Public Health and the Role of Public Health Nurses

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Disclosure

- No disclosures
Objectives

• List three major challenges to successful Tuberculosis [TB] control in the U.S.

• Describe the role of state and local public health departments in preventing and controlling TB

• Define TB case management

• List three activities of TB Nursing Case Management
Imagine TB in a world without public health…

• Patients would take TB medications incorrectly
  • drug resistance would increase
  • more relapsed cases
  • patients would remain infectious for longer periods of time
Imagine TB in a world without public health…

• No accurate TB statistics
  
  • is TB increasing? decreasing?
  • how much drug resistance is there?
  • what are the risk factors for TB in your area?
  • how would we know when an outbreak occurred?
  • how would we make policy decisions and allocate resources?
Imagine TB in a world without public health…

• Who would respond to a TB outbreak?
• How would individual physicians locate and test all contacts to their TB patients?
• Who would ensure that new immigrants and refugees are screened and treated for TB?
Public Health...

• …notifies you that your LTBI patient should be switched to Rifampin because the source case is resistant to INH.

• ... informs you that your Hmong patient with suspected TB likely came from a refugee camp with an outbreak of MDR-TB.
Public Health...

• …notifies your infection control practitioner that a patient you saw two months ago for pneumonia has been diagnosed with infectious TB in another hospital and may have exposed your staff and patients.
Public Health...

• ...calls the Ohio DOH to clarify that your patient who reports that she “had TB 5 years ago” was actually an LTBI patient who took only 3 months of INH
Public Health...

- notifies you that your asymptomatic patient’s positive Mtbc culture may in fact be a laboratory cross-contamination because the public health genotyping system shows that the isolate matches that of another patient from the same lab.
Public Health...

• …has the authority to pursue legal action with an infectious TB patient who refuses to continue his TB therapy
1. What is one of the major challenges to successful TB control in the United States?

A. High prevalence of TB
B. Delays in detecting TB
C. Inadequate medications
D. High incidence of MDR-TB
E. All of the above
Major Challenges to Successful TB Control in the U.S.
Major Challenges to Successful TB Control in the U.S. (1)

• Prevalence of TB among foreign-born persons living in the U.S.

• Delays in detecting and reporting cases of pulmonary TB

• Deficiencies in protecting contacts of persons with infectious TB
Major Challenges to Successful TB Control in the U.S. (2)

• Deficiencies in preventing and responding to TB outbreaks

• Presence of substantial population of persons with latent TB infection (LTBI)

• Maintaining clinical and public health expertise in an era of declining TB incidence

Controlling Tuberculosis in the United States, CDC, 2005
Public Health Responsibilities for Prevention and Control of TB
History of Public Health Role in Tuberculosis Control

• Early 1900s: visiting nurses charged with home-based care of TB patients

• Legal mandate for TB control delegated to local and state health departments

• Strategies focus on linkages and partnerships within communities
US Tuberculosis Case Reports and Federal Funding 1967 - 1999
Reported TB Cases United States, 1982–2011*

*Updated as of June 25, 2012.
Hierarchy of TB Prevention and Control Strategies

1. Active TB Disease

2. Contact Investigation

3. Targeted testing and treatment of LTBI

4. Infection control measures in high-risk settings

CDC
2. What are some of the public health goals for TB control?

A. Quarantine patients
B. Provide medications
C. Educate patients
D. Educate providers
E. All of the above
F. b, c, and d

Quarantine patients
Provide medications
Educate patients
Educate providers
All of the above
b, c, and d

17% 17% 17% 17% 17% 17%
Public Health Goals for TB

• Stop/prevent transmission

• Prompt, appropriate treatment to prevent drug resistance

• Completion of effective treatment and cure of illness
Public Health Goals (1)

• Promptly initiate treatment

• Provide TB care and treatment according to published standards of care

• Prevent disease progression

• Prevent drug resistance

Adapted from New Jersey Medical School National TB Center
Public Health Goals (2)

• Complete TB treatment within appropriate time frames

• Prevent transmission of TB within the community through effective isolation, contact investigations, and delinquency control activities

Adapted from New Jersey Medical School National TB Center
Public Health Goals (3)

• Educate patients, families, and communities about TB

• Report TB cases and suspected cases to public health authorities

• Implement TB control activities according to national, state and local standards
Minnesota Department of Health TB Program Activities

1. Collect, analyze and report surveillance data
2. Oversee case management and contact investigations
3. Assure expert TB medical consultation
4. Provide public health consultation and education
5. Assure the screening and follow-up of immigrants and refugees at risk for TB
6. Provide free TB medications
Local Health Departments Responsibilities (1)

- Directly observed therapy [DOT] and nurse case management
- TB contact investigations
- Monitor TB trends/risks in their jurisdictions
- Provide incentives/enablers
Local Health Departments Responsibilities (2)

- Ensure access to TB clinical and diagnostic services
- Facilitate reporting of TB suspects and cases to MDH
- Address problems with compliance
- Locate new refugees and arrange for initial health assessments
- Monitor persons on LTBI therapy
Collaboration Between Public Health Agencies and Private Providers Caring for TB Patients

Provider
Reporting
Diagnosis
Treatment

Collaboration
Consultation
Education
Feedback

Public Health
Surveillance
Laboratory
Support Case Management
–DOT
–Contact Investigation

Mayo Clinic Center for Tuberculosis
3. Providers need to wait for a positive culture result before reporting a TB case to public health.

A. True
B. False
Public Health Activities

Reporting and Surveillance
TB Reporting

- Reporting of active TB required in all states
- Reporting of suspected TB cases
- Laboratory reporting
- Reporting of LTBI
- Reporting of clusters of TST conversions
Reporting Active TB Disease

- TB cases and suspected cases should be reported to PH authorities within one working day of identification
  - Culture positive for Mtbc

- Suspected TB starting on TB treatment

- Includes pulmonary and XP sites

- Includes culture-negative (“clinical”) cases
HIPAA and Communicable Disease Reporting

• HIPAA allows reporters to provide medical information necessary for public health surveillance, investigations and interventions.
TB REPORTING

Labs, Health Care Providers, Other Reporters

Local Health Department

State TB Program

CDC

WHO

Minnesota Department of Health

Mayo Clinic Center for Tuberculosis
Public Health Surveillance

• Ongoing, systematic collection, analysis, and interpretation of health related data essential to the planning, implementation, and evaluation of public health practice

• Integrated with timely dissemination of these data to those responsible for prevention and control
Uses of Public Health Surveillance

- Estimate magnitude of problem
- Determine geographic distribution of illness
- Portray natural history of a disease
- Detect epidemics/define a problem
- Generate hypotheses, stimulate research
- Evaluate control measures
- Monitor changes in infectious agents
- Detect changes in health practices
- Facilitate planning
Surveillance – Geographic Distribution

Tuberculosis incidence rates, 2013

Estimated TB incidence rates, 2013

The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.

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Surveillance: History of Disease

Reported Cases of Tuberculosis, Minnesota, 1988-2014
Surveillance: History of Disease

Reported TB Cases
United States, 1982–2014*

*Updated as of June 3, 2015.

Mayo Clinic Center for Tuberculosis
Surveillance – Monitor Changes in Infectious Agents

Percentage of new TB cases with MDR-TB

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**Surveillance – Detect Changes in Health Practices**

<table>
<thead>
<tr>
<th>How TB Cases Identified</th>
<th>1980</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presented at hospital or clinic</td>
<td>50%</td>
<td>30%</td>
</tr>
<tr>
<td>Overseas TB screening</td>
<td>1%</td>
<td>9%</td>
</tr>
<tr>
<td>TB contact investigation</td>
<td>1%</td>
<td>6%</td>
</tr>
<tr>
<td>Employee screening</td>
<td>15%</td>
<td>5%</td>
</tr>
<tr>
<td>Domestic refugee screening</td>
<td>2%</td>
<td>25%</td>
</tr>
</tbody>
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*Hypothetical data*
Public Health Activities

Public Health Laboratory
Public Health TB Laboratory

• “The laboratory is an essential part of the diagnosis, treatment, prevention, and control of TB”

Public Health TB Laboratory

• “Delays in laboratory confirmation of TB and reporting of drug-susceptibility results can lead to delays in initiation of therapy, prolonged infectiousness, inappropriate therapy, and missed opportunities to prevent transmission.”

CDC National Action Plan to Combat MDRTB, 1992
Public Health TB Laboratory [PHL] Support

• State PHL
  • AFB smears and cultures
  • Species identification Liquid & Solid media HPLC NAAT
  • Drug susceptibilities
  • Consultation for labs, clinicians

• CDC labs
  • MDDR
  • Second line drug susceptibilities
  • Genotyping
4. The patient and their medical provider are responsible for the successful completion of treatment for TB.

A. True
B. False
Public Health Activities

TB Case Management
TB is a Unique Disease

• “It is strongly recommended that the initial treatment strategy utilize patient-centered case management with an adherence plan that emphasizes direct observation of therapy.”

Treatment of Tuberculosis, 2003
Responsibility for TB Treatment (1)

- The responsibility for successful treatment lies with the public health program or private provider, not with the patient.

Treatment of Tuberculosis, 2003
Responsibility for TB Treatment (2)

• The prescribing physician...is carrying out a public health function with responsibility not only for prescribing an appropriate regimen but also for successful completion of therapy.

• ... given a clear understanding of roles and responsibilities, oversight of treatment may be shared between a public health program and a private physician.

Treatment of Tuberculosis, 2003
TB Case Management Definition

• “Case management is an effective intervention for use in tuberculosis (TB) control to ensure that patients complete an appropriate and effective course of anti-TB treatment in the shortest time possible.”
What Is TB Case Management?

- Systematic approach
- Responsibility assigned to one person
- Collaborative process
- Plan to ensure specific, measurable outcomes e.g., completion of therapy, HIV testing
- Regular review of patient’s progress
- Coordinates care
TB Case Management

• Assures that the following occur:
  • Patient is assessed, interviewed and a treatment plan is developed
  • Therapy is appropriate and continuous
  • Response to treatment is monitored
  • Patient is educated about disease and treatment
  • Isolation is maintained as appropriate
  • Contacts are identified, evaluated & treated
  • Referral are made to other services as needed
  • Continuity of care is maintained
Case Management Team

• Public Health Nurse Case Manager – May be shared responsibility between local and state health departments

• Medical provider

• Contact investigator

• Others (e.g., outreach worker, interpreter, social worker, school nurse, correctional facility, dialysis unit, etc.)
What Do TB Nurse Case Managers Do? (1)

• Assess patient’s knowledge and perception

• Hospital discharge planning

• Educate individuals and communities about TB

• Provide Directly Observed Therapy (DOT)
Directly Observed Therapy (DOT)

• “DOT is an adherence-enhancing strategy in which an HCW or other specially trained health professional watches a (TB) patient swallow each dose of medication and records the dates that the administration was observed.

• DOT is the standard of care for all patients with TB disease and should be used for all doses during the course of therapy for TB disease…”

Guidelines for Preventing the Transmission of Mycobacterium tuberculosis in Health-Care Settings, 2005.
DOT at Home

Photograph courtesy of Hennepin County TB Program
DOT at Workplace

Photograph courtesy of Hennepin County TB Program
What Do TB Nurse Case Managers Do? (2)

• Monitor tolerance of therapy; report adverse effects to physician

• Help document response to therapy

• Refer to social services or other community resources (food, housing, HIV/AIDS services, etc.)

• Interjurisdictional referrals
What Do TB Nurse Case Managers Do? (3)

• Document non-adherence and interventions undertaken to help improve adherence

• Assure isolation of infectious patients

• Help ensure that TB patients keep medical appointments and obtain follow-up lab/CXR testing
If a patient with lymph node TB refuses to take TB treatment, public health can detain him until he complies with the treatment plan.

A. True
B. False
Isolation & Legal Measures

• Least restrictive

• May require proof of infectiousness

• May require documented history of nonadherence to Isolation and/or DOT

• Examination Authority assigned to state or local PH department
Public Health Activities

Expert TB Medical Consultation
Regional TB Medical Consultation

Mayo Clinic Center for Tuberculosis

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Public Health Activities
TB Contact Investigation
Contact Investigations – A Crucial Prevention Strategy

• On average, 10 contacts are identified for each person with infectious TB in the U.S.

• 20%–30% of all contacts have LTBI

• 1% of contacts have TB disease

• Of contacts who will ultimately have TB disease, approximately one-half develop disease in the first year after exposure.

CDC
Contact Investigation Responsibilities

- Health departments are responsible for ensuring that contact investigations are conducted.

- Contact investigations are complicated activities that require
  - Many interdependent decisions
  - Time-consuming interventions
Purpose of Contact Investigations

1. Finding and treating additional cases of TB (potentially interrupting further transmission)

2. Finding and treating persons with LTBI to prevent future cases
Conclusion
Questions