Best Practices in TB Control

TB Among the Homeless: Dealing with Unique Challenges

February 7, 2012

Sponsored by the New Jersey Medical School
Global Tuberculosis Institute

Objectives

Upon completion of this seminar, participants will be able to:

• Describe the extent of homelessness as a social problem in the US
• Discuss the burden of TB among the homeless population
• Outline effective strategies for prevention and treatment of TB among homeless persons and their contacts
• Discuss how health departments and homeless services agencies can work as partners to coordinate clinical care and contact investigations to effectively prevent TB
Faculty (1)

**Bill L. Bower, MPH**
Director of Education and Training, Charles P. Felton National TB Center at Harlem Hospital
Assistant Clinical Professor, Heilbrunn Department of Population & Family Health, Mailman School of Public Health, Columbia University

**James J. O’Connell, MD**
President
Boston Health Care for the Homeless Program

Faculty (2)

**Dean Carpenter, MSN, FNP-BC**
Neighborhood Service Organization
Tumaini Center, Detroit

**Monica Heltz, RN, MPH**
TB Program Coordinator
Marion Country Public Health Department, Indianapolis
Polling Question

• Approximately how many homeless clients with TB disease does your program see each year?
  – 0
  – 1-10
  – 11-20
  – >20

Homelessness in the US and the Connections Between Homelessness and TB

James J. O’Connell, MD
Boston Health Care for the Homeless Program
February 7, 2012
HUD Definition of Homelessness
December 5, 2011

(1) Individuals and families who lack a fixed, regular, and adequate nighttime residence and includes a subset for an individual who resided in an emergency shelter or a place not meant for human habitation and who is exiting an institution where he or she temporarily resided (90 days now rather than 30);

(2) individuals and families who will imminently (within 14 days) lose their primary nighttime residence (home, motel, hotel, doubled up);

(3) unaccompanied youth and families with children and youth who are defined as homeless under other federal statutes who do not otherwise qualify as homeless under this definition (new category: no lease or ownership within 60 days, or have had 2 or more moves in last 60 days, and who are likely to continue to be unstably housed because of disability or multiple barriers to employment); and

(4) individuals and families who are fleeing, or are attempting to flee, domestic violence, dating violence, sexual assault, stalking, or other dangerous or life-threatening conditions that relate to violence against the individual or a family member.

Source: Federal Register, 2011

Homeless Persons Point in Time Count 2010

<table>
<thead>
<tr>
<th>Household Type</th>
<th>Number</th>
<th>% of All Homeless Persons</th>
<th>% of Subcategory</th>
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<tbody>
<tr>
<td>Total People</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheltered</td>
<td>403,543</td>
<td>62.1%</td>
<td></td>
</tr>
<tr>
<td>Unsheltered</td>
<td>240,374</td>
<td>37.9%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>644,917</td>
<td>100.0%</td>
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<table>
<thead>
<tr>
<th>Individuals</th>
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<tr>
<td>Sheltered</td>
<td>212,218</td>
<td>32.7%</td>
<td>52.0%</td>
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<tr>
<td>Unsheltered</td>
<td>195,748</td>
<td>30.1%</td>
<td>48.0%</td>
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<tr>
<td>Total</td>
<td>407,966</td>
<td>62.8%</td>
<td>100.0%</td>
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<table>
<thead>
<tr>
<th>Persons in Families</th>
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<tbody>
<tr>
<td>Sheltered</td>
<td>191,325</td>
<td>29.4%</td>
<td>79.1%</td>
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<tr>
<td>Unsheltered</td>
<td>50,626</td>
<td>7.8%</td>
<td>20.9%</td>
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<tr>
<td>Total</td>
<td>241,951</td>
<td>37.2%</td>
<td>100.0%</td>
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<table>
<thead>
<tr>
<th>Family Households</th>
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<tbody>
<tr>
<td>Sheltered</td>
<td>62,305</td>
<td>-</td>
<td>78.4%</td>
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<tr>
<td>Unsheltered</td>
<td>17,141</td>
<td>-</td>
<td>21.6%</td>
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<tr>
<td>Total</td>
<td>79,446</td>
<td>-</td>
<td>100.0%</td>
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</tbody>
</table>

* The sheltered homeless count includes people using safe havens.

* Individuals includes persons in households without children and persons in households with only children.

Source: 2010 Continuum of Care Applications, Exhibit 1, CoC Point-in-Time Homeless Population and Subpopulations
Cluster Distributions: Persons and Shelter Days Consumed
(Single Adults in Philadelphia)
Characteristics of Outbreaks

• Lax screening policies at shelters
• Unrecognized infectious cases
• Mobility of guests between shelters and other facilities (jails) and jurisdictions (NY)
• Inability to provide preventive treatment to high-risk, infected persons (contacts)
• High costs of screening and follow-up
  – Personal costs: *TB morbidity*
  – Actual screening costs: *Dollars*
    » NY 1,093 contacts; 4 cases found
    » ME 1,069 contacts; 0 cases found
    » WA 471 contacts (+ intensified screening); 11 cases found
TB and Homelessness in Boston

- Tuberculosis (TB) among homeless persons traditionally is a great public health concern
- Boston’s Pine Street Inn (PSI) shelter has been the center of several TB outbreaks
  - Outbreak in mid-1970’s triggered Public Health Nurse intervention: on-site clinical TB services
  - Following a 2nd outbreak, with a peak incidence of 29 cases of active disease in 1990, rates have declined to approximately 4-8 annually
  - A recent one-year increase (15 Boston cases in 2000) likely represented coincident reactivation of latent infection
    - 11/15 similar RFLP; no epi contacts
- Targeted Public Health Intervention:
  - Increased surveillance
  - Development of a specialized, public health TB clinic at Pine Street

- from John Bernardo, MD
Drug-Resistant Tuberculosis among the Homeless — Boston

In the period February 1984-March 1985, 22 confirmed cases of tuberculosis (TB) were reported among homeless people in Boston (Figure 1). All 22 cases have been associated with drug-resistant strains. The estimated total population of homeless people in Boston is 6,000. None of the 22 cases were counted in 1984; this represents an incidence of 316.7 per 100,000, a greater than fourfold increase over the 1983 case rate of approximately 60.0/100,000. By comparison, the TB case rate for the rest of Boston in 1984 was 18.2/100,000, and the rate for Massachusetts excluding Boston was 6.9/100,000.

The outbreak was recognized because of reports among the homeless of a number of TB cases due to multidrug-resistant organisms. A week of intensive intervention, including a screening program using Mantoux tuberculin skin tests, chest roentgenograms, and sputum examinations was started.

FIGURE 1. Reported laboratory cases among homeless persons, by month of report — Boston, Massachusetts, 1984-1985

*isoniazid and streptomycin resistant.
HEPA Filter, Lobby, Pine Street Inn
Tuberculosis in Boston 1984-2006

Number of Cases

Year


Homeless  Non-Homeless

• Bi-Weekly TB clinic staffed with 2 TB Providers – Pulmonologist – Nurse Practitioner
• Patients referred primarily by nurses – Based on +PPD status and/or assessment of respiratory symptoms and “cough log”
• Radiology/Laboratory services available on-site
• Electronic Medical Record: BHCHP
References

  – http://www.cdc.gov/mmwr/preview/mmwrhtml/00000578.htm
  – http://repository.upenn.edu/cgi/viewcontent.cgi?article=1069&context=spp_papers
NSO SERVICES

- Substance Abuse Treatment and Prevention Services
- Older Adult Service
- Emergency Telephone Service
- Harper-Gratiot Multi-Service Center
  - Food bank
  - Clothing
  - Utilities
- Youth Initiative Project
- Gambling Addiction Treatment
- Employment Training Services
- Life Choices (developmental disabilities)
- Homeless Services
  - Supportive Housing
  - Road Home
  - Tumaini Center
BELL BUILDING

- 155 One-bedroom apts
- NSO Corporate HQ
- FQHC
- Laundry
- Chapel
- Walk-out gardens

ROAD HOME

Outreach Homeless Services – seen here supporting Occupy Detroit at Grand Circus Park
NSO TUMAINI CENTER

Source: MSU “Spartan Sagas” 2011

The shelter of last resort in the Cass Corridor

SCOPE OF THE PROBLEM

Source: Huffington Post, 2009

• Estimated 19,000 homeless in Detroit
• Unemployment rate 27% (officially)
• Jobless rate near 50%
• 17 FQHC’s, no public hospital
DETROIT'S HOMELESS ARE DISPERSED

Comparing Detroit to three other major cities

SAN FRANCISCO
Population: 795,682
Square-mile area: 48.49

BOSTON
Population: 631,416
Square-mile area: 48.43

MANHATTAN
Population: 1,537,195
Square-mile area: 22.96

DETROIT
Population: 933,043
Square-mile area: 138.77

BOSTON, MANHATTAN, SAN FRANCISCO
TOTALS
Population: 2,870,493
Square-mile area: 118.38

Source: University of Detroit Mercy

Source: City Farmer News, 2008

DETROIT'S HOMELESS ARE WELL HIDDEN

Estimated 12,000-20,000 abandoned houses

Source: Themassesareangry.blogspot.com
## DETROIT’S HOMELESS ARE VULNERABLE

### Vulnerability Index:
Homeless Death Prevention Study April 2010

<table>
<thead>
<tr>
<th>Risk indicator</th>
<th>Nationally</th>
<th>Detroit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Size</td>
<td>8575</td>
<td>211</td>
</tr>
<tr>
<td>Tri-morbid</td>
<td>54%</td>
<td>51%</td>
</tr>
<tr>
<td>3x ER or Hospital last year</td>
<td>34%</td>
<td>66% *</td>
</tr>
<tr>
<td>3x ER last 3 months</td>
<td>25%</td>
<td>43% *</td>
</tr>
<tr>
<td>&gt; 60 years old</td>
<td>20%</td>
<td>13%</td>
</tr>
<tr>
<td>HIV+/AIDS</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>Liver Disease</td>
<td>19%</td>
<td>10%</td>
</tr>
<tr>
<td>Kidney Disease</td>
<td>9%</td>
<td>9%</td>
</tr>
<tr>
<td>Cold/Wet Weather Injury</td>
<td>15%</td>
<td>21% *</td>
</tr>
<tr>
<td>% vulnerable</td>
<td>42%</td>
<td>51% *</td>
</tr>
</tbody>
</table>

* Indicates higher than national average

Source: Corporation for Supportive Housing, 2010

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## DETROIT’S HOMELESS ARE TRANSIENT

D. Carpenter 2007
**LEGAL/SOCIAL BARRIERS TO SERVICE**

- Parole violators/open warrants
- Escaping domestic abuse
- Asylum seekers/illegal immigrants
- “Going ghost”
- Use of ‘street’ names
- Mental illness
- Organic brain disease
- Substance abuse
- Traumatic brain injury

**Mexicantown**

**Largest Arabic Expatriate Community**

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**TRAUMATIC BRAIN INJURY**

*Detroit Free Press*

**Fame, fortune have faded away for Detroit boxer Willie Edwards**

MIKE BRUDENELL DETROIT FREE PRESS SPORTS WRITER

JUNE 12, 2011

He had a wife, two children and a dynamite right hand that could put you to sleep.

Willie (the Sandman) Edwards had the world at his feet and many opponents as well, whom he knocked down during his colorful boxing career in Detroit and across the country in the 1980s. Now the Sandman hides in a dark corner of a downtown homeless shelter, where his most precious possessions are an old folding chair and a few memories of his ring career.

"I don't want to cry about anything."
UNDOCUMENTED IMMIGRANTS

Busiest international border crossing in North America


TB SKIN TESTING – LOW FOLLOW UP

20.2% of individuals who had PPD placed had the test read

D. Carpenter 2012
STEPS TAKEN TO MITIGATE OUTCOMES

• Improving Filtration
• Utilizing database for screening, referral and contact investigation
• Switching from TST to interferon – γ release assay (IGRA) testing
• Establishing close relationship with Detroit Health Department/other homeless service providers

VENTILATION

• Fiber filters capture no pathogens
• UVGI and HEPA filters are cost-prohibitive
• Pleated filters show some efficacy are affordable

D. Carpenter 2012
FILTER EFFICACY

![Graph showing filter efficacy for various particle sizes](image)

Source: Francis J Curry International TB Center

HMIS – HOMELESS MANAGEMENT INFORMATION SYSTEM

A Statewide database - provides information on services rendered and a screening tool/searchable database for contact investigation

D. Carpenter 2012
SCANNING A CONSUMER INTO HMIS

D. Carpenter 2012

QUANTIFERON – TB GOLD TESTING

D. Carpenter 2011
TB TESTING – DETROIT HEALTH DEPARTMENT

The "Crew" – providing not only Quantiferon TB testing, but also HIV and syphilis testing.

RESULTS OF TESTING

• 92 Registered and screened
• 61 Tested (66.3%)
• 31 Refused (33.7%) or not available
• 5 Positive (8%)
  • +2 cases from contact investigation (not homeless and previously identified)
• 0 Active disease in reactors
• 1 Positive syphilis (1%)
• 0 Positive HIV test
REFERENCES

• Brudnell, Mike. 2011. “Fame, fortune have faded away for Detroit boxer Willie Edwards.”

• City Farmer News. 2008 “Acres of Barren Blocks Offer Chance to Reinvent Detroit.”

• Corporation for Supportive Housing. 2010.

  • http://www.huffingtonpost.com/2010/04/09/over-half-of-detroit-homeless-n_1322097.html

• Michigan State University, 2011. Spartan Sagas.
  • http://spartansagasc.edu/spotlight/2013/
Case Study: TB and Shelter Staff

A TB Control and Case Management Perspective
Monica Heltz, RN MPH
February 7, 2012

Day 1

• “David,” a 31 year-old man, presented to a local emergency department from the street with a two-month history of productive cough, fevers, night sweats and shortness of breath
• Chest X-ray showed infiltrate in left upper lobe, CT showed cavitation
• Had been staying in local homeless shelter
• Admitted for TB rule-out
Context

Dormitory sleeping arrangements in a shelter

David’s History

• Positive Interferon Gamma Release Assay (IGRA) nine months prior, no treatment
• HIV positive for three years, no treatment, lost to follow-up
• Bipolar and schizophrenia, for which he received disability
• Alcohol addiction
• Incarceration
• Recent hospital encounters for: stab wound, suicidal ideation, TB rule out two and five months prior with negative X-rays
• Seen 1 week prior in emergency department for same. CXR showed patchy airspace opacities
What do you see as potential problems for TB case management?

Lunch patron at a local shelter

Day 11 - 16

- Client missing from hospital, smear positive, confirmed TB on probe
Day 23 – Discharge from hospital
Day 24 – Missing from shelter

What might you need to consider when discharging clients to shelters?

“Regulars” at a local shelter
Remainder of therapy

What about contacts?
Summary of this case

• 3 shelters involved: 1 day shelter, 1 discharge shelter, 1 overnight shelter
• Multiple interactions with health care system prior to diagnosis, but little follow-up
• Multiple co-morbidities
• Reluctance or inability to give up contacts
• Multiple challenges completing therapy
• Challenging contact investigation
• Completed therapy

If we could do it all over...

• Bed lists
• Use shelter staff
• Social work
• Communications
• Housing
• Alerts to providers

Lunch patron at area shelter
Regarding Homeless Clients

- Be persistent
- Follow through on promises
- Be creative with incentives & enablers
- Housing is good, but don’t forget food and other associated factors

TB testing patron and me

Regarding Shelters

- Resources, roles and rules are variable
- Education
- Respect
- Consistency
- Expertise

Resident and staff at a local shelter
How can shelters and TB work together?

- Inclusive planning
- Teamwork
- Regular contact
- Capitalize on skills and services

Planning for Homeless Clients

- Housing and food
- Social work involvement
- Contact investigations
- Notification systems
- Incentives & enablers
- Trust building
Outbreak Prevention

• Plan for homeless clients
• Maintaining relationships
• Technical assistance
• Screening
• Environmental measures
• Communicable disease code

Outbreak Response

• Targeted testing with immediate follow-up
• Incentives given only for follow-up
• Epi link investigation
• Short course therapy treatment DOT for LTBI
• Data management plan
• Data sharing plan
• Housing
• Ventilation improvements
Take Home

• The more you work with and involve your community partners, the easier it will be to find creative collaborative solutions when the need arises
• Trust-building is the most valuable activity you can perform

Circle City
Thank you for your participation!!