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Università di Pisa

Ethical Standards and Responsible Research in One Health

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Purpose of this Lecture

1. Examine ethical standards in One Health research
2. Identify key principles and guidelines
3. Highlight challenges and emerging frameworks
4. Promote responsible research across humans, animals, and ecosystems

Background

- **The One Health approach integrates human, animal, and environmental health**, providing a framework to address global challenges like zoonotic diseases, antimicrobial resistance, climate-related health risks and interconnected global health challenges.
- Aims to protect people, animals, and ecosystems
- Supports sustainable and balanced health outcomes
- Promotes collaboration across sectors
- Despite its growing use, ethical guidance in One Health research is often limited and inconsistently applied.

Reference: Adisasmito et al., 2022

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Current Gaps in Ethical Practice

1. Limited Ethical Integration in One Health

- Ethical standards are underdeveloped
- Ethics applied inconsistently across One Health
- Ethical issues overlooked in research stages
- Many studies fail to benefit humans, animals & environment equally
- Few animal research ethics committees

2. Institutional and Regulatory Challenges

- Social, political & legal constraints
- Hard to align research with public values
- Ethics rules vary across disciplines
- Focus on doctors & vets, less on ecology & society

References: Degeling et al., 2015; Ladbury et al, 2017; Hermesh et al., 2018; Lindenmayer et al, 2022; Ledermaner et al, 2024

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Basic Ethical Principles in One Health Research

One Health research is based on the idea that health improvement should include **humans, animals, and the environment**.

Lindenmayer et al. (2022) highlight **four key ethical ideas:**

1) Interconnectedness: Health and well-being of humans, animals, and nature are linked.

2) Holistic Well-being: Research should consider physical, mental, emotional, and social well-being for all species.

3) Health for All: Research should aim to improve health for humans, animals, and ecosystems together, even if it means making careful compromises.

4) Acknowledging Uncertainty: Because our knowledge is limited, researchers should be flexible and thoughtful in their approach.

- The **One Health High-Level Expert Panel (OHHLEP)** emphasizes that all living things have value, humans have a duty to protect animal welfare, and we must preserve ecosystems (Lederman et al., 2024).

These principles push researchers to consider all species, not just humans, to do no harm, and balance risks and benefits to humans, animals and environment.

Human-Centered vs. Multispecies Ethics

- A major challenge in One Health is the **focus on humans over animals and the environment.**
- Lindenmayer et al. (2022) note that many studies focus on human-animal health but often ignore ecosystems.
- Yeates et al. (2024) argue that **ethical research should consider all species**, including animals, and balance human, animal, and environmental well-being.

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Existing proposed Guidance and Frameworks

COHERE: Checklist for One Health Research Reporting

- Created by Davis et al. (2017), **COHERE checklist** guides researchers to ensure that One Health studies:
  - Integrate **all three domains** (humans, animals, environment),
  - Describe **methods transparently**, and
  - Report **results and interpretations** in a way that makes interdisciplinary connections clear.
- COHERE helps improve **method quality**, but it **does not fully guide researchers on balancing ethics** across humans, animals, and the environment (Lederman et al., 2024).
- **COHERE has 19 standards** for reporting One Health research:

COHERE: COHERE has 19 standards for reporting One Health research

Introduction (Standards 1–2)

1.Context & Justification

Explain the human–animal–environment interactions relevant to the study and why a One Health approach is appropriate.

2.Aims/Rationale

Clearly describe your research questions or hypotheses in relation to all three domains (human, animal, environment) or justify the study's design if not hypothesis-driven.

COHERE: COHERE has 19 standards for reporting One Health research

Methods (Standards 3–10)

3. **Study Design Overview**
   Describe how, when, and where data were collected from each domain, how they relate to each other, and criteria for including/excluding data. Follow relevant methodological reporting standards (e.g., STROBE, CONSORT) as appropriate.
4. **Human Data:** Provide details on the human population or datasets used, including characteristics, sample sizes, and how participants were chosen.
5. **Animal Data:** Describe the animal population or specimens, how they were sampled, and essential characteristics.
6. **Environmental Data:** Describe the environmental factors or samples, how data were gathered, and why these are relevant to the One Health issue studied.
7. **Spatial/Temporal Data:** Report when and where data from all three domains were collected so that spatial and temporal relationships are clear.
8. **Measurement Methods:** Explain the methods used to measure key variables, including laboratory, field, or survey techniques, and how they were standardized across domains.
9. **Analysis Plan:** Summarize statistical or qualitative analysis approaches, especially how data from different domains were integrated.
10. **Ethics & Permissions:** Include approvals or permits for human, animal, or environmental data collection and any community or regulatory permissions obtained.

Results (Standards 11–15)

11. Human Results: Report main findings from the human data component, including relevant measures or outcomes.

12. Animal Results: Report results from the animal component, with appropriate detail and context.

13. Environmental Results: Present findings from environmental assessments and how they relate to human and animal data.

14. Integrated Findings: Highlight how data across all domains relate and any patterns seen when combined.

15. Additional Analyses: Include stratified or sensitivity analyses if used, and describe how these inform the overall interpretation.

Discussion (Standards 16–17)

16. **Interpretation Across Domains**
Discuss how the findings from different domains help explain the research problem together, and consider any discrepancies between domains.

17. **Limitations & Biases**
Reflect on limitations of your methods or data across human, animal, and environmental components and note any potential biases.

One Health Contribution (Standard 18)

18. Value of One Health Approach
Describe how using a One Health perspective enhanced understanding of the issue. This may include lessons from interdisciplinary collaboration and implications for human, animal, and ecosystem health, and you should include "One Health" in keywords/title where appropriate.

Acknowledgment (Standard 19)

19.Funding & Conflicts
State funding sources and disclose any potential conflicts of interest.

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EAROH: Ethical Analysis of Research in One Health (Emerging Framework)

EAROH (Lederman et al., 2024) is a toolkit for checking if research truly follows One Health ethics.

EAROH provides a **systematic, values-based framework** that moves beyond traditional human-focused research ethics by:

- Integrating **multi-species and environmental ethics**
- Addressing **power, justice, and governance**
- Supporting **responsible, equitable, and sustainable One Health research**

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1. Ethical Scope and One Health Justification

- Clarifies why a One Health approach is ethically and scientifically appropriate
- Defines how humans, animals, and the environment are interconnected in the research
- Examines whether all relevant domains are meaningfully included or unjustifiably excluded

2. Moral Value of Humans, Animals, and the Environment

- Recognizes intrinsic and instrumental value across all three domains
- Avoids human-only (anthropocentric) ethical reasoning
- Considers animal welfare, ecosystem integrity, and intergenerational environmental value

3. Risk–Benefit Assessment Across Domains

- Identifies potential harms and benefits for:
  - Human participants and communities
  - Animals (domestic, wildlife, laboratory)
  - Ecosystems and natural resources
- Assesses whether benefits are fairly distributed and harms minimized in each domain

4. Justice, Equity, and Fairness

- Examines who bears risks and who receives benefits
- Addresses power imbalances between:
  - Global North and Global South
  - Researchers and local communities
  - Human interests and non-human interests
- Considers environmental justice and health equity

5. Participation, Consent, and Community Engagement

- Evaluates informed consent for human participants
- Considers representation and voice for communities affected but not directly enrolled
- Addresses ethical challenges of consent in animal and environmental research
- Emphasizes meaningful community engagement and co-production of knowledge

6. Governance, Accountability, and Oversight

- Reviews ethical approval processes across sectors and disciplines
- Identifies gaps between human research ethics, animal ethics, and environmental regulation
- Examines accountability mechanisms and responsibilities among collaborators

7. Scientific Integrity and Interdisciplinary Responsibility

- Ensures methodological rigor across disciplines
- Assesses ethical challenges of data integration and interpretation
- Promotes respect, transparency, and fairness in interdisciplinary collaboration

8. Social, Cultural, and Political Context

- Accounts for local values, norms, and belief systems
- Evaluates political and economic influences on research priorities
- Avoids ethical imperialism by respecting contextual ethics

9. Sustainability and Long-Term Impacts

- Examines long-term consequences for ecosystems and livelihoods
- Considers environmental sustainability and planetary health
- Addresses intergenerational ethical responsibilities

10. Translation, Policy Impact, and Ethical Legacy

- Assesses how findings are translated into policy or practice
- Examines potential misuse or unintended consequences of research outputs
- Considers responsibilities beyond publication, including capacity building and benefit sharing

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Ethical Considerations in Specific One Health Areas

Animal Research Ethics

- Mediterranean et al. (2012) highlight the **Three Rs**:
    1. **Replacement:** Use fewer animals if possible
    2. **Reduction:** Minimize the number of animals used
    3. **Refinement:** Reduce suffering and improve welfare
- Research must balance **scientific validity and animal welfare**. Yeates et al. (2024) stress including animal behaviour, sustainability, and ecosystem impact in ethical planning.

Environmental Ethics

Nieuwland et al. (2015) call for ethics that integrate **human, animal, and ecosystem health**, including:

- Considering all species in planning
- Protecting ecosystem integrity
- Including these values in policy recommendations

Community Engagement and Justice

Justice is often overlooked.

Lysaght et al. (2017) argue for:

- Fair treatment of humans, animals, and ecosystems
- International cooperation and shared resources
- Inclusion of multiple stakeholders in ethical decisions

Degeling et al. (2015) stress **genuine community involvement, openness, and practical ethics**.

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Recommendations for Ethical One Health Research

Core Requirements

- Clearly state your ethical approach: **human-focused, environment-focused, or all-species focused** (Lederman et al., 2024)
- Show benefits for humans, animals, and ecosystems (Lindenmayer et al., 2022)
- Include all stakeholders in planning and evaluation
- Review research ethics across disciplines, including animal and environmental experts
- Engage communities and ensure fair resource distribution
- Maintain openness and accountability throughout research

Implementation Strategies

- Make ethical analysis a requirement for funding or publication
- Include bioethics experts throughout research
- Use standardized tools like EAROH
- Apply flexible governance to adapt as research progresses

Conclusion

- Despite strong principles, One Health research often struggles to put ethics into practice.
- COHERE provides guidance on methodology, but tools like EAROH and reflexive governance offer stronger ways to include ethics.
- Key priorities are considering all species, engaging communities, transparency, cross-disciplinary review, and fairness.
- Global health challenges like COVID-19, antibiotic resistance, climate change, and new diseases make ethical integration urgent.
- Only by using comprehensive ethical frameworks, standardized tools, and institutional support can One Health research truly improve health for humans, animals, and ecosystems in a fair and responsible way.