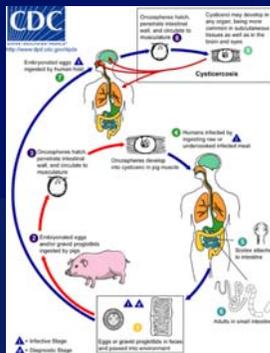


Cysticercosis Los Angeles County



Public Health Problem Identified

- LAC Cysticercosis hospitalizations
 - 10-15 cases in 1970's
 - 80 by early 1980's
(F. Richards et. al. 1985, JAMA)
- Severe Disease
 - 56% Seizures, 21% hydrocephalus (N=238) among hospitalized cases (D. Scharf 1988, Arch Neurol)
- Cysticercosis is Preventable !



How to Prevent Cysticercosis Review of Life Cycle

Public Health Opportunity

In 1988 LAC Public Health identified an opportunity for disease prevention:

- Add cysticercosis to the list of reportable diseases for LAC
- Public health nursing to screen close contacts of reported Cysticercosis cases for Taeniasis
- Refer Taeniasis cases for treatment

Public Health Results

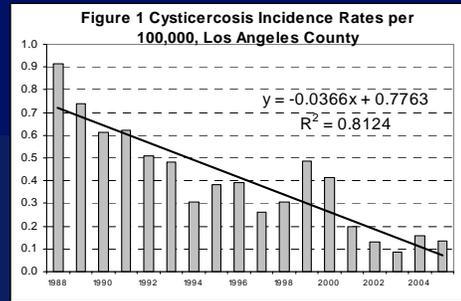
- This intervention method has been successful in identifying cases
 - Taeniasis cases were identified in 7% (5/72) of households tested (1988-1991).
- F. Sorvillo et. al. 1992. Am. J. Trop. Med. Hyg

What's Happening With Cysticercosis in LAC Today ?

- Review available data sources:
 - Reported cases
 - Death Certificates
 - Hospital Discharge Data
 - Published Studies

Reported Cases LAC

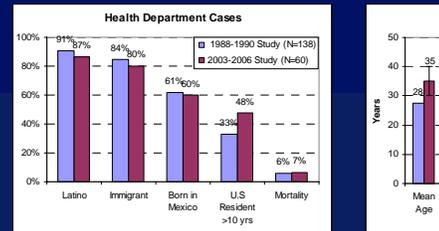
Reported Cases, LAC



Reported Cases, LAC 1993-2006 (N=411)

Race/ Ethnicity	n	%
Latino	371	93%
Caucasian	17	4%
Asian	6	2%
African American	3	1%
Pacific Islander	2	1%
Unknown	12	
Gender		
Male	216	53%
Female	192	47%

Trends in Reported Cases, LAC Early vs. Later Cases



Reported Cases by Health District

LAC, 2004-09 (n=59)

HEALTH DISTRICT IMPACTED	n	%
EL MONTE HD/ Pomona HC (23)	8	14%
SAN ANTONIO HD/ Compton HC (58)	6	10%
ANTELOPE VALLEY HD/Antelope Valley HC (5)	4	7%
POMONA HD/ Pomona HC (54)	4	7%
EAST VALLEY HD/ North Hollywood HC (19)	4	7%
SAN FERNANDO HD/ Pacoima HC (62)	3	5%
SOUTH HD/ South HC (69)	3	5%
SOUTHEAST HD/Humphrey HC (72)	3	5%
WEST VALLEY HD (86)	3	5%
BELLFLOWER HD/Bellflower HC (6)	3	5%
CENTRAL HD/ Central HC (9)	3	5%
Other Health Districts (2 or fewer cases)	15	3%

Mortality

Cysticercosis Mortality

- **National Mortality**
 - 221 Deaths 1990-2002 (17 per year)
 - 60% occurred in CA
 - 32% occurred in LAC
- F. Sorvillo et. al. 2004, EID
- **LAC Mortality**
 - Slight decrease over time
 - Demographics
 - 96% Latino
 - Mean age 41.2 years
 - 62% male



Hospitalizations



Hospitalizations

Hospitalizations 1991-2008 (18 years)

- 7,169 Cysticercosis hospitalizations (398 per year)
- 3,937 NC* Hospitalization (218 per year)
- 1,488 NC* Hospitalization with primary Dx cysticercosis (82 per year)

*NC=neurocysticercosis



Hospitalization Demographics

LAC, 1991-2008 (n=3937)

- 91.6 % Latino
- Male: Female = 1.1:1
- Mean age 38.4 years
 - 31.3 years in 1991
 - 43.1 years in 2008



Hospitalizations

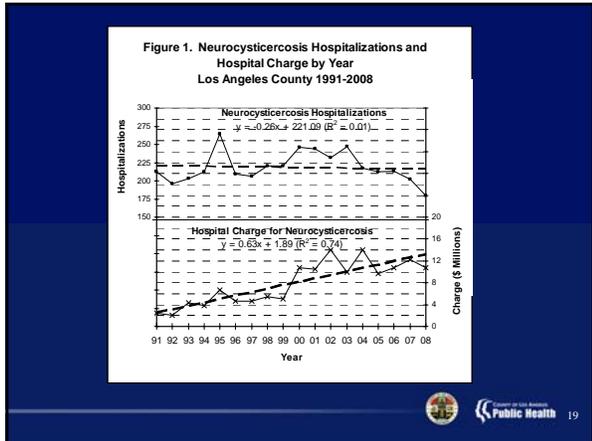
- Economic Burden over 18 years
 - \$136.2 million total hospitalization charges
 - Averaging \$7.9 million per year
 - Average charge per patient was \$37.6 thousand
 - Most common payment method
 - Medicaid (43.9%)
 - Private insurance (24.5%)
- The average length of stay was 7.2 days.



Hospitalizations 1991-2008

- 3,937 neurocysticercosis hospitalizations identified
 - 72.8% seizure or convulsion (2,866)
 - 30.9% hydrocephalus (1,217)
 - 6.2% cerebral cyst (244)
 - 2.2% cerebral edema (866)
 - 2.0% death (77)





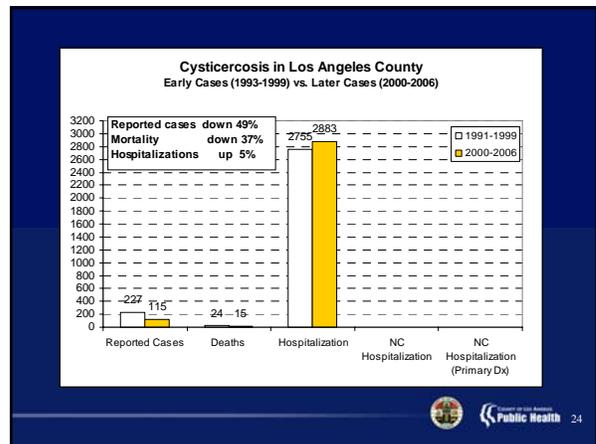
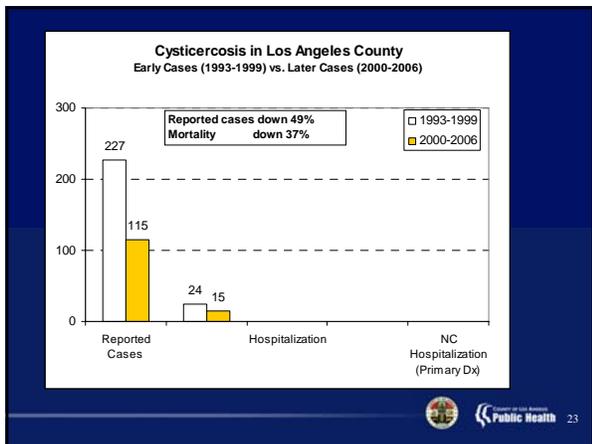
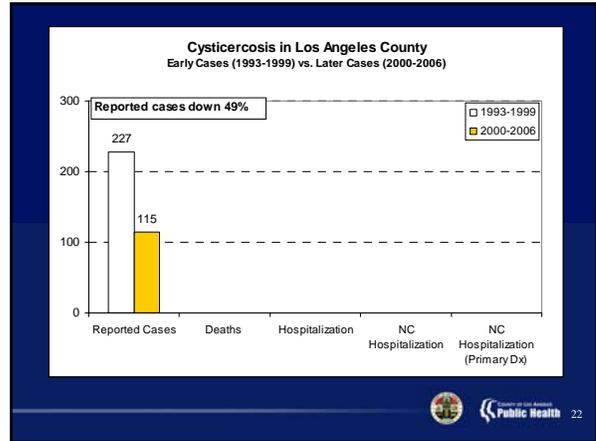
Hospitalizations Procedures Los Angeles County 1991-2008 (N=3937)

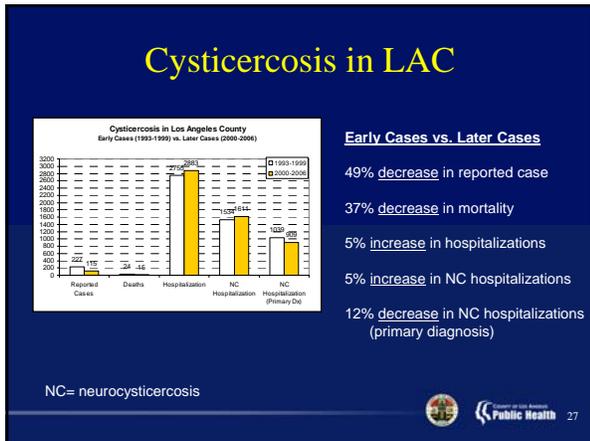
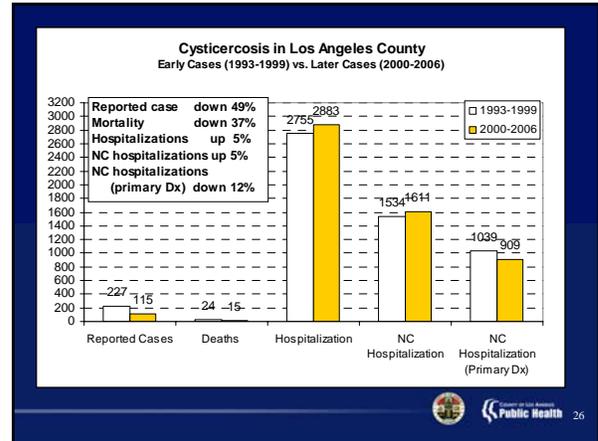
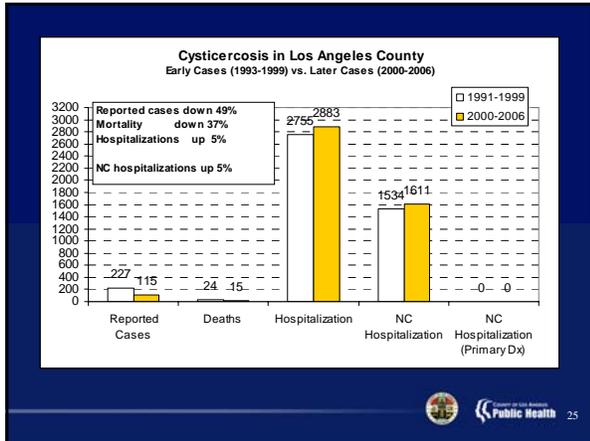
Procedure	n	percent
CNS Procedure	1273	32.3%
Lumbar Puncture	472	12.0%
Brain Procedure	842	21.4%
Any Ventricular Shunt	564	14.3%
Shunt Removal / Replace	217	5.5%
Ventriculostomy	155	3.9%
Brain Excision	131	3.3%
Craniotomy	23	0.6%
MRI or CT Scan of Brain	1256	31.9%

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Cysticercosis Trends
 1993-2006 (16 years)

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Other Published Studies

Cysticercosis and Taeniasis are Still Prevalent In and Around LAC

The sero-prevalence in a mostly Hispanic immigrant population in Ventura County approximates the prevalence in some endemic areas of Latin America.
(DeGiorgio C, et al, Acta Neurol Scand. 2005)

DeGiorgio C, et al 2005

METHOD

- Obtain finger pick blood samples from 1) Select persons living in a federally funded, predominantly Hispanic residential community 2) and in two migrant farm worker camps in rural Ventura County, California
- Test serum immunoblots for both cysticercosis and taeniasis.

DeGiorgio C, et al 2005

RESULTS (N=449)

- 1.8% positive for *T. solium* cysticercosis
- 1.1%. Positive for *T. solium* taeniasis



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Conclusion

- Cysticercosis remains a public health problem in LAC
- The disease is severe and represents a significant economic burden to LAC
- The disease can be prevented through detection and treatment of taeniasis cases
- Implementing improved testing methods for taeniasis will increase the likelihood of detection



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Questions ?



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