SURVEILLANCE OF AMR: TRENDS, LABORATORY CAPACITY, CHALLENGES AND PLANS

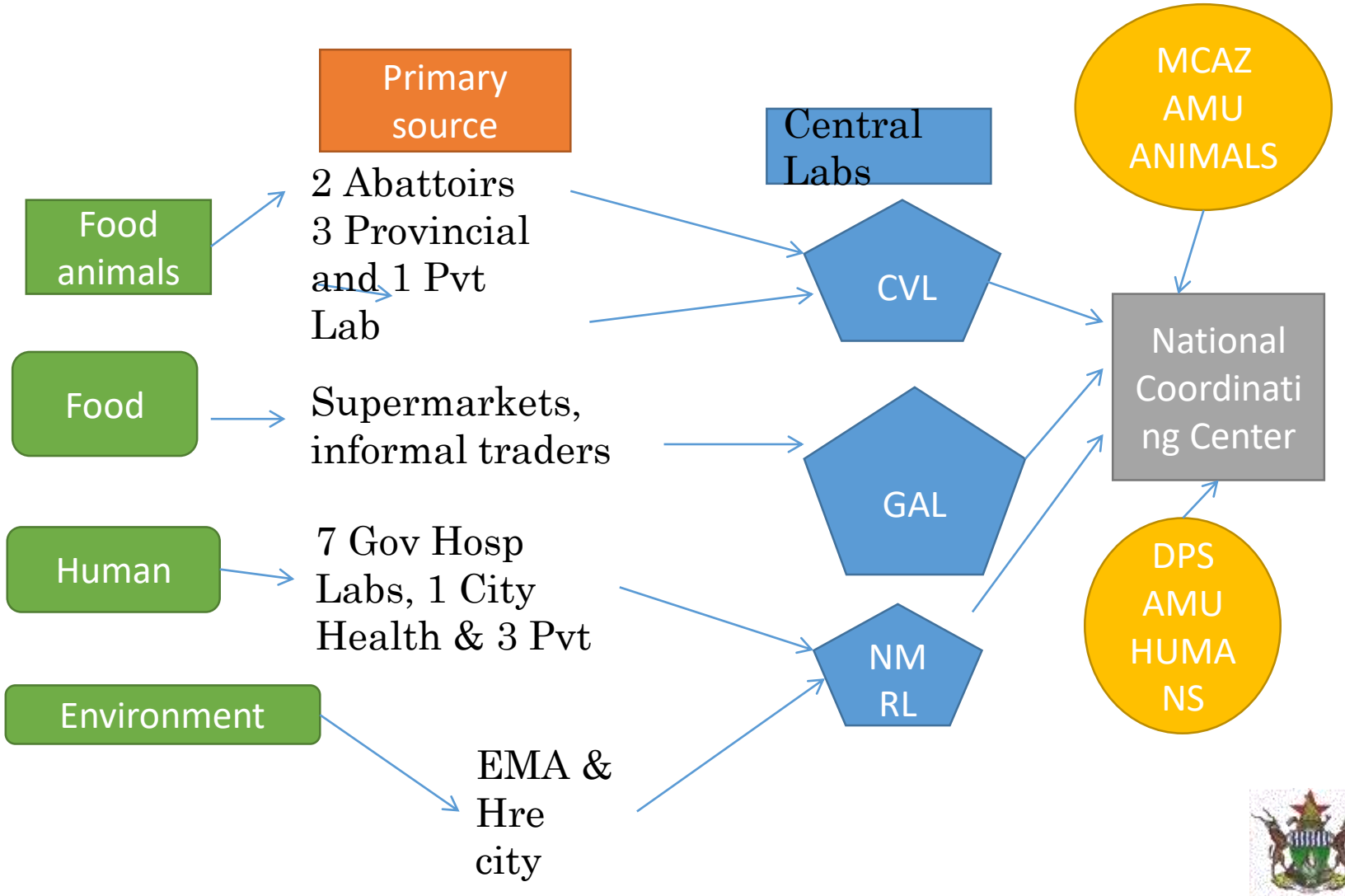
Andrew Tarupiwa, Microbiologist, National Microbiology Reference Laboratory

Overview of AMR in Zimbabwe

- Zimbabwe implemented Enteric pathogens surveillance in 1995
  - Detection and monitoring of AST

  - In 2017 Zimbabwe adopted a **One Health Surveillance** of foodborne pathogens (*Salmonella* spp and *E.coli*)
  - Training of One Health Sentinel labs in detection and monitoring of resistance foodborne pathogens
  - Training of human health labs in detection and monitoring of resistance of priority pathogens

One Health Surveillance - Strategy



Results of One Health Surveillance program

Fig 1 - Sensitivity pattern for human *E. coli* isolates

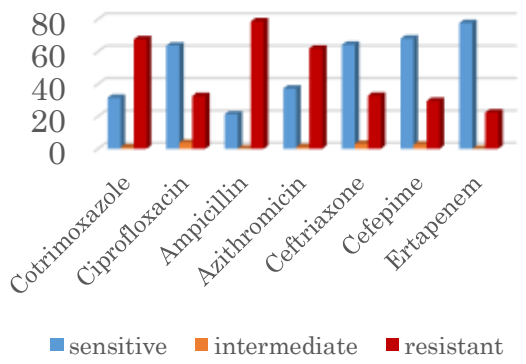


Fig 2 - *E. coli* AST from Avian samples

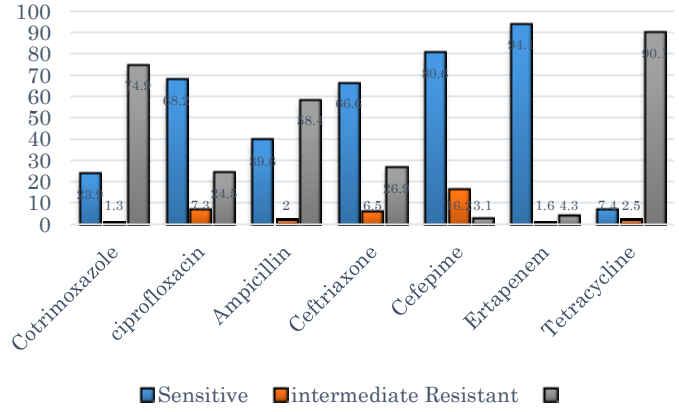


Fig 3 - *E. coli* AST from bovine samples

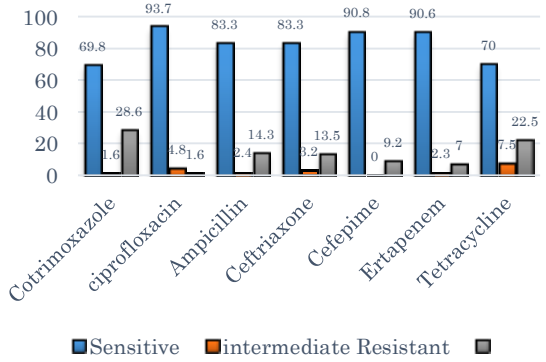


Fig 4 - *E. coli* from environmental samples

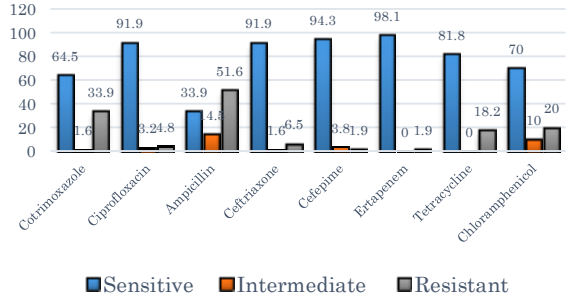
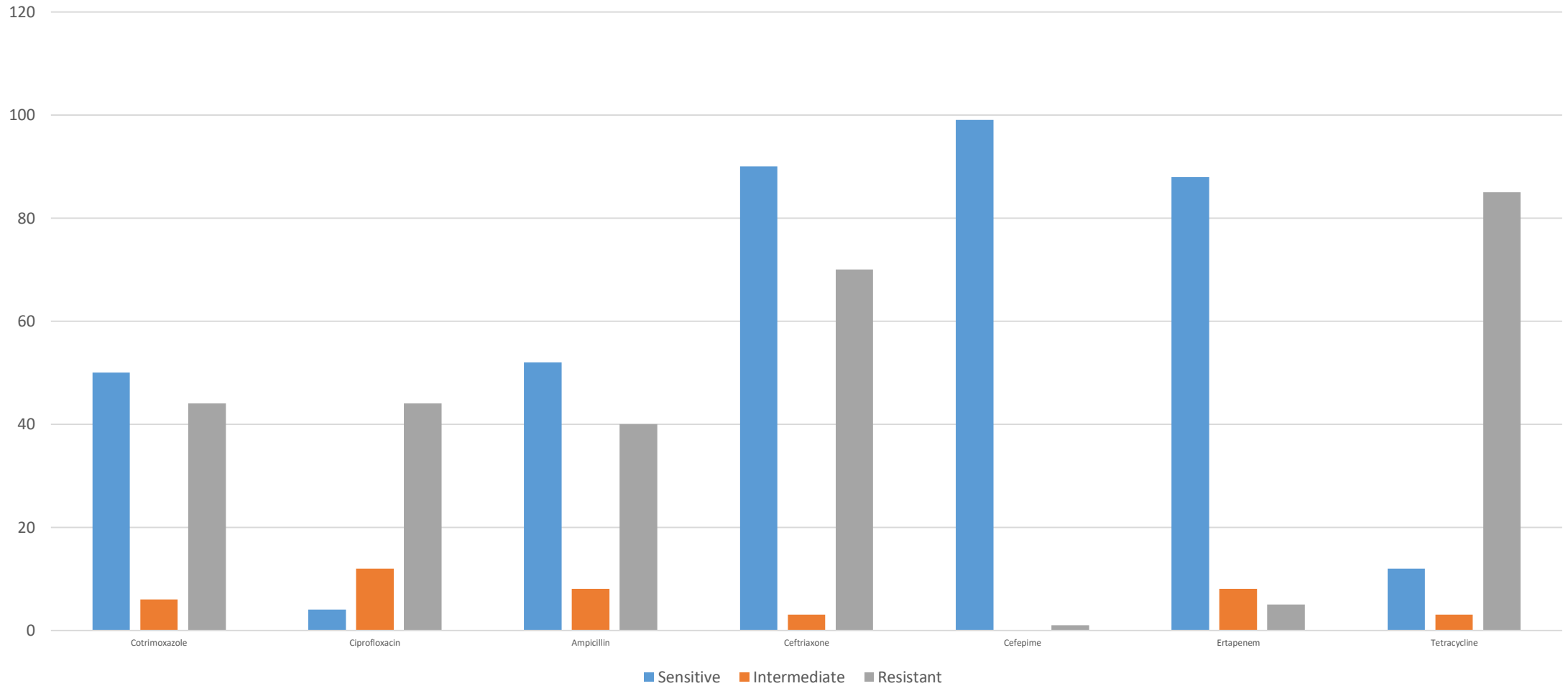


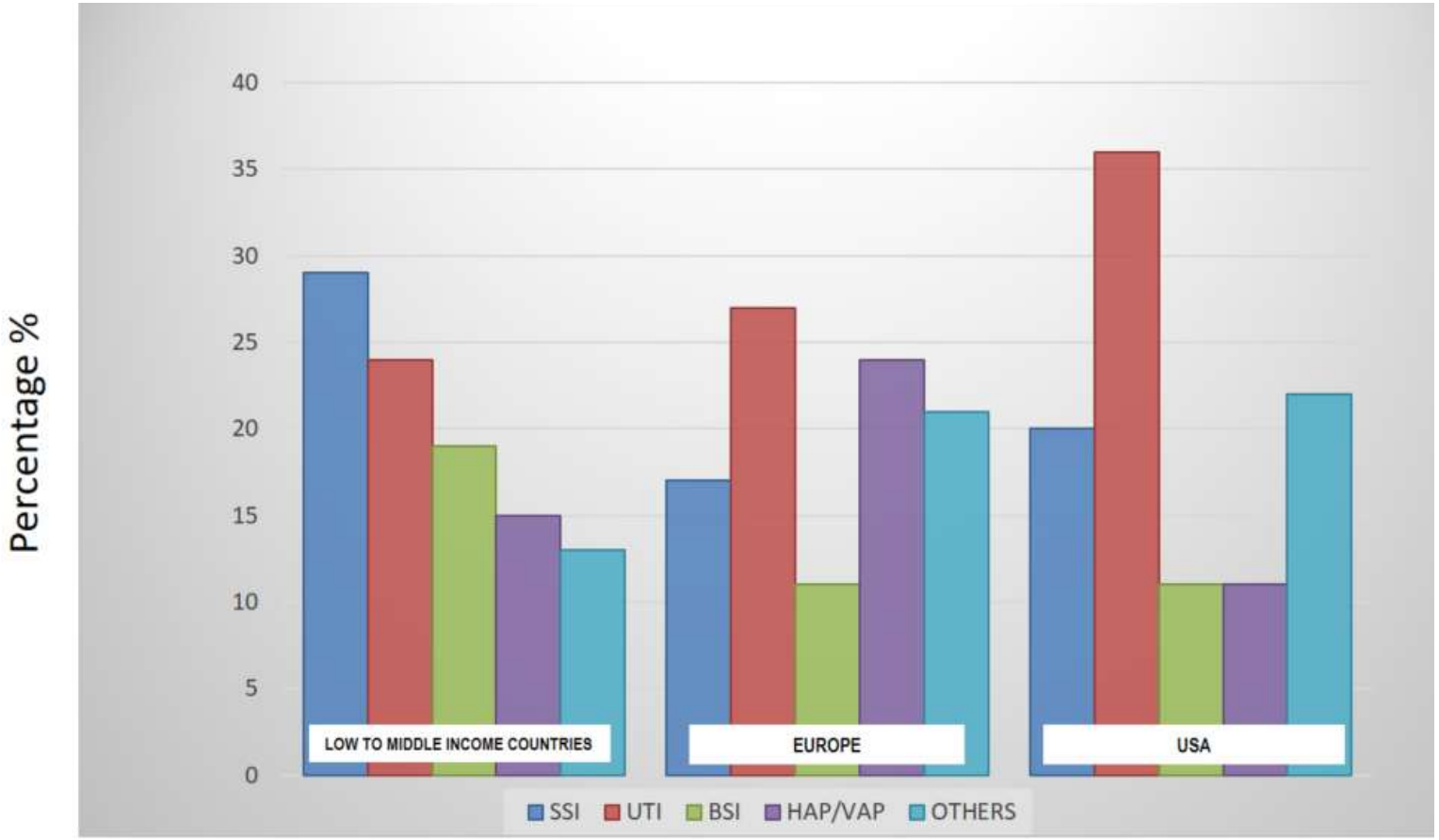
Fig 5- *E. coli* from chicken cuts



Healthcare associated infections – no national HAI surveillance system – we are applying for funding to set up a pilot for Neonatal sepsis and SSIs

Burden of major HAI types in different economic regions

The four major types of healthcare-associated infections



SSI - surgical site infections: UTI - Urinary Tract infections: HAP/VAP Hospital acquired pneumonia/ Ventilator acquired pneumonia

Source: Report on the burden of endemic healthcare associated infections worldwide. Geneva: World Health Organization, 2011.

SSI Data from Zimbabwe

- Overall SSI rate of 26% associated with abdominal surgery in a prospective study to evaluate risk factors in 285 patients in Harare
  Muchuweti D, Jonsson KUG. 2013 Int Wound J; 12:517–522

- Incidence of SSIs in Caesarean sections prior to an IPC intervention was 29% (n=237) in two Central Hospitals. Post – intervention dropped to 12.1% (n=275)

  The IPC intervention introduced included feedback of surveillance data, IPC training, a post-operative wound care factsheet for mothers and an SOP for cleaning of surgical instruments
  A Maruta MPhil Thesis 2015 University of Stellenbosch SA

NOTE: High rates of SSIs but no microbiological data included in either of these studies so the role of AMR organisms in these infections remains unknown.

Neonatal sepsis

Outbreak reported: 24 October 2016 at Parirenyatwa Hospital NNU

- 41 deaths in 5 months

- 641 clinical records reviewed (13th June 2016- 26th October)
- 108 (17%) were diagnosed with neonatal sepsis (NNS)
- 78% NNS yielded a positive *Klebsiella pneumoniae* blood culture.
- 50% of the deaths can be attributed to *K.pneumoniae* and could have been prevented in the absence of the bacteria.
- 94% of neonatal sepsis cases recorded acquired the syndrome whilst resident in the unit, having been admitted for different reasons

HOSPITAL-ACQUIRED NEONATAL SEPSIS OUTBREAK IN AN INTENSIVE CARE UNIT, PARIRENYATWA GROUP OF HOSPITALS, ZIMBABWE, 2016 H. Mugauri1 , A. Mashumba **Pediatric Critical Care Medicine.** 19(6S):110, June 2018.

Challenges

- Laboratory capacity
  - Human resources
  - Lack of equipment and reagents
  - Lack of skills
- Lack of funding

Next Steps

- Implementation of Global One Health Tricycle ESBL *E.coli* project – 2020 to 2021 (**supported by WHO**)
- Strengthening of One Health Surveillance program within 14 laboratories and NAP – 2020 -2022 (**Supported by Fleming Fund grant**)