Editorial

Uniting for One Health; Better Late than Never

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'Human beings' or 'Homo sapiens' are one of the most intelligent species that ever existed on Earth, if not in the Universe. The hallmark of this species has been to first 'create problems' and then try to find 'solutions' to them. Nothing wrong in that approach if we compare it to the approach of 'modern medicine' that talks only about diagnostics and therapeutics, there is hardly any thought given to 'primary passive prevention'. Had there been an approach to preservation of ecosystems, we would not have been addressing 'One Health' separately. Health of all living and non-living parts of an ecosystem was always intertwined and dependent on each other.

Most infectious diseases today originate in animals and can thereafter spread globally, due to increasing animal – human interaction, resulting from encroachment on animal territory by human settlement expansion as well as eating habits in certain parts of the world. Increasing human encroachment on nature has resulted biodiversity loss, ecological disruption, and climate change. These have compounded the infectious public health threats that are more distressing to human health in marginal households, especially in middle- and low-income countries. Recent example has been COVID-19 that significantly impacted the entire World since its first reported case in China in the middle of November 2019, and has since resulted in multiple waves of infections, with millions of confirmed cases and hundreds of thousands of deaths, most of them in the second wave during mid-2021.

Response to COVID-19 was significantly important for our Institution, NCDC, as it showcased the importance of Government Health Institutions, both hospitals and the Public Health Institutions. These Institutions stood behind India's solid response to this grave pandemic. India had followed a flexible, evidence based, and scenario based public health approach to contain COVID and successfully contained it with support from remarkably unified approach from the Federal as well as Government Health and Public Health Sectors in a significant 'One Health approach and policy'. Governments and Officers at all levels deserve accolades for their openness to vary their response to the needs, with an inspiring 'Prime Minister' leading from the front like a 'true General'.

National Centre for Disease Control (NCDC), a premier public health institute in the country, played a pivotal, proactive role in Public Health response since the advent of Covid-19 pandemic, starting from operationalizing the first 24x7 call centre, providing technical expertise and guidance for early detection and response, strengthening surveillance, establishing a National referral laboratory system along with ICMR, infection prevention and control practices, genomic surveillance through INSACOG network, deployment of rapid response teams, case management, logistics, procurement & supply management, risk communication, community engagement, drafting of technical guidelines, SOPs & travel advisories, PIB press releases, inter-sectoral coordination, communication with State Health Departments and International agencies WHO and CDC.

Pandemic outbreak (linked to bats in China) has shown that it is not only about addressing diseases from a human health point of view (zoonoses) but to address the livestock and wildlife also. This has also been evident in outbreaks

of Nipah, Crimean Congo hemorrhagic fever (CCHF) and Scrub typhus, which has clearly demonstrated close connection between humans, animals, through a shared environment. This highlights the need for a One Health approach, which will help in preventing/containing spread of diseases if pre-emptive epidemiological actions are taken. Zoonoses are not new to mankind, malaria being one of the most ancient examples.

Globally, zoonotic diseases affect more than two billion people worldwide and resulting in more than two million deaths every year. In India, approximately 60% of pathogens infecting humans and 75% of all emerging human infections are zoonotic in nature due to its enormous human and animal populations and a complex agrarian economy combined with rapid socio-ecological, environmental and climatic changes. Priority zoonoses in India include Rabies, Anthrax, Scrub Typhus, CCHF, Leptospirosis, Japanese B Encephalitis, Kyasanur forest disease (KFD) to name a few. These are responsible for significant morbidity & mortality in India, along with new emerging zoonoses like Nipah and Zika.

The second important aspect of 'One Health' is Anti-Microbial Resistance (AMR), which is a growing threat globally and in India. The fact that pharmaceutical Industry does not see a significant number of anti-microbials in the pipeline, focus has shifted from promoting antimicrobials to AMR. This shift is only natural. However, this may shift focus to novel approaches like m-RNA vaccines, monoclonal antibodies (for infections like Nipah) and use of bacteriophages. While they may be important, one needs to emphasize in personal and institutional IPC (Infection prevention and Control) practices. India's approach to AMR needs to be different from that of the developed World. Although it is important to tackle inappropriate antimicrobial use in humans, animals as well as plants, taking care of the human health sector will simultaneously prevent inappropriate use in the other two sectors. If not tackled seriously, AMR threatens to compromise all past as well as present individual and public health gains globally, particularly those related to maternal and child health, Tuberculosis, HIV/AIDS, results of surgical interventions including transplant surgeries.

Similarly, food-borne disease caused by poor hygiene, can become problematic due to availability of antimicrobials, environmental contamination and animal husbandry malpractice (related to inappropriate antibiotic use) on animal and poultry farms. In India, for instance, economic loss due to brucellosis in livestock is estimated at an equivalent of 3.4 billion US dollars.

Moreover, increasing climate variability has a significant impact on vector density, transmission cycles, threat of importing vectors or animal reservoirs, which could lead to emergence of zoonotic disease outbreaks. For instance, diseases, such as anthrax, increase in warm weather while leptospirosis increases post rains. It is likely that the source of many of these infections is rooted in the community, and thus will require a multifaceted One Health approach to detect, prevent, and control One Health issues.

Keeping this viewpoint in mind, a One Health Joint Plan of Action was launched by a Quadripartite Agreement between Food and Agriculture Organization (FAO), the United Nations Environment Programme (UNEP), World Health Organization (WHO), and World Organization for Animal Health (WOAH), setting out a common vision for protecting health globally and contributing to sustainable development.

Under India's G20 Presidency 'One Earth, One Family, One Future'; One Health is a key concept that has gained significant attention. NCDC, through its technical divisions, IDSP, AMR, Climate change and Centre for One Health is entrusted to undertake various activities pertaining to pandemic preparedness, likely to emerge from zoonotic threats at human animal and environment interface. National Programmes of the Ministry of Health related to 'one health' are already being implemented through NCDC. Some of them include National One Health Programmes for prevention and Control of Zoonoses (NOHPPCZ), National Rabies Control Programme, Programme for prevention and Control of Leptospirosis, Snake Bite Envenomation Prevention and control, National Programme on AMR Containment, National Programme on Climate Change and Human Health (NPCHH). In addition, a new division of NCDC, on IHR and pandemic preparedness has recently launched 'Sector Connect', an initiative with Animal Husbandry department for frontline epidemiological training of all sectors involved in one health. These interventions are being undertaken through strengthening of surveillance, capacity building for early detection, prevention, diagnosis and treatments of zoonoses, fostering R & D for medical counter measures, advocacy, and community engagement through a One Health approach.

Editorial

In India, the National One Health Mission was recommended during the 21st meeting of the Prime Minister's Science, Technology, and Innovation Advisory Council (PM-STIAC) in collaboration with different Ministries. The objective of this mission is to provide universal protection against priority diseases in both human and animal sector through early warning systems based on integrated surveillance system and early response to endemic and emerging epidemic or pandemic threats.

The mission will also address key pillars of preparedness in the form of targeted R & D to develop critical tools such as vaccines, diagnostics and therapeutics in terms of clinical care, and streamlining of data and information. Further One Health Institutes are also being set up for taking forward research agenda on "One Health", first one has come up at Nagpur in Maharashtra.

In view of above, I feel privileged to pen an editorial for this first ever E-Journal from NCDC which very aptly focuses on this recently launched initiative of 'ONE HEALTH' – theme being 'Uniting for One Health'. The Theme focusses on an update of various activities undertaken by NCDC and other agencies namely ICMR and DBT, other relevant ministries; Animal Husbandry, Environment, Forest & Climate Change, WHO & International Organizations & academia working on "One Health". These updates would provide important information to readers on current issues and initiatives by stakeholders on One Health.

I congratulate my NCDC colleagues ably guided by Dr S Venkatesh (formerly DGHS and Director, NCDC) for successfully drafting this publication with best wishes for this and all following issues hereafter. Let us try and make this endeavor a global success.

Before ending this editorial, the clinician in me forces me to issue a 'veiled warning to practitioners of modern medicine'. While we unite for 'one health' across sectors, we continue to dissect human body into pieces for health management. A similar 'one health' approach is absolutely essential to restore the health of humanity. centre to this is 'PREVENTION' of disease in a move away from the current emphasis on 'Diagnostics and Therapeutics'. This prevention should not lay emphasis on 'Vaccines' but on promoting 'positive health' by life-style interventions. As a practitioner of 'modern medicine' with over 35 years of experience, I feel that modern medicine is on its last legs unless it is ready to embrace a 'one health approach' for a patient-centric management of human beings, moving away from a healthcare industry centric approach.