

## Pediatric Tuberculosis

Brian Lee, M.D.  
Charlotte Hsieh, M.D.  
Pediatric Tuberculosis Program  
Children's Hospital & Research Center at  
Oakland

---

---

---


---

---

---

---

---



### Overview

- Significance of TB infection/disease among children
  - Public health standpoint
  - Individual health standpoint
- 4 case examples & lessons learned

---

---

---


---

---

---

---

---



### Pediatric TB = Primary Infection

- Children generally develop primary tuberculosis infection and disease (not reactivation disease)
  - AFB load is low (low infectivity, low yield on AFB cultures)
  - Clinical/radiographic findings often due to immune response

---

---

---

---

---

---

---

---



### Public Health Standpoint: Pediatric TB = Sentinel Event

- Active TB or PPD skin test conversion in a young child represents recent infection and therefore active transmission in the community (usually due to a contagious adult)

---

---

---

---

---

---

---

---



### Response: We need to find the contagious adult!

- Source case investigation when active TB is identified in a child
- Associate investigation whenever:
  - Positive PPD in child <5 years of age
  - PPD skin conversion in a child

---

---

---

---

---

---

---

---



### Individual Health Standpoint: High Risk of Active Tuberculosis

| Age                  | Approximate Risk of Active TB |
|----------------------|-------------------------------|
| Healthy adults:      | 5-10% (lifetime risk)         |
| Children:            |                               |
| ▪ Birth to 12 months | 43%*                          |
| ▪ 1-5 years          | 24%                           |
| ▪ 6-10 years         | 25%                           |
| ▪ Adolescents        | 16%                           |

Risk is greatest in the first 2 years after infection

\* Risk of segmental lesion on CXR

---

---

---

---

---

---

---

---



Response: We need to find and treat latent TB infection in children!

- Treatment of infected children identified via contact investigation of an active TB case
- Treatment of infected children identified by targeted screening

---

---

---

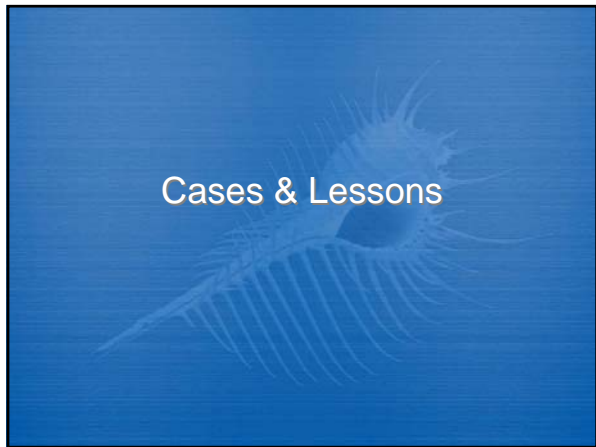
---

---

---

---

---



## Cases & Lessons

---

---

---

---

---

---

---

---



## Case #1: Notes

---

---

---

---

---

---

---

---



### Case #1: Lessons

- A single child with recent TB infection or disease may be the tip of a large iceberg (SENTINEL EVENT)
- Public health department plays a vital role in finding the TB source case and contacts

---

---

---

---

---

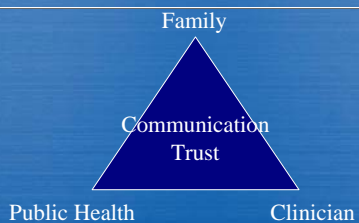
---

---

---



### Eradication of TB: A Team Effort



---

---

---

---

---

---

---

---



### Case #2: Notes

---

---

---

---

---

---

---

---



### Case #2: Lessons

- Important to screen family members (associate investigation) when a child is found to have latent tuberculosis infection
- Sister's active TB and father's TB disease were discovered by thorough evaluation of family members

---

---

---

---

---

---

---

---



### Case #3: Notes

---

---

---

---

---

---

---

---



### Case #3: Lessons

- Contact investigation must include persons who may have resided in the household of an active case during the time he/she was contagious, even if not currently a household member
- Cannot limit contact investigation to immediate family members of index case
- Contacts can travel between counties, so cooperation in investigation is critical

---

---

---


---

---

---

---

---



### Case #4: Notes

---

---

---

---


---

---

---

---

---



### Case #4: Lessons

- Contact investigation is a dynamic process, requiring constant reassessment
- Often there is more than one chance to catch a problem - try not to be the second person to drop the ball

---

---

---

---

---

---

---

---