Core Competencies in One Health Education

Jonna Mazet DVM, MPVM, PhD
One Health Institute
School of Veterinary Medicine
University of California, Davis

ONE HEALTH
OneUCDAVIS

Health challenges today are complex and cross-cutting

Antimicrobial resistance, political & natural disasters, food insecurity, emerging infectious disease, pollution etc.




In response: Global initiatives - International Health Regulations (2005), Global Health Security Agenda, Joint External Evaluation, Sustainable Development Goals etc.

US Joint External Evaluation: Develop a more formal One Health strategy & need for competent One Health professionals

First step: Train future One Health professionals through sound, competency-based education

https://www.srs.fs.usda.gov/compass/2014/10/09/projected-land-use-change-in-the-south/
http://blogs.worldbank.org/jobs/can-urban-slums-help-people-work-their-way-out-poverty
https://www.nytimes.com/2017/11/09/climate/fema-flooding-trump.html


ANIMALS
ENVIRONMENT
PLANTS
HUMANS
ONE
HEALTH

45 One Health academic degree programs identified

22% Bachelor's, 60% Master's, 18% Doctoral

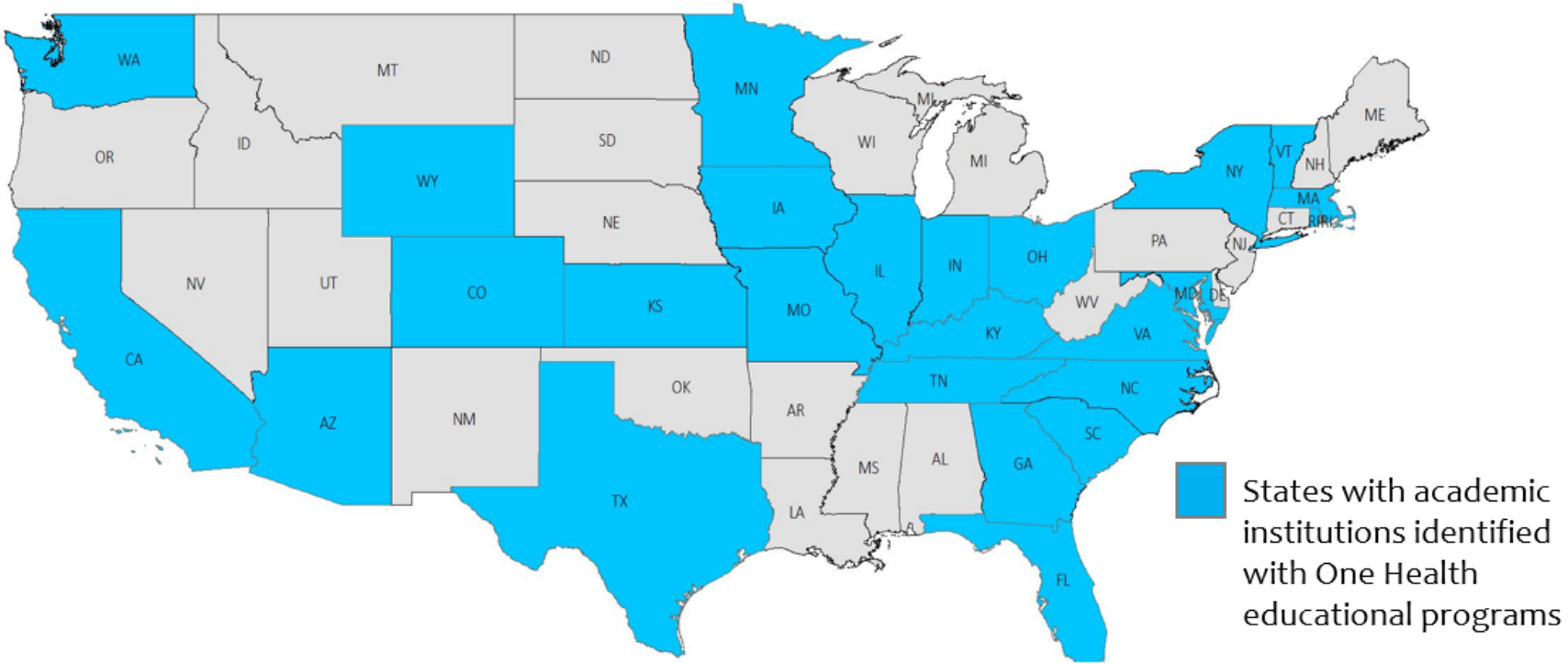


FIGURE 1 | Geographic Location of One Health Programs by State

SOURCE: Togami et al., "Core Competencies in One Health Education: What Are We Missing?," National Academy of Medicine.

NOTE: One Health academic programs were identified in the contiguous United States only.

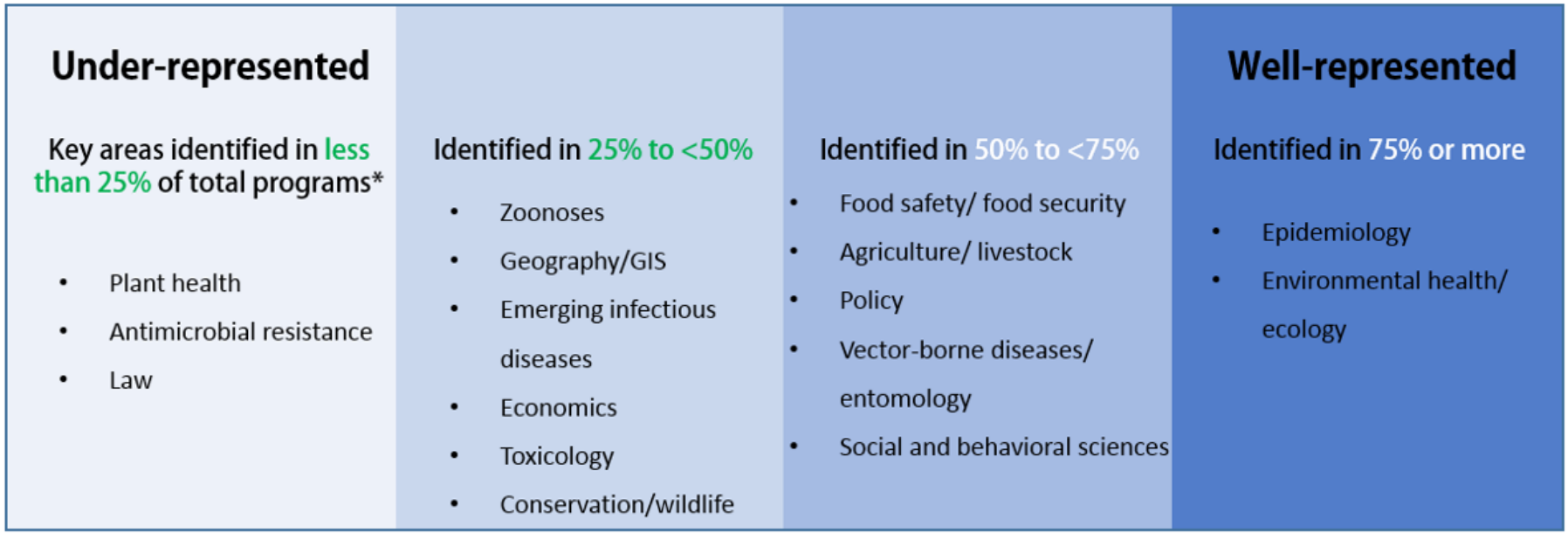


FIGURE 3 | Key Areas Represented in One Health Degree Programs

SOURCE: Togami et al., "Core Competencies in One Health Education: What Are We Missing?," National Academy of Medicine.

NOTES: "Total programs" refers to the 45 One Health academic programs identified in this study. GIS = geographic information system.

Recommendations

Three competency domains and 20 core competencies recommended:

1. Health Knowledge
2. Global & Local Issues in Humans, Animals, Plants, and the Environment
3. Professional Characteristics

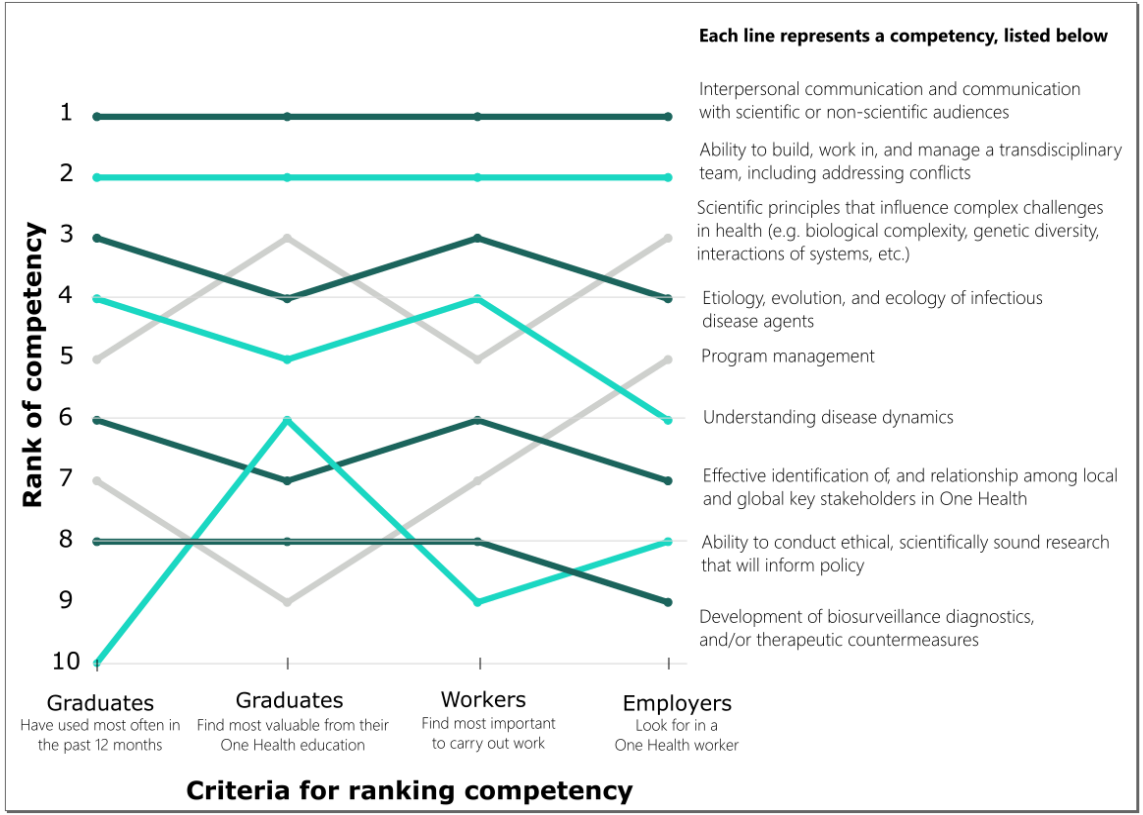
Must emphasize communication & interdisciplinary respect for better coordination and collaboration

Table 1 | Recommended Core Competencies for One Health Education

Health Knowledge	Global and Local Issues in Humans, Animals, Plants and the Environment	Professional Characteristics
Objective To demonstrate knowledge of established and evolving transdisciplinary One Health sciences, including those relevant to public health, animal health, environmental sciences, and modern agriculture	*Objective* To demonstrate an understanding of historical, cultural, political, economic, and scientific aspects of complex and emerging health problems that are amenable to the One Health approach	*Objective* To demonstrate the ability to understand and apply principles of research and evaluation methods to policy and health program implementation, as well as apply scientific findings to real-life situations
• Characterize the etiology, evolution, and ecology of infectious disease agents of people, animals, and plants that are of importance to health. • Describe the main transmission routes for toxins, pathogens, and resistance genes, including human-animal-plant-environmental exposures, as well as vector-borne, waterborne, and airborne cycles. • Explain epidemiologic principles used to characterize problems that involve human, animal, plant, and environmental components. • Understand scientific principles such as biological complexity, genetic diversity, and interactions of systems from individuals to ecosystems that influence modern complex challenges in human, animal, plant, and environmental health. • Identify common cultural and socioeconomic determinants and effects of illness, including poverty, residential geography, cultural practices, education, nutrition, and resource security. • Explain how biosurveillance, diagnostics, and therapeutic countermeasures are deployed. • Describe interventions used to prevent disease and improve human, animal, plant, and environmental health at the individual, community, and population levels.	• Describe the biological principles, scope, and complexity of disease in people, animals, plants, and the environment. • Understand the effects of global change on health and how both local and global factors affect disease transmission within and between countries. • Identify and understand the origins and determinants of health (human, animal, plant, and environment) as related to disease. • Compare and contrast health and non-health consequences of diseases and exposures, including social and behavioral, economic, and political effects across global regions. • Recognize major challenges and opportunities to improve health in a global and local context through practical and applied training. • Demonstrate a basic understanding of pre- and post-production food safety. • Understand the structure and responsibilities of the public health system, including the local, state, and national levels of government. • Describe the relationship among various key One Health stakeholders locally and globally.	• Describe the benefits and challenges of a multidisciplinary, integrative approach when implementing studies regarding health concerns at the human-animal-plant-environment interface. • Effectively communicate, both orally and in writing, scientific findings to the scientific community, non-health-related academics, public audiences, media, and policy makers. • Demonstrate scientific quantitative skills, such as the ability to evaluate experimental design, interpret scientific findings, and develop discussions, as well as provide implementable recommendations. • Demonstrate the ability to build and manage a transdisciplinary team and apply principles to conduct ethical, scientifically sound research that will inform policy. • Develop a plan to translate research findings and new discoveries into health policies, community programs, interventions, and public education in a manner that is sustainable, culturally relevant, and economically feasible.

One Health Workers & Employers

Workforce survey (n = 828) from 66 countries (2018-2019)



One Health Workforce – Next Generation Project 2019-2024

AFROHUN

AFRICA ONE HEALTH UNIVERSITY NETWORK

8 COUNTRIES

17 UNIVERSITIES

24 INSTITUTIONS

SEAOHUN

SOUTHEAST ASIA ONE HEALTH UNIVERSITY NETWORK

7 COUNTRIES

80 UNIVERSITIES

152 FACULTIES

USAID FROM THE AMERICAN PEOPLE · UCDAVIS One Health Institute, School of Veterinary Medicine · AFROHUN Advancing One Health · SEAOHUN Southeast Asia One Health University Network · EcoHealth Alliance · Ata Health Strategies · ICAP Columbia University Mailman School of Public Health · Berkeley University of California · Project ECHO · UCI University of California, Irvine

Global Change

OHWA
ONE HEALTH WORKFORCE ACADEMIES

ABOUT ONE HEALTH | TRAINING AND CREDENTIALS | GLOBAL ACADEMIES | SCHOLARS NETWORK | COMMUNITIES OF PRACTICE | STUDENTS | EMPLOYMENT FORUM | NEWS & EVENTS

One Health Workforce Academies

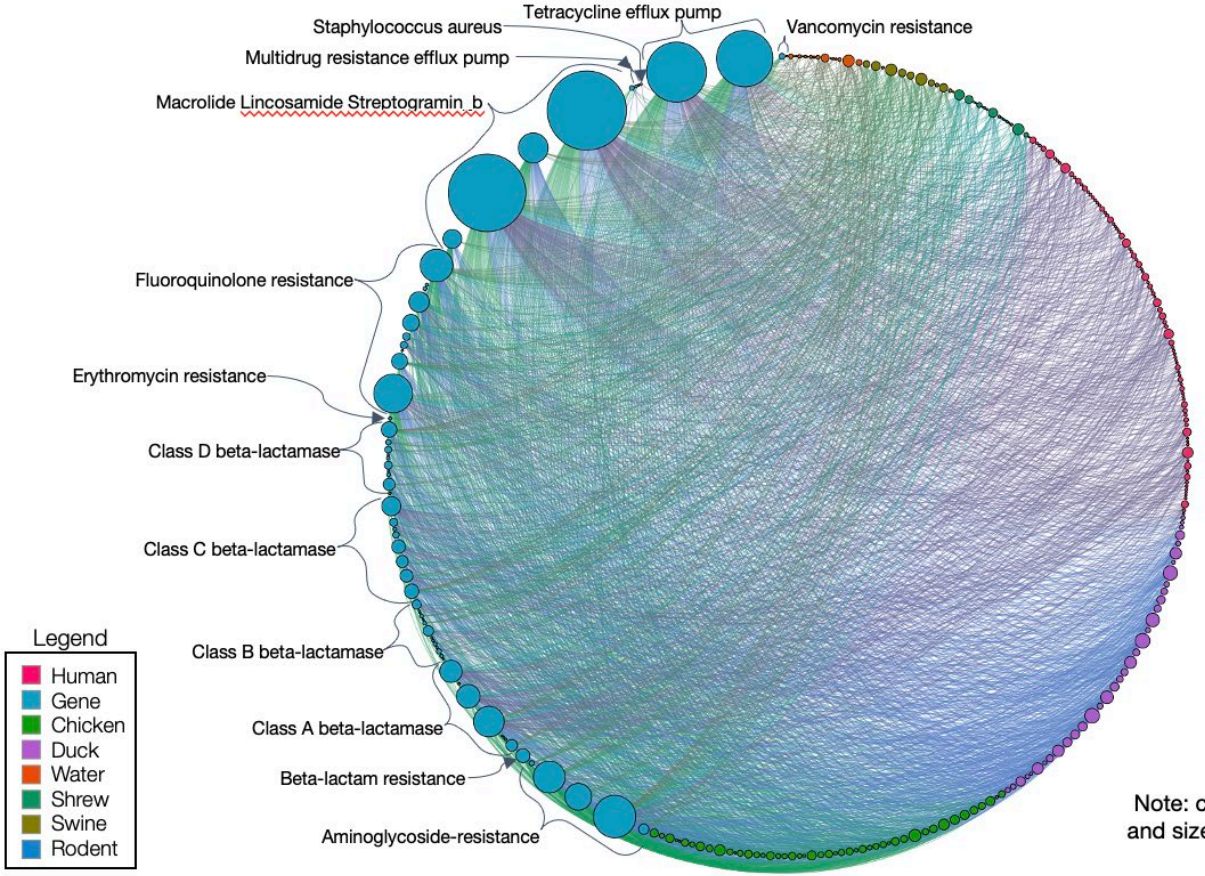
Building the current and future One Health Workforce

AFROHUN ACADEMY

SEAOHUN ACADEMY

USAID FROM THE AMERICAN PEOPLE | UCDAVIS One Health Institute | AFROHUN Advancing One Health | SEAOHUN Southeast Asia One Health | EcoHealth Alliance | Ata Health Strategies | ICAP Columbia University Mailman School of Public Health | Berkeley University of California | Project ECHO | UCI University of California, Irvine

Power of One Health Approach



Note: color based on sample type and size based on network degree

USAID
FROM THE AMERICAN PEOPLE