VETS6301 Veterinary Public Practice

Introduction

Veterinary Science as a Public Good

Economic Goods

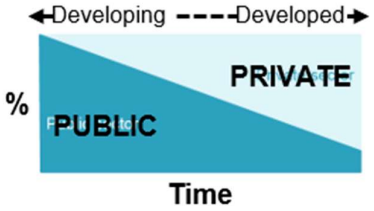
	Excludable	Non-Excludable
Rival	Private Goods *Food*	Common Goods *Water*
Non-Rival	Club Goods *Netflix*	Public Goods *National defence*

Governments

- Provide public goods
- Regulate common goods

Vets

- Australia – 20% public, 80% private
- Developing – 80% public, 20% private



Public Health Surveillance and Response

Public Health Surveillance

- **State** – state responsibility
- **Commonwealth** – collate data and report to the World Health Organisation (WHO)
- **WHO**
  - ❖ **International Health Regulation (IHR)**
  - ❖ Reports regarding **Public Health Emergencies of International Concern (PHEIC)**

	Passive	Active
Initiated By…	Provider ➔ State	State
Duration	Ongoing	Ongoing or outbreak
Disease Burden	Underestimated	Better estimate

Response

Steps

1) Detecting a possible outbreak
2) Defining and finding cases
3) Generating hypotheses
4) Testing hypotheses – analytical studies, lab tests
5) Finding the point of contamination and source of the food
6) Controlling an outbreak
7) Deciding an outbreak is over

Team

- **Public Health Unit –** epidemiological methods, interviews, medical tests
- **NSW Food Authority –** assess food handling, food tests
- **Lab –** isolate pathogens, subtyping
- **Food Industry –** controls

Antimicrobial Resistance

Antimicrobial Use

Categories

- **Therapeutic –** bacterial infection: *clinical signs + lab tests*
- **Prophylactic –** bacterial infection prevention following high risk events or procedures
- **Metaphylactic –** groups at risk due to exposure to disease or unfavourable conditions
- **Sub-Therapeutic**
    - ❖ Production only with no equivalent class in humans
    - ❖ Prevents disease and increases food conversion

Governance

- **Australian Pesticides and Veterinary Medicine Authority (APVMA) –** register drugs
- **State Health Departments –** control use of S4's
- **State Veterinary Registration Boards –** current practice standards

Antimicrobial Resistance (AMR)

- **AMR –** ability of a microorganism to stop an antimicrobial working against it
- Selective pressure ➔ resistance ➔ resistant microbes and resistance genes disseminate
- Types
    - ❖ Innate (Natural) – β-lactamase producers against β-lactams: *E. coli*
    - ❖ Acquired – genetic mutation or genetic acquisition

Impact

- Cost of healthcare increases
- Compromised success of surgery and chemotherapy
- Threat to effective prevention and treatment
- Threat to global public health that compromises the control of disease spread

Implications

- **Importance Rating –** low, medium, high
- **Spectrum –** broad vs narrow

Humans

- **Antimicrobial Use and Resistance (AURA) –** surveillance in hospitals and the community
- Australia is above the average volume
- Overprescribing – surgical, respiratory disease, aged-care
- Use – ↓ hospitals, ↑ community

Animals

- **1970's –** all medically important must be dispensed by registered vets
- **Companion**
    - ❖ Cephalosporins (3rd Generation) – ceftiofur + cefovecin
    - ❖ Fluoroquinolones
- **Food Producing**
    - ❖ Ceftiofur – *cattle:* respiratory disease + foot disease
    - ❖ Fluoroquinolones – never registered
- No nationally coordinated veterinary or agricultural surveillance program
- **Problems –** cost, prescribe and dispense antimicrobials, sample submission