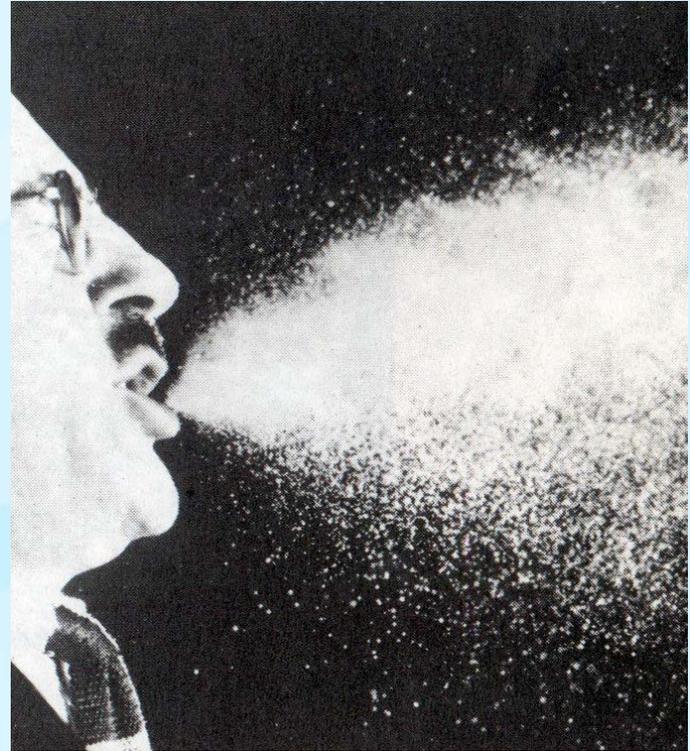


# Tuberculosis (TB) 101

- ❑ *Mycobacterium tuberculosis*
- ❑ Transmitted in air
- ❑ Usually affects the lungs, but also other sites
- ❑ Common symptoms of TB disease: cough, fever, weight loss



# TB Pathogenesis



**Infectious  
TB case**

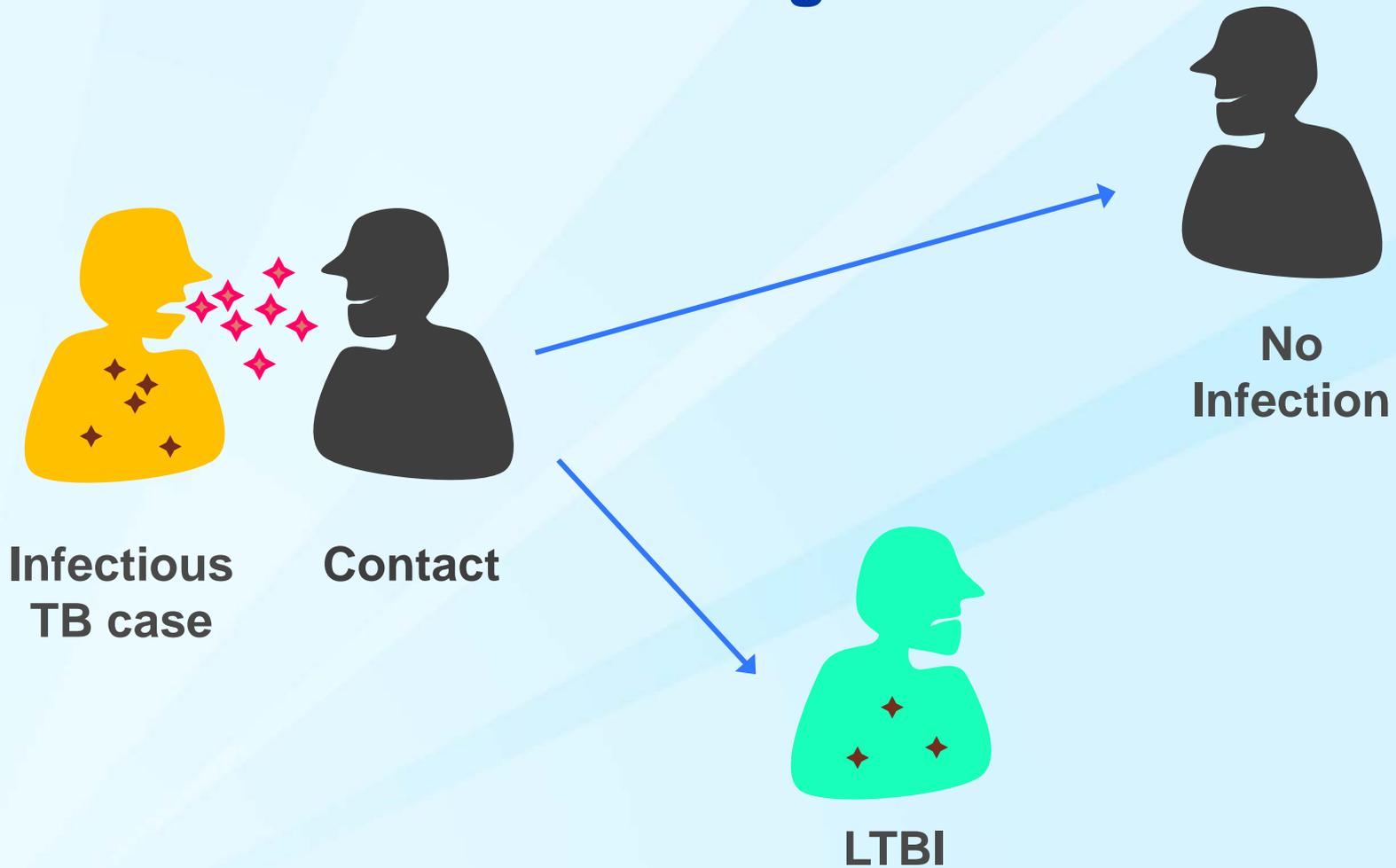


**Contact**

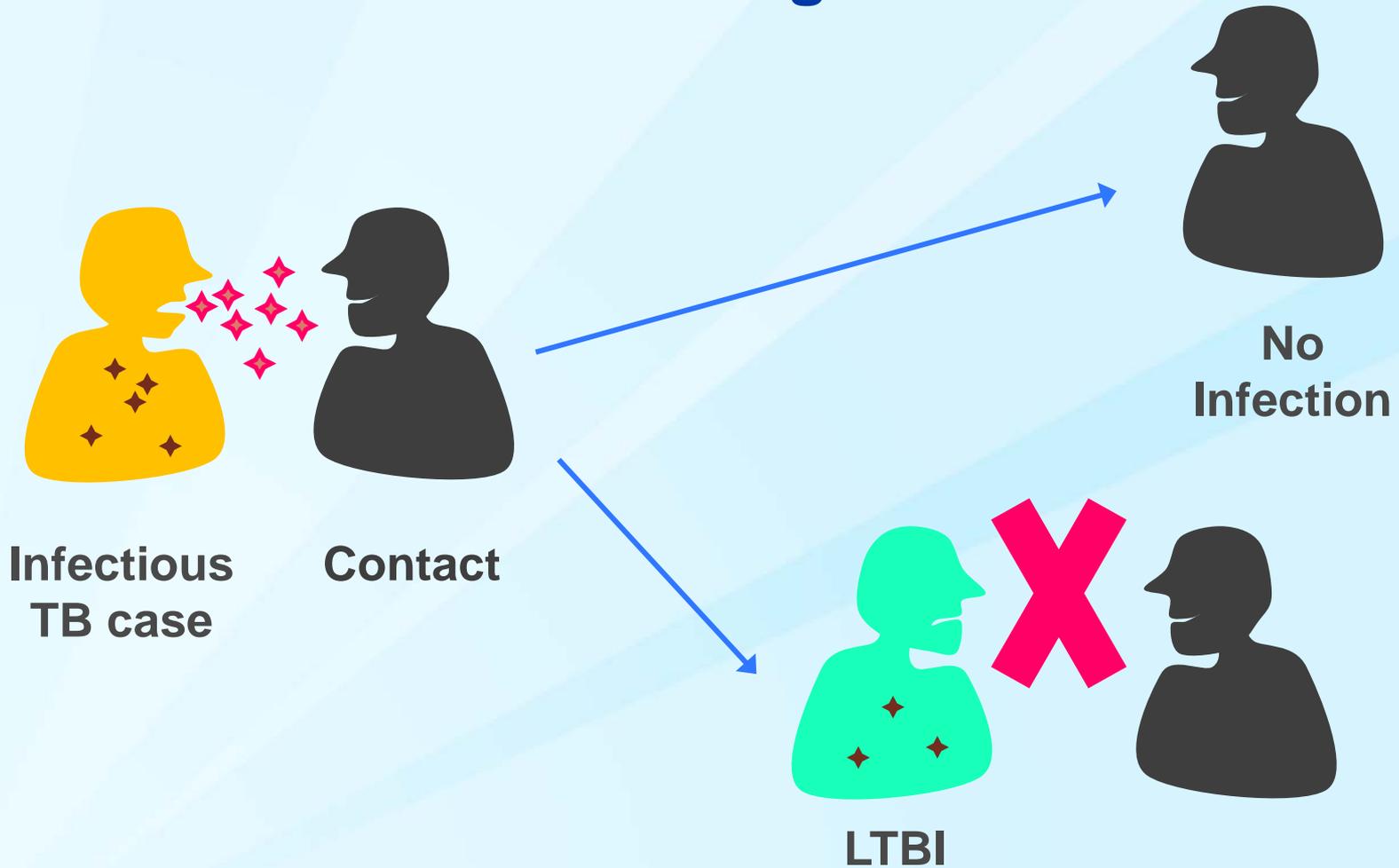


**No  
Infection**

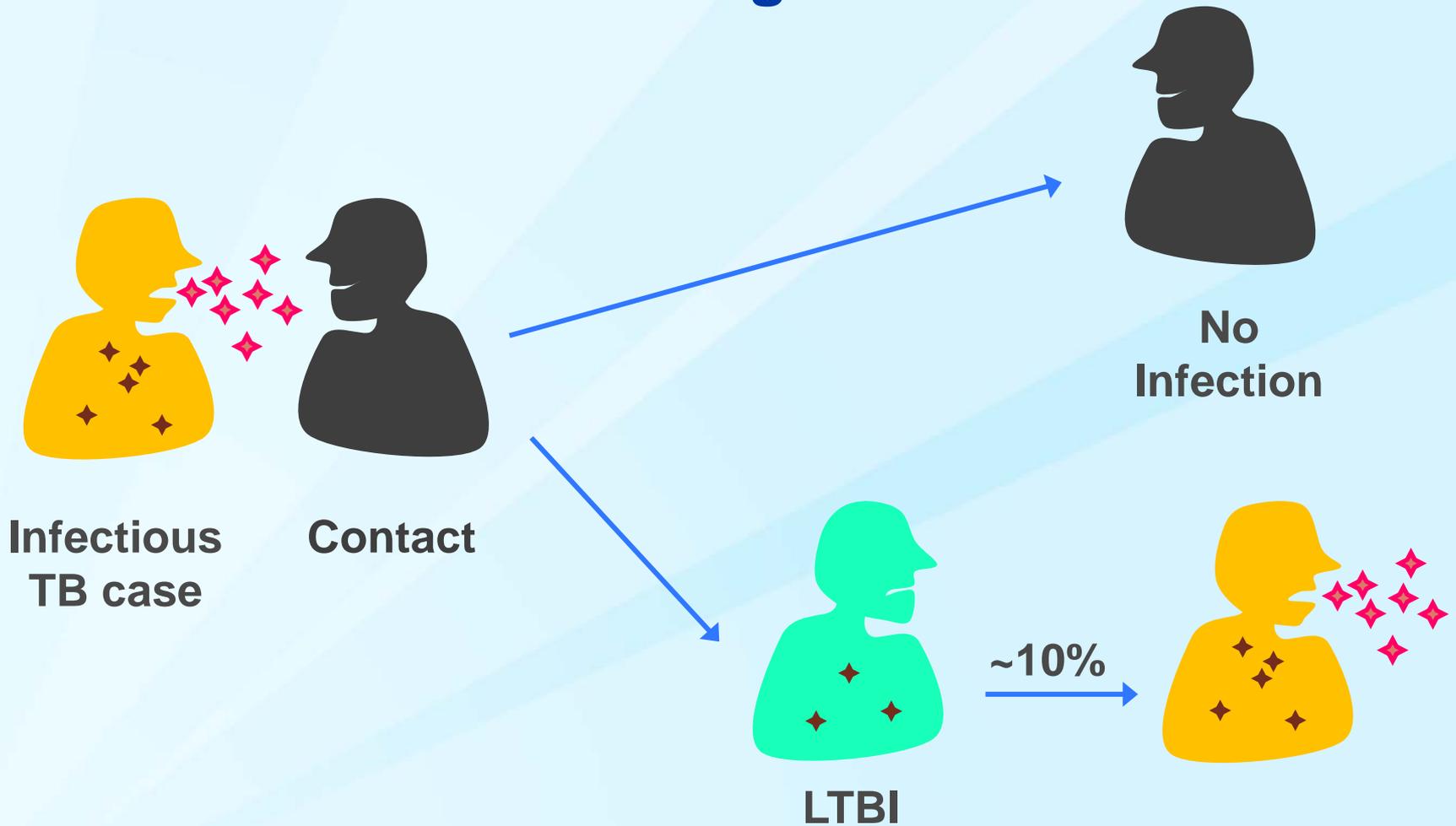
# TB Pathogenesis



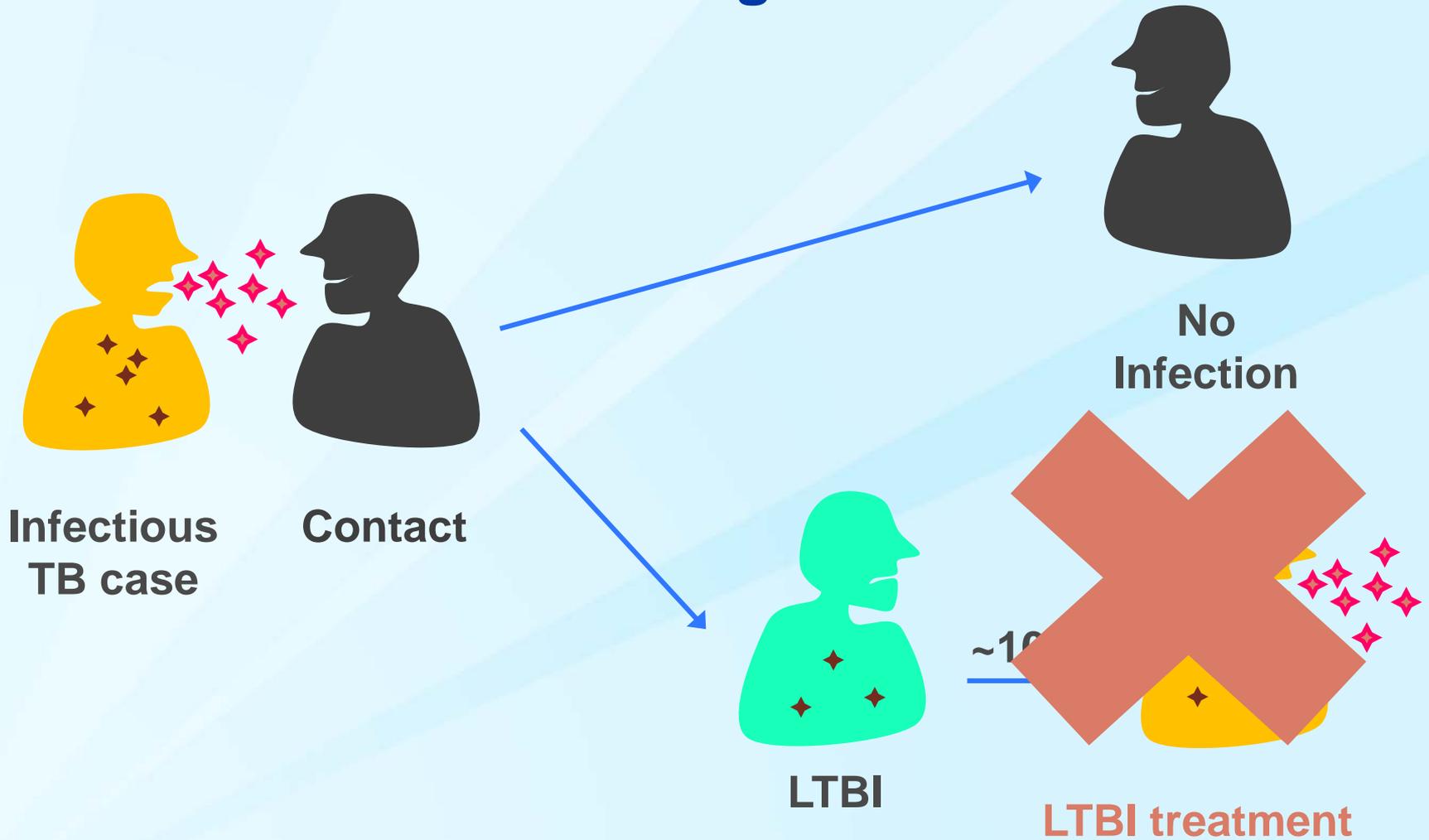
# TB Pathogenesis



# TB Pathogenesis



# TB Pathogenesis



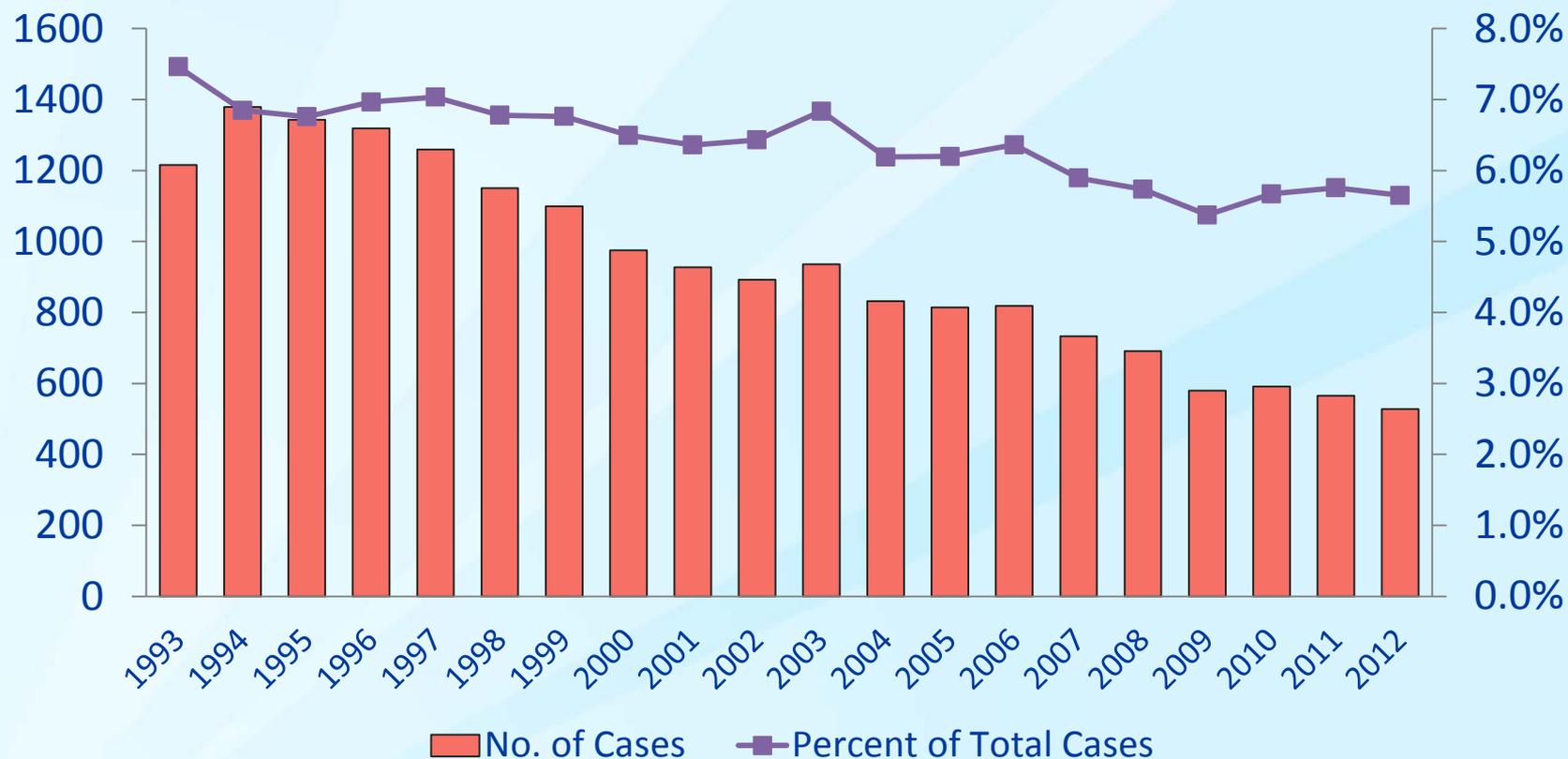
# TB & Homelessness: National Perspective

- **1% of the U.S. population in a given year**
- **Well established association between TB and the homeless**



Photo taken with written consent  
by Isabelle Sanchez

# TB Cases Reported as Homeless in the 12 Months Prior to Diagnosis, Age $\geq 15$ , United States, 1993-2012\*



\*Updated as of June 10, 2013

Note: Homeless within past 12 months of TB diagnosis



## **CDC Experience: TB and Homelessness**

- TB Incidence Rate (homeless): 44 per 100,000**
- U.S. TB Incidence Rate: 4 per 100,000**
- Over half of the patients involved in TB outbreaks investigated by CDC in 2010–2013 were homeless**



Photo taken with written consent  
by Isabelle Sanchez

# TB OUTBREAKS

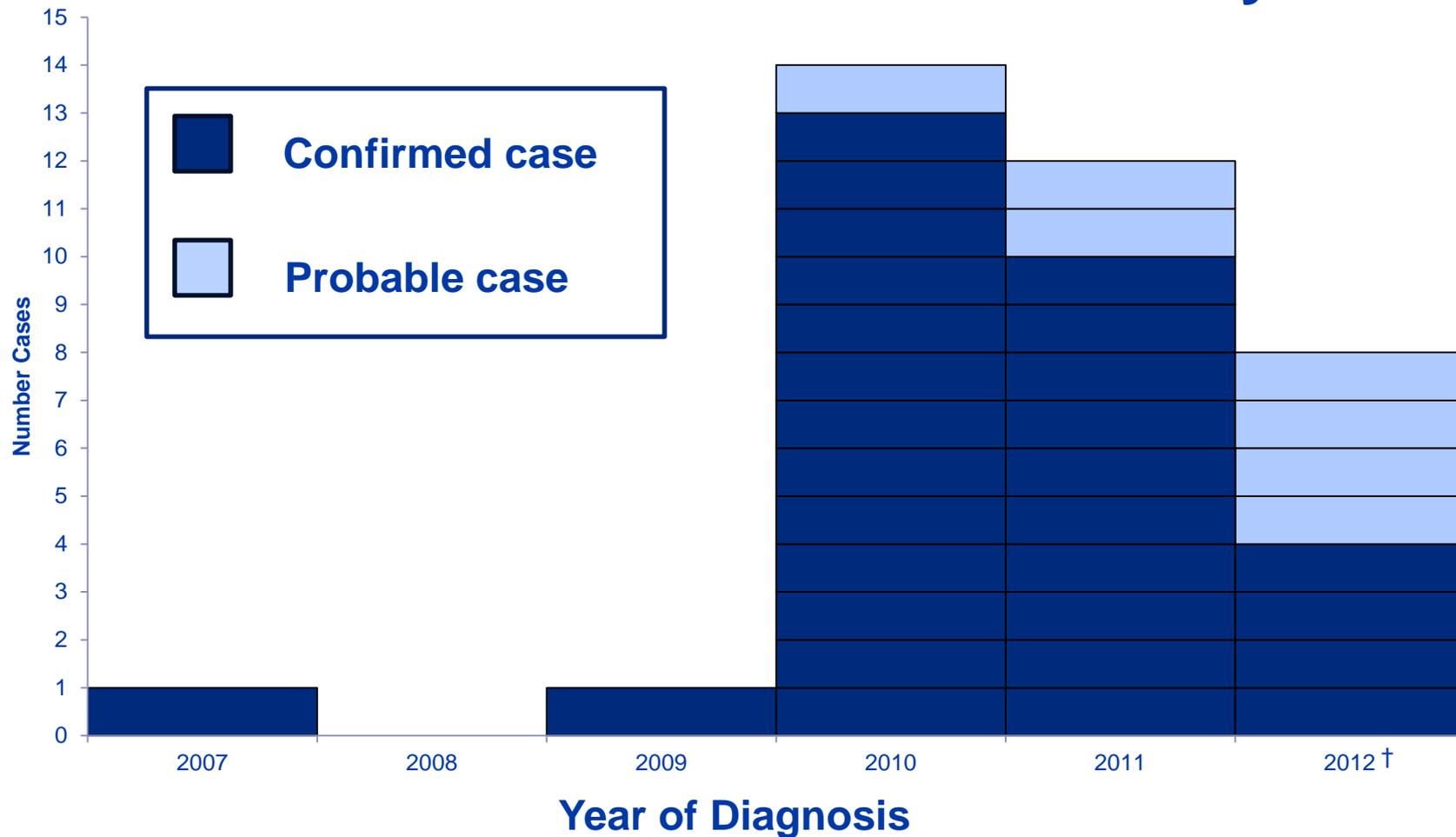
# Outbreak-investigation assistance provided by CDC epidemiologists, 2010–2013



## Comparison of outbreaks, by association with homelessness

Characteristic	Patients predominantly non-homeless (N=14)	>80% patients homeless (N=4)	Total (N=18)
<b>Number of cases investigated</b>	<b>138</b>	<b>233</b>	<b>371</b>
Mean per outbreak	10	58	
Median per outbreak	8	49	
Range	3–28	37–99	
<b>Number of contacts identified</b>	<b>7,888</b>	<b>31,217</b>	<b>39,105</b>
Mean per outbreak	563	7,804	
Median per outbreak	320	5,935	
Range	105–2,493	1,393–17,954	
<b>Corrections, n (%)</b>	<b>3 (23%)</b>	<b>0</b>	<b>3 (18%)</b>
<b>High-incidence jurisdiction, n (%)</b>	<b>0</b>	<b>3 (75%)</b>	<b>3 (24%)</b>

# Example 1: Outbreak Cases — Suburban County A



## **Example 2: Large Outbreak in a High-Incidence Setting**

- ❑ **Approximately 130 TB cases reported as homeless, but 45 cases linked by genotype and epidemiology**
  - Indicating recent transmission
- ❑ **Patients stayed at 10 major shelters while infectious**
- ❑ **Investigation identified 17,954 unique people who stayed at the same shelter overnight with at least 1 infectious case**
  - **Over 4,700 people stayed >30 nights** at the same shelter with at least one infectious case

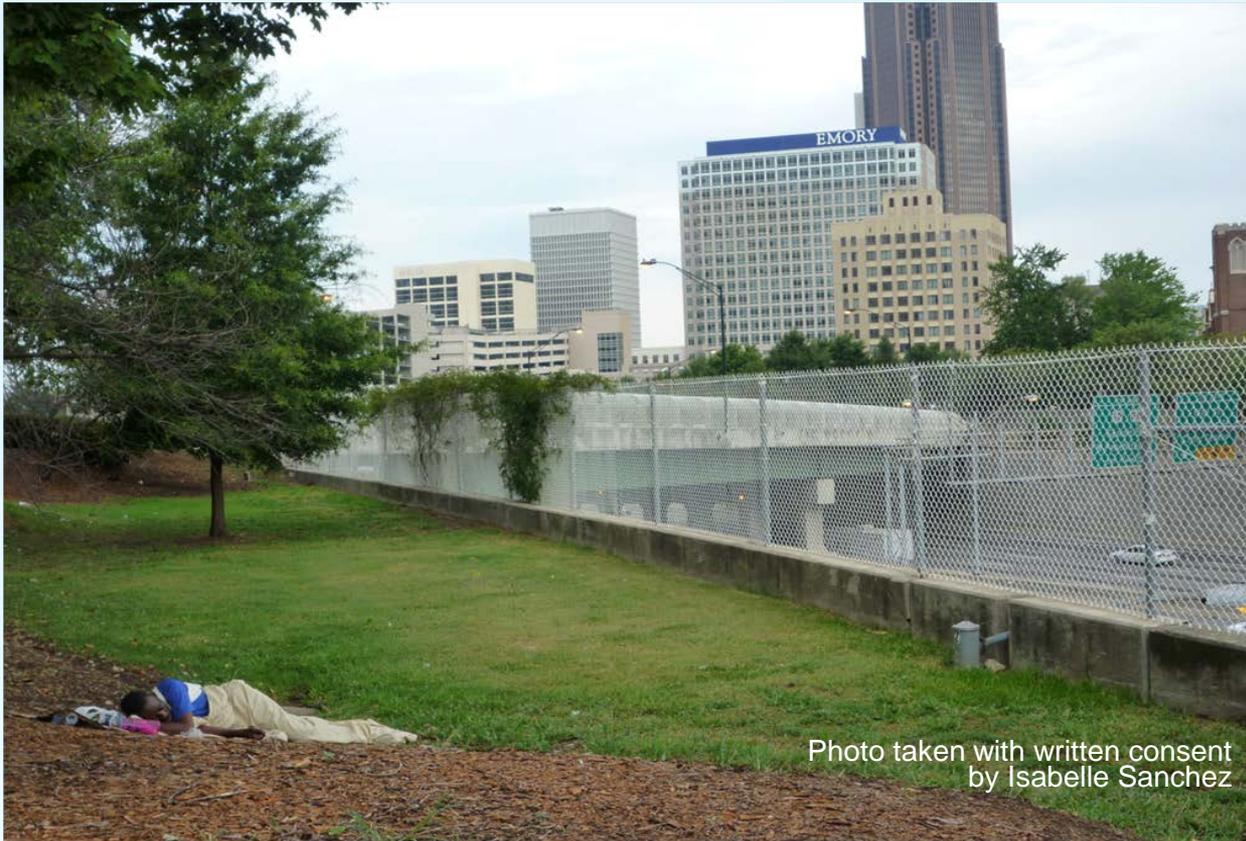


Photo taken with written consent  
by Isabelle Sanchez

# PREVENTING AND TREATING TB

# **Interventions to Address TB among Persons Experiencing Homelessness**

- ❑ **Using location-based contact investigations to supplement traditional name-based contact investigations**
  - Focus on where patients were while contagious
  - Utilize knowledge of shelter staff about social networks
- ❑ **Offering incentives and enablers for TB evaluation or treatment (e.g., housing, food, transportation)**
- ❑ **Engaging partners outside of public health who provide services to persons experiencing homeless**
- ❑ **Providing treatment of TB infection to prevent future cases of TB**

## TB in Shelters

- ❑ **Partnerships between with local TB control program and shelters are essential**
- ❑ **Especially during an outbreak, the TB program might need to work with the shelter to conduct active case-finding for TB at the shelter**
  - Resource-intensive
  - Challenging to obtain political will
  - Plan for housing and treatment needs to be in place
- ❑ **Some shelters have feared stigmatization, but needs to be balanced with obligation to inform shelter staff, clients, and volunteers about their risk of TB**

# **Administrative Controls to Prevent and Control TB Transmission**

## **□ Administrative controls**

- Cough monitor (requires training)
- Attendance logs & bed maps
- Symptom screening upon intake (requires training)
- Establishing timely referral procedures
- Routine screening for TB for clients & staff

## **□ National Health Care for the Homeless (NHCHC) offers assistance**

- Technical assistance can be requested ([nhchc.org](http://nhchc.org))

## **□ Health Resources and Services Administration (HRSA) funds Health Care for the Homeless (HCH) clinics, which have assisted TB programs with TB screening in shelters**

# Housing First Programs

- ❑ **Housing first programs:** an immediate and primary focus on helping individuals and families quickly access and sustain permanent housing
- ❑ **TB outcomes have never been studied in housing first programs**
- ❑ **Housing first programs have demonstrated**
  - Improved HIV treatment adherence
  - Improved overall health outcomes
  - Cost savings
  - Improved patient experience
- ❑ **Local TB programs identify and help provide housing assistance during intensive phase of treatment**

# Acknowledgments

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.