

Dengue and Climate Change: Exploring Bioethical Challenges in Global Health Research

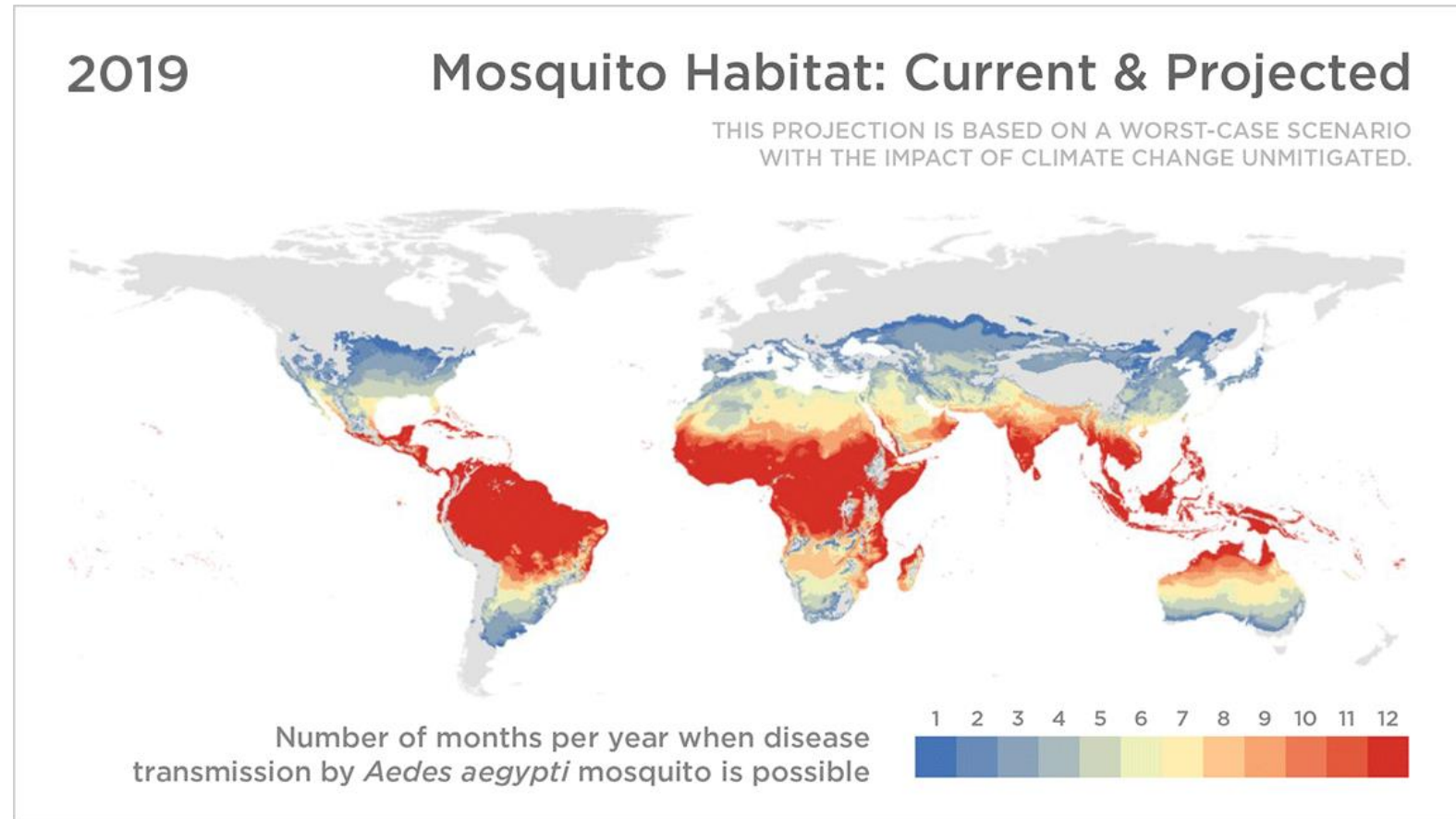
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Global Forum on Bioethics in Research (GFBR)
Kuala Lumpur, Malaysia
19 & 20 November 2024



Climate Change and Global Health Risks

- ✓ As global temperatures rise, vector-borne diseases like dengue are spreading beyond traditional endemic areas, creating new health risks worldwide.
- ✓ The regions most affected by climate change, such as Central America, face both increased incidence and resource limitations.

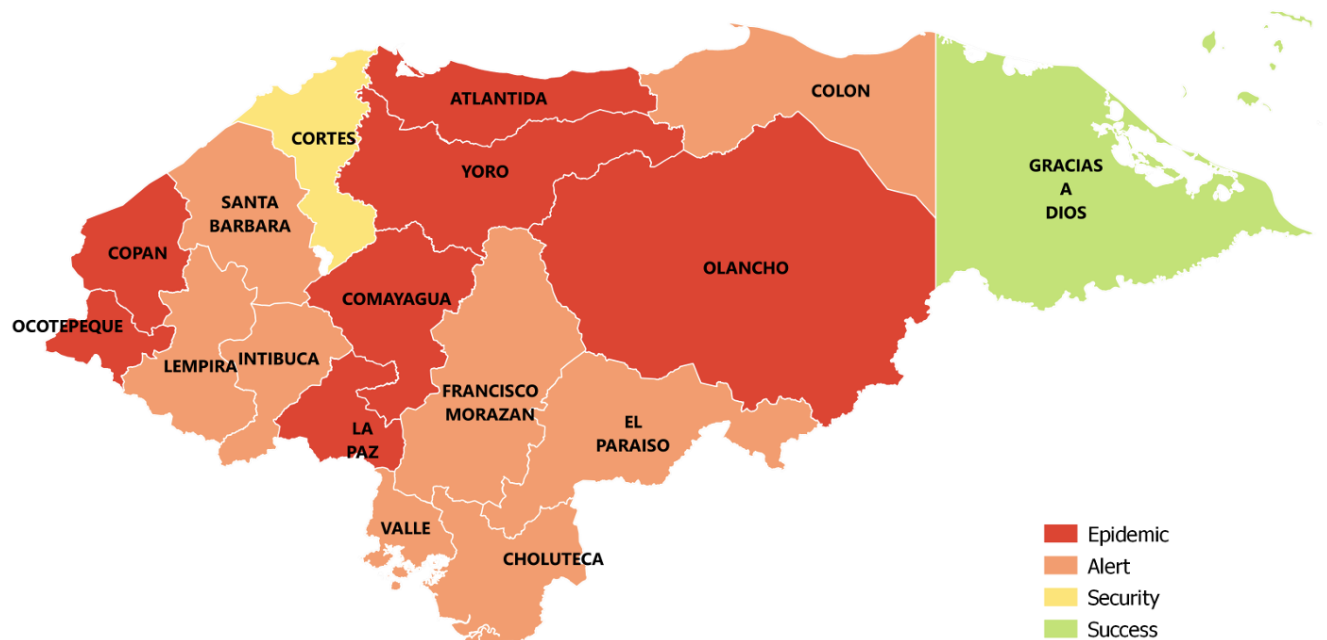


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Honduras: At the Crossroads of Climate and Health

HONDURAS | Dengue

Sanitary regions by endemic channel



- ✓ Honduras exemplifies the intersection of climate vulnerability and health challenges. Rising temperatures and increased rainfall provide optimal conditions for *Aedes* mosquitoes, exacerbating dengue transmission.
- ✓ Limited resources make it difficult to address the health impact effectively, highlighting the ethical need for targeted support and research.

Date Produced: 8 August 2023

The maps used do not imply the expression of any opinion on the part of the International Federation of Red Cross and Red Crescent Societies or National Societies concerning the legal status of a territory or of its authorities.

Produced by IM Team, DCCPRR, Americas Region.

Sources: Secretary of Health, Government of Honduras.





📍 Hurricane Iota has left the Planeta municipality in La Lima, Honduras, submerged in water. Photograph: Yoseph Amaya/Getty

'This was worse than Eta': Hurricane Iota brings repeat destruction to Honduras

Second devastating hurricane in two weeks lashes fragile nation and leaves villages submerged

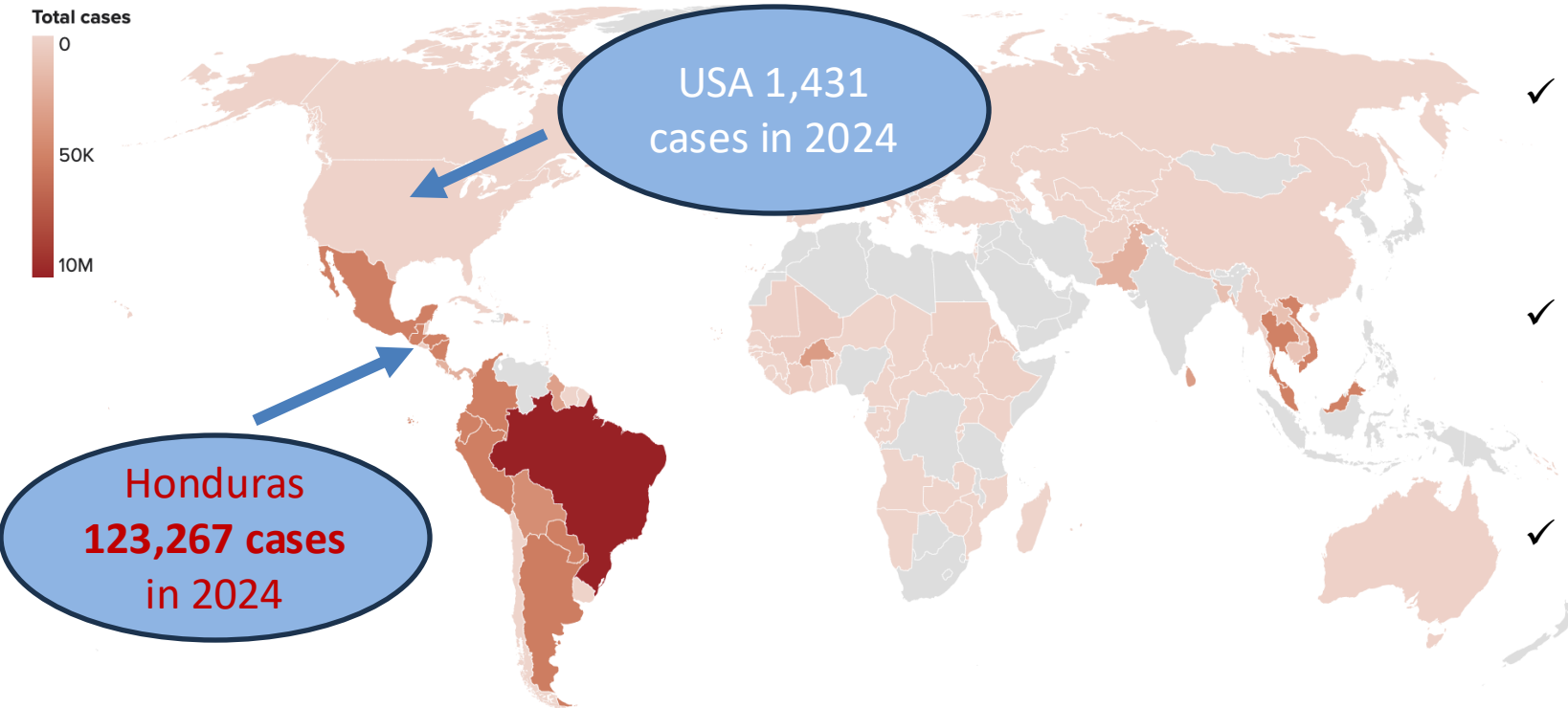
By [Jeff Ernst](#) in La Lima, Honduras



Dengue and Global Impact

Global dengue cases reported in 2024

The map below shows the total number of dengue cases reported so far this year. Click or hover over a country for more information



- ✓ Dengue symptoms range from mild fever to severe conditions (5% of cases) and death.
- ✓ Over 6 million cases in 2023 and nearly 5 million by mid-2024.
- ✓ Endemic countries in the Global South experience higher incidence, often without equitable access to vaccines and other prevention measures.

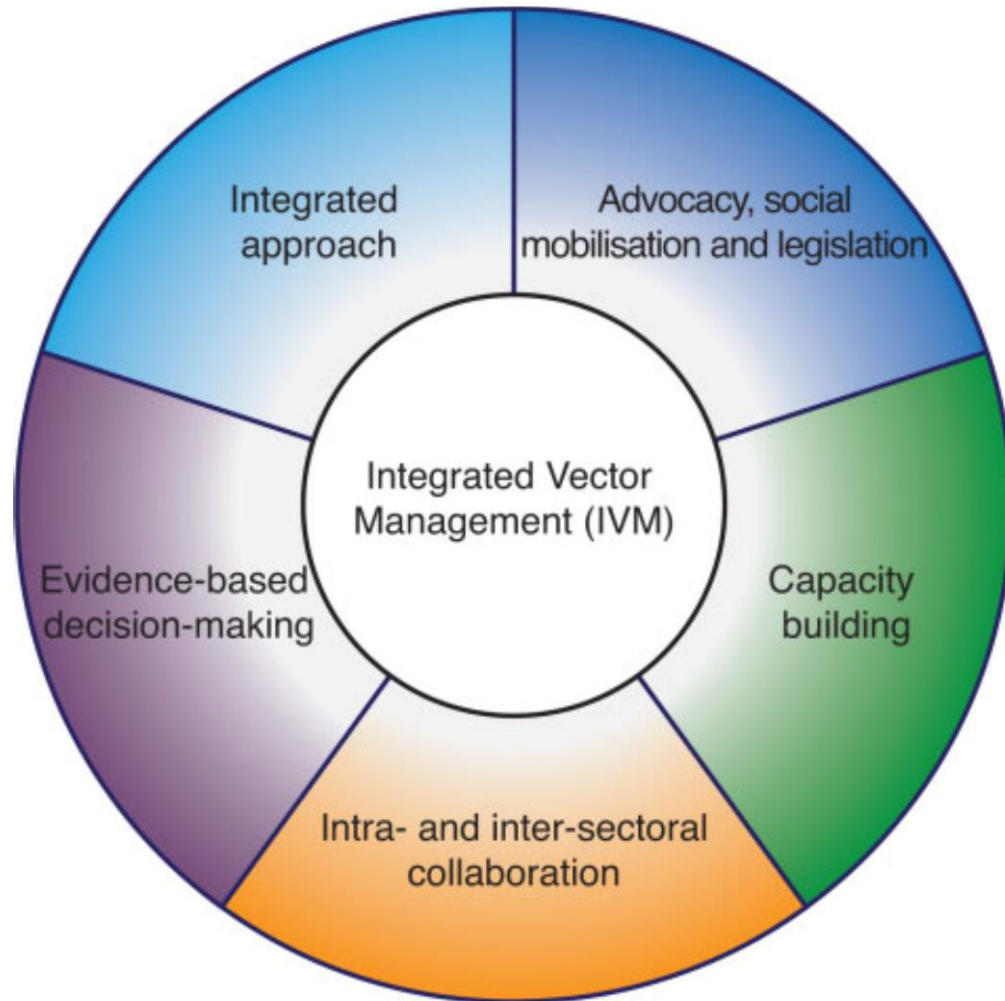
Note: Data as of September 16, 2024. Not all countries with dengue transmission are reflected.

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Dengue Vulnerability: Poverty, Children, and Climate Impact



Primordial Prevention in Dengue Control



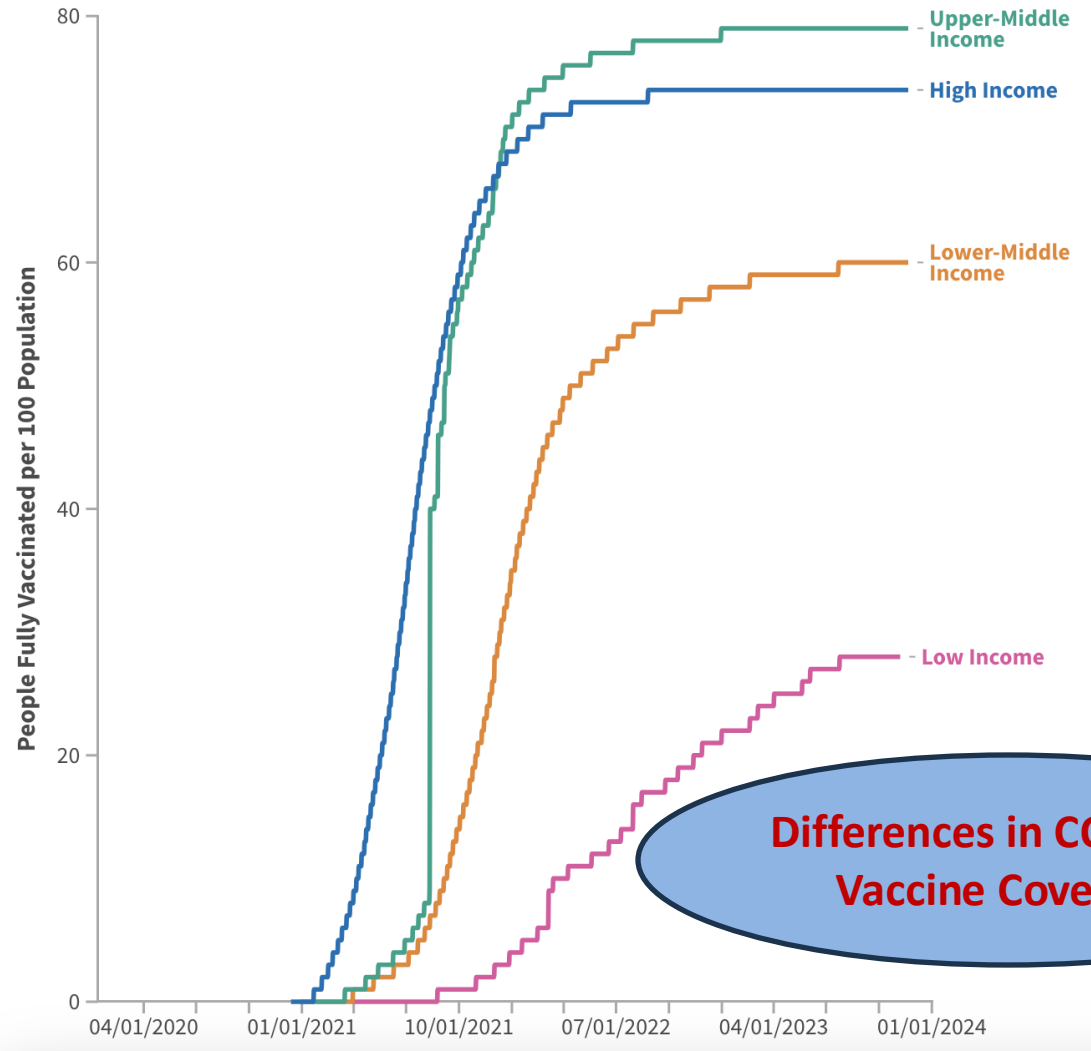
- ✓ Addressing root environmental and socioeconomic factors, such as water sanitation and housing, is an essential ethical priority in dengue prevention.
- ✓ Funding for these interventions is often overshadowed by investments in market-driven.

Vaccines as a Primary Defense Against Dengue



- ✓ Vaccines provide a critical line of defense in preventing dengue infections. However, dengue's multiple strains continue to present significant challenges for vaccine development.
- ✓ *Dengvaxia*® was the first dengue vaccine, effective mainly in people previously exposed to the virus. *Qdenga*®, approved by SAGE in 2023, was designed to broaden coverage.
- ✓ Both vaccines face accessibility issues in LMICs, where they are most needed.

Ethics of Vaccine Access in LMICs



Differences in COVID-19 Vaccine Coverage

- ✓ Dengue vaccines, while essential, remain largely inaccessible in LMICs due to high costs and logistical challenges.
- ✓ Communities most affected by dengue face limited access to vaccines developed with their participation in trials.
- ✓ *What strategies can ensure affordable access to vaccines for the communities that need them most?*

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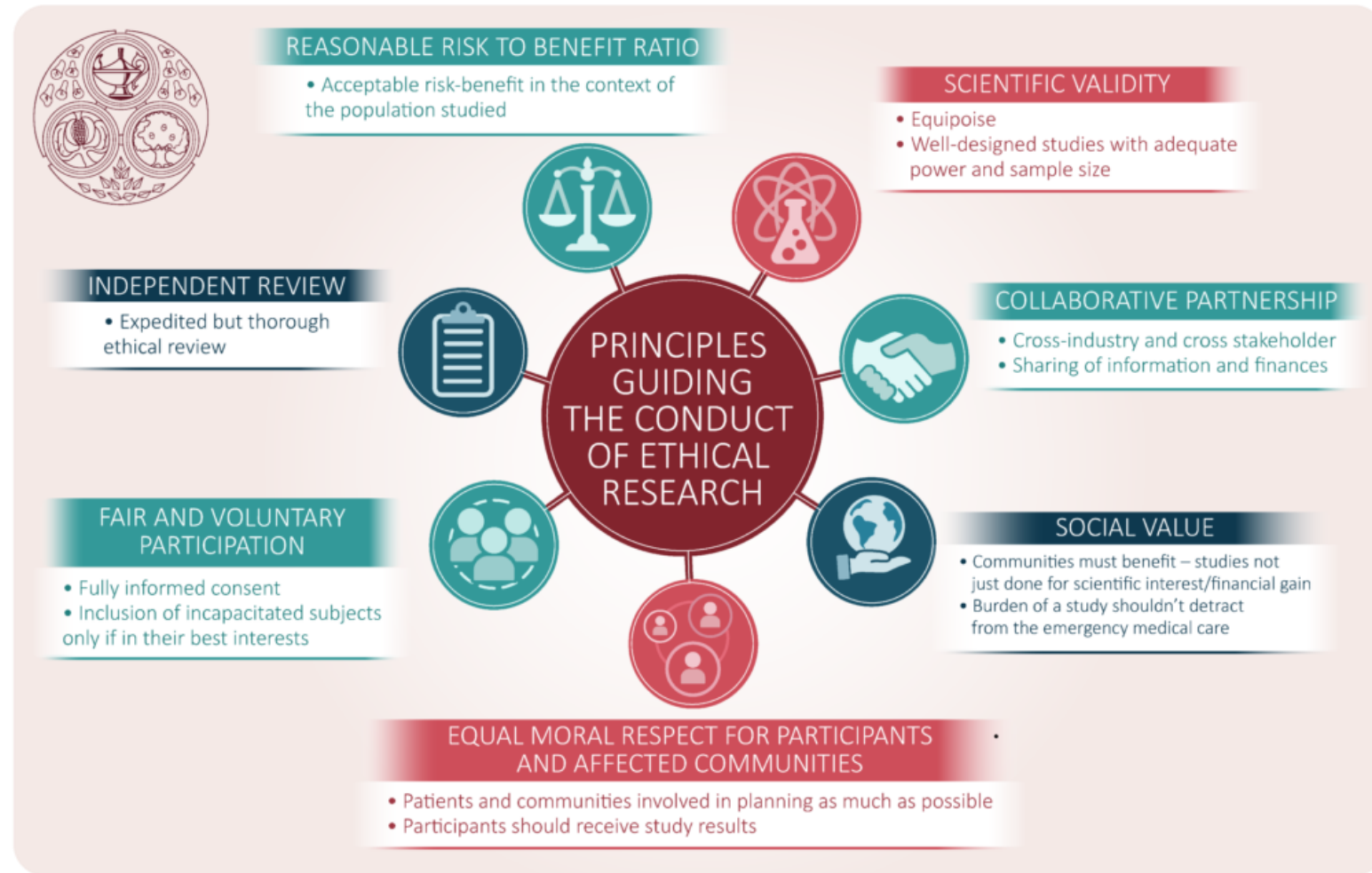
Funding and Ethical Responsibility

- ✓ Funding agencies, including WHO and Gavi, have a responsibility to ensure equitable access to life-saving interventions in LMICs.
- ✓ A shift towards supporting sustainable and community-focused prevention efforts is essential to addressing the root causes of dengue.

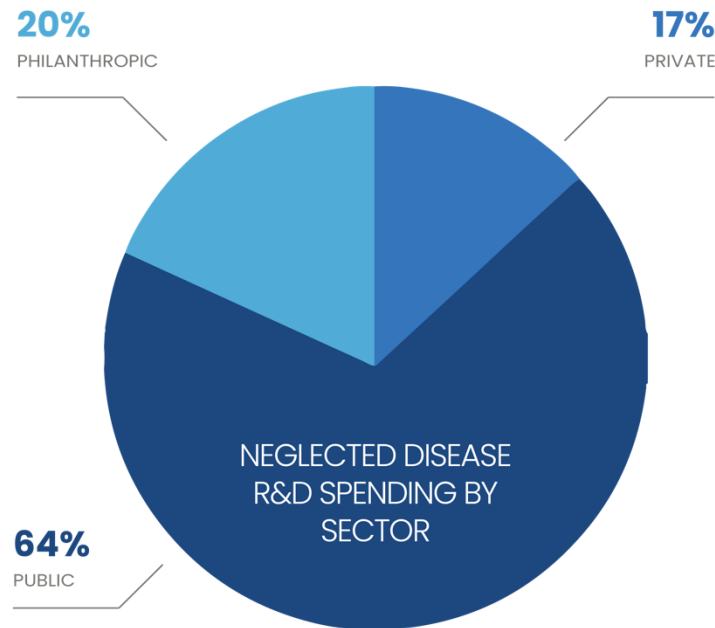


Ethical Frameworks for Global Health Research

- ✓ Ethical guidelines, such as those by *CIOMS*, emphasize the importance of fairness, benefit-sharing, and transparency in research, especially when involving vulnerable populations.
- ✓ LMICs often serve as research sites without sufficient benefits flowing back to these communities.



Economic Interests vs. Public Health Needs



- ✓ Vaccine development and distribution are often driven by economic interests, rather than prioritizing the health needs of the most affected populations.
- ✓ Addressing the ethical imbalance between profit-driven research and equitable healthcare access is essential for global health justice.

Empowering LMICs in Global Health Research

- ✓ LMICs should actively negotiate for protections and benefits in international research, supported by capacity-building efforts to strengthen their role.
- ✓ Empowering LMIC stakeholders allows for better negotiation of research terms to secure protections and benefits for their populations.
- ✓ International guidelines call for collaborative decision-making, but practical support is needed to strengthen local capacities for ethical oversight.



Recommendations for Ethical Research Partnerships



- ✓ Global health research must prioritize local health needs through collaborative partnerships with LMICs.
- ✓ Ethical reciprocity and benefit-sharing frameworks are essential to ensuring that research aligns with public health priorities in vulnerable regions.
- ✓ Invest in capacity-building to help LMICs negotiate terms that protect their interests.

Such measures are essential to ensure that vulnerable populations are both protected and benefit directly from global health research efforts.

Conclusion:

Addressing Ethical Challenges in a Changing World

As climate change accelerates health risks, ethical global health research is more important than ever. Ensuring fair benefit-sharing and protection of LMIC communities should be a guiding principle in all international health collaborations.

Equity in global health research means not only protecting vulnerable populations but also empowering them to benefit from scientific advances.

The question remains: *How can we build a future where ethical reciprocity, justice, and fairness are integral to global health research in a climate-challenged world?*



Collaboration, Justice, Impact



Acknowledgments



Cheryl Mcpherson
Ross Upshur
Adrienne Hunt
GFBR Planning Committee