

**Knowledge Attitudes and Practices of Farm Owners and Managers on Antibiotic Use,
Antibiotic Resistance and Antibiotic Stewardship:
A Research Project at the Antimicrobial Research Unit, University of KwaZulu-Natal**

Antibiotic resistance (ABR) is a complex, global public health problem. It occurs as a consequence of the overuse or misuse of antibiotics which results in a decrease in the effectiveness of the antibiotic. Due to the increase in animal protein demand, it is estimated that between 2010 and 2030 the administration of antibiotics in food animal production system will increase by 67% worldwide. Almost all the classes of antibiotics used in humans are also used in animals for therapeutic and non-therapeutic purposes. Antibiotics are used in livestock production as metaphylaxis, prophylaxis and as growth promoters. Farm owners and managers are responsible for the collection, storage and administration of antibiotics to animals under their care and ownership and thus play an important role in the correct use of antibiotics. A Masters study by a student affiliated to the Antimicrobial Research Unit, University of KwaZulu-Natal seeks to understand the knowledge, attitudes, and practices (KAP) of farmers on antibiotic use, antibiotic resistance and antibiotic stewardship by way of an online self-administered questionnaire to members of the Red Meat Producers Organization (RPO), Milk Producers Organization (MPO), South Africa Poultry Association (SAPA), South Africa Pork Producers Association (SAPPA) and the Kwazulu-Natal Agriculture Union (Kwanalu). The results of the study will optimize the use of antibiotics in food animal production and inform measures to ensure their sustainable effectiveness.

Informed Consent to participate in research study



Dear Participant.

You are kindly invited to participate in a research project, the aim of which is to assess the knowledge, attitudes, practices, and experiences of farm owners and managers on antibiotic use, resistance and stewardship in food animal production systems in KwaZulu-Natal farms.

An antibiotic is a medicine that is used to treat infections, it works by destroying/killing bacteria or by inhibiting bacterial growth.

Antibiotic resistance occurs when bacteria are no longer affected by the antibiotics that previously used to kill them and cure the infection.

Antibiotic stewardship is a coordinated program that promotes the appropriate use of antibiotics for treatment, prophylaxis and metaphylaxis in food and other animals to prevent the emergence and spread of antibiotic resistance and the outbreak of drug-resistant infections.

Your participation in this study involves answering questions about antibiotics, antibiotic use, antibiotic resistance, and antibiotic stewardship. Your participation is entirely voluntary.

Please be advised that

- No identifying information will be stored or shared. Your answers are anonymous.
- Confidentiality and anonymity are guaranteed by the survey format.
- Your participation is critical for the success of this study but entirely voluntary.
You are free to decline participation
- There are no known risks in participating in this study

- This study has been granted ethical clearance from the UKZN Humanities and Social Science Research Ethics Committee (HSSREC/00000998/2020)
- If you continue to the questionnaire after reading this letter, you are giving voluntary informed consent to participate in the survey.

Thank you in advance for your participation. If you have any questions or queries, please feel free to contact the following

Researcher: Lefa Thabo Mokhutsoane

E-mail: lefamokhutsoane@gmail.com

Cell number: 072 089 0897

We thank you in advance for your participation.

Yours faithfully

Lefa Thabo Mokhutsoane

Consent Form

I..... (name) have been informed about the study entitled the assessment of the knowledge, attitudes, experiences, and practices of the farm owners and managers on antibiotic use, resistance and stewardship in food animal production systems in KwaZulu-Natal by Mr. Lefa Thabo Mokhutsoane from University of KwaZulu-Natal (UKZN), Westville Campus, School of Health Sciences, Discipline of Pharmaceutical Sciences, contact number (072 089 0897) and my email: lefamokhutsoane@gmail.com.

If I have any further questions/concerns or queries related to the study I understand that I may contact the researcher at (072 089 0897) or lefamokhutsoane@gmail.com or the Supervisor : Dr. M. Nlooto at Nlooto@ukzn.ac.za. Contact number: 031 2607030 or the Co-Supervisor: Prof S. Essack at Essacks@ukzn.ac.za. Contact number: 031 2607785

If I have any questions or concerns about my rights as a study participant, or if I am concerned about an aspect of the study or the researchers then I may contact:

Humanities and Social Science Research Ethics Committee

Research Office, Westville Campus

Govan Mbeki Building

Private Bag X 54001

Durban

4000

KwaZulu-Natal, SOUTH AFRICA

Tel: 27 31 2604769 - Fax: 27 31 2604609 Email: HSSREC@ukzn.ac.za

Signature of Participant

Date

**Signature of Witness
(Where applicable)**

Date

**Signature of Translator
(Where applicable)**

Date

Questionnaire

• Section 1: Socio-demographic characteristics

Please tick where appropriate

1. Gender: Male Female

2. Race : Black Indian White Coloured

3. Your responsibility/position on the farm: Owner Manager

4. Years of work experience in the above-mentioned position.....

5. What is the size of your farm in terms of the number of birds/animals reared:

.....

6. How are you animals reared?

Intensive farming system – in specifically built housing

Extensive system – outside or limited shelter

Other

Please describe

7. What type of food animals do you rear on your farm?

Broilers Layers Breeders Porkers Baconers Dairy cattle

Beef cattle Sheep Goats

8. Who do you sell your product to?

Factories Public Commercial buyer

9. Do you use antibiotics on your farm for?

¹Prophylaxis ²Metaphylaxis ³Growth Promotion

¹ For Healthy animals suspected to be susceptible to any infection.

² For healthy animals to prevent the outbreak or spread of disease.

³ Added to the feed as additives to ensure efficient or rapid growth and reproduction in food animal production.

10. How often does your veterinarian(s) visit your farm per year?

0-2 3-5 6-10 Other.....

Reason for visit.....

• **Section 2: Knowledge of farmers on antibiotic use and the emergence of ⁴antibiotic resistance in intensive, extensive and small-scale family farms in KZN.**

1. Which of the following can be treated by an antibiotic (s)?

- a. Pain
- b. ⁵Inflammation
- c. Infections

2. Are antibiotics different from anti-inflammatory agents (medicines used to reduce inflammation)?

Yes

No

Please provide an example of each:

Antibiotic

Anti-inflammatory agent

3. Are antibiotics different from anti-pyretic agents (medicines used to prevent or reduce fever)?

Yes

No

Please provide an example of an anti-pyretic

4. Antibiotics should only be administered to sick animals?

⁴ The ability of a bacteria to resist the impact of the antibiotic that they were once sensitive too.

⁵ A localized physical condition to which a part of the body becomes swollen and often painful which is caused by an injury.

Yes

No

5. It is acceptable to use a lower/lesser dose of antibiotic than that prescribed?

Yes

No

6. Are you aware of a correct or proper dose of antibiotics to administer to your birds/animals?

Yes

No

7. Do some antibiotics have harmful effects on animals?

Yes

No

8. Should the antibiotic be stopped as soon as the animal's condition improves?

Yes

No

9. Which of the following conditions do you treat with antibiotics? Please name the antibiotic you use in the space provided

a) Diarrhea.....

b) Fever.....

c) Urinary tract infection.....

d) Respiratory tract infection.....

e) Skin infection.....

f) Ecto-parasitic infestation.....

g) Parasitic gastro-enteritis.....

10. Antibiotic resistance is one of the most challenging problems in livestock production?

A. Agree

B. Disagree

C. Neutral

11. Antibiotics are not as effective in humans because of their misuse and overuse in humans?

A. Agree

B. Disagree

C. Neutral

12. Antibiotics are not as effective in humans because of their misuse and overuse in animals?

D. Agree

E. Disagree

F. Neutral

13. Many common infectious diseases in humans and animals will be incurable in the future because of antibiotic resistance?

A. Agree

B. Disagree

C. Neutral

14. Indicate whether the following statements are true or false.

- A. Antibiotics increase the rate of drug-resistant infections in animals.
- B. Antibiotic-resistant infections are difficult to be treated with available antibiotics.
- C. Antibiotic resistance negatively affects animal populations.
- D. Antibiotic resistance is not an issue in South Africa.
- E. Antibiotic resistance can spread from animal to animal and animals to humans and vice versa.
- F. Antibiotic resistance can cause similar problems in animal and human populations.

• **Section 3: Attitudes of farmers towards antibiotic use, resistance, and ⁶stewardship in intensive, extensive and small-scale family farms in KZN.**

1. Do you store or keep antibiotics on your farm?

Yes No

If Yes please explain the reasons why.....

.....

2. When was the last time you used antibiotics on your animals?

- A. In the last month
- B. In the last 6 months
- C. Last year

3. Was the last antibiotic you used prescribed by a veterinarian?

Yes

No

⁶ Coordinated program that aiming to promote appropriate use of antibiotics to improve outcomes, reduce resistance and the spread of infection

4. Where did you buy the last antibiotic you used?

- A. Veterinarian
- B. Drug company (direct)
- C. Drug company (via representative)
- D. Co-operative
- E. Pharmacy (over the counter)
- F. Others

Please mentioned others.....

5. Do you observe the specified withdrawal period for each antibiotic you use to treat animals/birds?

- A. Yes
- B. NO

6. Do you seek guidance from a veterinarian before using antibiotic (s) on your farm?

- A. Yes
- B. No

7. Antimicrobial resistance is amongst the biggest problem in livestock production?

- D. Agree
- E. Disagree
- F. Neutral

8. Please indicate whether the following is true or false.

- A. Antibiotic use is associated with the risk of antibiotic resistance emerging in animals.
- B. Antibiotics can be easily and quickly given to animals.

- C. Antibiotics are affordable and have a good ⁷cost-benefit ratio.
- D. Antibiotics work effectively and quickly on (sick) animals.
- E. Antibiotics greatly reduce the rate of ⁸morbidity and⁹ mortality in animals.
- F. It is good to administer antibiotic agents to animals after consulting veterinarian.

9. Please tick where is appropriate

	Agree	Disagree	Neutral	Not sure
Technical progress in ¹⁰ animal husbandry such as animal welfare, ¹¹ biosecurity, and hygiene will decrease the need for and use of antibiotics.				
A ban on antibiotic use as growth promoters in animals will have a negative effect on livestock production.				
It is difficult to produce high quality livestock products at a reasonable price without antibiotics.				
If consumers become aware of the current level of antibiotics used in food animal production, they will buy less ¹² livestock products.				

⁷ Process of evaluating all benefits and cost consequences due some programs or projects

⁸ The rate of a disease within a population.

⁹ The number of deaths within a population,

¹⁰ Management, breeding and caring of an animal by humans for a profit.

¹¹ Set to reduce risks of infection transmission within animals population.

¹² Domesticated animals raised in an agricultural setting to produce animal- derived products such as meat, eggs and dairy.

People working in food animal production systems are at high risk of carrying antibiotic-resistant bacteria.				
Antibiotics reduce the risk of spreading infections from animals to humans and vice versa.				
Antibiotics used in food animal production system reduce the effectiveness of the antibiotic in human medicine.				
Antibiotics are overused in food animal production systems.				
Diseases in food animal production can be treated without antibiotics.				
It is less expensive to keep animals healthy using antibiotics than improving flock/herd management.				
Rearing a large number of animals is only possible with the use of antibiotics.				
Diseases caused by the conditions of intensive food animal production can only be cured by antibiotics.				
The quantity of antibiotics used on a farm is a good indicator of the husbandry conditions.				

Farmers can help to reduce or stop widespread antibiotic resistance.				
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• **Section 4: Practices of farmers related to antibiotic use, resistance and stewardship in intensive, extensive and small-scale family farms in KZN.**

1. Do you consult a veterinarian before you use antibiotics on your animals?

Yes

No

2. Do you give your animals antibiotics following the instructions of the veterinarian(s)?

Yes

No

3. Do you give your animals antibiotics following instructions on the antibiotic package insert/leaflet?

Yes

No

4. Please tick where is appropriate

	True	False
Farmer may store or keep antibiotics for later use in animals.		
Appropriate antibiotic use can reduce the risk of antibiotic-resistant infections in animals.		
Antibiotic resistance can be reduced by good husbandry.		
Antibiotics should only be administered to animals when they are prescribed by veterinarians.		
A veterinarian should only prescribe antibiotics when necessary.		

Veterinarians have the skills to solve the problem of antibiotic resistance.		
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5. Please tick where is appropriate.

	True	False	Not applicable
My veterinarian informs me about the risks of antibiotic use in my birds/animals.			
My veterinarian guides me on the use of antibiotics and how they work.			
My veterinarian informs me about alternatives to antibiotics and how to use them.			
I consult my veterinarian primarily for prescribing the drugs I need.			
My veterinarian is my first point of contact for questions about diseases in my animals.			
My veterinarian should prescribe antibiotics after he/she has examined the animals.			
Feed experts provide better advice on antibiotics than veterinarians.			
I keep a record of all drugs used on my farm.			

My feed expert guides me on the use of antibiotics and how they work.			
My feed expert warns me about the risks of antibiotic use.			
My feed expert informs me about alternatives to antibiotics and how to use them.			
My feed expert is the first point of contact for questions about diseases in my animals.			

6. Please indicate your opinion of the effectiveness of the following antibiotic alternative strategies.

	Very effective	Not effective at all	Do not know
Feed quality and food that is adapted to the animal's age.			
Fresh and clean drinking water.			
An ¹³ organic acid in feed or water.			
rearing fewer animals in a larger space (stock density)			
Stable climate/animal environment (optimal air humidity, optimal ventilation, optimal temperature, light).			

¹³ act by preventing the settlement of pathogenic bacteria and formation of toxic metabolites by acidifying feeds e.g. Sorbic acid

Breeding of disease-resistant animals (e.g. resistant against E.coli).			
Use of medicinal plant extracts to improve animal health (phytotherapy) (e.g. eucalyptus or sage).			
Use of anti-inflammatory agents or painkillers.			
Systematic cleaning and disinfection of the animal production system (hygiene program).			
Animal stress reduction (improved transfer management, keep age groups together).			

• **Isigaba 1: Izici-zenhlalo yeningi**

Ngcela ubeke uphawu lapho kufanele khona:

11. Ubulili : Isilisa owesifazane

12. Ubuhlanga : Nsundu Indiya Coloured Umlungu

13. Isibopho/ isikhundla sakho epulazini: Umnikazi Umphathi

14. Iminyaka yesipiloni osuyisebenzile ngaphansi kwesikhundla esikhethwe ngaphezulu:

.....

15. Ithini isayizi yepulazi ngokuya ngenani lezinyoni/ izilwane ezikhuliswayo:

.....

16. Zikhuliswa kanjani izilwane?

Uhlelo lokulima kuqunyelwe - ezindlini ezakhiwe ngokuqondile

Uhlelo lokulima olubanzi - indawo yokuhlala yangaphandle noma ekhawulelwe

Okunye

Sicela uchaze.....

17. Hlobo luni lwezilwane zokudla ozikhulisayo epulazini lakho ?

¹⁴Ama- Broilers ¹⁵Ama- layers Izingulube ¹⁶Ama-Baconers

Izinkomo zobisi Izinkomo zenyama Izimvu Izimbuzi

18. Uthengisa umkhiqizo wakho kubani ?

Amafekthri Esidlangalaleni Umthengi wentengiso

19. Uwasebenzisela ini ama -¹⁷antibiotics epulazini lakho ?

¹⁴ inkukhu encane ekhuliselwa ukungiqiza inyama.

¹⁵ Izinkukhu ezikhethekile zezikhukhukazi ekhuliswa zisencane ikhuliselwa ukungiqiza amaqanda.

¹⁶ Ingulube ekhuliselwa ukungiqiza inyama eyisesindo and ethambe ukuhlula ezinye inhlobo zengulube.

¹⁷ Imithi esebenziswa ukuvikelwa nokubhubhisa amagciwane

¹⁸I-Prophylaxis ¹⁹I-Metaphylaxis Ukukhuthaza Ukukhula

20. . Kukangaki udokotela wakho wezilwane evakashela ipulazi lakho ngonyaka ?

0-2 3-5 6-10 Okunye.....

- **Isigaba 2: Ulwazi lwabalimi ngokusetshenziswa kwama antibiotic kanye nokuvela kokumelwa kwama antibiotic emasimini amakhulu, amancane futhi neyemindeni e-KZN.**

15. Yikuphi kokulandelayo okulashwa ama-antibiotic ?

- d. Inhlungu
- e. Ukuvuvukala
- f. Igciwane/ukutheleleka

16. Ingabe ama-antibiotics ahlukile kuma anti-inflammatory agent (Imithi elapha ukuvuvukala)?

Yebo

Cha

Ngicela unikeze isibonelo salowo nalowo:

Ama-Antibiotics

Anti-inflammatory

17. Ingabe ama-antibiotic ahlukile kuma anti-pyretic agents (Imithi esetshenziswa ukuvikela or ukwehlisa umkhuhlane)?

Yebo

Cha

¹⁸ Kwezilwane eziphilile okusolakala ukuthi zingatheleleka igciwane.

¹⁹ Kwezilwane eziphilile ukuvikela ukuqubuka noma ukusakazeka kwezifo/igciwane.

Ngicela unikeze isibonelo sama anti-pyretic

18. Ama-antibiotic kumele unikeze izilwane ezigulayo kuphela?

Yebo

Cha

19. Kuyinto eyamukelekayo ukusebenzisa umthamo ophansi / omncane wama-antibiotic kunalokho obekiwe ?

Yebo

Cha

20. Ngabe uyawazi umthamo olungile noma ofanele wama antibiotic okumele uwuphe izinyoni / izilwane zakho?

Yebo

Cha

21. Ngabe amanye ama antibiotic inemiphumela emibi ezilwanini?

Yebo

Cha

22. Ngabe kumele ama antibiotic imiswa ngokushesha lapho isimo sesilwane sithuthuka/sibagcono khona ?

Yebo

Cha

23. Yiziphi kulezi zimo ezilandelayo oyilapha ngama antibiotic? Sicela usho igama le antibiotic oyisebenzisayo esikhaleni esinikeziwe

- h) Isifo sohudo.....
- i) Umkhuhlane.....
- j) Ukutheleleka kwephehshana lokuchama.....
- a) Ukutheleleka kwephehshana lokuphefumula.....
- b) Ukutheleleka kwesikhumba.....
- a) ²⁰I-Ecto-parasitic infestation.....
- b) ²¹Parasitic gastro-enteritis.....

24. ²²Antibiotic resistance kungenye yezinkinga eziyinselele kakhulu ekukhiqizeni imfuyo?

G. Vuma

H. Angivumi

I. Angithathi hlangothi

25. Ama-antibiotic awasasebenzi kubantu ngenxa yokusebenziswa kabi kanye nokusebenzisa ngokweqile kubantu ?

G. Vuma

H. Angivumi

I. Angithathi hlangothi

26. Ama antibiotics awasasebenzi kubantu ngenxa yokusebenziswa kabi kanye nokusebenzisa ngokweqile kwizilwanyana?

²⁰Isifo esidalwa yizinto eziphilayo ezihlala ikakhulu ngaphakathi kwe silanywana esigulayo.

²¹Uhlobo lwesifo esihambisana nenhlobo yezinhlobo ze-ntshulube.

²²Ukhono lama-bakutheriya lo kumelana nemiphumela nemisebenzi yama-antibiotic ababekade beyizwela ekuqaleni.

A. Vuma

B. Angivumi

C. Angithathi hlangothi

27. Amagciwane ajwayelekile atholakala kubantu nakwilwane azogcina engalapheki ekuhambeni kwesikhathi ngenxa yama bakutheriya amelana nama antibiotic?

D. Vuma

E. Angivumi

F. Angithathi hlangothi

28. Khombisa ukuthi lezi zititimende ezilandelayo ziyiqiniso noma zingamanga.

G. Ama antibiotic akhuphula izinga lwezifo ezingazweli kuwona elwanini.

H. Izifo ezimelana nama-antibiotic kunzima ukuzilapha ngama antibiotic atholakalayo.

I. Ukumelana nama-antibiotic kunemiphumela emibi kwi nani lwezilwane.

J. Ukumelana nama-antibiotic akuyona inkinga eNingizimu Afrika.

K. Ukumelana nama-antibiotic kusakazeka kusukela ezilwanini kuya eyilwanini kanye nokusukela ezilwanini kuye kubantu nokunjalo ukuphambana.

L. Ukumelana nama-antibiotic kungadala izinkinga ezifanayo enanini labantwu nele zilwane.

- **Isigabe 3: Izimo zabalimi ngokusetshenziswa kwe-antibiotic, ukumelana, kanye nokuphatha emapulazini amakhulu, amancane and nemindeni e-KZN.**

10. Ngabe uyawagcina noma uyawabeka ama-antibiotic epulazini lakho?

Yebo

Cha

Uma Yebo ngicela uchaze izizathu zokuthi kungani

11. Ugcine nini ukusebenzisa ama-antibiotic ezilwanini zakho?

D. Ngenyanga edlule

E. Ezinyangeni eziyi 6 ezedlule

F. Ngonyaka odlule

12. I-antibiotic yokugcina oyisebenzisile elibekwe/olitshelwe udokotela wezilwane?

Yebo

Cha

13. Wayithengaphi i-antibiotic yokugcina oyisebenzisile?

G. Udokotela wezilwane

H. Inkampani yezidakamizwa (eqondile)

I. Inkampani yezidakamizwa (ngokusebenzisa ummeli)

J. Abasebenzisana

K. Ikhemisi (ngaphezulu kwekhawuntari)

L. Abanye

Ngcela ubhale 'abanye'

14. Ngabe ubheka isikhathi esinqunyiwe sokukhipha i-antibiotic ngayinye oyisebenzisayo ukwelapha izilwane / izinyoni?

C. Yebo

D. Cha

15. Ngabe ufuna izaluleko kudokotela wezilwane ngaphambi kokusebenzisa ama-antibiotic epulazini lakho?

C. Yebo

D. Cha

16. Ukumelana ne-²³antimicrobial kuphakathi kwenkinga enkulu ekukhiqizeni imfuyo?

A. Vuma

B. Angivumi

C. Angithathi hlangothi

17. Uyacelwa ukuthi ukhombise ukuthi okulandelayo kuyiqiniso noma ngamanga.

G. Ukusetshenziswa kwama-antibiotic kuhlotshaniswa namagciwane amelanana nama-antibiotic avela ezilwanini.

H. Ama-antibiotic anganikezwa kalula futhi ngokushesha izilwane.

I. Ama-antibiotic awabiza futhi anesilinganiso esihle senzuzo.

J. Ama-antibiotic asebenza ngempumelelo futhi ngokushesha ezilwanini (ezigulayo).

K. Ama-antibiotics inciphisa kakhulu izinga lokugula ne lokufa kwezilwane.

L. Kuhle ukupha izilwane ama-antibiotic ngemuva kokubonisana nodokotela wezilwane.

18. Sicela ubeke uphawu lapho kufanele khona.

	Vuma	Angivumi	Angithathi hlangothi	Angiqinisekile
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²³ Ukumelana nayo yonke imithi eqenda igciwane.

<p>Inqubekela phambili yezobuchwepheshe ekunakekeleli izilwane okufana nokuhlaliswa kwezilwane, ukusatshalaliswa kanye nokuhlazeka kuzonciphisa isidingo nokusetshenziswa kwama-antibiotic.</p>				
<p>Ukuvinjelwa kokusetshenziswa kwama-antibiotic ekukhuliseni ezilwani kuzoba nomthelela omubi ekukhiqizweni imikhiqizo yemfuyo.</p>				
<p>Kunzima ukukhiqiza imikhiqizo esezingeni eliphezulu yemfuyo ngenani elifanele ngaphandle kwama-antibiotic.</p>				
<p>Uma abathengi beqaphela izinga lamanje lama-antibiotic asetshenziswa ekhiqizweni kokudla kwezilwane, bazociphisa ukuthenga imikhiqizo yemfuyo.</p>				
<p>Abantu abasebenza ezinhlelweni zokukhiqiza izilwane basengozini enkulu yokuthwala amagciwane amelana nama antibiotic.</p>				

<p>Ama-antibiotic inciphisa ingozi yokusabalalisa neloku theleleka kwengciwane elisuka ezilwanini luya kubantu, ngokuphambana.</p>				
<p>Ama-antibiotic asetshenziswa ohlelweni lokukhiqizwa kwezilwane zokudla anciphisa ukusebenza kwama-antibiotic emithini yabantu.</p>				
<p>Ama-antibiotic asetshenziswa ngokweqile ezinhlelweni zokukhiqiza izilwane zokundla.</p>				
<p>Izifo ekukhiqizeni kwezilwane zokundla zingalashwa ngaphandle kwama-antibiotic.</p>				
<p>Akubizi kakhulu ukugcina izilwane ziphilile ngokusebenzisa ama-antibiotic kunokuthuthukisa ukunakekelwa kwezibaya.</p>				
<p>Ukukhulisa inani elikhulu lezilwane kwenzeka ngokusetshenziswa kwama-antibiotic kuphela.</p>				
<p>Izifo ezibangelwa yizimo zokukhiqizwa kokudla okubanzi kwezilwane zingalashwa kuphela ngama-antibiotic.</p>				

Inani lama-antibiotic asetshenziswa epulazini liyinkomba enhle yezimo zempatho yezilwane.				
Abalimi bangasiza ukunciphisa noma ukumisa ukubhebhethaka kwamagciwane asakazekile amela ama-antibiotic.				

• **Isigabe 4: Imisebenti yebalimi lehlobene nekusetjentiswa, kumelana noku phathwa kwa-antibiotic emapulazini amakhulu, amancane nawemindeni EKZN.**

7. Ngabe uthintana nodokotela wezilwane ngaphambi kokusebenzisa ama-antibiotic ezilwanini zakho?

Yebo

Cha

8. Ingabe unikeza izilwane zakho ama-antibiotic kulandela imiyalo kadokotela wezilwane?

Yebo

Cha

9. Ingabe uyazinikeza izilwane zakho ama-antibiotic kulandela imiyalo efakwe ebhokisi lama-antibiotic / incwajana?

Yebo

Cha

10. Sicela ubeke uphawu lapho kufanele khona.

	Kuliqiniso	Amanga
Umlimi angawagcina noma awabeke ama-antibiotics ukuze asetshenziswe kamuva ezilwanini.		
Ukusetshenziswa okufanele kwama-antibiotic kunganciphisa ingozi yokutheleleka kwegciwane elimelana nama-antibiotic.		
Ukumelana nama-antibiotic kungancishiswa ngokunakekelana okuhle.		
Ama-antibiotic kufanele aphiwe ezilwanini mekhishwe owudokotela bezilwane kuphela.		
Udokotela wezilwane kufanele akhiphe ama-antibiotic kuphela uma kunesidingo.		
Abadokotela bezilwane banamakhono okuxazulula inkinga yokumelana nama-antibiotic.		

11. Sicela ubeke uphawu lapho kufanele khona.

	Kuliqiniso	Amanga	Akungeni
Udokotela wami wezilwane uyangazisa ngobungozi bokusebenzisa ama-antibiotic ezinyonini / ezilwanini zami.			
Udokotela wami wezilwane uyangihola/ ungihla indlela ngokusetshenziswa kwama-antibiotic nangendlela asebenza ngayo.			

Udokotela wami wezilwane ungazisa ngezinye izindlela zokwelapha ezilwane ngaphandle kwama-antibiotic.			
Ngibuza udokotela wami wezilwane kakhukazi ukuquma ama-antibiotic engiwadingayo.			
Udokotela wami wezilwane uyiphuzu lami lokuqala lokuxhumana manginemibuzo ephathelene nezifo ezilwanini zami.			
Udokotela wami wezilwane kufanele anqume noma akhiphe ama-antibiotics ngemuva kokuba esehlolile izilwane.			
Ochwepheshe abaphakayo bahlinzeka ngezeluleko ezingcono ngama-antibiotic kunowu dokotela bezilwane.			
Ngigcina umlando wawo wonke ama-antibiotic asetshenziswe epulazini lami.			
Uchwepheshe wami wokuphakelayo ungiqondisa ngokusetshenziswa kwama-antibiotic nangendlela asebenza ngayo.			
Uchwepheshe wami wokuphakela ungixwayisa ngobungozi bokusebenzisa ama-antibiotic.			

Uchwepheshe wami wokuphakela ungazisa ngezinye izindlela zokwelapha ngaphandle kwama-antibiotic, nokuthi zisebenziswa kanjani.			
Uchwepheshe wami wokuphakela iphuzu lokuqala lokuxhumana mangine mibuzo ngezifo ezilwanini zami.			

12. Uyacelwa ukuthi ukhombise umbono wakho ngempumelelo alandelayo okusetshenziswa esikhundleni samacebo ama- antibiotic.

	Kusebenza kakhulu	Ayisebenzi nhlobo	Angazi
Ukuphaka ukundla okunekhwalithi noku hambisana nobudala besilwane.			
Amanzi okuphuza amasha futhi ahlanzekile.			
²⁴ I-organic acid ekudleni noma emanzini.			

²⁴Kusebenza ngokuvimbela ukuhlala kwamagciwane kanye nokwakheka kwezidingo zombina ephuma ekudleni eziyigozi, ngokunyusa asidi ekudleni e.g. I-Sorbic acid

Ukukhulisa izilwane ezimbalwa endaweni enkulu (evulekile)			
Isimo sezulu esizinzileyo / imvelo yezilwane (umswakama omningi womoya, umoya omncane, izinga lokushisa elifanele, ukukhanya).			
Ukuzalela izilwane ezilwa nezifo (isbonelo , Ukumelana ne- ²⁵ E.coli)			
Ukusetshenziswa kokukhishwa kwezitshalo zokwelapha ezenza ngcono impilo yezilwane (Iyitshalo zedalo eyiphilisayo, isibonelo itelezi /ikhala)			
Ukusetshenziswa kwemithi eqenda ukuvuvukala neyi nhlugu .			

²⁵ Ibhakithiya elivame ukutholakala emathunjini abantu nezinye izilwane, ezinye izinhlobo zazo ezingadala ubugozi ubukhulu ekundleni.

<p>Ukuhlanza okuhleliwe kanye nokubulala amagciwane kohlelo lokukhiqiza izilwane (uhlelo lokuhlanzeka).</p>			
<p>Ukunciphisa ukucindezelwa kwezilwane (ukuphathwa okuthuthukile, nokubeka izilwane ngeminyaka yazo)</p>			