



GUIDELINES FOR INFECTION PREVENTION AND APPROPRIATE ANTIMICROBIAL USE IN THE ANIMAL SECTOR:

Poultry Farming



2020

Cover page – Visiting veterinary practitioner, vaccinating chicken with the farm owner in attendance as she prepares bird feeds.

Art illustrations in this guide by Godfrey Toskin, Uganda +256 778 915443

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Guidelines for Infection Prevention and Appropriate Antimicrobial Use in Animal Sector: Poultry Farming

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Copies may be obtained from:

Department of Animal Health,
Directorate of Animal Resources,
Ministry of Agriculture, Animal Industry and Fisheries Headquarters,
P.O Box 102, Entebbe Plot 16-18,
Lugard Avenue, Entebbe Uganda.

Email: ps@agriculture.go.ug

Email: animalhealth@agriculture.go.ug

Tel: 041 4320004

Tel: 041 4320166

Tel: 041 4320627

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TABLE OF CONTENTS

Foreword	iii
Preface	v
Acknowledgement	vii
Abbreviations	ix
Definitions.....	x
1.0 Introduction.....	1
2.0 Infection Prevention Practices	3
2.1 Four Golden Rules of Disease Control in Poultry Production	4
2.2 Biosecurity	6
2.2.1 Location of poultry house.....	6
2.2.2 Acquisition of new birds	7
2.2.3 Delivery or collection of birds and eggs.....	8
2.2.4 Good Personal and Farm Hygiene Practices	9
2.2.5 Cleaning and disinfection.....	10
2.2.6 Segregation of birds.....	11
2.2.7 Disposal of dead birds	11
2.3 Good animal husbandry practices in poultry	13
2.3.1 Proper housing	13
2.3.2 Feeding.....	14
2.3.3 Water.....	14
2.4 Rodent control	15
2.5 Insect and mite control.....	15

2.6	Veterinary equipment	15
3.0	Appropriate Antimicrobial Use Practices	16
3.1	Purpose of the guidelines	16
3.2	General principles to guide decisions on the use of antimicrobial agents in animals.....	16
3.3	Consultation with ANIMAL health professionals to promote appropriate antimicrobial use	18
3.4	Key points for farmers for diagnosis of common conditions.....	19
3.5	Appropriate approach to treatment	20
3.5.1	Obtaining veterinary medicines.....	21
3.5.2	Administration of medicines to poultry	22
3.5.3	Storage of veterinary medicines	23
3.5.4	Disposal of unused or expired medicines.....	24
3.6	Withdrawal periods.....	24
4.0	Keeping records for animals and veterinary medical products...	25
4.1	Poultry register	25
4.2	Records for veterinary medical products.....	27
Other	Contributors	29

FOREWORD

Welcome to the *first edition* of the *Guidelines for Infection Prevention and Appropriate Antimicrobial Use in the Animal Sector*. This edition focuses on five livestock production systems, namely cattle farming, fish farming, goat and sheep farming, pig farming, and poultry farming. We trust that these operational guidelines will be valuable for farmers and frontline veterinary practitioners.

The Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) is grateful to the Directorate of Animal Resources, and particularly the Department of Animal Health, for completing this task. We also thank the technical team of Dr. Dominic Mundrugo-ogo Lali, Dr. Patrick Vudriko, and Dr. Freddy Eric Kitutu for the technical support, as well as Makerere University and the USAID-funded Medicines, Technologies, and Pharmaceutical Services (MTaPS) Program, implemented by Management Sciences for Health, for material, technical, and financial support for this output.

Indeed, these guidelines play an important role in implementing the Uganda National Antimicrobial Resistance National Action Plan to slow the spread of resistant microbes. Around 75% of emerging resistant pathogens are related to zoonotic care. Taking steps to ensure the livestock industry improves its use and management of antimicrobials reinforces our commitment to strengthening the country's capacity for global health security—a goal that can only be achieved through a concerted effort focused on health management at the interface between human and animal health.

Farmers in Uganda play a critical role in promoting food safety and security, improving household incomes, and promoting animal and environmental welfare. These guidelines are intended to help farmers:

- Understand strategies for infection prevention and appropriate antimicrobial use

- Establish practices for recordkeeping of herds and medicinal products used
- Better understand the need for withdrawal periods for cases in which animals are justifiably given antimicrobials

A handwritten signature in black ink, appearing to read 'V. Ssempijja', with a stylized, cursive script.

Vincent Bamulangaki Ssempijja (MP)

**Minister of Agriculture Animal Industry and Fisheries,
Republic of Uganda.**

PREFACE

Farmers and frontline veterinary practitioners offer essential services that sustain food security, food safety, and the livelihoods of many households. The rising tide of resistant microbes, zoonoses and transboundary diseases has laid a foundation for pressure from key actors to restrict use of antimicrobial agents in the animal sector. It is, therefore, imperative that farmers and frontline veterinary practitioners demonstrate a responsible approach to the use of antimicrobial medicines in livestock production systems.

This is the first edition of the *Guidelines for Infection Prevention and Appropriate Antimicrobial Use in the Animal Sector*. It is envisaged that these guidelines will be widely disseminated and used, and that they will become a useful resource for farmers and frontline veterinary practitioners. They are written in a manner that allows easy and rapid access to vital information under three themes: infection prevention practices; appropriate antimicrobial use practices; and recordkeeping for farm animals and veterinary medical products on the farm.

These guidelines are intended to help create farming conditions that prevent or minimize the occurrence and spread of infections and to promote the effective and safe use of drugs. Appropriate antimicrobial use, also referred to as prudent or responsible use, in the animal sector is the scientific and technically directed use of these compounds which should form an integral part of good veterinary and animal husbandry practices. Recommendations and practical measures of infection prevention, such as vaccination and improvement in husbandry conditions, should be encouraged and prioritized as a core intervention to slow down the spread of antimicrobial resistance (AMR). Infection prevention, if well implemented, will reduce or even eliminate the use of antimicrobial agents, which in most cases are used as an alternative for deficient animal husbandry practices.

All the relevant government ministries, departments, and agencies—including the MAAIF, the National Drug Authority (NDA), the Uganda Wildlife

Authority (UWA), and other parastatals—must apply and promote these principles. Veterinarians and other veterinary practitioners and, livestock keepers are also expected to apply these principles.

It has been no small task to propose and develop this first edition of the guidelines by summarizing the most current and relevant literature. The Directorate of Animal Resources is enormously grateful to the technical team of Dr. Dominic Mundrugo-ogo Lali, Dr. Patrick Vudriko, and Dr. Freddy Eric Kitutu, as well as Makerere University and USAID’s Medicines, Technologies, and Pharmaceutical Services (MTaPS) Program, implemented by Management Sciences for Health, for their work in producing this first edition.

These guidelines are one of many technical documents produced by MAAIF in line with global and national aspirations to optimize use of antimicrobial agents in the animal sector as a key strategy to slowing down the spread of AMR. These guidelines will be available as a downloadable PDF document. However, we are also aware that many people would rather have a book and flip through the pages to easily find the information they need. We want to ensure the dissemination of this crucial knowledge is inclusive.

Therefore, these guidelines will be available in both formats—as a hard copy and as an electronic version. The electronic version enables updates and additions to be made without the need to wait for the next edition to come to print. Thus, the guidelines will, in an “active sense,” inform farmers and veterinary practitioners and continue to play their part in reducing infections, reducing unnecessary antimicrobial use, and, consequently, slowing the spread of resistant microbes



Dr. Juliet Sentumbwe

**Director Animal Resources
Ministry of Agriculture Animal Industry and Fisheries,
Republic of Uganda.**

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The *Guidelines for Infection Prevention and Appropriate Antimicrobial Use in the Animal Sector* were produced by the Uganda MAAIF with financial support from the Medicines, Technologies, and Pharmaceutical Services (MTaPS) Program, implemented by Management Sciences for Health. Makerere University (Mak) provided technical support in the process.

We hereby thank the USAID/MTaPS program for their financial support in developing these guidelines. The MAAIF Department of Animal Health, Directorate of Animal Resources, gratefully acknowledges the technical assistance, guidance, and constructive comments provided by all stakeholders during the development process.

We also extend sincere gratitude to all other government agencies (UWA, NDA UWEC, and NARO) who cooperated extensively to make sure the development of these guidelines occurred comprehensively and ensured that the final guideline document is in line with national and international standards.

I participated in crafting the *Guidelines for Infection Prevention and Appropriate Antimicrobial Use in the Animal Sector* and had the pleasure of working with the following talented individuals, from inception to final editing.

Secretariat and Veterinary Medicines Desk

- Dr. Erechu Richard, Senior Veterinary Officer/AMR Focal Person, Department of Animal Health, MAAIF
- Dr. Isingoma Emmanuel, Senior Veterinary Officer/Veterinary Drugs Desk/Stewardship Committee, Department of Animal Health, MAAIF
- Dr. Ben Ssenkeera, Senior Veterinary Officer/Veterinary Drugs Desk, MAAIF

Technical Team

- Dr. Patrick Vudriko, Lecturer, MakCOVAB, Director, RTC Laboratory at MakCOVAB
- Dr. Dominic Mundrugo-ogo Lali, Member, Uganda Veterinary Board, Executive Director, UNESCO
- Dr. Freddy Eric Kitutu, Lecturer, Makerere University Pharmacy Department (MakPD), Dean, School of Health Sciences and Program Lead, Antimicrobial Stewardship, Consumption and Use at MakPD
- Ms. Linacy Nampa, Pharmacist, Antimicrobial Stewardship, Consumption and Use Program at MakPD
- Dr. Reuben Kiggundu, Senior Technical Advisor, USAID/MTaPS, MSH

We also thank Makerere University College of Veterinary Medicine, Animal Resources, and Biosecurity (MakCOVAB) Makerere University School of Public Health (MakSPH), Pharmacy Department (MakPD), School of Health Sciences; Makerere University College of Health Sciences (MakCHS); the Uganda Veterinary Association (UVA) and Uganda Veterinary Board (UVB) for their tireless efforts in the review, finalization, and printing of the *Guidelines for Infection Prevention and Appropriate Antimicrobial Use in the Animal Sector*.



Dr. Anna Rose Ademun Okurut (PhD)

Commissioner Animal Health

Ministry of Agriculture Animal Industry and Fisheries.

Republic of Uganda.

ABBREVIATIONS

AMR	antimicrobial resistance
DVO	district veterinary officer
FAO	Food and Agriculture Organization
FVE	Federation of Veterinarians of Europe
ILRI	International Livestock Research Institute
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MSH	Management Sciences for Health
MTaPS	Medicines, Technologies, and Pharmaceutical Services
RUMA	Responsible Use of Medicines in Agriculture Alliance

DEFINITIONS

Administration: In medical terms, refers to giving medicine to an animal/fish.

Antimicrobial agent: Drugs, chemicals, or other substances that kill, inactivate, or slow the growth of microbes, including bacteria, viruses, fungi, and protozoa. Because of these properties, antimicrobial agents are used in treatment and infection prevention in animal health and production.

Antimicrobial resistance (AMR) The ability of microbes to grow in the presence of substances that previously used to kill them.

Appropriate medicine use: The selection of the proper drug to be administered according to a dosage regimen appropriate to the sick animal after due consideration of the potential benefits and risks of that therapy. This is also referred to as prudent or responsible medicine use. “Appropriate medicine use” is now the preferred term, replacing the previously common “rational medicine use.”

Biosecurity: The implementation of a series of basic management practices to prevent the introduction¹ and spread² of microbes and diseases within and between farm (s).

Diagnosis: The art and science of identifying disease-causing germs and parasites by observation, examination, or use of medical devices and laboratory tests.

¹ Agriculture Victoria. A practical approach to beef herd biosecurity. Updated 2020 June 22 [cited 2020 June 27]. Available from: <https://agriculture.vic.gov.au/livestock-and-animals/beef/biosecurity/a-practical-approach-to-beef-herd-biosecurity>

² Mayega, L., Dione, M.M., Kawuma, B., et al. Pig management: Ensuring appropriate husbandry practices for profitability: Uganda smallholder pig value chain capacity development training manual. ILRI Manual 15. 2015.

Disinfectant: Any substance which is mainly used on non-living objects/surfaces to kill microorganisms that cause infection and disease.

Disinfection: The process of cleaning a surface with a chemical (disinfectant) to destroy microorganisms.

Extra-label use: The use of drugs in ways that are not in accordance with the manufacturer's label and package insert. Extra-label use can only be authorized by a veterinary practitioner who takes full responsibility for such use. Veterinary practitioners must inform clients if a product is being used in such cases.

Footbath: A bath for disinfecting feet, placed at the entrance of the farm or other physically separated places.

Hatchery: A place where eggs of fish and birds (poultry) are hatched under artificial conditions.

Husbandry: The care, cultivation and breeding of crops and animals. These guidelines focus on animal husbandry where animals are raised for meat, fiber, milk, eggs, and other products.

Infection: When an organism (usually a microbe or germ) enters another organism's body (e.g., bird, fish, cow, or other animal) and causes disease.

Medicine: A natural or synthetic substance used to prevent or treat disease or maintain health in animals. This substance can be drenched, injected, applied, or smeared on any part of the animal.

Microbe: Disease-causing germs that cannot be seen with naked eyes. They are also referred to as microorganisms and include bacteria, fungi, viruses, and protozoa.

Parasite: An organism that lives and feeds on an animal. Parasites may cause physical injury and/or spread disease-causing microbes (germs).

Pest: A destructive arthropod or other animal that attacks livestock, including flies, ticks, mice, rats, and birds.

Vector: An organism that transmits a disease or parasite from one animal to another.

Quarantine: A state, period, or place of isolation or confinement in which animals are placed after transport from another place or after exposure to an infectious or contagious disease. It separates or restricts the movement of those animals to see if they become sick.

Veterinary pharmacy/drug shop: A place where medicinal products, medical devices and diagnostics for animals are sold. A licensed pharmacy or drug shop must have a valid license that is displayed where it can be seen.

Veterinary practitioner: A person who is licensed by the Uganda Veterinary Board to practice veterinary medicine in Uganda, e.g., a veterinary surgeon or doctor and veterinary paraprofessionals.

Withdrawal period: The minimum time required between the last treatment and the collection of meat or milk for human consumption.

1.0 INTRODUCTION

Antimicrobial resistance (AMR) presents challenges for global public health, and is impacted by both human and animal antimicrobial usage. Ineffective antimicrobial agents endanger the effectiveness of many interventions in modern medicine. For instance, most treatment of common infections, prophylaxis for elective surgeries and transplantations and cancer treatment are not possible with AMR. Widespread AMR, left unattended, compromises the achievement of multiple Sustainable Development Goals (SDGs), including ending poverty, ending hunger, ensuring healthy lives, reducing inequality, and revitalizing global development partnerships.

Economic growth is less likely to be achieved in sick populations, which in turn hinders poverty reduction efforts. And yet, poor people are more at risk of suffering from resistant infections and they are less able to prevent or treat them. In other words, AMR breeds poverty and poverty fuels AMR.

In the animal sub sector, AMR presents a grave danger to sustaining food production and the livelihood of farmers. Antimicrobial usage in animals threatens food safety and security, and puts humans at greater risk of infection.

Global and national action plans have been developed and prioritized for implementation to mitigate the adverse effects of AMR. At the agricultural practice level, farmers and frontline veterinary practitioners must embrace evidence-based strategies and actions to meet this challenge. Farmers must seek to minimize the occurrence of infection through AMR control mechanisms, including proper feeding, avoiding stress to the animals, improved sanitation and hygiene, and early disease detection, isolation, and treatment of sick animals. For all animal sickness, treatment should be based on the best available clinical judgement supported by

veterinary expertise and/or laboratory investigation. Judicious use of antimicrobial agents cannot be over-emphasized. The guidelines propose concrete evidence-based steps and actions to aid farmers and frontline veterinary practitioners in achieving these aspirations.

These guidelines for infection prevention and appropriate antimicrobial use in the animal sector have been developed in line with the *Uganda AMR National Action Plan 2018-2023*. By following this plan, farmers and veterinary practitioners will contribute to reduction of infections in animals, resulting in more judicious use of antimicrobial agents in the animal sector. This will reduce the development and spread of resistant microbes in animals and humans, and reduce the presence of antimicrobial residues in food-producing animals.

These guidelines are for use in poultry farming in Uganda. Poultry are a key source of animal protein in the form of meat and eggs. Chickens and their products are a source of income for a substantial number of small- and large-scale farmers.

They are presented under the following themes:

- Infection prevention practices;
- Appropriate medicine use practices; and
- Keeping animal and veterinary medical product records on the farm.

2.0 INFECTION PREVENTION PRACTICES

Commonly occurring diseases affecting poultry in Uganda are coccidiosis, Newcastle disease, fowl cholera, fowl typhoid, pullorum disease, fowl pox, Gumboro disease, and helminthiasis. Poor hygiene practices and lack of proper farm biosecurity and other disease prevention strategies are factors that predispose poultry to the above diseases.

These diseases manifest as change in behavior of birds, reduction in production, and mortality. Prevention of infection is very important for promotion of health and wellbeing of poultry. The cost of infection and disease in poultry is enormous, leading to low production of eggs and meat, poor quality of products, slow growth rate, and poultry death—all of which ultimately result in financial losses to the farmer. These can be addressed by infection prevention.³

Moreover, prevention of infection and disease also leads to reduced use of antimicrobials, which in turn reduces the rate of development of AMR.

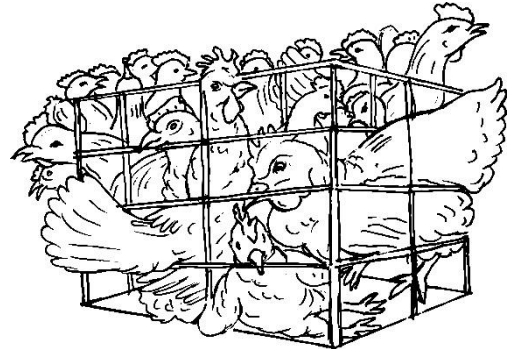
The burden of disease in poultry can be reduced through the implementation of infection prevention strategies. These practices include the implementation of biosecurity initiatives, vaccination programs, and good animal husbandry practices,⁴ as shown in the table below.

³ Food and Agriculture Organization of the United Nations. Prevention and control of poultry diseases for better farm profitability. 2011 [cited 2020 June 27]. Available from: http://www.fao.org/avianflu/en/news/farm_biosec.html

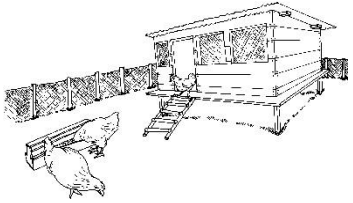
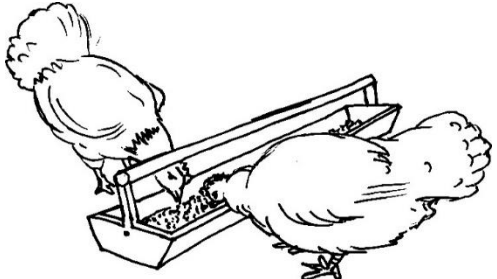
⁴ Food and Agriculture Organization of the United Nations. Prudent and efficient use of antimicrobials in pigs and poultry. 2019 [cited 2020 June 27]. Available from: <http://www.fao.org/3/ca6729en/CA6729EN.pdf>

2.1 FOUR GOLDEN RULES OF DISEASE CONTROL IN POULTRY PRODUCTION⁵

<p>Rule 1: Biosecurity</p>	<ul style="list-style-type: none">• Disease spreads onto and around the farms by contamination, usually by faeces or dust. Limit this contamination and you will help to limit the prevalence of disease.• REMEMBER this contamination can occur indirectly, through water systems, equipment, vehicles, other animals, or people. Don't spread disease by sharing equipment or personnel.
<p>Rule 2: “Stress is a killer”</p>	<ul style="list-style-type: none">• Stressed birds are far more likely to become diseased.• This includes not only obvious physical stress factors such as overcrowding or chilling, but also exposure to microorganisms which cause major stress to the immune system.• THINK: If a procedure causes birds to become stressed, ask “Can this be done in a less stressful manner?”



⁵ RUMA. Responsible use of antimicrobials in poultry and game production. 2018 [cited 2020 June 27]. Available from: <https://www.ruma.org.uk/poultry/responsible-use-antimicrobials-poultry-game-production/>

<p>Rule 3: Good hygiene</p>	<ul style="list-style-type: none">• There is no substitute for good hygiene.• Cleaning and disinfecting buildings and equipment, including water and feeding systems, coupled with good personal hygiene will make a difference.• Don't be complacent about areas outside of the birds' living area.	 A black and white line drawing of a chicken coop with a ramp leading to an entrance. A single chicken is shown in the foreground, facing the coop.
<p>Rule 4: Good nutrition</p>	<ul style="list-style-type: none">• Balanced diets with adequate levels of trace elements, minerals, vitamins and antioxidants are essential for the proper functioning of birds' immune systems.	 A black and white line drawing of two chickens standing at a long, narrow wooden trough filled with feed. Both chickens are leaning over the trough, eating.

2.2 BIOSECURITY

Biosecurity is the implementation of a series of basic management practices to prevent the introduction of contagious diseases to and within the poultry farm.⁶ Some of the biosecurity measures are given below.

2.2.1 LOCATION OF POULTRY HOUSE

- Ensure that your poultry house is far away (3 km apart) from the nearest poultry farm.
- Farm should be fenced with only one entry point- restrict access to the farm.
- Keep record of all visits to the farm.
- Prevent unauthorized persons from accessing the poultry house by locking it.
- All poultry houses should be enterable through a footbath containing disinfectant.
- Prevent entry of wild and domestic animals and birds, for example by using bed netting, screened windows, and walls.
- Maintain cleanliness within and around the farm.
- The design and layout should allow easy and proper drainage.

⁶ Agriculture Victoria. A practical approach to beef herd biosecurity. Updated 2020 June 22 [cited 2020 June 27]. Available from: <https://agriculture.vic.gov.au/livestock-and-animals/beef/biosecurity/a-practical-approach-to-beef-herd-biosecurity>

2.2.2 ACQUISITION OF NEW BIRDS

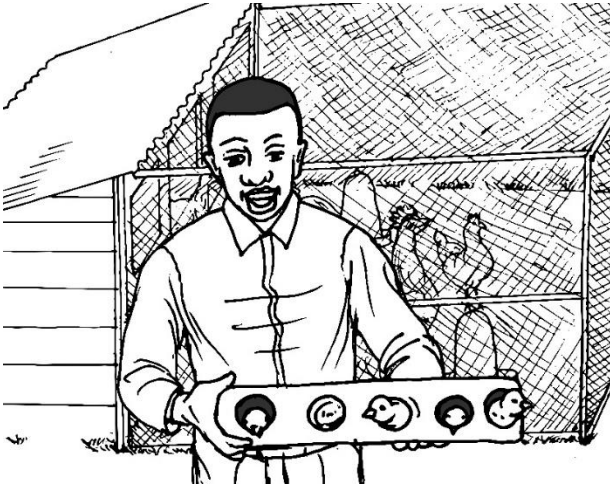


Illustration: New chicks in crate, arriving at a poultry farm.

- Ensure that parent source flocks are in good health before buying them; they should be vaccinated against diseases such as chicken anemia virus and avian encephalomyelitis.
- Buy day-old chicks from a trustable source, that's the same hatchery, breeder farm or reputable supplier.
- Ensure day-old chicks are vaccinated against Marek's disease. Broilers may be additionally vaccinated against Newcastle disease and infectious bronchitis.
- Ensure that staff handling the chicks are not sick.

2.2.3 DELIVERY OR COLLECTION OF BIRDS AND EGGS



- Do not allow vehicles and dealers for eggs and chicken onto the farm; transport these to them at the farm gate.
- If vehicles must enter the farm, they should first be washed and disinfected and parked at least 30 m away from the chicken house.
- A vehicle that has visited another farm on same day should not be given access to enter unless it has been thoroughly cleaned and disinfected.
- Keep records of all vehicles that enter the farm.

2.2.4 GOOD PERSONAL AND FARM HYGIENE PRACTICES



Illustration: Farmer donning personal protective equipment and performing hand hygiene practices in preparation for attending to his animals. **Error! Bookmark not defined.**

- Ensure that staff maintain personal hygienic practices to avoid spreading infection.
- Ensure that all workers and visitors wash their hands and feet with soap and water before entering the poultry house.
- Ensure that workers and visitors change into farm clothes and footwear before entering the chicken house.
- Ensure that all persons clean and disinfect footwear between compartments by using footbath or footwear dedicated for the new compartment/flock houses.
- Regularly empty and clean footbaths and change the disinfectant frequently.
- Provide and maintain clean and functional toilets or pit latrines and handwashing facilities with soap and water.

2.2.5 CLEANING AND DISINFECTION

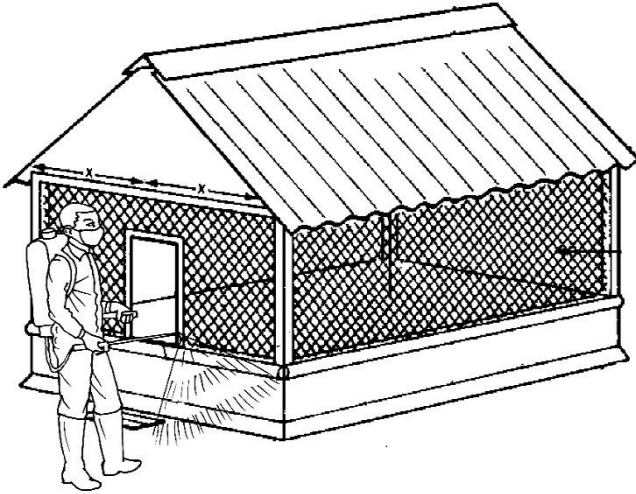


Illustration: Veterinary practitioner in PPE—goggles, overalls, gloves, nose and mouth mask, and head cover—spraying using knapsack sprayer.

- Clean and disinfect all equipment used in the poultry house (header tanks, rafters, sills, lighting fixtures, fan blades, etc.) between batches of birds or between compartments.
- Thoroughly clean and disinfect houses or compartments so that they are clean, dry and warm before introducing new birds.
- Use detergents and/or hot water to remove any grease or organic material that may be present before disinfection.
- Keep both the inside and outside of the poultry houses cleaned and disinfected during the production cycle.
- Clean drinkers and change drinking water on a daily basis.
- Empty and clean feeding troughs daily.

2.2.6 SEGREGATION OF BIRDS

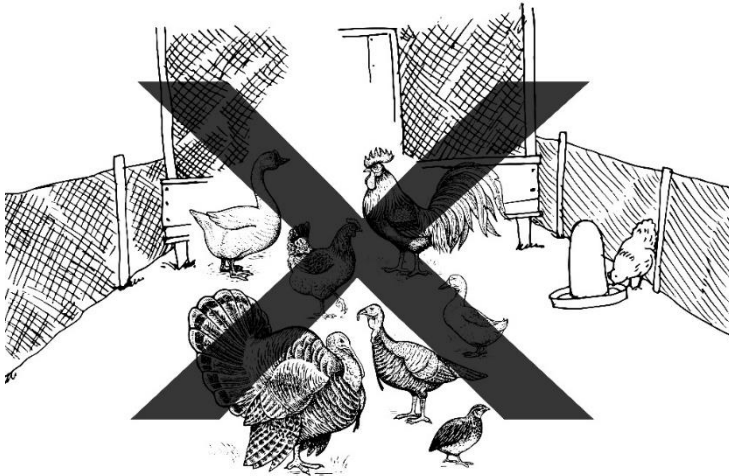
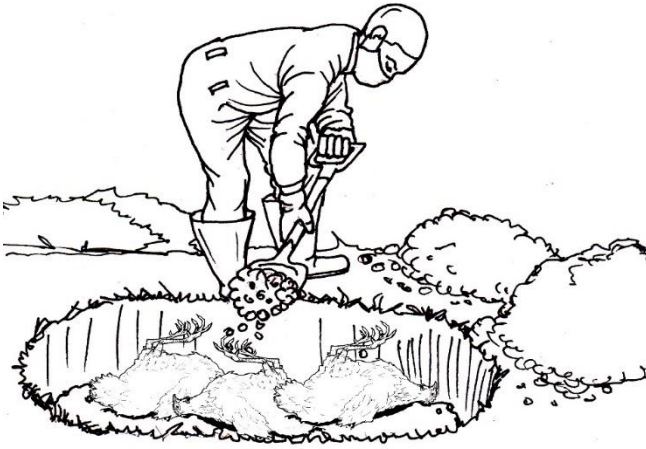


Illustration: Different species of birds should not be raised in the same room.

- Do not keep chickens with other birds such as ducks or turkeys in the same poultry house. Each species of bird should be kept separate.
- Staff should not handle or have contact with other birds (wild or domestic) before coming into contact with poultry on your farm.
- Do not add new birds to an existing flock, and preferably practice batch production.
- New birds introduced should be kept separately and be the last fed every day for an initial quarantine and observation period of one month.

2.2.7 DISPOSAL OF DEAD BIRDS

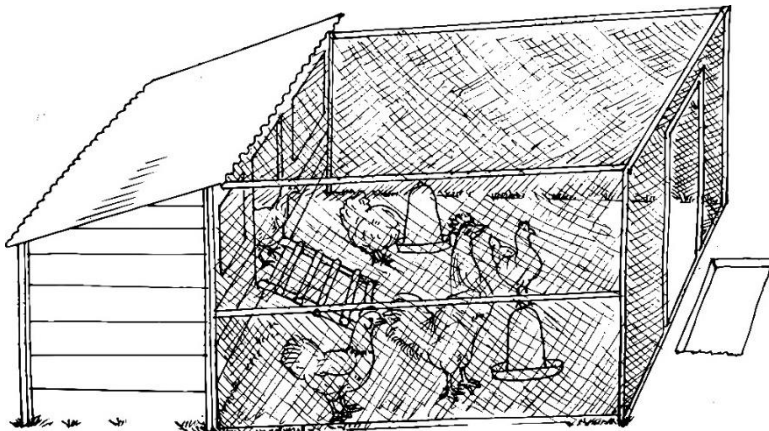
Dead birds can be a source of infection for the healthy ones. Thus, they should be handled and disposed of as follows:



- Separate sick birds from the healthy ones as soon as you see them.
- Dispose of dead birds either by incineration, deep burial or composting.
- Never throw the dead birds in a bush or dumping site as they will decompose and pollute the environment and could be a source of infection.

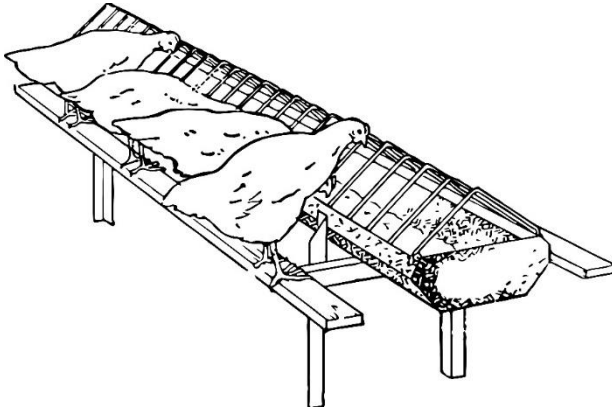
2.3 GOOD ANIMAL HUSBANDRY PRACTICES IN POULTRY

2.3.1 PROPER HOUSING



- Ensure that temperature of the poultry house is controlled by proper ventilation, aeration, and lighting. This helps to prevent heat stress that affects animal welfare and productivity.
- In cases where partial depopulation is practiced, minimize withdrawal of feed and ensure that optimal temperature is maintained.
- Ensure that litter is of good quality, dry and friable.
- Change litter often, especially following disease, and when introducing a new flock of chicken.
- Ensure the size of the house correlates with the number of birds to avoid overcrowding.
- Use concrete rather than earth flooring in poultry production areas. This increases the effectiveness of cleaning and disinfection.

2.3.2 FEEDING



- Ensure that birds have sufficient and nutritious feed to eat.
- Buy good quality feed from a trustworthy source.
- Feed troughs should be raised above the ground to avoid contamination
- Keep feed storage rooms closed at all times to prevent entry of vermin and wild birds.
- Ensure that feed is kept in a clean, dry place.
- Ensure that foggers and drinkers do not drip into feed pans.
- Avoid giving feed containing antimicrobials to birds as this practice fuels AMR.

2.3.3 WATER

- Collect drinking water from a clean water source, e.g. tap or deep well.
- Running water sources are preferable to stagnant water sources.
- If you use surface water sources such as wells, dams, or rivers, treat the water by filtration or sedimentation followed by chlorination.

- Where possible, submit water samples to the laboratory for tests of bacterial load, heavy metals, and chemical impurities.

2.4 RODENT CONTROL

Rats and mice can infest poultry houses. If left uncontrolled, they can cause physical damage to the house structure, and also spread disease. The following measures should be followed:

- Clear all bushes around the poultry house.
- Use rodent screen or proof to block entry into the poultry house.
- Keep the house tidy.
- Remove all feed remnants in the store and poultry house.
- When necessary, use approved rodenticide with help from the veterinary practitioners.

2.5 INSECT AND MITE CONTROL

- Remove any stagnant water that may act as a breeding ground from insects such as mosquitoes.
- Remove manure and decaying materials on the farm as they attract flies- potential vectors for disease.
- Use appropriate insecticide or miticide for killing insects or mites in preparation of the house to receive the next batch of birds.

2.6 VETERINARY EQUIPMENT

- Do not share equipment with other poultry farms.
- Ensure regular cleaning of equipment used on the farm such as drinkers, feeders or feed pans, egg trays, syringes, or debeaking equipment.

3.0 APPROPRIATE ANTIMICROBIAL USE PRACTICES

3.1 PURPOSE OF THE GUIDELINES

These antimicrobial use guidelines work in two main ways: first, they help create farm conditions that prevent or minimize the occurrence and spread of infections; second, they promote the effective and safe use of these drugs. Taken together, these two approaches broadly would minimize the selection of antimicrobial resistant bacteria in animals.

The underlying purpose is to conserve and sustain the effectiveness of available antimicrobial agents intended for use in animals so as to:

- Enable farmers to comply with the moral obligation and economical need to keep animals healthy.
- Protect consumer health by ensuring the safety of food of animal origin.
- Prevent or reduce the transfer of resistant microbes within animal populations, so as to maintain the efficacy of antimicrobial agents used in livestock.
- Prevent or reduce the transfer of resistant microbes or their resistance genes from animals to humans, so as to maintain the efficacy of antimicrobial agents used in human medicine.
- Prevent the contamination of animal-derived food with antimicrobial residues that may have a detrimental effect on human health.

3.2 GENERAL PRINCIPLES TO GUIDE DECISIONS ON THE USE OF ANTIMICROBIAL AGENTS IN ANIMALS

- Use of antimicrobial agents in veterinary medicine is guided by the law which outlines licensed persons who can trade in, prescribe, and/or administer these medicines. Only a qualified veterinary practitioner is authorized to prescribe their use.

- Antimicrobial agents used for therapy should be used for as long as needed, but for as short a duration as necessary and using the appropriate dosage regimen.
- Label instructions as provided by the manufacturer should be carefully followed. Due attention must be paid to species and disease indications and contraindications, dosage regimens, and storage instructions. Extra-label use of the antimicrobial agent should be exceptional, and always under the professional responsibility of a veterinary practitioner.
- Records of all veterinary medicinal products administered to animals and those available on the farm should be kept in a retrievable form. Additionally, there should be an effective system of stock control.
- Use of vaccines and strict adherence to the proposed infection prevention measures are effective and have been proven as better alternatives to reduce or completely eliminate antimicrobial use in the animal sector.
- Antimicrobial agents should be used under supervision of a veterinary practitioner.
 - Therapeutic antimicrobials should be used when it is known or suspected that an infectious agent is present which will be susceptible to therapy.
 - It is the responsibility of the veterinary practitioner to choose the antimicrobial product based on his/her informed professional judgement, balancing the risks and benefits for humans and animals.
 - Antimicrobial agents should only be used when necessary and then selected rationally and used appropriately.
 - When antimicrobials need to be used for therapy, bacteriological diagnosis with sensitivity testing should, whenever possible, be part of the informed professional judgement.

3.3 CONSULTATION WITH ANIMAL HEALTH PROFESSIONALS TO PROMOTE APPROPRIATE ANTIMICROBIAL USE

Only professionals trained to the level of a veterinary surgeon or higher have the requisite knowledge, expertise and experience to prescribe antimicrobial medicines.

Each case provides a different set of considerations as explained below.

1. Drug factors such as dosage, dose, dosage interval, route of administration, duration of treatment, mechanism of action, combined use, adverse drug reactions.
2. Microbial infection factors, including objective evidence of infection, susceptibility of the causative organism(s), stage of infection, locality of infection, and microenvironment at the site of infection.
3. Animal factors such as type, age, condition and sex of animal, disease condition, type of husbandry, and feeding of animals.
4. Animal farmer factors, such as agreement between farmer and veterinary practitioner on treatment policy, level of training, and experience of farmer.

3.4 KEY POINTS FOR FARMERS FOR DIAGNOSIS OF COMMON CONDITIONS

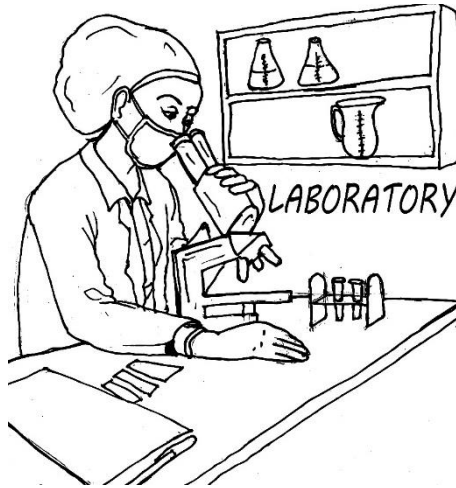


Illustration: A laboratory technician examining a laboratory sample under a microscope.

In all animal species, “prevention is better than cure”.⁷ However, sometimes animals become sick regardless of good prevention strategies and proper care. When this happens, early recognition and treatment is essential to protect animal welfare and promote responsible use of medicines.

⁷ Federation of Veterinarians of Europe. Antimicrobial use in food-producing animals. 2016 February 29 [cited on 2020 June 27]. Available from: https://www.ema.europa.eu/en/documents/report/annex-replies-efsa/ema-questions-use-antimicrobials-food-producing-animals-eu-possible-measures-reduce-antimicrobial_en.pdf

- Give accurate information to the attending veterinary practitioner so that he/she can ably make a correct diagnosis, hence correct medication and dosage.
- Base initial diagnosis on clinical signs and experience but a veterinary practitioner should also use a laboratory for diagnosis.
- If unsure, consult the veterinary practitioner.
- In case the veterinary practitioner wants to take samples of diseased, dead, or even clinically healthy animals, allow him/her to do so.

3.5 APPROPRIATE APPROACH TO TREATMENT

If poultry are found to be sick, it is important that treatment is given promptly.

Evaluate any treatment given to poultry. If there is no improvement within a few days, treatment can be considered ineffective. This may be due either to resistance or to having chosen an antimicrobial that is not effective against the relevant pathogen, or which cannot reach the relevant infection site.

- Only use antimicrobials on the advice of or upon prescription by a veterinary practitioner.
- Inform the prescribing veterinary practitioner about other medicines being administered to the animals so that adverse reactions can be avoided.
- Treat individual animals, rather than all of them when one or more are reported sick.
- Obtain clear instructions regarding medication, dosage and administration from the veterinary practitioner.
- Follow all instructions given by your veterinary practitioner.
- Collect dust and manure from rooms where the animals being treated are kept separately to avoid the spread of antimicrobial residues.
- Do not use antimicrobials as growth promoters.

3.5.1 OBTAINING VETERINARY MEDICINES



Illustration: A farmer receiving instructions on use of medicines from a trained veterinary practitioner

- DO NOT use illegally obtained medicines on the farm since their safety and efficacy cannot be ascertained.
- Do not borrow or move medicines between farms.
- Check expiry date and ensure that medicines and other products are not expired before buying them for use on the farm.

3.5.2 ADMINISTRATION OF MEDICINES TO POULTRY

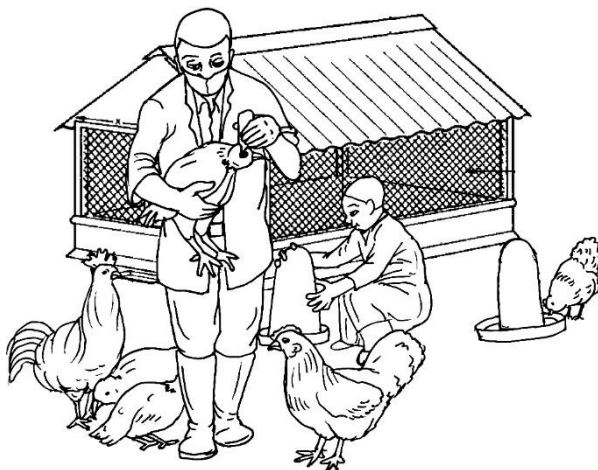


Illustration: A farmer administering medicines to a chicken on the farm

- Do not administer two or more antimicrobials at the same time unless specifically advised to do so by a veterinary practitioner.
- Ensure that poultry receive the full course of treatment at the correct dosage and appropriate time, as instructed by the veterinary practitioner.
- Only birds intended to be treated should be treated with medication.
- If group treatment cannot be avoided, administer the medicine via water instead of feed or as directed by the manufacturer.
- Clean all equipment used for in-feed or in-water administration of medicine to ensure that no residues are retained.
- Do not mix medicines unless you have been advised to do so by a veterinary practitioner, since mixing can result in the medicine being ineffective, or lead to adverse reactions.

- Do not mix antimicrobials with vitamins, disinfectants, or other drinking water treatments.
- Avoid use of human medicines—especially antimicrobial agents—in treatment of poultry conditions.

3.5.3 STORAGE OF VETERINARY MEDICINES

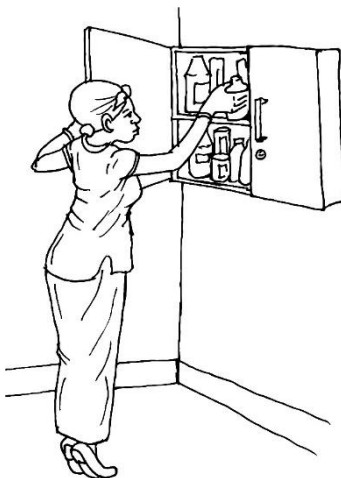


Illustration: Farmer picking medicine from the storage cabin on the farm's medicine store.

- Store medicines as indicated on the medicine label.
- Store most medicines in a clean, cool, dry area such as a farm office or utility room.
- Store medicines away from direct sunlight, dust, animals and insects.
- Store medicines that should be refrigerated at temperatures between 2 °C and 8 °C.
- Keep medicines locked away from the reach of children and unauthorized persons.

3.5.4 DISPOSAL OF UNUSED OR EXPIRED MEDICINES

- RETURN unused medicines to the prescribing veterinary practitioner or supplier for disposal.
- Dispose of unused, spoiled, out-of-date medicines, expired, containers and application equipment (including needles to a sharps container) when the treatment for which they were intended is completed.
- Follow manufacturer's advice as written on the medicine label.
- Do not reuse medicine containers; wash them and dispose of them in a pit.

3.6 WITHDRAWAL PERIODS

A withdrawal period is the minimum time required between the last treatment and the collection of meat or eggs for human consumption.

The withdrawal period ensures that the food produced from treated birds does not contain harmful residues.

- Identify treated birds to ensure that withdrawal times are observed.
- Strictly adhere to the appropriate withdrawal period before the slaughter of treated birds or the use of eggs for human consumption.
- The withdrawal period is usually indicated on the prescription or on the label of the medicine or may be given by the veterinary practitioner.
- Observe a withdrawal time of at least 28 days for meat and at least seven days for eggs unless your veterinary practitioner instructs otherwise.

4.0 KEEPING RECORDS FOR ANIMALS AND VETERINARY MEDICAL PRODUCTS



Illustration: A farmer reviewing farm records.

- Keep a record of medicine use on the farm. You can use a durable book, files, or an electronic system.
- If you use an electronic system, ensure that the information is regularly backed up in a retrievable form (e.g. on an external hard drive).

4.1 POULTRY REGISTER

- This contains information such as:
 - Identity of diseased poultry
 - History of disease
 - Symptoms of disease
 - Diagnosis
 - Treatment given
 - Name of veterinary practitioner who treated poultry

Example of poultry register form

Health Record	
Animal species	Date
Animal Name	Identity/No/Tag
Breed	Age
Case history	
Clinical exam	
Laboratory test	
Diagnosis	
Prescription	
Withdrawal for each medicine	
Veterinarian	
Name	Contact
Signature	Date

4.2 RECORDS FOR VETERINARY MEDICAL PRODUCTS

Recordkeeping is important in any poultry production system for conducting audits and reviews of the farm's performance and quality improvement initiatives. Records of antimicrobials facilitate surveillance of consumption and use in order to improve and optimize use.

- Upon purchase of a medicine, record:
 - Name of the prescribing veterinary surgeon
 - Name of medicine
 - Batch number
 - Date of expiry
 - Date of purchase
 - Quantity obtained
 - Name and address of the supplier

- At the time of administration, record:
 - Name of veterinary medicine
 - Name and identity of the animal
 - Date of administration
 - Quantity administered
 - Withdrawal period
 - Identity of the animal(s) treated

- In case you dispose of the medicine without using it, record:
 - Name of medicine
 - Date of disposal
 - Quantity of product
 - How veterinary medicinal product was disposed of
 - Where product was disposed of

- Ensure that all records are kept for at least five years.

Example of records form for veterinary products

#	Product name	Dosage form	Quantity	Batch number	Expiry date

OTHER CONTRIBUTORS

Dr. Marion Murungi, Senior Technical Advisor, USAID/MTaPS
Dr. John Paul Waswa, Technical Advisor, USAID/MTaPS
Dr. Nassolo Winnie, Monitoring and Evaluation, APD/MAAIF
Ms. Nakyeyune Carolyne, Monitoring and Evaluation, APD/MAAIF
Dr. Mwanja Moses, Senior Veterinary Officer, MAAIF
Dr. Kajo Francis, Veterinary Inspector, MAAIF
Dr. Fred Monje, Senior Veterinary Officer, OHF, MAAIF
Dr. Dan Tumusiime, Senior Veterinary Officer, MAAIF
Dr. Merab Acham, Veterinary Inspector, MAAIF
Dr. Annet Praise Namboowa, Veterinary Inspector, MAAIF
Mr. Kassi Yusuf, Senior Fisheries Officer, Aquaculture business development, MAAIF
Mr. Butete Cosmas Alfred, Senior Apiculture Officer, MAAIF
Dr. Lumu Paul Johnson, Senior Veterinary Officer, MAAIF
Dr. Kenneth Mugabi, Senior Veterinary Officer, MAAIF
Dr. Kalanda Rodgers, Veterinary Inspector, Northern Uganda, MAAIF
Dr. Kimaanga Michael, Senior Veterinary Inspector, MAAIF
Dr. Nanozi Beatrice, Senior Veterinary Officer, MAAIF
Dr. Nakanjako Maria Flavia, Veterinary Inspector, MAAIF
Dr. Jeanne Muhindo, Head, Veterinary Products, NDA
Dr. Wilfred Opira, Regulatory Officer, NDA
Dr. Sandra Tuhairwe, Regulatory Officer, NDA
Dr. Juliet Nalubwama, Regulatory Officer, NDA
Dr. Noel Aineplan, Principal Regulatory Officer, NDA
Dr. Kayizzi Magembe Vincent, Principal Regulatory Officer, NDA
Mr. Mutasaaga Joseph, Manager, Planning and Business, NDA, Kampala
Dr. Robert Aruho, Senior Wildlife Veterinarian, UWA, Kampala
Dr. Samuel G. Okech, Lecturer, MakCOVAB
Dr. David Musoke, Lecturer, Department of Disease Control and Environmental Health, Makerere University
Dr. Esther Buregyeya, Senior Lecturer, Department of Disease Control and Environmental Health, Makerere University

Dr. Kubiriza Kawooya Godfrey, Lecturer, MakCONAS, Makerere University
Dr. Nguma Willy, District Veterinary Officer, Arua
Dr. Taban Luke, Veterinary Officer, Arua Municipality, Arua
Mr. Caku Benjamin, DAPO, Arua
Mr. Kalia Victor, Assistant Veterinary Officer, Nyadri, Maracha
Ms. Taburu Christine, Assistant Veterinary Officer, Yivu, Maracha
Mr. Drate Cox, Drug shop Operator, Arua
Mr. Aroma Stephen, Veterinary Practitioner, Arua
Mr. Bada Kennedy, Veterinary Practitioner, Arua
Mr. Eceta Patrick, Veterinary Practitioner, Arua
Mr. Asea Fred, AAHO, Ayivuni, Arua
Mr. Nyakuta Hillary, Assistant Veterinary Officer, Tara, Maracha
Mr. Ezu Paska, Drug shop operator, Arua
Ms. Adiru Kevin, Assistant Veterinary Officer, Tara, Maracha
Mr. Atama Emmanuel, Assistant Veterinary Officer, Tara, Maracha
Dr. Onzima Charles, AAHO, Madi-Okolo District.
Dr. Candia Alex, District Veterinary Officer, Maracha
Mr. Acidri Jimmy, AAHO, Madi-Okolo District
Mr. Abirima Abubakar, Assistant Veterinary Officer, Maracha
Mr. Diku Charles, Drug shop operator, Arua
Mr. Izama Yazid, Drug shop operator, Adjumani
Dr. Ijo Didemous, Veterinary Officer, Adjumani
Dr. Dramwi Mathias, Veterinary Officer , Adjumani
Dr. Akule Urri Richard, District Veterinary Officer, Moyo
Mr. Unzimai Vincent, Assistant Veterinary Officer, Moyo
Mr. Dralobu Akuti Pascal, Assistant Veterinary Officer, Moyo
Dr. Kiryabwire, District Veterinary Officer, Mukono
Mr. Margaret Nankya, Owner, Bulunzi poultry and animal feeds, Mukono
Ms. Katana Grace, Sales representative, Agroservice (U) Ltd, Mukono
Dr. Kaaya, Veterinary Surgeon, Dealer/Supplier of Kuroilers, Mukono
Dr. Kyobe, Veterinary Surgeon, Mukono
Dr. Charles Musoke, Veterinary Surgeon, Mukono

Notes
