

One Health Initiatives: Global and Indian perspectives

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Global Perspectives

Introduction

Following are the definitions of One Health from the US.

Centres for Disease Control and Prevention (CDC)

According to Centres for Disease Control and Prevention (CDC), 'The One Health' concept recognizes that the health of people is connected to the health of animals and the environment. CDC uses a One Health approach by working with physicians, veterinarians, ecologists, and many others to monitor and control public health threats and to learn about how diseases spread among people, animals, and the environment.

CDC defines One Health as a collaborative, multi-sectoral, and transdisciplinary approach — working at the local, regional, national, and global levels — with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.

Global Health Security Agenda

The Global Health Security Agenda (GHSA) is an effort by nations, international organizations, and civil society to accelerate progress toward a world safe and secure from infectious disease threats. In order to encourage progress toward these goals, the "Action Packages" concept was developed to facilitate regional and global collaboration toward specific GHSA objectives and targets.

One Health Initiative

About the One Health Initiative

The One Health concept is a worldwide strategy for expanding interdisciplinary collaborations and communications in all aspects of health care for humans, animals and the environment. When properly implemented, it will help protect and save untold millions of lives in our present and future generations.

World Health Organization

What is 'One Health'?

'One Health' is an approach to design and implement programmes, policies, legislation and research in which multiple sectors communicate and work together to achieve better public health outcomes.

Global Health Program by Bill and Melinda Gates Foundation (BMGF)

The global health program at BMGF aims to harness advances in science and technology to save lives in developing countries.

The Grand Challenges initiative was launched by the Gates Foundation in 2003, in partnership with the National Institutes of Health (NIH), with a \$200 million grant to the FNIH (Foundation for The National Institutes of Health) to help apply innovation in science and technology to the greatest health problems of the developing world.

In India, BMGF began more than a decade ago with an HIV prevention initiative. Since then, their focus has included maternal and child health, nutrition, vaccines and routine immunization, family planning, and control of selected infectious diseases.

Food and Agricultural Organization in the United Nations

The Food and Agriculture Organization (FAO) is a specialized agency of the United Nations that leads international efforts to defeat hunger.

UK One Health Report

While I could not find a concerted effort in the UK towards goals similar to One Health initiatives in the US, I did find a One Health report on anti-microbial resistance between 2013 and 2017.

Antibiotic Use

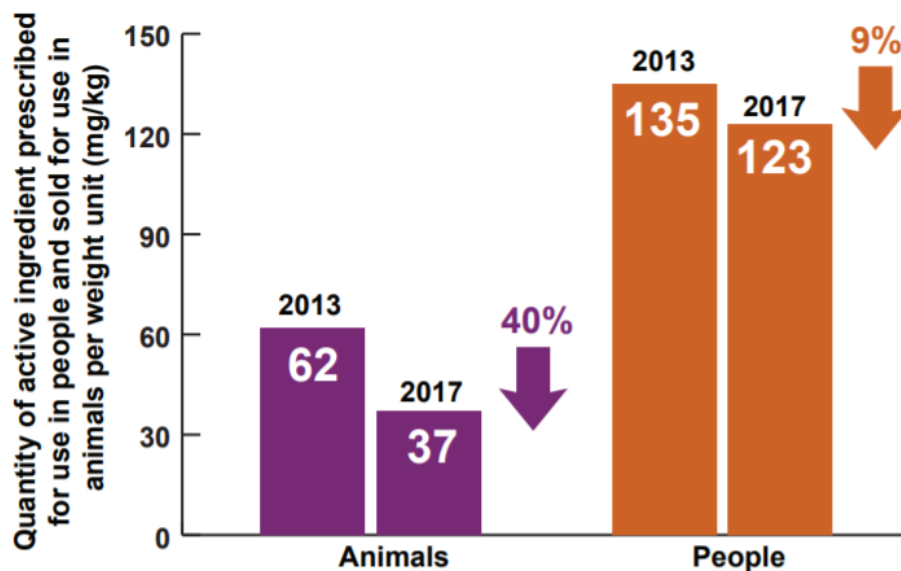


Figure 1: Based on antibiotic use per 'bodyweight', there was a reduction of 40% in food-producing animals and 9% in people.

What was interesting is that there is a Master's program available at Royal Veterinary College, University of London in One Health: ecosystems, humans and animals. This could be a recommendation to Indian policy makers to make a similar course available in Indian colleges and universities.

The One Health European Joint Programme (OHEJP)

The OHEJP is a landmark partnership between 36 European partners, including acclaimed food, veterinary and medical laboratories and institutes across Europe and the Med-Vet-Net Association. OHEJP believes that as interdisciplinary, integrative and international approach to One Health is

essential to address the existing and emerging threats of zoonotic disease and antimicrobial resistance.

One Health in Australia

One Health (OH) as an interdisciplinary approach aiming to achieve optimal health for humans, animals and their environments is currently being discussed in Australia.

In 2017, a four-phase mixed-method Delphi survey of 52 Australian human and animal health practitioners and policymakers explored areas of consensus and disagreement over:

- a. The operational definition of OH
- b. Potential for cross-sectoral collaboration
- c. Key priorities for shaping the development of an OH response to significantly elevated zoonotic disease risk.

Participants agreed OH is essential for effective infectious disease prevention and control, and on key priorities for outbreak responses, but disagreed over definitions and the relative priority of animal health and welfare and economic considerations. Strong support emerged among Australian experts for an OH approach.

Globally, several universities are offering courses on One Health Initiatives.

Indian Perspectives

In India, 'One Health' is a newly emerging concept still in nascency which could be an advantageous position to be in because first, as a country, we have started discussing about it and second, we can leverage from similar initiatives globally, ask India-specific questions, innovate and implement in India.

One Health Initiative

First 'One Health India' conference was conducted in Delhi in Feb 2019 to serve as a starting point for policy makers, legislators and healthcare professionals to initiate discussions regarding policies concerning human and animal health as well as the environment. The conference launched India's new 'One Health Initiative' - an inter-sectoral approach to tackle the most urgent health threats in India as well as in low and middle income countries across South and South East Asia and Sub-Saharan Africa.

The conference was hosted by Department of Biotechnology (DBT), Ministry of Science and Technology in partnership with the Departments of Agriculture Research and Education (DARE) and Animal Husbandry, Dairying & Fisheries (DAHDF), Ministry of Agriculture & Farmers' Welfare, the Departments of Health Research (DHR) and Health & Family Welfare (DHFV) in collaboration with The Bill & Melinda Gates Foundation, Institute of Animal Health and Veterinary Biologicals (IAHVB) and Penn State University, USA.

The conference provided a platform for researchers, medical and veterinary practitioners, public and private sector stakeholders, and policymakers to integrate knowledge and identify needs and opportunities to better coordinate activities and address major human, animal, and environmental health challenges in India.

The One Health Initiative aims to recognize the inter-connectedness and aims to advocate a comprehensive approach to health and environmental problems. By promoting cross-talks between physicians, veterinarians, environmental scientists, and public health professionals, the initiative aims to "promote, improve, and defend the health and well-being of all species."

To cite a specific example, majority of the milk available in India contains very high levels of the hormone Oxytocin responsible for early onset of puberty in young children. Oxytocin is given to cows and buffalo's to increase their volume of milk that is produced per day. This hormone is passed on to humans via their consumption of such oxytocin-enriched milk. Excess amount of this hormone is not healthy either for humans or animals. In humans, overdose of oxytocin can cause serious hormonal imbalance.

The link between human and animal health can be seen with bovine tuberculosis (TB) and brucellosis. Both are zoonotic diseases meaning they can spread from animals to people.

India is among the top geographical hotspots where zoonotic diseases are major public health issue causing high burden of morbidity and mortality.

High priority zoonotic diseases like Brucellosis have been emerged from Haryana to Goa. Incidence and prevalence of occupational zoonotic disease like Anthrax have affected human health throughout. Similarly, Bovine tuberculosis (bTB) is a chronic disease of cattle that impacts productivity and represents a major public health threat and is considered endemic in India. People can become infected with both bTB and brucellosis by consuming contaminated, unpasteurized (raw) milk or dairy products and through direct contact with infected live animals or carcasses.

Further, India has the highest bacterial disease burden in the world and therefore antibiotics are used exorbitantly in limiting morbidity and consequently Antimicrobial Resistance (AMR) has huge implications for India.

Many such examples can be cited that exhibit an inter-connectedness between human and animal health as well as the environment which needs urgent addressing which is where implementation of One Health Initiative will be extremely timely and useful.

Conference Outcomes and Recommendations

The conference resulted in a ground breaking dialogue by scientific thought leaders, inter-sectoral representatives, as well as policy-makers that resulted in concrete recommendations on how to advance a future One Health framework for India based on inclusive policy reform, scientific innovation and sustainable investment

The deliberations strongly emphasized that a multi-sectoral and transdisciplinary collaboration and cooperation approach, working at local, regional, national, as well as global levels will be necessary to achieve such a One Health framework. However, depending upon the nature of collaboration(s) and parties involved in it, the committee recommended adoption of a well-defined, sustainable One Health Roadmap (OHR) where each country needs to identify the concerned party(ies) and define their role in the collaboration. As such, it was agreed for action with 10-point OHR plan to assure best possible implementation of the One Health Program.

The proposed One Health Roadmap

1. Review, update and document the current disease burden(s) resulting from zoonotic diseases and AMR and the drivers behind the behaviours by commissioning required studies.
2. Identify the priority area(s) of concerns with respect to diseases, emerging or re-emerging infections, biosafety and biosecurity challenges and policy environment that require immediate or long-term interventions.
3. Promote basic and applied research to understand the mechanism of virulence, infections and its transmissions leading to the development of relevant tools and techniques for detection, diagnosis and control.
4. Capacity building through engagement and training of manpower including students, scientists, researchers, primary respondents, and health care professionals. Specific training modules need to be developed for target groups, maintaining currency with the evolving nature of challenges, international best practices and advancement of sciences.
5. Capacity building and improvement of related infrastructure for research, diagnosis, and health care system(s) to enable an effective preparedness and response mechanism and empowering primary responders and health care professionals to avoid occupational hazards while diagnosing and treating diseases.
6. Share information on existing and evolving disease burdens, challenges, research outcome and outputs and promote exchange of resources, including trained manpower, tools, reagents, organisms etc for effective medical countermeasures.
7. Explore opportunities and promote partnership through scientific collaborations between public and private organizations, both at the national and international level, establishing inter-sectoral

exchange programs to fast track innovation in the areas of detection, diagnostics, response and medical countermeasures.

8. Evolve with practical governance, policy mechanism(s) and regulation(s) to define the role of Government and other stakeholders on responsibly regulating/ dealing with One Health related activities.

9. Incentivize the OHR through dedicated funding, rewards mechanisms as well as due protection of intellectual rights, wherever applicable.

10. Create and implement a One Health communication and outreach plan for all stakeholders including the public, through print and online platforms, an organization of workshops, training, and conference like this (One Health India Conference) to provide a platform for mass awareness helping a nation to ensure its own health security.

Taken from One Health Roadmap: Conference Declaration and Statement

Additional recommendations for One Health Initiative

Our recommendations in addition to what has been presented above could be:

1. Regulation of availability of hazardous chemicals (availability in shops to be monitored in quantity sold and for the nature of the application).
2. Conducting surprise audits and following up on audit findings.
3. Stricter punishments for those found non-compliant to policy guidelines.
4. Start courses on One Health Initiatives at colleges and universities.

Solution

Role of IKP

The proposed 'One Health incubator' at IKP will bring together doctors, veterinarians and environmental experts from India and globally to identify, ideate and find solutions to global One Health challenges.



Figure 1: Stakeholder Map: Physicians, veterinarians, and ecologists will work together with government policy makers and regulatory bodies to come up with strategies on rolling out plan of action in case of an epidemic or a breakdown.

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