Catalyzing innovation and access to AMR diagnostics for animals

J Scott Weese DVM DVSc DipACVIM FCAHS

CPHAZ
Centre for Public Health and Zoonoses

UNIVERSITY of GUELPH
CHANGING LIVES IMPROVING LIFE

6+ innovative high-impact treatments are needed per decade

Report/strategy	Target (therapeutics)	Extrapolation for 10 years
IDSA 10x20	10 “new systemic” over 10 years	10
AMR Review	15 “new”, of which at least 4 “breakthrough”, over a decade	15 (of which 4 breakthrough)
GUARD	One additional “high-need” per year	10
DRIVE-AB	16-20 “truly innovative” over 30 years	5-7
U.S. NAP 2020-2025	Three “new” by 2025	6
BARDA Strategic Plan 2022-2026	Three “novel” by 2026	6

Courtesy of Dr. K Outterson

What’s my target for new antimicrobial classes for animals?

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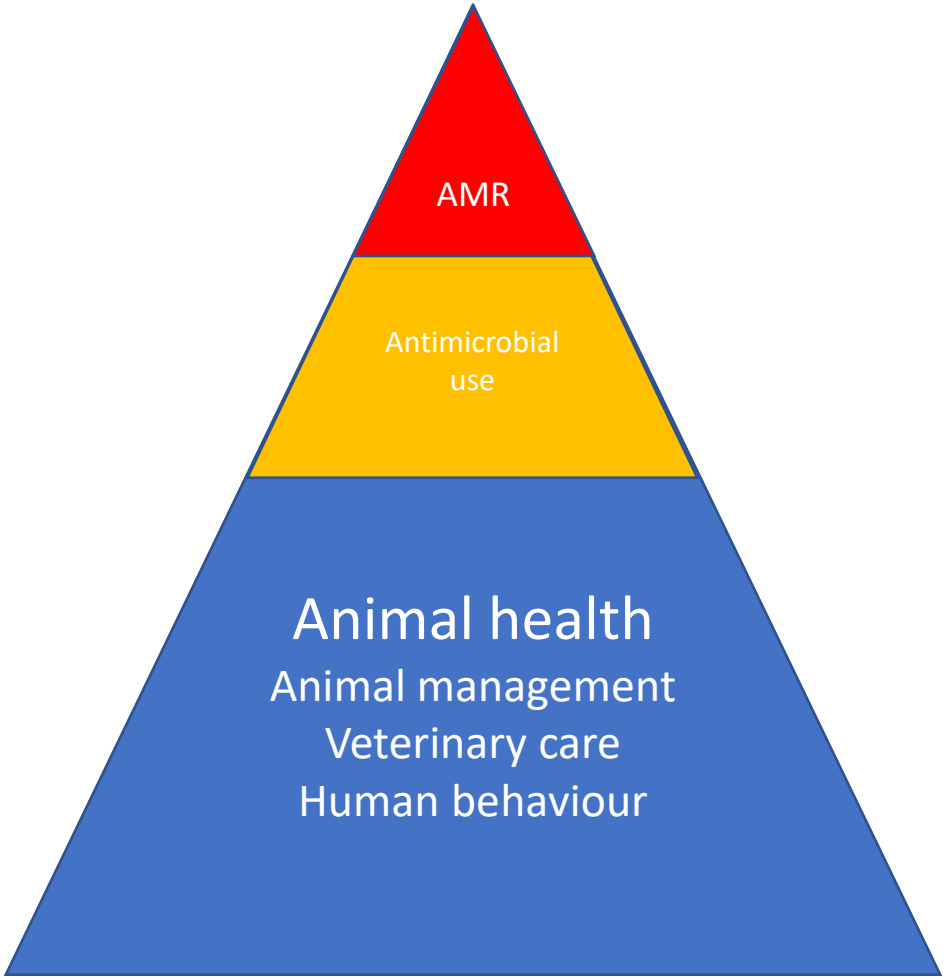
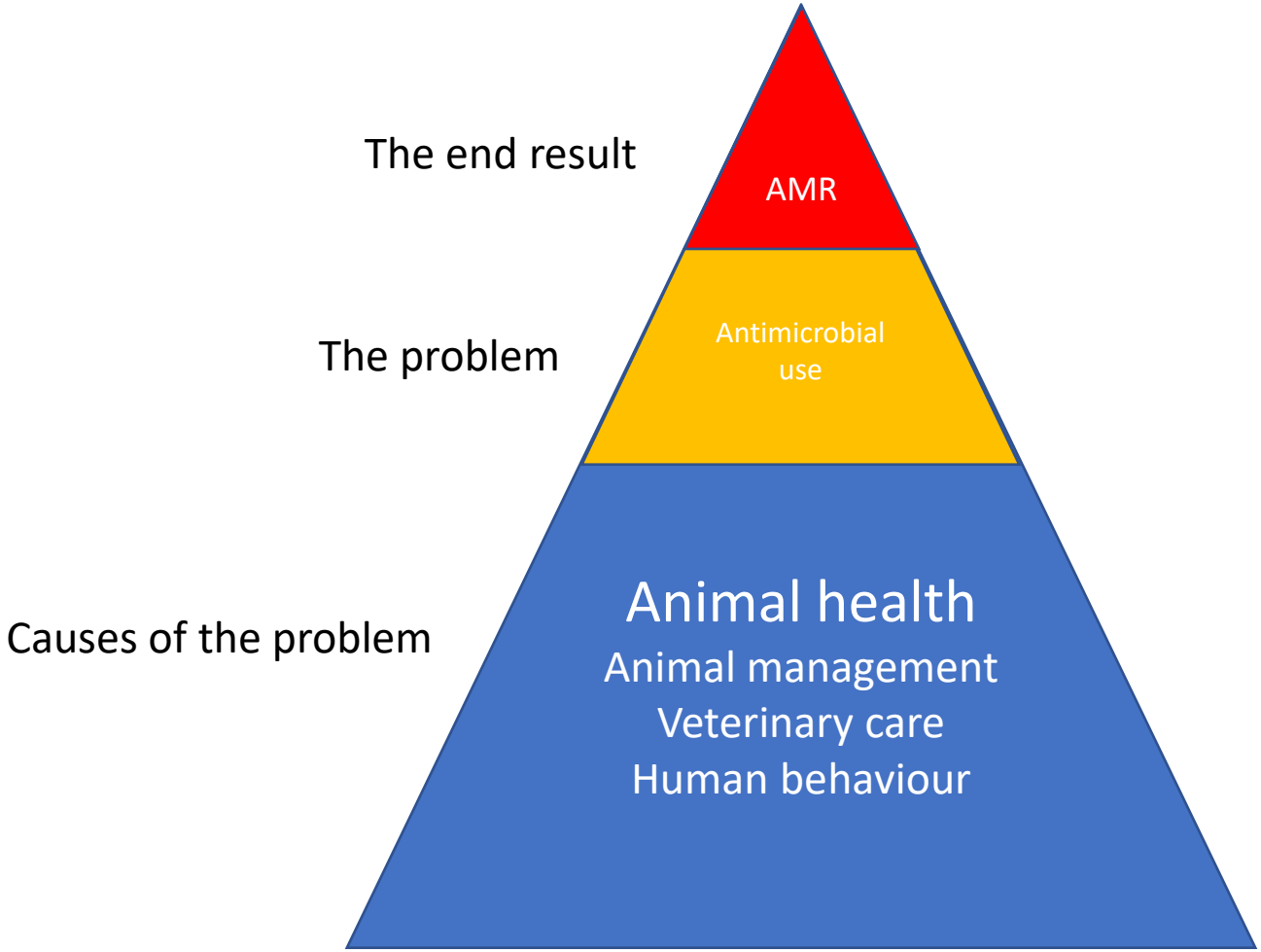
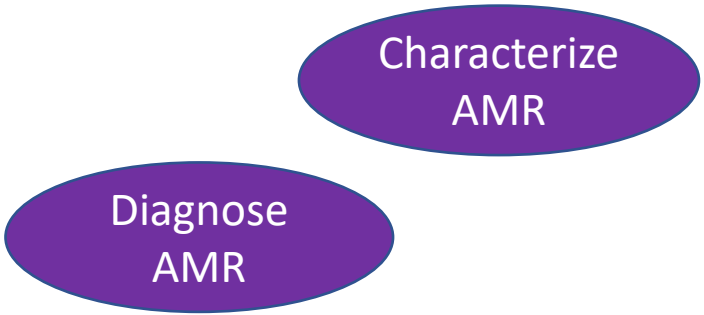
Innovation needs to reduce and improve use of current antimicrobials

“AMR diagnostics?”



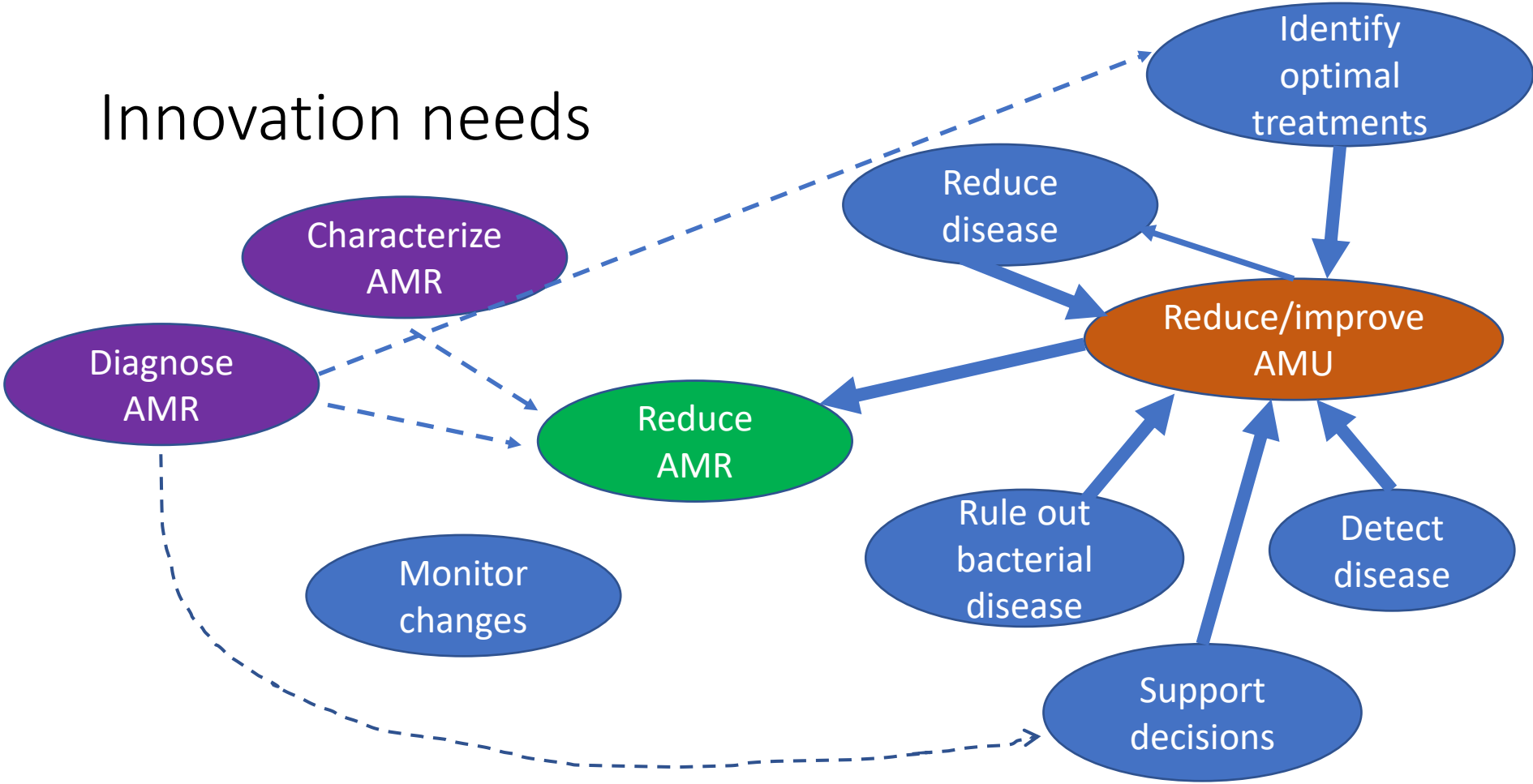

The end result
AMR
The problem
Antimicrobial use
Causes of the problem
Animal health
Animal management
Veterinary care
Human behaviour

Innovation needs

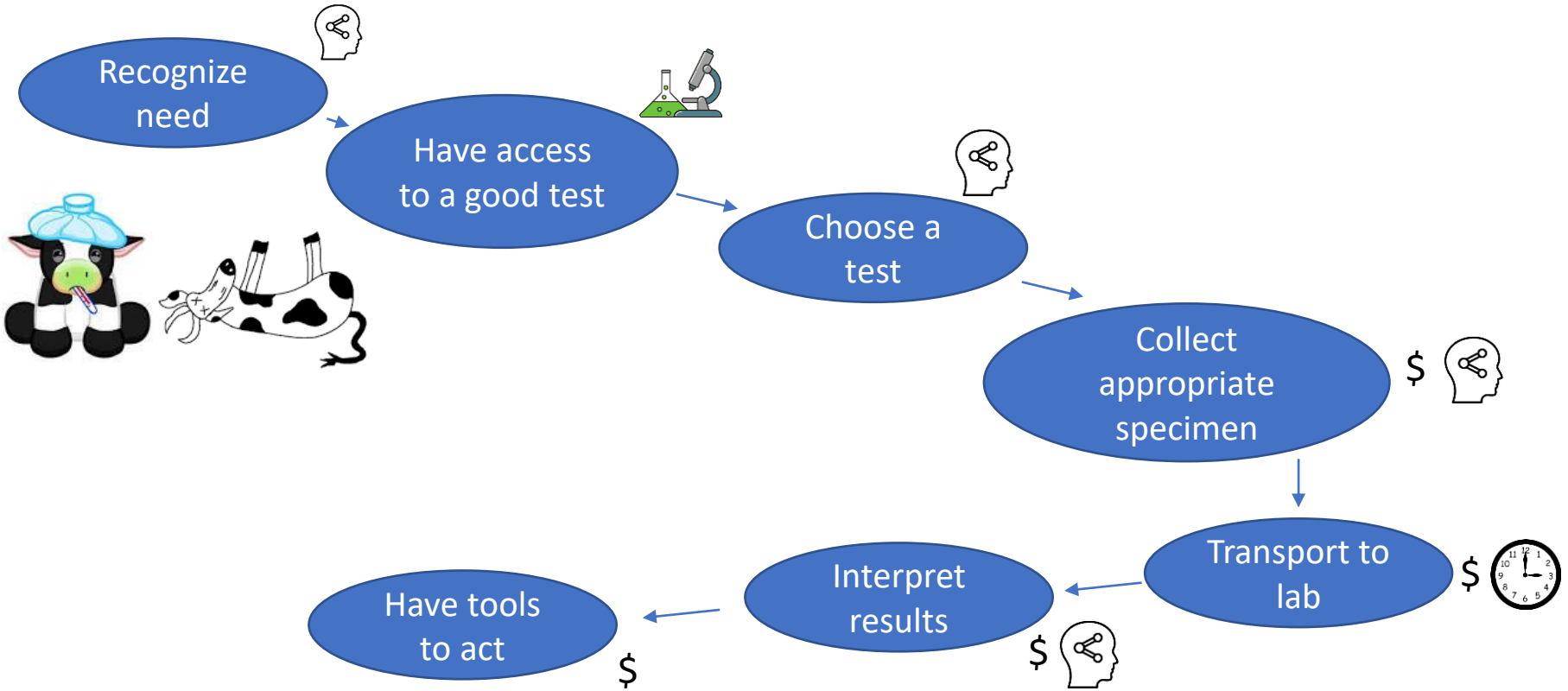


Surveillance
Source attribution
Research
Clinical management

Innovation needs



Typical Diagnostic Testing Challenges



- Very limited access to much of the above where most animals are raised

Examples of innovation opportunities

- Rapid, easy, low-cost, temperature stable animal-side pathogen detection tests
  - Differentiation of bacterial vs viral disease
    - Antimicrobial yes/no decisions
    - Confidence in not treating
  - Rapid infection control intervention implementation
  - Detection of high consequence diseases
  - Disease knowledge to implement future prevention strategies
  - Application of evidence-based/targeted treatments

- Multiplex testing
  - More efficient and cost-effective testing
  - Identification of emerging issues
  - Surveillance data to inform future action

- Biomarkers
  - Detection of ***disease***
  - Confidence in when not to treat

- Tests that differentiate vaccine from infection

Most of those directly apply to human innovation needs too

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Challenges

- Massive public sector funding gap between human and animal research sectors
- Lower private sector priority for animal innovation because of lower potential financial return
- Serial vs parallel development in humans/animals
  - Missed opportunities
  - Delayed access
  - Inefficiency
  - Transferring rejected technologies to animal applications vs prioritizing promising technologies

Diagnostic Innovation Challenges

- Financial
  - Who benefits vs who pays?
  - Cost of testing vs empirical treatment
  - Economic realities for production animals
- Application
  - Technical/personnel requirements
  - Field vs laboratory performance
  - Field stability
- Logistical
  - Diverse ‘animal’ market
  - Diverse range of countries, production systems…

What would happen if we put low cost animal-side WGS into every farm and vet clinic?

New diagnostic tests are only useful if they lead to action (or targeted inaction)

- Decision support
- Veterinary support
- Preventives and appropriate therapeutics
- Alternative treatments
- Containment practices
- Improved management practices


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- We need rapid, accessible diagnostic innovations to improve animal health and optimize antimicrobial use

- We also need myriad parallel health system, communications, management and other innovations to ensure we have ***innovation to action***

- jsweese@uoguelph.ca
- Twitter: weese_scott
- http://www.wormsandgermsblog.com