

Letter to the Editor

One Health: perspectives on ethical issues and evidence from animal experiments

Sir,

A recent publication in your journal, by Asokan et al, entitled “One health: perspectives on ethical issues and evidence from animal experiments” [1], touches on a number of important points, but fails to go far enough in exploring the innovative nature of a One Health approach to a number of scientific and ethical issues related to the overlap of human and animal health.

The authors seem to make the following argument:

- Zoonoses are important threats to human and animal health, and animal research has played a role in assessing risk across species.
- The ethical justification and scientific utility of laboratory animal experimentation are rightly criticized, necessitating efforts to enhance humane aspects of animal research as well as to address biases and difficulties in extrapolating data from animal research to humans.
- One Health is a comparative clinical approach which promotes better collaboration between human and animal health professionals in order

to reduce the spread of zoonotic diseases.

Therefore, the authors conclude,

- “... researchers should not only avoid using more animals for experiments than needed, they should also aim to avoid using too few”. The authors also provide four proposals to improve the ability to apply data from laboratory animal experimentation to humans.

While agreeing with their premise, I would disagree with the conclusion and would argue that the authors fail to adequately describe how the One Health approach provides alternatives to traditional use of animal experimentation.

The American Veterinary Medical Association has defined One Health as “... the collaborative efforts of multiple disciplines working locally, nationally and globally, to attain optimal health for people, animals, and our environment” [2]. One Health supports a shared risk approach, wherein animals and humans are considered to be generally susceptible to the same environmental risks and are thus perceived as mutual benefactors of one another; it entails preventing and treating disease in one species in order to indirectly prevent and treat disease in another species [3].

Approaching zoonotic and environmental risks from a One Health perspective involves considering what research and disease control and prevention methods are mutually beneficial to humans, animals and the environment. This is very different from traditional attitudes of maximizing human health alone. One key type of research that the One Health approach encourages is the use of epidemiological studies of naturally occurring populations using techniques such as case-control and cohort studies to assess correlation between environmental exposures and health risks [4]. One key type of direct disease control and prevention is the use of animal collars and vaccinations [5].

The One Health paradigm, whether applied to zoonotic disease or other health issues affecting both animals and humans, can provide important alternatives to animal experimentation. As such, groups concerned with animal ethics would do well to further explore the applications of a One Health approach: what are the ethical guideposts as we move toward a future of health care that considers the health of multiple species as well as the environment?

References

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Authors' response

Dr Lederman responding to our article agrees with our premise on One Health, ethics and evidence. However, he disagrees with our conclusion.

Our article focuses on One Health in relation to ethics and a pathway to generating robust evidence from animal experiments and certainly not, as seems to be understood by Dr Lederman, that One Health provides an alternative to the conventional animal experiments.

Our argument is based on the currently prevailing facts on evidence and ethics.

Evidence: Many systematic reviews published in the Cochrane library are inconclusive and unable to provide clinical recommendations after randomized controlled trials have been undertaken based on the results of animal experiments. The key factors central to

the lack of conclusive evidence include inadequate numbers of animals used and poor choice of animal models in the experiments to mimic human disease.

Ethics: Subjecting human volunteers to trials in the absence of adequate results generated from animal studies, which have used fewer animals because regulated by ethical guidelines (i.e. reduction, one of the three "Rs" in humane animal experimentation), is unethical. Furthermore, this a wastage of research grants, time and resources, including experimental animals.

The results of animal experiments can benefit not only humans alone but also multiple species affected by zoonotic diseases. There is a need to move ahead with animal experiments to circumvent the existing inadequacies in

evidence. We explored and recommend four proposals in our article, such as standardization of procedures in animal experiments, enhancing statistical power in studies, and generating evidence ethically from prospective registration of animal experiments similar to registration of clinical trials in humans. This would support scientific evidence and remove some of the confusions .

In zoonoses, agent and environment are similar across species; clinical approaches under One Health do not differ. Therefore, prevention and control of zoonoses requires conclusive evidence from systematic reviews of multiple species together on diagnostic test accuracies and interventions.

We further reiterate that One Health is not an alternative to animal experiments for generating evidence.

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