



## Viewpoint

# One Health in Worldwide Educational Curricula Paradigm Shift – All levels

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### Recommended Citation:

Laura H. Kahn et al. One Health in Worldwide Educational Curricula Paradigm Shift – All levels. JGPOH 2024. DOI: 10.61034-JGPOH-2024-6. Website: <http://jgpoh.com/wp-content/uploads/2024/01/Kahn-L.-One-Health-in-Worldwide-2024-01-31.pdf>

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Recognizing the multiple risks to global health, including that of novel, emerging and potentially pandemic infectious diseases, there is a growing need for One Health trained specialists to lead robust initiatives that address these complex challenges. The WHO/FAO/WOAH/UNEP quadripartite organizations, supported by the One Health High-Level Expert Panel (OHHLEP), launched the operational definition of “One Health” (1): *One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and the ecosystems. It recognizes the health of humans, domestic and wild animals, plants and the wider environment (including ecosystems) are closely linked and inter-dependent. The One Health approach mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate changes and contributing sustainable development.* In essence, One Health is a strategy for international sustainability and survival and can offer a framework to improve global health security.

The quadripartite organizations also supported the launch of the *One Health Joint Plan of Action (2022-2026)*, which highlights six action tracks – strengthening health systems’ capacities, minimizing risk of emerging zoonotic disease transmission, controlling endemic infectious diseases, promoting food safety assessment and management, reducing the spread of antimicrobial resistance, and focusing on environmental impacts – to help guide global leaders in the development of cost-effective and sustainable solutions for the planet (2). This action plan also emphasizes the 4Cs (communication, cooperation, collaboration, capacity), as an approach to help streamline local, national, and international policies, initiatives, and activities.

Since the late 20<sup>th</sup> century, the One Health concept/approach has been presented across a variety of educational venues, even noting key public locations to enhance community engagement with diverse audiences (3). While an important start, a One Health curriculum should be implemented internationally at all didactic levels for students to learn about how to live on their planet in a healthier and more sustainable way. In essence, a paradigm shift in education is urgently needed to meet capacity training needs for the future, which will ultimately support how global communities accelerate action to achieve ambitious goals of the 2030 Agenda for Sustainable Development. Particularly, the *Journal of Global, Public and One Health (JGPOH)* (<https://jgpoh.com/>), among other recent One Health journals, will offer opportunities for experts across scientific disciplines to share research findings, critical analyses, and insight to promote knowledge exchange.

Multiple disciplines should be aware of the One Health concept, especially those who participate in field investigations of emerging zoonotic diseases that spillover from wild animals. Approximately 75% of emerging diseases have a zoonotic origin, of which two-thirds involve wild birds and mammals. For example, avian influenza virus H5N1 can spillover from marine and wild bird populations into humans, and spillover events from rodent or bat reservoir hosts have increased risk of rapid spread with subsequent interhuman transmission (e.g., SARS-CoV-1 and Ebola viruses) (4).



For decades, veterinary medical schools have promoted One Health as a central part of their curriculum; however, schools of health sciences have inconsistently integrated One Health content into curricula (5,6). In a survey of 133 U.S. medical schools, 56% included One Health-related subject matter, primarily in the context of preclinical classroom One Health educational learning (7). Some schools of public health have established Centers for One Health Research, such as that at the University of Washington (<https://deohs.washington.edu/cohr/>). To address this observed academic gap, one solution may include establishing combined veterinarian/physician degree programs (8).

Moreover, basic One Health teaching programs are currently available online for primary and secondary schools (e.g. One Health Lessons: <https://onehealthlessons.org/webinars>) and undergraduate colleges and universities (Bats, Ducks, and Pandemics: An Introduction to One Health Policy: <https://online.princeton.edu/bats-ducks-and-pandemics-introduction-one-health-policy>). As the virtual platform has facilitated the successful expansion of these educational programs, it is important to consider additional formats and venues that can widely leverage scientific expertise into user-friendly domains that can be widely shared across countries.

Food safety and security, emerging zoonotic diseases, antimicrobial resistance, infectious disease associated chronic illnesses, and climate change are some of the major challenges confronting societies. Professionals as well as the public must understand the inextricable linkages between human, animal, plant, environmental, and ecosystem health (9,10). An education in the principles and practices of One Health would provide individuals with the knowledge they need for healthier and more productive lives. The earlier this concept is introduced into the educational curriculum, the greater its impact will have in the future.

## References

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