

# The Art of Holding Hands: Coordinated TB Care in 2016 and Beyond

*Flagstaff, AZ  
November 16, 2016*

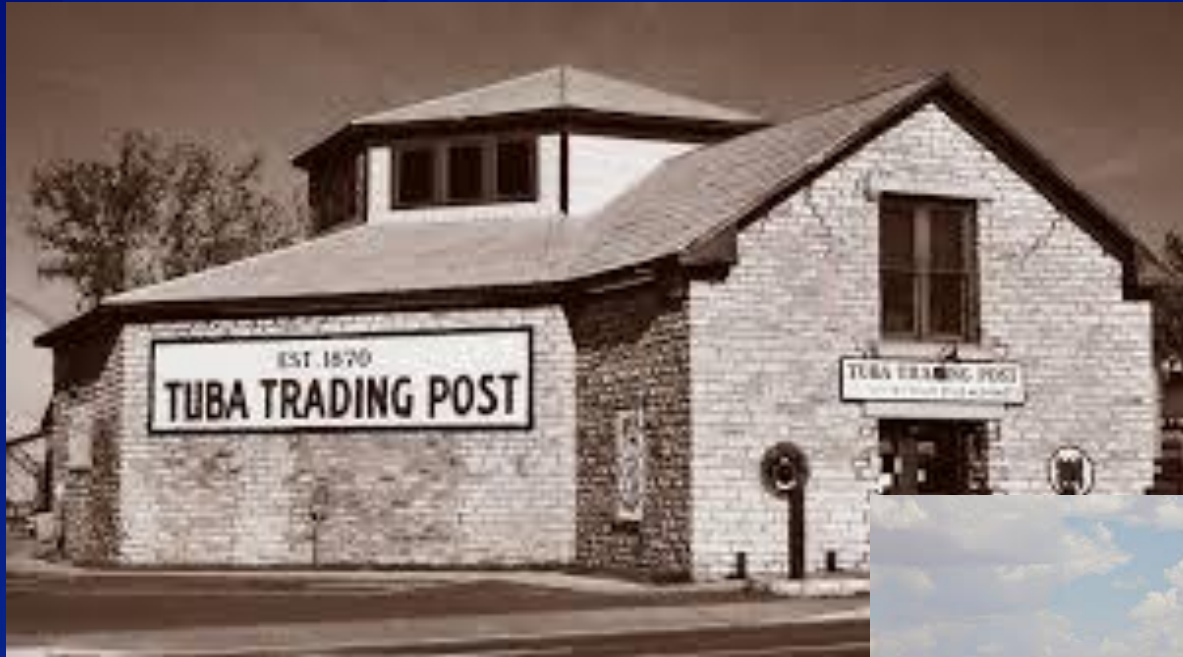
**David A. Yost, M.D., MSc.**  
CDC Southwest Field Medical Officer



# Disclaimers

- ❑ No conflicts to declare
- ❑ Opinions expressed are not necessarily those of the Centers for Disease Control or the Indian Health Service

# Tuba City - 1965



## 50+ Years Ago

Now you be good for your mother when she takes you to Flagstaff....



# Flagstaff - 1965





**Not good**

# Teaching Points

## ❑ Handholding can hurt

- It isn't always easy or comfortable to follow someone else's ideas

## ❑ Handholding can lead you in new and unexpected directions

- The input of others can broaden horizons, expand ideas, and lead to new options for success

## **“Holding Hands” Definition**

**“A means to keep those who are dear to you safe in an unpredictable world.”**

**- Mrs. Yost (1965)**





## **“Holding Hands” Definition**

**“The establishment, maintenance and expansion of cooperative relationships with traditional and non-traditional partners that facilitate the realization of mutual goals.”**



# Goals

- ❑ **Handholding is Essential** - Participants will develop an understanding of critical levels of future TB expertise and TB resources in the U.S. and Four Corners region
- ❑ **Lots of Handholding Partners** - Participants will be able to identify at least three new collaborative opportunities which can facilitate TB care

## In the beginning...

- ❑ Two boring graphs

And

- ❑ One that really counts

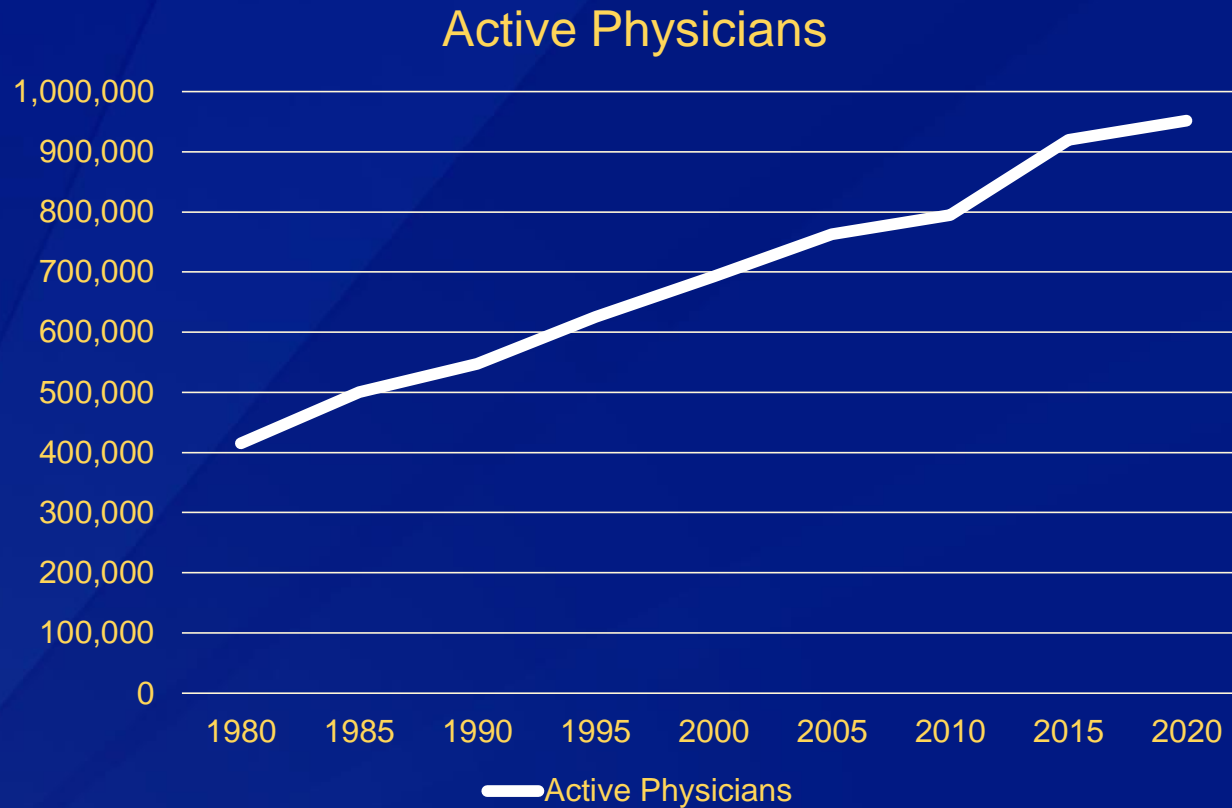
# Reported TB Cases United States, 1982–2015\*



\*Updated as of March 2016

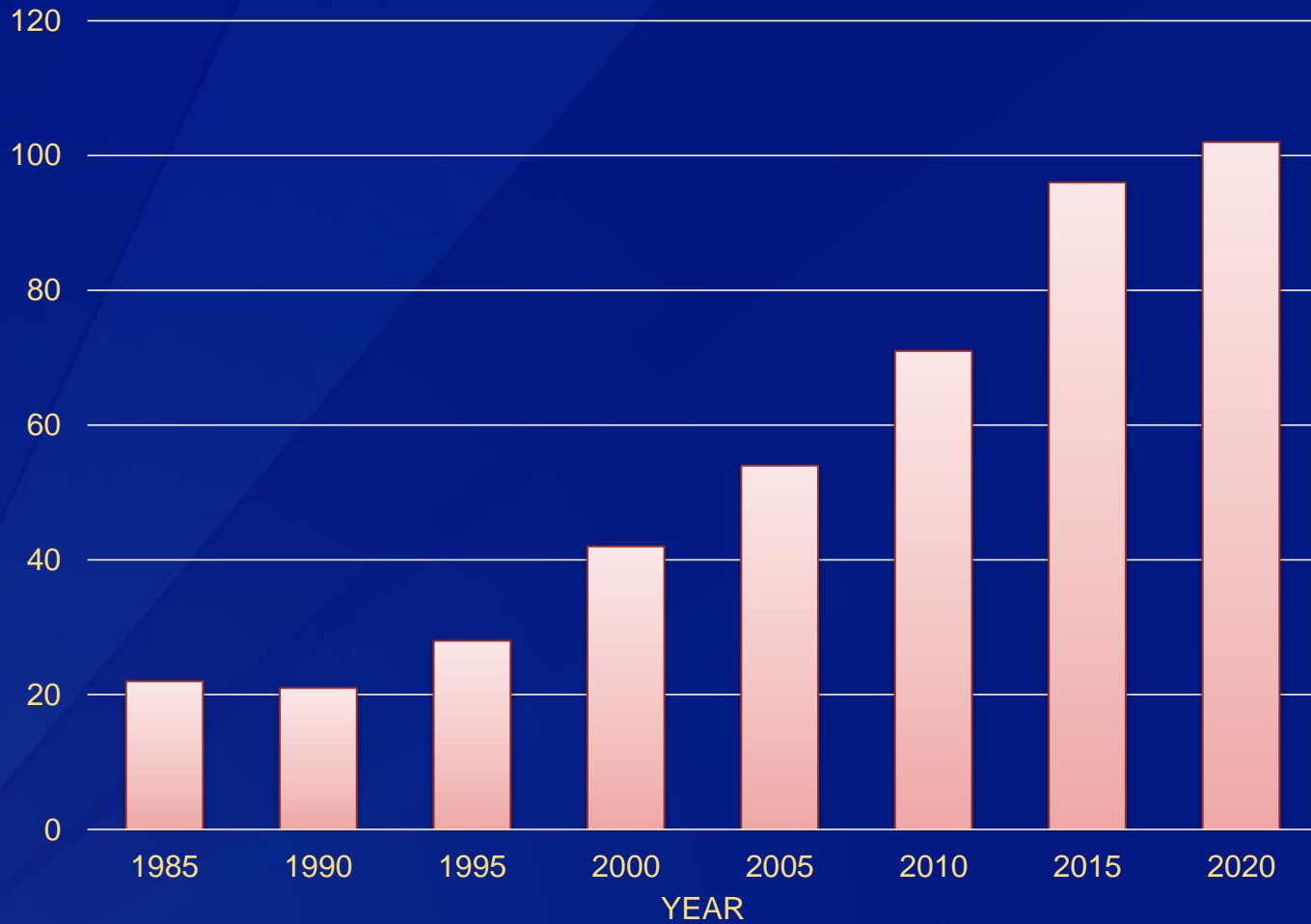
Source: Centers for Disease Control and Prevention

# Total number of active doctors of medicine in the U.S. from 1980 to 2020 (projected)



<http://www.statista.com/statistics/186269/total-active-doctors-of-medicine-in-the-us-since-1949/>  
<http://www.cdc.gov/nchs/data/hus/2015/085.pdf>

# Physicians per Active TB Case in the U.S.



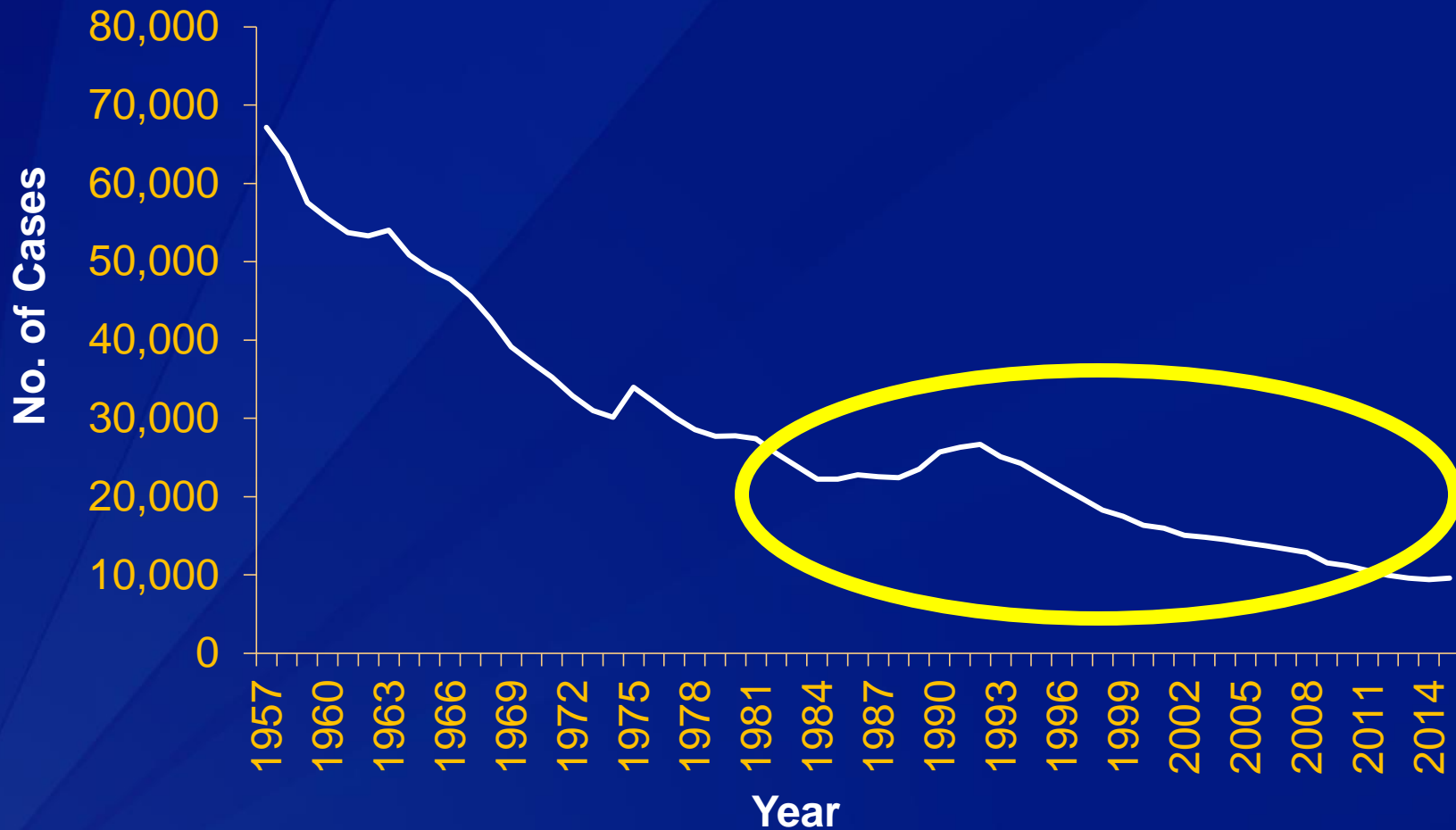
**1 TB case per 100 practicing physicians**

**102**

**100**

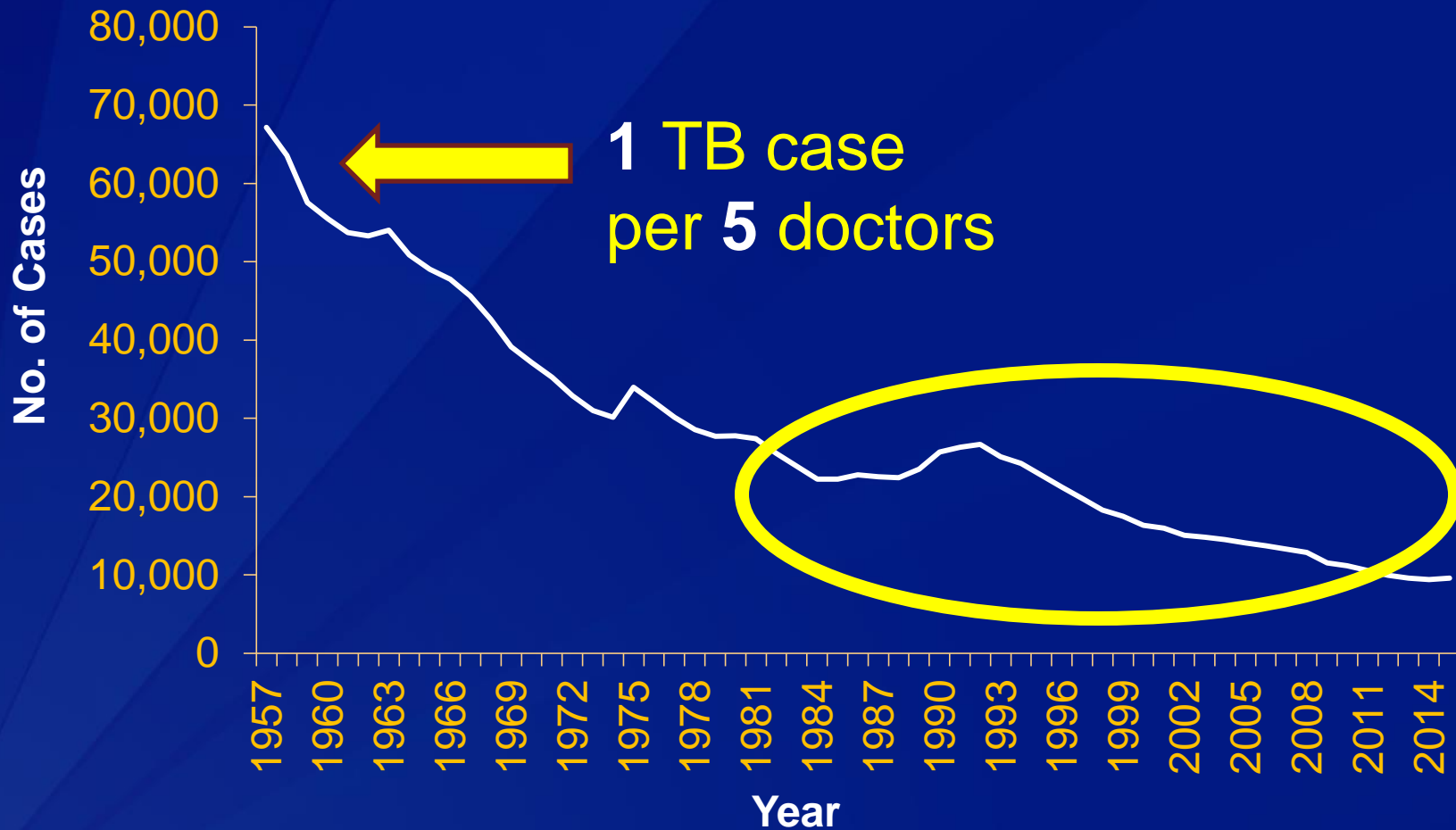


# Reported TB Cases United States, 1957–2015





# Reported TB Cases United States, 1957–2015





National Center  
for Advancing  
Translational Sciences

**GARD** Genetic and Rare Diseases  
Information Center

- ❑ **Orphan Drug Act of 1983 / Rare Diseases Act of 2002**
- ❑ **Definition**
  - United States - defined as a condition that affects fewer than 200,000 people
  - European Union - affects fewer than 1 in 2,000 people
- ❑ **7,000 rare diseases**
  - TB is on the GARD list
  - Just above Coccidioidomycosis (9,438 cases) and Cryptosporidiosis (9,056 cases) in 2013

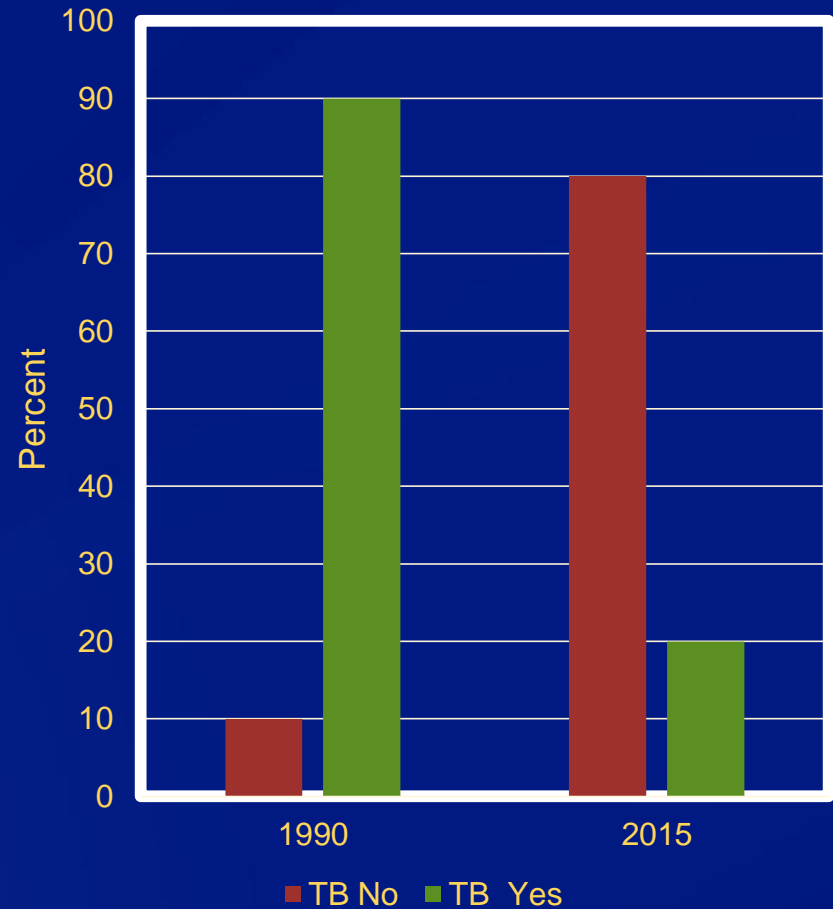
<https://rarediseases.info.nih.gov/diseases/pages/31/faqs-about-rare-diseases>

MMWR October 23, 2015 / 62(5); 1-119

# Whiteriver IHS Hospital

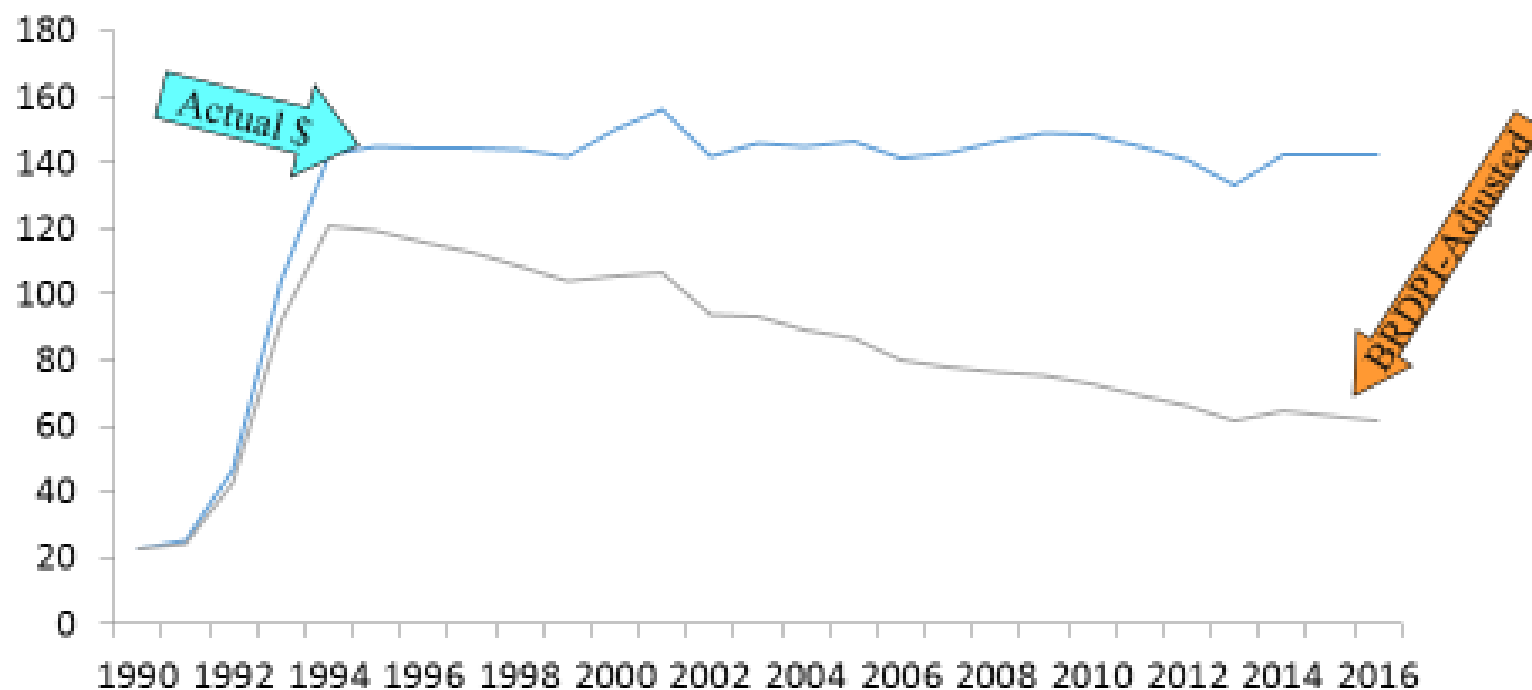


Physicians Comfortable with Independent TB Care



## Annual CDC TB Budget, FY 1990–FY 2016\*

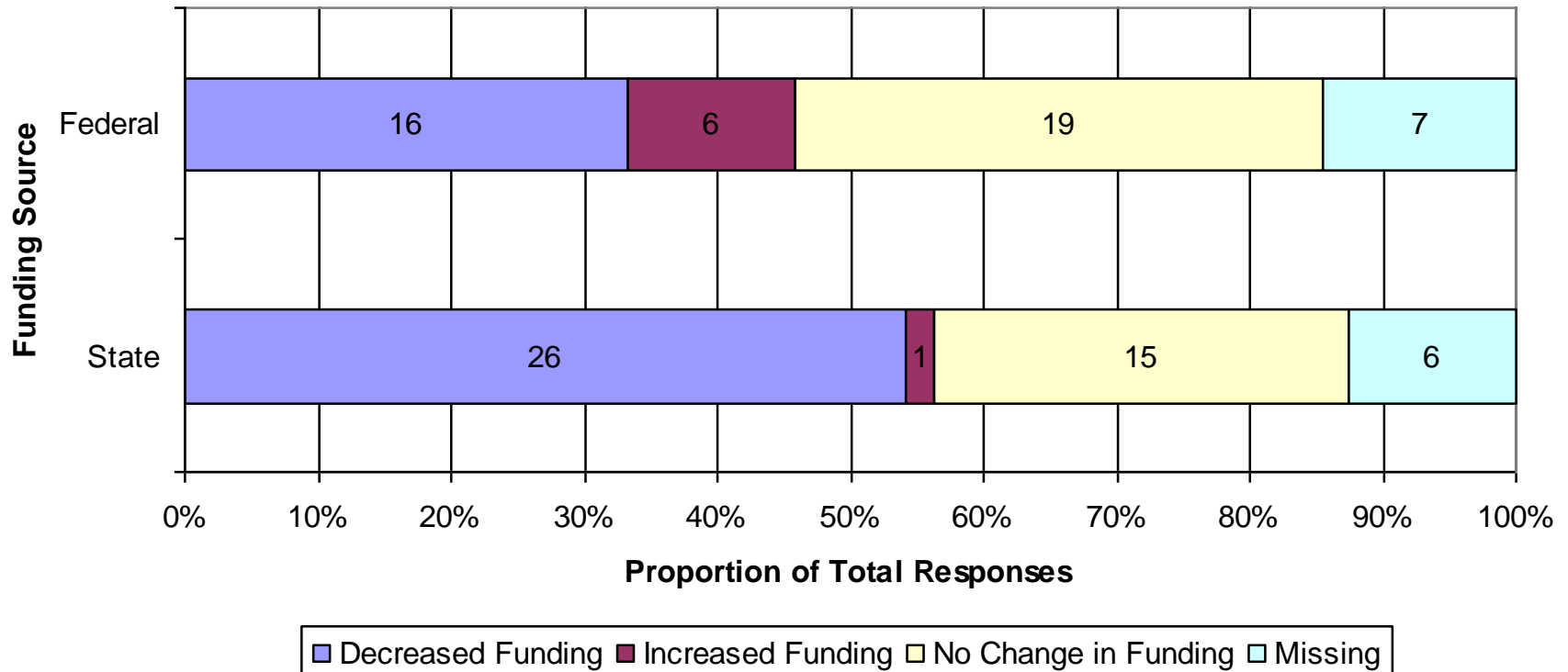
*48% drop in purchasing power in FY 2015 vs FY 1994*



\*1990 Dollars, Adjusted by the Biomedical Research and Development Price Index (BRDPI). Includes TB/HIV and lab dollars. Updated 6/14/2016

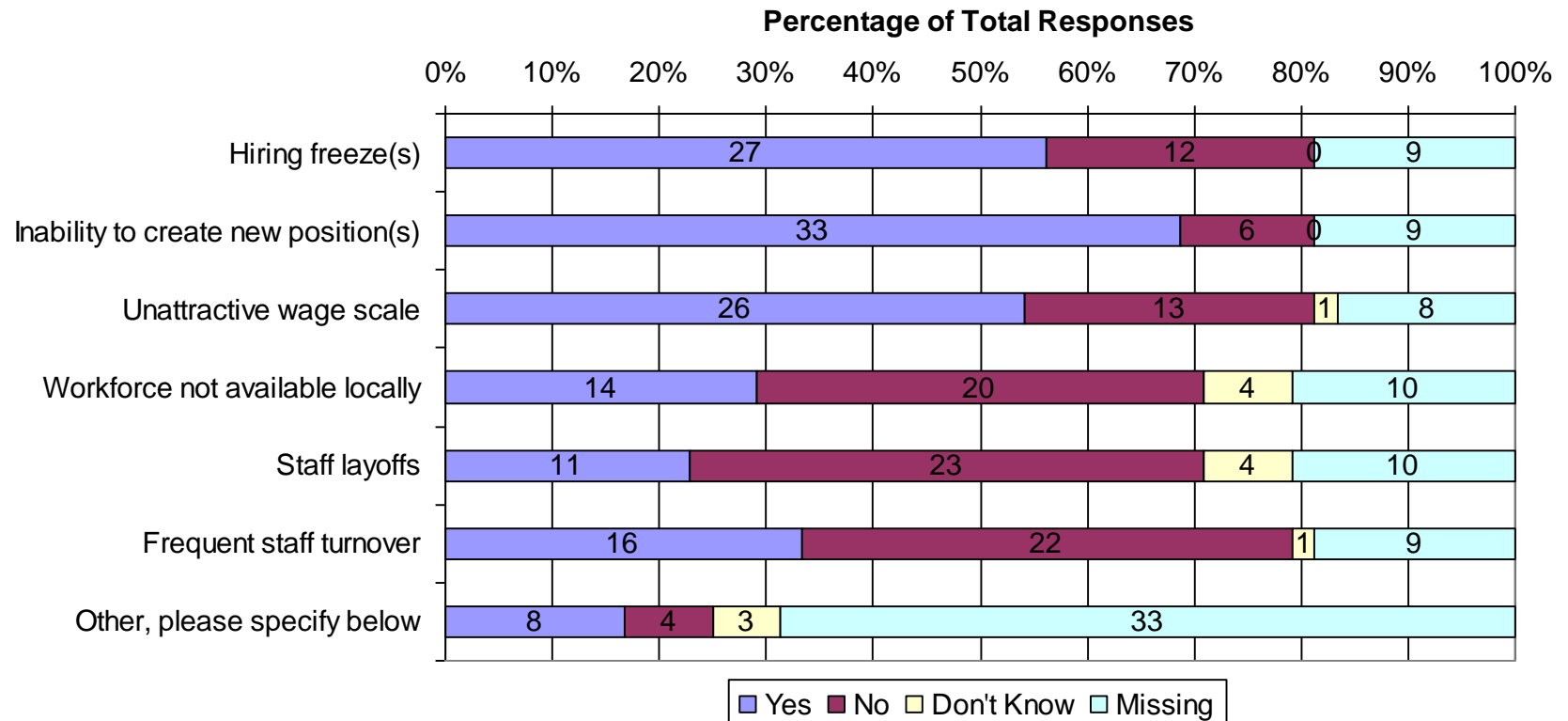
# NTCA Constituent Survey

## Funding Changes in 2009



# NTCA Constituent Survey

## Human Resource Challenges, 2009



## **NTCA Press Release – 10/2016**

**“TB cases in the US increased for the first time in over 20 years in 2015, and the CDC states that ‘progress toward TB elimination in the United States appears to have stalled. History shows that when we ignore TB it comes back with a vengeance. The next President must increase support for state and local programs, while also addressing TB globally.”**

**Donna Wegener**

**Executive Director, National TB Controllers Association.**

Partners in Health, IDSA Center for Global Health Policy, Treatment Action Group, TB Alliance, National TB Controllers Association, American Thoracic Society, and Aeras.

# Progress and Expertise

## The 10 Leading Causes of Death in the AI/AN Population

1951-1952	1996-1998
1. Heart disease	1. Heart disease
2. Accidents	2. Cancer
3. Influenza and pneumonia	3. Accidents
4. Tuberculosis	4. Diabetes
5. Certain diseases of early infancy	5. Chronic liver disease
6. Cancer	6. Stroke
7. Intestinal disease (dysentery, enteritis)	7. Pneumonia and influenza
8. Stroke	8. Suicide
9. Congenital malformations	9. Chronic obstructive pulmonary disease
10. Homicide	10. Homicide



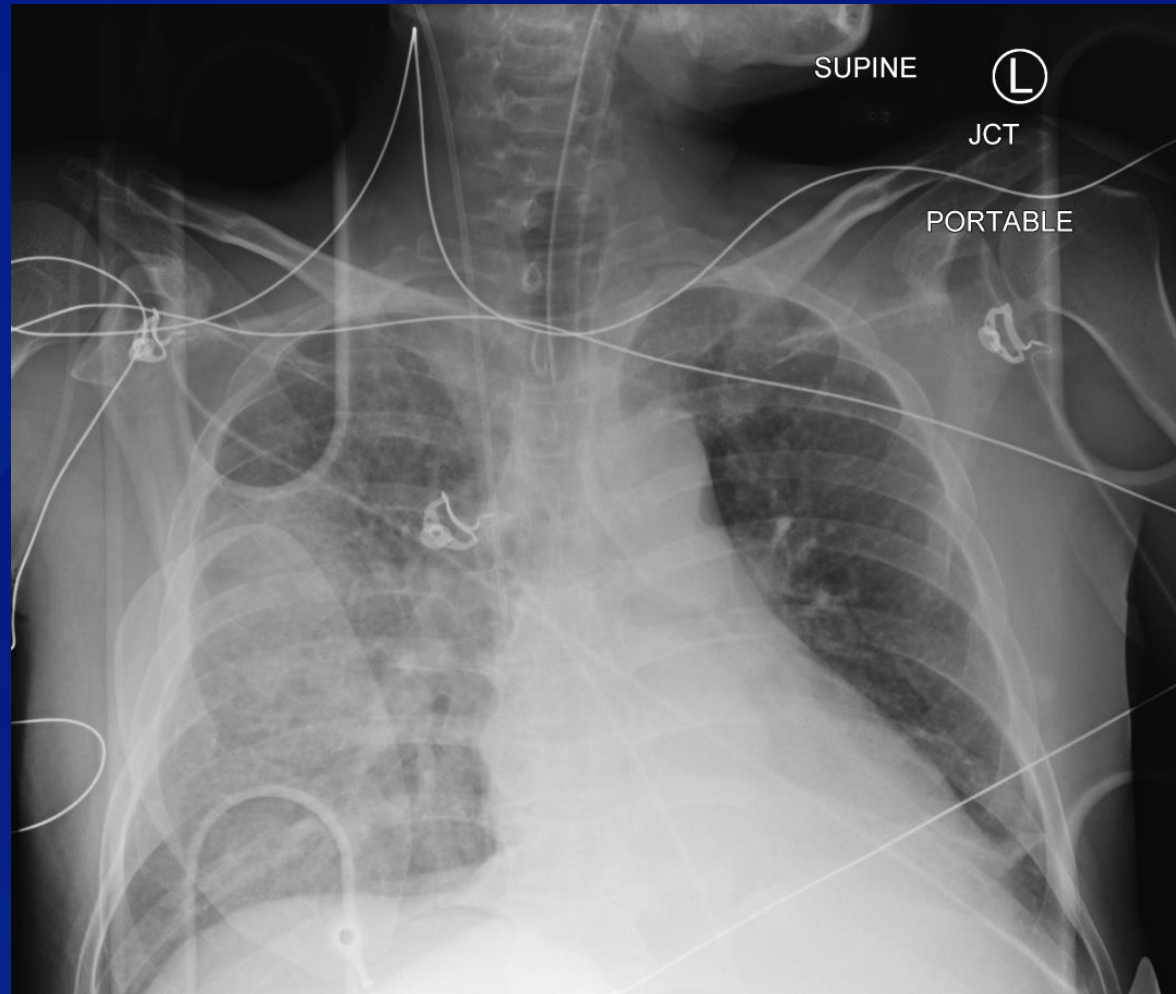


# An Illustrative Case

## □ Summer 2015

- American Indian male presents to an off-reservation ER
- Significant respiratory distress with complaints of cough, dyspnea, fever
- No additional history
- Rapidly intubated

**ER  
CXR**



## An Illustrative Case (2)

### □ ER and Hospital Care

- ER provider concerned about atypical pneumonia - Orders AFB smears, cultures, and isolation
- Hospitalists admit patient to ICU on ventilator and broad spectrum antibiotics
- Progressive respiratory distress
- **Death from respiratory failure**

## An Illustrative Case (3)

### □ Summer 2015

- Reference lab identifies AFB+ organisms on smears
- TB growth confirmed by HPLC
- Sample sent to state TB lab for confirmation
  - *Mycobacterium tuberculosis* confirmed
  - Sample sent to national reference lab for genotyping
- **Case reported to CDC as TB related mortality**

# History and Connections

## ❑ Fall 2015

- TB field investigation
  - No travel out of reservation area, no prison time
  - No known TB contacts
  - Alcohol use, but no other known immunosuppressive conditions
  - Previously PPD negative
- Hospital investigations

# The Connections

## ❑ Fall 2015

- Genotype report received
  - PCR 00017
  - 24-locus MIRU-VNTR 224325153324 34333442333a
- **Not a typical Native American genotype**
- **Matched to non-Native county resident case from 2012**

# The Source Case

## □ 2012

- Diagnosed with pulmonary TB in urban area, but treated rurally by County A on-reservation after hospital discharge
- Risk factors
  - Homeless lifestyle
  - Drug use
  - TB etiology possibly connected to exposures in Texas
- Contact investigation referred to County B (on and off reservation)

## However.....



- ❑ County A and County B didn't follow-up with each other
- ❑ Neither county followed up with the IHS
- ❑ Nobody informed the tribe



## An Illustrative Case - Outcome

- ❑ Probable transmission paths identified
- ❑ Numerous previously unidentified community contacts found and tested
- ❑ Numerous hospital and clinic employees tested and followed
- ❑ Additional possible death found

## **ATS Guidelines 2016**

- ❑ Recommend that patients begin antiretroviral therapy (ART) while being treated for TB**
- ❑ Daily dosing, rather than intermittent dosing, is preferred in the intensive phase**
- ❑ Daily dosing or treatment three times per week is recommended for the continuation phase**
- ❑ Recommend comprehensive care of all TB patients using case management**

## **ATS Guidelines 2016**

**“The optimal organization of tuberculosis treatment often requires the coordination not only of primary and specialty clinical care services, but also community-based organizations and agencies in the public and private sectors.”**

# **“The End Game - Eliminating Tuberculosis In America”**

**“When an infectious disease recedes from public view, society often reduces prevention and control efforts - but this is exactly the time to double down, especially when we have the tools to eliminate TB forever”**

**Dr. Jonathan Mermin**

Director of CDC's National Center for HIV/AIDS,  
Viral Hepatitis, STD, and TB Prevention

# **“Tuberculosis control and elimination 2010-2050: cure, care, and social development”**

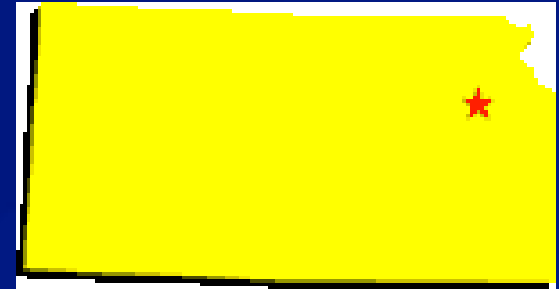
## **Components of the Stop TB Strategy and implementation approaches:**

- ❑ “Involve all public, voluntary, corporate, and private providers through public-private mix approaches”**
- ❑ “Foster community participation in TB care, prevention, and health promotion”**

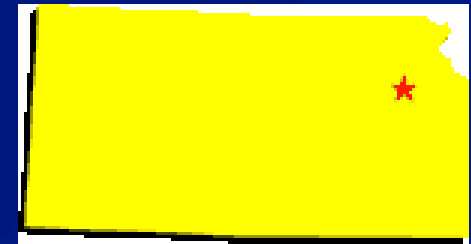
# **Creative Handholding: Examples From the Field**

# Student TB Risks - Kansas

- ❑ 18% of state's TB cases occurred in post-secondary students
- ❑ Student mobility frequently led to incomplete testing and treatment
- ❑ Costly contact investigations (monetarily and politically)



# Student TB Action Plans - Kansas



## □ State legislation

- Requires schools to develop TB Prevention and Control plans under guidance from KDHE
- Requires student compliance
- Requires 5-year record maintenance
- Costs prescribed to students and schools

## □ School plans

- Focus on high-risk international students
- Increased use of IGRAs
- Increased use of 3HP



# Student TB Action Plans - California



## □ 3HP - UC system (2012-2015)

- 238,000 students / 145,000 staff at 10 UC campuses
- Target programs at UCSD and Cal
- eDOT, text messaging, e-mail

## □ Impact

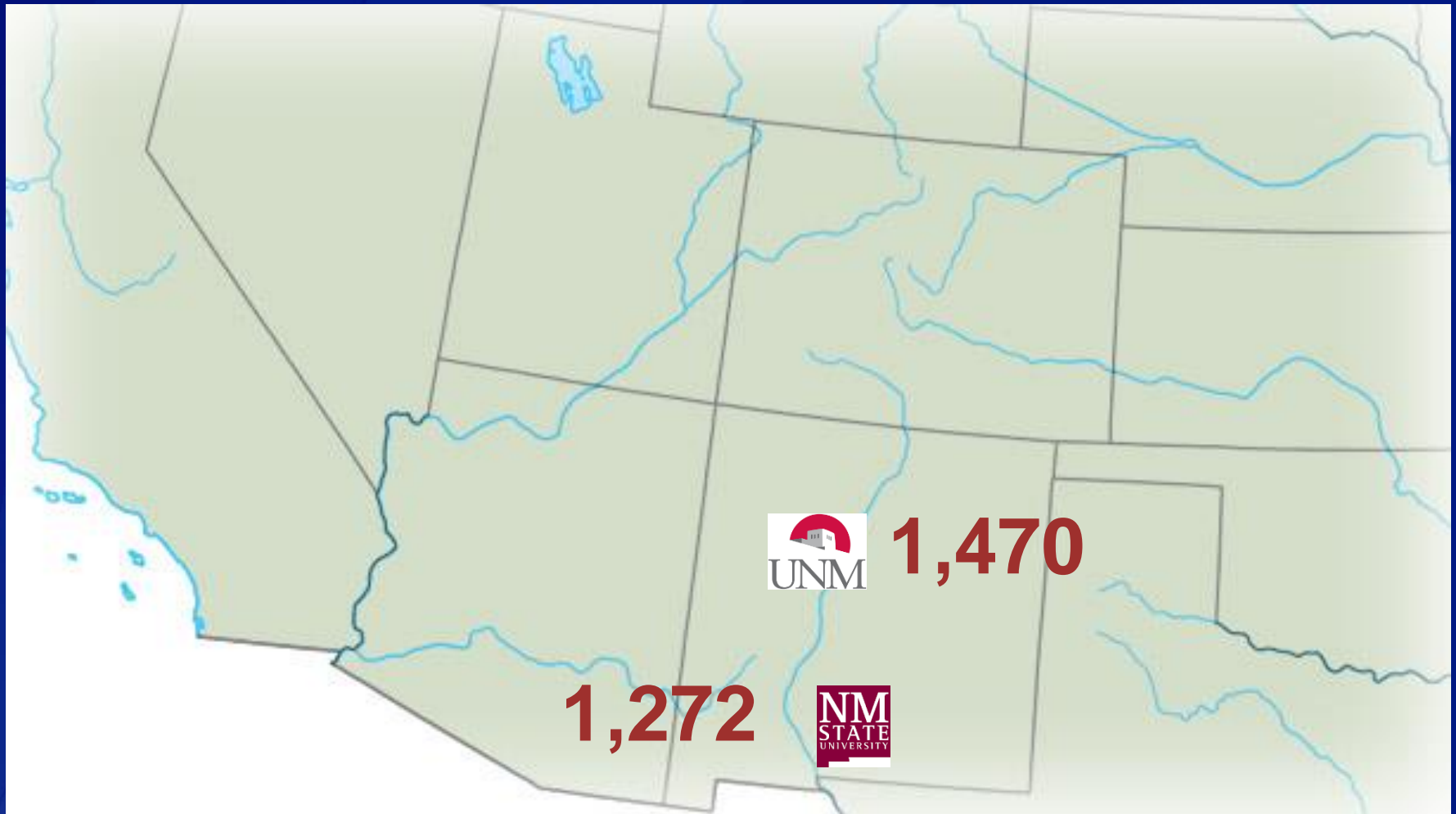
- 92-100% 3HP completion rates
- Expansion of 3HP to all UC sites in 2016
- Estimated annual TB cases prevented:

175

## **International Students in the US (2014-15)**

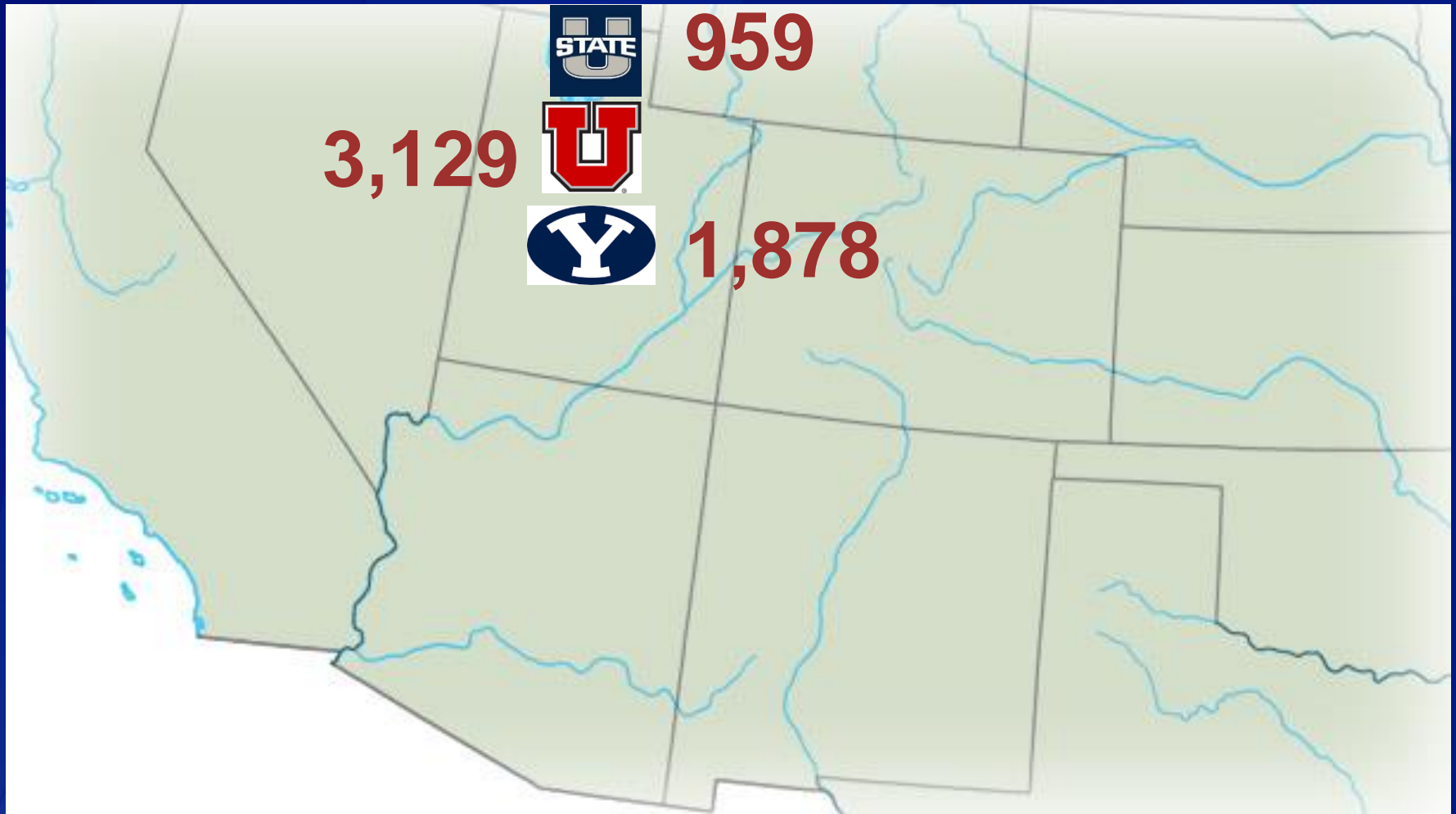
- ❑ Total international student enrollment: 974,926**
- ❑ 4.8% of all higher education students in the U.S. are international**
- ❑ 1 of 3 international students studies in California, New York or Texas**
- ❑ But.....**

# Foreign Born Students – 4C Region



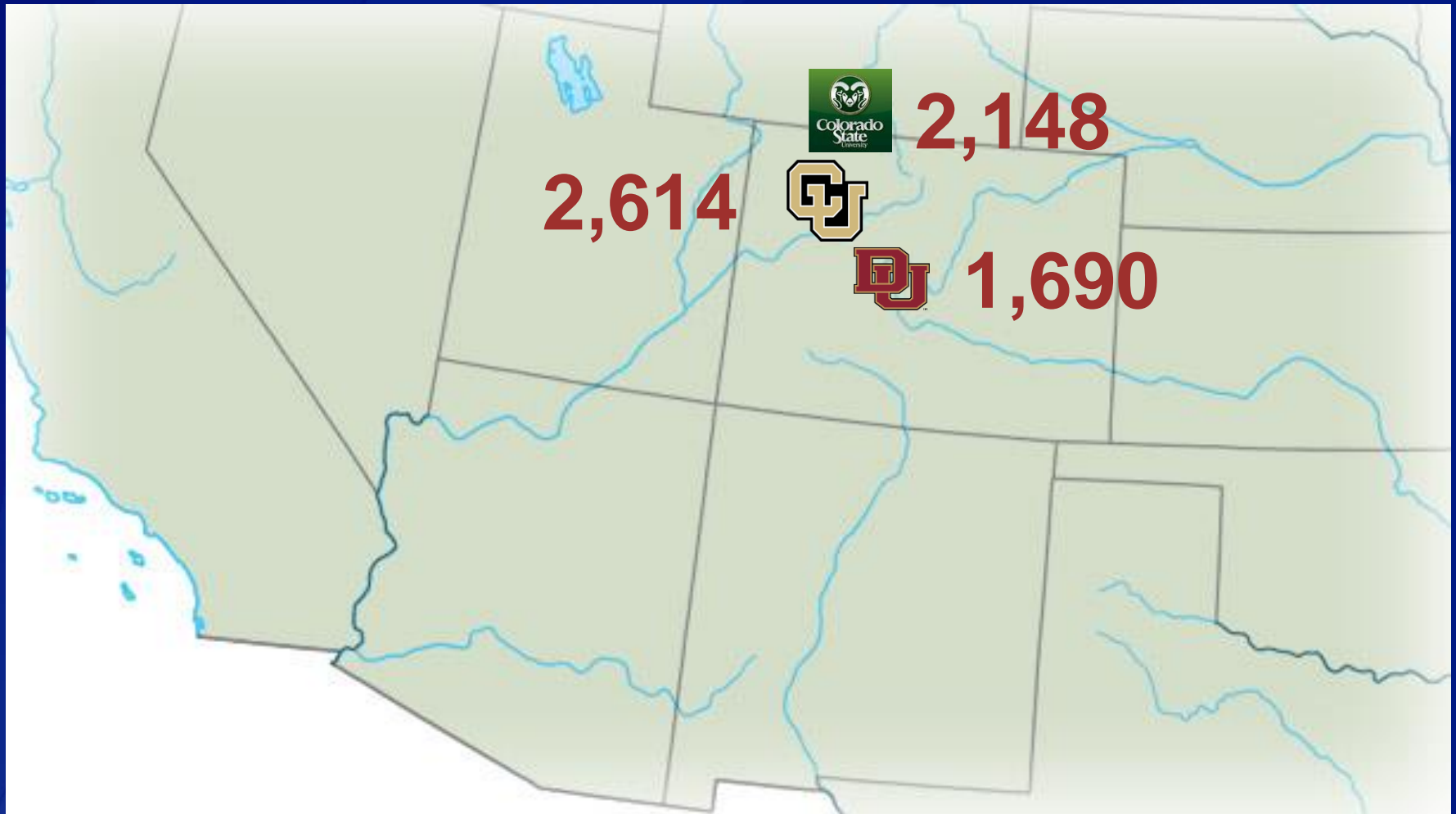
Source: Educational Exchange Data from Open Doors 2015  
INSTITUTE OF INTERNATIONAL EDUCATION

# Foreign Born Students – 4C Region



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INSTITUTE OF INTERNATIONAL EDUCATION

# Foreign Born Students – 4C Region

A map of the 4C region, which includes parts of California, Nevada, Idaho, Utah, Arizona, and New Mexico. The map is light green with black outlines for state boundaries and blue lines for rivers and lakes. The number 43,233 is overlaid in the center in a large, bold, dark red font.

**43,233**

Source: Educational Exchange Data from Open Doors 2015  
INSTITUTE OF INTERNATIONAL EDUCATION

# **More Creative Handholding: Bringing Other Professionals into the TB World**

- ❑ Pharmacists**

- ❑ EMTS**



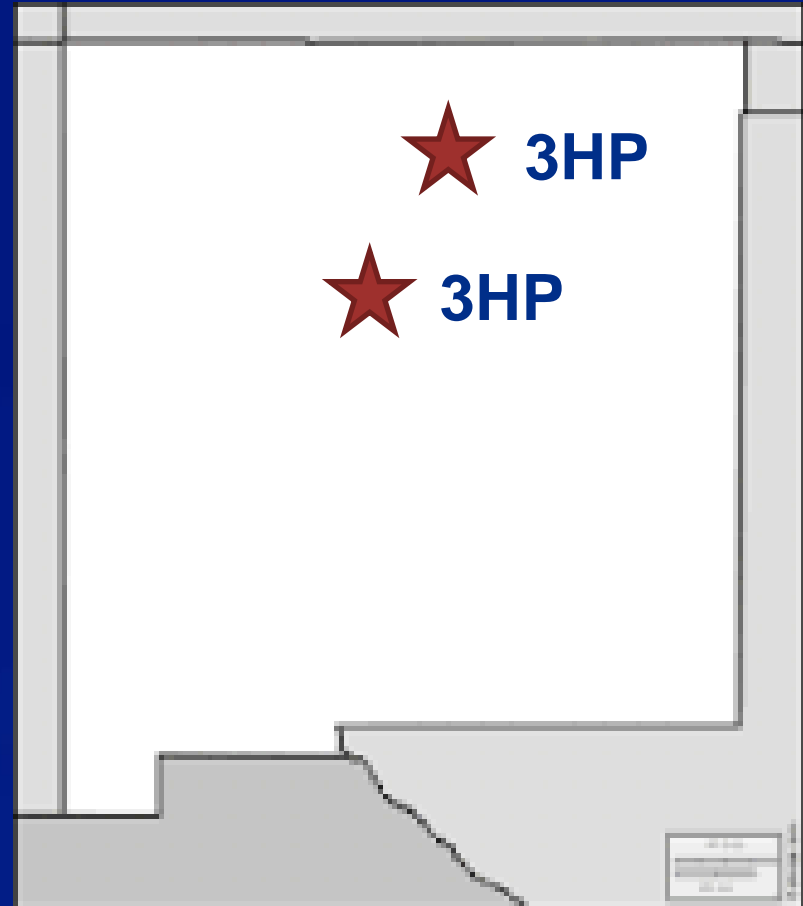
# New Mexico Pharmacy Project

- ❑ **Authorized in 2011**
- ❑ **NM DOH training program**
- ❑ **Trial period**
  - 43 pharmacists certified
  - 8 community pharmacy sites
  - 606 TSTs administered
  - 92.8% return rate for reading
  - 3.1% positivity rate



# New Mexico Pharmacy Project – Next Steps

- **National Association of Chain Drugs Stores foundation funding**
  
- **3HP DOT**
  - Offered at community pharmacy sites
  - Cases reviewed by NM DOH TB staff



# Ventura County, California Community Health / EMS Collaboration



Source: Eva Reeder RN, BSN, PHN – Ventura Communicable Disease and Tuberculosis Control Programs

# Ventura Project

- ❑ 2,134 TB cases in California in 2014
- ❑ Ventura county
  - 46 cases in 2014
  - #13 of 45 counties
  - Significant number of homeless cases and migrant workers



# Ventura Project

- ❑ **16 select paramedics enlisted for DOT dispensing**
  - Active cases and high risk LTBI
  - >18 years old
- ❑ **16 hr TB curriculum and mentoring**
  - Side effect monitoring and management
  - Physician/RN oversight
  - Documentation



# Ventura Project

## October 2012 – May 2016

- ❑ **48 patients complete treatment**
  - Include BID services for MDR patients
  - Approximately 10-13 active patients at any time
  
- ❑ **DOT services on evenings, weekends, holidays**
  
- ❑ **Cases reduction**
  - 26 cases in 2015 (rank #24/45)
  - 47.8% decrease
  
- ❑ **\$40,000 estimated savings to Ventura TB program**

**More Handholding:  
Reaching Out to Higher Expertise**

# Indian Health Service Infectious Disease ECHO Projects

- HCV teleECHO Clinic  
(March 2013)
- HIV teleECHO Clinic  
(Sept 2013)
- Navajo Nation TB  
teleECHO Clinic  
(Jan 2016)





# Navajo Nation TB teleECHO Clinic

The screenshot displays a teleECHO clinic session. At the top center is the **Project ECHO IT** logo. The main area is a grid of video feeds for participants, including 'Navajo TB', 'Project ECHO IT Support', 'Deborah Haack', 'Chris Lorenita Tso', 'hawkins', 'sarah yazzie', 'David Yost', 'Bleken Amy Dr Tang', and 'altheagabrielas'. A large window in the bottom right shows a shared medical chart with radiology images of a spine. The chart includes the following sections:

- 22. Occupation:**  Self-employed  Contracted employee  Program/contract worker  Not employed  Other occupation
- 23. Diabetes:**  None  Type 1  Type 2  Other
- 24. Substance Use:**  None  Alcohol  Tobacco  Other
- 25. HIV Status:**  None  HIV-1  HIV-2
- 26. Lung Disease:**  None  COPD  Asthma  Other
- 27. Chemotherapy:**  None  Yes
- 28. Cancer:**  None  Yes
- 29. Hepatitis:**  None  Hepatitis A  Hepatitis B  Hepatitis C
- 30. Medications:**  None  Yes
- 31. TB Treatment:**  None  Full course  Partial course  Other
- 32. Symptoms:**  None  Cough  Weight loss  Night sweats  Other
- 33. TB Test Results:**

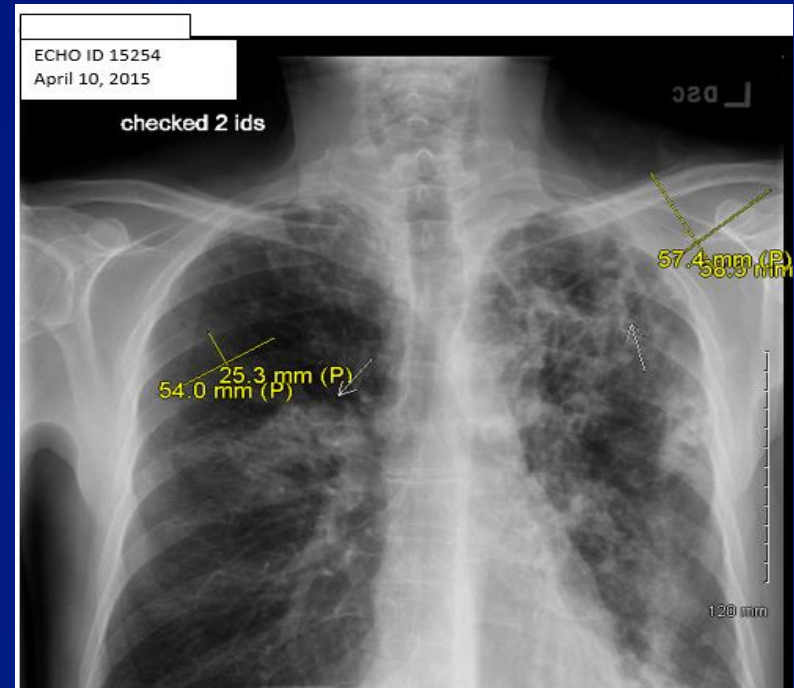
Date	Result	Test
8/7/15	YST	20
- 34. Chest x-ray:**  Normal  Abnormal
- 35. Laboratory Diagnostics:**

Collection Date	Specimen Type	Result	Notes
10/1/15	Sputum	POS	
10/1/15	Sputum	POS	
10/1/15	Sputum	POS	
10/1/15	Sputum	POS	
- 36. TB Meds/Resist:**  None  Yes
- 38. Contact to TB Case:**  No  Yes

SOURCE: UNM ECHO

# IHS TB teleECHO Clinic Tools

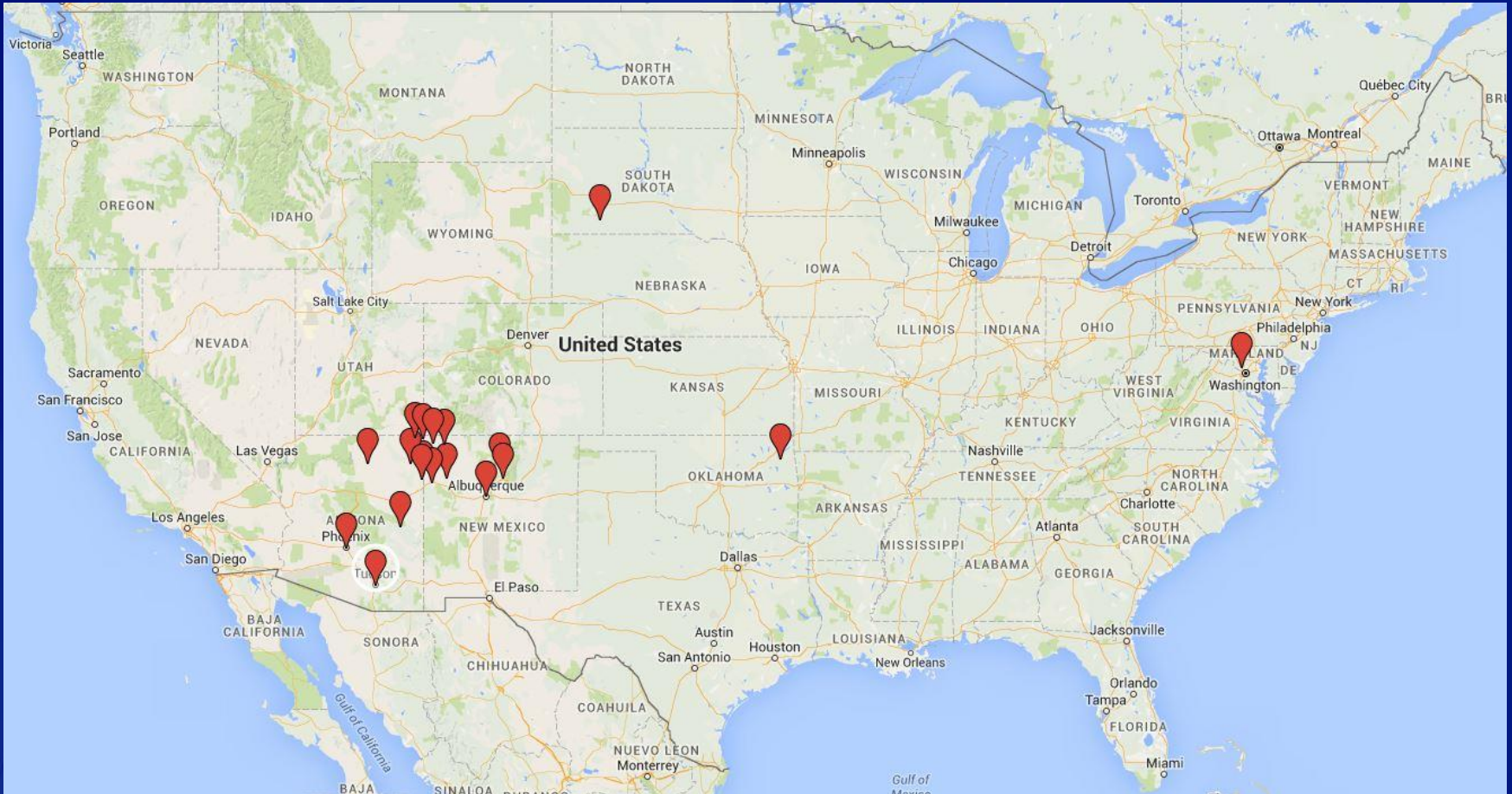
NEW MEXICO HEALTH					
Tuberculosis Record					
Complete for client with suspect/active TB disease and/or TB infection					
For questions please call: 505-827-2471/2473/2500					
Please fax this form with client demographics, H&P, Radiology & Lab reports to 505-827-0163					
ECHO ID#15157					
1. Date: Referred by: ED	2. Nurse Case Manager	3. BEHR/Medical Record #	4. Hospitalized Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Where: Rust	Dates: 1/30/15-2/4/15	
				9. Age 49	
15. County Sandoval					
16. Status <input type="checkbox"/> Suspect Active TB <input checked="" type="checkbox"/> Active TB <input type="checkbox"/> TB Infection positive TST/ QFT/ T.Spot <input checked="" type="checkbox"/> NKDA <input type="checkbox"/> Allergy List:	17. Race <input checked="" type="checkbox"/> White <input type="checkbox"/> Asian, Pacific Islander <input type="checkbox"/> Black <input type="checkbox"/> American Indian <input type="checkbox"/> Other	18. Ethnicity & Sex <input checked="" type="checkbox"/> Hispanic <input type="checkbox"/> Non-Hispanic Sex <input checked="" type="checkbox"/> Male <input type="checkbox"/> Female	19. Reason for Testing <b>Public Health</b> <input type="checkbox"/> Symptoms/ diagnostic <input type="checkbox"/> Contact to TB case <input type="checkbox"/> Refugee Health Screen  <b>Testing by Private Provider</b> <input type="checkbox"/> Immigration <input type="checkbox"/> Work requirement <input type="checkbox"/> Rheumatology <input type="checkbox"/> Dialysis/ESRD <input checked="" type="checkbox"/> Other: ED Specify: ED	20. Residence <input checked="" type="checkbox"/> Private residence <input type="checkbox"/> Homeless <input type="checkbox"/> Shelter <input type="checkbox"/> Jail/prison <input type="checkbox"/> Long Term Care Facility <input type="checkbox"/> Substance Abuse Treatment center <input type="checkbox"/> School Setting <input type="checkbox"/> Other	21. Country of birth <input type="checkbox"/> United States <input checked="" type="checkbox"/> Mexico, specify State: Durango <input type="checkbox"/> Other, specify Date of entry to US 1984 Travel History: <input type="checkbox"/> Bi-National
22. Occupation: <input type="checkbox"/> HCW <input type="checkbox"/> Correctional Employee <input type="checkbox"/> Migrant/seasonal worker <input type="checkbox"/> Not employed <input type="checkbox"/> Retired <input type="checkbox"/> Not seeking employment <input checked="" type="checkbox"/> Other occupation <input type="checkbox"/> Unknown Place of employment:					
23. Diabetes <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No List DM Meds:	24. Substance Use <input checked="" type="checkbox"/> None <input type="checkbox"/> Injection drug use <input type="checkbox"/> Other drug use <input type="checkbox"/> Alcohol use Amount: <input type="checkbox"/> Tobacco use	25. HIV Status Date tested: <input checked="" type="checkbox"/> Negative <input type="checkbox"/> Positive <input type="checkbox"/> Refused	26. Lung Disease <input checked="" type="checkbox"/> None <input type="checkbox"/> Pneumonia <input type="checkbox"/> COPD <input type="checkbox"/> Other, specify:	27. GI/GU <input checked="" type="checkbox"/> None <input type="checkbox"/> Chronic Kidney Disease <input type="checkbox"/> ICD/D <input type="checkbox"/> Other, specify: Due Date:	28. Cancer/Chemotherapy <input checked="" type="checkbox"/> None <input type="checkbox"/> Cancer <input type="checkbox"/> Immunosuppressive therapy <input type="checkbox"/> Other, Specify:
29. Hepatitis <input checked="" type="checkbox"/> None <input type="checkbox"/> Hepatitis A <input type="checkbox"/> Hepatitis B <input type="checkbox"/> Hepatitis C <input type="checkbox"/> Other liver disease		30. Medications <input type="checkbox"/> None <input type="checkbox"/> Steroids <input type="checkbox"/> TNF a blockers <input type="checkbox"/> See attached list Percocet, Kler-ten, Albuterol inhaler			



SOURCE: UNM ECHO



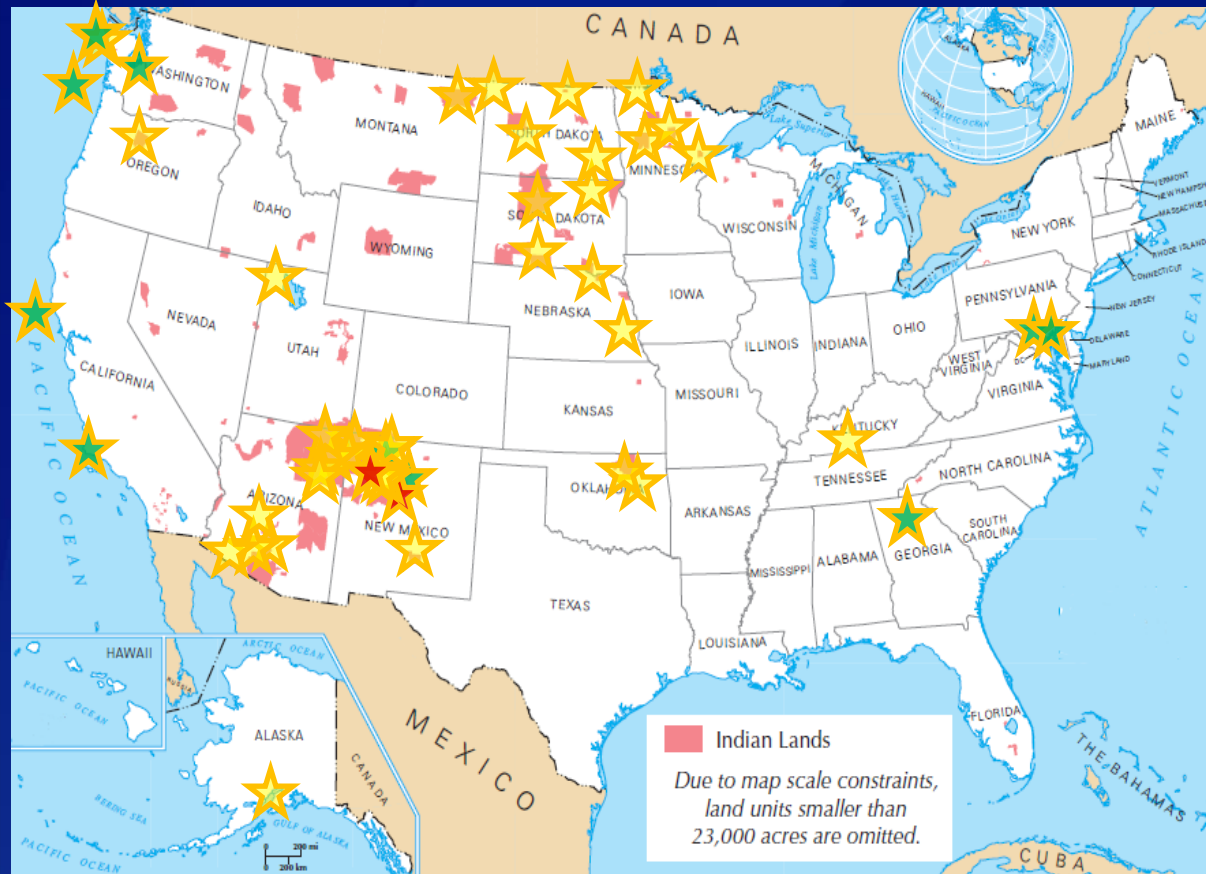
# IHS HIV teleECHO Clinic participating sites



SOURCE: UNM ECHO



# IHS HCV ECHO Participating Sites



★ Project ECHO

Map: [nationalatlas.gov](http://nationalatlas.gov)

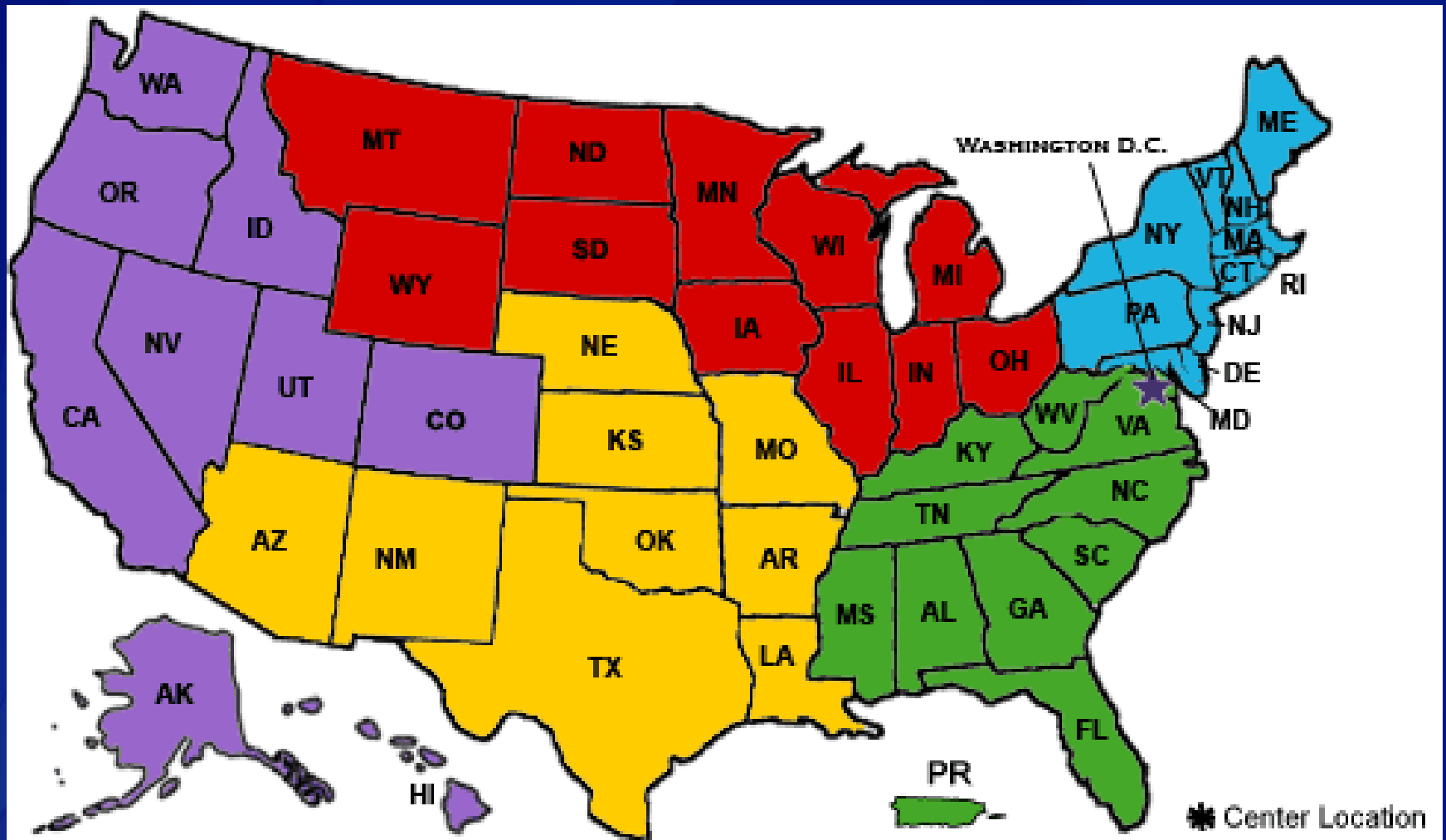
## ★ Clinical Sites

- Alaska Native Tribal Health Consortium (Anchorage, AK)
- Albuquerque Indian Health Center (Albuquerque, NM)
- Cass Lake Hospital (Cass Lake, MN)
- Cheyenne River Service Unit (Eagle Butte, SD)
- Cherokee Nation W.W. Hastings Hospital (Tahlequah, OK)
- Chinle Comprehensive Health Care Facility (Chinle, AZ)
- Claremore Service Unit (Claremore, OK)
- Crownpoint Service Unit (Crownpoint, NM)
- Fond du Lac Human Services (Cloquet, MN)
- Fort Berthold Indian Health Service Health Center (Fort Berthold, ND)
- Fort Peck Area (Poplar, MT)
- Four Corners Regional Health Center (Red Mesa, AZ)
- Fred LeRoy Health and Wellness Center – Ponca Tribe (Omaha, NE)
- Gallup Indian Medical Center (Gallup, NM)
- Great Plains Area Aberdeen (Aberdeen, SD)
- Harborview Medical Center (Seattle, WA)
- Healthcare for Native American Indians in Tennessee (Nashville, TN)
- Indian Health Service (Whiteriver, AZ)
- Mescalero PHS Indian Hospital (Mescalero, NM)
- Northern Navajo Medical Center (Shiprock, NM)
- Phoenix Service Unit (Phoenix, AZ)
- Quentin Burdick Memorial Hospital (Belcourt, ND)
- Red Lake Comprehensive Health Services (Red Lake, MN)
- Rehoboth McKinley Christian Health Care Services (Gallup, NM)
- Rosebud Public Health Nursing (Rosebud, SD)
- Santee Health Center & Wellness (Niobrara, NE)
- Sells Indian Hospital (Sells, AZ)
- Standing Rock Indian Health Center (Fort Yates, ND)
- St. Joseph's Hospital and Medical Center (Tucson, AZ)
- Taos-Picuris Service Unit (Taos, NM)
- University of New Mexico Hospital (Albuquerque, NM)
- University of Utah (Salt Lake City, UT)
- Warm Springs Health and Wellness Center (Warm Springs, OR)
- White Earth Health Center (Ogema, MN)
- Woodrow Wilson Memorial Healthcare Center (Sisseton, SD)
- Zuni Comprehensive Health Center (Zuni, NM)

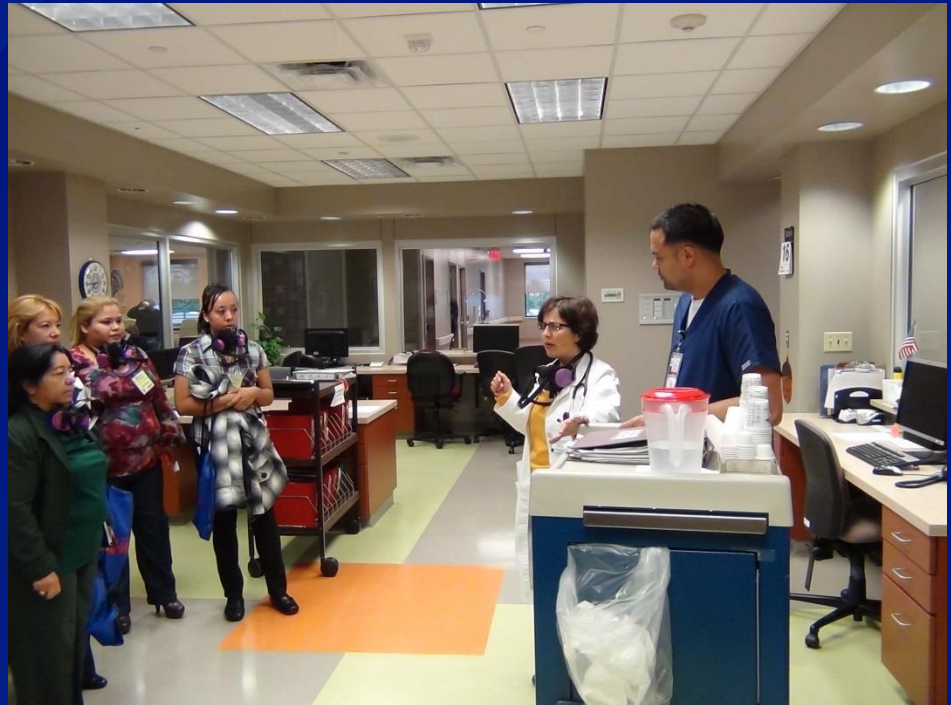
## ★ Non-Clinical Sites

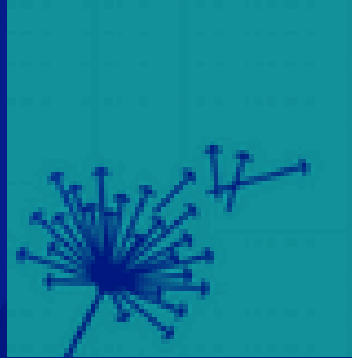
- Center for Diseases Control (Atlanta, GA)
- Drug Policy Alliance New Mexico (Santa Fe, NM)
- Hepatitis Education Project (Seattle, WA)
- HSS Office of HIV/AIDS and Infectious Disease Policy (Washington, DC)
- IHS Headquarters (Rockville, MD)
- NM DOH Public Health Division (Santa Fe, NM)
- Northwest Portland Area Indian Health Board (Portland, OR)
- University of California, Los Angeles – PAETC (Los Angeles, CA)
- University of California, San Francisco (San Francisco, CA)

# Regional Training and Medical Consultation Centers (RTMCCs)

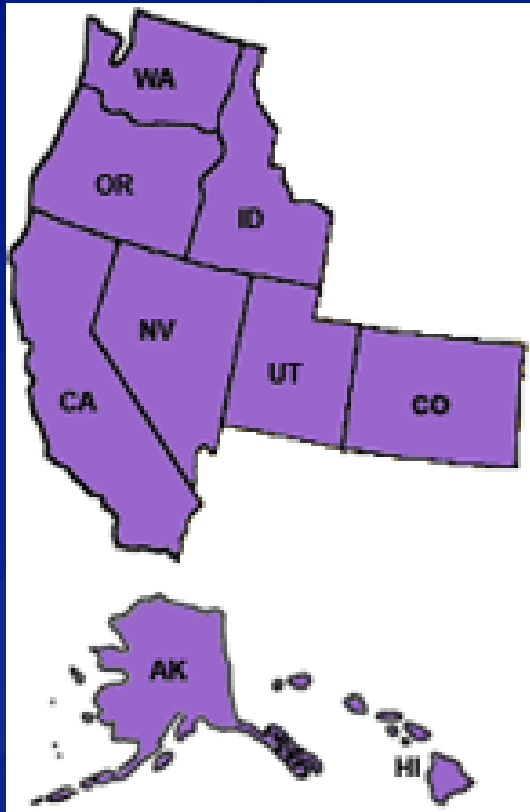


- **Mini-Fellowships**
- **TB Intensive Clinical Workshops**
- **Focused TB Training Programs**





CURRY  
INTERNATIONAL  
TUBERCULOSIS  
CENTER



**Curry International Tuberculosis Center**  
**300 Frank H. Ogawa Plaza, Suite 520**  
**Oakland, CA 94612-2037**  
**Phone: 510-238-5100**  
**E-mail: [CurryTBcenter@ucsf.edu](mailto:CurryTBcenter@ucsf.edu)**  
**Website: [www.currytbcenter.ucsf.edu](http://www.currytbcenter.ucsf.edu)**



**2303 SE Military Drive  
San Antonio, TX 78223-3542**

**Phone: 800-TEX-LUNG  
(800-839-5864)**

**Fax: 210-531-4500**

**Web: <http://www.heartlandntbc.org>**



## Summary

- ❑ **Handholding collaborations will be critical in an era of diminished TB expertise and resources**
- ❑ **Communication between traditional TB partners is the foundation of collaborative TB care (CDC, states, counties, IHS)**
- ❑ **Collaborations with new partners can save resources, improve care, and expand the pool of people skilled at recognizing and treating TB**

# All I really need to know I learned in kindergarten



All I really need to know about how to live and what to do and how to be I learned in kindergarten. Wisdom was not at the top of the graduate-school mountain, but there in the sandpile at Sunday School. These are the things I learned ■ Share everything. Play fair. Don't hit people. Put things back where you found them. Clean up your own mess. Don't take things that aren't yours. Say you're sorry when you hurt somebody. Wash your hands before you eat. Flush. Worms, cookies and cold milk are good for you. Live a balanced life—learn some and think some and draw and paint and sing and dance and play and work every day some. ■ Take a nap every afternoon. ■ When you go out into the world, watch out for traffic, hold hands, and stick together. ■ Be aware of wonder. Remember the little seed in the Styrofoam cup: The roots go down and the plant goes up and nobody really knows how or why, but we are all like that. ■ Goldfish and hamsters and white mice and even the little seed in the Styrofoam cup—they all die. So do we. ■ And then remember the Dick-and-Jane books and the first word you learned—the biggest word of all—LOOK. ■ Everything you need to know is in there somewhere: The Golden Rule and love and basic sanitation. Ecology and politics and equality and sane living. ■ Take any one of those items and extrapolate it into sophisticated adult terms and apply it to your family life or your work or your government or your world and it holds true and clear and firm. Think what a better world it would be if we all—the whole world—had cookies and milk about three o'clock every afternoon and then lay down with our blankets for a nap. Or if all governments had as a basic policy to always put things back where they found them and to clean up their own mess. ■ And it is still true, no matter how old you are—when you go out into the world, it is best to hold hands and stick together.

By Robert Fulgham

“And it is still true, no matter how old you are, when you go out in the world, it is best to hold hands and stick together.”

**Thank You**