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One Health Approach For Animal Disease Control

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One Health Approach for Animal Disease Control: A Comprehensive and Collaborative Strategy

The One Health approach is a holistic way of managing health that recognizes the deep interconnections between people, animals, and the environment. It promotes collaboration among multiple sectors and disciplines to effectively control diseases, particularly those that can spread between animals and humans (zoonotic diseases). This approach aims to improve health outcomes for all living beings while protecting ecosystems.

What is One Health?

One Health is an integrated approach that balances and optimizes the health of humans, domestic and wild animals, plants, and the ecosystems they share. It acknowledges that the health of one is inextricably linked to the others and that coordinated efforts are necessary to prevent, detect, and respond to health threats at the interface of humans, animals, and the environment.

The approach is essential in a world where human population growth, changes in land use, globalization, and climate change increase interactions between humans, animals, and nature, facilitating the emergence and spread of infectious diseases.

Why is One Health Important in Animal Disease Control?

Animal diseases, especially zoonotic diseases like rabies, influenza, and Ebola, pose significant threats to public health, food security, and economies. Traditional disease control strategies often tackle human and animal health separately, limiting their effectiveness.

One Health breaks these silos by:

- Enhancing surveillance and early detection of diseases in animals before they jump to humans.
- Coordinating responses across veterinary, medical, and environmental sectors.
- Managing disease reservoirs in wildlife and domestic animals.
- Addressing environmental factors like water, waste management, and habitat changes that influence disease emergence.

This prevents outbreaks and reduces risks to both animal and human populations.

Key Focus Areas in One Health for Animal Disease Control:

- **Zoonotic Disease Surveillance and Response:** Joint surveillance systems track diseases in animal populations and monitor spill over risks to humans. Early interventions reduce spread and severity.
- **Antimicrobial Resistance (AMR):** The responsible use of antibiotics in animals is crucial to prevent resistant infections that can affect both humans and animals. One Health promotes stewardship programs across sectors.
- **Food Safety and Security:** Ensuring the safety of animal products through integrated health controls protects consumers and maintains trust in the food supply.
- **Environmental Health:** Managing pollution, habitat conservation, and climate impacts help reduce disease sources and transmission vectors like mosquitoes and ticks.

Collaborative Efforts and Global Impact:

Organisations like the World Health Organisation (WHO), the Food and Agriculture Organisation (FAO), the World Organisation for Animal Health (WOAH), and the United Nations Environment Programme (UNEP) work together under the One Health framework. They develop policies and strategies, foster research, and support countries in implementing One Health programs.

COVID-19 revealed the urgent need for One Health, as SARS-CoV-2 likely emerged from animals to humans. Investing in One Health can prevent future pandemics, protect ecosystems, improve animal welfare, and save billions in health costs globally.

Core Principles of One Health in Animal Disease Control:

- Collaborative and multisectoral coordination among veterinarians, physicians, ecologists, public health officials, and communities.
- Joint surveillance systems linking human and animal health data for real-time disease monitoring.
- Integrated, simultaneous vaccination and treatment programs targeting both animal and human populations.
- Addressing environmental factors—like water quality, waste disposal, and wildlife habitat management—that influence disease transmission.
- Educating communities on safe animal handling and zoonotic disease risks.

Case Studies Showcasing One Health Success:

1. Syndromic Surveillance in Chad (SySMob Initiative):

In rural Chad, a community-based syndromic surveillance system was established, involving local human and animal health workers using mobile phones to report signs of disease in real time. Between 2018 and 2020, this system increased early detection of zoonoses such as anthrax and pasteurellosis. It enhanced collaboration between health sectors, enabling quicker, coordinated responses to outbreaks,

thereby improving animal and human health security while being cost-effective in remote locations.

2. Canine Rabies Control in Chiang Mai, Thailand:

The Chiang Mai Model integrated mass dog vaccination campaigns with humane dog population management supported by mobile technologies and community education. This approach achieved near-zero human rabies cases for nearly a decade while improving animal welfare and public confidence. It demonstrates how blending scientific vaccination strategies with community engagement and social sectors ensures sustained zoonotic disease control.

3. Crop-Livestock Clinics in Uganda:

Joint mobile advisory services for crop and livestock farmers fostered cross-sectoral learning and enhanced disease control, agronomic practices, and nutrition. This collaborative model reduced costs and time for farmers, improved referral systems for veterinary and agricultural inputs, and elevated overall farm productivity. It highlighted the value of integrating livestock and human health perspectives for community wellbeing.

4. Health for Animals and Livelihood Improvement (HALI) Project in Tanzania:

Focused on the Ruaha ecosystem, the HALI project investigated bovine tuberculosis and brucellosis in wildlife, livestock, and humans. It combined laboratory testing, capacity building of local health workers, and community training on zoonoses. The initiative reduced tuberculosis incidence, improved livestock productivity by 20%, and fostered sustainable resource management by integrating ecological and health data, serving as a sustainable model for zoonotic disease prevention.

One Health and Disease Prevention Strategies:

- **Joint Immunization Campaigns:** Simultaneously vaccinating humans and animals against shared diseases reduces reservoir populations and human risk (e.g., integrated mass dog rabies vaccination and deworming campaigns).
- **Antimicrobial Resistance Control:** Coordinated prudent use of antibiotics in veterinary and human medicine prevents resistant strains, preserving drug efficacy.
- **Community Engagement and Education:** Training farmers, veterinary workers, and health officials to recognize early disease signs, adopt safe practices, and report outbreaks strengthens the frontline defense.
- **Environmental Hygiene and Wildlife Management:** Proper waste management, water sanitation, and controlling wildlife reservoirs reduce environmental risk factors for disease emergence and spread.

Challenges and Future Directions:

Despite proven benefits, One Health faces implementation challenges such as poor inter-sector communication, limited funding, and varying policy frameworks. Scaling up pilot initiatives to national and

global levels requires political will, capacity building, and sustained community participation.

Emerging technologies like mobile health apps, genomic sequencing, and artificial intelligence can enhance surveillance and coordinated responses. Climate change considerations and habitat preservation increasingly require One Health frameworks to adapt to shifting disease patterns.

Conclusion:

The One Health approach is indispensable for controlling animal diseases and preventing zoonotic outbreaks. It pivots on cross-disciplinary collaboration centered on health equity for humans, animals, and the environment. By adopting One Health, societies can anticipate disease threats early, reduce economic losses, safeguard public health, and promote sustainable farming and natural resource use.

Animal disease control through the One Health approach is not just about managing animals or human health in isolation but about addressing the complex, interconnected web of life. It encourages collaboration, communication, and coordination among veterinarians, physicians, ecologists, policymakers, farmers, and communities to safeguard global health.

Implementing One Health leads to more resilient health systems, better preparedness, safer food, and healthier animals and people. It is a foundational strategy for sustainable development in a rapidly changing world.

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