

Background to epizoonotic and
handling of the new curriculum,
combining epizoonotic and
disaster management

By

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Presentation outline

- Objectives
- Introduction
- Common Epizoonotic incidences.
- Epizoonotic components integrated in disaster management.
- Problems encountered.
- What to do ?

Objectives

- 1.To gain knowledge on prevalence of common epizoonotics .
- 2.To suggest Readiness for Response.
- 3.To see the relevance of combined LIPHEA epizoonotics curriculum in public health disaster management teachings.

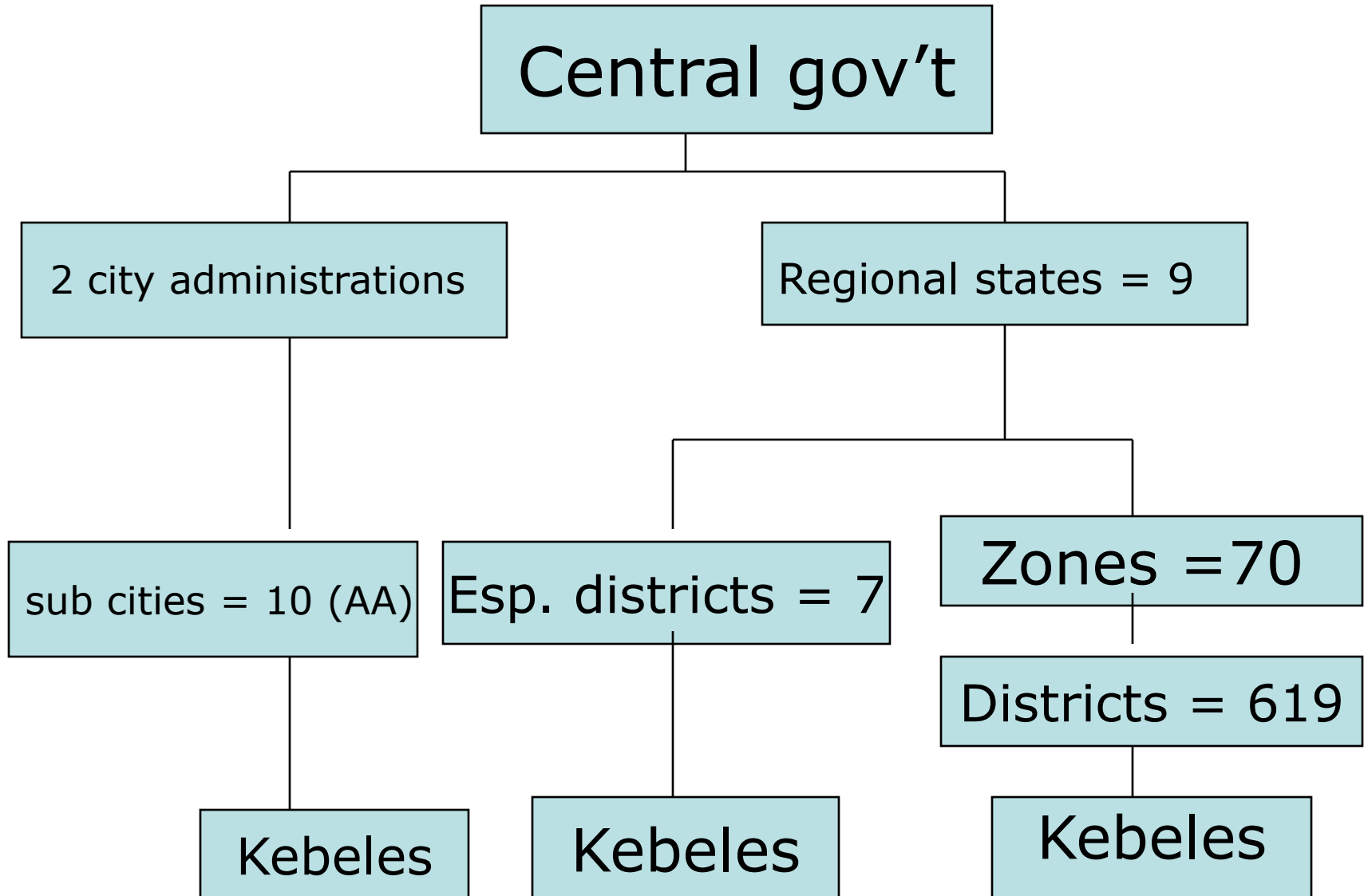
Materials and methods

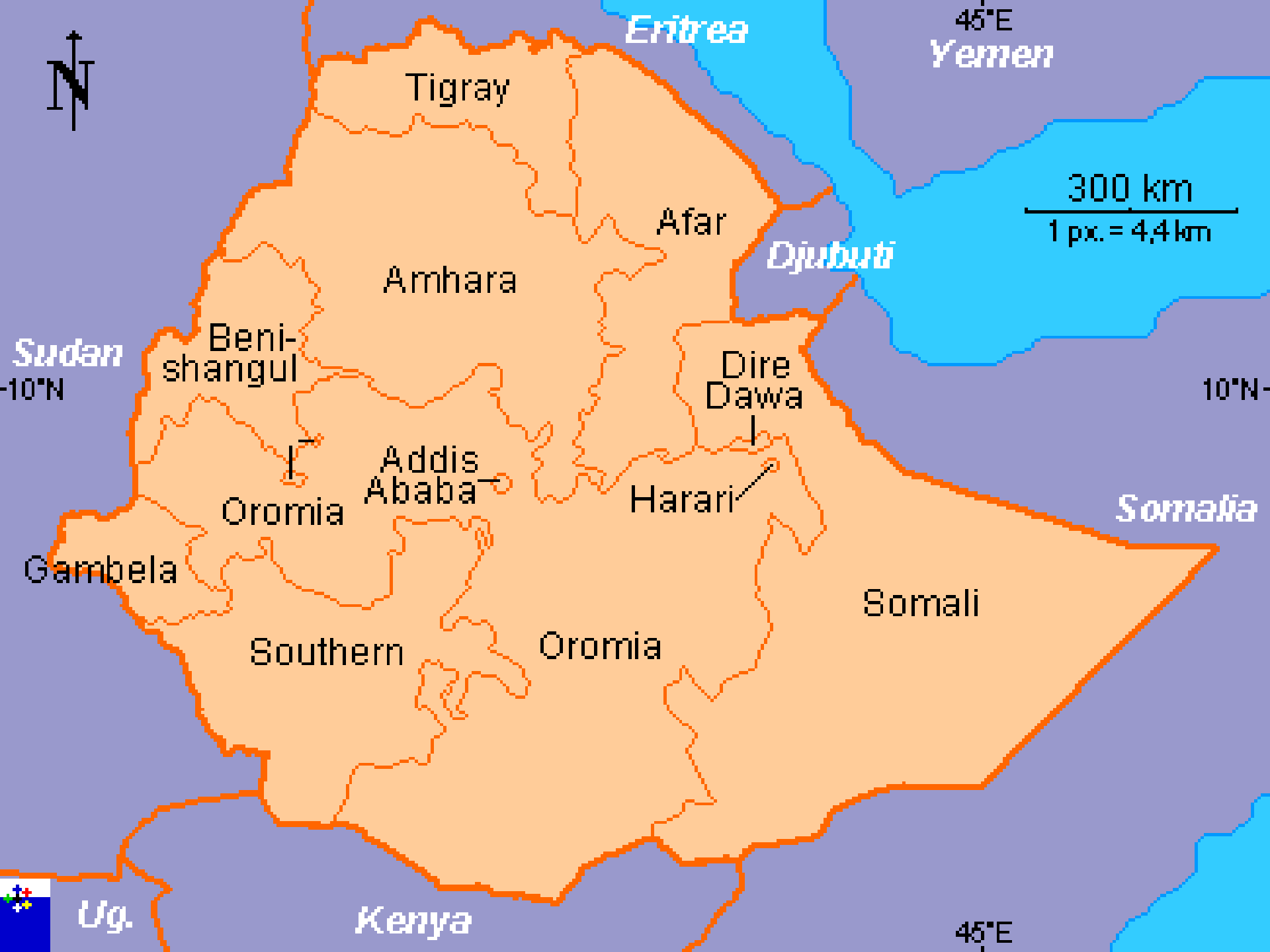
- Major regional cities research data ,on epizonootics prevalence were taken.
- Questionnaire survey taken during research were also considered.

Introduction

- Total population = 88,013,491 (CSA, 2009);
- Growth rate = 3.202%/year (2010 est.)
- Life expectancy = 55.8 years (2010 est.)
- Sex ratio = 1.00
(0.97 male(s)/female (2010 est.)
- Has more than 80 ethnic groups

Introduction.../Administration/





Eritrea

45°E
Yemen

Tigray

Afar

Djibuti

300 km
1 px. = 4.4 km

Amhara

Beni-
shangul

Dire
Dawa

Sudan
10°N

10°N

Addis
Ababa

Harari

Somalia

Oromia

Somali

Gambela

Southern

Oromia

Ug.

Kenya

45°E

Domestic animal diversity

- 47.5 million cattle
- 26.1 million sheep,
- 21.7 million goat,
- 1 million camel,
- 39.6 million chickens,
- 1.8 million horses,
- 0.4 million mules and
- 5.6 million donkeys (CSA, 2009).

Epizoonotic diseases of known incidence

- Avian influenza H5N1
- Pandemic influenza H1N1
- Rabies.
- Cysticercosis.
- Hydatidosis
- Bovine tuberculosis.
- Brucellosis.
- Anthrax.

- Most of the diseases considered are relevant b/c of high potential to occur;
- But the following diseases are rare in Ethiopia:
 - Trypanosomiasis (common in animals, not human)
 - Ebola
 - Plague

Avian influenza H5N1

- Influenza viruses are found in a number of species including birds, humans, swine, horses and dogs.
- Avian H5N1 infected and killed tigers, leopards, housecats, palm civets, a dog and a stone marten.
- As of January 2009, approximately 390 human infections from poultry; about two thirds were fatal globally.

Avian influenza H5N1

- Taskforces led by vice P M. established
- zero reporting surveillance (part of IDSR), established
- laboratories established (assisted by CDC Ethiopia)
- National Influenza Laboratory (NIL) at EHNRI in July 2007.
- Influenza sentinel sites (ISS) in Sept, 2008.

Surveillance for New Pandemic Influenza A (H1N1) (Cont.)

- Nearly 80 suspect cases reported (mostly self-reporting cases, with recent travel history).
- First cases detected in mid June 2009 (recently returning students from the US).
- To date, 17 cases of influenza A positive specimens (21%) were detected.
- 10 (59%) were positive for Pandemic influenza A H1N1... (Report 4th Annual Meeting of IANPHI)

Rabies

Outbreak place	Dogs	Wolfs /Fox	Cattle/smali ruminants	Man	Year	Reference
Bale mountains	32	38	20	3	2004	CDC
Kelafo				56	2008	
Afder zone			629	140	2008	<i>(World Food Program Ethiopia Country Office Food Security Update 24 February 2009.)</i>
East Imey				1	2008	
Gode				4	2008	
Adadle				15	2008	

Rabies in Bale Mountains



Responses

- Vaccination of 2000 dogs every year
- Vaccination of wolves every year
- Keeping domestic animals in safe way

Rapid response



References

- University of Oxford, Oxford, United Kingdom; ([dagger]) Ethiopian Wolf Conservation Programme, Addis Ababa, Ethiopia; ([double dagger])
- Centers for Disease Control and Prevention, Atlanta, Georgia, USA, ([section]) Ethiopian Wildlife Conservation Organisation, Addis Ababa, Ethiopia; ([paragraph]) [University of Edinburgh](#), Edinburgh, United Kingdom; and # Frankfurt Zoological Society, Arusha, Tanzania

Brucellosis

- *Is an **important zoonosis** and cause of reproductive losses in animals.*
- *Caused by *Brucella abortus* in **cattle**, *B. melitensis* or *B. ovis* in **small ruminants**, *B. suis* in **pigs** , *B. canis* in **dogs and marine mammal brucella** are all **human pathogens***

Brucellosis in the pastoralist community of Ethiopia

- The Borana and Hamar are tribal, mainly **pastoralist people** .
- Population **Boran** 300,000-350,000 people
- Over 40,000 people of **Hammer**
- Cattle, sheep, goats and camels are the domestic animals.

Hamer people preparing and consuming a meal consisting of **milk mixed with blood**.

Collecting blood (a), mixing with milk (b) and consuming the meal (c)



(a)



(b)



Human Brucellosis in Traditional Pastoral Communities in Ethiopia

Brucellosis in patients according to stage of illness in **Pastoralist** community

Area	Acute	Subacute	Persistent
Brucellosis(34) total	21(61.7%)	5(14.7%)	8(23.6%)
Borana(27)	17(63%)	3(11.1%)	7(25.9%)
Hamer(4)	3(75%)	1(25%)	*
Metema(3)	1(33.3%)	1(33.3%)	1(33.3%)

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Patients tested in selected pastoralist areas.

Study site	Positive/ Tested
Borana	30/88(34.9%)
Hamer	5/17(29.4%)
Metema	3/100(3%)

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Brucellosis in selected pastoralist community

Selected pastoralist area	Species of animals	Seroprevalence
Afar	Sheep	3.2% (Teshome <i>et al.</i> , 2003; Ashenafi <i>et al.</i> , 2007).
Afar	Goat	5.8%
Afar	Camel	5.7%

- Most (60.6%) patients were pastoralist and the majority (95%) of mixed livestock with goats, camel, sheep and cattle being kept by 95, 75, 75 and 65%, respectively.

Reference

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Bovine Brucellosis prevalence in some Ethiopian community

Area name	Animal species	Tested RBPT/CFT	Positive	References
Jimma	cattle	1,595	3.1% & 15%	Tropical Animal Health and Production Publisher Springer Netherlands ISSN 0049-4747 (Print) 1573-7438 (Online) Issue Volume 42, Number 1 / January, 2010
Agro-Pastoral Areas of East Showa Zone	Cattle	1106	11.2%	American-Eurasian J. Agric. & Environ. Sci., 6 (5): 508-512, 2009 ISSN 1818-6769 © IDOSI Publications, 2009
Agro-pastoral			4.1%.	International Journal of Tropical Medicine Year: 2009 Volume: 4 Issue: 2 Page No.: 59-64 DOI: 10.3923/ijtmed.2009.59.64

Brucellosis in selected community

Area name	Animal species	Tested RBPT/CFT	Positive	References
Pastoralist	Cattle		15.2%	
Sidama Zone	Cattle	1627	1.66%	African Journal of Agricultural Research Vol. 5 (3), pp. 257-263, February, 2010 Available online at http://www.academicjournals.org/AJAR African Journal of Agricultural Research Vol. 5 (3), pp. 257-263, 4 February, 2010 Available online at http://www.academicjournals.org/AJAR ISSN 1991-637X © 2010 Academic Journals ISSN 1991-637X Academic Journals
Oromia	Cattle	1,238	2.9%	Rev. sci. tech. Off. int. Epiz., 2009, 28 (3), 933-943
Tigray	cattle	1120	4.9%.	Rev Sci Tech. 2009 Dec;28(3):933-43. PubMed PMID:20462151.

Risk factors for brucellosis among tribal communities in

Borana and Hamar

- Consuming raw milk 85.7%
- Consuming fresh cheese 88.6%
- Consuming blood 38.2%
- Consuming raw meat 94.3%
- Consuming all 100%.
- **Reference**
- International Journal of Tropical Medicine Year: 2009 | Volume: 4 | Issue: 2 | Page No.: 59-64 DOI: [10.3923/ijtmed.2009.59.64](https://doi.org/10.3923/ijtmed.2009.59.64)

Bovine tuberculosis

Susceptible species Cattle and buffaloes are the principal hosts for *Mycobacterium bovis* and are responsible for maintaining the disease.

M. bovis can also cause disease in deers, pigs and humans , occasionally in horses, dogs, cats and sheep.

Prevalence of **bovine tuberculosis** detected by single tuberculin skin tests in a traditionally managed extensive production system in **six farming areas** in different districts

Area of study	tested	positive	%	Reference
Assella*	281	25	8.9	Teshome, 1986
Debre-Birhan	76	11	14.5	Tadele, 1998
Kombolcha	53	12	22.6	Tadele, 1998
Dessie	34	4	11.8	Tadele, 1998
West Wellega	353	12	3.4	Regassa, 2001
North Shewa	1 041	169	16.2	Regassa, 2005
Total	1 838	233	12.9	

*a comparative intradermal tuberculin skin test was used; positive results are given for bovine tuberculin

Prevalence of **bovine tuberculosis** in smallholder dairy farms based on tuberculin skin test in seven **farming areas** in different districts

Areas of study	tested	positive	%	Reference
Holleta*	389	25	6.4	Teshome, 1986
Selale*	1 528	78	5.1	Teshome, 1986
Wolaita-Sodo*	416	59	14.2	Regassa, 1999
Fiche**	735	31	4.2	Gemta, 2000
Assella*	514	18	3.5	Redi, 2003
Addis Ababa	473	61	12.9	Alemu, 1992
Total	4 818	332	6.9	

Risk factors

- The impact of animal production systems.
- Limited knowledge of the community .
- 85%of the people are engaged to livestock.
- Cultural feeding of **raw milk and meat** (WHO, 1994;Kazwala et al., 1998; Pavlik *et al.*, 2003; Ayele *et al.*, 2004).

cysticercosis

- **Humans** can be intermediate hosts for *T. solium*, *T. crassiceps*, *T. ovis*, *T. taeniaeformis* and *T. hydatigena*.
- **Humans** are the definitive hosts for *Taenia solium* (the pork tapeworm) and *T. saginata* (the beef tapeworm). *T. asiatica*.
- **Animals** are the definitive hosts for *T. crassiceps*, *T. ovis*, *T. taeniaeformis*, *T. hydatigena*, *T. multiceps*, *T. serialis* and *T. brauni*.

Worldwide Morbidity & Mortality

- 2-3 million people are infected with adult *T. solium*.
- 45 million with adult *T. saginata*,
- 50 million with *T. solium* cysticerci.
- An estimated 50,000 people die annually from the CNS or cardiac complications.

Bovine cysticercosis

Area	Species	Number inspected	Positive	Year	Reference
Awassa Abattoir	Cattle	400	105	2006	(Abunna <i>et al.</i> ,2006)
Addis Ababa	Cattle	11227	842(7.5%)	2005	(Kebede et al., 2005)
Eight abattoirs in Amhara	Cattle	4456	824(18.49%)	2007	Science direct
Wolaita Soddo	Cattle	415	47(11.3%)	2008	(Regassa .,2008)

Taenia saginata(Bovine cysticercosis) questionnaire survey

Area	People question ed	Positive	Year	Reference
Awasa	122	77/122(64.2%)	2006	(Abunna <i>et al.</i> ,2006)
Wolayta Sodo	79	40/79(50.63)	2008	(Regassa.,2008)
Addis Ababa				(Kebede <i>et al.</i>, 2005)

Taenia saginata

- 10% of humans in Ethiopia, Kenya and Democratic Republic of Congo (formerly Zaire) are reported to have *T. saginata*. (Antia and Alonge ,1982)

Hydatidosis

Area	Year	Species	% of cattle infected	Predilection sites
Ambo abbattoir	2008	384 Cattle	114(29.69%)	Lung 61(15.89%) Liver 19 (4.95%) Lung & liver 26(6.77%)
Bahirdar	2008	420 cattle	143 (34.05%)	
Bahirdar	2008	340 sheep	36 (10.6%)	
Tigray	2008	5194 cattle	1146 (22.1%)	
Adama	2008	852 cattle 92 sheep 208 goats	46.8% cattle 29.3% sheep. 6.7% goats	

Risk factors

- Raw meat consumption, and occupational risks.

Anthrax

- **Humans** may exhibit **three types** of anthrax:
 - Cutaneous anthrax
 - Gastrointestinal anthrax
 - Pulmonary (inhalation) anthrax

Anthrax

	Species	%	Year	Reference
zuria ssa e)	Cattle	7.7%,	2002	PMID: 15861891 [PubMed - indexed for MEDLINE]
Wabess ge)	Goats	32.7%	2002	PMID: 15861891 [PubMed - indexed for MEDLINE]
Wabess ge)	Donkeys	47.1%	2002	PMID: 15861891 [PubMed - indexed for MEDLINE]
	Man(cutaneous form)		2002	PMID: 15861891 [PubMed - indexed for MEDLINE]
e	Cattle		2002	

Anthrax

Area	Species	Number	Year	Reference
Gondar	Man	27	2002	PMID: 2763354 [PubMed - indexed for MEDLINE]
Fentale	Man	10	2002	Integrated Regional Information Network (IRIN)
Fentale	Cattle	15	2002	Integrated Regional Information Network (IRIN)

The epizoonotic components added to disaster management

- The new curriculum gave **understanding on epizoonotics**, emerging and reemerging zoonosis.
- The new curriculum gave **Awareness** for early response and Preparedness in emerging and reemerging zoonosis.

Problems encountered

-
- **Lack of capabilities** in Surveillance, early diagnosis and detection of pathogens .

Common risk factors

- The epizoonotics common to Ethiopia are with **risk factors** associated in its transmission to human being , like **raw milk,raw meat** and **raw animal products** consumption.

What to do?

- Community based health workers (CHWT) training on epizoonotics.
- Community based animal health workers (CAHWT) training on epizoonotics.
- Meat inspection workers training on food safety issues.
- Capabilities in food safety issues specifically on control of zoonoses
- Good governance in veterinary medical works .

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