MULTIDRUG-RESISTANT TUBERCULOSIS IN INDIA:

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• The infectious diseases were identified according to the following factors: “high transmissibility, disease burden and severity; established or pandemic potential; disease eradication; and lack of available preventative or treatment interventions.”
• Goal of surveillance, diagnosis, and treatment programs is to contain disease at their local origin, with the purpose of preventing a global threat of disease
• 2010 U.S. TB Report: 60% of all TB cases were found in foreign-born persons
PURPOSE

- Identify the underlying factors causing high TB rates in India
- Evaluate previous research studies to identify effective TB programs in countries with similar risk factors to that of India
- Assess if intervention strategies from other communities may support India in bridging the gap among the TB-infected populations
PURPOSE
Identify the risk factors causing the rapid transmission multidrug-resistant tuberculosis (MDR-TB)
Assess the underlying social factors that are causing high MDR-TB rates in India
Evaluate TB intervention strategies from other countries that may help India develop an appropriate solution for decreasing the prevalence of MDR-TB incubation
Airborne means: coughing, sneezing, etc.
Transmits nuclei infected droplets → can remain airborne for several hours
ACTIVE: infects the human host in a progression of weeks or months, depending on the person, and presents itself as an infectious tubercle
LATENT: can remain hidden for decades, ready to resume reproduction when immune system becomes infected (compromised)

LATENT:
TB STATISTICS

TB PREVALENCE WORLDWIDE

- Top reasons of worldwide mortality from infectious diseases: HIV and TB, respectively
  - Outside the U.S. TB is the number one opportunistic infection for patients who are HIV positive
- Eliminating TB as a public health problem would require current incidence rates to fall at a rate of 16% per year for the length of at least 40 years (Lawn et al., 2013)
  - Progress reports are not representative of African and European regions
- In 2011, 1.4 million people died from TB (WHO TB Report 2012)
  - 31%: HIV co-infection
  - 36% Women
  - 64,000 children younger than 15 years
- Only 1/5 of multidrug-resistant tuberculosis (MDR-TB) cases are being reported to WHO
INDIA’S LAB CAPACITY- WHO TB REPORT 2012

Smear microscopy labs
13,026
1 per 100,000 population
% using LED microscopes 2

CULTURE LABS + DRUG SUSCEPTIBILITY TESTING (DST)
37
0.1 per 5 million population

LINE PROBE ASSAY
17
<0.1 per 5 million population

XPERT MTB/RIF
18 sites

“In India, drugs available by prescription elsewhere are available over the counter in any pharmacy, which complicates the management of MDR-TB. For example, **fluoroquinolones** are available over the counter and are
commonly used in households for fevers and infections (CITE).”

“In 2006, prior to the implementation of the DOTS-Plus program in India, based on the total amount of money available for anti-TB drugs sold in India, 75% of first-line drugs and 100 percent of second-line drugs were being used outside the RNTCP (CITE).”
Figure 2. Overpopulated conditions of India. Incubating environment allows for rapid TB and MDR-TB transmission. (Telegraph, 2010)
1999 poorest country
- All of the countries are part of the 22 high-burden countries, 1990-2011 (WHO TB Report 2012) [EXCEPT FOR PERU]
- Bangladesh has kept their rates stagnant
- Russian Federation has seen a steadily decrease in TB incidence rates but an increase in HIV-positive incidence rates
- Thailand has also seen a decrease

CASES FOR MDR-TB have been reported in all countries but the top 27 MDR-TB burdened country list does not include Peru or Thailand

Peru has an expanding LABORATORY PREPAREDNESS PLAN
• Bangladesh
  • NTP is called FIDELIS (Fund for Innovative DOTS Expansion through Local Initiatives to Stop TB
  • Case detection increased from 29% (districts who didn’t implement anything) to 36% (health awareness campaigns)
  • Programs were structured in a culturally-sensitive manner
    • Structured to fit identified population
    • Healthy literacy increase
• PERU
  • Collaboration delivered home-based treatment to diseased community
• RUSSIA
  • Sputnik was established in 2006
  • For patients who are at high risk for non-adherence
**RESULTS: DEVELOPED COUNTRY**

- **United States Public Health System**
  - 2011: Recorded lowest TB rates since the 1990s
  - Milestone in combating TB
    - 17th century and again in 1985
    - TB accounted for a large percentage of mortality in U.S.
  - 1990: New York MDR-TB outbreak
    - Immediate political involvement
  - Active surveillance and monitoring systems
  - Intrinsic system with many stakeholders, systems, and organizations all working towards maintaining a healthy population
  - CDC annual report for infection control guidelines
U.S. 10 ESSENTIAL ELEMENTS OF PH

"You can't have public health without a public health system. We just don't want to be part of a mindless competition for resources. We want to build back capacity in the system." – Paul Farmer
“In India, drugs available by prescription elsewhere are available over the counter in any pharmacy, which complicates the management of MDR-TB. For example, **fluoroquinolones** are available over the counter and are commonly used in households for fevers and infections (CITE).”

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CDC definition of community engagement: “the process of working collaboratively with a through groups of people affiliated by geographical proximity, special interest, or similar situations to address issues affecting the wellbeing of those people” (Boulanger et al., 2013).
Currently they have 1 lab per 100,000 population
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Work Referenced


WORK REFERENCED


QUESTIONS?