TB and Air Travel

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Great Lakes Border Health Initiative
July 9-10, 2008
Outline

• Transmission of TB on airline flights

• WHO TB and Air Travel Guidelines

• The Canadian experience

• Challenges, partnerships and collaboration
Agent - aerosolized M. tuberculosis

Host - passengers (and crew?)

Environment - aircraft cabin

Potential but low risk - flights of 8 hours or longer

- Aerosolized TB bacteria from infectious case
  - Smear and culture status
  - Treatment status
  - Cavitary lesions on x-ray
  - Site of disease
  - Documented transmission
Agent – WHO Guidelines

- Infectious
- Potentially infectious
- Non-infectious
  - MDR/XDR need two negative cultures
Hosts

- Proximity to the index case
  - Passengers near by
  - Crew (no longer contacts)

- Five rows (usually)
  - Case’s row
  - Two rows ahead of case
  - Two rows behind case

- (Susceptibility)

Environment

- Duration of exposure

- Cabin air quality
  - Down and to the side walls
  - ~20 air exchanges per hour
  - High-efficiency particulate air (HEPA) filters
  - No increased risk of transmission
The Canadian Experience
Canadian Guidelines

- Follow-up regardless of time from flight to notification
- Follow-up regardless of flight duration if MDR or laryngeal TB
- Definition of non-infectious

Investigation Process

- Diagnosis, travel history
- Reporting form
- Review and risk assessment
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Investigation Process

- Notification
  - Quarantine (PHAC), airline
  - International partners - determine roles

- Obtain necessary contact information
  - Manifest, PNRs, frequent flyer info, customs declaration cards, passports

- Notifications of jurisdictions regarding passenger contacts

- Obtain results of contact assessments if available

Flight info
Case information
Infectiousness
Drug Sensitivities
Flight Risk
Canadian Experience

- Summary of files 2006 to 2007

- 53 cases of TB
  - Male, foreign-born, median 45 years old
  - Most moderately to highly infectious
    \[(≥ AFB 3+ and cavitary)\]

- Three drug-resistant (two MDR)

- Number of notifications increasing

Challenges
Challenges to Investigation

• Diagnosing country and country of flight arrival are different

Example:

- Origin Country: 12 hour flight
- Transit Country: 3 hour flight
- Diagnosing Country

• More than one country of destination for at-risk flights

Challenges to Investigation

• Airline not based in country of diagnosis

• One country involved has national guidelines that differ from WHO or another country
  - More stringent than WHO
  - Procedures differ
• Criteria for follow-up unclear
• Lacked guidance on collaboration responsibilities

• Clarifies threshold criteria for follow-up
• Clarifies roles, responsibilities and process of collaboration
• Stipulate that national guidelines be used where available
Other issues

• Preventing travel by infectious persons
  – Prevent travel before it happens!
  – If case is abroad, ensure assessment and treatment before return travel

• Suspect cases

• Waiting for culture and drug sensitivities

• Need for rapid communication of information

Partners and Collaboration

• Local, provincial/state public health
• Quarantine Services, PHAC
• Airlines
• Canadian Border Services Agency
• Passport Office – Foreign Affairs
• CDC Quarantine Service
• International TB Programs
Conclusions

• Small but potential risk of transmission

• Updated WHO guidelines provide clarification

• Collaboration between partners including local, provincial, federal and international jurisdictions is critical

• Number (and complexity) of investigations to increase
www.publichealth.gc.ca/tuberculosis
www.santepublique.gc.ca/tuberculose