Global AMR R&D priorities in the animal health sector

Global Leaders' Group,
Barbados, February 2023

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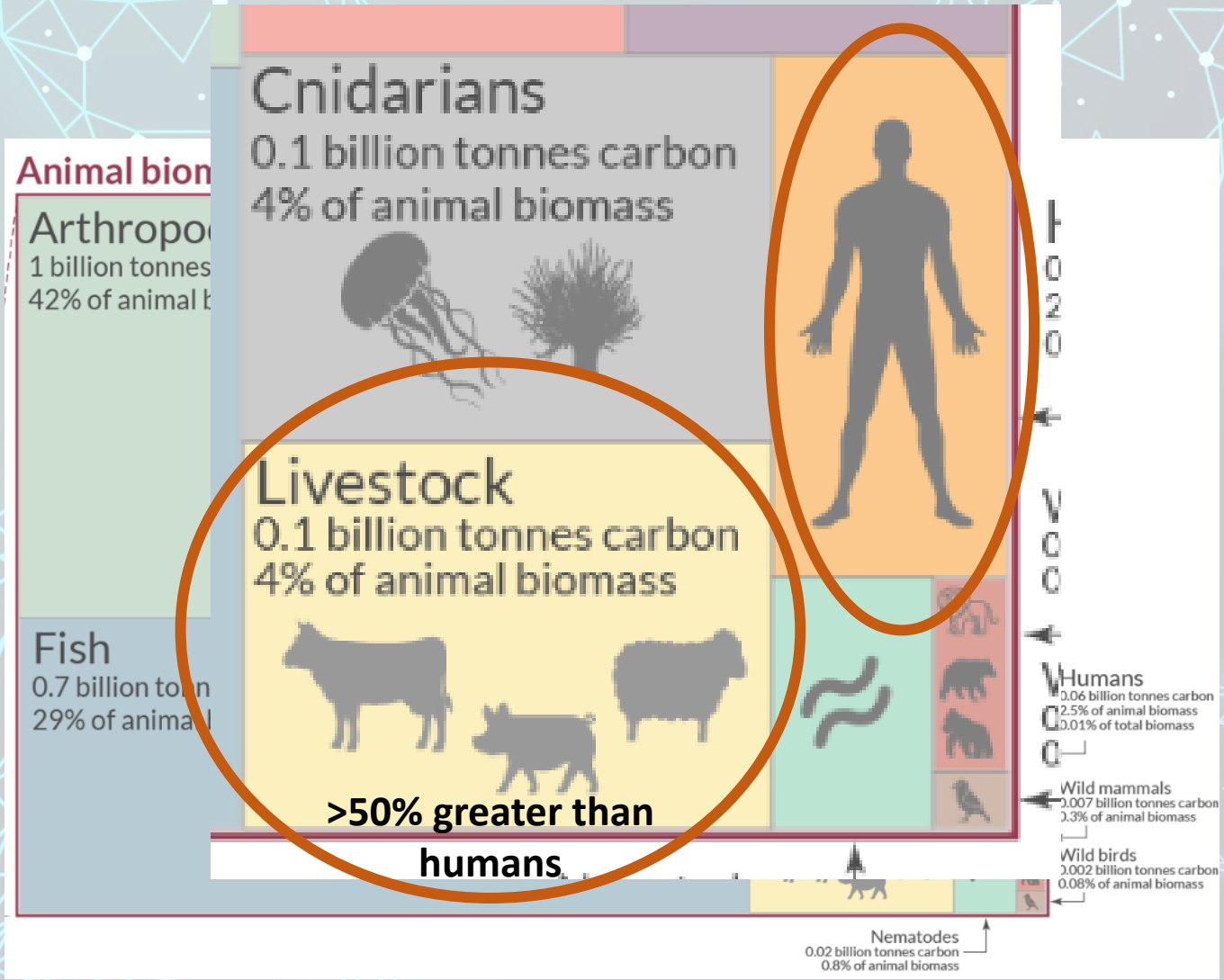
Antimicrobials in animal health

- Animal agriculture is the largest net user of antimicrobials
- Much of this use is legitimate
    - Livestock represent a very large biomass
    - Antimicrobials are used to maintain their health and welfare
- Some use is inappropriate, such as use of medically important antimicrobials for growth promotion
- Some use is driven by unhygienic or stressful farming conditions
- Use of antimicrobials in animals is believed to contribute to AMR in human infections
    - Through contaminated food products
    - Through contamination of the environment (manure onto soil and into water, dust)



Minimising AMU in animals

- Preventing infectious animal diseases can decrease the need for antimicrobial use in animals
    - This can reduce the risk for development of AMR
- This might be achieved through:
    - Vaccines
    - Enhanced biosecurity (national, industry, enterprise level)
    - Enhanced nutrition (natural gut modifiers that do not contribute to AMR)
- Other considerations include:
    - AMU targets (simple reduction in AMU by volume is not a useful indicator)
    - Point of care diagnostic tools (guide prescribing decisions in real time)
- Some use will always be required to treat clinical infections in animals.

Knowledge gaps

- Attribution: how and how much does the animal sector contribute to AMR in humans?
- Surveillance: how can surveillance for AMR in animals be strengthened and funded appropriately?
- Impact: what are the consequences of AMR on animal health and productivity?
- Interventions: which are impactful and cost-effective?

R&D priorities

- Pharmacobiology: optimising the dosage regimens for veterinary medical use
- Registration: predict the impact of the proposed use of the antimicrobial agents in animals on the rate and extent of antimicrobial resistance development
- Diagnostics: demonstrating the need for antimicrobials before commencing therapy.
- Drivers: understanding what promotes development and spread of resistance in animal populations and between animals and people.
- Social science: understanding the human behaviours that promote or prevent achievement of global/ national/ local goals
- Alternatives: develop safe and effective alternatives to antimicrobial agents, including vaccines
- Environment: improve knowledge on the role of the environment on the persistence, transmission and emergence of AMR

Global AMR R&D considerations for the animal health sector

- There is an uneven playing field
    - Most of the focus and funding addresses impacts of AMR on human health
    - What is feasible in developed countries is unrealistic in LMICs
- Understand economic drivers for both development and uptake of innovations
- Identify innovations from other sectors/ problems that could be re-purposed for AMR
    - These may be opportunities for public-private partnerships
- Build on the capabilities of ubiquitous technologies (e.g. mobile phones)
- Plan partnerships appropriate to objectives
    - E.g. for surveillance projects, livestock industry partnerships may be appropriate