

Resources for teaching One Health in MPH programs in the ECOHAB model:

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Resource Preface:

The following is a list of resources meant to help educators of Masters in Public Health (MPH) programs to teach foundational learning objective #12 of Council on Education for Public Health (CEPH's) accreditation criteria:

"Explain an ecological perspective on the connections among human health, animal health and ecosystem health (eg, One Health)."

More information can be found on pages 16, 30, 33 and 35 of [CEPH's accreditation criteria](#). This document is not necessarily exclusive to CEPH-accredited programs.

This document aims to work with your needs; It aims to help integrate One Health (OH) principles and thinking into what is already being taught. This document is structured on the [ECO HAB](#) framework for OH, developed and utilized by the University of Washington School of Public Health. ECO HAB is detailed further below. The resources included below have been curated to synergize with MPH curricula as considered within the ECO HAB model.

Please contact neil.vezeau@gmail.com with any questions, comments, suggestions, corrections, or to report broken links.

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ECO HAB: An Acronym for the One Health Connections between Human, Animal, and Ecosystem Health.

At the University of Washington School of Public Health, the many types of One Health connections are summarized in the acronym “[ECO HAB](#)”

- Exposures (infectious, toxic, etc.)
- Comparative (health and disease across multiple species)
- Occupational (special considerations of persons working with animals)
- Human-animal-nature bond (the psychological connections to other living beings)
- Agriculture and Food
- Biodiversity



Introduction to One Health:

These resources are appropriate for inclusion in introductory public health coursework, and also in other coursework where an understanding of One Health is highly relevant.

<u>Video</u>	<u>Text/Articles/Books</u>	<u>Lessons & Courses</u>
<p>Brief introductory video: One Health One Future</p> <p>Brief introductory video: One Health: An introduction by Professor Dirk Pfeiffer</p> <p>In-Depth Lecture: One Health: Improving Human, Animal, and Environmental Health (lecture starts at 15:30)</p>	<p>Forbes: What Is One Health?</p> <p>One Health Commission: Why One Health?</p> <p>Textbook: Introduction to One Health: An Interdisciplinary Approach to Planetary Health</p>	<p>Online Course: One Health, One Medicine: A Sustainable Approach</p> <p>In-Class Lessons:</p> <ul style="list-style-type: none"> • OH Principles & Concepts • OH Concepts & Knowledge • OH & Core Competencies <p>Lesson: Public Health framed in OH: Public Health in One Health</p>

Further Resources: Find more OH introductory video resources linked [here](#)

Exposure Connections:

One Health, zoonoses, and emerging infectious diseases (EIDs)

A hallmark of the One Health movement, zoonotic disease and its control is often one of the most discussed and actionalized segments of One Health. When teaching about One Health it is incumbent upon the instructor to remind students that One Health is applicable in many arenas beyond zoonotic diseases as revealed in this compilation of resources.

<u>Video</u>	<u>Text/Articles/Books</u>	<u>Lessons & Courses</u>
<p>Short introductory lecture: Controlling zoonotic diseases through a One Health approach</p> <p>In-depth lecture: Lecture: "Emerging Zoonotic Diseases"</p> <p>Wildlife, Wild Places, and Spillover: Insights from the Field</p> <p>Methods-based lecture: Dirty Doctors and Pestilent Puppies: Modeling Infection Control in Humans and Animals</p>	<p>Textbook: OH: The Human- Animal- Environment Interfaces in EIDs</p> <p>Book Chapter: Infections at the Animal/Human Interface: Shifting the Paradigm</p> <p>Journal Article: OH, "Disease X" & the challenge of "Unknown" Unknowns</p>	<p>Classroom Activity: One Health and Infectious Diseases Classroom Activity</p> <p>Online Course (Coursera): Tropical Parasitology: Protozoans, Worms, Vectors and Human Diseases</p> <p>Case Study: Implementing One Health principles in outbreak investigations</p>

Further Resources: Find more OH video resources on zoonoses & emerging infectious diseases linked [here](#).

Vector-Borne Diseases in One Health

Considering the ecological factors dictating vector behavior, vector-borne diseases include each element of the OH triad.

<u>Video</u>	<u>Text/Articles/Books</u>	<u>Lessons & Courses</u>
30-minute lecture: Climate and Vector-Borne Diseases	Journal Article: The case for a OH approach to combating vector-borne diseases WHO Online Resource: OH & integrated vector management CUGH: Infectious, Parasitic & Communicable Diseases	Online Course (Future Learn): Controlling Vector-Borne Diseases Online Course (Coursera): Tropical Parasitology: Protozoans, Worms, Vectors and Human Diseases

Antimicrobial Resistance (AMR) in One Health

Arguably a subset of zoonotic disease as considered within a One Health framework, consequences and causes of AMR lie within all domains of the OH triad.

<u>Video</u>	<u>Text/Articles/Books</u>	<u>Lessons & Courses</u>
Brief case-study: Tackling AMR in Bangladesh – a One Health approach In-depth lecture: Antimicrobial resistance in humans, livestock and the wider environment	Journal Article: Antibiotic resistance is the quintessential One Health issue	Global Health Learning Center: Antimicrobial Resistance (Part 1) Antimicrobial Resistance (Part 2)

Further Resources: Find more OH video resources on AMR linked [here](#).

Environmental toxins & OH

This topic often presents some of the most clearly “One Health”-related problems; toxic substances spread in the environment harm plants, animals, and humans.

<u>Video</u>	<u>Texts & Tools</u>	<u>Lessons & Courses</u>
Case Study Lecture: A One Health Approach to Lead Pollution from Hunting in Argentinian Wetlands In-Depth Lectures: “Pesticides, pathogens, and pollinator declines: What we know and what YOU can do”	Journal Article: Animal sentinels for environmental and public health	n/a

PFAS in PA: How 'Forever Chemicals' Threaten Our Health and Environment and What We Can Do About It		
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Comparative Connections:

Comparative medicine is a traditional means of understanding human biology, disease, and the risk of toxic agents. One Health alters this approach by considering health and disease from a species-spanning, evolutionary perspective that values the health of animals as well as humans, and examines different species adaptation to the environment.

Comparative Medicine & Research

<u>Video</u>	<u>Texts & Tools</u>	<u>Lessons & Courses</u>
Short Clip: Veterinary Clinical Trials Give Humans Hope Too In-Depth Lectures: One Health and Comparative Medicine in Medical Research "One Health" Perspectives From BioPharma	Textbook: Animals and the Shaping of Modern Medicine	AFROHUN In-Class Lesson: Research

Occupational Connections:

More than 1 billion persons work closely with animals and animal products on a daily basis, and this work is closely related to their health. Such workers are on the “front-lines” for zoonotic diseases and other disease risks at the human-animal-ecosystem interface.

One Health Collaborations

<u>Video</u>	<u>Texts & Tools</u>	<u>Lessons & Courses</u>
In-Depth Lecture: Leveraging One Health Collaborations to Enhance Investigation Capacity	Arizona One Health Toolkit Journal Article: Overcoming challenges for designing and implementing the One Health approach	AFROHUN & SEAOHUN In-Class Lessons: <ul style="list-style-type: none"> • AFROHUN - Leadership • SEAOHUN - Leadership • OH leadership experience Advancing OH w/ Collaborations

OH in basic epidemiology

Considered the “mother science” of public health, epidemiology’s relative significance to One Health is no different. Much attention in scholarship and practice is given to the nonrandomness of disease and health outcomes between human, nonhuman animals, and often environmental factors. The example below

goes over a selection of these. Biostatistics classes may benefit the most from this resource by constructing “story problems” inspired by human-animal-environment interactions described below.

<u>Video</u>	<u>Texts & Tools</u>	<u>Lessons & Courses</u>
<p>Short introductory lecture: Controlling zoonotic diseases through a One Health approach</p> <p>In-depth lectures: Lecture: "Emerging Zoonotic Diseases"</p> <p>The Global Burden of Animal Diseases: A New Addition to One Health Data Resources</p> <p>Methods-based lecture: Dirty Doctors and Pestilent Puppies: Modeling Infection Control in Humans and Animals</p>	<p>Journal Articles: What role for One Health in the COVID-19 pandemic?</p> <p>Socializing One Health: an innovative strategy to investigate social and behavioral risks of emerging viral threats</p> <p>The One Health Approach: Perspectives for Environmental Epidemiology</p>	<p>Classroom Activity: AFROHUN - Epidemiology</p> <p>Case Study: Implementing One Health principles in outbreak investigations</p>

OH & Program Planning

OH partnerships, as discussed under “Leadership, Professionalism, & OH”, require detailed management and implementation. This is where viewing public health practice within the context of program planning is most significant. These can be viewed as objectives toward which to build OH collaborations, or ways to build further on pre-existing partnerships.

<u>Video</u>	<u>Texts & Tools</u>	<u>Lessons & Courses</u>
<p>In-Depth Webinars: CUGH Webinar The One Health Opportunity: A Powerful Mechanism to Improve Global Health Outcomes CUGH 2021 Plenary: Training the Next Generation of Global Health/One Health Professionals</p>	<p>Arizona One Health Toolkit</p> <p>CUGH Resources & Tools: Global Health Priorities, Problems, Programs & Policies</p>	<p>AFROHUN & SEAHOHUN In-Class Lessons:</p> <ul style="list-style-type: none"> • Management • Collaboration • Infectious Diseases Management • Outbreak Investigation • Risk Analysis <p>USAID One Health OH-APP</p> <p>CUGH-curated M&E courses</p>

Systems Thinking & OH

Systems thinking represents one of the newest items within the MPH core competency framework, and itself corresponds to the inter-linkedness emphasized in OH.

<u>Video</u>	<u>Texts & Tools</u>	<u>Lessons & Courses</u>
<p>Short Interview:</p>	<p>Journal Article:</p>	<p>AFROHUN & SEAHOHUN In-</p>

<p>One Health One Planet™: Systems Thinking</p> <p>In-Depth Lecture: Jessie Kissinger OneHealth Seminar April 15, 2015 b</p>	<p>A system dynamics approach to understanding One Health</p>	<p>Class Lessons:</p> <ul style="list-style-type: none"> • AFROHUN - Systems Thinking • SEAOHUN - Systems Thinking
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Biostatistics, mathematical modeling, & geographic information systems (GIS)

With the onset of systems of OH operationalization, biostatistics methods and tools have emerged that cross traditional disciplinary boundaries.

<u>Video</u>	<u>Texts & Tools</u>	<u>Lessons & Courses</u>
<p>In-Depth Lectures: One Health @ UGA Lecture: Map Apps & Historical Epidemics July 7th Coffee House</p>	<p>Journal Article: Checklist for One Health Epid. Reporting of Evidence (COHERE)</p> <p>Tool: One Health Systems Mapping and Analysis Resource Toolkit (OH-SMART)</p>	<p>Online Courses (Curated by CUGH):</p> <ul style="list-style-type: none"> • Epidemiology: The Basic Science of Public Health • HIV Basic Biology, Epidemiology, and Prevention • Mortality Surveillance Methods & Strategies

Communications & Informatics

An important element of OH is communicating the subjects it represents to technical persons who may benefit from seeing things in a more connected fashion, as well as to general audiences.

<u>Video</u>	<u>Texts & Tools</u>	<u>Lessons & Courses</u>
<p>In-Depth Lectures: "Viral Communication" by Dr. Brian Lutz and Dr. Jessica McCall</p> <p>One Health at UGA Lecture: Map Apps and Historical Epidemics</p>	<p>Arizona One Health Toolkit</p> <p>CUGH Resources: Communication Tools</p>	<p>AFROHUN In-Class Lessons:</p> <ul style="list-style-type: none"> • Diseases Management • Outbreak Investigation • Risk Analysis • Communication <p>Understanding the "One Health" Concept: The Value of Storytelling</p>

Governance, policy, & OH

After over a decade since its entrance into the popular discussion, One Health began to be implemented in high-level governmental and intergovernmental health programs as well as in industry.

<u>Video</u>	<u>Texts & Tools</u>	<u>Lessons & Courses</u>
<p>Short Interview: Richard Horton: How can we use knowledge to improve our systems, governance and One</p>	<p>WHO Europe OH webpage</p> <p>Arizona One Health Toolkit</p>	<p>Online course: Bats, Ducks, and Pandemics: An Introduction to One Health Policy</p>

<p>Health?</p> <p>In-depth webinars: One Health Policy, Governance and the EID/NTD Interface Panel Discussion: One Health Governance Gaps and Opportunities</p> <p>Updates On The “One Health” Landscape Across Federal Agencies</p> <p>Lectures: WS 08 - Pandemics and Operationalizing One Health - World Health Summit 2020</p>	<p>CUGH Resources & Tools</p> <p>World Bank OH Policy Toolkit: Framework for human, animal & environment health systems</p> <p>Journal Articles: - Operationalizing the OH approach - Governing Towards ‘One Health’ - Implementation framework for One Health approach</p>	<p>AFROHUN & SEAOHUN In-class lessons: - Policy and Advocacy - Policy, Advocacy and Regulation</p>
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Further Resources: Find more OH governance & policy video resources linked [here](#).

OH in public health ethics & social issues

OH is a variably-defined concept. It sometimes has indefinite implementation, with difficulties measuring outcomes. Because of this, OH is ripe ground for public health ethics and bioethics. This is particularly true with regard for how best to fund OH activities.

<u>Video</u>	<u>Texts & Tools</u>	<u>Lessons & Courses</u>
<p>Short Clips: One Health Research – Dr. Gus Skorburg, How One Health Interacts with the Philosophy of Medicine</p> <p>Why animal health and welfare matter to One Health</p> <p>One Health: Communities find strength in tradition</p> <p>In-Depth Lecture: ‘Behind Closed Doors: COVID-19’s Impact on Violence Against Women and Children’ by Hannah Cornell</p>	<p>Journal Articles:</p> <ul style="list-style-type: none"> • One Health as a moral dilemma: Towards a socially responsible zoonotic disease control • Does One Health require a novel ethical framework? • One Health, Bioethics, and Nonhuman Ethics • The ethics of One Health 	<p>Online Course (Future Learn): One Health, animal ethics and animal welfare</p> <p>AFROHUN & SEAOHUN In-Class Lessons:</p> <ul style="list-style-type: none"> • Culture and Ethics • Culture, Beliefs, Values and Ethics • Gender, infectious disease, & One Health

Human-Animal-Nature Bond Connections:

There are various OH connections felt to have the largest impact on psychosocial health outcomes, and toxic NCDs, including cardiovascular disease, diabetes, and obesity.

Human-animal bond, mental health, & non-communicable diseases (NCDs)

<u>Video</u>	<u>Texts & Tools</u>	<u>Lessons & Courses</u>
<p>TED Talk: Healthy Planet, Healthy People C. Howard TEDxMontrealWomen</p> <p>Short Clips: Saving the Whole Family: Disaster Prep and Your Pets</p> <p>Eric & Peety, a Mutual Rescue™ film</p>	<p><i>Read or listen:</i> National Public Radio articles on physical and mental health benefits of pet ownership</p> <p>NatGeo Article: Link between animal abuse and domestic violence</p> <p>LA Dept. of Pub. Health Website: - Healthy Pets Healthy Families: Obesity - Healthy Pets Healthy Families: Disaster Preparedness</p>	<p>Online Course: Pastoralism, Uncertainty, and Resilience</p>

Find more issues related to OH and social sciences/issues on YouTube [here](#). Find Webinars on related topics [here](#).

Agriculture-Food Connections:

Food security & safety in the framework of OH

<u>Video</u>	<u>Texts & Tools</u>	<u>Lessons & Courses</u>
<p>Short Introductory Videos: Our Livestock Are Our Mother -- Doing Community One Health in Kaabong, Uganda</p> <p>Hervé Petit explains that One Health and agroecology go hand-in-hand</p> <p>In-Depth Lecture: A One Health Approach to Food: The Double Pyramid Connecting Food Culture, Health and Climate</p>	<p>Journal Article: OH for Food Safety, Security, and Sustainable Production</p> <p>CUGH Resources: Food and Nutrition / WASH</p>	<p>"One Health" Food Security, Public Health and Other Consequences of Animal-borne Illnesses</p> <p>Online Course: Pastoralism, Uncertainty, and Resilience</p> <p>Case Study: Today's Solutions for the Future of Food</p>

Further Resources: Find more OH video resources related to food security linked [here](#)

Biodiversity Connections:

Wildlife, conservation medicine, & ecosystem health

This topic has gained particular worldwide prominence after the outbreak of SARS-CoV-2 in human populations. The role of wildlife conservation and related topics is widely considered to be of central importance in global and public health³⁻⁸.

<u>Video</u>	<u>Texts & Tools</u>	<u>Lessons & Courses</u>
<p>In-depth introductory video: Public Health/Planetary Health/One Health</p> <p>In-Depth Lectures: COVID-19: Rethinking Our Relationships with Wild Animals & Wild Places Webinar</p> <p>Socio Economic Epidemiology of Disease Risk in Wildlife Trade Networks</p> <p>Horseshoe Crabs and Ecosystem Productivity for Birds and Fish by Dr. Lawrence Niles</p> <p>Wildlife, Wild Places, and Spillover: Insights from the Field</p>	<p>Websites: About - ConservationMedicine.org</p> <p>World Extreme Medicine - Conservation Medicine?</p> <p>Wikipedia article: Conservation medicine</p>	<p>In-Class Lesson: Ecosystem Health</p>

Further Resources: Find more OH video resources on climate, plants, and the environment linked [here](#).