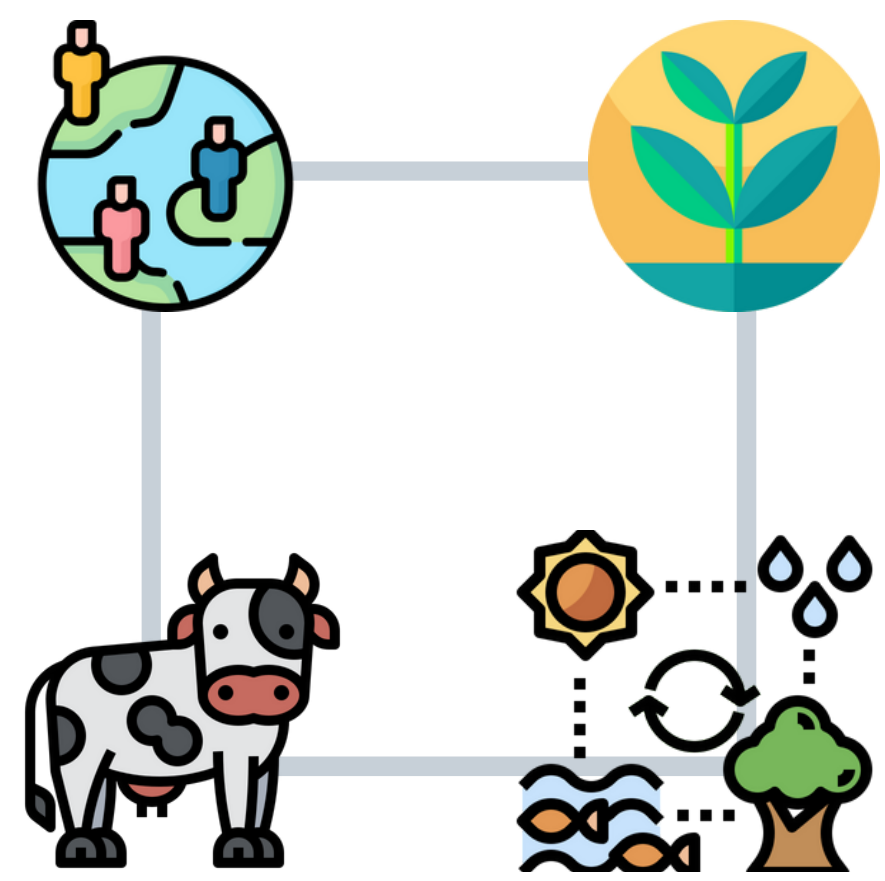


# THE BIOETHICAL IMPLICATIONS OF HUMAN AND NON-HUMAN BIOSURVEILLANCE: TOWARDS AN INTEGRATED ONE HEALTH AND GLOBAL JUSTICE FRAMEWORK

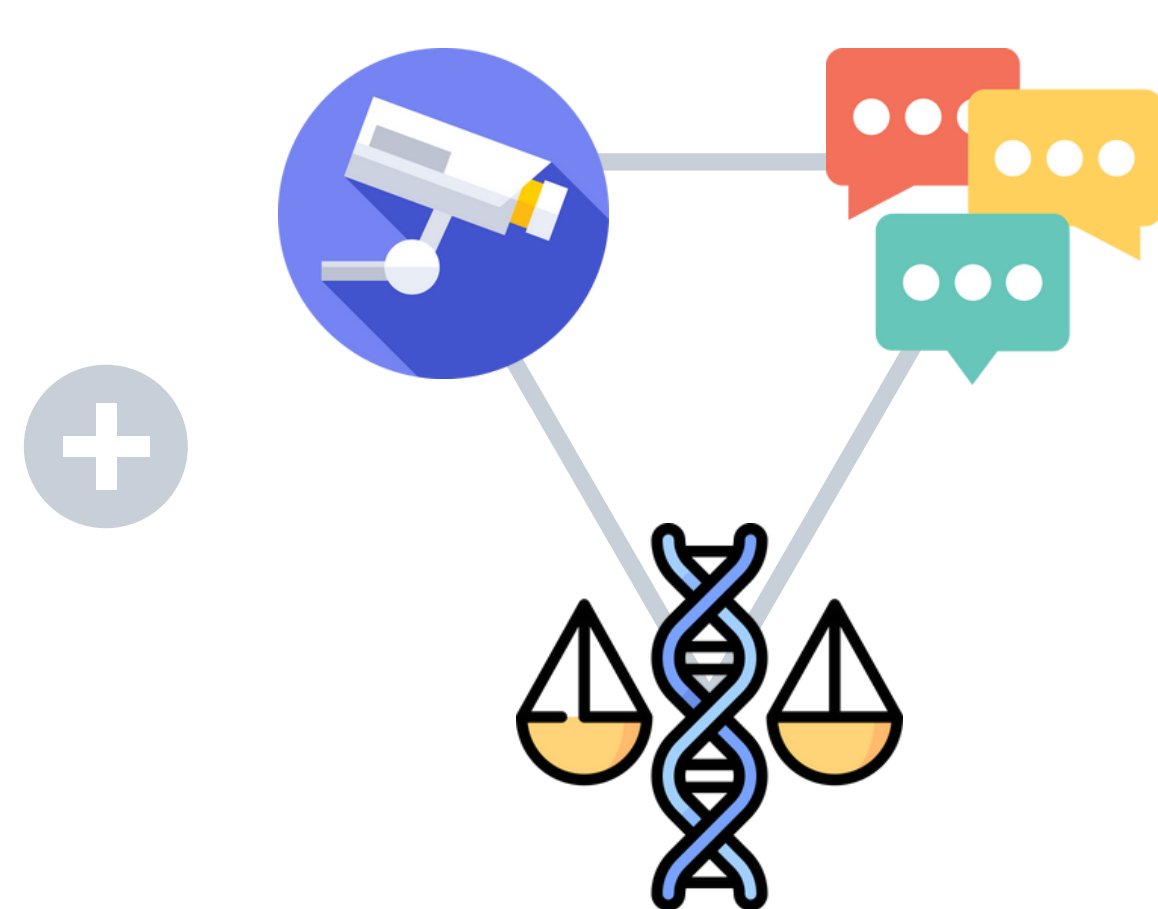
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## ABSTRACT

As demonstrated by the COVID-19 pandemic, increased identification and communication of emerging infectious diseases, especially zoonotic crossovers, are crucial to controlling disease outbreaks. However, there remains a marked lack of integration between human, animal, plant, and environmental health sectors. While the One Health paradigm aims to foster greater interdisciplinarity, more research into the ethical implications of integration is urgently needed. My research investigates the bioethical aspects of both human and non-human biosurveillance activities, ultimately aiming to integrate both strands under a One Health and global justice framework.



One Health Paradigm:  
Humans, Plants,  
Ecosystems, Animals



Increased Identification,  
Communication, and  
Bioethical Investigation



Towards an Integrated One  
Health and Global Justice  
Framework

## RESEARCH QUESTIONS



**Non-human biosurveillance:** How should recognising and attending to plant, animal, and ecosystem health improve overall global health without creating new, or exacerbating existing, instances of structural injustice?

**Human biosurveillance:** What are the ethical dimensions of human biosurveillance, including, for example, the impact of such measures on privacy, autonomy, and social justice?

**Effects of Non-human and Human Biosurveillance on Global Justice:** What are the impacts of human and non-human biosurveillance on global justice and what effects, if any, should emerging and future biosurveillance policies have on global justice?

**Integration of human and non-human biosurveillance under a One Health and Global Justice Framework:** What are the shared practicalities and ethical responsibilities of both human and non-human biosurveillance actions, and how should both actions be integrated under a One Health and global justice framework?

## ETHICS OF NON-HUMAN BIOSURVEILLANCE

Appreciating and investing in non-human health through the updating and strengthening of international biosurveillance, biosafety, and biosecurity measures will have a significant and positive impact not only on human health but also on overall global health. The necessity of recognising and attending to non-human health must also be quickly realised and incorporated into global health policies. Given the context of globalisation, recognising and attending to non-human health through updating biosurveillance and biosecurity measures should be of tantamount importance.

## ETHICS OF HUMAN AND NONHUMAN BIOSURVEILLANCE ON GLOBAL JUSTICE

To prevent or mitigate the next pandemic, it is not only human public health biosurveillance tools which should be strengthened but also non-human biosurveillance. Human public health does not exist in a vacuum but, rather, as a function of global health, including non-human health factors such as plant, animal, and environmental. Due to modern realities such as increased globalisation, high levels of human mobility, and intensified agricultural demands, global health is an unavoidably shared endeavour (Hulme, 2020). In critically analysing human and non-human health and their integration, I aim to recognise and attend to the differences between the sectors.

## ETHICS OF HUMAN BIOSURVEILLANCE

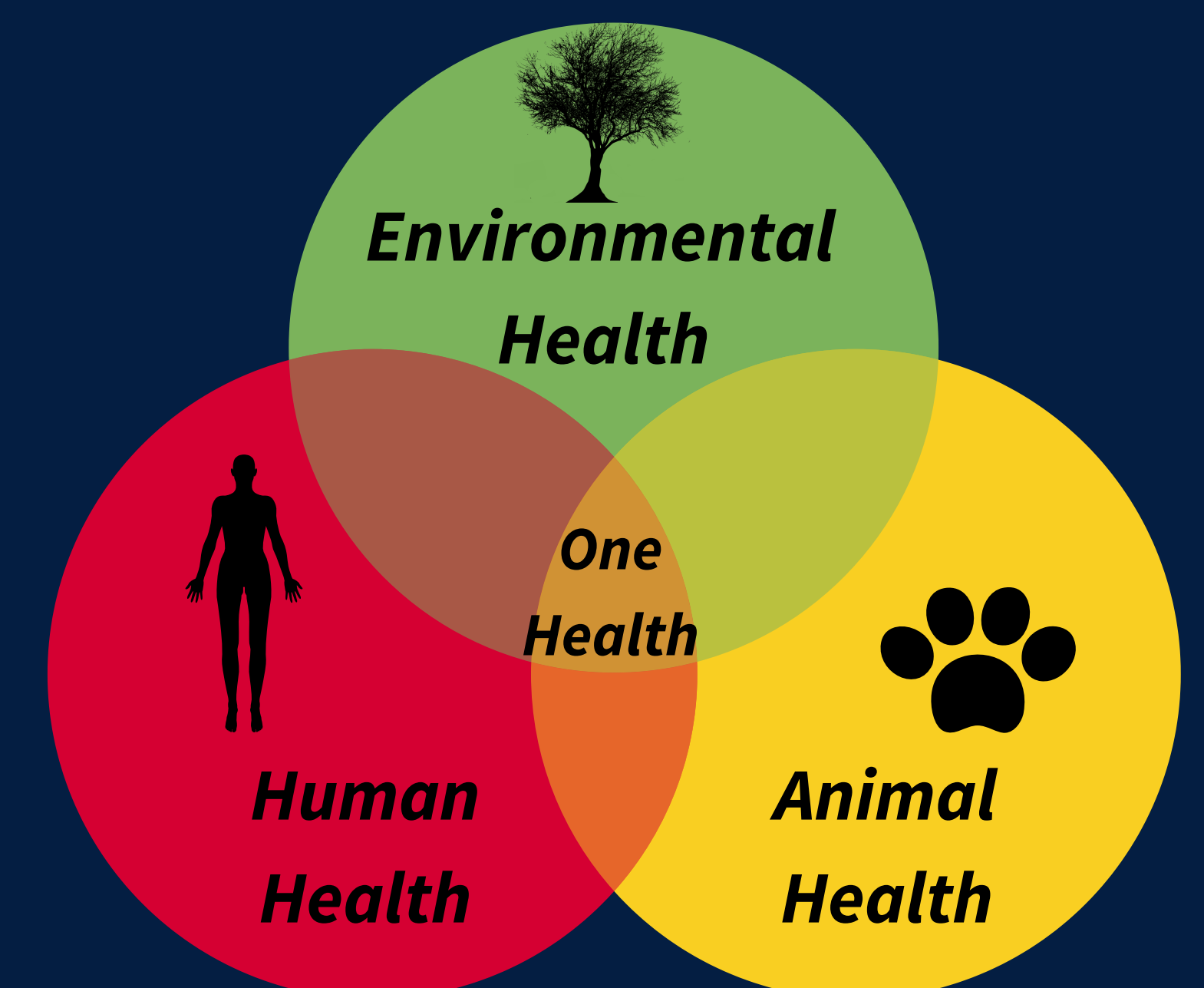
“Proactive, real-time” biosurveillance of human populations represents a simple and cost-effective way to mitigate disease outbreaks (Holmes et al, 2018). While human public health biosurveillance interventions, such as intensive contact tracing as well as rigorous vigilance and control measures to reduce transmission have been recognised as crucial to mitigating the current pandemic, it is clear that the implementation of strict human public health measures alone are not sufficient in eliminating the threat caused by COVID-19 (Ahmad et al, 2020).

## INTEGRATING BIOSURVEILLANCE UNDER A ONE HEALTH AND GLOBAL JUSTICE FRAMEWORK

It is important that the integration of human and non-human biosurveillance should have a neutral, or ideally positive effect and should by no means exacerbate global injustice. It is in the best interests of global health – meaning the shared health of humans, animals, plants, and the environment – to develop international biosecurity and biosurveillance standards which promote equitable health, development, and global justice. Equitable global health justice means avoiding the homogenisation of health by recognising and attending to the specific needs of communities at the regional level as well as to promote justice at the international level.

## WHAT IS ONE HEALTH?

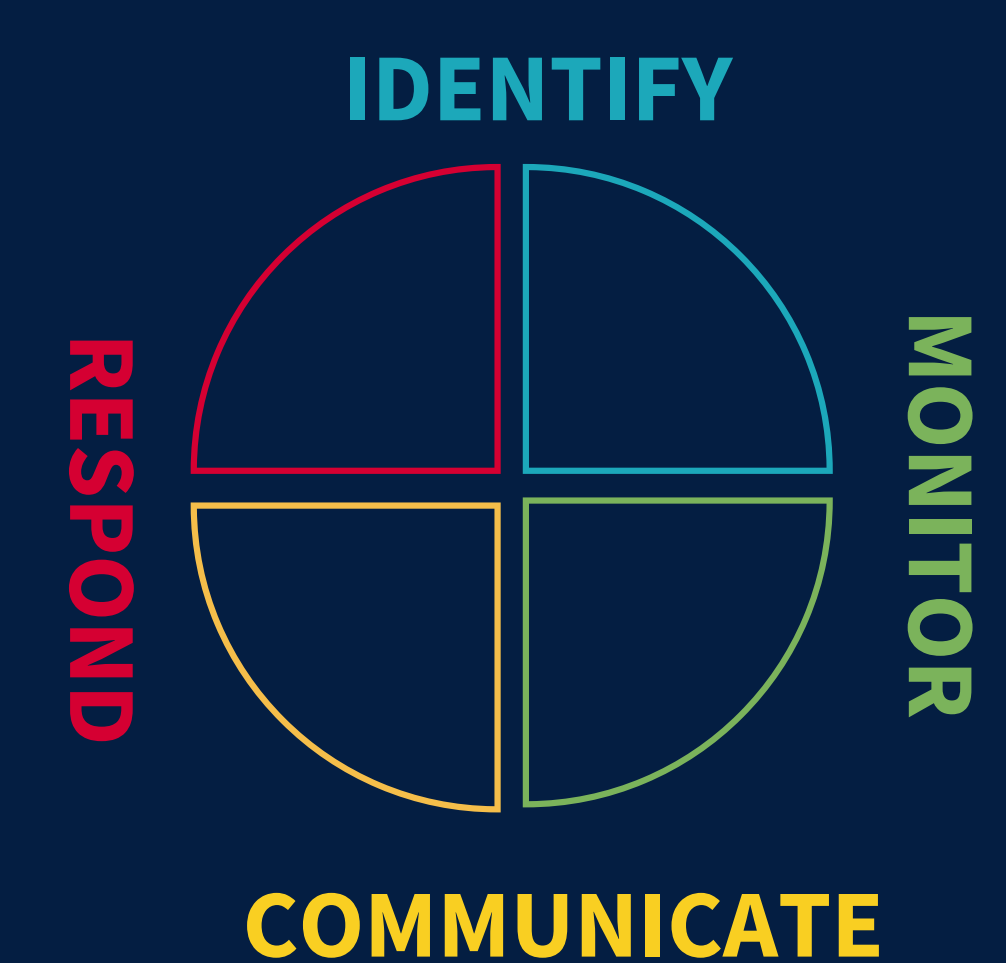
In 2007, the One Health paradigm was suggested as a way of uniting the common interests of humans, animal, plants, and the environment, advocating for an actively interdisciplinary approach to global health (Hulme, 2021).



The purpose of formalising the One Health concept was to explicitly unite veterinary and human health concerns under one shared aim, with the following definition: “a collaborative, multi-sectoral, and trans-disciplinary approach, working at local, regional, national, and global levels, to achieve optimal health and well-being outcomes recognizing the interconnections between people, animals, plants and their shared environment” (Hulme, 2021). However, it has become increasingly clear during the COVID-19 pandemic that this approach is limited in its purview and must expand to sufficiently recognise and attend to non-human health outcomes to better protect and promote shared global health.

## WHAT IS BIOSURVEILLANCE?

As demonstrated by the COVID-19 pandemic, monitoring of emerging infectious diseases and identification of harmful agents that have pandemic potential, are crucial in the control and mitigation of current and future disease outbreaks. These identifying, monitoring, communicating and responding actions fall into three categories: biosurveillance, biosafety, and biosecurity.



Biosurveillance refers to the monitoring of “infectious disease agents and toxins which constitute noteworthy threats to the economy, biodiversity, food security, food safety, and public health” (Ahmad et al, 2020). “Biosafety” and “biosecurity” refer to actions and activities taken to reduce, mitigate, and control risks. Biosurveillance, biosafety, and biosecurity measures should more explicitly integrate the One Health paradigm and expand it, specifically by recognising and attending to non-human health outcomes.