

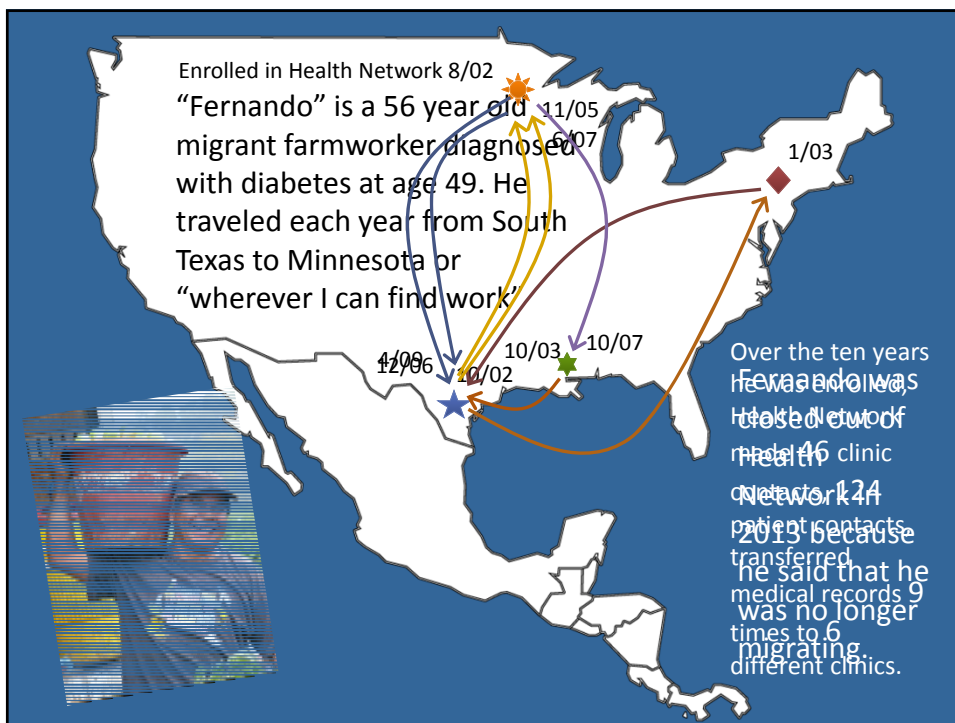


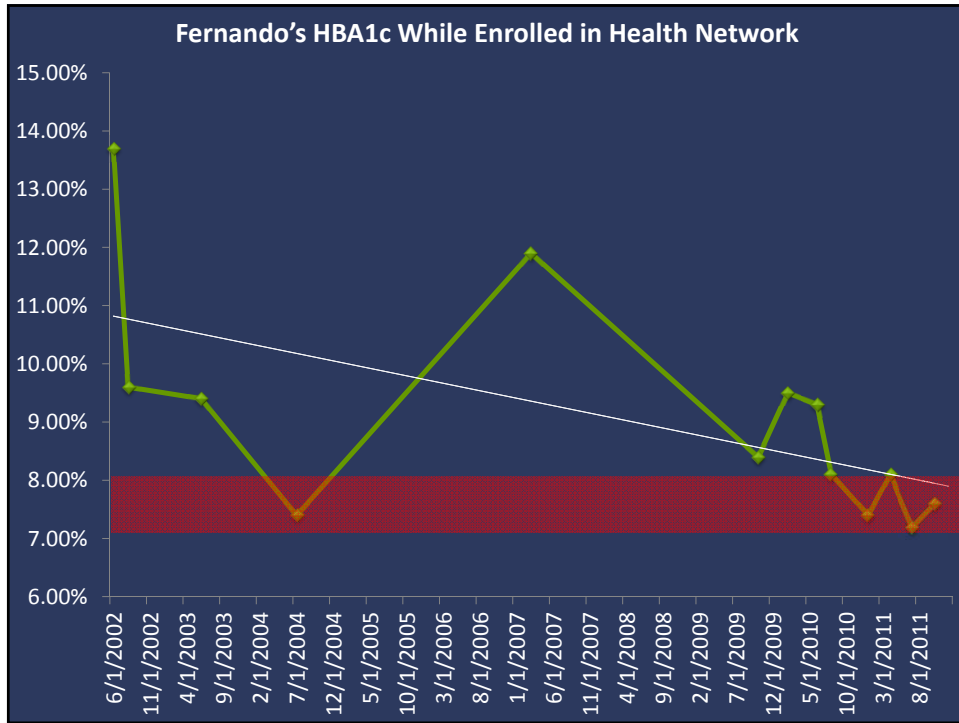
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# The Intersection of Primary Care and Migration Health

Session 3: Orientation to Migration Health

**Ed Zuroweste, MD**  
Medical Director



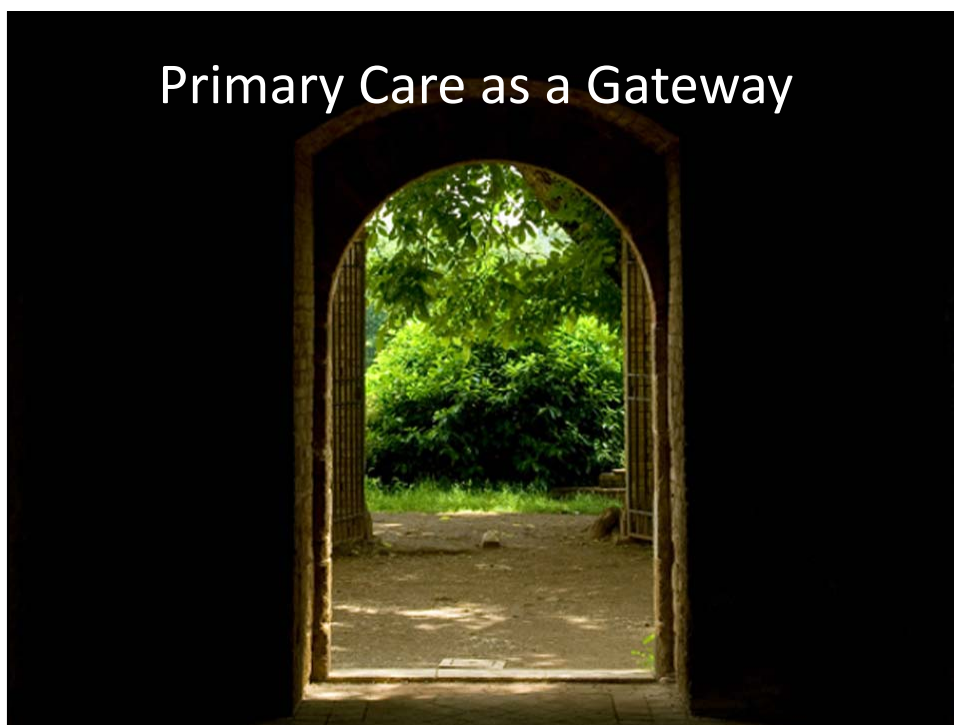


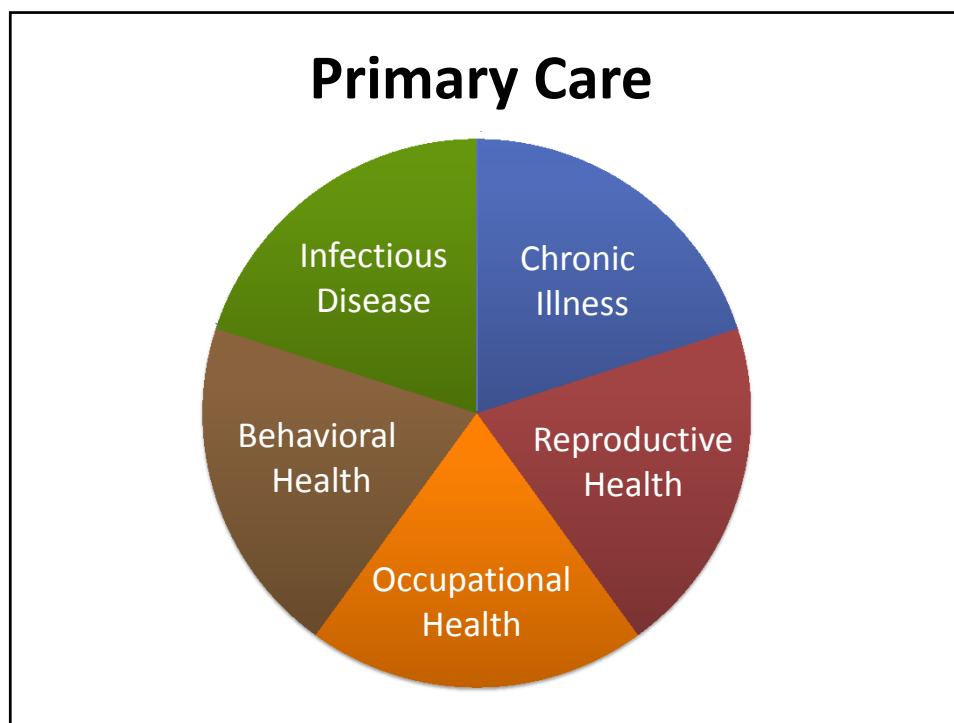
## Migrant Health

Underserved population whose health is challenged by...

- Migratory lifestyle
- Cultural and language barriers
- Immigration status
- Inherent dangers and health risks of occupation
- Lack of access to insurance or financial resources
- Lack of regulatory protection

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How do you manage chronic illness with a patient who is on the move?

Questions that lead to solutions.....

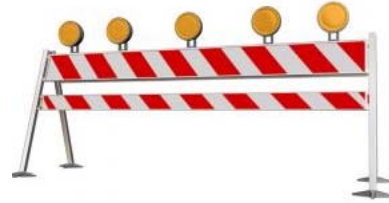
How long do you think you are going to be in the area?

Is there any reason you would leave this area?

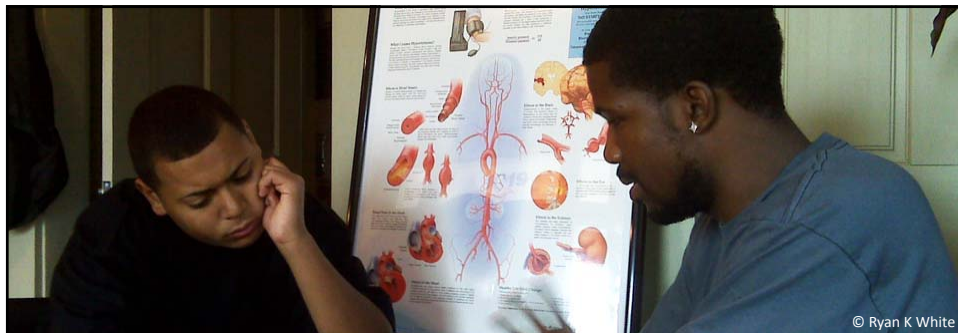


- Prioritize preventive/chronic care interventions
- Culturally competent evaluation
- Team approach





Identify possible barriers  
(today and tomorrow) to  
achieving the patient's goals.

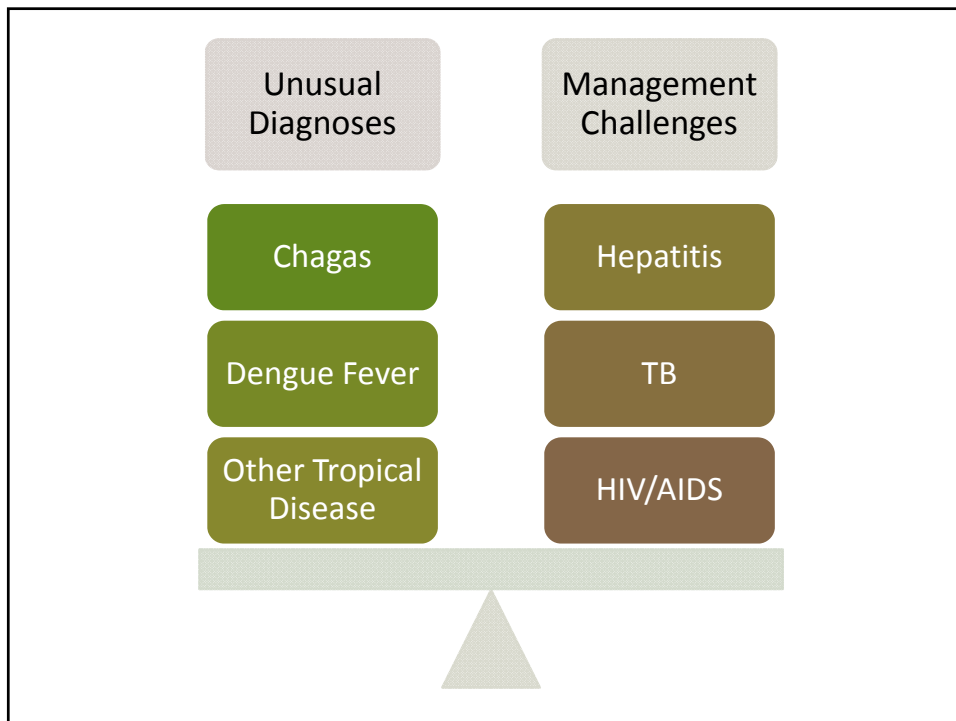


- Education! Education! Education!
- Self management! Self management!
- Continuity of Care

A lot in a short period of time

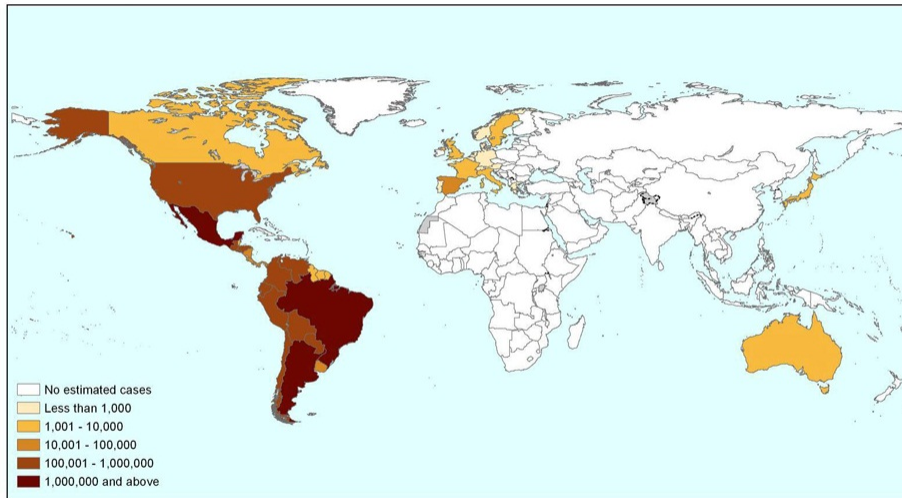


The patient in my office today was living in Central America last month. What do I need to know about infectious diseases?



## Chagas' Disease (American Trypanosomiasis)

Estimated global population infected by *Trypanosoma cruzi*, 2009



Sources:

1. OPS/SHM/CD/425-06 Estimación cuantitativa de la enfermedad de Chagas en las Américas.
2. Guerin-Guttenberg RA, Grana D R, Giuseppe Ambrosio, Milei J. Chagasic cardiomyopathy. Europe is not spared! European Heart Journal (2008); 29: 2587-2591.
3. Schmunis, G. A. Epidemiology of Chagas Disease in non-endemic countries: the role of international migration. Mem Inst Oswaldo Cruz, Rio de Janeiro, Vol. 102(Suppl. 1): 75-85, 2007.
4. De Ayala A.P, Pérez-Molina J.A, Norman F., and López-Vélez R. Chagasic cardiomyopathy in immigrants from Latin America to Spain. Emerging Infectious Disease Volume 15, Number 4-April 2009.
5. According to the numbers of immigrants registered for 2007 in the website of the Japanese Ministry of Justice and estimated seroprevalence for non endemic countries according to

## Chagas' Disease

- **8-11** million people infected
- **~50,000** deaths per year
- In 2011 **>300,000** people in the US are infected
- **~100,000** will progress to chronic disease\*

\*Nature 465,S6-S7(24 June 2010)





*Trypanosoma Cruzi,*

- Reduviids found from southern USA to Argentina, but distribution is erratic
- Humans are not necessary to life cycle
- 150 species of mammals are infected
- Transmission around tree trunks, hollow trees and burrows to non-human mammals
- Disease in humans limited to areas where reduviid can adapt to primitive human dwelling





## Case Report Virginia 2012

- Bolivian mother, + Chagas
- Infant by C-sec; 29 wks; fetal Hydrops; ascites, pleural effusion and pericardial effusion
- Peripheral blood pos. *T. cruzi*
- *1<sup>st</sup> Documented case of Congenital Chagas in US!!!*
- *Estimated annually 65-315*
- 1-10% of children born to infected mothers
- Rx: Infected newborns often asymptomatic (60-90%)
- 60 days benznidazol
- Age 10 months test of cure

(MMWR/Vol.61/No.26 July 6,2012)



## Chagas' Disease Acute Phase

- 2 successive phases, acute and chronic.
- Acute phase = 6-8 weeks.
- Acute phase often in childhood, 10-20% mild febrile syndrome (mean age—4; 85% by age 10)
- Chagoma—seen in 50% during acute phase



© WHO

## Chagas' Disease Acute Phase

- Other Symptoms—fever, tachycardia, fatigue, anemia, weakness, hepatosplenomegaly, and lymphadenopathy—myocarditis and meningoencephalitis are rare and have very poor outcomes.
- Most pts. experience spontaneous remission of symptoms, followed by lifelong low-grade parasitemia.

## Chagas' Disease Chronic Phase

- 20% to 35% of the infected individuals will develop irreversible lesions of the autonomic nervous system in the heart, esophagus, colon and the peripheral nervous system ( $\approx$  100,000 in the US)
- Mean age of onset of chronic disease is 35-45 years old



## Chagas' Disease Chronic Phase

- Visceromegaly - the heart most often infected—CHF (often R-sided), dysrhythmias, emboli and cardiomyopathy
- **#1** cause of cardiac lesions in young, productive adults in endemic regions in Latin America.

**Think Chagas in Young  
Migrants with CHF**

## Chagas' Disease Chronic Phase

- Megaesophagus, like achalasia, regurg, dysphagia, chronic cough, recurrent aspiration, wt. loss, and increased esophageal cancer
- Megacolon leads to chronic constipation, abd. Pain (obstruction, perforation, sepsis, death)

**Think Chagas in Migrants with  
GI Mega-GI**

## Chagas Treatment

### Unsatisfactory

- Nifurtimox and Benznidazole
- Nifurtimox only available in USA through CDC, not FDA approved
- Severe side effects-GI (nausea/vomiting, anorexia, abd. Pain, wt. loss); Neurologic (disorientation, insomnia, paresthesias, seizures and polyneuritis)
- Reduces the severity and duration of illness and decreases mortality (if patients complete a 60 day course at correct dose up to 80% cure\*)



© PBS

\**Nature* 465,S4-S5(24 June 2010)



## Chagas' Disease Treatment

- Benznidazole—efficacy similar to Nifurtimox
- Only available in USA through CDC
- Side effects: granulocytopenia, peripheral neuropathy, rash
- Recommended duration—60 days
- BENznidazole Evaluation For Interrupting Trypanosomiasis (BENEFIT) trial. Started 2004 in Argentina, Brazil and Columbia—3,000 patients. Results reported late 2010 or early 2011\*

*\*Nature 465,S4-S5(24 June 2010)*

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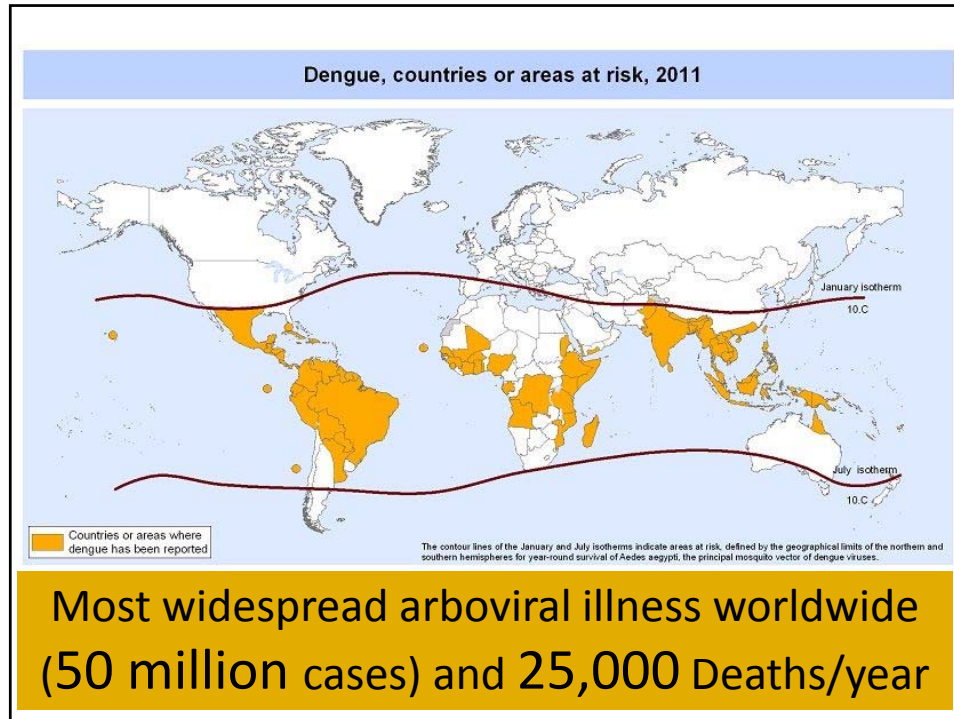
## Chagas Treatment

- Supportive Rx for myocarditis, meningoencephalitis, CHF, dysrhythmias; pacemaker may be helpful in bradyarrhythmias
- Rx megaesophagus-dietary changes, dilation of esophagogastric junction
- Megacolon-high fiber diet, laxatives, enemas, later partial resection

## Prevention is most important method of treatment

- Identify endemic areas and institute insect eradication program
- Improve housing by eliminating “thatched roofs/stick walls” housing
- Pyrethroid-impregnated bednets





## Dengue Fever

- Transmitted by mosquitoes (*Aedes aegypti*)
- Most patients—mild dis. Flu-like symptoms; severe HA; aching joints/muscles “bone-break” dis;
- 500,000/yr dengue hemorrhagic fever (capillary leak syndrome—thrombocytopenia; abnormalities in coagulation/LFTs/potentially resulting in shock, bleeding, and organ failure). Almost exclusively in previously infected patients because of “antibody-dependent enhancement”.

## Dengue



- Since 1980 a few locally acquired U.S. cases Texas/Mexico border
- September 2009 first case of dengue Key West, Florida, by April 2010, 28 total cases\*
- Key West serosurvey revealed 5.4% residents with recent infection\*
- Treatment; symptomatic and supportive only

\*MMWR;Vol. 59/No. 19; May 21, 2010

## Dengue

- Prevention is still best “treatment”
  - Eliminate mosquito breeding sites
  - Pyrethroid-impregnated Bed nets
  - Personal mosquito repellants



# Dengue

- New Modalities to Cut Dengue risk!!
  - Adaption of *Wolbachia*, a bacterial parasite, mosquito life span reduced to 21 days
  - 2 weeks for mosquitoes newly infected by dengue virus to be able to transmit the infection
  - When *Wolbachia* transmitted to offspring they fail to reproduce offspring\*



\*JAMA, Feb. 18, 2009—Vol. 301 No. 7

by Scott O'Neill

Wolbachia infected insect cell



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## HIV/AIDS



## Important Issues Regarding HIV/AIDs in a Migrant Population

- **Continuity of Care!**
- Migrants coming from regions with different sexual mores- able to engage in new behaviors with fewer restrictions but they can be naive and open to risk. or they may have to engage in survival sex which also has tremendous risk





## Hepatitis

- Hep B- sexually transmitted disease same risks as HIV
- Hep C - this is actually the most common infectious disease- more so than HIV. while sexual contact is a risk factor the greater risk is blood exchange through needle sharing. rudimentary tattooing in friend groups or social networks is a frequent activity and a concern.

**“Tuberculosis is a social problem with a medical aspect”**

Sir William Osler, 1904

- Spread when someone who is sick with TB disease of the lungs coughs or sneezes, releasing bacteria – **and a person nearby breathes in these infected droplets**
- Untreated, a person with active TB can infect 10 to 15 people a year on average

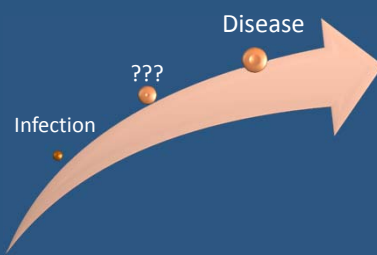


## What is the probability that TB will be transmitted?

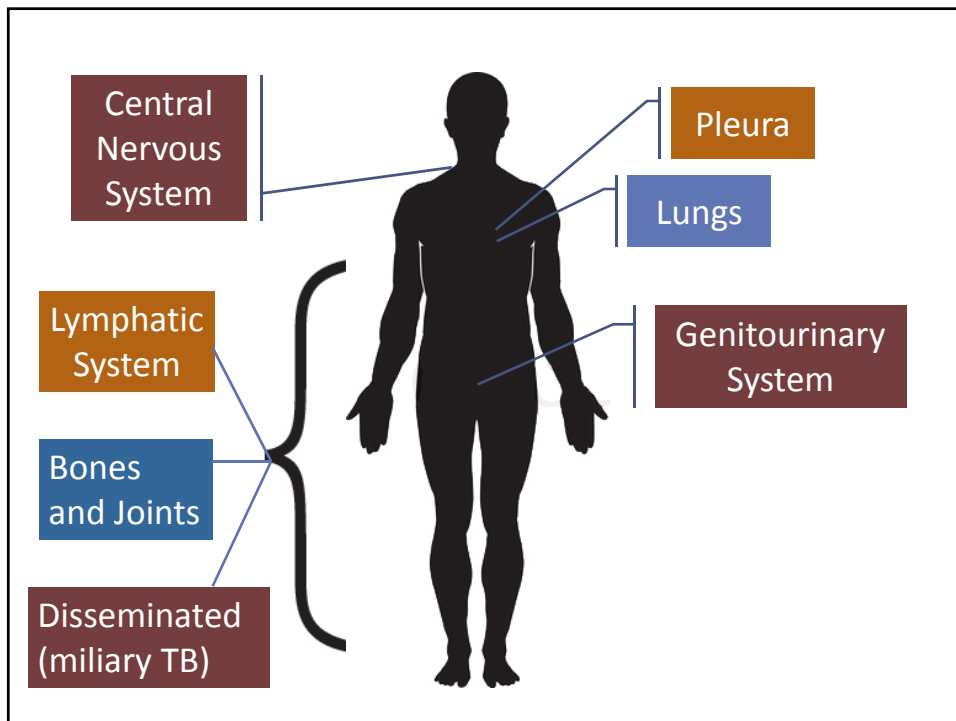
- Infectiousness of person
- Environment of exposure
- Duration of exposure
- Virulence of organism

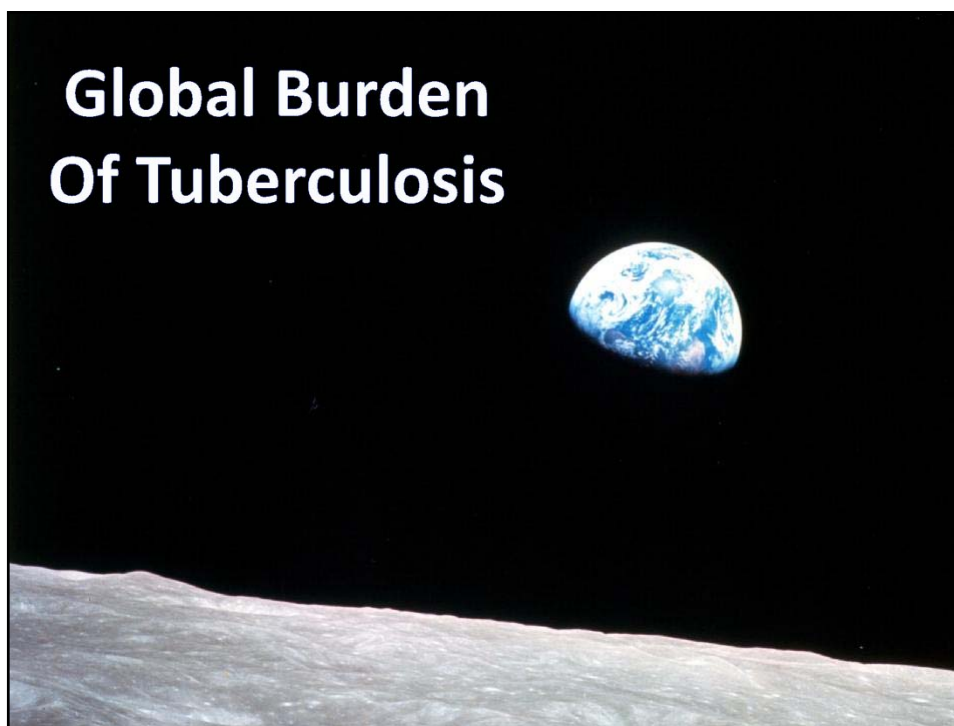


## Conditions that increase the risk of progression to TB disease



- HIV Infection
- Recent infection
- Chest x-ray findings suggestive of previous TB
- Diabetes mellitus
- Prolonged corticosteroid therapy
- Other immunosuppressive therapy
- History of inadequately treated TB





# Global Burden Of Tuberculosis

## Global Burden of TB, 2010

WHO Global TB Report, 2011



	Estimated Number of Cases	Estimated Number of Deaths
All forms of TB	9.4 million	<b>1.7 million*</b>
HIV-Associated TB	1.1 million (12%)	<b>380,000</b>
Multidrug-resistant TB (MDR-TB)	440,000	~150,000

Approx. 1/3 of the world (2 billion people) is infected with *M.tb*


\*including deaths among PLHIV

## Who carries the burden of Tuberculosis?

Largely, the most vulnerable





TB spreads in poor, crowded & poorly ventilated settings




700,000/yr women die of TB– more suffer due to illness, stigma, infertility


TB-orphans are also a consequence




Migrant workers, prisoners, minorities, refugees suffer from barriers to care




Over 25% of TB disease may be attributable to poor nutrition; 25% to HIV infection; TB rates are linked to tobacco & alcohol use as well as diabetes





# HIV-TB



- 1/3 of 33 million people living with HIV/AIDS co-infected with TB >10 million people
- Without treatment 90% will die within months
- TB is the leading cause of death among HIV positive people (up to 50% of all patients worldwide)

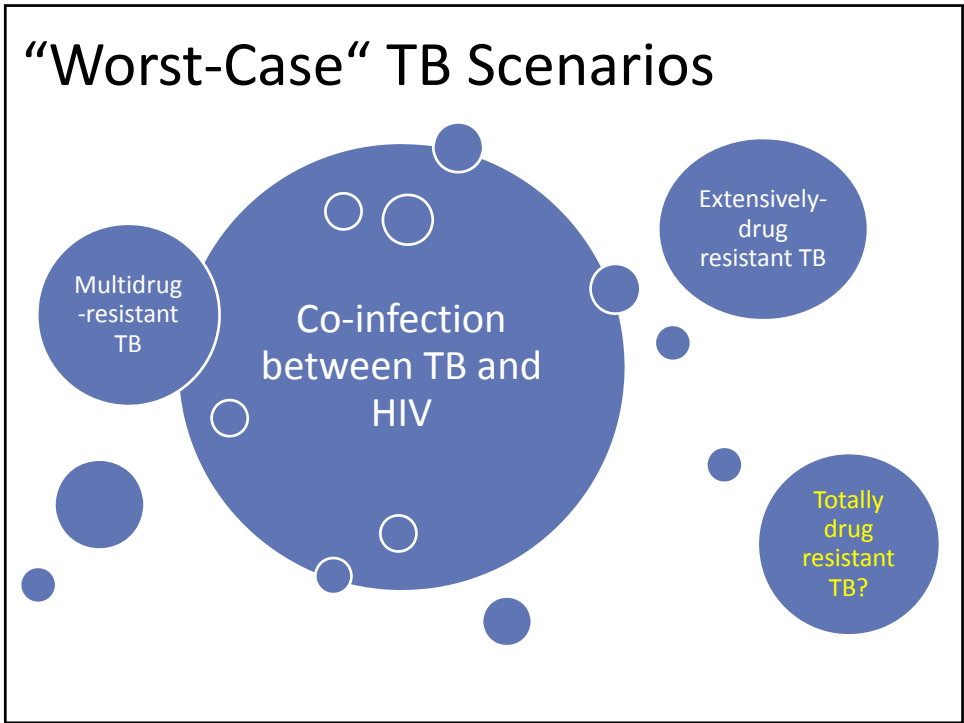
## Emergence of “Worst- Case” TB Scenarios



## Drug-Resistant TB

- Drug-resistant TB transmitted the same way as drug-susceptible TB
- Drug resistance is divided into two types:
  - Primary resistance develops in persons initially infected with resistant organisms
  - Secondary resistance (acquired resistance) develops during TB therapy



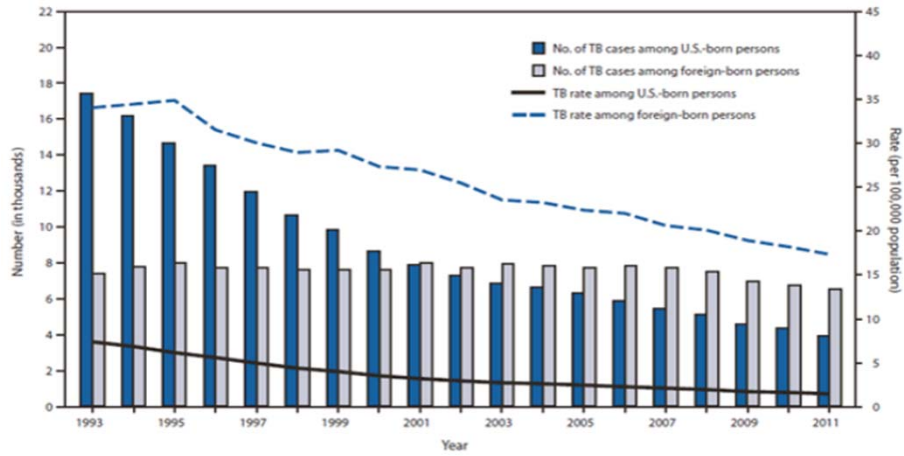


Why does TB infect one-third of the world's population and still remain a global health threat despite the fact that highly cost-effective drugs are available to eradicate it?

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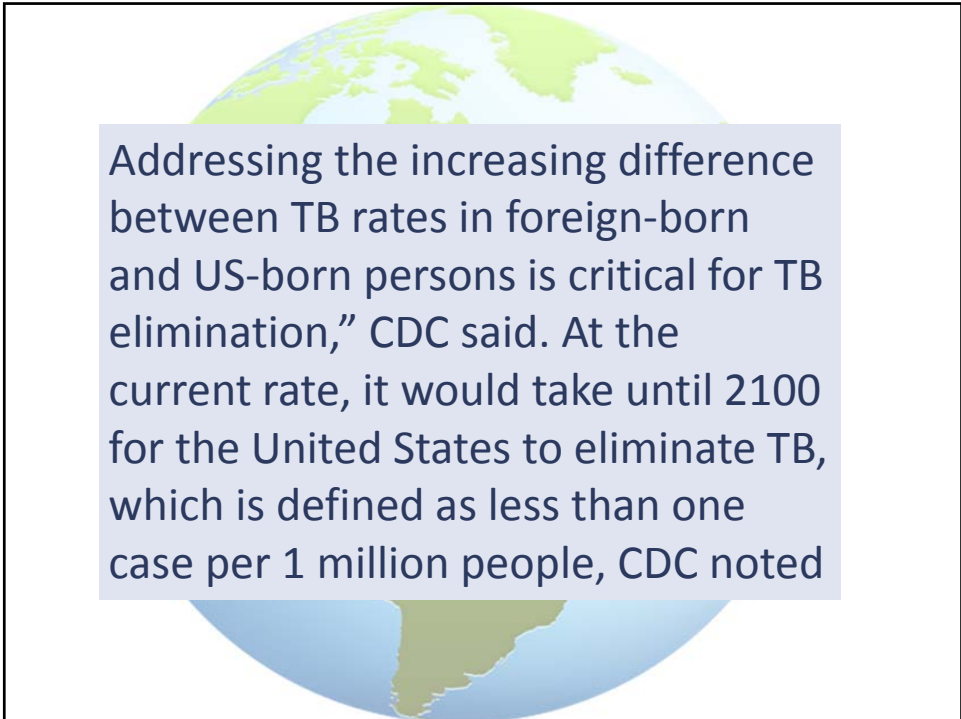
## TB Cases in US-born vs Non-US-born persons

United States, 1993-2011\*



\*Updated March 2012 with provisional 2011 data

**Globalization of Economy  
=  
Globalization of Health Risks**



Addressing the increasing difference between TB rates in foreign-born and US-born persons is critical for TB elimination,” CDC said. At the current rate, it would take until 2100 for the United States to eliminate TB, which is defined as less than one case per 1 million people, CDC noted

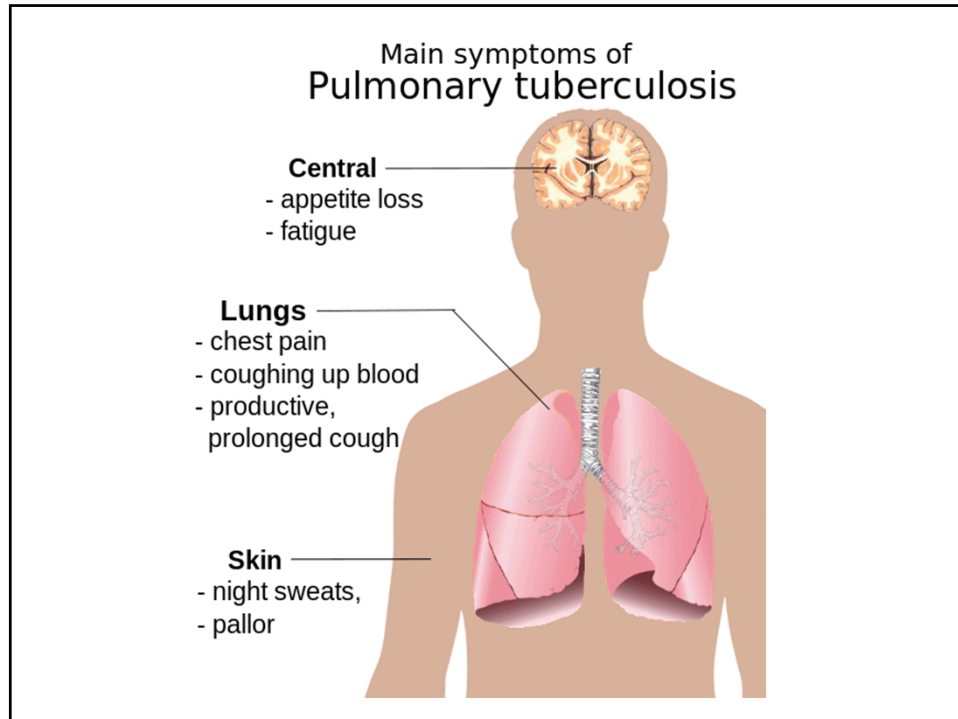


## Evaluation for TB

- Medical history
- Physical examination
- Mantoux tuberculin skin test/IGRA
- Chest radiograph
- Bacteriologic or histologic exam

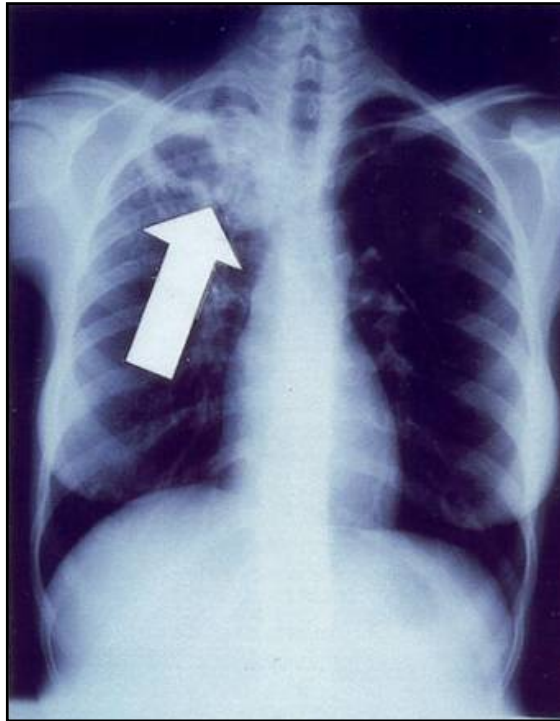
## History and Physical Exam





## Medical History

- Symptoms of disease
- History of TB exposure, infection or disease
- Past TB treatment
- Demographic risk factors for TB
- Medical conditions that increase risk for TB disease



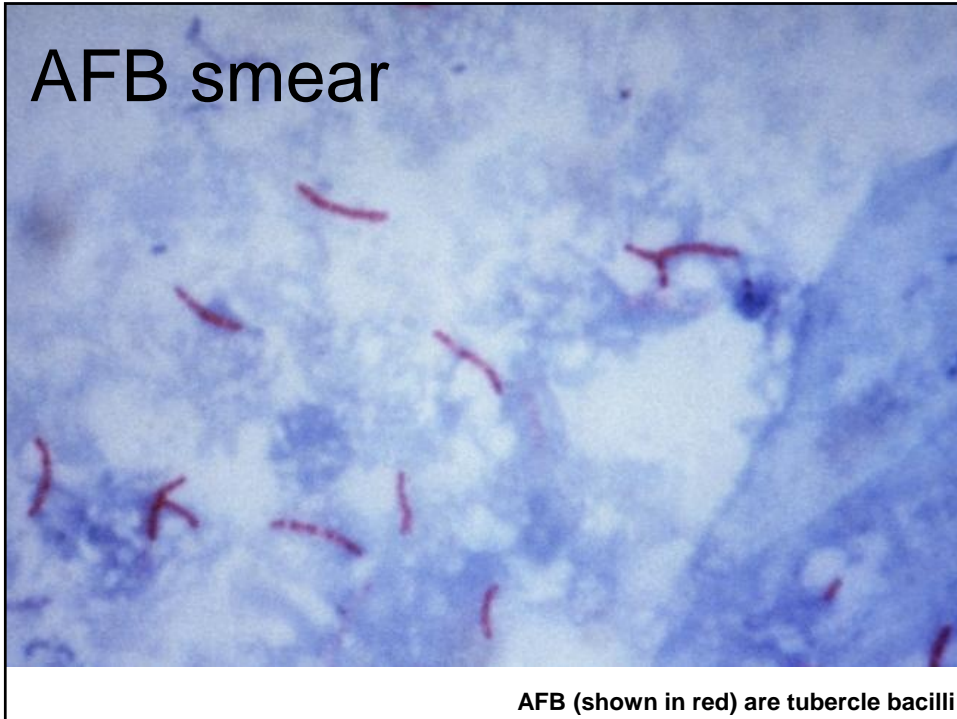
- Abnormalities often seen in apical or posterior segments of upper lobe or superior segments of lower lobe
- May have unusual appearance in HIV-positive persons
- Cannot confirm diagnosis of TB

- Obtain 3 sputum specimens for smear examination and culture
- Persons unable to cough up sputum, induce sputum, bronchoscopy or gastric aspiration
- Follow infection control precautions during specimen collection





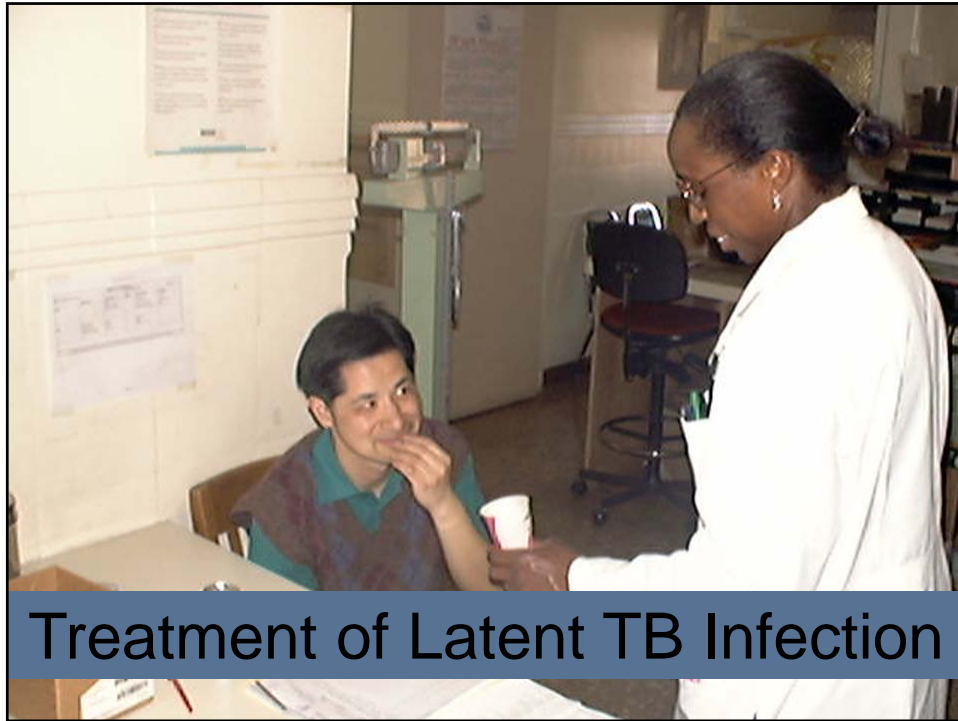
## AFB smear



## Cultures

- Used to confirm diagnosis of TB
- Culture all specimens, even if smear negative
- Results in 4-14 days when liquid medium used





### Drug Regimen for Treatment of LTBI

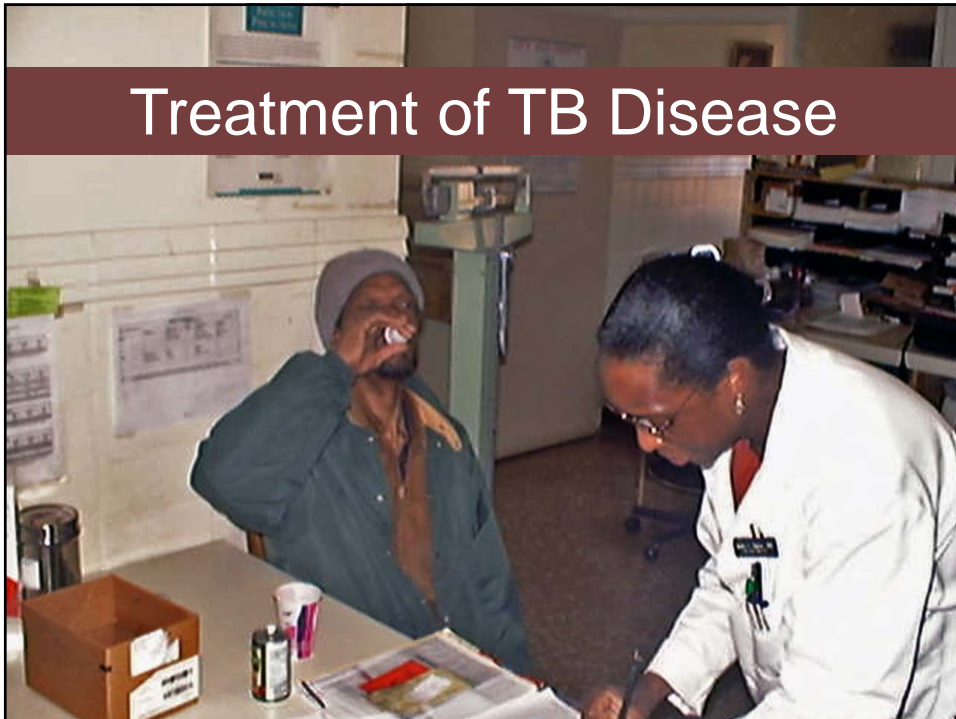
Drugs	Duration (months)	Interval	Minimum doses
Isoniazid	9	Daily Twice weekly	270 76
Isoniazid	6	Daily Twice weekly	180 52
Rifampin	4	Daily	120
INH/Rifapentine	3	Once a week	12

## INH Hepatotoxicity

10-20%	Elevations of AST up to 5X normal
0.6%	Clinical Hepatitis (maybe less-in one study it was only 0.1%)
2.7%	INH plus RIF
2%	Persons 50-64 years of age

INH hepatotoxicity is increased with liver disease/  
alcoholism/postpartum-especially Hispanic women

## Treatment of TB Disease

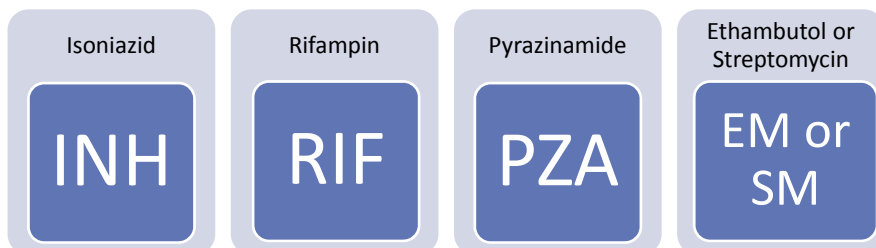




- Non-adherence is a major problem
- Use case management and Directly Observed Therapy (DOT) to ensure patients complete treatment

## Treat of TB for HIV-Negative Persons

4 drugs in initial 8 week regimen



- Adjust regimen when drug susceptibility results are known
- Usually INH-RIF in continuation phase (18 weeks)
- Total treatment = 26 weeks

# TB:HIV

- Management of HIV-related TB is complex
- Care for HIV-related TB should be provided by or in consultation with experts in management of both HIV and TB

## BCG Vaccination

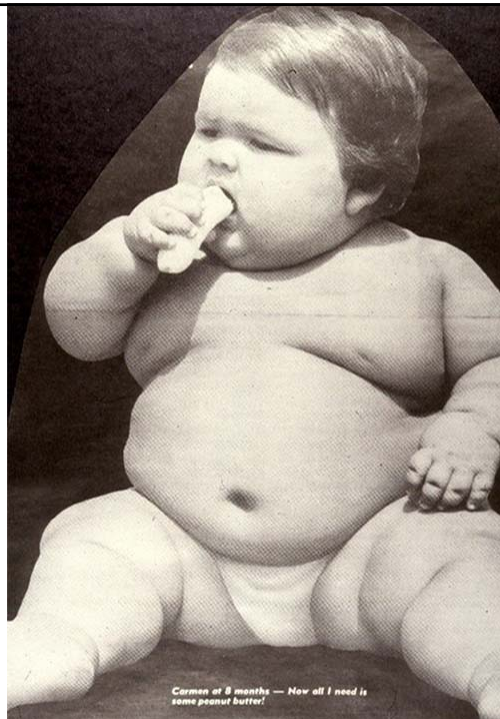




## Recommendations for BCG Vaccination

- Not recommended in immunization programs or TB control programs in the U.S.
- BCG utilized extensively in most developing countries including Honduras
- **BCG only prevents TB Meningitis in infants**
- History of BCG immunization **is not a contraindication** for PPD skin testing—test is to be read the same

We have  
a big  
problem!



**NEW WORLD RECORD!**

**3-YEAR-OLD WEIGHS 233 POUNDS!**

**SUPERBABY DWARFS HIS 4 1/2-FOOT-TALL MOM BY 12 INCHES!**

And if nothing is done?

**BABY BORN WITH ANGEL WINGS!**

LITTLE Marlon is a happy, healthy baby — with a perfectly formed pair of angel's wings.

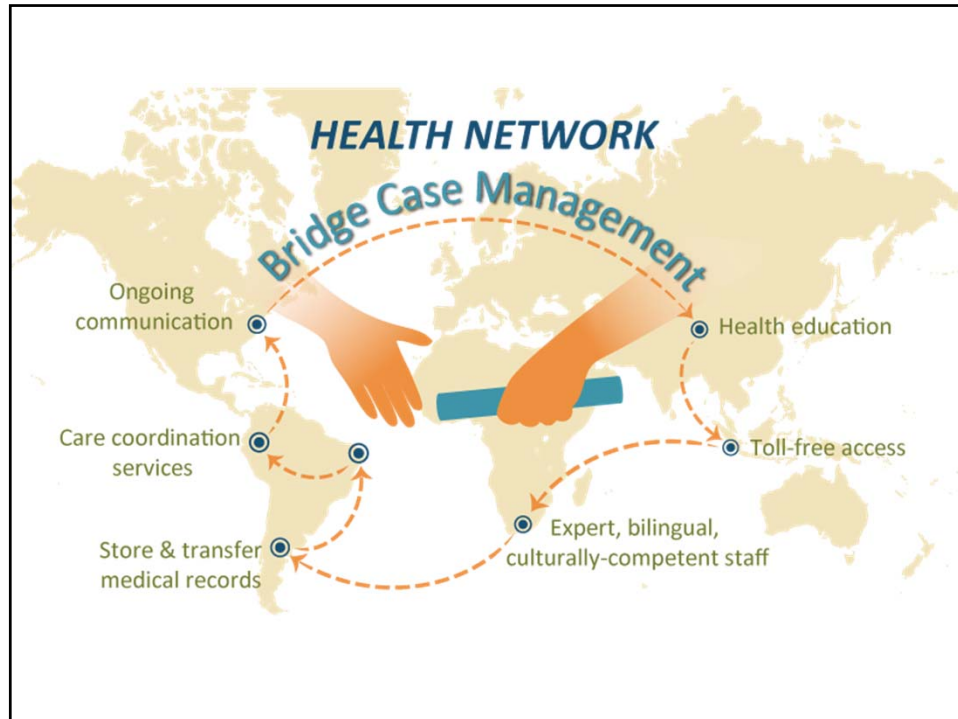
We could just wait for this little guy, or....

## New Diagnostic Test for TB



- **Xpert MTB/RIF** — New diagnostic test for TB
  - Automated Rapid Molecular Detection of TB and Rifampin resistance
  - From fresh sputum specimen-> diagnosing TB and detecting resistance to rifampin in less than **2 HOURS!!**
  - “Could revolutionize TB care”  
Mario Raviglione WHO STOP TB Director

**MGN**



### Class 3 Active TB: TBNet Treatment Success (2005-2011)

- ✓ 1,145 Class 3 Active TB Cases Referred
  - 34 treatment not recommended by destination country
- ✓ 1,111 Treatment Recommended
  - 13 deceased
- ✓ 1,098 Followed by TBNet for Active TB
  - 112 lost to follow up
  - 64 refused treatment

**922 Complete Treatment = 84.0%**

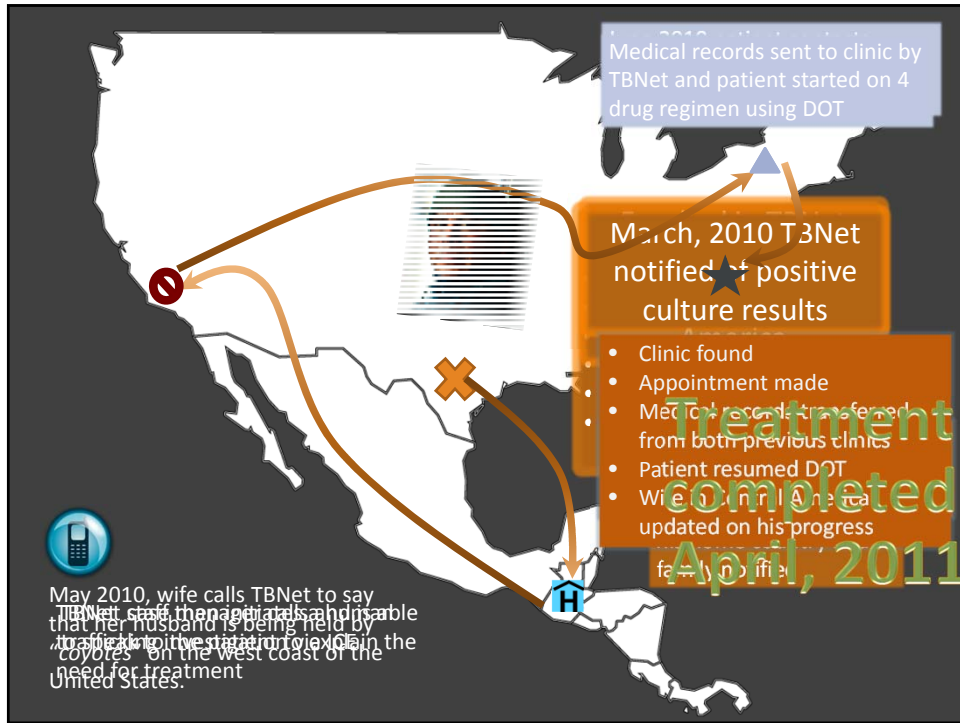


## Health Network

- Continuity of care
- Decrease in lost to follow-up
- Completion reports
- Central hub for patient medical records
- Cultural competent team
- Patient advocacy
- Better communication among clinics (and patients as well)
- Better knowledge of health conditions and treatment options







# Contact

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