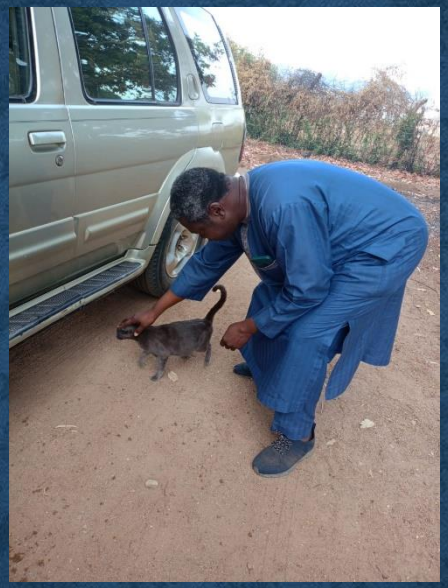
ZOONOSES AND YOU



Prof Pwaveno H. Bamaiyi

Department of Veterinary Public Health and Preventive Medicine, University of Jos

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A man who is right with God cares for his animal, but the sinful man is hard and has no pity.
Proverbs 12:10 (New Life Version)

ZOONOSES

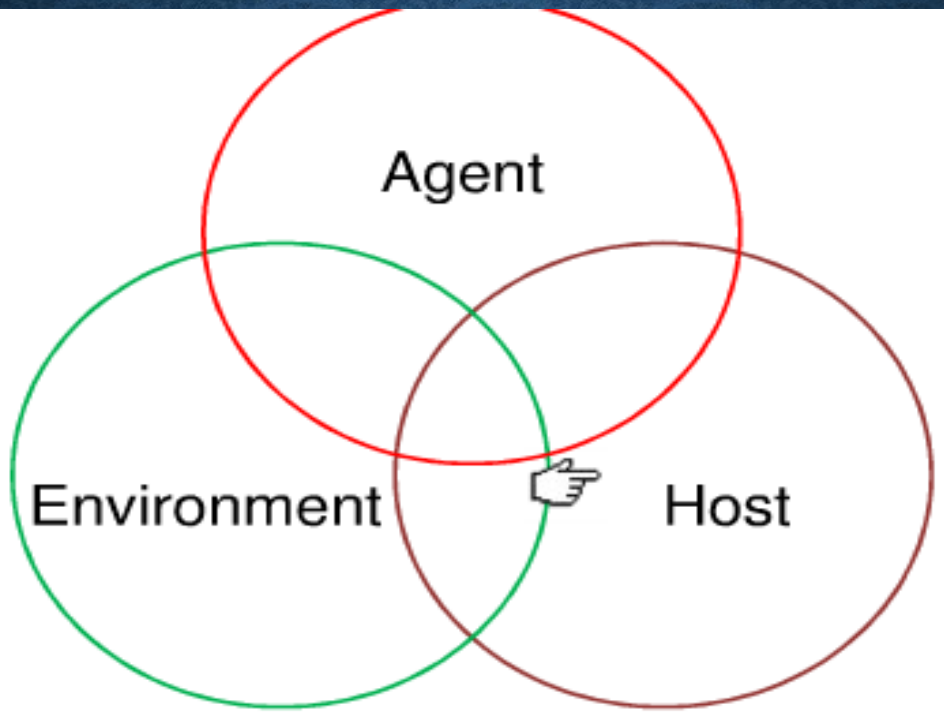
- **Zoonosis** are infections which are naturally transmitted between vertebrate animals and people.
- Derived from Greek word zoon(animals) and noses (diseases). People , birds, animals , arthropods and inanimate environment are all involved in cycles of zoonotic infections.

Genesis 1:21 So God created the great creatures of the sea and every living thing with which the water teems and that moves about in it, according to their kinds, and every winged bird according to its kind. And God saw that it was good.

WORLD ZOONOSES DAY

6th JULY

ZOONOSES

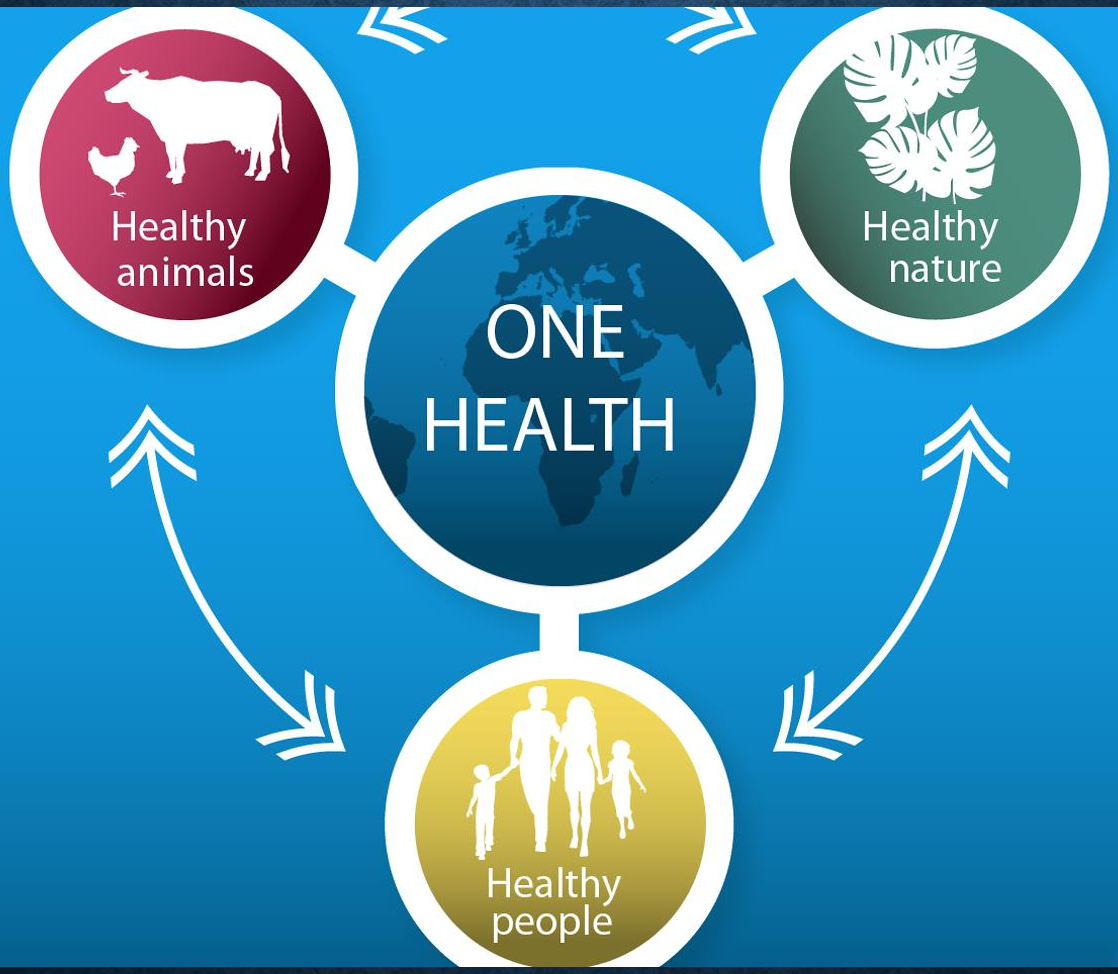


Zoonotic diseases are multifactorial and their occurrence is affected by interactions between the host, the agent and the environment

God gave man dominion over animals and nature

Genesis 2:19-20

19 Now the LORD God had formed out of the ground all the wild animals and all the birds in the sky. He brought them to the man to see what he would name them; and whatever the man called each living creature, that was its name.
20 So the man gave names to all the livestock, the birds in the sky and all the wild animals.


Healthy animals
Healthy nature
ONE HEALTH
Healthy people

WHY ZOONOSES?

1. We keep animals for various reasons
2. We take animal products (meat, milk, eggs, cheese, etc)
3. We play with animals (recreation)
4. We come across animals
5. Ecosystem
6. Responsible for 2.5 billion cases of human infection and 2.7 million human deaths globally every year!

ZOONOSES

Approximately 1500 infectious diseases are recognized in humans

Of these 60% are due to zoonoses

however

75% of recently emerging infectious diseases (EID) have been caused by zoonotic pathogens

AETIOLOGIC AGENTS INVOLVED IN ZOONOSES

- **Viral zoonoses**

  Viral zoonoses are virus infections of animals that can be naturally transmitted to man often with devastating effect. Rabies is perhaps the prime example of a zoonotic viral infection. Other viral zoonoses are avian influenza , crimean-congo haemorrhagic fever , Ebola and Rift valley fever .

- **Bacterial zoonoses**

  Every year millions of people get sick, because of foodborne zoonoses caused by different types of pathogenic bacteria such as Salmonellosis , Campylobacteriosis etc. Other bacterial zoonoses are: anthrax , brucellosis , *E. coli* , leptospirosis ,plague , shigellosis and tularaemia .

- **Ricketssial zoonoses**

  Rickettsiae are extremely small sized obligate intracellular prokaryotes, which multiply by binary fission.

  Rickettssial diseases are primarily transmitted by arthropods. The major reservoirs of infection are humans, rats, mice and small mammals .

  The main sources of human infection are affected domestic animals and their products.

- **Parasitic zoonoses**

  Parasitism is the major health problem both for animals and humans, which constitutes major part of the zoonoses. Some of the examples of parasitic zoonoses include cysticercosis, echinococcosis, toxoplasmosis, etc.

- **Fungal zoonoses**

  Fungus is the main source of the most of the skin problems and mostly occurs due to direct contact.In most developing countries, zoonotic diseases are among those diseases that contribute significantly to an already overly burdened public health system.

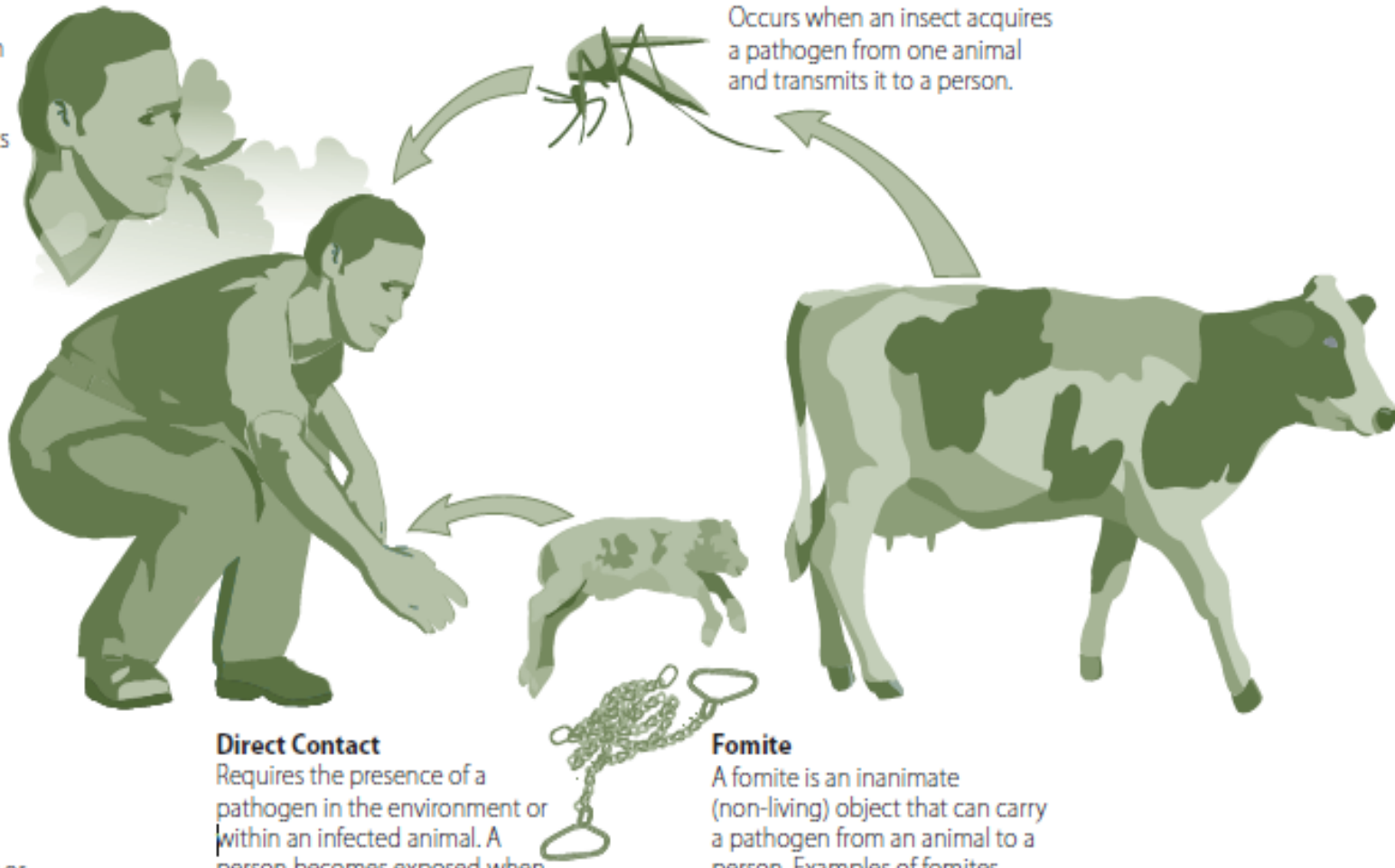
TRANSMISSION ROUTES OF ZOONOTIC DISEASES

- Aerosol
- Oral
- Direct Contact
- Fomite
- Vector

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.

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



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.

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).

TABLE OF ZOONOTIC DISEASES THEIR ORGANISMS AND TRANSMISSION

Disease	Organism	Main reservoirs	Usual mode of transmission to humans
Anthrax	*Bacillus anthracis*	livestock, wild animals, environment	direct contact, ingestion
Animal influenza	influenza viruses	livestock, humans	may be reverse zoonosis
Avian influenza	Influenza virus, avian strains	poultry, ducks	direct contact
Bovine tuberculosis	*Mycobacterium bovis*	cattle	milk
Brucellosis	*Brucella species*	cattle, goats, sheep, pigs	dairy products, milk
Cat scratch fever	*Bartonella henselae*	cats	bite, scratch
Cysticercosis	*Taenia* species	cattle, pigs	meat
Cryptosporidiosis	*Cryptosporidium species*	cattle, sheep, pets	water, direct contact
Enzootic abortion	*Chlamydophila abortus*	farm animals, sheep	direct contact, aerosol
Erysipeloid	*Erysipelothrix rhusiopathiae*	pigs, fish, environment	direct contact
Fish tank granuloma	*Mycobacterium marinum*	fish	direct contact, water
Food poisoning	*Campylobacter species*	poultry, farm animals	raw meat, milk

TABLE OF ZOONOTIC DISEASES THEIR ORGANISMS AND TRANSMISSION

Giardiasis	Giardia lamblia	humans, wildlife	waterborne, person to person
Glanders	*Burkholderia mallei*	horse, donkey, mule	direct contact
Haemorrhagic colitis	*Escherichia coli O157*	ruminants	direct contact (and foodborne)
Hantavirus syndromes	Hantaviruses	rodents	aerosol
Hepatitis E	Hepatitis E virus	not yet known	not yet known
Hydatid disease	*Echinococcus granulosus*	dogs, sheep	ingestion of eggs excreted by dog
Leptospirosis	*Leptospira species*	rodents, ruminants	infected urine, water
Listeriosis	*Listeria monocytogenes*	cattle, sheep, soil	dairy produce, meat products
Louping ill	Louping ill virus	sheep, grouse	direct contact, tick bite
Lyme disease	*Borrelia burgdorferi*	ticks, rodents, sheep, deer, small mammals	tick bite
Lymphocytic choriomeningitis	Lymphocytic choriomeningitis virus	rodents	direct contact
Orf	Orf virus	sheep	direct contact
Pasteurellosis	*Pasteurella multocida*	dogs, cats, many mammals	bite/scratch, direct contact
Plague	*Yersinia pestis*	rats and their fleas	flea bite
Psittacosis	*Chlamydophila psittaci*	birds, poultry, ducks	aerosol, direct contact
Q fever	*Coxiella burnetii*	cattle, sheep, goats, cats	aerosol, direct contact, milk, fomites

TABLE OF ZOONOTIC DISEASES THEIR ORGANISMS AND TRANSMISSION

Rabies	Rabies viruses	dogs, foxes, bats, cats	animal bite
Rat bite fever (Haverhill fever)	*Streptobacillus moniliformis*	rats	bite/scratch, milk, water
Rift Valley fever	Rift Valley fever virus	cattle, goats, sheep	direct contact, mosquito bite
Ringworm	Dermatophyte fungi	cats, dogs, cattle, many animal species	direct contact
Streptococcal sepsis	*Streptococcus suis*	pigs	direct contact, meat
Streptococcal sepsis	*Streptococcus zooepidemicus*	horses, cattle	direct contact, milk
Tickborne encephalitis	Tickborne encephalitis virus	rodents, small mammals, livestock	tickbite, unpasteurised milk products
Toxocariasis	*Toxocara canis/cati*	dogs, cats	direct contact
Toxoplasmosis	*Toxoplasma gondii*	cats, ruminants	ingestion of faecal oocysts, meat
Trichinellosis	*Trichinella spiralis*	pigs, wild boar	pork products
Tularemia	*Francisella tularensis*	rabbits, wild animals, environment, ticks	direct contact, aerosol, ticks, inoculation
Zoonotic diphtheria	*Corynebacterium ulcerans*	cattle, farm animals, dogs	direct contact, milk
West Nile fever	West nile virus	wild birds, mosquitoes	mosquito bite

SOME ZOONOTIC DISEASES IN NIGERIA

Tuberculosis	Ring worm
Brucellosis	Leptospirosis
Campylobacteriosis	Listeriosis
Tetanus	Cryptopondiosis
Lassa Fever	Anthrax
Congo fever	Salmonellosis
Leishmaniosis	Chlamydiosis
Rabies	Toxoplasmosis
E.coli	Tuberculosis


RABIES
hydrophobia
virus
animal
dogs
bite
death
fear of water
agitation
paranoia
nervous system disease
India
brain inflammation
stray
WHO
RABIES
delirium
bite
wild animal
dogs
fever
Louis Pasteur
saliva
viral
fear of water
saliva
virus
insomnia
RABIES
madness
animal
hydrophobia
insomnia
Milwaukee protocol
hydrophobia
insomnia
saliva
paralysis
madness
furious
India
virus
stray
Louis Pasteur
post-exposure prophylaxis
furious
paranoia
bite
death
prophylaxis
fever
delirium
bats
fever

Psalm 59:6 New Living Translation

They come out at night,
snarling like vicious dogs
as they prowl the streets.

RABIES

1 Samuel 17:43

The Philistine said to David, “Am I a dog, that you come to me with sticks?” …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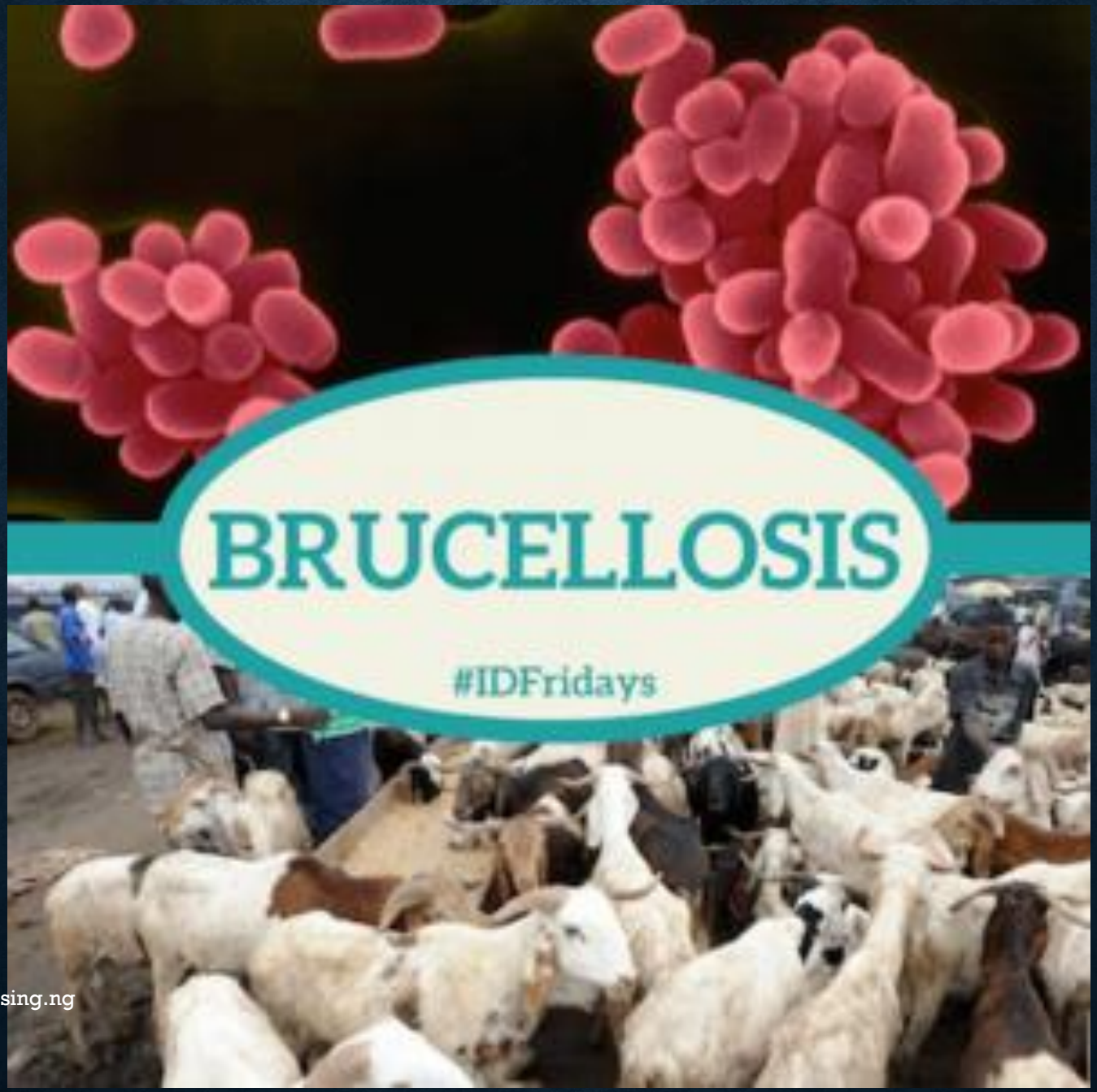

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ANTIMICROBIAL RESISTANCE (AMR)

INAPPROPRIATE USE of antibiotics by patients

OVER PRESCRIPTION of antibiotics by doctors

SPREAD OF INFECTIONS in hospitals and clinical facilities

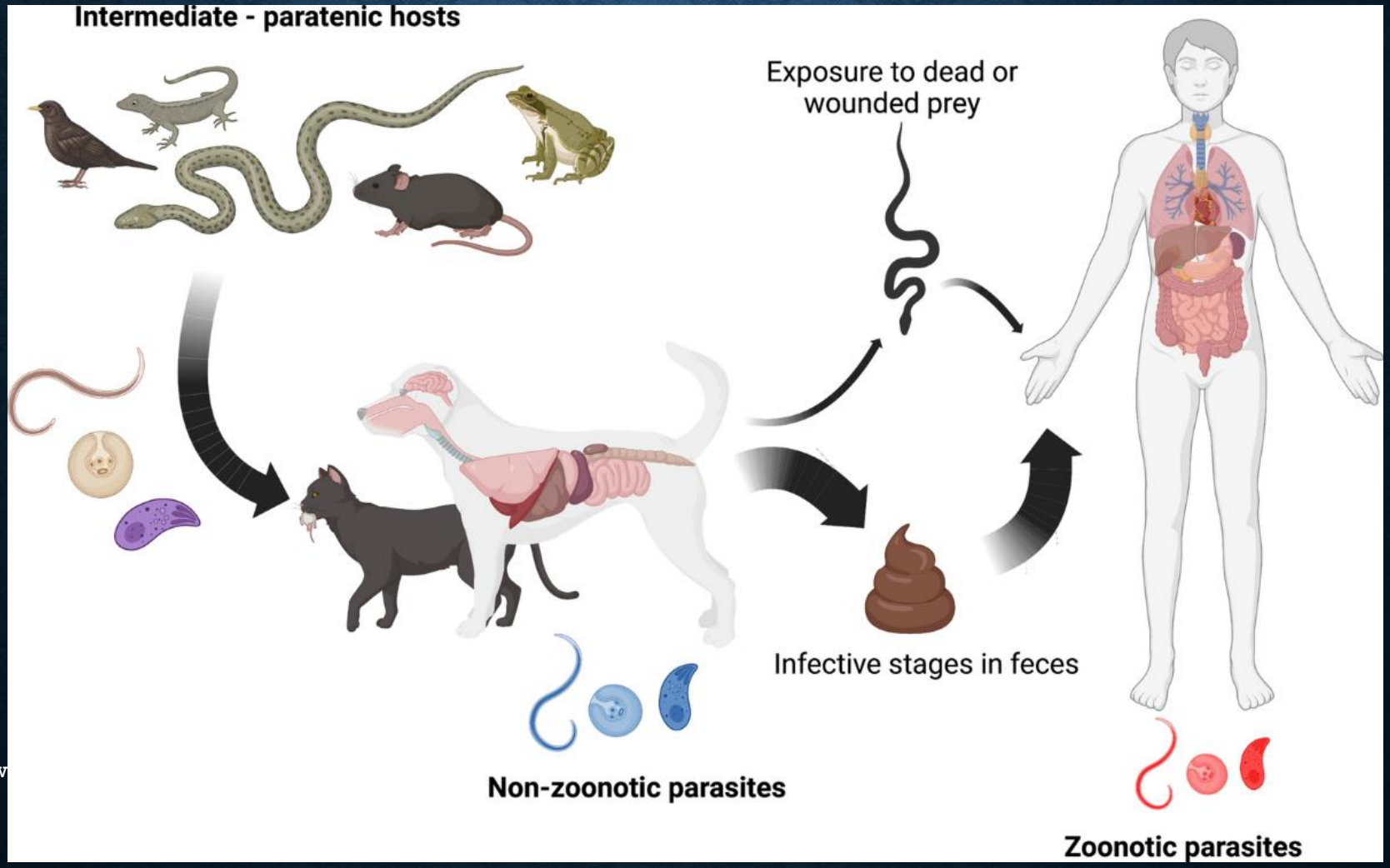
Causes of antibiotic resistance

POOR HYGIENE and deficiencies in prevention practices

UNNECESSARY AND/OR INAPPROPRIATE USE of antibiotics in agriculture and livestock farming

FAILURE TO IMPLEMENT DIAGNOSTIC TESTS that can inform and guide prescribing

ZOONOTIC PARASITES

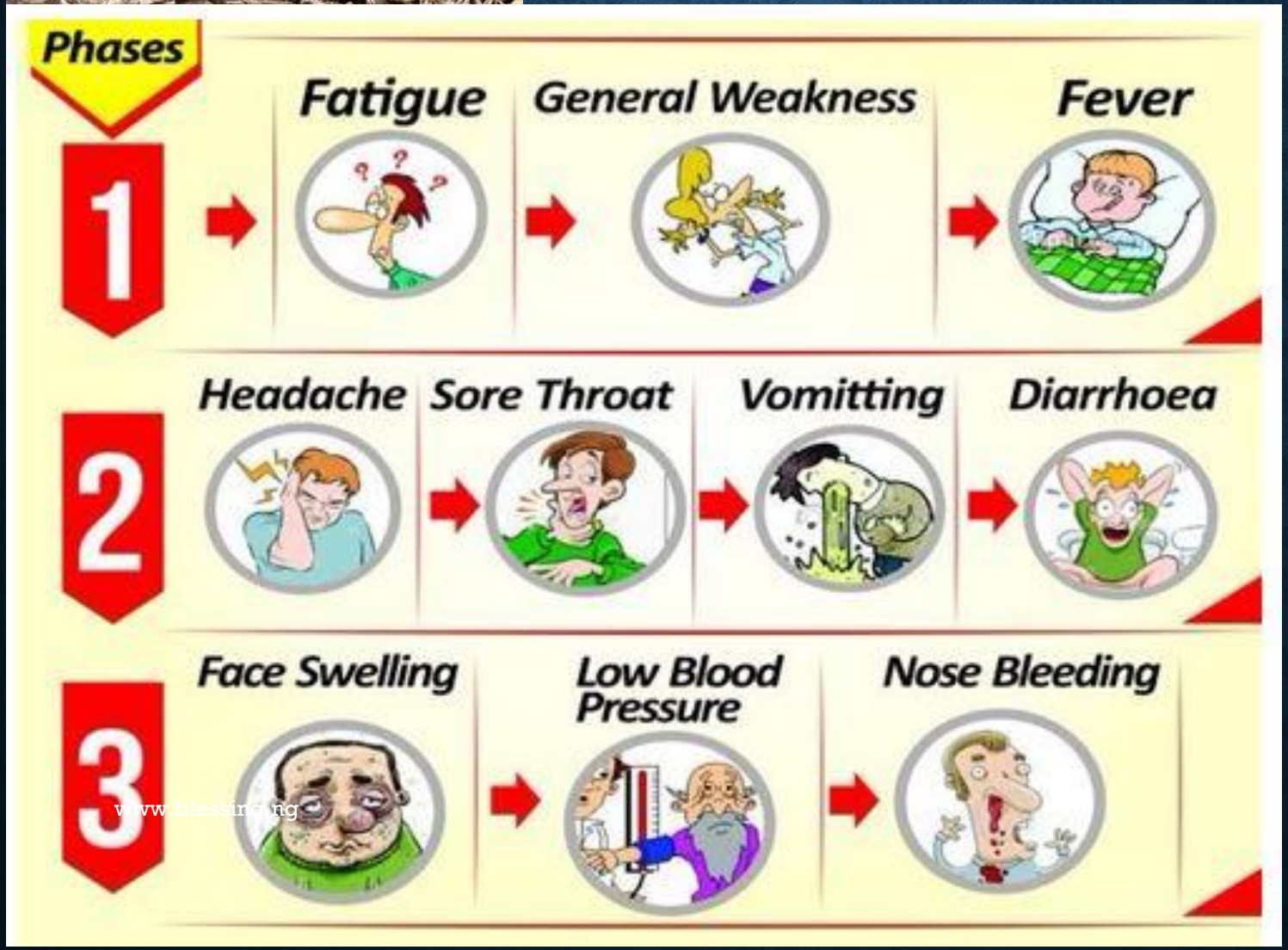


Roundworms

Tapeworms

Hookworms

Lassa Fever


Phases
1
Fatigue
General Weakness
Fever
2
Headache
Sore Throat
Vomitting
Diarrhoea
3
Face Swelling
Low Blood Pressure
Nose Bleeding
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ANTHRAX

In July 2023, Nigeria experienced its first confirmed anthrax outbreak, affecting livestock on a multi-species farm in Niger State, with eight animal deaths reported. The Nigeria Centre for Disease Control (NCDC) confirmed the outbreak after samples from the farm tested positive for anthrax

ZOONOTIC TUBERCULOSIS

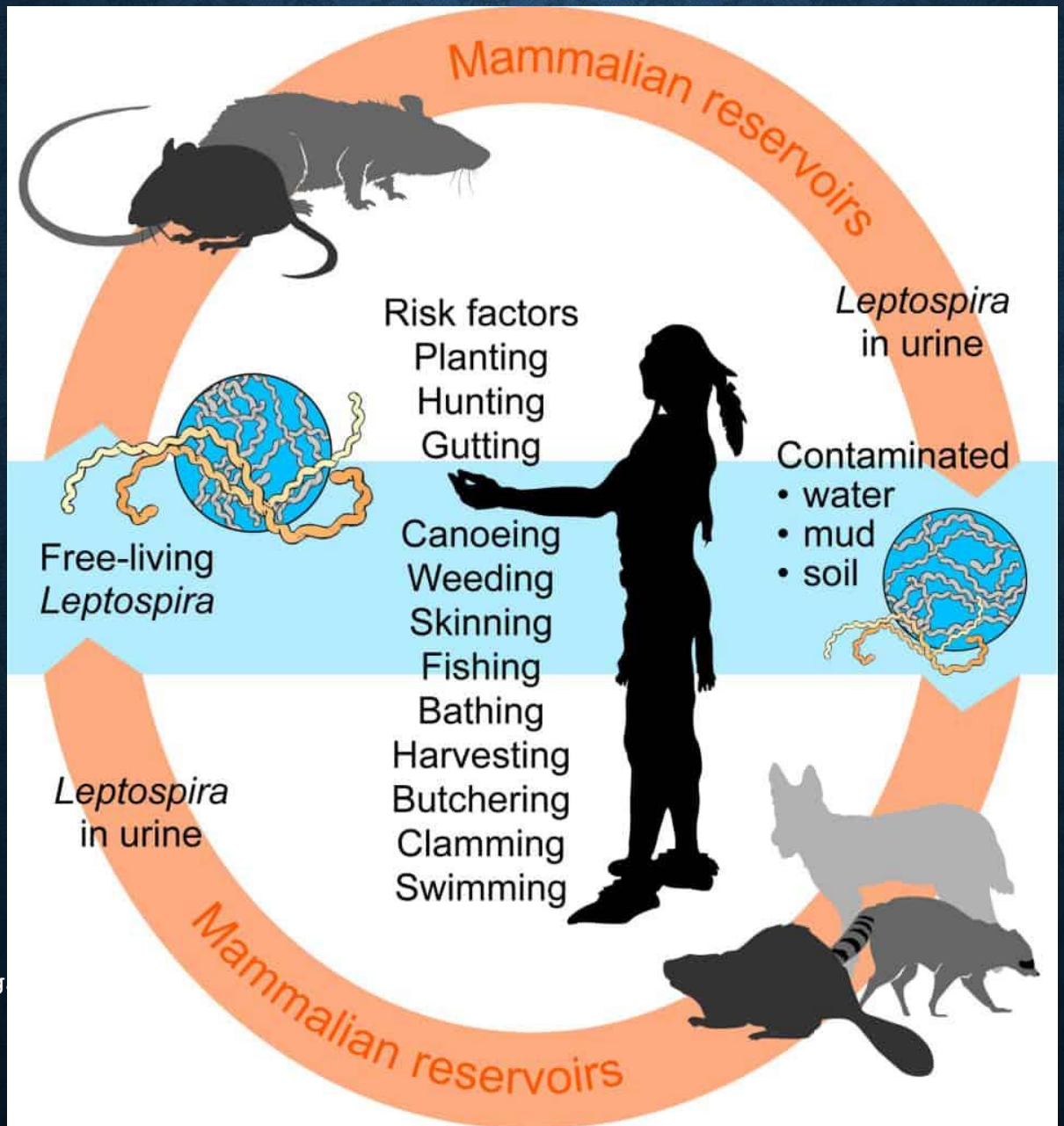

WHAT IS ZOONOTIC TB?

- Zoonotic tuberculosis (TB) is a form of tuberculosis in people caused by *Mycobacterium bovis*, which belongs to the *M. tuberculosis* complex.
- It often affects sites other than the lungs (extra-pulmonary), but in many cases is clinically indistinguishable from TB caused by *M. tuberculosis.*
- Within animal populations, *M. bovis* is the causative agent of bovine TB. It mainly affects cattle, which are the most important animal reservoir, and can

RISK FACTORS

- While the most common route of transmission of *M. bovis* to humans is through contaminated food (mainly untreated dairy products or, less commonly, untreated meat products), airborne transmission also poses an occupational risk to people in contact with infected animals or animal products, including farmers, veterinarians, slaughterhouse workers and butchers.

LEPTOSPIROSIS

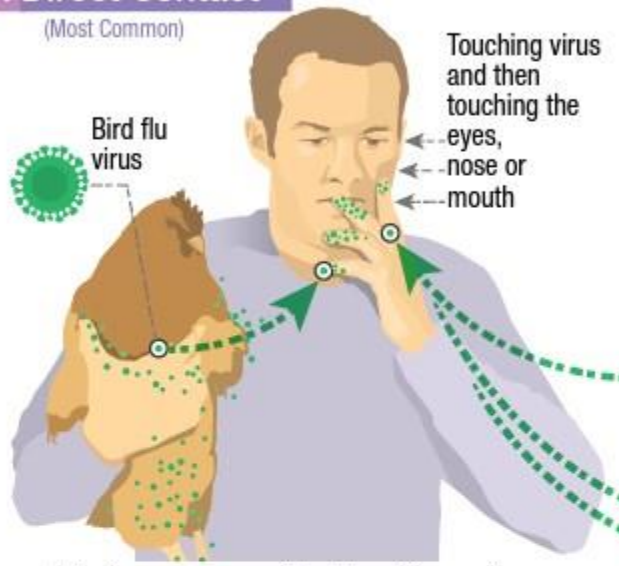


How Infected Backyard Poultry Could Spread Bird Flu to People

Human Infections with Bird Flu Viruses Rare But Possible

1 Direct Contact

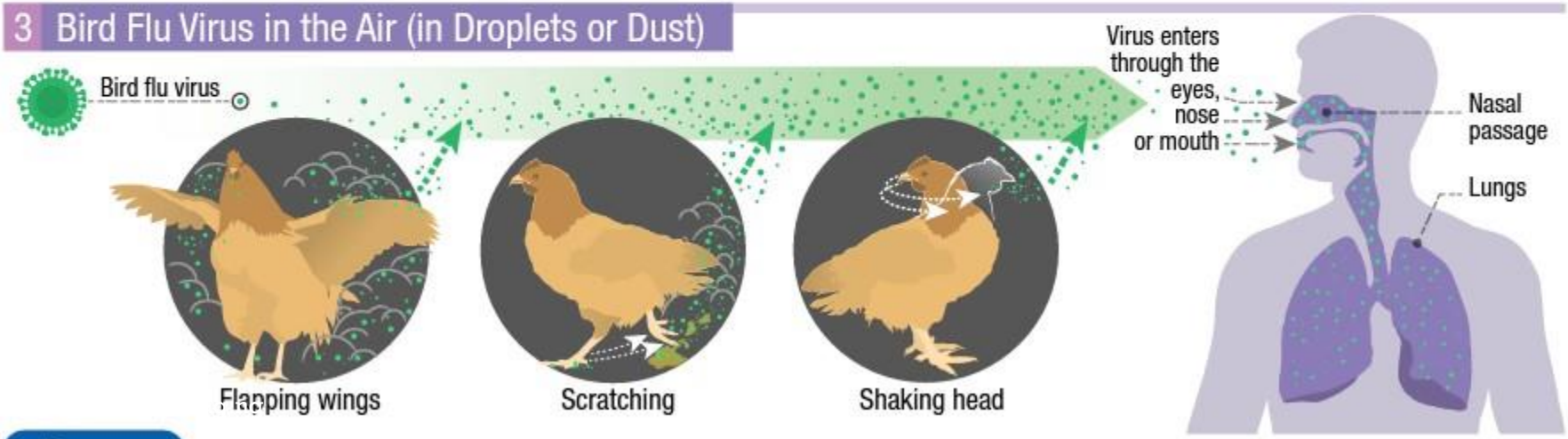
(Most Common)



Infection can occur without touching poultry.

2 Contaminated Surfaces

3 Bird Flu Virus in the Air (in Droplets or Dust)



U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

www.cdc.gov/flu/avianflu/avian-in-humans.htm

CS330154

TOXOPLASMOSIS

ZOONOSES FACTSHEET

Diseases that spread from animals to people

amrric
Animal Management in Rural and Remote Indigenous Communities

WHAT IS IT?

Protozoa are very small - we cannot see them without a microscope.

Toxoplasma gondii is a protozoa (a type of germ) that can infect animals and humans to cause sickness.

Animals can spread Toxoplasma as *oocysts* in their poo, or other *cysts* may be in their meat.

HOW DOES IT SPREAD?

Toxoplasma can infect lots of animals including dogs, cats, rats and humans but **cats are the most important spreaders** of the disease.

Cats usually become infected by eating infected rats or birds.

People become infected by accidentally eating cysts that are shed in the poo of infected cats, especially when cleaning litter trays and not washing hands properly afterwards. People are sometimes infected by eating undercooked meat, especially if it hunted or killed at home and not bought from the shop.

WHAT DOES IT DO?

If you are healthy, a Toxoplasma infection may feel just like a bad flu. Toxoplasma infection is most dangerous to **pregnant women.** Toxoplasma infection can cause miscarriage, problems with the foetus' brain or eyes.

Plague (Black death, Bubomic plague)
Aetiology: *Yersinia pestis*

COVID-19

COVID-19 CORONAVIRUS / DEATH TOLL

UPDATES - Graphs - Countries - Death Rate - Incubation - Age - Symptoms

Last updated: April 13, 2024, 01:00 GMT

Coronavirus Death Toll

7,010,681 deaths

7,010,681 people have died so far from the coronavirus COVID-19 outbreak as of April 13, 2024, 01:00 GMT.

There are currently 704,753,890 confirmed cases in 229 countries and territories . The fatality rate is still being assessed.

HOW TO PREVENT ZOONOTIC DISEASES

- **Good hygiene**
- Always wash your hands
- After handling animals, carcasses or meat
- After using the toilet
- Before eating or preparing food
- Use toilets. Never use the veld as a toilet, or if you have to, dig a deep hole and cover up with soil
- Clean up dog and cat faeces lying around and prevent children from coming into contact with these

CORRECT FOOD PREPARATION

- When slaughtering animals, cutting up meat and preparing food avoid contamination with dirt, flies, faeces and dirty water
- Do not eat meat from animals that have died either suddenly or after being ill. Leviticus 22:8; Deuteronomy 14:21
- Do not eat meat which contains lum
not look normal or has an unusual s

John 21:9

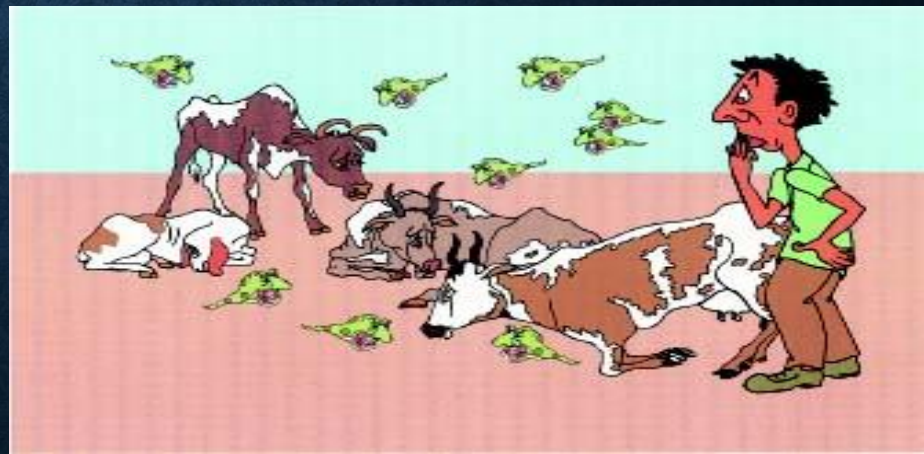
When they landed, they saw a fire of burning coals there with fish on it, and some bread.

- **Cook meat well**
- **Buy meat from reputable dealers only**
- **Boil milk which has not been pasteurised**
- **Do not keep perishable food for long periods before use**

- Keep perishable food refrigerated when possible
- Wash dirt from vegetables before eating

TAKE CARE WHEN HANDLING SICK OR DEAD ANIMALS, ABORTED FOETUSES AND AFTERBIRTH

- Do not cut open animals which have died suddenly
- Use gloves when opening up a dead animal, handling aborted foetuses or afterbirth, or assisting during birth
- Wash hands in soap and water and even disinfectant after handling sick or dead animals, aborted foetuses and afterbirth
- Burn or bury carcasses, especially those from animals that have died suddenly



GOOD ANIMAL HEALTH MEASURES

- Vaccinate animals against the serious diseases affecting animals and people to protect both yourself and your animals (e.g. rabies, brucellosis, anthrax)
- Deworm pets
- Have cattle tested yearly for brucellosis and tuberculosis. If the cattle are positive for these diseases, you should sell them for controlled slaughter through an outlet where the meat will be inspected. Do not sell them to other people, because you are then only passing the problem on to them
- Do not feed raw offal to animals

WASH BITE WOUNDS PROMPTLY WITH SOAP AND WATER AND DISINFECTANT, AND SEEK MEDICAL ATTENTION

- Bites from animals can spread diseases (e.g. rabies and tetanus). There are many bacteria in an animal's mouth which can cause infection

- Do not handle strange or wild animals that appear tame

•Control rats and flies

CAN ZOONOTIC DISEASES BE TREATED?

- **Some of these diseases can be treated, but you can get very sick and even die from others e.g. rabies and anthrax**

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PREVENTION IS ALWAYS BETTER THAN CURE!

ZOONOTIC DISEASE PREVENTION(W.A.S.H)

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Psalm 8:4-9 KJV

4 What is man, that thou art mindful of him? and the son of man, that thou visitest him?
5 For thou hast made him a little lower than the angels, and hast crowned him with glory and honour.
6 Thou madest him to have dominion over the works of thy hands; thou hast put all things under his feet:
7 All sheep and oxen, yea, and the beasts of the field;
8 The fowl of the air, and the fish of the sea, and whatsoever passeth through the paths of the seas.
9 O Lord our Lord, how excellent is thy name in all the earth!

1 Corinthians 6:19 NLT

Don’t you realize that your body is the temple of the Holy Spirit, who lives in you and was given to you by God? You do not belong to yourself

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- *www.animalhosp.com/**Zoonotic_Diseases**.pdf*
- *http://disease.disease.com/Types-of-Disease/zoonotic-diseases.html*


Thank You
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