

RETHINKING TB CONTACT INVESTIGATIONS: THE ROLE OF TRUST, COMMUNITY, AND INNOVATION

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Biography

- **Jessica Elofson** is a Public Health Nurse for Nicollet County and has been working in Infectious Disease and Emergency Preparedness in South Central Minnesota for over 18 years. She is completing her Master's in Public Health from the University of Minnesota this summer and has provided TB education in a variety of settings. She has extensive experience with TB nursing case management and TB contact investigations, and her work in TB cultural competency was highlighted in the Rutgers Global Tuberculosis Institute Newsletter in 2017.
- **Chelsea Hunstad** is a Public Health Nurse with over 10 years of experience at Blue Earth County. Her work has focused on Disease Prevention and Control and Emergency Preparedness, where she has played a key role in managing public health responses. Chelsea has extensive expertise in tuberculosis (TB) case management and has been apart of numerous contact investigations, contributing to the health and safety of the community.

Learning Objectives

Identify key strategies for managing limited resources during contact investigations

Leveraging partnerships in TB contact investigations

Discover innovative approaches for large TB contact investigations

Blue Earth County TB Program

- Population 67,000 ~ Mankato = 45,000
- Active TB Cases: 1-3 per year
- Latent TB Cases: 10-20 average
- Staffing:
 - 1 PHN- Disease Prevention & Control and Emergency Preparedness Coordinator
 - 2 PHN- trained for “backup” for LTBI, DOT, Contact Investigations



<https://www.mncourts.gov/Find-Courts/blueearth.aspx>

Medical Services in the Mankato area

- Hospitals
 - Mayo Clinic Health System
 - 240 patient beds
 - Regional hospital
- Clinics
 - Mankato Clinic
 - 6 satellite locations
 - 2 Urgent Care locations
 - Mayo Clinic
 - 4 satellite locations
 - 2 Urgent Care
 - Infectious Disease Clinic
- Federally Qualified Health Center (FQHC)
 - Open Door Health Center

Minnesota State University, Mankato

- Population 15,000 students + 2,000 faculty & staff
- International Student Population in 2019
 - 1,327 students from 97 countries
- Student Health Services
 - Pharmacy
 - Health Education
 - Medical Clinic
 - International Student Health Insurance
- TB testing required for all incoming International Students



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January 2018: Case #1

- 23 y/o male MSU student from Ivory Coast
- Emergency Department- cough & fevers x 2 weeks, fatigue, hemoptysis episode
- IGRA +, cavitary chest X-ray, sputum smear 2+, rtPCR +*M.tb*
- Culture +*M.tb*, pan-sensitive
- Influenza +
- Positive TST in 2015 - declined LTBI treatment

Case #1: Contact Investigation

- Infectious Period ~ 3 months
- Total contacts = 55
 - Household contacts = 3 (2 adult siblings, 1 infant)
 - Social contacts = 6 (soccer)
 - Classroom contacts = 46
- Challenges: poor response rate (<50%), inadequate contact information
- Results:
 - 3 new LTBI
 - Infant fully evaluated and ruled out active TB, treated for LTBI

April 2018: Case #2

- 16 y/o female high school student, U.S. Born
- Extrapulmonary- enlarged inguinal lymph node, weight loss
- Aspirate smear +, rtPCR +*M.tb*
- Culture +*M.tb*, pan-sensitive
- No known exposure to active TB, no travel
- Social challenges- drug & alcohol use, high risk sexual behaviors
- ***Where did this TB come from?***

May 2018: Case #3

- 21 y/o male, U.S. born
- Urgent Care in Dakota county: cough, fever, night sweats, weight loss x 2 months
- IGRA+, cavitory chest X-ray, sputum smear 3+, rtPCR +*M.tb*
- Culture +*M.tb*, pan-sensitive
- No known exposure to active TB, no travel
- Recent MSU graduate!!!!
- ***Where did this TB come from?***

Case #3: Contact Investigation

- Infectious Period ~ 5 months
- Dakota and Blue Earth County Collaboration- face to face interview
- Total contacts = 123
 - Workplace contacts = 26
 - Classroom contacts = 94
 - Household = 3
- Challenges: no identifying information for roommates
- ***Reports 1 roommate has constant cough!***

June 2018: Case #4

- 23 y/o male MSU student from Ivory Coast
- Cough & shortness of breath for several months
- IGRA +, cavitory chest X-ray & CT Scan, sputum smear 4+, rtPCR +*M.tb*
- Culture +*M.tb*, pan-sensitive
- Arrived in U.S. August 2016, MSU student: IGRA negative
- Medical Record review- *first incidence of symptoms Nov 2016*

Case #4: Contact Investigation

- Infectious Period 2 years
- Total Contacts = 393
 - Roommates = 7 (total 2016 – 2018)
 - ✓ Case #3 epi-link
 - Social & Soccer = 6 (expanded to 65+)
 - ✓ Case #1 epi-link
 - Workplace = 1
 - Classroom = 364
 - Law Enforcement & Jail = 12
 - Health Care Facilities = 3

Leveraging Partnerships

- 3 connected cases=outbreak
- 2 simultaneous contact investigations (Case #3 and #4)
- Healthcare coalition briefing
 - Healthcare partners
 - University partners
 - Minnesota Department of Health
 - Public Information Representatives (All partners)
- Response Objectives:
 - Situational awareness
 - Coordination of resources
 - Streamline communications

Innovative Strategies

Challenges	Strategies
Prioritizing > 500 contacts	Evaluations at MSU Health Services
Private Healthcare only	TST offered by Public Health
College student communication style and summer break	Phone calls, text messages, MSU Secure Message, Mail letters
Data Management	Excel Spreadsheet ->Redcap Outlook Calendar Interjurisdictional notifications
High potential for additional cases	CDC consultation- whole genome sequencing
High Conversion rates among social contacts	Allowed self referrals

Progress: 6 Months of Response

Updates

- Case #2 linked (16-year-old)
- High rates of transmission Case #4
- Registration holds improved response rates

New Cases

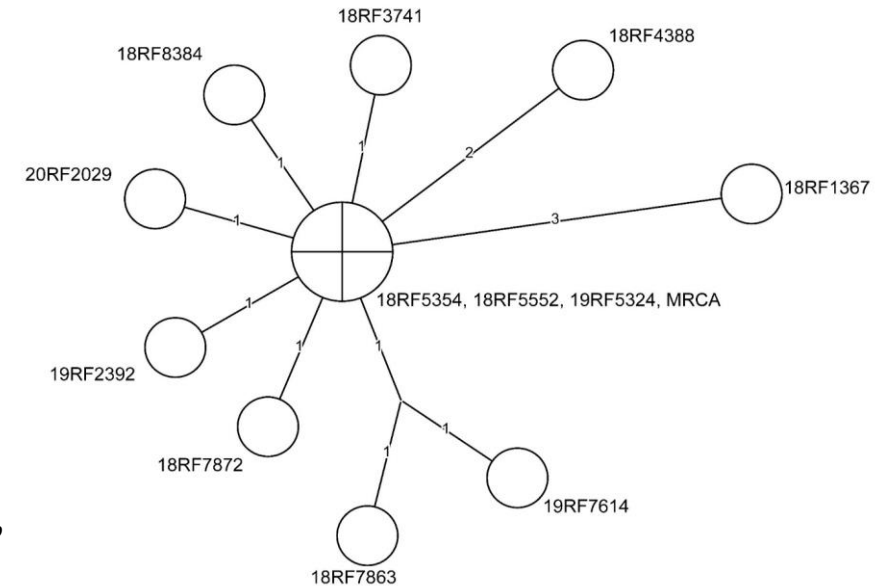
- 3 additional cases-total of 7
- CDC Whole Genome Sequencing
- LTBI Treatment Regimen, 12-week INH + RPT

Medical Providers on high alert

- Increase of probable case reporting to LPH
- Continued conference calls
- Health Alert Network sent to Minnesota and surrounding states

Outbreak Summary

- 12 cases in the Blue Earth WGS cluster
- 10 from MN and one each from WI and NJ
- Average age 22, range from 16 – 28 years
- 6 males, 6 females
- 5 cases have epi-links
 - 9 = pulmonary
 - 1 = lymph node
 - 1 = spinal
 - 1 = pleural & pulmonary
- 7 are U.S. born, 3 Ivory Coast, Nigeria, 1 China



Contact Investigation Summary

Contact Investigation	Total # Contacts	Fully Evaluated	New/Untreated LTBI	Active/Clinical Case
Case #1	55	51%	3	0
Case #3	123	71%	5	1 Active (Case #4)
Case #4	515	72%	55	1 Active (Case #6) 1 Clinical (Social Contact) 1 Clinical (Roommate)
Case #6	13	84%	0	0
Case #7	81	97%	2	0
Case #10	146	77%	2	0
Case #11	41	75%	2	0
Total for Outbreak	974	75%	69	3 Active Cases

Ongoing Partner Engagement

- All local healthcare providers
 - Strengthened and expanded relationships with healthcare partners
 - Provider education
 - Open communication line for questions
- Infectious Disease Team
 - Team based approach for new probable TB cases
 - Public Health attends initial ID clinic visit
 - Expanded consultation between public health and ID
- Healthcare coalition
 - Role of coalition is better defined
 - Immediate partner buy-in through coalition engagement
 - Communication streamlined quickly

Recap

Limited Resources: optimize resources by prioritizing high-risk contacts, utilizing technology, and streamlining investigations processes

Leveraging Partnerships: collaborations with community partners by working together to expand our reach and effectiveness in identifying and managing cases

Innovative approaches: mobile clinic tools, and targeted outreach strategies to ensure timely and efficient case management

Questions?

Managing TB contact investigations is an ongoing challenge, but with the right strategies, collaborations, and innovations, you can make a significant impact.

Building Trust, Delivering Impact