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BROOKE INDIA

One Health in India 2024

Overview and Recommendations

Knowledge Series

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Foreword

India is one of the oldest living civilizations enjoying a rich cultural history, scientific temperament, rich biodiversity, vast cattle population, and deep-rooted cultural connection with domesticated animals, which make the One Health approach not just relevant but essential for the nation's health security. With nearly 536 million livestock, India has the largest livestock population in the world. The close interaction between humans, animals, and the environment—whether in rural households, urban settings, or agrarian economies—creates a dynamic ecosystem where the health of one directly impacts the others.

Zoonotic diseases along with emerging threats like antimicrobial resistance (AMR) and vector-borne infections, underline the urgent need for an integrated One Health framework. The COVID-19 pandemic has further reinforced the importance of a collaborative, multisectoral approach to disease prevention and response.

Traditional Indian practices have long emphasized the harmonious coexistence of humans and animals. However, rapid urbanization, climate change, and intensive farming practices pose new challenges to this balance. Strengthening veterinary public health, robust disease surveillance, and coordinated policymaking across health, agriculture, and environmental sectors is crucial to safeguarding human and animal health alike.

This report, One Health in India 2024: Overview and Recommendations, the Think Tank – Health Parliament, provides research and interview-based assessment of the status of One Health in India. It is imperative that India prioritizes the One Health model to ensure sustainable public health outcomes, food security, and economic resilience. A strong One Health strategy will not only protect human and animal populations but also preserve India's cultural ethos of coexistence and respect for all living beings.

Also, Health Parliament has started its work on the draft One Health Policy, we welcome your suggestions and cooperation in our endeavours to mainstream One Health. We are immensely thankful to the leadership at Brooke India, and their support, which has made it possible for this report to reach you.

Dr. Rajendra Pratap Gupta, PhD
Founder
Health Parliament

"Although One Health is recognized scientifically and institutionally, its progress remains sluggish."

Dr. Vishwa Mohan Katoch
Former Secretary to the Government of India, Department of Health Research, Ministry of Health & Family Welfare; Former Director-General, Indian Council of Medical Research (ICMR)

"It is a low priority for the government but a high priority for the population."

Dr. R.K. Srivastava
Former Director General of Health Service (DGHS), Government of India;
Former Chairman, Medical Council of India

"Healthcare functions like a tricycle, with human health as the front wheel and animal and environmental health as the two rear wheels. In India, the disproportionate focus on human health makes navigating this 'tricycle' challenging."

Dr. Abhijit Mitra
Animal Husbandry Commissioner, Department of Animal Husbandry and Dairying (DAHD), Ministry of Fisheries, Animal Husbandry and Dairying, Government of India

"The concept of 'Vasudhaiva Kutumbakam' reflects India's long-standing cultural alignment with One Health principles."

Dr. Shrikrishna Isloor
Associate Professor, Department of Veterinary Microbiology, Veterinary College, Karnataka Veterinary, Animal and Fisheries Sciences University

"India's large human and cattle populations make a One Health approach essential. Strengthening coordination, surveillance, research, and capacity-building is not just policy—it's a national priority for a resilient, sustainable future."

Dr. Rajendra Pratap Gupta
Founder, Health Parliament

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- **Dr. Venkatesh Thuppil**, Professor Emeritus, St. Johns Medical College. Recognized for outstanding contribution in introducing LEAD-free gasoline in India and establishing 48-LEAD clinics in the country aimed at mitigating the adverse impact of Lead on the community at large, for which he is widely acknowledged as the Lead Man of India.
- **Dr. Uday Kakroo**, Former Director, Animal Husbandry Department, Government of Jammu & Kashmir, India
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Historical Context of One Health

From Plagues to Present Times

The concept of One Health emphasizes the interconnectedness of human, animal, and environmental health. This holistic approach, integrating social, medical, and ecological perspectives, has ancient roots and continues to be relevant in modern times. Ancient thinkers such as Hippocrates (460 BCE–367 BCE) recognized the interdependence of public health and a clean environment. Hippocrates' principle "Primum Non Nocere" ("above all, do no harm") remains a cornerstone of medical ethics. Aristotle (384 BCE–322 BCE) furthered this understanding through his comparative studies of diseases across species, documented in his series "Historia Animalium."

Ayurveda's holistic approach aligns with the One Health concept, recognizing the interconnectedness of human, animal, and environmental health—an idea deeply embedded in ancient Indian thought. The Charaka Saṃhitā (Śārīrasthāna) emphasizes the relationship between individuals and their surroundings, where natural landscapes serve as sources of both herbal and non-herbal remedies. Healing is not just about treating diseases but also about maintaining ecological balance, ultimately linked to spiritual liberation (Mokṣa).

Ancient Indian medical texts, including the Suśruta Saṃhitā and Aṣṭāṅgahṛdaya Saṃhitā, highlight how human health is affected by interactions with animals. They discuss venomous bites, toxic exposures, and zoonotic diseases like rabies (jaltrāsa), detailing symptoms such as hydrophobia and behavioral mimicry of infected animals. These insights reflect a sophisticated understanding of disease transmission, reinforcing Ayurveda's relevance to modern One Health approaches that integrate human, animal, and environmental well-being (Weiss & Agashe, 2021).

In the 17th century, the Italian physician Giovanni Maria Lancisi (1654–1720) highlighted the role of the environment in disease transmission, advocating for measures such as swamp drainage and protection against biting flies to combat malaria. His work marked an early understanding of zoonotic diseases, where pathogens are transmitted from animals to humans.

In the 18th century, Claude Bourgelat, a French veterinary surgeon, founded the first veterinary faculty in Lyons, France, establishing formal education in animal health and its interactions with human health. Subsequent figures like Louis-René Villermé and Alexandre Parent-Duchatelet contributed to the development of veterinary public hygiene.

Rudolf Virchow (1821–1902), a German physician, anthropologist, pathologist, prehistorian, biologist, writer, editor, and politician, coined the term "zoonosis" and argued that human and animal health are intrinsically linked. He emphasized the importance of environmental factors in health outcomes, proposing improvements in living conditions as a remedy for persistent epidemics. This integration of human and animal health continued with Sir William Osler (1849–1919), a Canadian physician and one of the "Big Four" founding professors of Johns Hopkins Hospital, who promoted comparative medicine and biology.

In the 20th century, Dr. James Harlan Steele, an American veterinarian and Calvin Schwabe, widely known as the father of veterinary epidemiology, from the United States advanced the ecological nature of health. Steele established the veterinary public health unit at the CDC, while Schwabe's pioneering work in veterinary preventive medicine underscored the need for integrating human, animal, and environmental health.

The 21st century's One Health concept focuses on ecological processes as key determinants of health. This modern understanding draws on the intellectual history of ecology, veterinary and human medicine. Influential figures like Ernst Haeckel, who coined the term "ecology" in 1866, and Charles Darwin, with his theory of evolution, laid the groundwork for this integrated approach. The application of ecological concepts to health was solidified by Robert May and Roy Anderson's work in 1979, introducing the basic reproductive number (R0) of infectious diseases. This new field of disease ecology provided a framework for the One Health approach. Historical examples, such as the emergence of measles from the cattle virus rinderpest and human immunodeficiency virus (HIV) from simian immunodeficiency viruses, demonstrate the ongoing relevance of One Health. These cases underscore how changes in the environment and human behavior can trigger the emergence of new diseases, highlighting the importance of an integrated approach to health (Evans & Leighton, 2014).

Overall, One Health is not a new idea but a rediscovery of the fundamental connections between humans, animals, and the environment. This concept continues to evolve, driven by historical insights and modern scientific advancements, ensuring a holistic approach to health for future generations.

In more recent times, the formal development of the One Health concept gained significant momentum. The term "One Health" was first used in 2003-2004, linked to the emergence of severe acute respiratory syndrome (SARS) and avian influenza H5N1. The Manhattan Principles established in 2004 emphasized the connection between human and animal health and the importance of cross-disciplinary collaboration. Implementing the One Health approach globally is estimated to require $10.3 to $11.5 billion annually, involving financing from various sources, including multilateral development banks, international financial institutions, domestic resources, and the private sector (Mackenzie & Jeggo, 2019).

In December 2007, representatives from 111 countries and 29 international organizations met in New Delhi, India, for the International Ministerial Conference on Avian and Pandemic Influenza. This meeting encouraged the development of linkages between human and animal health systems for pandemic preparedness.

Following this, major organizations such as the Food and Agriculture Organization, the World Organization for Animal Health, the World Health Organization, the United Nations Children's Fund, and the World Bank developed a strategic framework for reducing risks of infectious diseases at the animal-human-ecosystem interface. This framework was officially released at the 2008 International Ministerial Conference in Sharm el-Sheikh, Egypt, focusing on areas where animals, humans, and ecosystems meet.

In 2009, the One Health Office was established at the United States Centers for Disease Control & Prevention to maximize external funding opportunities and support public health research that furthers the One Health concept. This office also facilitated data exchange among researchers across disciplines and sectors. The Public Health Agency of Canada hosted a technical meeting in March 2009 to further discuss the One World, One Health strategy, leading to key recommendations for advancing the One Health concept.

Subsequent international meetings, such as the 2010 International Ministerial Conference in Hanoi, Vietnam, and the Stone Mountain Meeting in Georgia, USA, further solidified the operationalization of One Health. These meetings emphasized the need for multisectoral cooperation to address health threats at the animal-human-ecosystem interface.

In 2011, the Tripartite Concept Note was published by the World Organization for Animal Health, the Food and Agriculture Organization, and the World Health Organization, proposing a long-term strategic direction for international collaboration. The first One Health Summit in 2012 in Davos, Switzerland, and the second International One Health Congress in 2013 further promoted collaboration across disciplines to improve public health.

The COVID-19 pandemic in 2020 underscored the importance of the One Health approach, demonstrating the need to address the interconnectedness of human, animal, and environmental health. By 2022, G20 countries sought guidance from the One Health Quadripartite to operationalize One Health approaches, showing a significant increase in global coordination efforts.

In 2024, the One Health Seminar organized by the United Nations Environment Programme in Vienna, Austria, aimed to strengthen, integrate, and develop activities for implementing the One Health concept globally. Additionally, the G20 Health Development Partnership hosted the annual Health 20 Summit at the WHO Headquarters to further promote international cooperation in One Health (Ancheta et. al., 2021).

In conclusion, the One Health concept has a rich history that continues to evolve. Its roots are in ancient civilizations and the advancements in understanding the interconnectedness of human, animal, and environmental health highlight the importance of this holistic approach for future generations.

Importance of One Health

The World Health Organization defines One Health as "an integrated, unifying approach that aims to balance and optimize the health of people, animals, and ecosystems. It recognizes the interdependence of the health of humans, domestic and wild animals, plants, and the wider environment" (WHO, 2017) Approximately 60% of emerging infectious diseases reported globally originate from animals, with over 30 new human pathogens detected in the past three decades, 75% of which came from animals (WHO, 2023). These facts make the One Health approach crucial for safeguarding public health, animal welfare, and environmental sustainability.

Over the past three decades, it has become evident that most emerging infectious diseases reported in humans originate in animals (zoonotic), particularly wildlife (SARS-CoV-2, Nipah, Avian Influenza) signifying the dependency of human health on the health of animals and the environment. Anthropogenic activities such as land use change, agriculture intensification, urbanization, indiscriminate use of antimicrobials, pesticides, insecticides, global trade, etc. are global stressors to the environment, increasing risks to human health. Public health challenges are not linear but require multi-disciplinary approaches, coordination, and mutual understanding between the stakeholders. We need to understand the fact that successful One Health collaborations benefit from the synergistic impact of combining the efforts of field-based disciplines and sectors. The challenge of effective engagements among medical, veterinary, ecological and social disciplines driven by human behaviors results in One Health implementation issues.

One Health has major implications for India. India with its diverse wildlife, one of the largest livestock populations and high density of human population carries heightened risks for inter-compartmental spread of diseases. The COVID-19 pandemic (zoonotic), recent epizootic incidences of Lumpy Skin Disease (LSD) in cattle (Shagun, 2022) and the constant threat of Avian Influenza (zoonotic and crossing species barrier) have highlighted the need for One Health approach. Neglecting environmental protection, disease emergency preparedness, health systems, hygiene & sanitation, infrastructure etc. have shown to have disastrous impacts on a country's economy and health in comparison to their duly adoption as prophylactic measures (for preventing disease epidemics incidences).

The One Health principle needs to be visualized beyond the scope of zoonoses. Along with public health, veterinary, conservation, and ecological professions are also becoming increasingly engaged with One Health. In addition to zoonotic diseases, infectious and contagious diseases transmitted at the livestock-wildlife interface in the forest fringe areas (Anthrax, Avian Influenza, African Swine Fever, Canine Distemper Virus, Foot-and-Mouth Disease, Peste des Petits Ruminants, etc.) specifically pose significant risks to livestock and wildlife health impacting livelihoods of marginal and small scale livestock farmers as well as biodiversity conservation and in turn human health, adversely.

Therefore, the framework for One Health implementation should be deliberated through wider large-scale consultations and piloted in a phased manner.
The World Health Organization has initiated the One Health Initiative to integrate human, animal, and environmental health efforts in collaboration with the Food and Agriculture Organization, the United Nations Environment Programme, and the World Organisation for Animal Health. The World Health Organization promotes multi-sectoral strategies to reduce health threats at the human-animal-ecosystem interface. The Quadripartite One Health Joint Plan of Action outlines the transformations needed to prevent and mitigate future health challenges (WHO, 2017).

In summary, the One Health approach is vital for addressing health issues at the human-animal-environment interface, optimizing zoonotic disease prevention, and improving healthcare delivery through efficient use of resources.

Source: The One Health European Joint Programme (OHEJP)

Sustainable Development Goals & One Health

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity. One Health emphasizes the interdependence of human, animal, and environmental health, while the Sustainable Development Goals provide a global framework for sustainable development, aiming to address social, economic, and environmental challenges. The Sustainable Development Goals encompassing social development, economic progress and environment represent a One Health strategy on its own. Thus, employing a One Health approach is seen as increasingly important to achieve the below-mentioned Sustainable Development Goals.

To meet Sustainable Development Goal 2, which aims to end hunger, One Health promotes safe food production and livelihoods by controlling livestock diseases, managing livestock health and productivity and sustainable farming practices. Integrating animal health into agriculture safeguards food supply stability and boosts resilience (FAO, 2023).

One Health directly contributes to Sustainable Development Goal 3 by addressing health issues such as Zoonotic diseases, Antimicrobial Resistance, the health risks at the human-animal-environment interface (food and water borne diseases). This collaborative approach has been vital in controlling diseases like acquired immunodeficiency syndrome, tuberculosis, and malaria (CDC, 2023). Monitoring and surveillance in human and animal populations for diseases like COVID-19, Nipah, Brucellosis, rabies etc. have helped safeguard human health and prevent outbreaks.

One Health aids Sustainable Development Goal 6 by advocating for sustainable water management, reducing pollution from agricultural runoff and animal waste, and protecting shared water resources from contamination (UNEP, 2023).

As climate change reshapes disease patterns and severity, One Health's focus on monitoring of ecosystem health becomes central to Sustainable Development Goal 13. Promoting adoption of mitigation and adaptation strategies to minimize climate change effects helps manage vector-borne diseases like malaria, dengue, lumpy skin disease, bluetongue etc. which are sensitive to changing climates.

One Health underscores the importance of maintaining healthy aquatic ecosystems to prevent the spread of waterborne diseases and support marine biodiversity. By ensuring clean water and protecting marine life, we safeguard fisheries that provide food and livelihoods for millions. Sustainable management of oceans, rivers, and lakes directly contributes to SDG 14, promoting ecosystem resilience and long-term human and environmental well-being.

One Health focuses on the interconnectedness of land ecosystems, wildlife, and human health, addressing the risks of zoonotic diseases that originate in disrupted habitats. By preventing deforestation, promoting sustainable agriculture, and conserving biodiversity, we reduce disease spillover risks and enhance ecosystem stability. These efforts align with SDG 15's vision of preserving terrestrial ecosystems for future generations.

Global partnerships, a focus of Sustainable Development Goal 17, are the backbone of One Health. Collaborative initiatives, such as the Global One Health Initiative, unite sectors worldwide to address zoonotic diseases, promoting knowledge-sharing and a coordinated response to health threats (OIE, 2023).

The One Health approach is pivotal to achieving Sustainable Development Goals by tackling interconnected health threats shared by humans, animals, and ecosystems. Embracing a One Health framework within the Sustainable Development Goal context enhances global health outcomes and promotes resilient ecosystems, helping build a sustainable future.

Role of G20 in Advancing One Health

The concept of One Health has gradually gained prominence within the G20* framework over the past decade. This integrated approach recognizes that health threats do not respect species boundaries and that addressing these challenges requires a multidisciplinary and collaborative effort.

2015: The G20 Antalya Summit (Turkey) 

In 2015, the G20 Antalya Summit primarily focused on economic and financial stability. However, the increasing recognition of the interconnections between human, animal, and environmental health began to surface during the discussions. Although there were no formal declarations on One Health, the summit laid the groundwork for future considerations by acknowledging the necessity of integrated health approaches to address complex global health challenges.

2017: The G20 Hamburg Summit (Germany) 

The 2017 G20 Hamburg Summit marked a significant milestone for One Health. For the first time, One Health was explicitly mentioned in the Leaders' Declaration**. The summit acknowledged the importance of addressing health threats at the human-animal-environment interface. This recognition underscored the commitment of G20 nations to promote health security and strengthen health systems by incorporating One Health approaches into their strategies (G20 Leaders' Declaration, 2017).

2019: The G20 Osaka Summit (Japan) 

At the G20 Osaka Summit in 2019, the Leaders' Declaration highlighted the significance of implementing One Health strategies to combat antimicrobial resistance (AMR) and zoonotic diseases. This summit emphasized the urgent need for collaborative efforts to enhance global health security. The commitment to One Health was reflected in the increased emphasis on addressing these issues through integrated approaches, reinforcing the global resolve to tackle health threats comprehensively (G20 Leaders' Declaration, 2019).

2020: The G20 Riyadh Summit (Saudi Arabia) 

The COVID-19 pandemic underscored the urgency of One Health approaches during the G20 Riyadh Summit in 2020. The discussions focused extensively on the pandemic response, highlighting the interconnectedness of health sectors. The summit recognized that effective pandemic preparedness and response plans must integrate One Health principles to address the root causes of zoonotic diseases and prevent future outbreaks. This reinforced the resolve of G20 nations to adopt One Health strategies in their health security frameworks (G20 Leaders' Declaration, 2020).

2021: The G20 Rome Summit (Italy) 

In 2021, the G20 Rome Summit saw leaders reiterating their commitment to One Health. The summit specifically mentioned the role of One Health in preventing future pandemics and addressing Antimicrobial Resistance. This acknowledgement was coupled with agreements to support One Health research and implementation through funding and international cooperation (G20 Leaders' Declaration, 2021).

2022: The G20 Bali Summit (Indonesia) 

The 2022 G20 Bali Summit focused on sustainable development and strengthening health systems, with One Health as a core component. Discussions during this summit included the economic benefits of preventing pandemics through integrated health approaches. The summit resulted in enhanced collaboration on One Health initiatives, with commitments from G20 nations to share data and best practices (G20 Leaders' Declaration, 2022).

2023: The G20 New Delhi Summit (India) 

Under the theme "One Earth, One Family, One Future," the G20 New Delhi Summit in 2023 emphasized the critical role of One Health in addressing global health challenges. Specific initiatives were discussed to operationalize One Health strategies, focusing on resource allocation and policy implementation. The summit culminated in agreements to allocate resources and implement policies that support One Health at both national and international levels. This marked a significant step towards integrating One Health into the global health agenda (G20 Leaders' Declaration, 2023).

The discussions on One Health at G20 summits have evolved from initial acknowledgements to concrete commitments and actionable strategies. Each summit has built upon the previous ones, reinforcing the importance of integrated approaches to health. This progression has culminated in stronger global cooperation and resource allocation for One Health initiatives, highlighting the critical need for a unified approach to global health security.

Source: Getty Images/iStockphoto

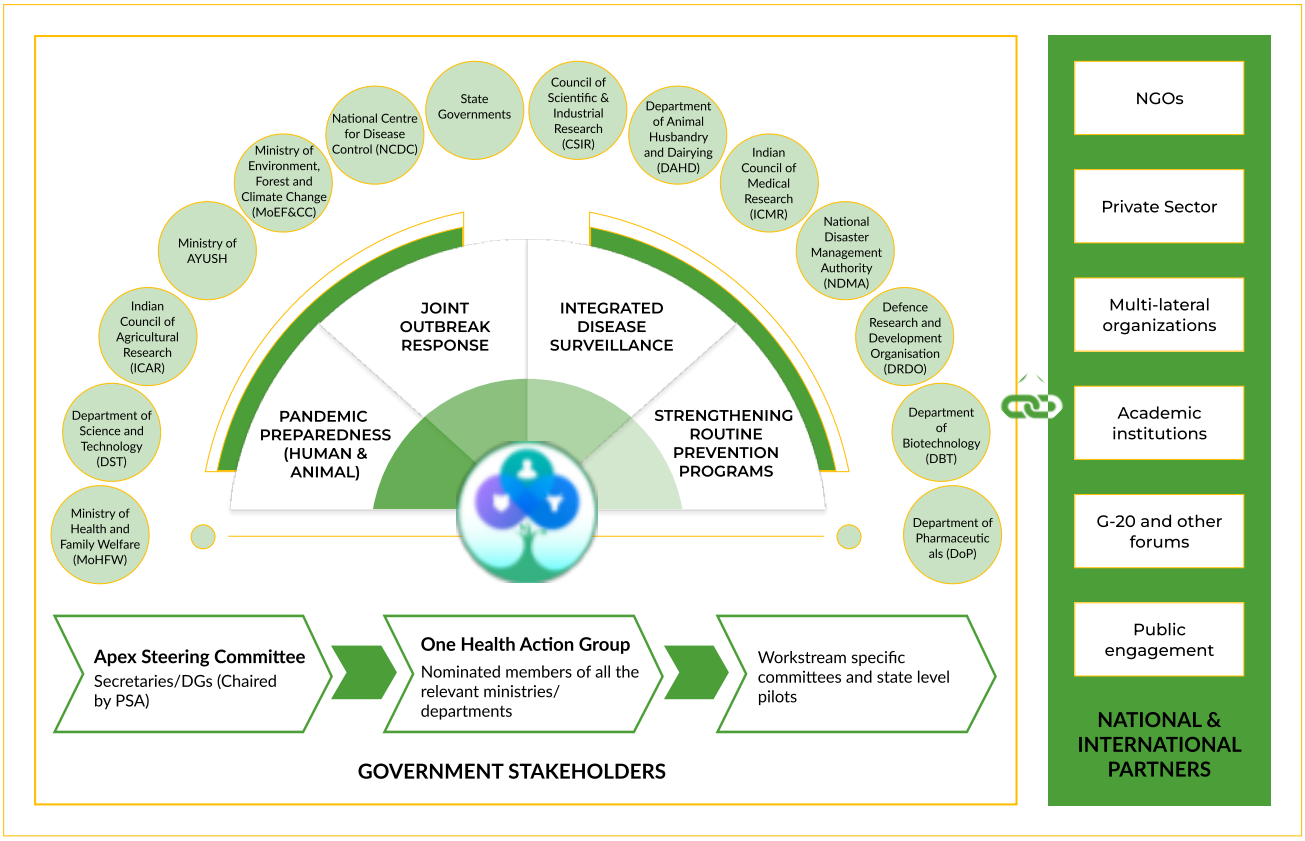
*The G20, or Group of Twenty, is a premier forum for international economic cooperation. It consists of 19 sovereign countries along with the European Union and the African Union. Established as a response to global financial crises, the G20 addresses economic issues such as financial stability, sustainable development, climate change, and global trade.

**The G20 Leaders' Declaration typically outlines collective commitments and policy priorities agreed upon by the leaders of the G20 nations during their summit meetings. These declarations address various global challenges and set agendas for cooperation on economic, environmental, and social issues.

One Health Approach in India

The One Health concept, which integrates human, animal, and environmental health, has steadily gained prominence in India over the past decade. This essay provides a detailed account of the significant milestones and the roles of various ministries and departments in promoting the One Health approach.

Globally, the One Health initiative started to gain traction around 2015. India began acknowledging the critical importance of integrating human, animal, and environmental health to effectively manage health threats that cross these domains. This period marked the beginning of increased awareness and preliminary efforts to align with the One Health principles.



Source: Office of Principal Scientific Advisor to the Government of India

National One Health Mission

In 2020, the Government of India launched the National One Health Mission (NOHM), a cross-ministerial comprehensive effort to coordinate, support, and integrate all the existing One Health activities in the country and fill gaps where it is appropriate. This mission aims to achieve overall pandemic preparedness and integrated disease control against priority diseases of human, animal and plant sectors, with early warning systems built on integrated surveillance systems within and across human, animal, and environmental sectors to address communicable diseases of zoonotic, transboundary animal diseases and diseases of epidemic/pandemic potential. (Office of the Principal Scientific Advisor).

The office of the Principal Scientific Advisor to the Government of India conducted a brainstorming Session to explore potential collaborations with Multilateral Organizations under the National One Health Mission in the month of December 2024 under the National One Health Mission (NOHM).

It was highlighted by the Principal Scientific Advisor to the Government of India, that there is a need to identify synergies and define joint areas of collaboration of multilateral organizations with the National One Health Mission to align the efforts for impactful implementation, leveraging resources, and building capacity at national and state levels.

The multi-ministerial and non-governmental stakeholders like the World Health Organization, the Food & Agriculture Organization, the World Bank, the United Nations Development Programme, the Asian Development Bank, the World Organisation for Animal Health, Health Parliament, Brooke India etc. presented their work on One Health.

Ministry of Science and Technology

One Health Consortium

In 2021, the Department of Biotechnology (DBT) under the Ministry of Science and Technology launched the One Health Consortium. This initiative was designed to create a robust surveillance network for zoonotic diseases and foster collaborative research efforts. The consortium brought together multiple institutions to work on zoonotic disease research, surveillance, diagnostics, and response mechanisms (PIB, 2021).

Ministry of Health and Family Welfare (MoHFW)

The Ministry of Health and Family Welfare is at the forefront of the National One Health Mission. It leads efforts to promote public health, enhance disease surveillance, and combat AMR. The ministry played a pivotal role in implementing the National Action Plan on AMR, focusing on a holistic approach to managing health threats.

National Action Plan on Antimicrobial Resistance (NAP-AMR)

In 2018, the Ministry of Health and Family Welfare, Government of India, launched the National Action Plan on Antimicrobial Resistance. This plan underscored the necessity of a One Health approach to tackle Antimicrobial Resistance, a growing global health threat and aimed to improve surveillance, reduce infections, and promote the responsible use of antimicrobials in humans, animals, and agriculture (Ranjalkar & Chandy, 2019).

National Centre for Disease Control (NCDC)

The National Centre for Disease Control coordinates responses to outbreaks of zoonotic diseases. It is involved in disease surveillance and control measures, playing a critical role in managing health emergencies that arise from zoonotic disease outbreaks.

Indian Council of Medical Research (ICMR)

The Indian Council of Medical Research conducts extensive research on the human health aspects of the One Health approach. It is involved in disease surveillance, epidemiological studies, and developing strategies to mitigate health threats that impact human populations.

Ministry of Agriculture and Farmers' Welfare (MoAFW)

The ministry aims for the increased production and productivity of agri-horticultural crops using environmentally friendly science and technology while ensuring increased net farm income to the farmers through various schemes, programs and welfare measures.

Indian Council of Agricultural Research (ICAR)

Indian Council of Agricultural Research focuses on animal health and agricultural practices. It conducts research on zoonotic diseases and livestock management, contributing to the overall One Health strategy by ensuring healthy animal populations and safe agricultural practices.

Ministry of Fisheries, Animal Husbandry and Dairying

The Department of Animal Husbandry and Dairying (DAHD) under the Ministry of Fisheries, Animal Husbandry and Dairying has been proactive in implementing the One Health approach, aiming to integrate human, animal, and environmental health for a comprehensive and sustainable health system in India.

Early Collaborations and Pilot Projects

The One Health approach in India gained momentum with the support of the Bill and Melinda Gates Foundation (BMGF). On April 6, 2022, the Department of Animal Husbandry and Dairying launched its first pilot project in Uttarakhand, followed by another in Karnataka on June 28, 2022. These projects were pivotal in showcasing the importance of integrating animal, human, and environmental health, especially in regions with rich biodiversity like Uttarakhand. The state's dense wildlife population necessitated a focus on maintaining the health of animals, humans, and the environment through coordinated efforts in conservation and public health initiatives (Department of Animal Husbandry & Dairying, 2024).

To further strengthen this initiative, a One Health Support Unit (OHSU) was established at the Department of Animal Husbandry and Dairying. This unit, comprising experts from various sectors, including veterinary sciences, epidemiology, wildlife, and data management, was created to provide both technical and administrative support. The project is overseen by a Project Steering Committee, chaired by the Secretary of the Department of Animal Husbandry and Dairying and guided by the Empowered Committee on Animal Health, led by the Principal Scientific Advisor to the Prime Minister of India. This structured approach ensures that the project is well-coordinated and aligned with national health priorities (Department of Animal Husbandry & Dairying, 2024).

Expansion of One Health Initiatives

The expansion of the One Health framework continued with significant developments in 2023. On September 13, 2023, the Department of Animal Husbandry and Dairying, in collaboration with the World Organization for Animal Health, organized a multi-sectoral workshop titled "Risk-based Management of Spillover Events in Wildlife in India." The workshop focused on enhancing knowledge of wildlife-origin disease risks, conducting gap analyses, and fostering communication among stakeholders. The discussions highlighted the importance of cross-sectoral collaboration and pandemic preparedness, emphasizing the need for a robust One Health approach to address emerging zoonotic diseases (World Organization for Animal Health, 2023).

In November 2023, India hosted the 33rd Conference of the World Organization for Animal Health Regional Commission for Asia and the Pacific. This event, organized by the Department of Animal Husbandry and Dairying, brought together global and regional experts to discuss pressing animal health issues such as bird flu, rabies, and foot-and-mouth disease. The conference underscored the necessity of collaborative regional approaches, information sharing, and establishing multi-sectoral coordination mechanisms involving veterinary services, public health, and environmental health. The discussions also emphasized the need for equitable financial and resource allocation to support preventive measures like vaccinations, disease intelligence, and competent laboratories (Department of Animal Husbandry & Dairying, 2023).

Strategic Partnerships and Future Directions

On May 20, 2024, DAHD signed a Memorandum of Understanding (MoU) with the United Nations Development Programme, India, to enhance the digitalization of vaccine cold chain management, capacity building, and communication planning. This partnership aims to address the challenges of immunization coverage in a country with a large human and livestock population. By leveraging United Nations Development Programme's global expertise and Department of Animal Husbandry and Dairying's mandate, the collaboration seeks to create a robust framework for managing animal health and welfare, thereby contributing to the broader One Health goals in India (United Nations Development Programme, 2024).

The importance of One Health was further highlighted on July 17, 2024, during a high-level brainstorming session on Avian Influenza convened by the Department of Animal Husbandry and Dairying. The session focused on surveillance and vaccination strategies under the One Health approach, particularly in light of recent outbreaks in the USA. Experts from various sectors emphasized the need for enhanced environmental surveillance and proactive coordination to prepare for zoonotic diseases like Avian Influenza. The discussions reinforced the importance of integrating human, animal, and environmental health to effectively address emerging health threats (Department of Animal Husbandry & Dairying, 2024). Revised and realigned scheme of the Department of Animal Husbandry and Dairying with a $1200 million budget outlay & $6660 million total investment aims to reduce disease burden, improve animal production & One Health outcomes.

Animal Pandemic Preparedness Initiative (APPI): Launched in April 2023, to enhance India's preparedness and response to animal pandemics, particularly zoonotic diseases that threaten both animal and human health. APPI focuses on disease surveillance, creating disease model algorithms, early warning and response systems, outbreak investigation, vaccine development, and building disaster resilience.

National Digital Livestock Mission: The National Digital Livestock Mission is a joint initiative of the Department of Animal Husbandry & Dairying, Government of India, and the National Dairy Development Board. It aims to digitize the livestock sector, improve service delivery to farmers, and enhance data-driven decision-making for better livestock management. Bharat Pashudhan Application is an initiative under the National Digital Livestock Mission, aiming to create a farmer-centric, technology-driven ecosystem in India's livestock sector. The mission focuses on establishing a comprehensive digital livestock database, enhancing farmer services, and providing timely information updates. A key component of NDLM is assigning a unique 12-digit barcoded tag ID to all bovines and small ruminants, which plays a crucial role in universal Foot and Mouth Disease (FMD) vaccination under the National Animal Disease Control Programme. This comprehensive database facilitates effective sero-monitoring and sero-surveillance, enabling authorities to assess population immunity and track the success of vaccination campaigns (Bharat Pashudhan Portal).

Pandemic fund proposal: The Department of Animal Husbandry and Dairying bagged a G20 Pandemic Fund of $25 million. Implementing entities are the World Bank, the Department of Animal Husbandry and Dairying and the Asian Development Bank.

Mobile Veterinary Units (MVUs): 4340 Mobile Veterinary Units have been sanctioned for 14 operational states to enhance the accessibility of veterinary services. Helpline: 1962.

In conclusion, the Department of Animal Husbandry and Dairying has made significant strides in implementing the One Health approach in India. Through strategic partnerships, pilot projects, and international collaborations, the Department of Animal Husbandry and Dairying has laid the foundation for a comprehensive health system that integrates human, animal, and environmental health. As the world continues to face challenges from emerging zoonotic diseases, the One Health framework will play a crucial role in ensuring a healthier and more sustainable future.

Global Impact – One Health

Promoting collaboration across multiple disciplines, the One Health approach strives to achieve optimal health outcomes worldwide. This integrated framework has become increasingly vital in tackling complex health challenges that transcend conventional boundaries. In this section, we delve into global best practices in One Health and explore real-world implementations across diverse regions.

Region-wise examples of Implementation

Africa

Nigeria utilized the One Health approach during the Lassa fever outbreak, implementing an integrated surveillance system in collaboration with the World Health Organization, the Food and Agriculutre Organization, and other partners. This led to more effective control measures and reduced transmission rates (Machalaba, 2021).

Asia

Bangladesh's One Health initiatives focus on combating Antimicrobial Resistance. By integrating efforts across human health, veterinary services, and agriculture, Bangladesh has developed a national action plan that includes surveillance, regulation of antibiotic use, and public awareness campaigns (Rai, 2024).

Europe

Germany's One Health strategy has been pivotal in managing zoonotic diseases like avian influenza. Collaboration between veterinary and public health authorities ensures coordinated responses and efficient use of resources (Haider, 2023).

North America

The U.S. CDC's One Health Office addresses zoonotic diseases, food safety, and environmental health issues. Notable success includes the control of West Nile virus through coordinated mosquito control, wildlife management, and public health interventions (Ogunseitan, 2022).

South America

In the Amazon, Brazil's One Health initiatives involve environmental agencies, health departments, and indigenous communities to address deforestation and habitat loss, reducing the risk of zoonotic diseases (WHO, 2023).

Source: Infonomics Society

One Health: The Way Forward

The One Health approach has gained traction over the past decade as a critical framework for addressing complex global health challenges. As the world becomes increasingly interconnected through globalization, urbanization, and environmental changes, the need for an integrated approach to health is more pressing than ever. While there have been notable successes in implementing One Health, the approach also faces significant challenges that must be addressed to fully realize its potential. This section explores five key successes and five major challenges in implementing One Health, drawing on examples from around the globe to illustrate these points.

Successes in Implementing One Health

Early Detection of Zoonotic Diseases

One of the most significant successes of the One Health approach has been the early detection and response to zoonotic diseases, which are diseases that can be transmitted between animals and humans. For example, the U.S. Agency for International Development's (USAID) PREDICT project, part of the Emerging Pandemic Threats (EPT) Program, successfully identified over 1,000 new viruses in wildlife and livestock populations, including novel coronaviruses (USAID, 2020). This early detection capability has been crucial in preventing potential pandemics by enabling timely interventions.

Interdisciplinary Collaboration

The One Health framework has fostered interdisciplinary collaboration between veterinarians, medical professionals, environmental scientists, and policymakers. This collaboration is exemplified by the Global Health Security Agenda, which promotes a multi-sectoral approach to global health security (GHSA, 2021). Through the Global Health Security Agenda, countries like Uganda have successfully integrated veterinary and human health services to improve disease surveillance and response, reducing the impact of zoonotic diseases such as Rift Valley Fever.

Integrated Disease Control Programs

Integrated disease control programs that address both human and animal health have seen success under the One Health approach. In Bangladesh, for instance, the government implemented a joint avian influenza control program that involved both the Ministry of Health and the Ministry of Fisheries and Livestock. This program led to a significant reduction in avian influenza cases in both poultry and humans, showcasing the effectiveness of a coordinated approach (Rahman et al., 2017).

Capacity Building and Training

One Health initiatives have also focused on capacity building and training to improve the skills of health professionals in managing zoonotic diseases. In Southeast Asia, the One Health Workforce project has trained over 7,000 professionals in One Health principles and practices, enhancing the region's ability to respond to health threats (One Health Workforce, 2019). This training has been particularly effective in improving response times to outbreaks of diseases such as H5N1 and Ebola.

Policy Integration and Advocacy

The success of One Health has also been seen in its growing integration into national and international health policies. The World Health Organization, the Food and Agriculture Organization, and the World Organisation for Animal Health have jointly endorsed the One Health approach, leading to its adoption in national policies in countries like Vietnam and Thailand (WHO, 2017). Both these countries have developed national One Health strategies that align with global health security goals, ensuring a more coordinated and effective response to health threats.

Challenges in Implementing One Health

Fragmented Governance Structures

The effective implementation of One Health necessitates cohesive collaboration among human, animal, and environmental health sectors. However, the current governance framework is fragmented, with responsibilities dispersed across various ministries and agencies. This division often leads to inefficiencies and delays in addressing zoonotic diseases.

For instance, the lack of a unified national policy hampers coordinated efforts, as highlighted by Dasgupta et al. (2021), who emphasize the need for intersectoral One Health committees to bridge these gaps.

Coordination Issues

Inter-ministerial and inter-sectoral coordination is pivotal for the success of One Health initiatives. In India, challenges arise due to overlapping responsibilities and insufficient communication between sectors such as health, agriculture, and environment. The absence of a cohesive framework often results in fragmented efforts. As noted by Asaaga et al. (2021), effective cross-sector convergence is hindered by limited policy visibility and conflicting departmental priorities, underscoring the necessity for a unified national One Health policy.

Infrastructure and Workforce Deficits

The successful operationalization of One Health is constrained by inadequate infrastructure and a shortage of trained professionals. Limited diagnostic and surveillance capacities, especially in rural and peri-urban areas, impede timely detection and response to zoonotic threats. Furthermore, there is a dearth of professionals skilled in interdisciplinary fields essential for One Health, such as veterinary public health and environmental science. Taaffe et al. (2023) highlight that while intersectoral collaboration exists, it is often limited to specific research activities or outbreak responses, indicating a need for sustained investment in infrastructure and workforce development to support continuous One Health activities at local levels.

Financial Constraints

Financial constraints are another significant challenge for One Health implementation. Many countries, particularly in the Global South, struggle with limited resources and competing priorities. In Nigeria, for example, insufficient funding for veterinary services and public health infrastructure has hampered efforts to control zoonotic diseases like Lassa fever (Ehichioya et al., 2020). Without adequate financial investment, the long-term sustainability of One Health initiatives remains in question.

Ethical Dilemmas in Resource Allocation

Ethical dilemmas arise in One Health implementation, particularly in the allocation of limited resources during outbreaks. For instance, during the Ebola outbreak in West Africa, decisions had to be made about who would receive limited medical supplies and treatments. These decisions often led to ethical controversies, as they raised questions about fairness and equity in healthcare delivery (Hewlett & Hewlett, 2017). Such dilemmas can undermine public trust and complicate the implementation of One Health strategies.

Legal and Regulatory Challenges

Legal and regulatory challenges also pose significant obstacles to One Health. Different countries have varying legal frameworks for addressing health issues, leading to inconsistencies in how One Health is implemented. In the United States, for example, the lack of a unified legal framework for One Health has led to jurisdictional conflicts between federal and state agencies, complicating efforts to control zoonotic diseases like Lyme disease (Bier & Peterson, 2019). These legal complexities can hinder timely and effective responses to health threats.

Lack of Data and Monitoring Systems

The effective implementation of One Health requires robust data and monitoring systems to track the spread of diseases and the effectiveness of interventions. However, many countries lack the necessary infrastructure for comprehensive disease surveillance. In Africa, for instance, weak health information systems have made it difficult to monitor and respond to outbreaks of zoonotic diseases like Rift Valley Fever (FAO, 2019). Without accurate data, it is challenging to make informed decisions and evaluate the impact of One Health interventions.

The One Health approach has demonstrated significant successes in early disease detection, interdisciplinary collaboration, integrated disease control, capacity building, and policy integration. However, the approach also faces substantial challenges, including socio-political barriers, financial constraints, ethical dilemmas, legal complexities, and inadequate data systems. To fully realize the benefits of One Health, it is crucial to address these challenges through increased political commitment, financial investment, ethical frameworks, legal harmonization, and improved surveillance systems.

Role of Civil Society Organizations in advancing One Health initiative

Civil Society Organizations (CSOs) play a crucial role in advancing the One Health agenda and addressing One Health challenges due to their reach to the community, advocacy capabilities, and ability to bridge gaps between policy and practice. They bridge the gap between communities, governments, and stakeholders. Their contributions are critical in implementing the integrated approach of One Health, which connects human, animal, and environmental health.

Health Parliament and Brooke Hospital of Animals (India) or Brooke India (BI) have been actively involved in various One Health initiatives. They have been collaborating with diverse stakeholders & CSOs to promote health and welfare while partnering with various agencies and institutions. Some of the significant conferences and seminars have been done in the past:

- The role of Civil Society Organizations in advancing One Health principles with the International Livestock Research Institute.
- Brooke India worked with the National Academy of Veterinary Sciences (India) and gave recommendations on Continuous Veterinary Education in India.
- Brooke India collaborated with the National Academy of Veterinary Sciences (India) and organized a conference on; Safe carcass disposal and its effective commercial utilization to safeguard One Health.
- Health Parliament and Brooke India organized a spotlight session on One Health Innovations and Digital Technologies at the Global Digital Health Summit 2024.
- Brooke India facilitated a seminar with the One Health Poultry Hub and Jawaharlal Nehru University, on multi-sectoral governance of antimicrobial resistance and studied contextual factors influencing antibiotic use among informal prescribers.
- Brooke India participated in the launch of the Pandemic Fund Project to strengthen animal health security in India.
- Organized One Health awareness camps. As part of the C20 Integrated Holistic Health Working Group under the G20 Health agenda, it provided recommendations for increasing investments in animal health to enhance pandemic preparedness.
- Brooke India, under the One Health approach, collaborated with (Creindia) & Worldwide Veterinary Service on Rabies Eradication India (Creindia): Skill enhancement of field veterinarians for improved surveillance of rabies in livestock and wildlife in Assam.

- Provided recommendations on pandemic preparedness to the Ministry of Health and Family Welfare and the Ministry of External Affairs.
- Health Parliament, in collaboration with Brooke India, gave recommendations on strengthening the animal health system under One Health in the G20 Health agenda.
- Health Parliament and Brooke India jointly developed a dedicated Professional Development Forum, a platform for in-depth discussions on topics related to One Health. Professional Discussion Forums are specific discussion forums on the Health Parliament Mobile App available on Android and iOS.
- Health Parliament, in collaboration with Brooke India, drafted the report titled One Health in India - 2024: Overview and Recommendations.
- One Health Poultry Hub, Jawaharlal Nehru University: Contextual factors influencing usage of Antibiotics in Animals among Informal Prescribers in two states of India,
- Brooke India, in collaboration with One Health Support Unit organized two Awareness sessions and One Health camps in Dehradun & Kashipur, Uttarakhand.

Recommendations

Education & Awareness

- Awareness campaigns for community people and inclusion of marginalized communities in One Health initiatives specifically among women who lead in managing the livestock and agriculture ecosystems in their households.
- Awareness campaigns for primary, secondary, and tertiary education levels.
- Awareness campaigns for urban and rural local government levels.
- Essay & Poster Competition on One Health at the school level.
- Introduction of Degree/Diploma course in One Health.
- Introduction of a Credit-based course in One Health in all veterinary, medical and environmental studies curricula.
- One Health principles should be incorporated into medical, veterinary, and environmental education to create a foundation of cross-disciplinary understanding.
- Involving rural youth in One Health initiatives to enhance local awareness, participation, and impact.

Capacity Building & Training

- Professional training courses on the One Health approach and its implementation should be launched for public health, veterinary and forest department staff, ecologists and agriculturalists which can be placed as interdisciplinary academic programs.
- One Health Field Fellowship jointly offered by Health Parliament & Brooke India.
- Creation of employment opportunities in One Health under the central, state, and local government.
- Engagement from the Prime Minister's Office and NITI Aayog is necessary for broader support and direction.
- Establishment of State One Health Units.

Governance & Policy Development

- Establishment of Inter-State Working Group on One Health.
- Establishment of an inter-ministerial group.
- Creation of a parliamentary standing committee on One Health.

- A dedicated coordination mechanism is essential to streamline efforts.
- **A comprehensive One Health policy should be drafted to guide future regulations and amendments.**
- Policymakers need to prioritize One Health in national agendas, supported by increased government funding and CSR initiatives from the private sector.
- Emphasis on creating a national consortium of One Health organizations, and engaging government bodies and non-governmental organisations/civil society organizations (working at the grassroots level closely with the communities) across agriculture, health, environment, and biotechnology sectors. The proposed consortium would support annual reporting and accountability, with real-time data-sharing to assess outcomes and ensure investment.

Research & Data-Driven Decision-Making

- Increased research and innovation are essential to address emerging One Health challenges.
- More research is needed on how livestock health influences human health.
- Decision-making should be based on field-based data or research, based on local needs and challenges.
- Regular assessments of ecosystem health are critical.
- There is insufficient data generation specific to One Health, impeding informed decisions.
- Decision-making should be based on Indian-led data or research.
- Mapping hotspot areas is crucial for targeted interventions.
- Data on antimicrobial use across sectors is crucial to address antimicrobial resistance comprehensively.
- Effective integrated surveillance is essential for an early-warning system addressing cross-sector health threats.
- Data needs to be generated for the impact of climate change on health systems (especially vector-borne diseases) and the impact of production of livestock and agri-food systems on climate change, to derive climate change adaptation and mitigation strategies.
- Effective One Health implementation depends on real-time data sharing among stakeholders to monitor and respond promptly.

Collaboration & Multi-Sectoral Engagement

- National One Health Coordination Center under NITI Aayog should be established.
- Effective collaboration is required among clinicians, ecosystem scientists, and veterinarians.
- Greater coordination among ministry secretaries, and technocrats across ministries to implement One Health initiatives effectively.
- Surveillance and management of diseases in wild animals require dedicated resources and expertise.
- Engaging government bodies across agriculture, health, environment, and biotechnology sectors to align policy, funding, and research efforts.

Resource Allocation & Funding

- Increased funding from government and Corporate Social Responsibility initiatives by private-sector and multinational corporations.
- Corporates should contribute research funding for One Health initiatives.
- Invest more in Animal Health Systems.

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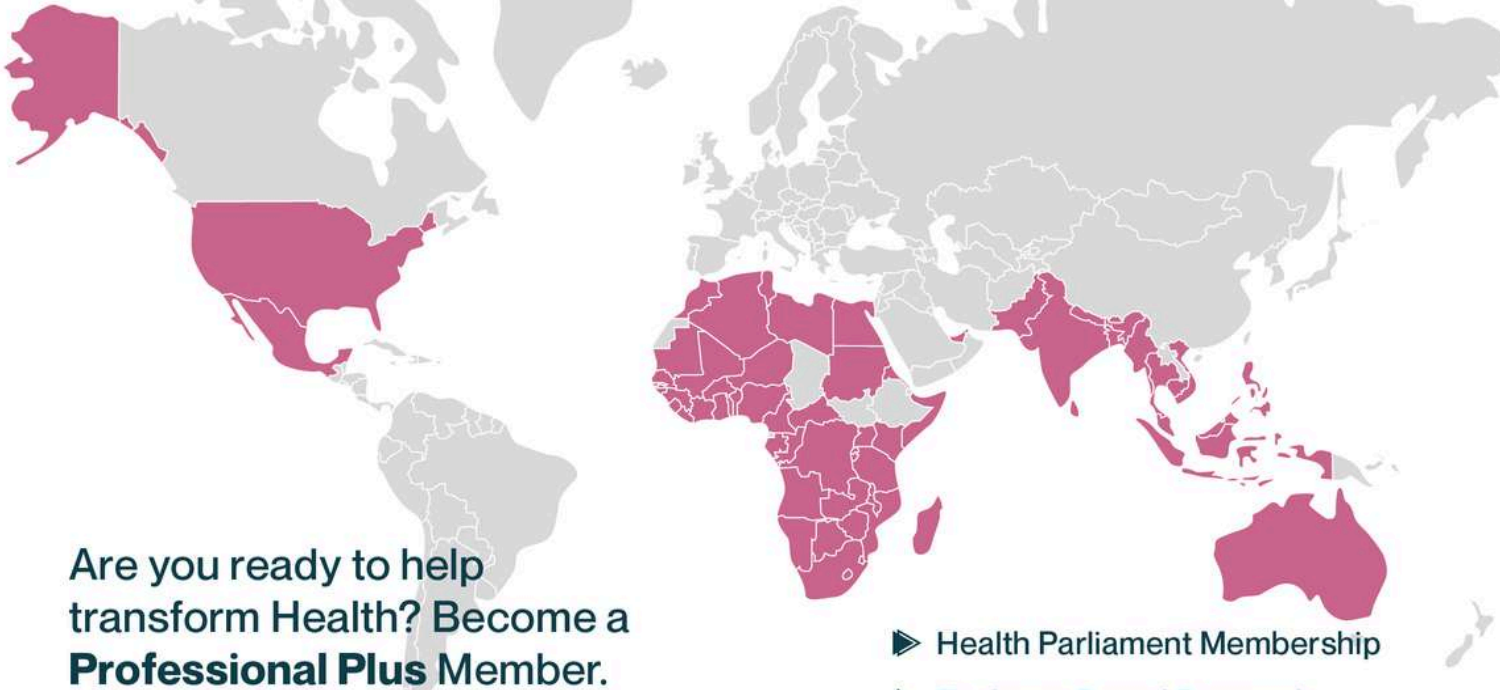

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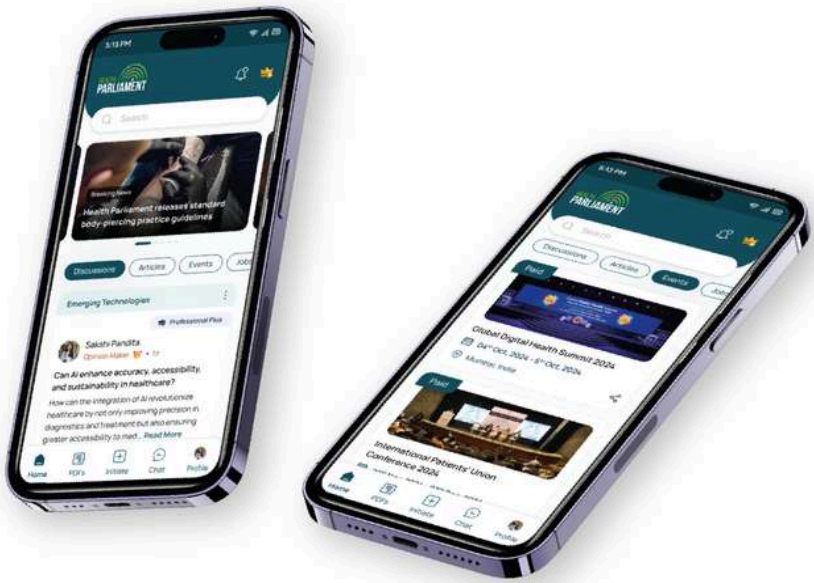

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