Global AMR R&D priorities in the animal health sector
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Dr Mark Schipp
Australian Chief Veterinary Officer
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)

>50% greater than humans
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