Assigning Priorities to Contacts

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TB Contact Investigation
August 21st – 22nd, 2024
San Antonio, Texas

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- No conflict of interests
- No relevant financial relationships with any commercial companies pertaining to this educational activity

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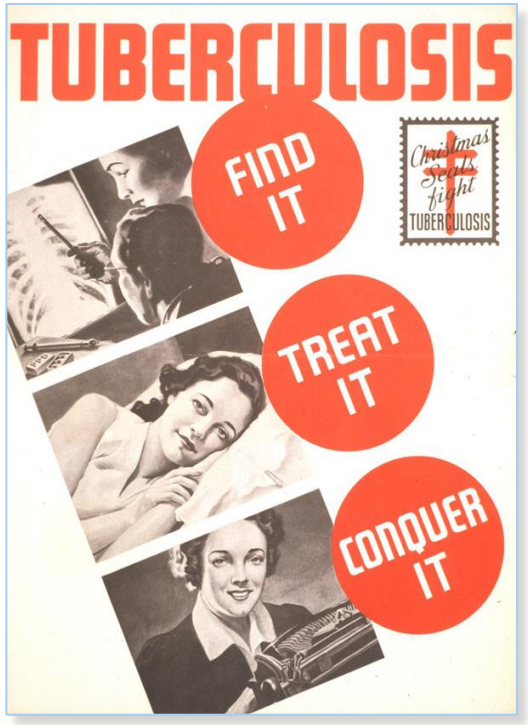
Objectives

- Review characteristics of the index patient
- Discuss characteristics of contacts to those with TB
- Examine frequency, length, and environment interactions with patient
- Review and discuss CDC algorithms



A hopeful start

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- "Contact investigations are complicated undertakings that typically require hundreds of interdependent decisions, the majority of which are made on the basis of incomplete data, and dozens of time-consuming interventions." p. 1
- Excerpt from Guidelines for the Investigation of Contacts of Persons with Infectious Tuberculosis, 2005

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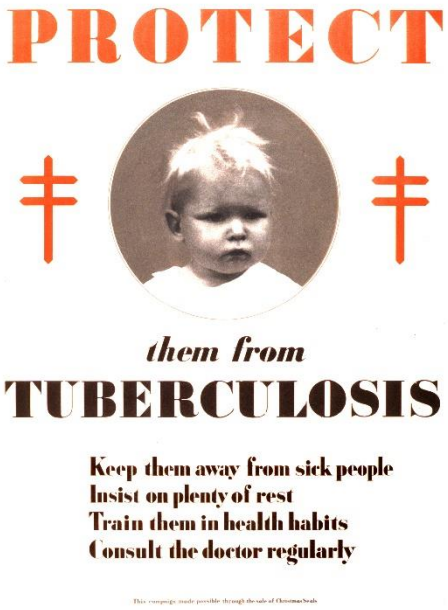
Characteristics of index patient

Findings

- Pulmonary, laryngeal, or pleural TB
- Age
- HIV-status
- Positive sputum smear results
  - How many AFB on are smear
- Cavities on chest X-ray



Findings

- Length of treatment
- Actions and activities* that can increase the likelihood of transmission
  - Coughing
  - Singing
  - Sneezing
  - *Aerosolizing activities (procedures, autopsy)

Why do we prioritize contacts?

More encouragement

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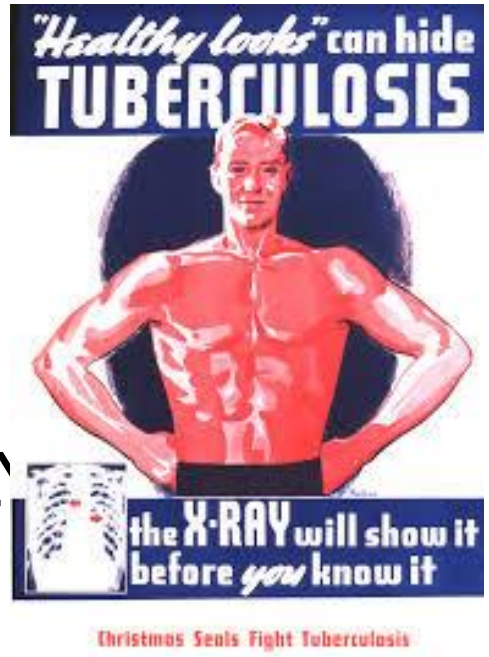
- "The ideal goal would be to distinguish all recently infected contacts from those who are not infected and prevent TB disease by treating those with infection. In practice, existing technology and methods cannot achieve this goal." p. 9
- Excerpt from Guidelines for the Investigation of Contacts of Persons with Infectious Tuberculosis, 2005

Why?

- Allocating resources appropriately
- Balancing priorities of the program
- Need accurate picture of patient infectiousness*
- TB is not that contagious
- Those who get TB bad, will get it REALLY bad (pediatric patients, immunocompromised)



Characteristics of contacts

High priority

- Age
- Medical factors
- Environmental factors

High priority

- Age (non-modifiable)
- Medical factors (non-modifiable)
- Environmental factors (flexible based upon HD assessment)*

High priority

- **Age (non-modifiable)**
  - **Why?**
    - **Incubation period is shorter, latency period is shorter**
    - **TB is more invasive and more lethal**
  - **Children <5 years old are assigned "high priority**
- Medical factors (non-modifiable)
- Environmental factors (based upon HD assessment)

High priority

- Age (non-modifiable)
- **Medical factors (non-modifiable)**
  - **Immunosuppression (iatrogenic)**
    - **Immunosuppressive therapy**
      - **TNF-alpha antagonists**
      - **Corticosteroids**
      - **Anti-rejection medications**
  - **Immunosuppression (pathologic)**
    - **HIV infection**
  - **Exposed and symptomatic**
- Environmental factors (based upon HD assessment)

But wait

- Some medical issues have a higher risk for developing disease, but aren't automatically "high priority"
  - Underweight (BMI <18.5)
  - DM1 or DM2
  - Silicosis
  - s/p gastrectomy or jejunoileal bypass surgery
  - SUD, AUD

High priority

- Age (non-modifiable)
- Medical factors (non-modifiable)
- **Environmental factors (based upon HD assessment)**
  - **Volume of air shared**
    - **1 – size of vehicle**
    - **2 – size of bedroom**
    - **3 – size of a house**
    - **4 – size larger than a house**
  - **Time and circulation of air**
    - **≥ 8 hours**
  - **Environmental factors**
    - **UV light**
  - **Medical procedures (wound irrigation, autopsy, bronchoscopy, induced sputum)**

Exposure factors

Difficulty with the environment

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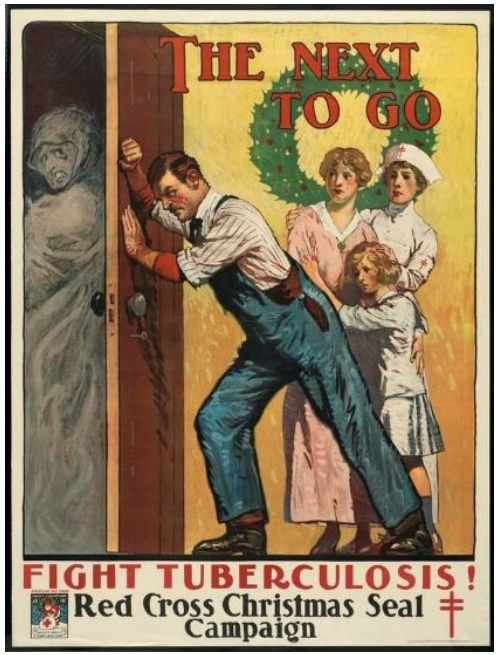
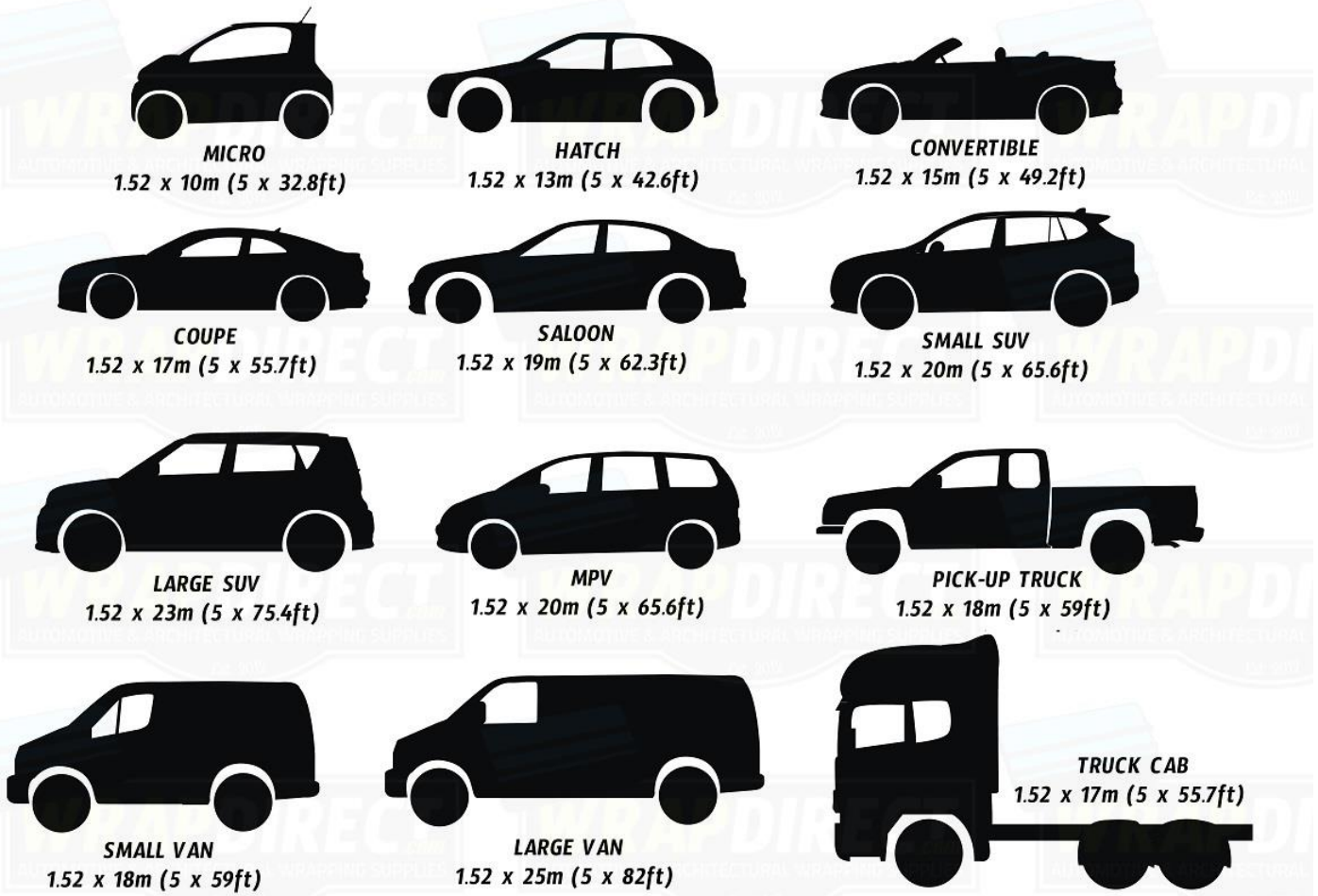
- Staff must make decisions about exposure length based upon the best information they have from their interview(s).
- Memories for patient may not be accurate (onset of symptoms, who I was around, etc.).
- Patients ~~may not~~ won't trust you.



Vehicle


MICRO
1.52 x 10m (5 x 32.8ft)
HATCH
1.52 x 13m (5 x 42.6ft)
CONVERTIBLE
1.52 x 15m (5 x 49.2ft)
COUPE
1.52 x 17m (5 x 55.7ft)
SALOON
1.52 x 19m (5 x 62.3ft)
SMALL SUV
1.52 x 20m (5 x 65.6ft)
LARGE SUV
1.52 x 23m (5 x 75.4ft)
MPV
1.52 x 20m (5 x 65.6ft)
PICK-UP TRUCK
1.52 x 18m (5 x 59ft)
SMALL VAN
1.52 x 18m (5 x 59ft)
LARGE VAN
1.52 x 25m (5 x 82ft)
TRUCK CAB
1.52 x 17m (5 x 55.7ft)

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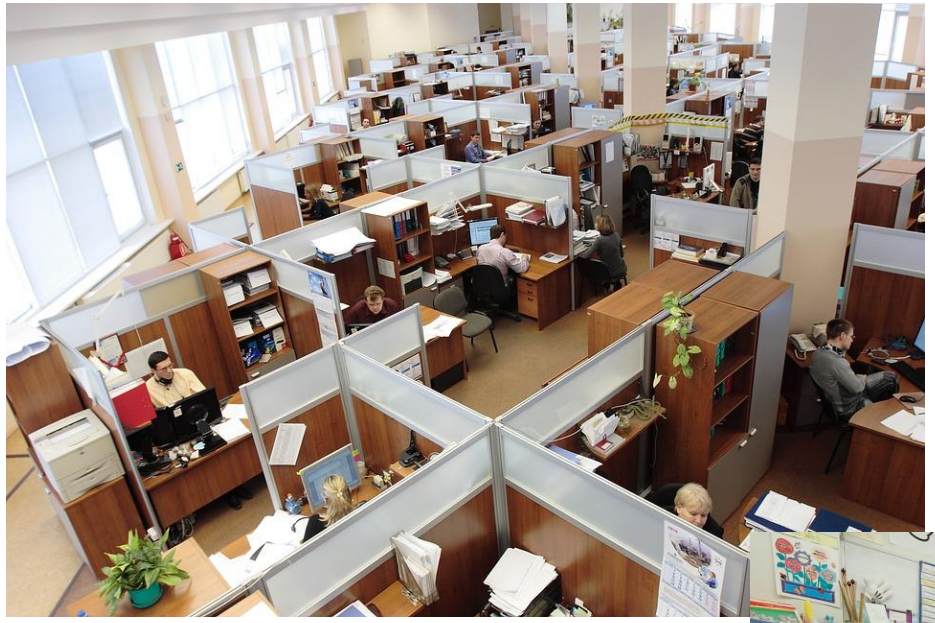
Bedroom

House

Bigger than a house



CDC algorithms

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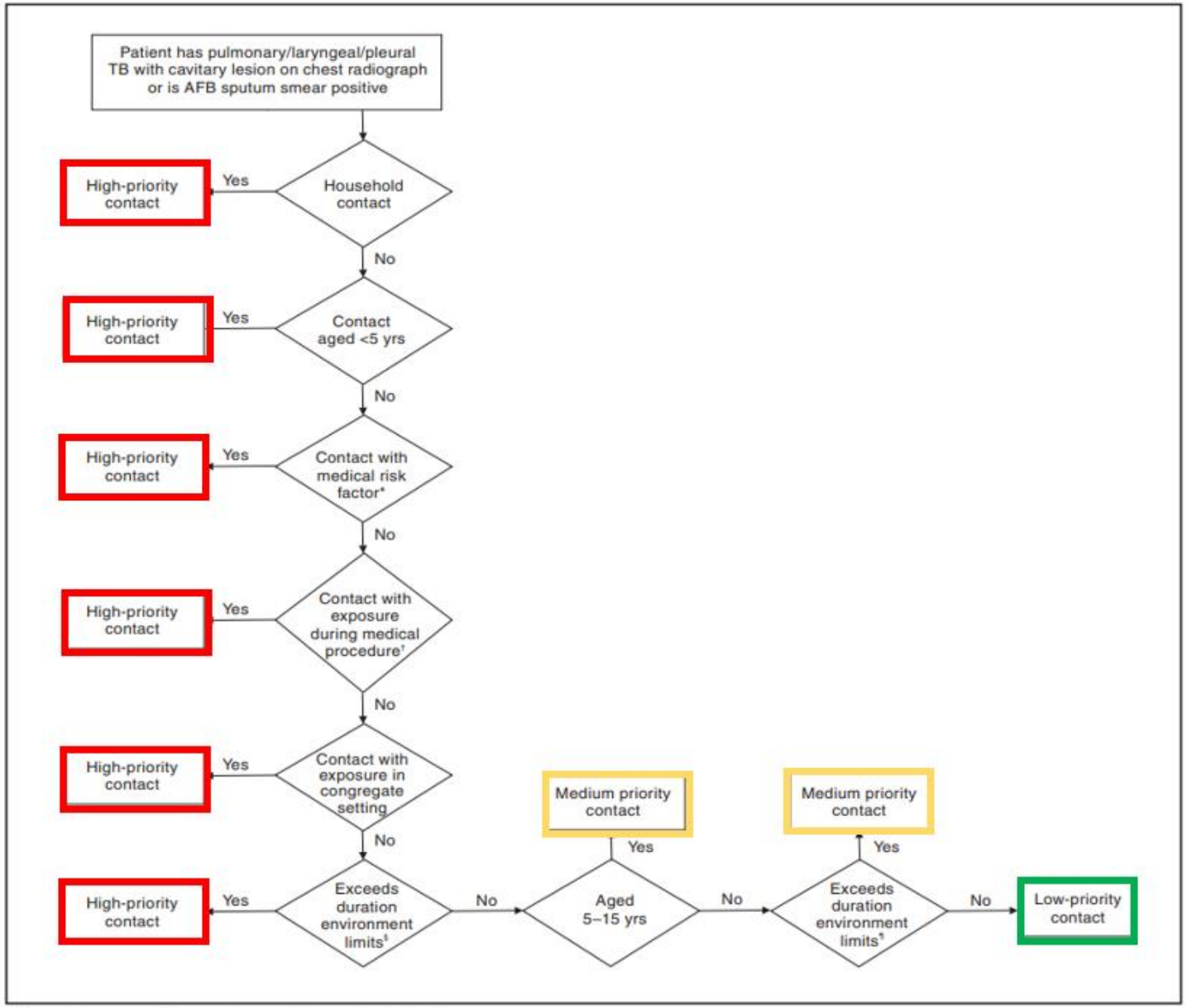
FIGURE 2. Prioritization of contacts exposed to persons with acid-fast bacilli (AFB) sputum smear-positive or cavitary tuberculosis (TB) cases



*Human immunodeficiency virus or other medical risk factor.
†Bronchoscopy, sputum induction, or autopsy.
§Exposure exceeds duration/environment limits per unit time established by the health department for high-priority contacts.
¶Exposure exceeds duration/environment limits per unit time established by the health department for medium-priority contacts.

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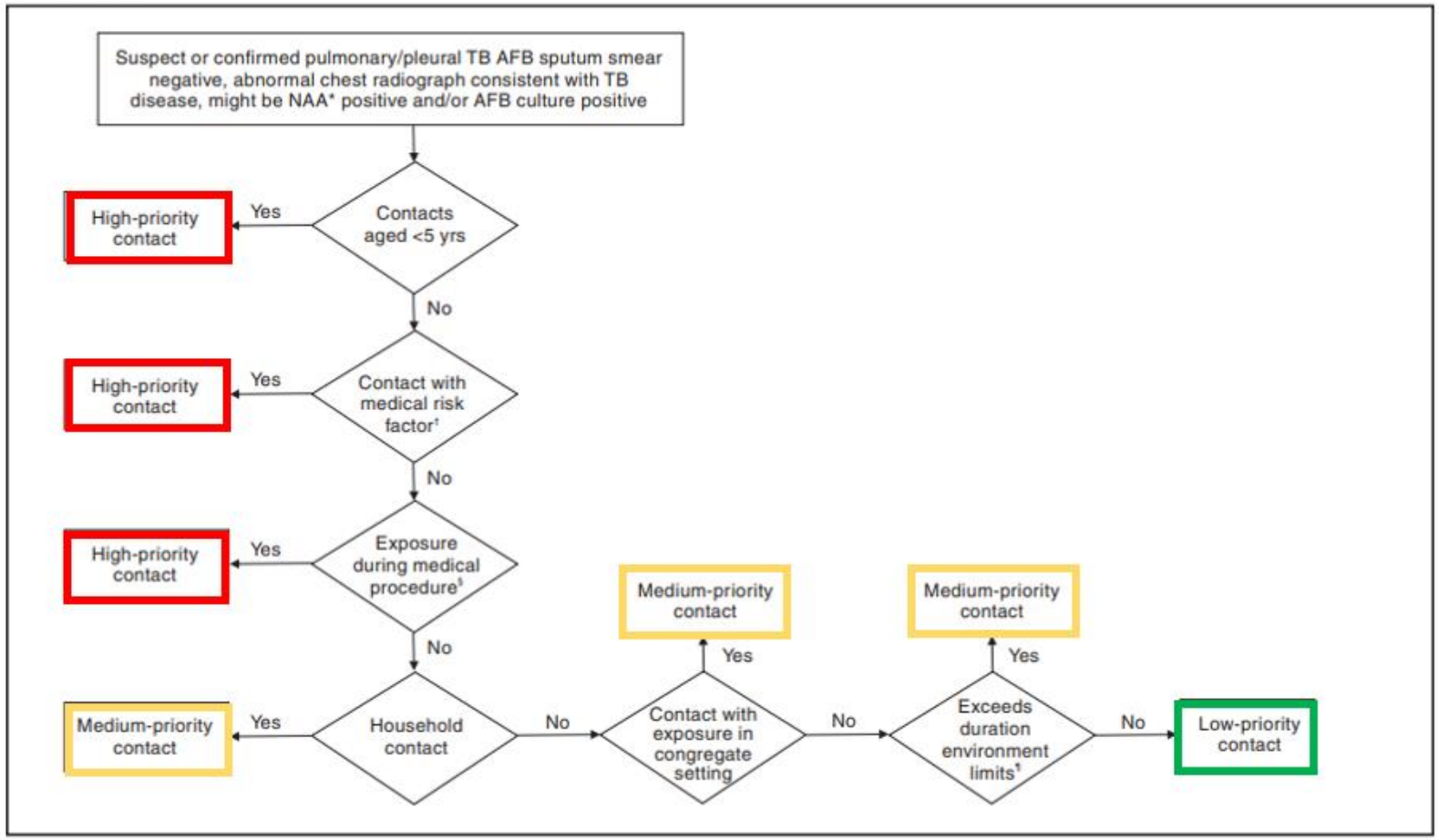
FIGURE 3. Priority assignments for contacts exposed to persons with acid-fast bacilli (AFB) sputum smear-negative tuberculosis (TB) cases



*Nucleic acid assay.
†Human immunodeficiency virus or other medical risk factor.
§Bronchoscopy, sputum induction, or autopsy.
¶Exposure exceeds duration/environment limits per unit time established by local TB control program for medium-priority contacts.

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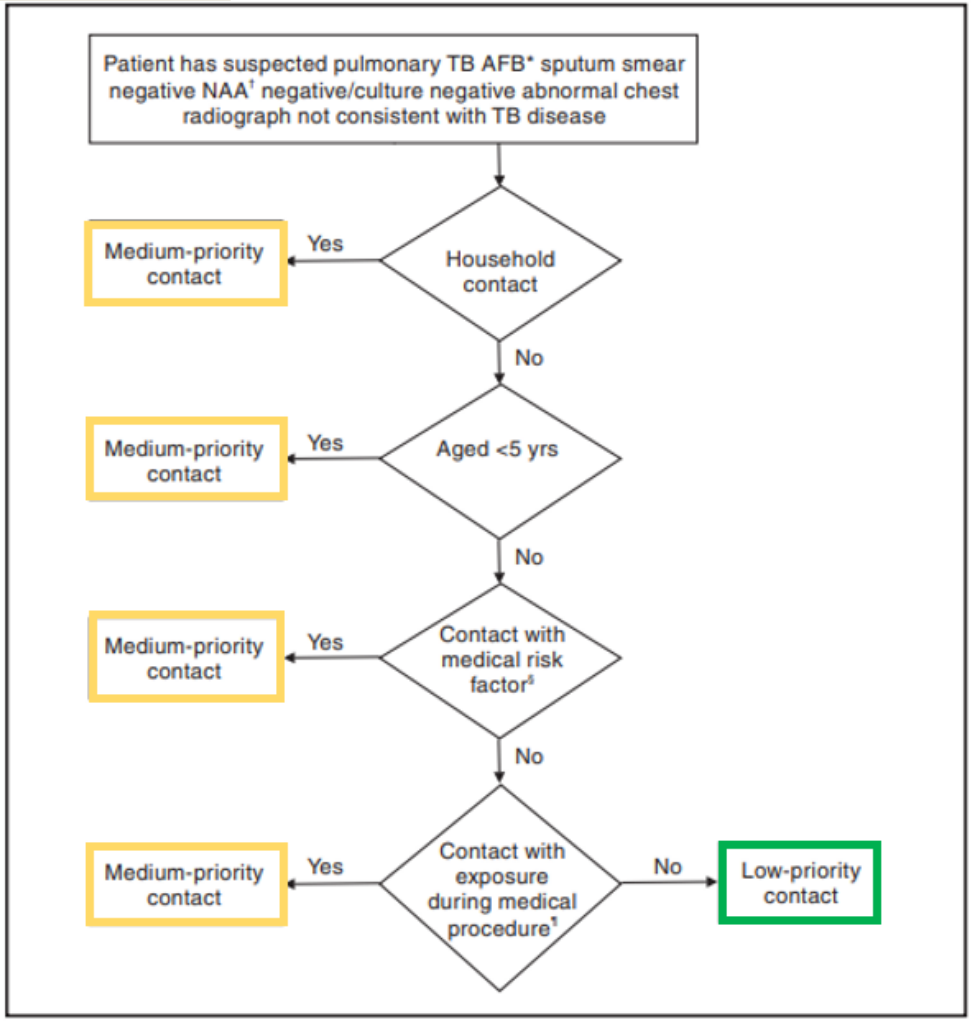
FIGURE 4. Prioritization of contacts exposed to persons with suspected tuberculosis (TB) cases with abnormal chest radiographs not consistent with TB disease



* Acid-fast bacilli.
† Nucleic acid assay.
§ Human immunodeficiency virus infection or other medical risk factor.
¶ Bronchoscopy, sputum induction, or autopsy.

Example: North Carolina

F. Environment in which the exposure occurred

- High Priority Contacts
  - ≥ eight hours in a small poorly ventilated space.
  - ≥ 16 hours in a small well ventilated space.
  - ≥ 24 hours in a classroom size space.
  - ≥ 100 hours in a large open area.
- Medium Priority Contacts
  - four to 7 hours in a small poorly ventilated space.
  - eight to 15 hours in a small well ventilated space.
  - 12 to 23 hours in a classroom size space.
  - 50 to 99 hours in a classroom size space.

Example: Virginia

Table 2

VDH recommendations for the cumulative time needed during the infectious period to assign the priority of contact based on environmental exposure				
Space size	**Example**	**High Priority**	**Medium Priority**	**Low Priority**
Very small	Car, small office, 150 sq. ft.	8 or more hours	4 to less than 8 hours	Less than 4 hours
Small/medium	Classroom, meeting room	24 or more hours	8 to less than 24 hours	Less than 8 hours
Medium/large	Cafeteria, small church	50 or more hours	24 to less than 50 hours	Less than 24 hours
Large	Gymnasium, auditorium	100 or more hours	50 to less than 100 hours	Less than 50 hours
The less time exposed → the lower the potential for transmission → the lower the priority for evaluation of the contact				

Example: Los Angeles County

Table 2a: Exposure to a TB 3 or TB 5 case of pulmonary, laryngeal, and/or pleuro-pulmonary TB with:

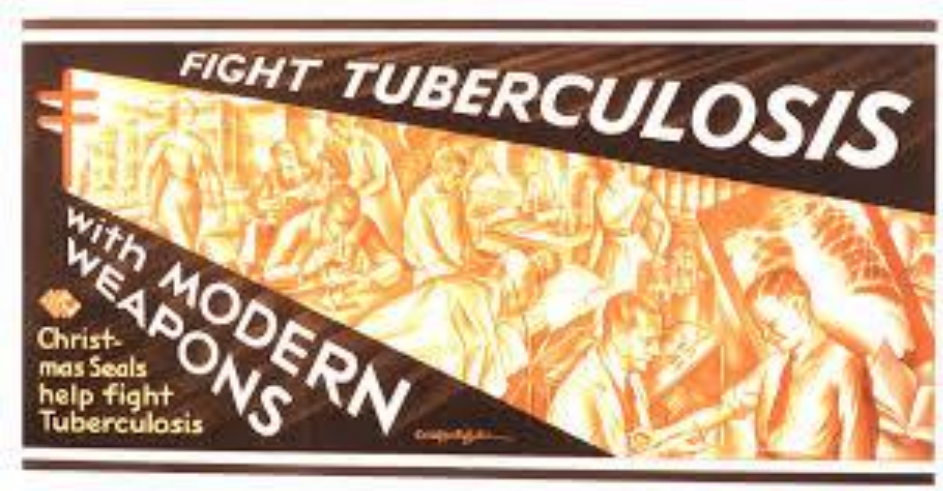
- ***Positive sputum AFB smear or***
- ***Cavitary lesion on chest radiograph***

High Priority Contacts	Medium Priority Contacts	Low Priority Contacts
1. Children under 5 years of age **2. Immunosuppressed contacts:** a. Infected with HIV b. Immunosuppressive medical treatment, for example: - ≥ 15mg/ day of prednisone or its equivalent for one month or more - Cancer chemotherapy agents - Antirejection drugs for organ transplantation - Biologic agents such as tumor necrosis factor alpha (TNF-α) antagonists (e.g. for autoimmune diseases like rheumatoid arthritis, Crohn's disease) **3. Other conditions that increase risk of progression from latent TB infection to active disease once infected:** a. Chronic kidney disease / end-stage renal failure b. Diabetes mellitus c. Silicosis d. Head or neck cancer e. Hematological and reticuloendothelial disease (e.g. leukemias and lymphomas) f. Intestinal bypass or gastrectomy g. Chronic malabsorption syndrome h. Low body weight (>10% below ideal body weight) i. Chronic alcoholism j. Increased risk for HIV infection (including intravenous drug-use) **4. Exposure during an aerosol-inducing medical procedure** (e.g. autopsy, bronchoscopy or sputum induction) **5. Significant exposure based on intensity AND ≥8 hours of exposure during any one week of the infectious period***	**1.** Persons five years and older, not already classified as high priority with **significant exposure based on intensity OR ≥8 hours of exposure during any one week of the infectious period*.** **2. Any contact who does not meet the above criteria but deemed to be medium priority by the CI Core Team.**	Any contacts, who are not already classified as high or medium priority, and who have limited exposure to the index case.

* Examples of intense exposure include: Carpooling with the index case, sharing the same house or living space as the index case, and sharing air with the index case in small, enclosed spaces with little natural ventilation or mechanical ventilation with re-circulated air.

Key takeaway points

- Always get your contacts prioritized and stick with the criteria.
- Be prepared to answer questions as to why you prioritized the way you did.
- Educate high priority individuals about why they are high priority and the concern for rapid and lethal TB developing.



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Thank you

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