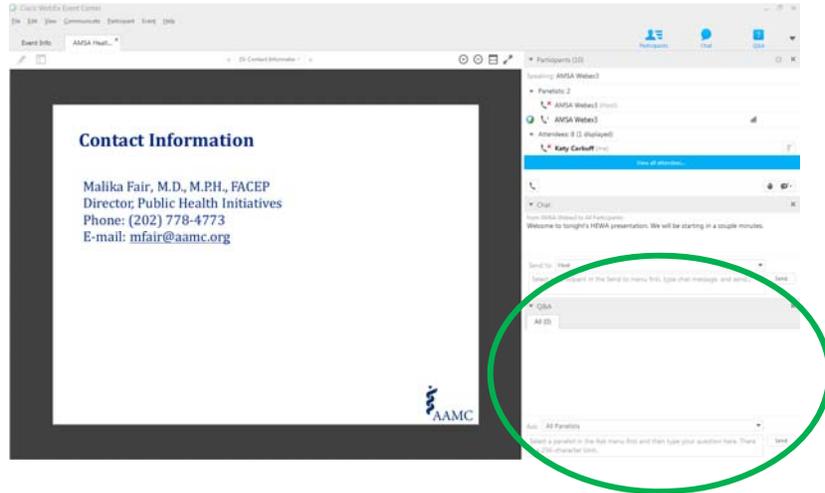
Take Home Messages and Tips

- Avail yourself of online resources for EOM, cases, teaching materials (see list at end of the webinar)
- Connect to other groups of academically affiliated specialists in environmental/occupational or pediatric environmental health (see list at end of the webinar)



Q&A Session

Type your questions in the 'Q&A' box at the bottom right of your screen and send to "All Participants"



Robert Harrison, M.D., M.P.H. UCSF



- Clinical Professor of Medicine, UCSF
- Associate Director, UCSF Occupational & Environmental Residency Program
- Sr. Medical Officer, CA Dept. of Public Health Occupational Health Branch
- Program Director, CDC/NIOSH-funded Occupational Health Internship Program
- Occupational and Environmental Medicine Residency, UCSF

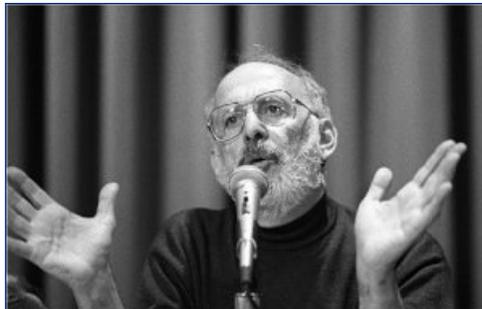


The “Environmental” Physician

- Inspiring educator
- Mentorship
- Clinical/field experience
- Research



Inspiring Educator



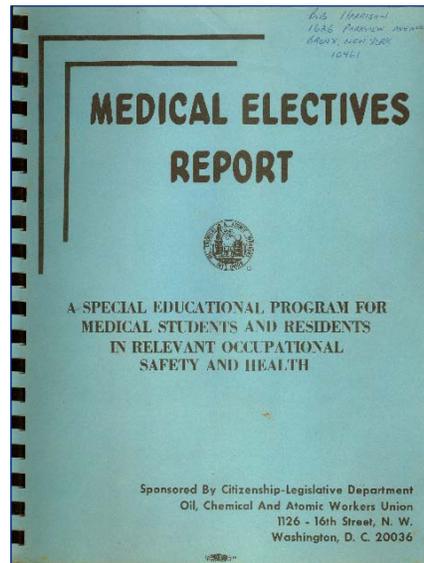
Tony Mazzocchi
1926 – 2002



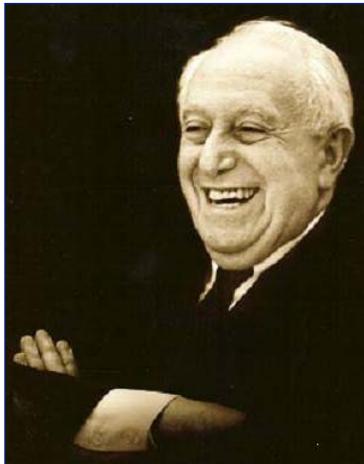
Mentorship



Pyser Edelsack
1943 – 2014



Clinical/Field Experience



Irving Selikoff, M.D.
1915 – 1992

“Statistics are human beings with the tears wiped away.”



Research



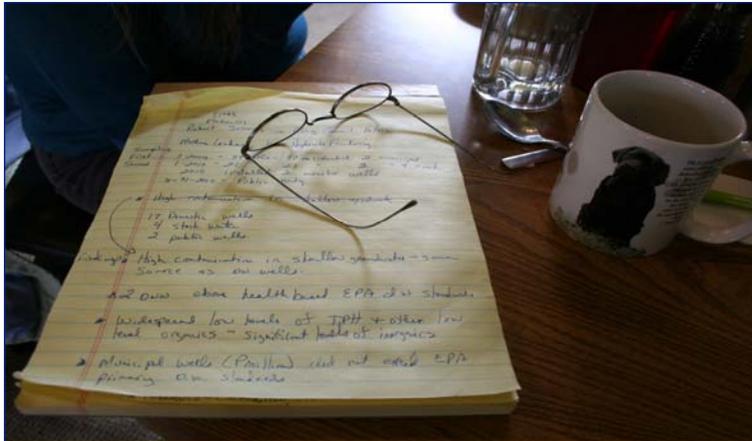
Research



Research



Research



Approved by UCSF Committee on Human Research #14-13652
Funding provided by Coming Clean (samples),
Commonweal (administrative support),
and UCSF RAPtr (Zack Wettstein)



Research



Research



Research

- Community based participatory research model
- Public health capacity to protect workers and communities
- Policy implications for climate change and human survival



Occupational Health Internship Program

- www.aoec.org/ohip



Talking with workers

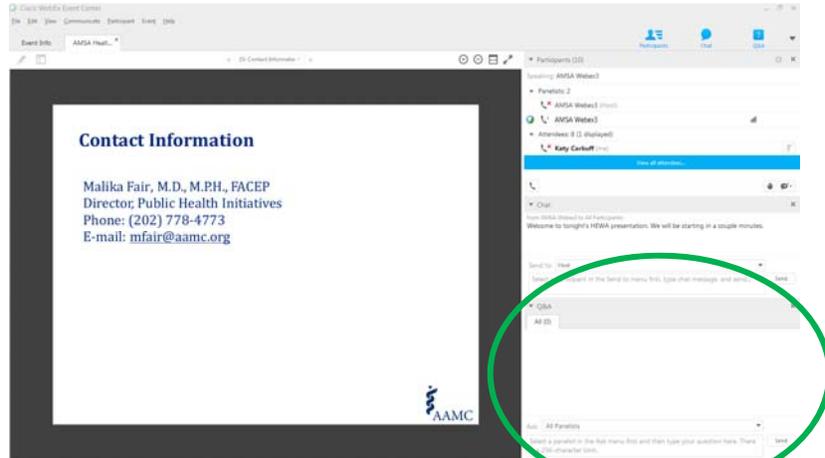
Seeing the workplace

Making a difference



Q&A Session

Type your questions in the 'Q&A' box at the bottom right of your screen and send to "All Participants"



Closing Remarks Moderator: Malika Fair, M.D., M.P.H.



Director of Public Health Initiatives
Association of American Medical Colleges



Environmental Medicine Curricular Resources

- **Interactive Modules**

- ACMT: Environmental Modules
www.acmt.net/Environmental_Modules.html
- ACMT: Environmental Medicine Modules
http://acmt.net/Environmental_Medicine_Modules.html

- **Case Studies**

- CDC/ATSDR: Case Studies in Environmental Medicine
www.atsdr.cdc.gov/csem/csem.html

- **Course**

- NextGenU
www.nextgenu.org/course/view.php?id=52#0



Environmental Medicine Curricular Resources

- **Publications** (guidelines, reports)

- Institute of Medicine. *Environmental Medicine and the Medical School Curriculum*. Washington, D.C. National Academy Press; 1993.
- Pope AM, Rall DP, eds. *Environmental medicine: integrating a missing element into medical education*. Washington, DC: National Academy Press, 1995.
- Institute of Medicine. *Role of the Primary Care Physician in Occupational and Environmental Medicine*. Washington, D.C. National Academy Press; 1988.



Environmental Medicine Curricular Resources

- **Publications cont'd.** (guidelines, reports)
 - Gehle KS, Crawford JL, Hatcher MT. Integrating environmental health into medical education. *Am J Prev Med.* 2011;**41**:S296-301.
 - Goldman RH, Peters JM. The occupational and environmental health history. *J Am Med Assoc.* 1981;**246**:2831-2836.
 - Goldman RH, Rosenwasser S, Armstrong E. Incorporating an environmental/occupational medicine theme into the medical school curriculum. *J Occup Environ Med.* 1999;**41**:47-52.



Environmental Medicine Resources

- **Other Organizations** (guidelines, fact sheets, links to other useful sites)
 - American Academy of Clinical Toxicology
www.clintox.org
 - Association of Occupational & Environmental Clinics (AOEC)
www.aoec.org
 - Pediatric Environmental Health Specialty Units (PEHSU)
www.pehsu.net



Special Rotations for Interested Students

- Epidemiology Elective Program for Senior Medical and Veterinary Students:
www.cdc.gov/epielective
- OSHA Occupational Medicine Elective:
www.osha.gov/dts/oom/elective
- EOM rotations at various locations with OEM Residencies, such as:
 - UCSF
 - Harvard Medical School

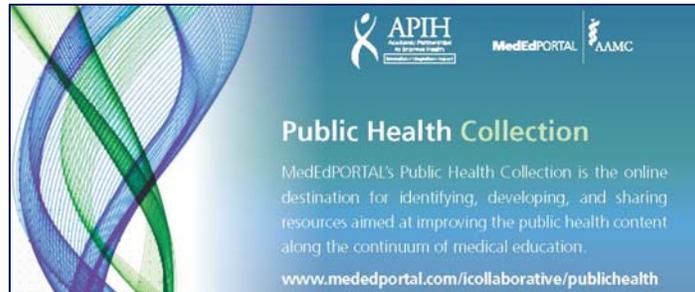


Public Health Initiatives at AAMC

- *Diversity Policy and Programs* promotes, advances, and drives diversity and inclusion along the medical education continuum with work in three portfolios:
 - Human Capital
 - Organizational Capacity Building
 - **Public Health Initiatives**
- Improving the integration of public health concepts into medical education and seeking to enhance and expand a diverse and culturally prepared health workforce.



MedEdPORTAL Public Health Collection



Consider submitting your curricular innovation to be included in the **Public Health Collection** of AAMC's MedEdPORTAL®, a free, cross-indexed suite of services that aims to equip healthcare professionals across the continuum with effective and efficient educational tools to improve patient care.



Public Health Pathways



AAMC is pleased to announce the launch of **Public Health Pathways**
A new online searchable database of domestic and international public health training opportunities for:

- ✓ Pre-med Students
- ✓ Medical Students
- ✓ Residents
- ✓ Early Career Physicians

Please visit **Public Health Pathways** at:
www.aamc.org/phpathways





Learn

Serve

Lead

Funding for this webinar is made possible by the Centers for Disease Control and Prevention (cooperative agreement number 1U36OE00004-01). The views expressed by the speakers and moderators do not necessarily reflect the official policies of the Department of Health and Human Services, nor does the mention of trade names, commercial practices, or organizations imply endorsement by the U.S. Government.

Association of
American Medical Colleges