One Health and important zoonoses in Myanmar

Nay Pyi Taw, January 25, 2018

Dr. Min Thein Maw (BVSc, MAg, PhD)
Contents

• Zoonoses

• One health

• One Health collaboration in Myanmar
Zoonotic Diseases

• Diseases that can be passed between animals and humans

• At least 61% of all human pathogens are zoonotic.

• ~75% of all emerging pathogens in the past decade have been zoonotic.
Why do you think this is true?

1. We interact with animals in our daily lives.
2. We raise animals for food or enjoyment.
3. We keep them in our homes as pets.
4. We come into close contact with animals at fairs and zoos.
5. We encounter wildlife when we are outdoors or bugs that transmit disease.
Zoonotic Disease and Spill over
Zoonotic phases

- Circulation in reservoir
- Cross-species spillover
- Limited human-human transmission
- Pathogen evolution

# of published studies

# of zoonotic phases included in published studies
Spill over and Pandemic Properties

- Animal viruses with high host plasticity
- Animal-to-human spillover of viruses
- Amplification by human-to-human transmission
- Global Spread
Pet Ownership and Zoonoses
Livestock and Zoonoses
TRANSMISSION ROUTES OF ZOONOTIC DISEASES

Aerosol
Occurs when droplets are passed through the air from an infected animal and are breathed in by a person. Most exposure occurs when droplets are created from birthing tissues (placenta, birthing fluids), soil contaminated with feces, urine or bacteria and a person breathes in the dust particles.

Oral
Occurs by ingesting food or water contaminated with a pathogen. This can occur if animal products, such as milk or meat, are not pasteurized or cooked properly. Eating or drinking after handling animals without washing your hands could also lead to oral zoonotic disease transmission.

Direct Contact
Requires the presence of a pathogen in the environment or within an infected animal. A person becomes exposed when the pathogen directly touches open wounds, mucous membranes or the skin.

Vector
Occurs when an insect acquires a pathogen from one animal and transmits it to a person.

Fomite
A fomite is an inanimate (non-living) object that can carry a pathogen from an animal to a person. Examples of fomites include contaminated obstetrical (O.B.) chains, brushes, needles, clothing or bedding (straw, shavings).
Routes of Transmission

• Direct contact
  – Bite, scratch, contact with infected tissues
  – Ex. Rabies

• Indirect contact
  – Food/water-borne or touching infected object (fomite)
  – Salmonella, E. coli, Giardia

• Aerosolization
  – Inhalation, contact with respiratory droplets
  – Ex. Brucellosis, Psittacosis

• Vector-borne (animal serves as reservoir)
  – Mosquitoes, ticks, fleas
  – Ex. Rocky Mountain Spotted Fever, West Nile Virus
Zoonotic Diseases Commonly Associated with Livestock & Poultry

- **Influenzas** – swine, poultry, humans
- Salmonella
- **Anthrax**
- E. coli
- Psittacosis
- Q-fever
- Brucellosis
- Tuberculosis
- And others..... **Rabies**
Significant zoonotic important Events

2006-2017: (9) waves of outbreaks associated with public animal exhibitions – mostly *Avian Influenza*
Influenza in Poultry

Significant zoonotic important Events

• H5N1 – 858+ human cases reported in 15 countries in Asia, Africa, Pacific, Near East since 2017. 60% cases were fatal.
• Almost all cases had poultry exposures.
• H7N9 – 1623+ cases in China & Malaysia in 2013 & 2014. Source was poultry.
# Cumulative number of confirmed human cases for avian influenza A(H5N1) reported to WHO, 2003-2017

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<th>Country</th>
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<th>2010-2014** cases</th>
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</table>

* 2003-2009 total figures. Breakdowns by year available on subsequent tables.
** 2010-2014 total figures. Breakdowns by year available on subsequent tables.

Total number of cases includes number of deaths. WHO reports only laboratory cases. All dates refer to onset of illness.

Source: WHO/GIP, data in HQ as of 20 April 2017
Overview

Hazard: Influenza A(H7N9) virus with pandemic potential.
Country: China; imported cases in Malaysia (1) and Canada (2).
Number of human cases: **1,623** confirmed; **620** deaths (since February 2013).
New findings in birds / environment since last update (24 November 2017): 3
New human cases since last update (24 November 2017): 1

Map 1. Human cases and positive findings in birds or the environment

Legend
- New Animal/Environment (since 24 November 2017)
- New Human case (since 24 November 2017)

Wave 5
(October 2016 - September 2017)
- Animal/Environment
- Human case

Wave 4
(October 2015 - September 2016)
- Animal/Environment
- Human case

Note: Human cases are depicted in the geographic location where they were reported; for some cases, exposure may have occurred in a different geographic location. Precise location of 63 human cases in Anhui (2), Beijing (2), Guangdong (1), Guangxi (1), Hebei (3), Hunan (1), Hubei (2), Jiangsu (2), Jiangxi (6), Sichuan (2), Zhejiang (3) and unknown (38) Provinces are currently not known, these cases are therefore not shown on the map.
“One Health”

1. Animal Influenza
2. Rabies
3. Antimicrobial resistance
One Health Concept

Animal Health

Ecosystem Health

Human Health
One Health Concept Approach

One Health advocates for the collective and cohesive investment in addressing health threats through a coordinated, collaborative, multi-disciplinary and cross sectoral approach.

This concept is evolved through several recommendations of world bodies for establishing a suitable approach towards preventing emerging & re-emerging diseases, maintaining ecosystem integrity.
**One Health Drivers**

- 80% of agents having a potential bioterrorist use are zoonotic pathogens
- 75% of emerging diseases are zoonotic
- 60% of human pathogens are zoonotic

The world bank estimates that an influenza pandemic could cost the global economy 2 trillion dollars

Approximate growth of the global population (Evans et al.,)
Our OH Goals

• Open communication/networking
• Provide disease prevention education
• Enhance surveillance for disease risk
• Work together to mitigate zoonotic disease outbreaks when they occur
On Health Myanmar Development

“One Health Strategy Workshop” 9-10 March, Nay Pyi Taw

Representatives and participants from MLFRD, MOH, MOECAF, USAID Regional Asia, USAID MM, FAO RAP, FAO MM, FAO-ECTAD Bangladesh, FAO-ECTAD MM, WHO SEA, WHO MM, OIE SEA, P&R Thailand, PREDICT MM and MVA
Myanmar One Health (OH) Strategy

The One Health (OH) Strategy Workshop
(Nay Pyi Taw on 09 and 10 March 2016.)

One Health priority topics

• antimicrobial resistance (AMR) and
• six priority zoonotic diseases/syndromes, i.e.
  – rabies
  – zoonotic influenza
  – tuberculosis
  – food-borne diseases
  – anthrax, and
  – Japanese encephalitis.
Why One Health in Myanmar?

- Population density
- Vulnerable food security & safety
- Hotspots for EID & rEID
- Natural Disaster
- Fragile ecology
- Close contact to human-Animal
Zoonotic Disease Prevention and Control: Global Rabies Elimination Strategy

Rabies, the 100% preventable zoonotic NTD
optimised supply + coordination = expedited achievement of zero deaths
**GLOBAL FRAMEWORK FOR THE ELIMINATION OF DOG-MEDIATED HUMAN RABIES**

Dog-mediated human rabies kills tens of thousands of people every year worldwide. Freedom from dog-mediated human rabies is a global public good and is feasible with currently available tools.

In accordance with the consensus of the Global Conference (Geneva, 10-11 December 2015), this framework provides a coordinated approach and vision for the global elimination of dog-mediated rabies. It is intended to harmonize actions and provide adaptable, achievable guidance for country and regional strategies.

### The five pillars of rabies elimination (STOP-R)

<table>
<thead>
<tr>
<th>Pillar</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> Socio-cultural</td>
<td>Rabies control involves a wide range of stakeholders including the general public. The socio-cultural context influences rabies perceptions and dog-keeping practices of at-risk populations. Understanding the context guides approaches to motivate behavioural change and plan feasible delivery of services.</td>
</tr>
<tr>
<td><strong>2.</strong> Technical</td>
<td>Effective animal and public health systems are required to eliminate dog-mediated human rabies. These systems must be strengthened and resourced appropriately, and gaps identified and filled.</td>
</tr>
<tr>
<td><strong>3.</strong> Organization</td>
<td>The One Health approach and data collaboration is applied. Leadership, partnership and coordination for rabies elimination activities arise from the human health and animal health sectors and other stakeholders.</td>
</tr>
<tr>
<td><strong>4.</strong> Political</td>
<td>Success depends on political will and support for elimination of dog-mediated human rabies. Political will results from recognition of rabies elimination as a national, regional and global public good.</td>
</tr>
<tr>
<td><strong>5.</strong> Resources</td>
<td>Rabies elimination activities frequently span several years and therefore require sustained, long-term support.</td>
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</table>

### Critical success factors

- Long-term political and social commitment
- Community engagement
- Sustainable vaccination of >70% of the dog population
- Proof of concept (small scale, pilot) for the control of rabies in dogs
- Reduced access to rabies-prone areas and types of dog population
- Surveillance and monitoring of the rabies status
- Community-based educational campaigns
- Sensitization and awareness raising
- Economic incentives for dog owners
- Legislation and policies promoting rabies control
- Access to affordable vaccines
- Effective vaccinators and trained individuals
- Public-private partnerships
- Regional coordination
- International cooperation
- Sustainable funding mechanisms
- Evaluation and monitoring of impact and success

### Strategic Vision:

Zero human deaths from dog-mediated rabies by 2030 in participating countries.
The ASEAN Rabies Elimination Strategy

NATIONAL DOG RABIES ELIMINATION

A. SOCIO-CULTURAL
B. TECHNICAL
C. ORGANIZATIONAL & ONE HEALTH
D. POLICY & LEGISLATIVE

ASEAN RABIES CONTROL
GLOBAL RABIES CONTROL
Myanmar Rabies Elimination Framework

National Plan for Rabies Elimination in Dogs

- Social-cultural
- Technical
- Organisational
- Political
- Resources
4 Rabies control and prevention

- **STANDZ Rabies Project**
  - Philippines (ongoing)
  - Myanmar (ongoing)
  - Small Grant Facility in Cambodia (2015)

- **OIE Regional Vaccine Bank for Rabies**
  - EU-HPED Programme (finished last December 2014)
  - The Vaccine Bank mechanism still exists and continues to operate (funds now provided by countries or other donors)
>3.9 million doses of rabies vaccines delivered as of December 2015

- Nepal (200,000 doses)
- Vietnam (872,000 doses)
- Lao PDR (290,400 doses)
- Bangladesh (200,000 doses)
- Singapore (5,000 doses)
- Cambodia (50,000 doses)
- Bhutan (100,000 doses)
- Philippines (1.12M doses)
- Sri Lanka (300,400 doses)
- Indonesia (200,000 doses)
- Myanmar (400,000 doses)
Mass Dog Vaccine Campaign: A One Health approach (A perfect Model)

- Public private partnerships (e.g. private vets, NGO’s)
- Community involvement and awareness
- Inter-ministerial collaboration
- Ecosystem: Stray dog populations, wildlife reservoir

Effective Mass Dog Vaccine Campaign
OIE Myanmar Rabies Project: A One Health example
<table>
<thead>
<tr>
<th>Property</th>
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<tr>
<td>Surface area</td>
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<tr>
<td>Population</td>
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<tr>
<td>Altitude</td>
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<td>Longitude</td>
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<td>Dogs (total)</td>
<td>-4 million</td>
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<td>Human:Dog ratio</td>
<td>1:6</td>
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<td>Annual percentage growth</td>
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<tr>
<td>Cattle breeding (estimated)</td>
<td>15,000-20,000</td>
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<td>Wild dog population</td>
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Myanmar Map
Endemic situation

Human rabies Cases (Reported)

Source: Department of Public Health
Data as of 27th August, 2016
### Rabies in Animals (lab Confirmed)

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*Source: LBVD, Yangon Veterinary Lab*
Myanmar’s Strategic Vision: Zero Dog Mediated rabies fatality by 2020
Stages in Progressive Control Pathways

2015
STAGE 0
- Rabies suspected to be present
- Scanty information available

2016-17
STAGE 1
- Development and adoption of the National Rabies control strategy
- Preparation for its implementation

2017-22
STAGE 2
- Implementation of the National Rabies control strategy in pilot districts

2023-27
STAGE 3
Rabies risk reduction through full-scale implementation of the control strategy

2027-29
STAGE 4
- Maintain freedom from dog-mediated human rabies
  - Elimination of dog rabies

2030
STAGE 5
- Maintain freedom from rabies status in humans and dogs

Livestock Breeding and Veterinary Department, LBVD

17 November

World Rabies Day 2017
ကျောင်းအများအပြားအချိန်:

• ၂၀၁၃ ခုနှစ်မှ ၂၀၁၇ ခုနှစ်အတွင်း မခွေးမကာင်မေ (၃၃၀,၀၀၀) ကျွေးကျေင့်ထားသေ့် ကာကွေယ်မဆးမခုံြှုေေှိမခင်း

• Pilot ကျောင်းအများအပြား ၇၀% ကာကွေယ်မဆးမခုံြှုေေှိမခင်း

• SOP and vaccination Guideline ကျောင်းအများအပြား

• One Health ကျောင်းအများအပြား

• အစုလိုက်မခွေးရူးမောဂါကာကွေယ်မဆးမခင်း

• အမတွေ ကျောင်းအများအပြားအချိန်အပေါ် မခွေးရူးမောဂါကာကွေယ်မဆးမခင်း
ကြ္ဘာ့မခွေးရူးမောဂါတိုက်ဖျေက်မေးမန့အခြေားြျေားနှစ်စဉ်ကျေင်းြေ

• ကာကွေယ်မဆးထိုးမြေးမခင်း
• ြေောမြေးမခင်း

11th ကြိမ်မြ် ာကြမ်ဘက့ြွေးရူးြေကဂါြကြေယမတမုြမဖျြမြေးြေ့အွ်မးအေကး

(၁၀) ကြာရင်းကြက်
ကြာရင်းဒသားကွင်းကောင်းမှုအပေါ်အဦးတင်ခွစ်သူအောင်သား:
မြေေ်သူြျေားြေူးမြေါင်းြေါေင်ြှု
Public Awareness
Implementation: Community Involvement (CAHW)
Implementation Training: LBVD officers
Implementation Training
Implementation – in the field
One Health Approach

‘It is amazing what can be accomplished when you don’t care who gets the credit.’

United States President Harry S. Truman
Avian Influenza Surveillance

Livestock Breeding and Veterinary department

Nay Pyi Taw, Myanmar

22 December 2017
Location Maps of 9 waves of HPAI H5N1 Outbreaks in Myanmar

Preparedness (brief)

- **Contingency plans** for avian influenza: HPAI Contingency plan and H7N9 Contingency Plan (LBVD)
- **National Steering Committee** on prevention and control of Avian Influenza and Human Influenza Pandemic Preparedness & Response
- **Table Top exercise and simulation exercises** (One Health)
- **National surveillance**: Active and passive AI surveillance in border area, LBM and farms
- **Strengthening laboratory capacity**, resources
- **control** measures include: Joint outbreak response, investigation
  - No vaccination
  - Zoning
  - Movement control
  - Cleaning and disinfection
  - Public awareness and risk communication
  - Active and passive surveillance
  - **One health Coordination**
## LBVD Laboratory capacities

<table>
<thead>
<tr>
<th>Capacities</th>
<th>Yangon</th>
<th>Mandalay</th>
<th>ShweMyo (NPT)</th>
<th>Taungyi</th>
<th>Pathein</th>
<th>Quarantine Labs:</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSL2 enhanced</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Biosafety Cabinet Class II</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Serology (HA, HI,)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Serology (ELISA, IPMA, FAT)</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Virus Isolation</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Conventional PCR</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Real Time PCR</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Gene Sequencer</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
Routine and risk-based surveillance has been conducting in collaboration with FAO since 2006-2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Activities</th>
<th>Target</th>
<th>Organized by</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-07</td>
<td>Routine Surveillance in LBM, Breeder Farm, Hatcheries, Commercial farms</td>
<td>HPAI</td>
<td>FAO/LBVD</td>
</tr>
<tr>
<td>2008</td>
<td>Wet land area (MoeyunGyi Area)</td>
<td>HPAI</td>
<td>FAO/LBVD</td>
</tr>
<tr>
<td>2009</td>
<td>• Wild Bird Related Areas Surveillance and Supply Chain Study,</td>
<td>HPAI</td>
<td>FAO/LBVD</td>
</tr>
<tr>
<td></td>
<td>• National H5N1 Duck Cross Sectional Study In 54 townships</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>HPAI Active Surveillance and duck cohort study in 78 townships</td>
<td>HPAI</td>
<td>FAO/LBVD</td>
</tr>
<tr>
<td>2012</td>
<td>Day Old to 5 Month Old Duck Longitudinal Duck Study</td>
<td>HPAI</td>
<td>FAO/LBVD</td>
</tr>
<tr>
<td>2013-14</td>
<td>• H7N9 Emergency border area Surveillance (implemented) LBM surveillance</td>
<td>LPAI</td>
<td>FAO/LBVD</td>
</tr>
<tr>
<td>2015-17</td>
<td>• Risk Based Surveillance (ongoing )</td>
<td>HPAI/LPAI</td>
<td>FAO/LBVD</td>
</tr>
</tbody>
</table>

Since 2013 total of 6th Round of risk-based surveillance implemented.
Lesson learnt, benefit

- Lesson- Learnt from H5N1 Poultry Outbreak

- Benefit:
  - Rapid response and reduced impact
  - Contingency Plan, SOP, guidelines, structure in place
  - Joint investigation and response One Health
AI epidemiology changes

- H5N1 (2007)
- H5N1 (2010-2012)
- H5N6 (2016)
- H9N2 (2017)
Tackling Antimicrobial Resistance (AMR) by One Health Approach and role of veterinarian in Myanmar

by
Dr Min Thein Maw
Livestock Breeding and Veterinary Department
(10-1-2018)
“One Health”

• Three important topics

1. Animal Influenza
2. Rabies
3. Antimicrobial resistance
The Global Health Security Agenda (GHSA)

**Prevent 4:** Immunization

**Detect 1:** National Laboratory System

**Detect 2 & 3:** Real-Time Surveillance

**Detect 4:** GHSA Reporting

**Detect 5:** Workforce Development

**Respond 1:** Emergency Operations Centers

**Respond 2:** Linking Public Health with Law and Multisectoral Rapid Response

**Respond 3:** Medical Countermeasures and Personnel Deployment Action Package

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Global Health Security Agenda

"...We must come together to prevent, and detect and fight every kind of biological danger – whether it’s a pandemic like H1N1, a terrorist threat, or a treatable disease."

President Barack Obama, 2011

Office of the Spokesperson, Washington, DC September 14, 2016
PVS vs IHR-JEE and AMR MYANMAR
What is antimicrobial resistance?

- The ability of a microorganism to multiply or persist in the presence of an increased level of an antimicrobial agent.

**Mechanisms of ABR**

- Enzymes that alter or degrade antibiotic (e.g. \(\beta\)-lactamases, etc.)
- Efflux pumps (e.g. resistance to tetracyclines)
- Alteration of the intracellular target of antibiotic (e.g. ‘ribosome protection’ against tetracyclines)
Antibiotics vs AMR: Antimicrobial Resistance
Deaths attributable to antimicrobial resistance every year compared to other major causes of death

- AMR in 2050: 10 million
- Tetanus: 60,000
- Road traffic accidents: 1.2 million
- Cancer: 8.2 million
- Measles: 130,000
- Cholera: 100,000 – 120,000
- Diarrhoeal disease: 1.4 million
- Diabetes: 1.5 million
- AMRnow: 700,000 (low estimate)
Types of Antibiotic Uses in Livestock

The Uses

Antibiotics are just one tool among many that farmers and veterinarians use to ensure the health of animals, and it is one that must be used responsibly. Comprehensive programs are needed to treat and prevent animal illnesses.

- **Treat**: Animals diagnosed with an illness
- **Control**: The spread of illness in a herd or flock
- **Prevent**: Illness in healthy animals when exposure is likely
- **Growth**: Balance good/bad bacteria for improved nutrition
**COMPOSITION**
Colistin........................................... 300,000,000 IU
Neomycin........................................ 60 g
Tylosin........................................... 25 g
Vitamin A........................................... 4,500,000 IU
Vitamin C........................................... 25 g
Dipyrone........................................... 10 g
Prednisolone.................................... 10 mg
Excipient to..................................... 1,000 g

**PHARMACOLOGICAL DATA**
COLIMICINA COMPLEX is an association of antibiotics, anti-inflammatories and vitamins, specially designed to resolve efficiently poultry pathologies of complex etiology.

**TARGET SPECIES AND INDICATIONS**
Poultry.
COLIMICINA COMPLEX is indicated in the treatment of the respiratory tract infections, particularly CRD, colibacillosis and salmonellosis.

**COMPOSITION** Each 100g contains:
- Oxytetracycline HCl 6,000 mg
- Vitamin A 400,000 IU
- Vitamin D₃ 70,000 IU
- Vitamin E 100 mg
- Vitamin K₃ 150 mg
- Vitamin B₁₂ 250 mg
- Calci d-Pantothenat 500 mcg
- Calci d-Pantothenat 600 mg

**EVIDENCE & EFFECT**
For the prevention of bacterial diseases which are sensitive to ampicillin and colistin.
1) Cattle (under 6 months), Pig: Salmonella, E. coli, Pasteurella
2) Chicken: Mycoplasma, Haemophilus, E. coli, Salmonella.
other streptococcus, Staphylococcus.

**INDICATIONS**
- Prevention of diseases following stress periods: Transport, vaccination, reboaking, breeding problems.
- Prevention and treatment of diseases caused by germs sensitive to the combination.
  - Poultry: Chronic Respiratory Disease (CRD), infectious synovitis, fowl cholera, Blue-comb, bacterial enteritis caused by E.coli and infectious anemia.
  - Calves: Neonatal diarrhea, bacterial enteritis.
  - Swine: Neonatal diarrhea, oedema

**DIRECTIONS FOR USE**
- Treatment: For 3-5 days.
  - Poultry: 1 g per 2 liters of drinking water or 200 g dissolved in 100 gallons of drinking water.
  - Piglets, calves: 25 g per 100 liters of drinking water.
- Prevention: For 1-3 days.
  - Poultry: 1 g per 4 liters of drinking water, or 200 g dissolved in 200 gallons of drinking water.
  - Piglets, calves: 5 g per 10 piglets per day.
  - Pigs, chickens: 1 g per 8 liters of drinking water.

**CONTRAINDICATIONS AND ADVERSE REACTIONS**
The use of COLIMICINA COMPLEX at the recommended dosage is well tolerated in the target species and no adverse reactions are reported.
Do not administer in dehydrated animals, animals with renal insufficiency.
Do not administer in animals showing hypersensitivity to the antibiotics.

**WITHDRAWAL TIME**
7 days.
This period is subdue to the regulations in force in the country of destination.

**STORAGE CONDITIONS**
Store in a cool, dry place protected from intensive light.

**FOR VETERINARY USE ONLY**
Batch No.: 16/2
Authorization of antimicrobial growth Promoters in OIE member countries (2015)

- Antimicrobial growth promoters authorized (26%)
- Antimicrobial growth promoters not authorized (74%)
## Submissions from ASEAN Member States

Terrestrial animals covered, based on submissions from AMS (N=4)

<table>
<thead>
<tr>
<th>Animal Type</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>3</td>
</tr>
<tr>
<td>Pigs Commercial</td>
<td>2</td>
</tr>
<tr>
<td>Sheep</td>
<td>1</td>
</tr>
<tr>
<td>Goats</td>
<td>3</td>
</tr>
<tr>
<td>Layers</td>
<td>1</td>
</tr>
<tr>
<td>Broilers</td>
<td>4</td>
</tr>
<tr>
<td>Poultry Backyard</td>
<td>1</td>
</tr>
<tr>
<td>Buffaloes</td>
<td>1</td>
</tr>
<tr>
<td>Cervidae</td>
<td>1</td>
</tr>
<tr>
<td>Equidae</td>
<td>0</td>
</tr>
<tr>
<td>Rabbits/Hares</td>
<td>0</td>
</tr>
<tr>
<td>Bees</td>
<td>1</td>
</tr>
<tr>
<td>Reptiles</td>
<td>1</td>
</tr>
</tbody>
</table>

*Note:* The total submissions (N=4) indicate the number of AMS reports received, not the total number of animals covered.
Submissions from ASEAN Member States

Food-producing aquatic animals covered, based on submissions from AMS (N=4)

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fish aquaculture production</td>
<td>3</td>
</tr>
<tr>
<td>Fish farmed in fresh water</td>
<td>2</td>
</tr>
<tr>
<td>Crustaceans</td>
<td>0</td>
</tr>
<tr>
<td>Molluscs</td>
<td>0</td>
</tr>
<tr>
<td>Amphibians</td>
<td>0</td>
</tr>
</tbody>
</table>
Spread of AMR animal-human interface

**ANTIBIOTIC RESISTANCE**

**RESISTANCE**
All animals carry bacteria in their intestines

Antibiotics are given to animals
Antibiotics kill most bacteria
But resistant bacteria survive and multiply

**SPREAD**
Resistant bacteria can spread to...
- animal products
- produced through contaminated water or soil
- prepared food through contaminated surfaces
- the environment when animals poop

**EXPOSURE**
People can get sick with resistant infections from...
- contaminated food
- contaminated environment

**IMPACT**
Some resistant infections cause...
- mild illness
- severe illness and may lead to death
Issues of AMR for the Vet

- Reduced efficacy of treatment
- AMR in zoonotic bacteria
  - Consumer protection/food safety
  - Self protection from occupational disease
Measure taken by LBVD

- National Planning for Responsible and prudent use of antibiotics
- Veterinarian are parts of solution
  - Well trained Vets
  - Well supervised
  - Veterinary Council
  - Myanmar Veterinary Association
- Raised awareness among players
  - National Authorities
  - Veterinarians
  - Breeders and animals owners
- Campaigns World Antibiotic Weeks
- Standards (HACCP, GMP, GAHP)
National Livestock AMU/AMR Control Plan

1. IMPROVE awareness and understanding of AMR through effective communication, education and training;

2. STRENGTHEN knowledge and evidence base through surveillance and research;

3. REDUCE the incidence of infection through effective sanitation, hygiene and infection prevention measures;

4. OPTIMIZE the use of antimicrobial medicines in human and animal health; and

5. DEVELOP the economic case for sustainable investment that takes account of the needs of all countries, and increase investment in new medicines, diagnostic tools, vaccines, and other interventions.
What Policy makers can do?

• Control the use of antibiotic through veterinary supervision (strengthen regulatory and supply chain)
• Guidelines and recommendations on the use of antibiotics in food animals
• Ensure the existence of appropriate veterinary legislation
• Advocate responsible and prudent use
• Ban antibiotic as growth promoter or phase out nontherapeutic use of antibiotics in food animals
What Veterinarian can do?

- Only prescribe when necessary
- Test bacterial sensitivity
- Raised awareness among animal owners
- Encourage good practice (GAHP)
- Keep your knowledge update
What Breeder and Animal Owners can do?

- Only use antibiotics prescribed by your veterinarian
- Respect the treatment dose and duration
- Always procure antibiotic from authorized sources
- Prevent infection by following good Husbandry practices
- Keep records of antibiotics administered
National Plan (livestock) Implementation

1. Strengthening Veterinary Supervision
   • Veterinary medical and feed stuff Committee
   • VmfAq-TWG
   • Proposed Prohibited substances list by VMFAq

   1. Chloramphenicol
   2. Chloroform
   3. Chlorpromazine
   4. Colchicine
   5. Dapsone
An Integrated management-based approach for surveillance and control of zoonoses in emerging livestock systems (ZELS)

FOCUS: AMR zoonoses in Pig Supply chain

- Salmonella
- Streptococcus suis
- E.coli
3. Education and Awareness to Veterinary drug and feed shops
World Antibiotic Awareness Activities
4. Antimicrobial Usage Baseline-Data Collection in Livestock Sector


Antibiotic Class

Amount in (Kg)
5. Development of GAHP and promotion of GAHP
Challenges on AMR control

- AMR/Food safety ကိစ္စတွေင် Multi-agency control process နိုင်ငံတော်တွင်:
- Limited capacity on Collection and Analysis of AMU data (species basic)
- အစားထိုးရောင်းမှုကို စစ်ဆင်ရေး ဖြတ်သန်းသော အချိန်အောက် များစွာ: (Weak Regulatory control on registration, prescription, distribution, selling, usage of Veterinary drugs in animal sector)
- Post marketing surveillance ပြုလုပ်အချိန်အောက်: နိုင်ငံတော်ကိုလိုအပ်ပြီး (Needs sound regulatory framework)
- Needs stakeholder participation
Mitigating AMR with One health Approach
On Health Myanmar Development

“One Health Strategy Workshop” 9-10 March, Nay Pyi Taw

Representatives and participants from MLFRD, MOH, MOECAF, USAID Regional Asia, USAID MM, FAO RAP, FAO MM, FAO-ECTAD Bangladesh, FAO-ECTAD MM, WHO SEA, WHO MM, OIE SEA, P&R Thailand, PREDICT MM and MVA
Participating in AMR National Action Plan, Myanmar
Thank you for attention