

Pig and pork zoonoses in Uganda

Presented at a training course for pig farmers organized by
Pig Production and Marketing Uganda Ltd

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giz



**RESEARCH
PROGRAM ON
Agriculture for
Nutrition
and Health**

ILRI
INTERNATIONAL
LIVESTOCK RESEARCH
INSTITUTE

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Safe Food, Fair Food project

Part of two research projects by the International Livestock Research Institute (ILRI)

- Smallholder pig value chain development project (IFAD-EU)
- Safe Food, Fair Food (BMZ/GIZ)

with local partners (Makerere University, MAAIF, district government, NGOs) in Masaka, Kamuli and Mukono districts.

Outline

- ❑ A brief introduction to zoonoses
- ❑ I am just a farmer, why care about zoonoses?
- ❑ Selected pig zoonoses identified in Uganda, transmission and management

What are zoonoses?

“Diseases that can be transmitted between animals and people and vice versa”

7 billion world population: 55 million die each year

18 million from infections: 60% shared with animals

1.2 million from road traffic accidents

170,000 from fatal agricultural accidents

20,000 from extreme weather conditions

0772368491



Prevent Rabies

Protect yourself and your family



Take all your dogs and cats for vaccination to the nearest Veterinary staff

Published by the Veterinary Public Health Unit / Health Promotion and Education, Ministry of Health



Photo courtesy of Animal Blawg



FRIDAY, JULY 27, 2012 9

Daily Monitor
www.monitor.co.ug

Strange disease kills family of 12 in Kibaale

Health experts say residents should not panic as investigations are ongoing.

caused by a strange disease and said the Virus Research Institute and the Central Public Health Laboratory was in the dis-

ation is under control. It is reported that blood also oozed from the nose and mouth of the victims



Photo courtesy of The pigsite

Transmitted by contact: worms

- Very common
- Whipworm, roundworm
- Enormous economic losses
- Stunted growth and malnutrition in piglets but also in children
- Good management: regular deworming (albendazole/ivermectine) and biosecurity



Littermate Hampshire pigs:
control 91kg – infected 41kg
(Photo courtesy of Louisiana State University, US)

Diamond skin disease

- ❑ Reported by farmers in Kamuli
- ❑ Bacterial disease (*Erysipelothrix rhusiopathiae*)
- ❑ In pigs from 3 months to 1 year, 3 forms of the disease:
 - 1: sudden death without any signs
 - 2: diamond skin, fever, abort
 - 3: fever, joint pain, heart failure
- ❑ In people (mostly butchers, vets, pork handlers):
like form 3 starting with painful skin infection
- ❑ Easy treatment with Penicillin

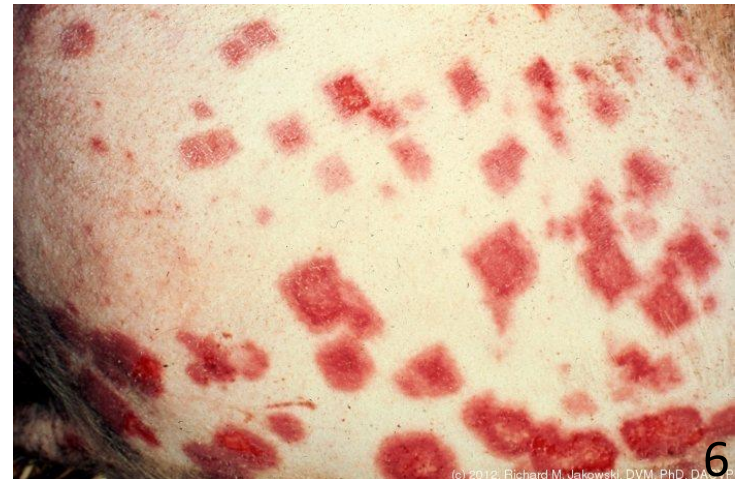


Photo courtesy of Richard Jakowski, DVM, PhD, DACVP

Many are transmitted by food

- ❑ At least 2 billion cases of diarrhoea worldwide per year (up to 90% attributed to food)
- ❑ 1.5 million children under 5 die because of diarrhoeal diseases (80% in South Asia and Africa)
- ❑ In sub-Saharan Africa, 80% of the food from animals is marketed informally
- ❑ Animal-source foods are single most important source of foodborne disease

I am just a farmer, why care about zoonoses?



- ❑ „Majority of pork in Kampala contaminated“
→ with what?
- ❑ „Increasingly risky for human consumption“
→ consequences?
- ❑ „Loyal pork consumers face running mad“
→ per se?

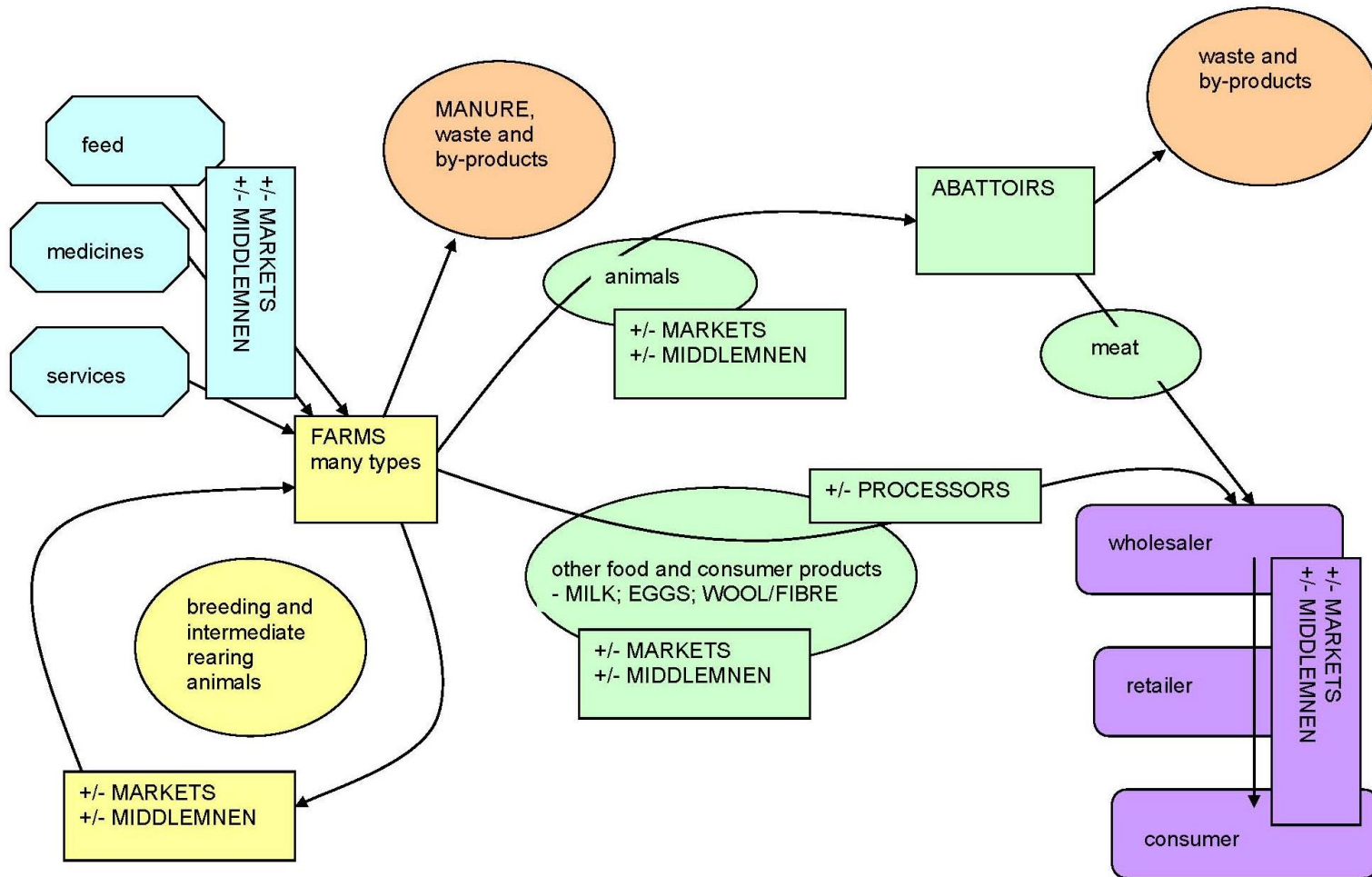
I am just a farmer, why care about zoonoses?



- ❑ „**ALL** pork supplied in Kampala for human consumption is contaminated“
→ *defamation, severerly damaging a sector's reputation*
- ❑ „Threatening to close all pork joints around the city“
→ *risk of unemployment*

**Did you feel any impact on your business after this
publicity?**

It's because you are part of a system:

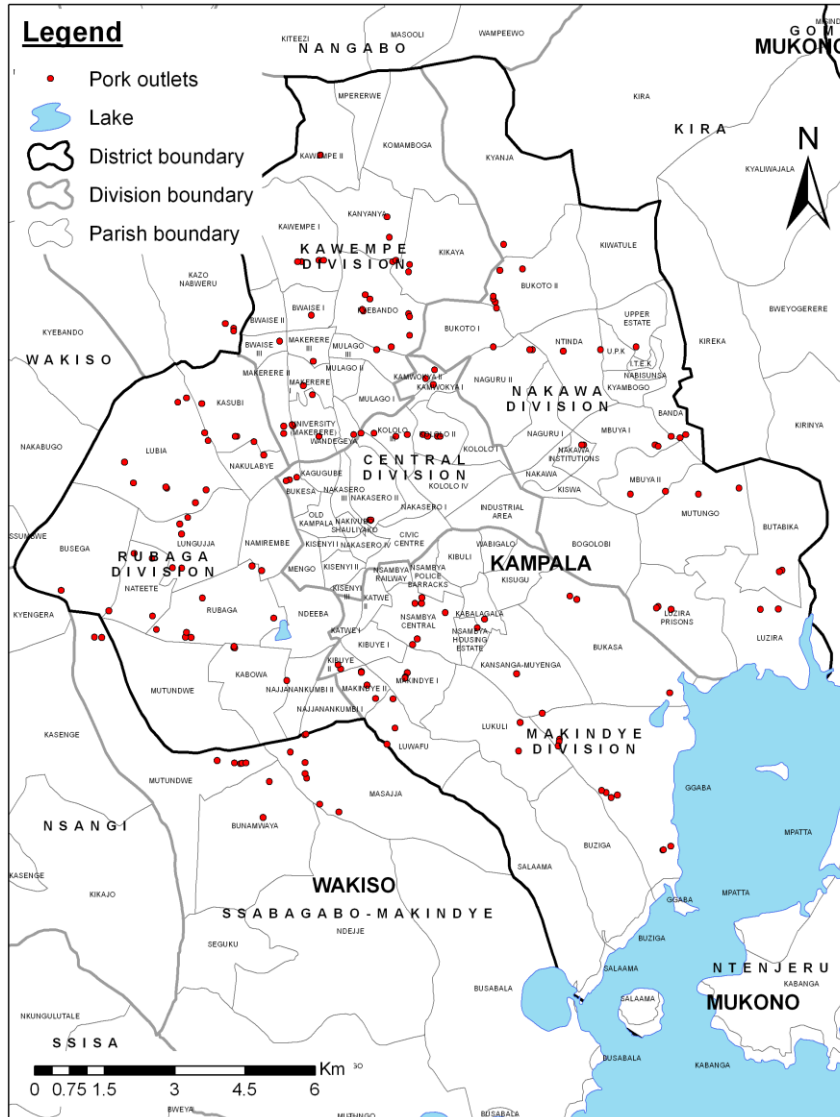


Pigs and pork in Uganda

- ❑ Highest per capita consumption in SSA (3.4 kg)
- ❑ Explosion in pig numbers over the past 30 years (0.19-2.3 million pigs, FAO)
- ❑ Mostly in hands of small holders, especially women's activity
- ❑ Live asset, "piggy bank"
- ❑ "Pork joint" phenomenon
- ❑ Small formal sector with processed pork products (i.e. ham, bacon, salami)



Pork consumption in Kampala



Pig zoonoses in Uganda

Bacterial	Viral	Parasitic
<p><i>Bacillus anthracis</i> <i>Bacillus cereus</i> <i>Brucella suis</i> <i>Burkholderia pseudomallei</i> <i>Campylobacter</i> spp. <i>Clostridium botulinum</i> <i>Clostridium perfringens</i> <i>Listeria monocytogenes</i> <i>Mycobacterium</i> spp. <i>Salmonella</i> spp. Toxigenic <i>E. coli</i> <i>Staphylococcus aureus</i> <i>Yersinia</i> spp.</p>	<p>Adenoviridae Astrovirus Ebolavirus Enterovirus Hepatitis E Hepatitis A Influenza virus Norovirus Rabies Rotavirus</p>	<p><i>Alaria alata</i> <i>Ancylostoma duodenale</i> <i>Balantidium coli</i> <i>Cryptosporidium</i> spp. <i>Taenia solium</i> <i>Entamoeba polecki</i> <i>Fasciola hepatica</i> <i>Giardia intestinalis</i> <i>Linguatula serrata</i> <i>Sarcocystis suihominis</i> <i>Toxoplasma gondii</i> <i>Trichinella spiralis</i></p>

Cysticercosis



Photo courtesy of Dr. A. Lee Willingham III, WHO/FAO Collaborating Center for Parasitic Zoonoses, Denmark

- What do you see here?
- Could eating this meat make people sick?
- What would be the symptoms of the sickness?
- What signs did the live pig show?
- What can you do to manage this disease?



Cysts in the human brain causing epilepsy. If people ingest eggs of the pig tapeworm (e.g. when not washing their hands before eating), these may develop in the brain, the eye or other parts of the body: <http://www.cdc.gov/parasites/cysticercosis/biology.html>

LET'S BREAK THE PORK TAPEWORM CYCLE

with these 6 easy steps ➤ ➤ ➤

6. Cook meat well.

It is better to be safe than sorry. Pork must be cooked thoroughly so that there is no pink meat and no blood running out. This will kill any tapeworm cysts and prevent infection.



5. Check meat is safe.

Check meat carefully to make sure there are no cysts. Meat with cysts should not be eaten or sold.



4. Stop pigs from roaming.

Keep your pigs in a kraal or tied to a stake, so that they can't eat human faeces containing tapeworm eggs.



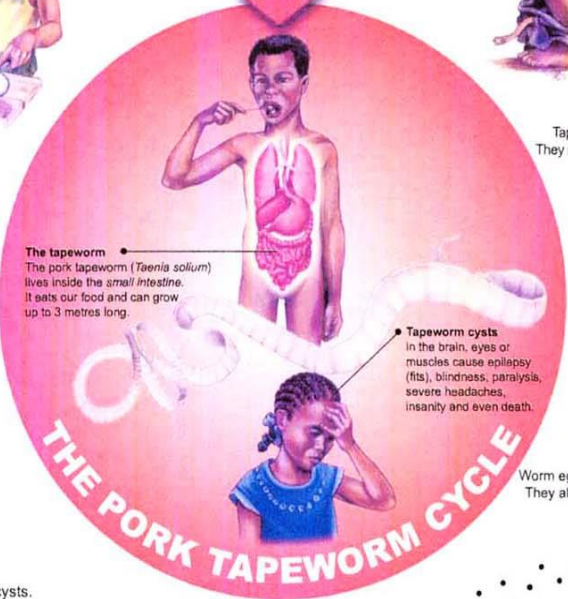
People get tapeworms when they eat the cysts in undercooked meat.



Pork infected with cysts. The eggs grow into cysts and can be found in infected meat.



This child has a tapeworm growing inside him.



Thousands of tapeworm eggs come out with the faeces. Tapeworm segments can be seen in the faeces. They release thousands of eggs into the environment.



1. Always use a toilet.

Use a toilet to stop worm eggs infecting pigs and other people.



The eggs spread easily. Worm eggs can contaminate the soil and water supply. They also get on our hands, food and drinking water.

2. Wash your hands.

Tapeworm eggs are too small to see and spread easily. So wash your hands well with soap and clean water after using the toilet and before touching food.



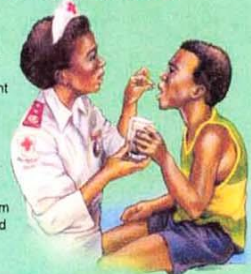
Wash fruit and vegetables. Boil drinking water.



Swallowing tapeworm eggs is dangerous. Tapeworm eggs grow into cysts in the brain, eyes and muscles causing epilepsy (fits), blindness, paralysis, severe headaches, insanity and even death.

3. Go to the clinic.

If you think you have tapeworm, go to the clinic and get treatment as soon as possible.



Deworming medicine will kill the tapeworm and stop you from infecting pigs and other people.

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Illustrated by Barry Jackson and designed by Lori Lake

Managing cysticercosis on farm

- ❑ Detection in live pigs is very difficult; treatment possible in theory (Oxfendazole) but not feasible
- ❑ Better to observe good management practices:
 - Use toilets
 - Wash your hands with soap after the toilet, before eating and after touching the soil
 - If you think you have a worm infection, go and see a doctor who can easily treat worm infection (praziquantel)
 - Observe good biosecurity for your pigs (confinement, limited outside visitors)
 - Cook pork thoroughly, boil drinking water

Trichinellosis in people

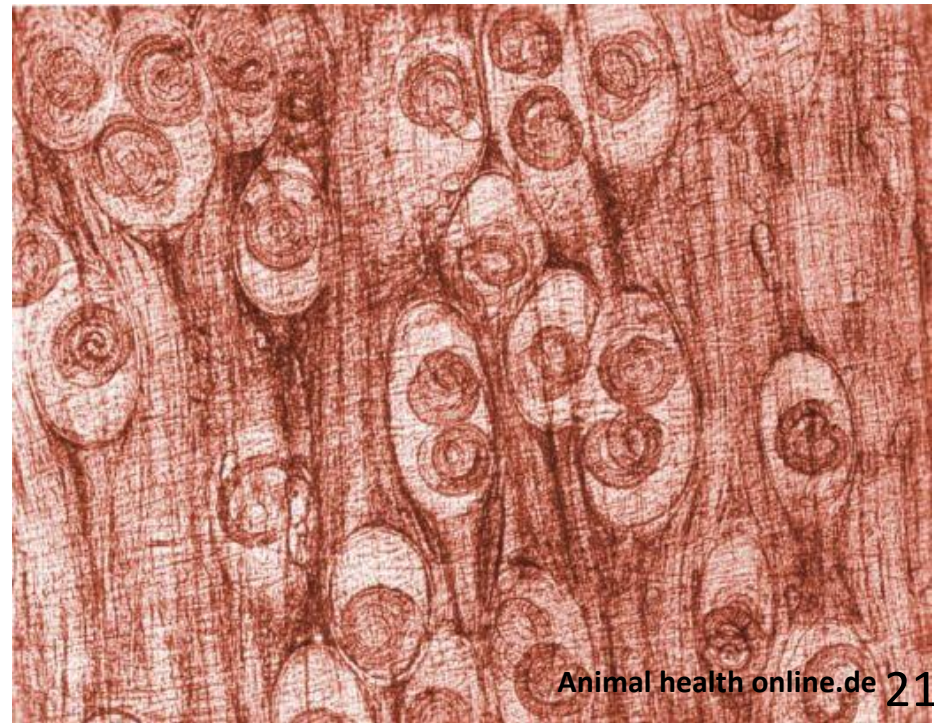
- ❑ Parasitic disease
- ❑ 2 days after the ingestion: Nausea, Diarrhoea, Vomiting, Abdominal pain
- ❑ 2-8 weeks after the infection: **flu-like symptoms** muscle pain, fever, swelling of the face (particular the eyes), weakness/fatigue, headache, chills, itching, cough, diarrhoea, constipation
- ❑ Normally, recovery after few months but sometimes breathing and heart problems until death



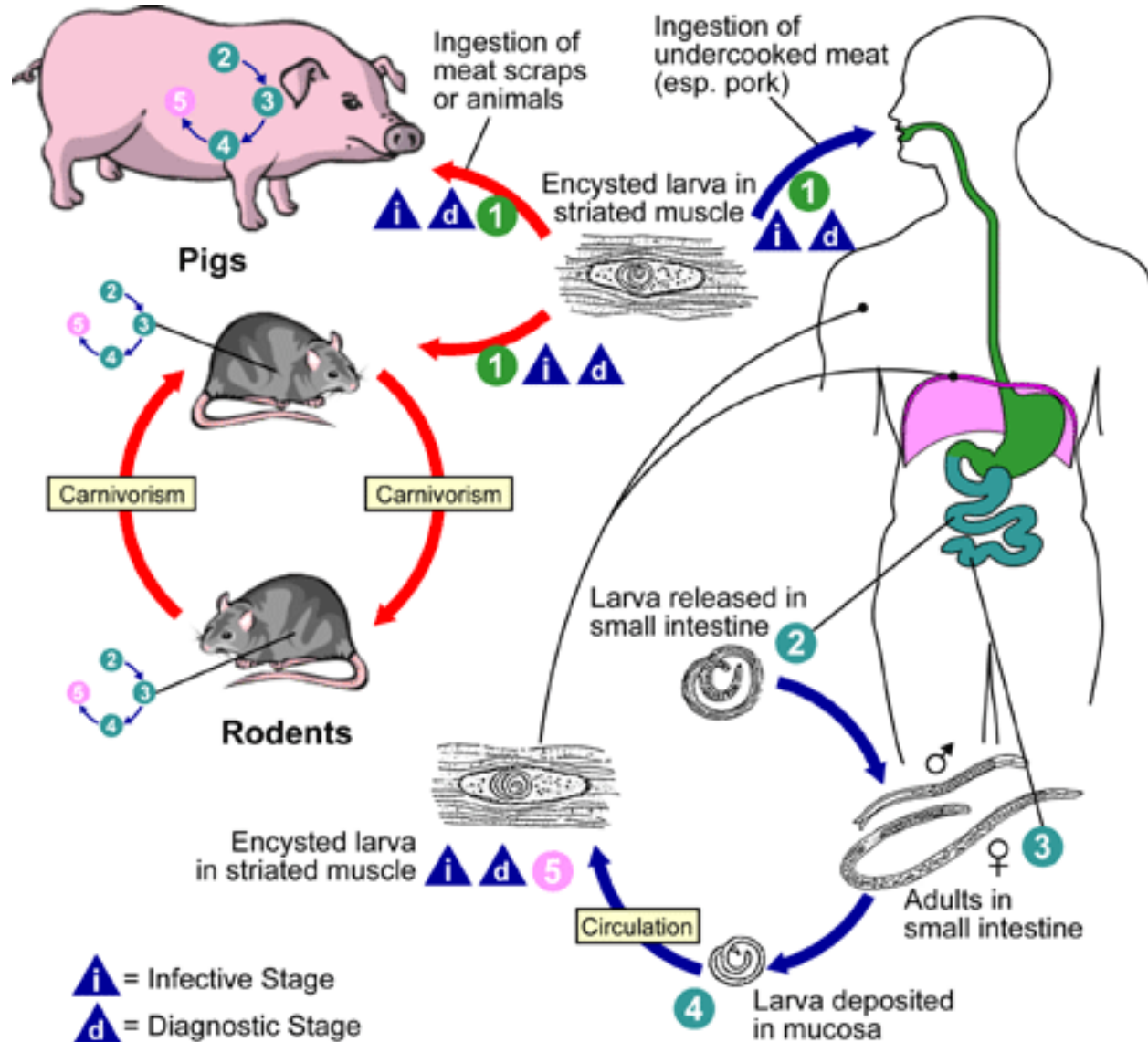
Trichinellosis

Challenges:

- ❑ Larvae in meat not visible with bear eyes
- ❑ Pigs not sick
- ❑ Symptoms in people flu-or malaria-like
- ❑ Trichinellosis not commonly known in Uganda , so doctors may not think of it



Trichinellosis



Managing trichinellosis on farm

- ❑ Detection in live pigs is very difficult; treatment possible in theory (Albendazole) but not feasible
- ❑ Better to observe good management practices:
 - Confinement (no interaction with wildlife)
 - Don't allow your pigs to eat meat scraps, lizards, snakes, birds and rodents
 - Cook your meat thoroughly

Toxoplasmosis in people

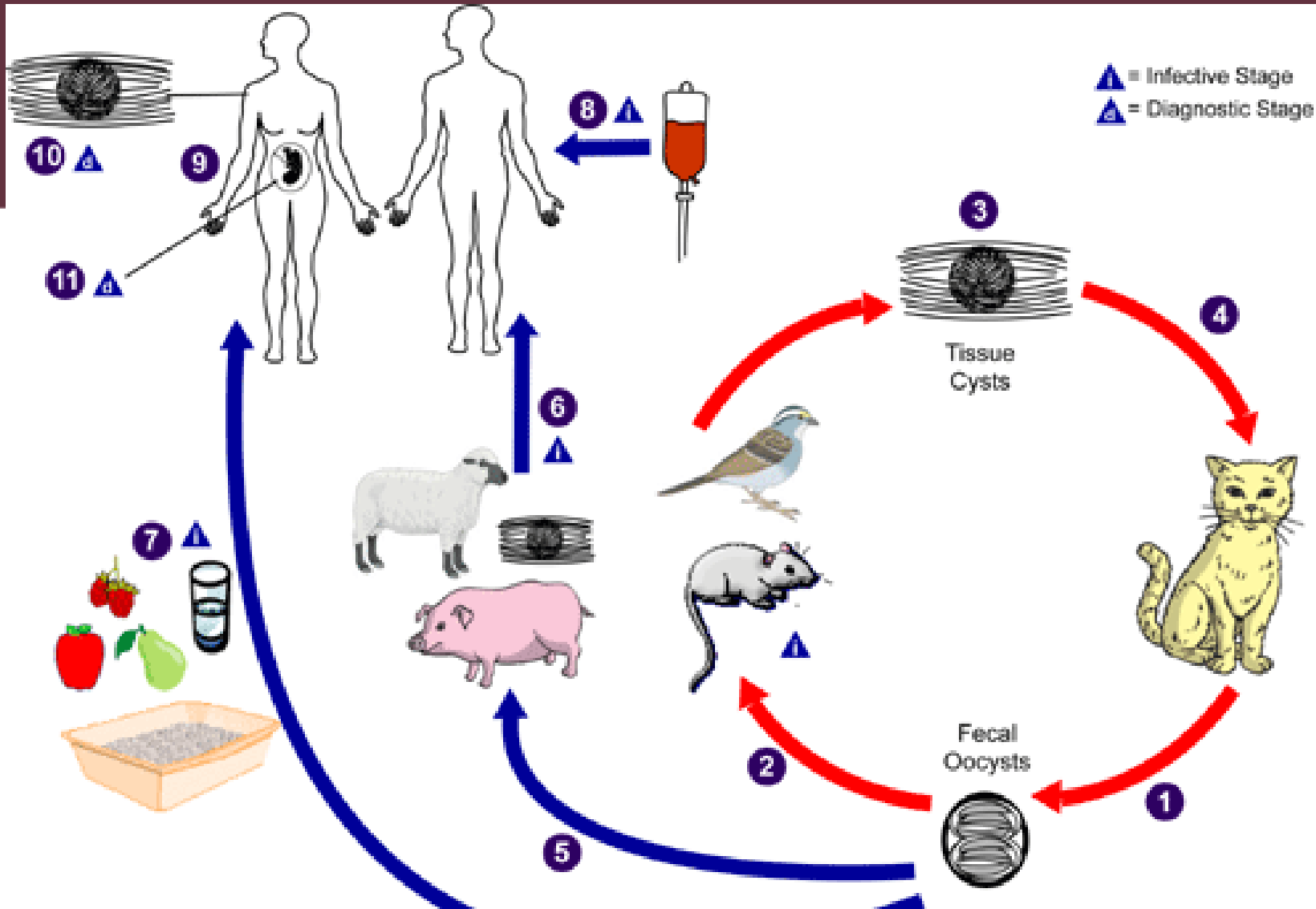
- ❑ Parasitic disease; >60% infected worldwide but no signs of sickness

At risk are:

- ❑ People with HIV or other chronic conditions
- ❑ Pregnant women and their unborn children*
- ❑ The infection can be re-activated if a person was infected while healthy but is immuno-compromised at a later time
- ❑ Eye pain, tearing of the eyes, sensitivity to light, blurred vision – can lead to blindness
- ❑ Fever, confusion, headache, seizures, nausea, and poor coordination because of brain infection

Managing toxoplasmosis on farm

- ❑ Detection in live pigs is very difficult; treatment possible in theory (Sulph, Trim) but not feasible
- ❑ Better to observe good management practices:
 - Confinement
 - Keep cats out of the piggery and the feed store
 - Rodent control
 - Cook your meat thoroughly



Environmental contamination and cross-contamination of fruits and raw vegetables!

Trypanosoma spp.

- ❑ Pigs can die suddenly or
- ❑ Don't show any signs
- ❑ Pigs can be carriers of human sleeping sickness



Photo: courtesy of CDC

Brucellosis in people

- ❑ Bacterial disease: *Brucella*
- ❑ Eating undercooked meat
- ❑ Consuming unpasteurized/ raw milk or dairy
- ❑ Breathing in the bacteria
- ❑ Skin wounds (vets, slaughter staff, meat handlers, hunters)
- ❑ Symptoms: recurrent fever and joint pain (often falsely confused with **malaria!**), abortions

Courtesy of Dr Joseph Erume
DAAD post doc fellow at ILRI

Brucellosis in pigs

- ❑ Transmitted between pigs through contact/ copulation
- ❑ In boars often inflammation of one testicle
- ❑ Lameness, sometimes paralysis
- ❑ Infertility, abortion at any stage of gestation, birth of dead or weak piglets
- ❑ Related to *Brucella* in cattle, sheep and goats; can grow on cows udder and contaminate milk
- ❑ Management: culling; vaccination not common in pigs
- ❑ In Masaka, Mukono and Kamuli districts it occurs very rarely



Salmonellosis in people

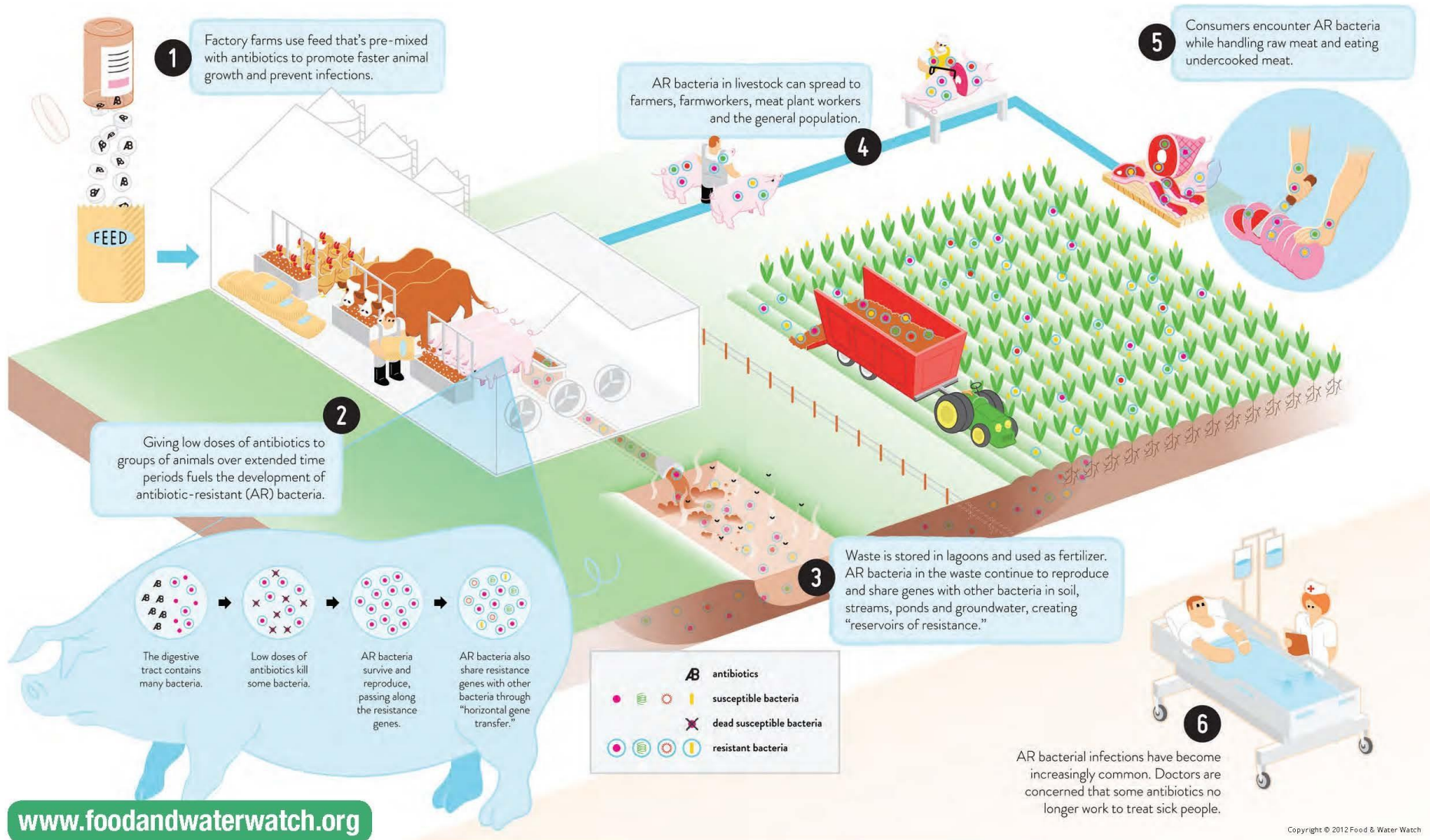
- ❑ Bacterial disease: *Salmonella*
- ❑ More than 2000 strains, it is everywhere, some strains cause sickness in people
- ❑ acute onset of fever, abdominal pain, diarrhoea, nausea and sometimes vomiting; sickness starts 6-72 hours (usually 12-36 hours) after ingestion, and illness lasts 2-7 days
- ❑ In otherwise healthy people no treatment necessary but children and elderly must be re-hydrated or they could die
- ❑ Can be transmitted through consumption of eggs, meat, poultry and milk), green vegetables contaminated by manure, or from sick people; 20% attributed to pork consumption

Salmonellosis in pigs

- ❑ Affects mostly weaners and growers, especially when stressed (weaning, re-grouping, transport)
- ❑ Diarrhoea but more often respiratory disease and **fever, shivering, reddening of ears, nose and under-belly**, death can also occur
- ❑ Piglets and older pigs may not show signs but are carriers
- ❑ 100 meat and faecal samples from Masaka, Mukono and Kamuli districts at Kampala city slaughterhouse
- ❑ *Salmonella* spp. isolates from 50% samples
- ❑ Resistant to antibiotics: Sulfameth > Ampic > Tetracycline > Penic

Courtesy of George Tinega,
MSc fellow at ILRI

How Antibiotic Misuse on Factory Farms Can Make You Sick



www.foodandwaterwatch.org

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<https://safefoodfairfood.wordpress.com/>

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