A COMPLICATED CASE INVESTIGATION: LESSONS LEARNED

ADVANCED NURSE CASE MANAGEMENT – CURRY CENTER, UCSF

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Equity~Innovation~Integrity~Leadership~Quality~Responsiveness~Service~Stewardship

Merced County Department of Public Health

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Objectives

- Outline Merced County Demographics
- Identify Disparities in Risk for Tuberculosis (TB)
- Explain Process of Expanding a Contact Investigation
- Define TB Outbreak
- Identify Challenges with Diagnosing Pediatric Clients
- Discuss Cultural Competency among Hmong and Asian families

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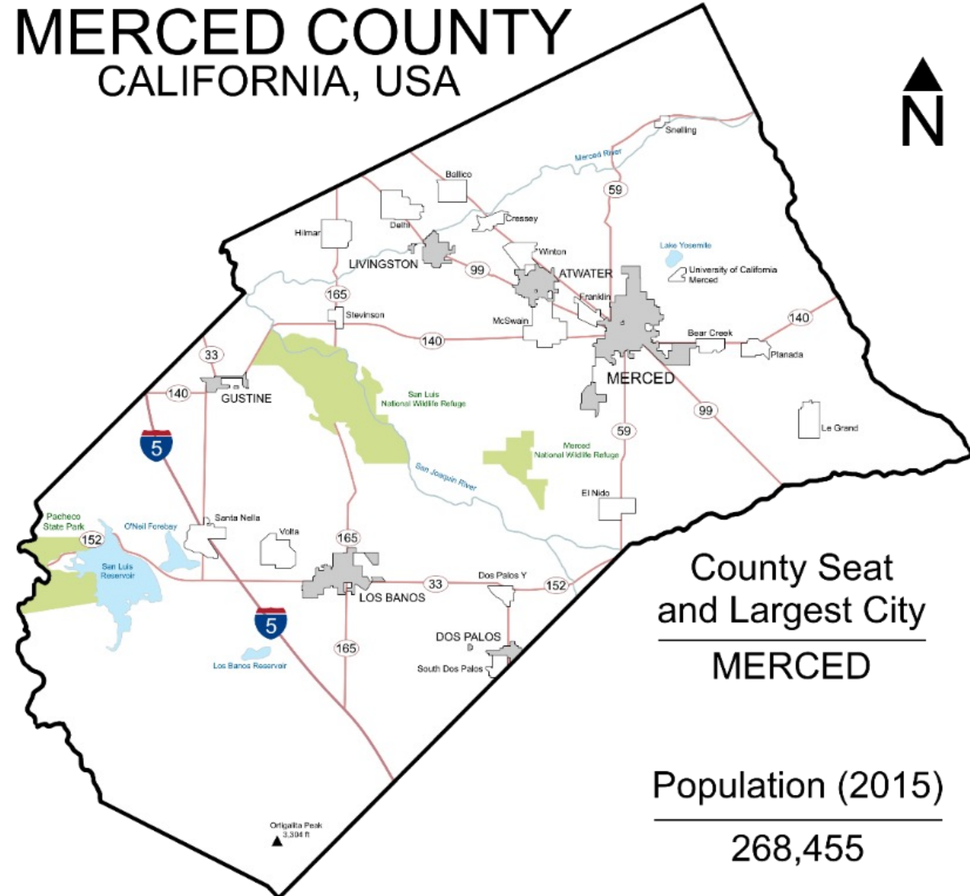
MERCED COUNTY
DEPARTMENT OF PUBLIC HEALTH

Merced County Demographics

- Merced: 91,563
- Los Banos: 47,044
- Atwater: 32,337
- Livingston: 14,760
- Gustine: 61,181
- Dos Palos: 5,820

(Slightly more people than the city of Fremont)

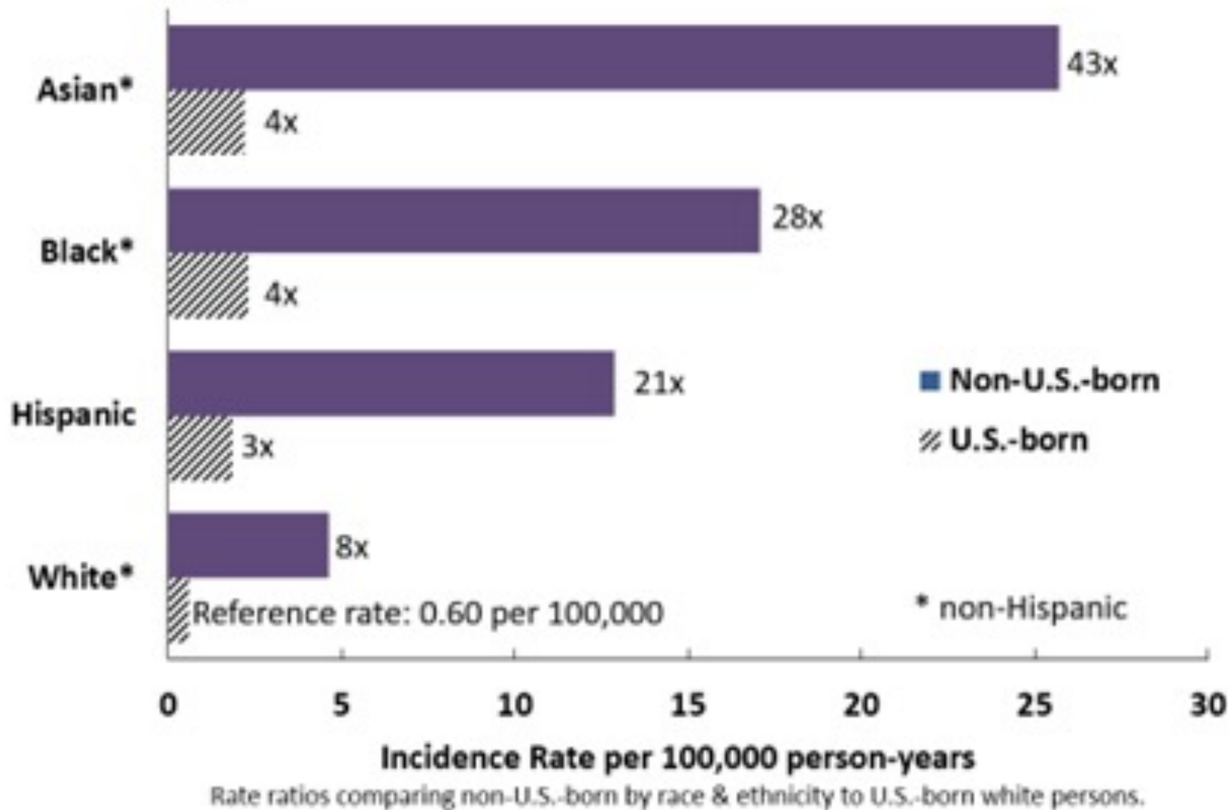


Merced County Demographics

Health Disparities: Underserved and Under-Insured

- Most areas in the county are medically underserved areas and health professional shortage areas
  - 91.8% of the population lives in a health professional shortage area
  - 47.6% Merced County residents received Medicaid compared to 28% in California and 22.2% in the U.S

Disparities in Risk for TB



Expanding a Contact Investigation: Why

- Concern for additional cases and ongoing transmission
- Evidence of recent TB transmission helps us focus our limited resources where we can have the biggest impact

Expanding a Contact Investigation: When

According to CDC guidelines, ***first*** ensure you have the capacity and resources to expand your investigation; i.e., all high and medium priority contacts have been tested, positive cases have started treatment, and contacts <5 are on prophylaxis.

Then, consider expansion when there are signs of recent transmission, including:

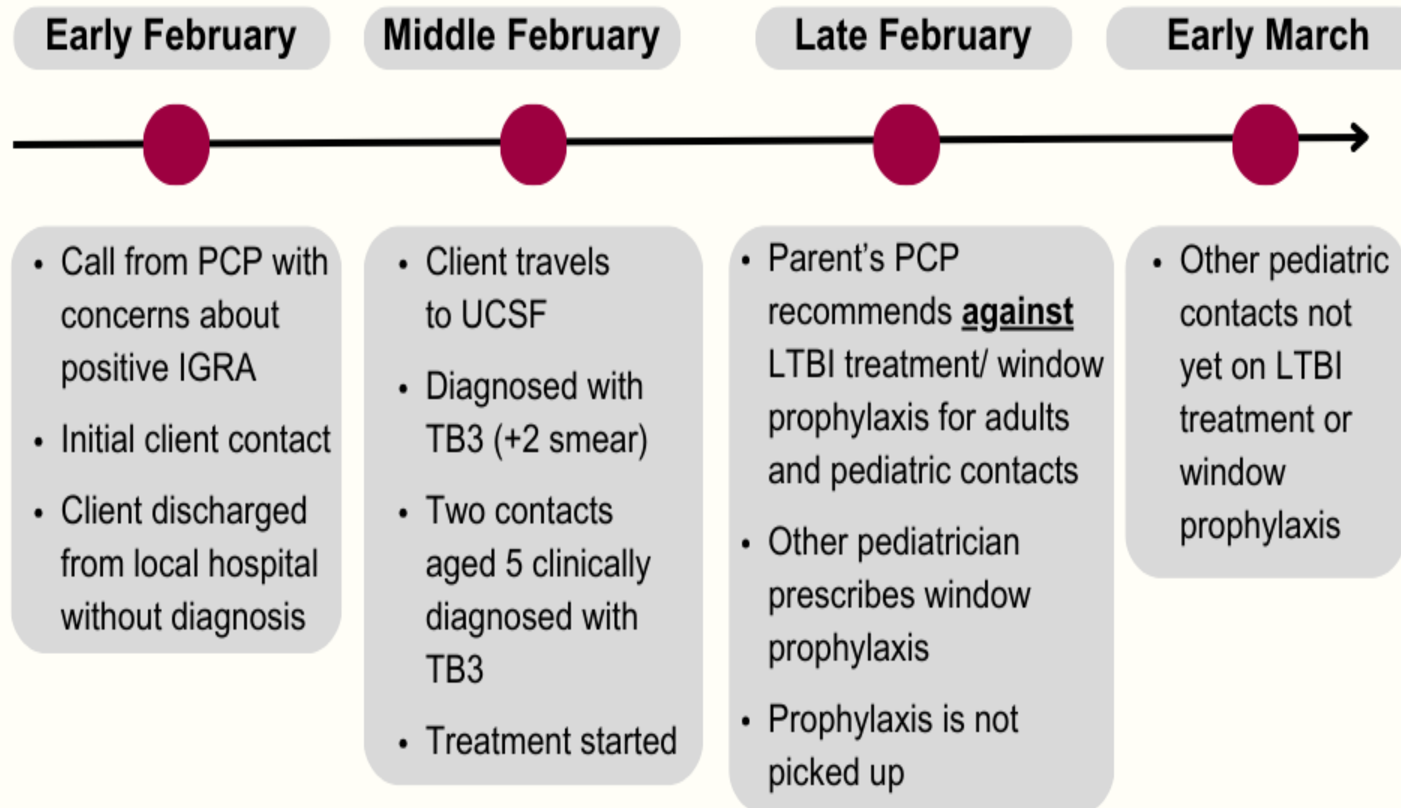
1. **An unexpectedly high rate of infection in close contacts**
2. **Evidence of secondary cases**
3. TB disease in any contacts who had limited exposure
4. **Infection in any contacts <5**
5. Contacts with change in Interferon-Gamma Release Assays (IGRA) or Tuberculin Skin Test (TST) result from negative to positive

(Our case today met 3 of these 5 criteria)

Expanding a Contact Investigation: When

1. High rate of infection/exposure in close contacts: **6 (3 LTBI and 3 active, which was 6 out of 12, or 50%)**
2. Secondary cases: **ultimately 3 active TB (TB3) cases**
3. TB disease in limited contact exposure: 0
4. Infection/exposure in contacts <5: **3**
5. Conversions: 0

Timeline of Events



Challenges to starting treatment for multiple families

- 6 kids, 5 and under, seeing different pediatricians
- Misinformation: primary care provider (PCP) advised family ***against*** Latent Tuberculosis Infection (LTBI) treatment and window prophy
- Grandmother speaks Hmong only
- Childcare and transportation to appointments
- Parents working and going to college

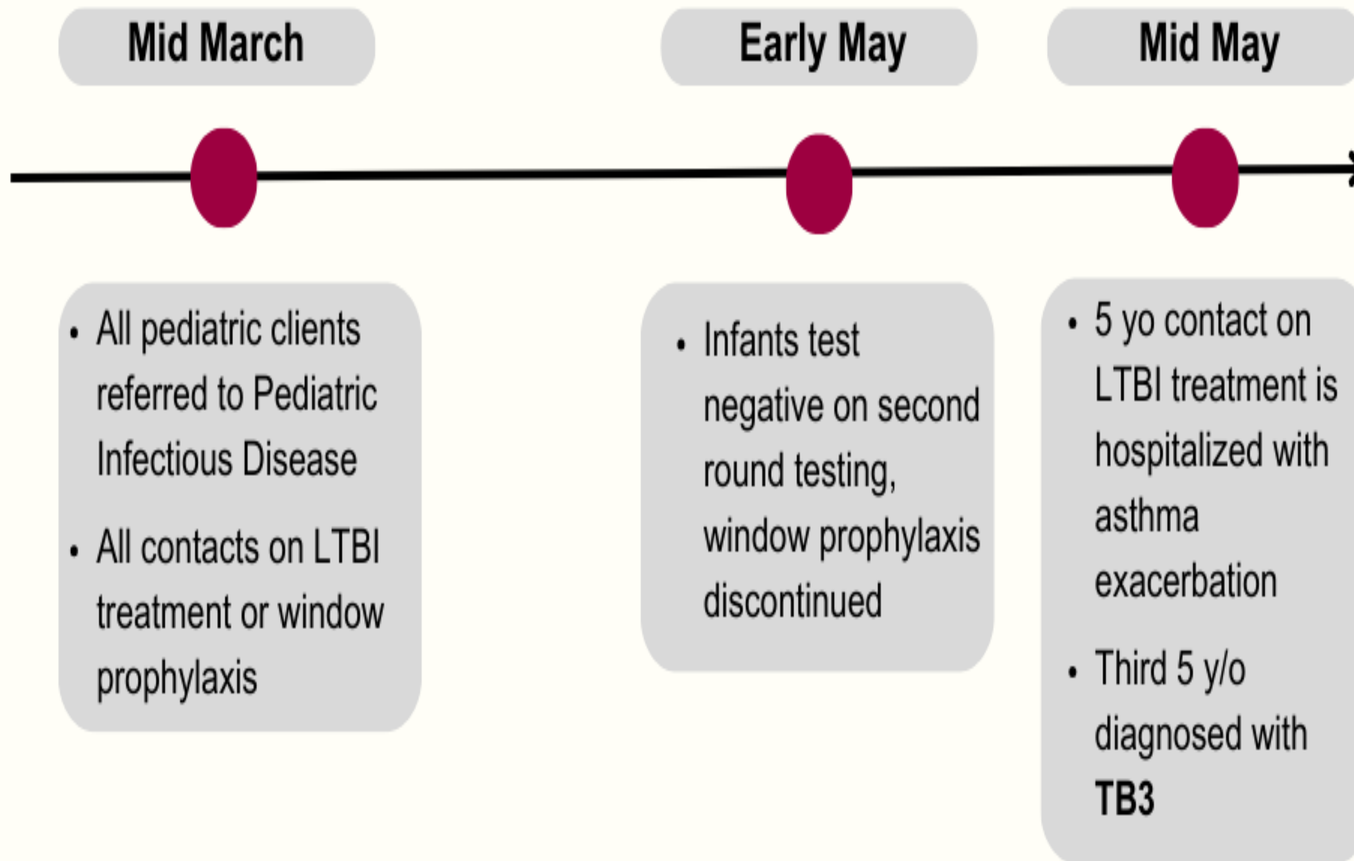
Clinical characteristics of Index Case

- 26 years old Parent of 3
- No identifiable risk factors
  - Born domestically
  - No foreign travel
  - No known contacts
  - Not immunocompromised
- Sputum smear +2 and culture positive
- Mild ascites, severe anemia, requiring transfusion
- Foci on adnexa
  - Result was benign but served as main suspect of clinician's initially
- Chest imaging
  - Nodules and small pleural effusion
- Length of infectious period:
  - Initially calculated as November 2023 – February 2024

Challenges to diagnosing and treating TB in Merced County

- No dedicated TB clinic
- Reliance on outpatient procedures (imaging, EKG, lab-work) at a variety of facilities
- Educating community providers on the fly
- Unable to order directly through Kaiser system
- Uneven knowledge in community, hospital residency program
- Status adjusters seen by Civil Surgeon are often unconnected to PCP

Timeline of Events – Continued



Challenges and Solutions in Diagnosing Pediatric Cases

- Most 5 and under cannot produce sputum on command, therefore collecting gastric aspirate is the standard procedure for performing MTB PCR, currently
- In our cases, the pediatric infectious disease specialist diagnosed based on symptoms, imaging, and clear exposure history to active case, to avoid inpatient stay
- TSPOT has an infant protocol which draws 2ml instead of 6ml
- TST/PPD is still appropriate for those with no history of BCG vaccine

Initial Contact Investigation: Lack of Risk Factors

- No risk factors for index case
- Intimate partner cohabiting with index case IGRA negative
- TB3 pediatric cases were initially only at the *other household*
- Infants negative
- All adults at other household IGRA positive, but no risk factors identified

Suspect Case

- It was discovered that the index case's father passed in the previous year
- Research very concerning for suspected TB3
  - History of LTBI treatment with Merced County in 1993 at immigration
  - Potentially infectious 12/2021 to 3/2023 per family report of cough and weight loss
  - A1C 7.7
  - ED visit 1/2023, PNA, UTI, D/C home w/ ABX
  - Admitted 2/2023 - 3/2023 HF, AKI, PNA, D/C home via gurney
  - Returned to ED 3/2023, admitted again
  - Deceased 3/2023- Resp. failure, multiple CVA

Cultural Competencies

- Cultural Competency -> Cultural Sensitivity and Humility
- A spectrum of experiences, and blending of cultures
- No two families are identical

Hmong and pan-Asian Cultural Competencies

- Buy-in/allyship with matriarch/patriarch
  - Respect/obedience to elders is common value across Asian cultures
- Community provider/trusted advisor/traditional practitioner
  - Community providers speaking native language may be few/scarce: possibility of misinformation/outdated information
  - Traditional practitioner/shaman can be open to working alongside hospital/health department, crucial for building buy-in
- Traditional medicine/holistic
  - Historical reliance on herbal remedies can require extra education
- Fear/stigma of diagnosis
  - Treatment avoidance/delay
- Language barrier can lead to poor connection with care/community resources/PCP
- Immigrant populations can be underinsured

Expanding Contact Investigation

- Guidance from California Department of Public Health (CDPH) was to expand contact investigation, since the cluster met criteria for a probable outbreak per CDPH outbreak definitions (**4 or more epi-linked cases within a 3-year period**)

- How was it expanded?
  - Including suspect case's possible infectious period/contacts
  - Lengthening index case's infectious period to include when they first noticed weight loss: 4/2023 - 2/2024

Tools for Expanding Contact Investigation

- Communicable Disease Investigation team
- TB records from immigration
  - Revealed additional siblings
- Accurint
  - Searches for individuals associated with past addresses and places of employment
  - Reach out to state department of health for help
- Social Media search
  - Requires care to not reveal how you found information to the client
  - Can be useful in identifying large social gatherings

Lessons Learned

1. **Immediately** order TGRA/TST, imaging for anyone 5 years old and under
2. Refer to local pediatric hospital/infectious disease for help with education/buy-in, or clinical questions
3. It is okay to consider a CPS report if parents delay window prophylaxis, and all other avenues have been explored
4. Ask for help from CDI when contact investigation reveals multiple cases/positives
5. Ask for help from CDPH when investigation reveals 2 or more TB3 epi-linked to index
6. Assess your current capacity, and create plan now

Questions?

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