



Public Health

TB Outbreak in a Low Incidence Setting

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Wellington-Dufferin-Guelph Public Health

- Southwestern Ontario, Canada
- Serves a population of 254,861
- Mix of rural and urban:
 - 2 counties (small towns, rural farming communities)
 - 1 city (114,000)
- TB incidence (2005-2011): **2.1 per 100,000**

Outbreak Setting

- Long-term care (LTC) facility in rural community
 - 67 LTC beds
 - 54 retirement home (RH) beds
- Community population
= 2600



Current Investigation Summary

- 5 confirmed active cases
- All sensitive to first line therapy
- All 5 genetically linked – and unique in PHL database, lineage European-American
- 4 of 5 active cases have died
- 28 new latent infections (11 LTC residents, 6 RH residents, 11 staff)

Investigation

- Each case contact follow-up included staff, residents, volunteers, and family
 - Also staff who quit, residents who moved, and external agencies
- Testing began 8-12 weeks post-exposure
- Follow up for LTBI: CXR, MD assess, ? signs and symptoms, sputum samples

Investigation

- All residents are under heightened surveillance for 2 years post-exposure to the last active case
- Symptoms
- Chest x-rays

TB Skin Test Clinics

- July, 2010
- August, 2010
- October, 2010
- January, 2011
- January, 2012
- June, 2012

Respirologist Clinics

- August 13, 2010 – resident TB clinic on-site
- September 17, 2010 – staff TB clinic off-site
- March, 2011 – resident TB clinic on-site
- LTBI treatment initiated where indicated

Case #1 Identified – May, 2010

- Laboratory-confirmed case of TB was reported in a HCW and linked to the long-term care home
- Smear negative, culture positive
- The case was followed by Public Health and received treatment for 9 months

Case #2 Identified – August, 2010

- Resident, LTC side
- Smear negative and culture + ***Mycobacterium Tuberculosis (MTB)***
- Removed from facility

Case #3 Identified – October, 2010

- Female resident, LTC
- To hospital for negative pressure
- No sputum samples – bronchoscopy – smear Negative; **culture + MTB**

Case #4 Identified – October, 2010

- Male resident, LTC side
- Sputum – smear negative, culture + **MTB**

October 25, 2010 – Declared Outbreak

- “During (and because of) a contact investigation, two or more *contacts* are identified as having active TB, regardless of their assigned (contact investigation) priority;...”

Canadian TB Standards, 6th Edition, 2007. p.268.

Control Measures

- Closed to admissions
- Resident transfers to other facilities authorized by Public Health
- Children younger than 5 years old restricted from visiting inside the facility
- **All** residents in facility had CXR in October/November
- CT scan of all abnormal CXRs

Control Measures

- MD assessment and isolation on any individual with a positive skin test or who is immunocompromised and develops symptoms consistent with active TB
- Request air exchanges to increase to 6 per hour – facility not able to do this

Outbreak Declared Over

- November 19, 2010 – Outbreak declared over
- Rationale:
 - Active or probable cases removed
 - Intensive screening
 - Treatment offered
 - Education

Ongoing Follow-up – January, 2011

- January, 2011 – TST clinics for ALL residents, staff, family, volunteers
- 5 new positive TST in RH
- 5 with Nontuberculous mycobacteria (NTM)
- 3 new positive TST in LTC side
- Respirologist clinic March, 2011 – no LTBI prophylaxis started

January, 2012

- TST clinic for ALL residents, staff, and volunteers
- Intended as a final screen one year later
- 2 new positive TST residents
- 2 new positive TST staff (other risk factors)

2012 Follow-up – 1st Resident

- Female resident on RH
 - Plan to follow with surveillance of signs and symptoms and CXRY

2012 Follow up – 2nd Resident

- Female on LTC
- 2010:
 - TST 0 mm
 - Sputum x2 culture negative

Case #5 – March, 2012

- **Culture + MTB**

Surveillance – March, 2012

- Chart review completed for all residents with LTBI, NMTB, concerning radiology (33)
- Sputum samples requested for these residents as well; able to obtain 19

June, 2012 Follow-up

- TST clinic for ALL residents, staff, and volunteers
- Contact tracing for family of case
- One new positive TST– other risk factors

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Treatment Summary – 5 Cases

- 4 residents, age range 83 to 97:
 - All received INH, Rifampin, vitamin B6
 - 1 received Ethambutol; 1 received Pyrazinamide; 1 received both
 - None completed treatment (all died)
 - 1 case INH hepatitis
 - TB contributing factor on all 4 death certificates
- 1 staff member completed treatment uneventfully

Public Health Interventions

- Isolation in negative pressure
- Sputum samples or bronchoscopy
- TSTs, CXRs, CT scans
- Respiriologist clinic in community and at facility
- Consultations with TB experts
- HEPA-UV filter

Public Health Interventions

- Information/education sessions
- Town hall meeting for community
- Media releases
- Physician advisories
- Physician – expert speaker (Dr. Rea)
- Weekly teleconferencing with the local hospitals

Challenges for Public Health

- Screening
- Unknowns – lack of guidelines
- Staffing resources
- Diagnostics-difficult to obtain sputums
 - Elderly do not have classic signs & symptoms
- Transporting residents
- Accessibility of respirologists and/or TB experts

Challenges for Public Health

- Many residents with cough or “bad” CXRs
- Different outbreaks related to influenza, RSV, rhinovirus, and coronavirus
- Poor tolerance of drugs
- Small rural community – confidentiality

Challenges for Facility

- Financial implications
- Stigma
- Stress of the staff member
- Stress in community, family, and friends
- Isolation of residents

Lessons Learned

- Communication
- Outbreak management response
- Documentation
- TB screening requirements for LTC and RH facilities
 - World TB Day 2011- all LTC and RH staff in WDG area had training on TST techniques.
 - Resources-Poster ,DVD by RICN, calipers

Summary

- No active TB identified in visitors, family contacts, or residents of the residential home
- Source case never confirmed, but suspected
- Active surveillance continues at the facility
- iPHIS data entry enormous – each case had 240-300 contacts
- WDG completed over 850 TSTs at this facility
- TSTs to be done again June, 2013

References and Acknowledgements

- CID Team, Wellington-Dufferin-Guelph Public Health
- Dr. Nicola Mercer, Medical Officer of Health, Wellington-Dufferin-Guelph Public Health
- Royal Terrace Long-term Care and Retirement Home
- Ministry of Health and Long-Term Care
- Canadian TB Standards, 6th Edition, 2007
- Public Health Lab, Public Health Ontario



Public Health

QUESTIONS?

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