

Should Oklahoma be concerned about parasitic zoonoses?



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<http://geology.com/state-map/oklahoma.shtml>

factfinder.census.gov/

Study Objectives

- Determine the current status of severe cysticercosis, toxoplasmosis and toxocariasis disease in Oklahoma
- Describe demographic characteristics
- Estimate hospital charges associated with the inpatient hospitalizations
- Assess the need for further investigation to identify risk factors for parasitic zoonotic diseases and targeted prevention



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Cysticercosis

- *Taenia solium* (pork tapeworm)
- Transmission
 - Ingestion of raw or undercooked infected pork
 - Ingestion of food cross-contaminated with *T. solium* eggs
- Clinical manifestations
 - Intestinal infection
 - Tissue infection – especially CNS
- US Infections occur primarily in immigrant populations



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Toxoplasmosis

- *Toxoplasma gondii*
- Transmission
 - Ingestion of tissue cysts from raw or undercooked meat
 - Transplacental
 - Ingestion of fecal oocysts from cats
- Clinical manifestations
 - “Influenza – like illness”
 - Chorioretinitis
 - Lymphadenitis
 - Myocarditis
 - Polymyositis
 - CNS Involvement
- Burden of disease primarily in the HIV/AIDS and immunocompromised population



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Methods

Data Sources

- Oklahoma Inpatient Hospital Discharge Data
 - 2002 – 2005
 - > 95% of hospitals reporting
 - State licensed acute care hospitals
 - Does not include Veteran's Administration, Indian Health Services, or psychiatric facilities
 - International Classification of Disease (ICD) – version 9 coding
 - Inpatient hospitalization of greater than 14 hours
- Oklahoma Death Certificate Data
 - 2002 – 2005
 - ICD – 10 coding
 - Looked at both underlying cause of death and multiple causes leading to death



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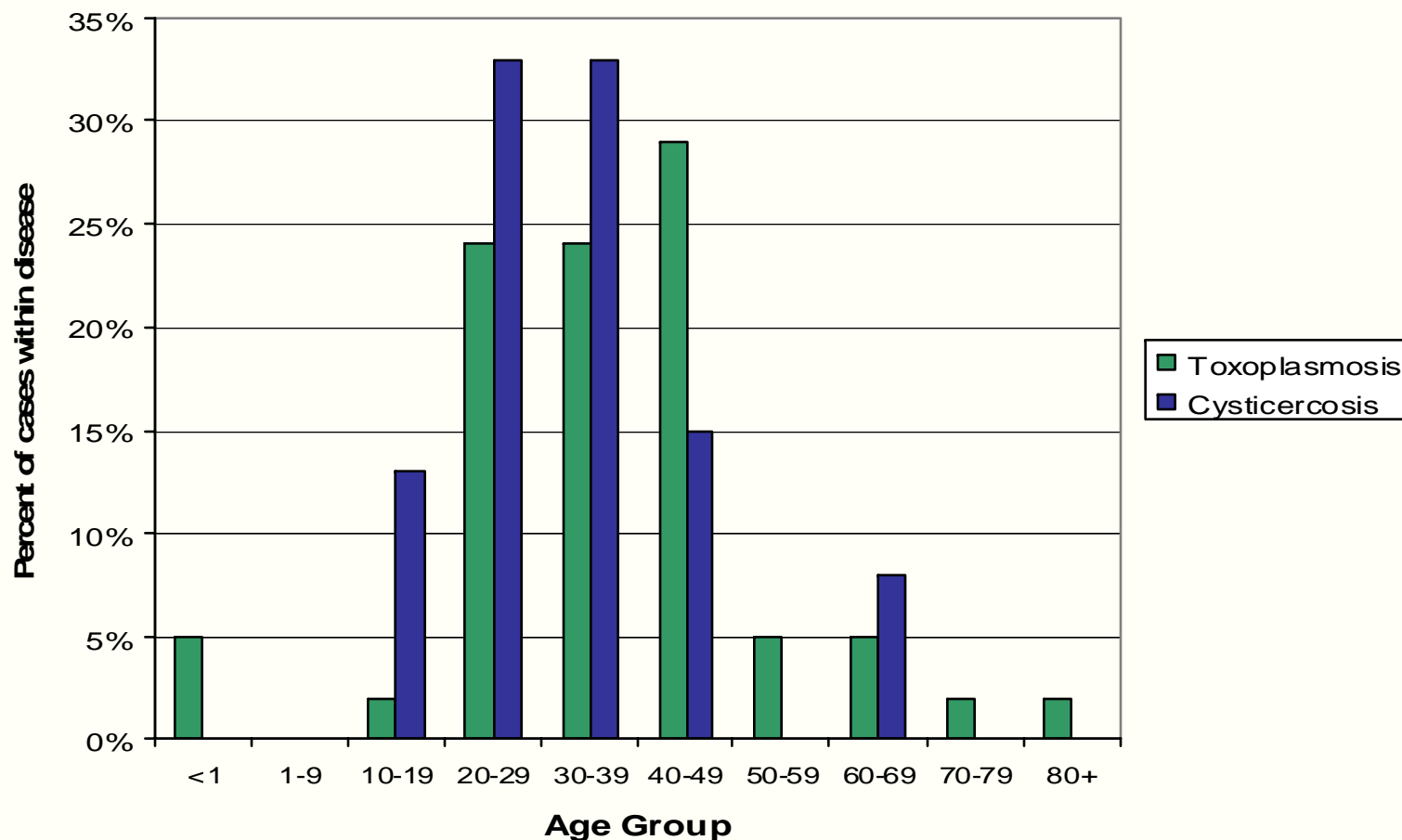
Hospital Inpatient Discharge & Vital Statistics Data Oklahoma, 2002-2005

- Cysticercosis
 - 40 Individuals
 - 58 Hospitalizations
 - No Deaths
- Toxoplasmosis
 - 41 Individuals
 - 64 Hospitalizations
 - 3 Deaths identified with Toxoplasmosis in vital statistics multiple cause death coding



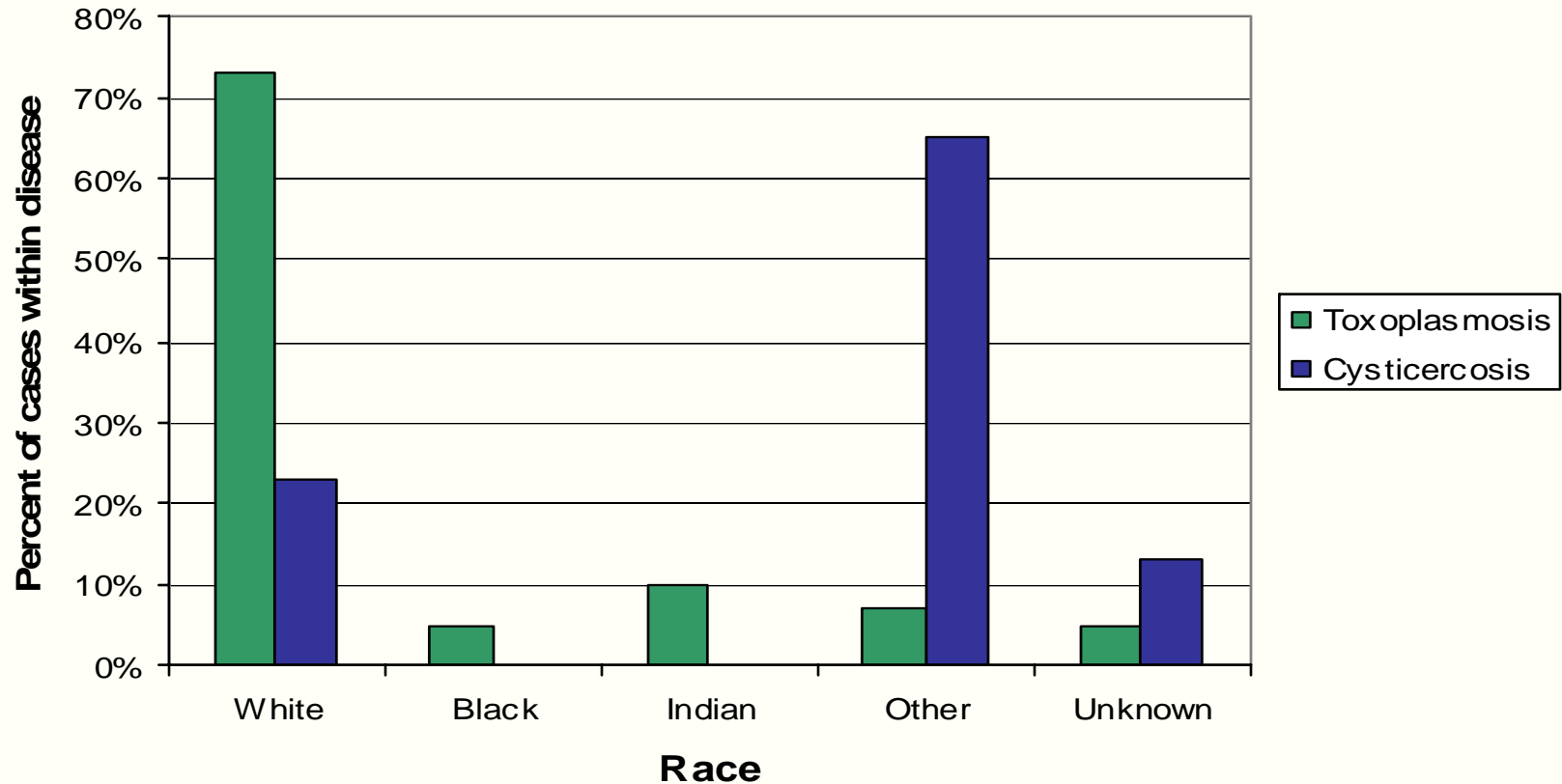
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Percent of Toxoplasmosis (N=41) and Cysticercosis (N=40) Cases by Age Group OK Inpatient Hospital Discharge Data 2002-2005



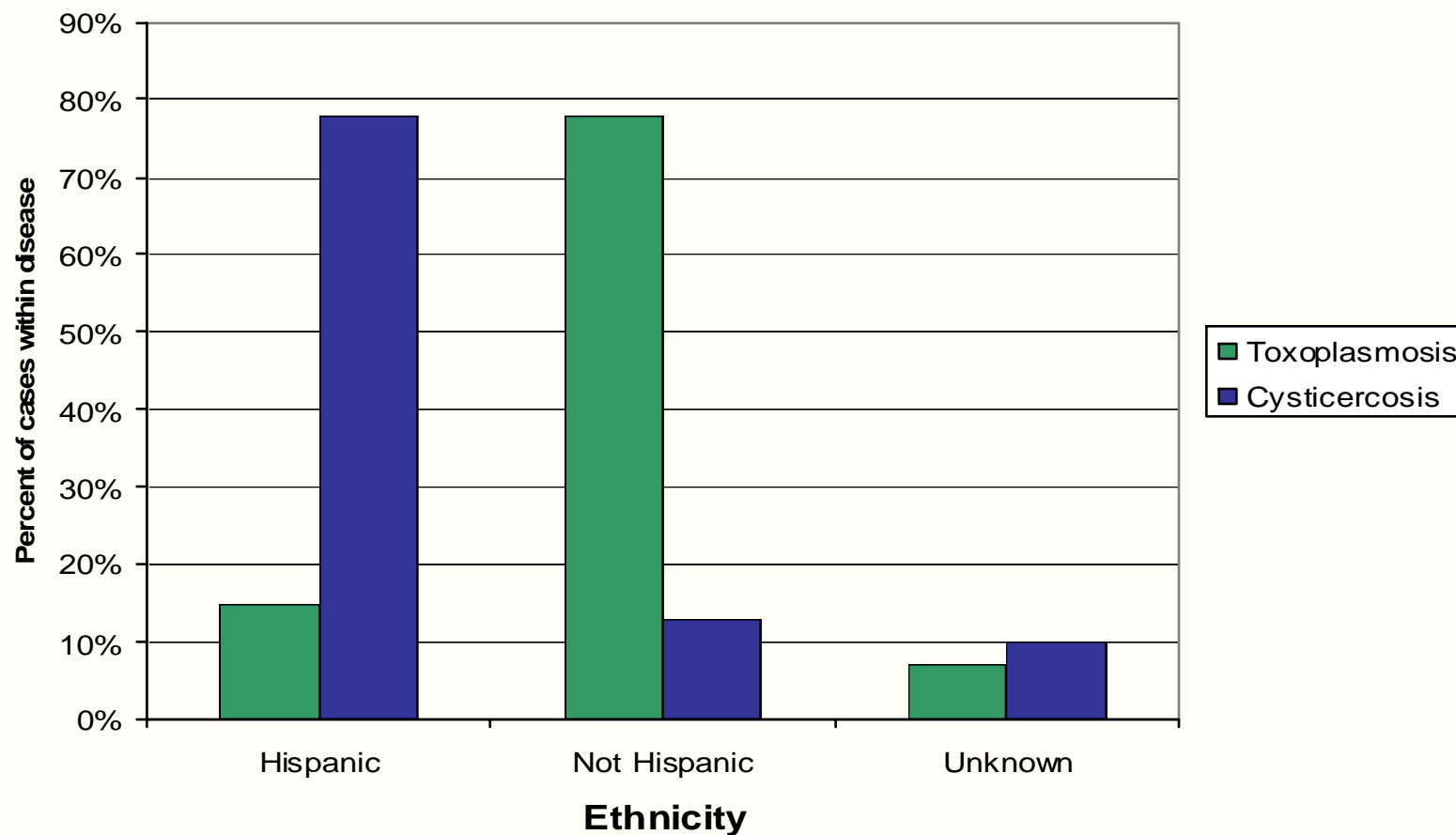
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Percent of Toxoplasmosis (N=41) and Cysticercosis (N=40) Cases by Race OK Inpatient Hospital Discharge Data 2002-2005



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Percent of Toxoplasmosis (N=41) and Cysticercosis (N=40) Cases by Ethnicity OK Inpatient Hospital Discharge Data 2002-2005



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Cysticercosis & Toxoplasmosis

Discharge Diagnoses

- Cysticercosis (N=58)
 - Primary diagnosis
 - Cysticercosis – 45.3%
 - Additional diagnoses
 - Obstructive or communicating hydrocephalus
 - 21 (32.8%)
 - Other convulsions
 - 30 (46.9%)
 - Mechanical complication of nervous system device, implant, and graft or other nervous system complications
 - 7 (10.9%)
- Toxoplasmosis (N=64)
 - Primary diagnosis
 - Toxoplasmosis – 11.9%
 - HIV – 55.2%
 - Additional diagnoses
 - HIV
 - 46 (68.7%)
 - Other convulsions
 - 25 (37.3%)
 - Numerous opportunistic infections



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Cysticercosis & Toxoplasmosis Length of Stay & Total Charges Oklahoma, 2002-2005

	Disease	
	Cysticercosis	Toxoplasmosis
Length of Stay – Range	1 – 44 days	1 – 168 days
Length of Stay – Median	4 days	7 days
Total Charges – Range	\$530 – \$145,388	\$912 – \$230,331
Total Charges – Median	\$11,396	\$15,234
Combined Charges	\$1,276,478	\$2,181,909



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Limitations

- Potential underreporting of cases
 - Only capture hospitalized cases
 - Excludes outpatient visits
 - Physicians must recognize and diagnose the patient with the disease in order to be counted
- Cannot determine the source of infection
 - Locally acquired in US versus internationally acquired
- Case counts do not represent incidence or prevalence of disease



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Conclusions

- Severe Cysticercosis and Toxoplasmosis disease is present in Oklahoma
- Burden of disease is primarily in the young adult / early middle ages of life
 - Toxoplasmosis – concern historically for transmission from mother to fetus in a pregnant female
 - Medical / Social costs

Cysticercosis

- Concern for individuals acquiring infection outside the US and transmitting within the US
- Increasing Hispanic population in Oklahoma and the US
 - Oklahoma
 - 1990 – 2.7%
 - 2005 – 6.6%
 - US
 - 1990 – 8.9%
 - 2005 – 14.5%



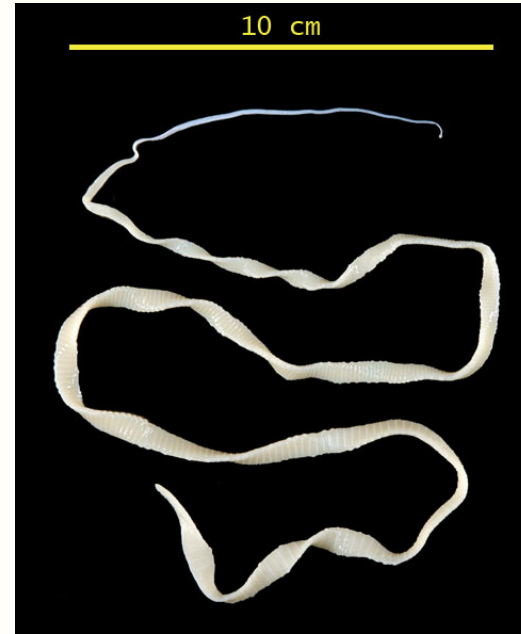
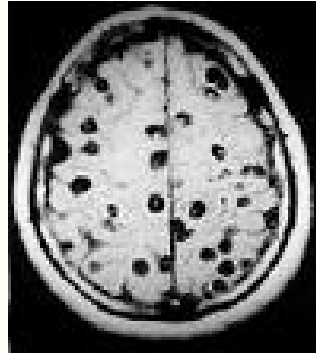
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Public Health Response

- Importance of working across programs (ie working with HIV/AIDS programs)
- Health education messages are essential in preventing disease
 - Proper cooking techniques
 - Hand hygiene education
- Increasing Surveillance
- Further research
 - Risk factors
 - Obtain outpatient information



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Thank you!

Jean Thompson, MPH

Acute Disease Service

Oklahoma State Department of Health

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http://www.medicine.cmu.ac.th/dept/parasite/cestode/Tsolium_whole_worm.htm
www.cdc.gov/ncidod/eid/vol3no3/evans.gif



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Case Definitions

- Cysticercosis
 - ICD – 9 code
 - 123.1
 - ICD – 10 codes
 - B69
 - B69.0
 - B69.1
 - B69.8
 - B69.9



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Case Definitions

- Toxoplasmosis

- ICD – 9 codes

- 130.1
 - 130.2
 - 130.3
 - 130.4
 - 130.5
 - 130.7
 - 130.8
 - 130.9

- ICD – 10 codes

- B58
 - B58.0
 - B58.1
 - B58.2
 - B58.3
 - B58.8
 - B58.9



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