

Hidalgo County Hospital TB Outbreak Investigation

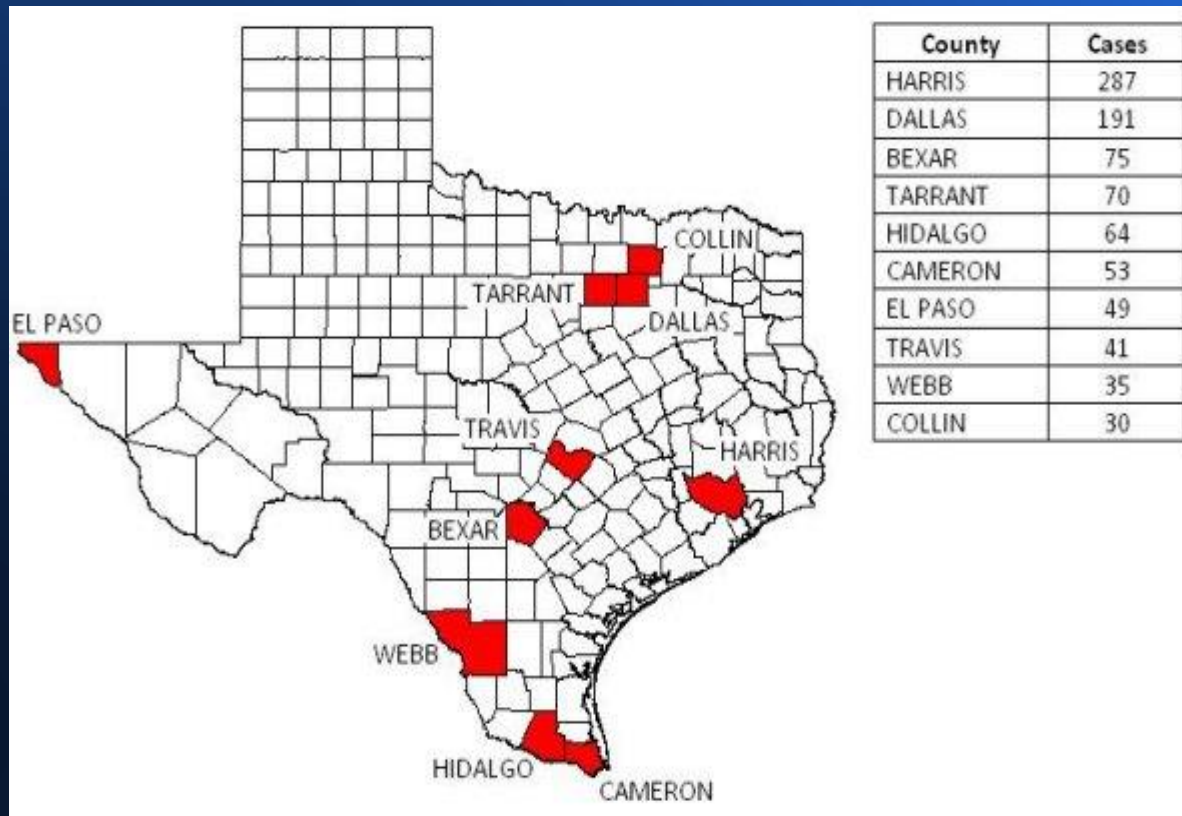
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Hidalgo County

- Border county to Mexico total population 774,769
- 89% Hispanic population
- 6th largest county in Texas
- 2nd poorest county in Texas and one of the fastest growing counties in the United States

TB Incidence

- Hidalgo County averages 1.5 to 2 times higher than the average rate for state of Texas.



Hospital X

- Healthcare workers screened for TB every 6 months
- 441 beds, lead trauma center for Hidalgo County
- No TB skin test conversions reported in 2008 and 2009
- Jan. - Feb. 2010 reported 44 converters (all shifts)
- 23(52%) are from a medical surgical floor zero
- 21 are Medical support staff that frequent floor zero

Evaluations of Conversion Rate

- Assess Employee Health Nurse's knowledge of TST application/reading
- TST solution sent back to pharmaceutical co. for evaluation and to state lab to check for possible contaminate
- TDH Community and Consumer Safety Group assessed ventilation system
- All staff including Physicians and volunteers that frequent floor zero were to be screened

TST Reactions



CDC Contact Investigation Team

- Early March 2010 CDC team arrives to assist
 - reviewed previously collected data
 - reviewed hospital infection control guidelines
- Matched 2009 Hidalgo County TB cases to hospital Electronic Medical Records
- Reviewed hospital staff health record based on previous TST results; transmission occurred between June 2009 thru Dec 2009

Possible Source Frequents Floor Zero

- Hospital employee/volunteer with undiagnosed TB
- Visitor to the hospital with undiagnosed TB
- Undiagnosed client with TB
- Known TB client (with breach of adherence to infection control guidelines)

Finding the Source Review of Client Records from Floor Zero

- All Immunocompromised clients
- Inmates
- Long-term stay > 2 weeks
- All clients placed in airborne infection isolation rooms
- All clients who had portable HEPA* air filtration systems placed in rooms

Suspect Among Converters

Case C

- In late Feb. 2010 1st TB suspect is found
- Abnormal CxR: minimal interstitial infiltrate in left mid lobe
- Cough for 3 days
- Smears negative
- Await cultures results

Nurse Case C

- A 30y/o female Philippine nurse works on floor zero late shift 11pm – 7am
- Several employees converted on TST or QFT on this floor

CI for Nurse Case C

- 22 converters on floor zero
- 66 clients identified as exposed by case c
(of the 66; 15 expired, 5 lost, 5 previous positive)

41 (62%) evaluated

5 positive TST (or QFT)

35 negative TST (or QFT)

1 not read

conversion rate (14%)

CI for Nurse Case C

Household contacts

- Baby sitter from the Philippines: TST positive (no record of previous test)
- Daughter 1 y/o, US born: TST negative twice
- Husband and 7 y/o daughter in the Philippines (verbal report from Nurse Case C they had normal cxr)

Still Looking for Source

- Upon reviewing all clients records requested, one inpatient stood out:
- A young Hispanic male from Honduras admitted as an inmate ; complaint of cough, weight loss, fever, and chills; HIV positive since July 2007; History of alcohol and drug use.
- History of pulmonaryTB July 2007 treated in this hospital; record indicate he was transferred to TCID were he completed therapy Dec 2008

Inmate Case B

- Not placed in airborne infection isolation; portable HEPA filtration system was placed in his room.
- A respiratory risk assessment was conducted by attending nurse upon admission;
- He was given a score of 11; a score of 5 or greater requires airborne infection isolation; the day after his admission the portable HEPA filtration system was removed

Nurse Case C

- Is Nurse case C the source of all the converters on floor zero?
- Cultures return MTB positive on April 05,2009
- Isolate sent for genotype

Inmate Case B

- Oct. 19, 2009 – Oct. 26, 2009: Inmate case B was admitted to Hospital X, floor zero
Readmitted Oct. 27, 2009; Expired Nov. 27, 2009
- He was on floor zero 38 days, 2 days in ICU
- He spent most of his time shackled to his bed, occasionally was allowed to walk in the hallways of floors zero without a mask and guards at his side
- Correctional officers added to CI

Inmate Case B

- Nurse case C was assigned to Inmate case B
- Inmate case B: CxR abnormal with bilateral infiltrates
- He was never evaluated for TB
- His Physicians were aware of his history of TB in 2007

Inmate Case B

- Final diagnosis was possible cancer of the mediastinum
- On 11/26/09 physicians attempted to collect a biopsy of a mass of the mediastinum but client went into cardiac arrest
- Sample of the larynx was obtained, negative for cancer
- He expired 11/27/09

Did We Find The Source

- He is high risk for TB
- He was on floor zero during the period determined to be time frame of transmission
- Did he have recurrent pulmonary TB?
- Will genotype isolates from Nurse case C match his isolate from 2007?
- Is Inmate case B the source?

Genotype Results

- Mid- April 2009 Genotype results are in
- Isolate of Nurse case C does not match Isolate of Inmate case B from 2007
- Match to cluster Tex-0246, PCR02188
- INH resistant group

Genotype Results

- List of cases on cluster Tex 0246 cross matched with hospital X medical record: No Match
- Nurse case C did not have any known link to the cases on cluster
- Could Inmate case B have a link to the cases in the cluster?
- Could Inmate case B have been re-infected with a new strain of MTB?
- Could Nurse case C be an incidental case finding?

Inmate Case B

Incarceration History

- Incarcerated July 26, 2009 – Aug. 28, 2009
in Hidalgo County
- Screened for TB on July 28, 2009:
asymptomatic and CxR stable
- Transfer to ICE detention center on Aug. 28,
2009 in Cameron County for 2 weeks
- Transfer to Starr County detention center from mid
Sept. 2009 to Oct. 19, 2009
- 10/19/09 transfer to Hospital X

Genotype Results

- List of cases on cluster Tex 0246 cross match with all three detention center
- Match found at Hidalgo County Detention Center
- Male, Hispanic, inmate 34 y/o booked same day as Inmate case B (10 minutes prior)
- Both stayed in holding cell from 130am – 530pm, on July 26, 2009 (approximately 16 hours)

Inmate Case A

Inmate case A diagnosed as a pulmonary laryngeal TB suspect on Aug. 5, 2009: CxR abnormal, cavitory, smear > 10 AFB

- Jail nurses initiated CI on Aug. 05, 2009
- Inmate case B was never identified as a contact by jail staff

Inmate Case A

- Inmate Case A cultures are MTB confirmed, resistant to INH on Aug. 26, 2009
 - started treatment Aug. 10, 2009
 - completed treatment May 10, 2010

Result on Correctional Guards

- Correctional officers screened: 17 identified
 - 12 (85.7%) TST positive
 - 2 TST negative
 - 3 previous positive
- 1 of the 12 positive developed Pleural TB

Correctional Officer Clinical Case

- 23 y/o male c/o of cough, SOB, and weight loss for 1 month
- TST negative in 2009, converted May 06, 2010
- Abnormal CxR with Right Pleural Fluid
- Initiated treatment May 27, 2010 with RIF, PZA, EMB for 6 months, complete treatment Nov. 19, 2010
- All cultures were negative

Source Case Inmate B

- Was inmate case B re-infected by inmate case A?
- Do we have enough evidence to call Inmate case B the source of Hospital X TB outbreak?
- Sample of paraffin biopsy was taken on inmate case B and PCR done
- PCR positive for MTB and M. Avium

PCR02188 as of May 2010

<u>03/2010 Nurse Case C</u>	225323153323	233532433334	<u>(Inmate case B epilink)</u>
08/2009 Inmate Case A	225323153323	233532423334	<u>(Inmate case B epilink)</u>
03/2009 Drug Abuse	225323153323	233532423334	
04/2007 Drug Abuse	225323153323		
03/2007 Drug Abuse	225323153323		

PCR02188

•	<u>04/2012 Nurse on floor X</u>	225323153323	233532423334	G01958
•	* <u>03/2012 Correctional Guard</u>	225323153323	233532423334	G01958
	* <u>10/2011 Patient on floor X</u>	225323153323	233532423334	G01958
•	<u>06/2011 P.T. Assistant</u>	225323153323	233532423334	G01958
	* <u>06/2011 Visitor</u>	225323153323	233532423334	G01958
•	<u>05/2011 Correctional Guard</u>	225323153323	233532423334	G01958
	10/2010 Drug Abuse	225323153323	234532423334	G01960
	<u>03/2010 Nurse Case C</u>	225323153323	233532433334	G01959 (<u>Inmate case B epilink</u>)
	08/2009 Inmate Case A	225323153323	233532423334	G01958 (<u>Inmate case B epilink</u>)
•	03/2009 Drug Abuse	225323153323	233532423334	G01958
•	04/2007 Drug Abuse	225323153323		
•	03/2007 Drug Abuse	225323153323		

* Missed during outbreak investigation

Total TB Case from Outbreak

7 cases from PCR02188

- (1 GENType 1959 and 6 GENType 1958)

2 Clinical Case :

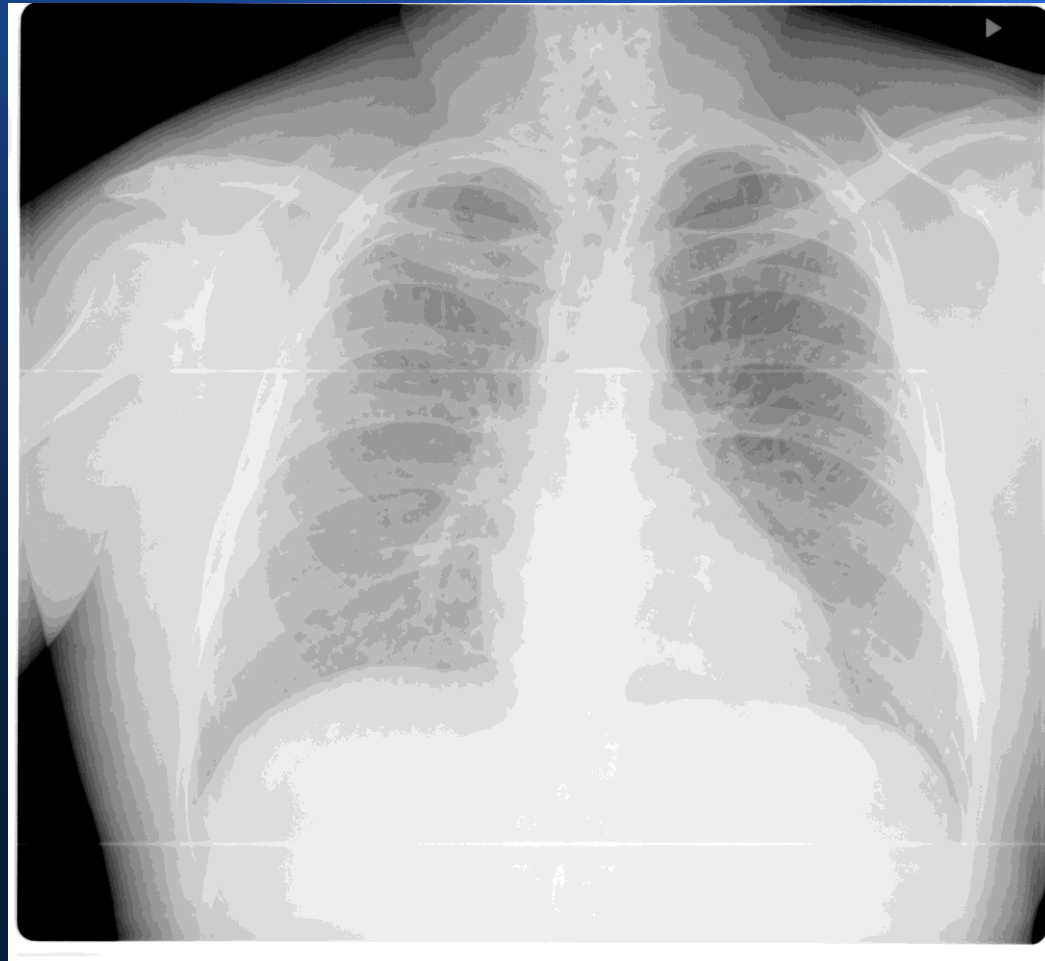
(Social Worker 2010 & Correctional Guard 2010)

- 1 Patient that was in adjacent room with Positive Tspot GENType G01205 (expired 2013)

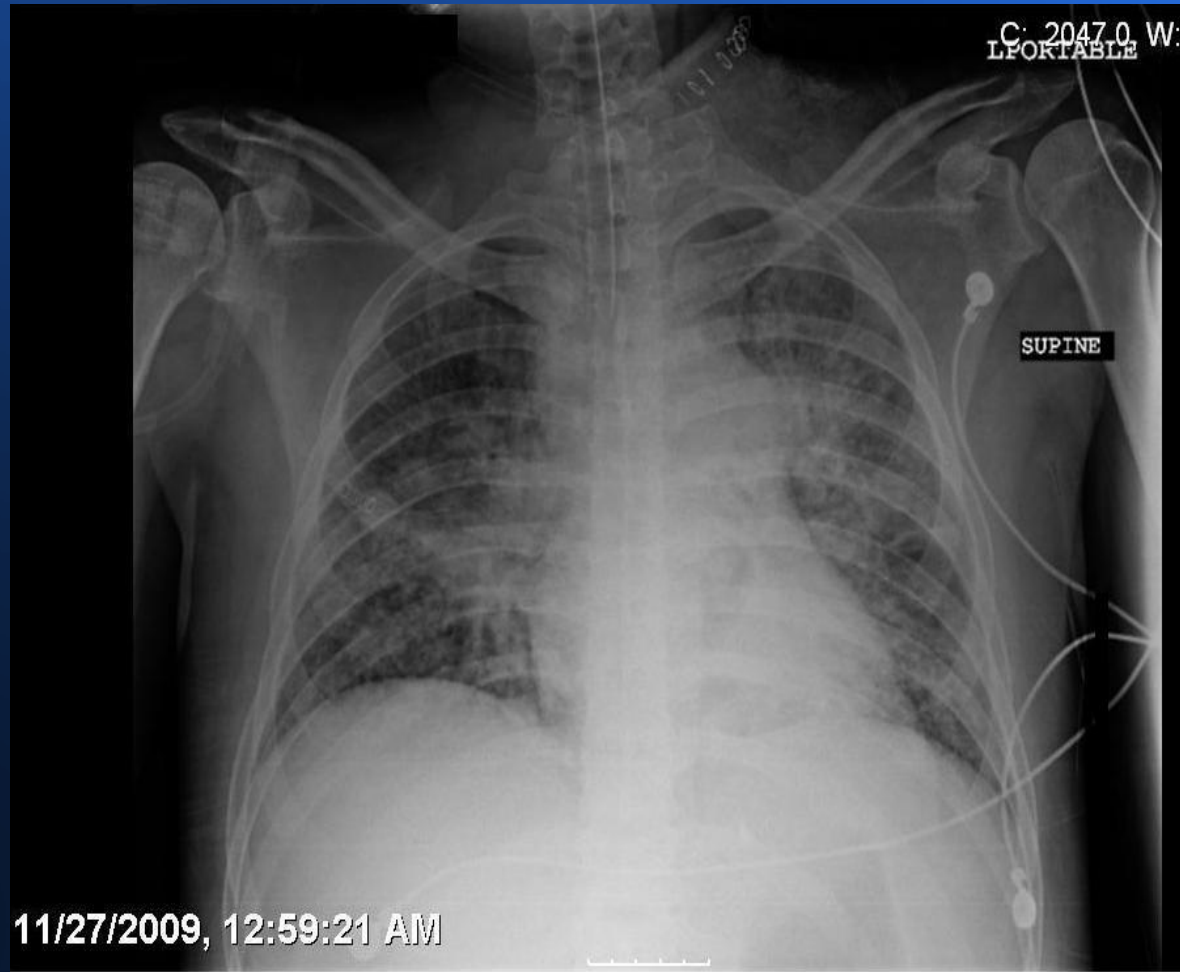
Probable Chain of Transmission

- Case A infected case B in holding cell July 26, 2009
- Case B developed signs and symptoms of TB Oct. 2009 and hospitalized at Hospital X
- Case C Nurse from Hospital X developed Pulmonary TB March 2010
- PCRType match between Case A and Case C
- Total number of hospital staff, correctional officers, clients, visitors: 425 evaluated

Source Case B 07/28/09



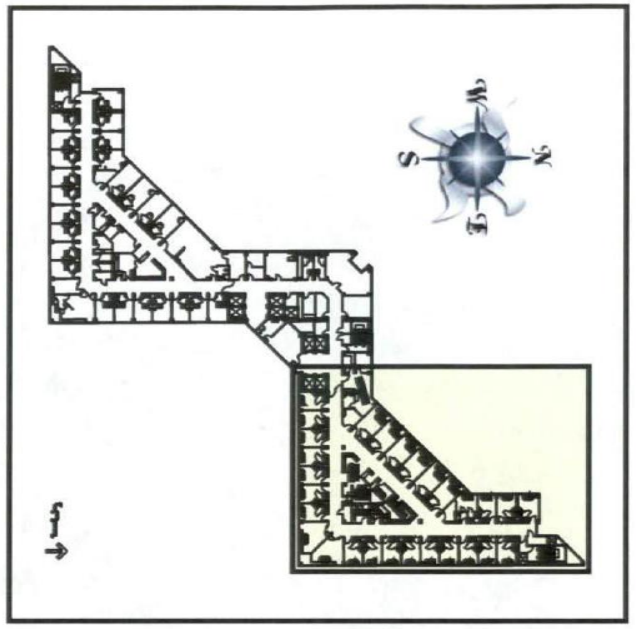
Source Case B 11/27/09





8 Days

30 Days



***TB conversion based on TST or TB spot**

Table 1: conversion rate for patients/visitor

	Converters*	Total Contacts	Rates (%)
Patient/visitor in Adjacent room	7	23	30.4
2nd/3rd RM Patient/ visitors	2	27	7.4

Total Contacts Evaluated

Total ID 458 Total Screened	Previous Positive TST	Rate Of Previous Positive TST	Total Eligible for TST/ IGRA's 359 Lost 33	Positive TST/ IGRA's	Rate Of Conversion
425	99	23%	326 Tested	93	28.5%

Conversion Rates

