Livestock sector overview, drivers and trends of antimicrobial use and AMR, laboratory capacity, challenges and priorities

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LIVESTOCK OVERVIEW

Based on a 2014-2015 census (DVS, MLAWRR)

- 5.5 million head of cattle
- 3.3 million goats
- 975 000 sheep
- 200 000 pigs
- 40 million chickens
- 800 ostriches
- and farmed crocodile

- The Zimbabwe livestock industry is also a significant contributor to the growth and development of the national economy.
- livestock contributes about 86% to household income in small holder sector.
- In 2005, livestock alone contributed to 5.5 % of the annual GDP of the country, but the recent 5 year Agriculture recovery and Livestock growth strategy is aimed at increasing this contribution.
- The agricultural sector is the backbone of the economy
- food security and poverty eradication hinged on agriculture.
- In Zimbabwe, the animal diseases in which antibiotics are highly used are mastitis, tick borne diseases (January disease, heartwater, redwater, gallsickness) and, fowl typhoid, colibacillosis, coccidiosis, other causes of diarrheal disease, streptococcosis in fish and even viral diseases such as lumpy skin disease.

DRIVERS OF AMU/AMR

- ❑ Poor hygiene(e.g. poultry farmers)
- ❑ Lack of knowledge
- ❑ Limited professionals on the ground< 30% vets, national establishment
- ❑ Unlicensed AM traders(fake products, little of the active ingredient)
- ❑ Use of expired drugs by farmers
- ❑ Social, economic and political reasons

Ref :FAO AMR KAP study 2019

CAPACITY AND GAPS

4.1. SURVEILLANCE SYSTEM FOR ZIMBABWE

Governance:

General National framework and how is AMR issue addressed at national level :

National framework for AMR:	Zimbabwe
A national policy to combat AMR	✖
A national action plan to combat AMR	✔
A national strategy	✖
Regulatory measures	✖

- AMR surveillance is addressed (S4) in Zimbabwe:

Surveillance domains	Zimbabwe
AMR surveillance in human health	✔
AMR surveillance in veterinary public health	✔
AMR surveillance in agriculture	✖
AMR surveillance in the environment	✖

- Actors actively involved in national AMR surveillance in veterinary public health (S10):

Actors involved in Veterinary public health (VPH)	Zimbabwe	
Central/peripheral Laboratories	✔	1
Epidemiological unit responsible for AMR surveillance	✘	0
National unit responsible for AMU surveillance	✘	0
National regulatory authorities	✘	0
Veterinary practitioners organizations	✘	0

- AMR surveillance conducted in Zimbabwe through occasional studies (S5).

- Funding for AMR data collection and analysis (S9-25-26-34) is organized as below:

AMR funding (data collection, testing for surveillance and diagnostic)	AMR data collection and analysis	AMR Plans		
		Animal Health- Surveillance purposes	Animal Health- Diagnostis purposes	Food Safety
Government	✗	✗	✗	
Own lab budget	✗	✗	✗	
External funding, e.g. specific studies	✓	✓	✗	
Animal or product owners		✗	✓	
Antibiotics manufacturers, suppliers or users	✗			

Area	Category	Sub category	Current lab LMT score	Improvements for next level	Next level	Improvements for next level	Next level +1
Activity	**Sustainability**	Financial capacity (allocation of funds)- L1	4		≥1		≥2
		Management- L2	3		≥1		≥2
	Workflow organization	Quality of samples submitted - L3	4		≥3		≥3
	Collaborations	Training about antimicrobial resistance- L6	3		≥1		≥1
		Scientific publications- L7	1		≥1		≥1
		Collaboration with other labs in the country- L8	4		≥1		≥1
		Collaboration with reference labs outside the country- L9	1		≥1		≥1
Technical practices	**Resources for Bacteriology testing**	Biosafety of bacteriology lab - L10	3		≥2		≥3
		Equipment for bacteriology and AST - L11	3		≥3		≥3
		ANIMAL DISEASES - Media and consumable- L12	3		≥3		≥3
		FOOD SAFETY - Media and consumable- L13	N/A		≥3		≥3
		WATER and ENVIRONMENT - Media and consumable- L14	N/A		≥3		≥3
		Reagents availability for AST - L15	3		≥3		≥3
	Bacteriology- technical practices	Bacteriology methods - L16	3		≥3		≥3
		Bacterial identification- L17	2		≥2		≥2
	Antimicrobial susceptibility testing (AST) methods	Standard for AST- L18	3		≥2		≥3
		Bacterial inoculum calibration for AST - L19	3		≥3		≥3
		Panels definition- L20	4		≥4		≥4
		Revision of panels of antibiotics- L21	4		≥3		≥4
		Method for reading disc diffusion results- L22	1		≥2		≥2
		Method for reading MIC results- L23	N/A		≥2		≥2
		Standard for interpretation of disc diffusion results - L24	2		≥3		≥4
		Standard for interpretation of MIC results- L25	N/A		≥3		≥4
	Molecular Tools	Molecular characterization (resistance gene confirmation or typing)- L26	1		≥1		≥1
		Sequencing of resistant strains- L27	1		≥1		≥1
Management of data and biological material	**Management of biological material**	Sample identification and follow-up- L28	4		≥2		≥3
		Proportion of isolates stored in a library- L29	1		≥1		≥2
		Method for bacterial preservation- L30	1		≥1		≥3
		Inventory of stored isolates- L31	1		≥1		≥3
		Duration for bacterial isolates storage- L32	1		≥1		≥2
	Data management	Individual reports on AMR data to the customers- L33	3		≥3		≥4
		Data archiving- L34	4		≥2		≥3
		AMR data transmission to a dedicated epidemiology unit and analysis- L35	1		≥1		≥2
Quality Assurance	**Documentation**	SOPs on AMR detection implemented- L36	4		≥2		≥3
		SOPs on AMR detection updating- L37	2		≥2		≥3
	AMR Detection	Reference strains for AST quality control- L38	4		≥2		≥3
		Proficiency testing for AST- L39	1		≥2		≥3
	Staff	Initial training in AMR testing- L40	2		≥1		≥2
		Staff skill validation and continuous proficiency- L41	2		≥1		≥2

PRIORITIES

- National policy to combat AMR
- National strategy(ies)[TWGs e.g. surveillance, communication]
- Regulatory measure
- AMR surveillance in agriculture(strong lab networks & collaboration)
- AMR surveillance in environment
- AMR funding for data collection and analysis
- Management of data and biological material
- Quality assurance

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