Using the ECHO Model to Expand Access to Care and Treatment for HIV and Viral Hepatitis

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11/3/17

Conflicts of Interest

- I have no conflicts of interest to disclose

Moving Knowledge Instead of Patients

Objectives

- Describe the history and development of Project ECHO
- Describe how Project ECHO has impacted care for persons living with HIV and hepatitis C
- Discuss the replication of the ECHO model nationally and internationally

Hepatitis C in New Mexico (2004)

- Large geographic area, low population density
- Few health care providers and no specialists
- More than 35,000 reported HCV cases, < 5% had been treated
- Highest rate of chronic liver disease/cirrhosis

Hepatitis C Treatment in 2004

- Good News
  - Curable in 45-70% of cases
- Bad News
  - Severe side effects
  - Anemia 100%
  - Neutropenia >35%
  - Depression >25%
- No primary care clinicians treating HCV

Goals of Project ECHO

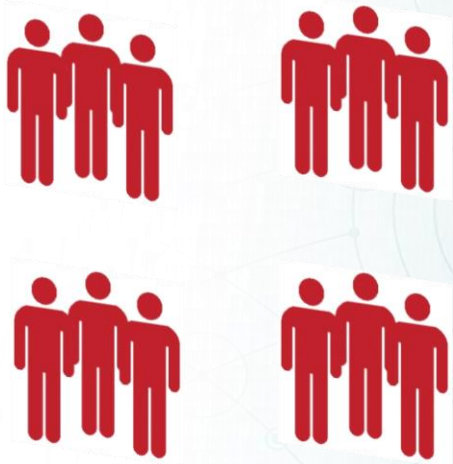
- Develop capacity to safely and effectively treat HCV in all areas of New Mexico and to monitor outcomes
- Develop a model to treat complex diseases in rural locations and developing countries

Methods

- Use technology to leverage scarce healthcare resources (specialty knowledge and expertise)
- Share “best practices”- reduce disparities by reducing variation in care
- Case based learning (learning by doing) to master complexity
- Web-based database to monitor outcomes

Arora S, Geppert CM, Kalishman S, et al: Acad Med. 2007 Feb;82(2): 154-60.

Project ECHO: Multidisciplinary Teams



ECHO Facilitators
Multidisciplinary Team
Infectious Diseases
Hepatology
Psychiatry
Pharmacy

ECHO Partners
Community Clinic
Primary Care Team

Steps

- Train physicians, nurses, pharmacists and their teams in HCV care
- Conduct teleECHO clinics – “Knowledge Network”
- Initiate case-based guided practice – “Learning loops”
- Collect data and monitor outcomes centrally

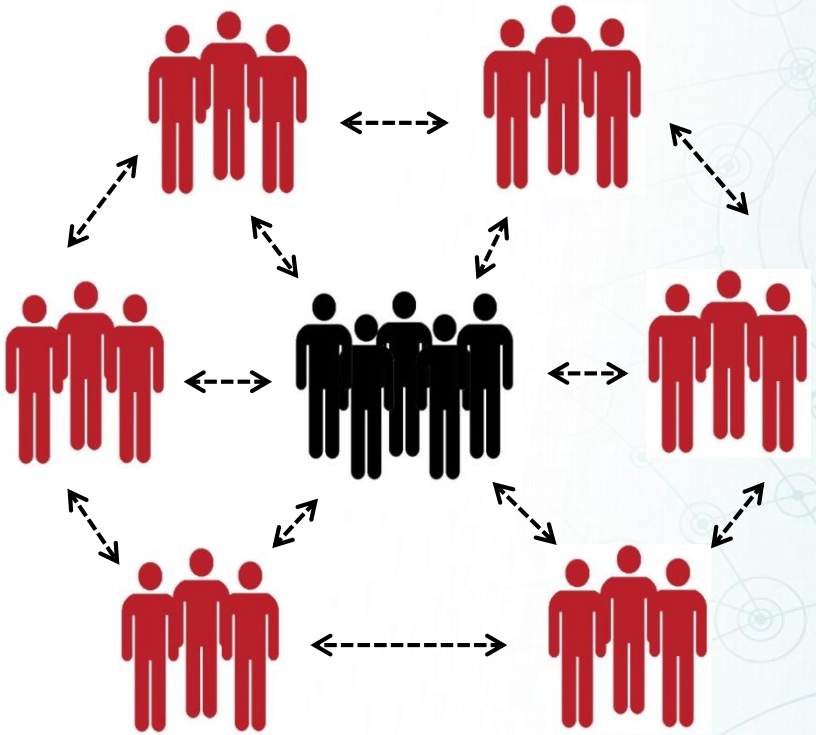

PHI


Stop Recording
Total non-video participants: 2
adominguez
HCV-ECHO
sandra.gonzalez
roden
MRDodd
H323_SDC FCCH3 (373010)
H323_HMS-cliff-vid (HMS-MedSq 519512)
kjoy
ROAMDM's iPad
debra_martinez
Jessica Doyle PA-C
H323_taddy (1842706996)
Mute
Stop Video
Invite
Participants
14
Share Screen
Chat
Stop Recording
Leave Meeting


INTERFERON INDUCED
DEPRESSION

Learning Loops

- Interactive Learning Environment
- Co-management of Cases
- Learning by doing
- Learning from didactics
- Learning from each other
- Collaborative Problem Solving

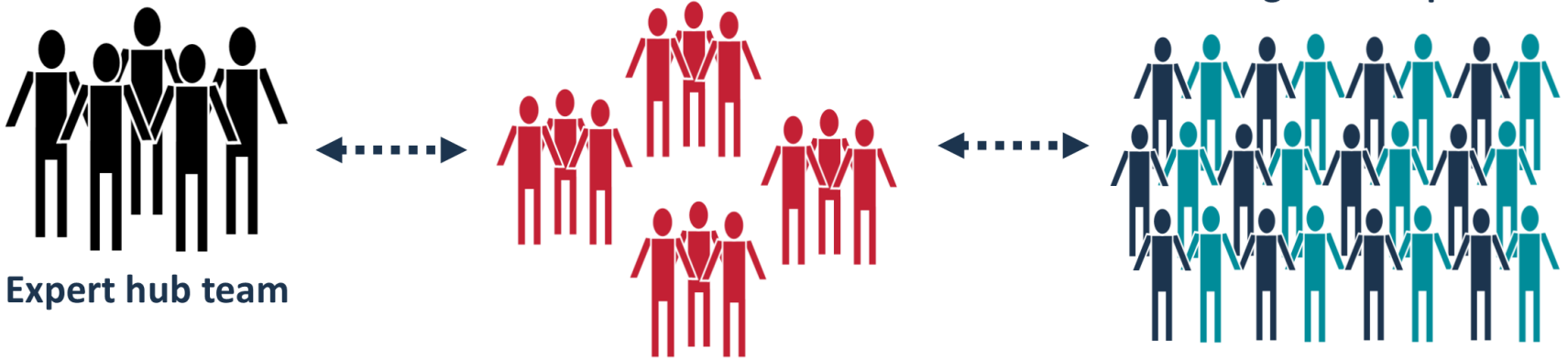


ECHO vs. Telemedicine

TeleECHO™ Clinic

ECHO supports community based primary care teams

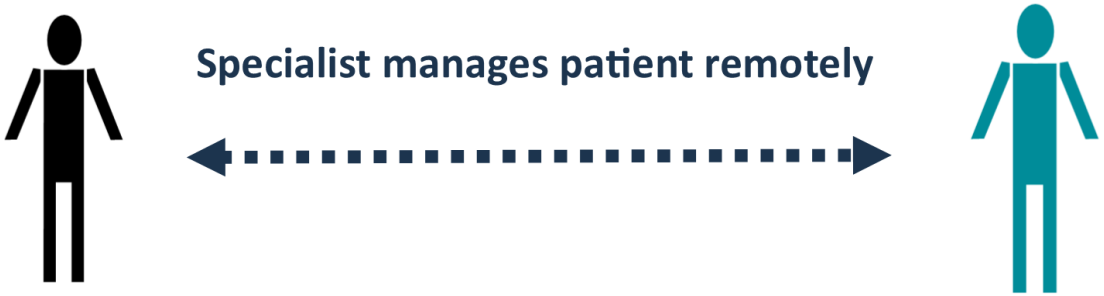
Patients reached with specialty knowledge and expertise



Expert hub team

Learners at spoke site

Traditional Telemedicine



Specialist manages patient remotely

Benefits to Clinicians and Teams

- No cost continuing education credits
- Professional interaction with colleagues with similar interest
  - Less isolation with improved recruitment and retention
- A mix of work and learning
- Access to specialty consultation with infectious diseases, hepatology, psychiatry, addiction specialist, pharmacist

Arora S, Thornton K, et al. Hepatology. 2010 Sept; 52(3):1124-33.

Benefits to Communities

- Increased access to HCV treatment
- Decreased HCV related mortality and suffering
- Training of the local workforce

Project ECHO Clinicians HCV Knowledge, Skills and Self-Efficacy

scale: 1 = none or no skill at all 7= expert-can teach others

Community Clinicians n=25	Before Participation Mean (SD)	Today Mean (SD)	Paired Difference Mean (SD) (p-value)	Effect Size for the Change
1. Ability to identify suitable candidates for the treatment of HCV.	2.8 (1.2)	5.6 (0.8)	2.8 (1.2) (<0.0001)	2.4
2. Ability to assess severity of liver disease in patients with Hepatitis C.	3.2 (1.2)	5.5 (0.9)	2.3 (1.1) (<0.0001)	2.1
3. Ability to treat HCV patients and manage side effects.	2.0 (1.1)	5.2 (0.8)	3.2 (1.2) (<0.0001)	2.6

Arora S, Kalishman S, Thornton K, et al. Hepatology. 2010 Sept; 52(3):1124-33.

Project ECHO Clinicians HCV Knowledge, Skills and Self-Efficacy

scale: 1 = none or no skill at all 7= expert-can teach others

Community Clinicians n=25	Before Participation Mean (SD)	Today Mean (SD)	Paired Difference Mean (SD) (p-value)	Effect Size for the Change
4. Ability to assess and manage psychiatric co-morbidities in patients with Hepatitis C.	2.6 (1.2)	5.1 (1.0)	2.4 (1.3) (<0.0001)	1.9
5. Serve as local consultant within my clinic and in my area for HCV questions and issues.	**2.4 (1.2)**	**5.6 (0.9)**	**3.3 (1.2) (<0.0001)**	**2.8**
6. Ability to educate and motivate HCV patients.	3.0 (1.1)	5.7 (0.6)	2.7 (1.1) (<0.0001)	2.4

Arora S, Kalishman S, Thornton K, et al. Hepatology. 2010 Sept; 52(3):1124-33.

ORIGINAL ARTICLE

Outcomes of Treatment for Hepatitis C Virus Infection by Primary Care Providers

Sanjeev Arora, M.D., Karla Thornton, M.D., Glen Murata, M.D., Paulina Deming, Pharm.D., Summers Kalishman, Ph.D., Denise Dion, Ph.D., Brooke Parish, M.D., Thomas Burke, B.S., Wesley Pak, M.B.A., Jeffrey Dunkelberg, M.D., Martin Kistin, M.D., John Brown, M.A., Steven Jenkusky, M.D., Miriam Komaromy, M.D., and Clifford Qualls, Ph.D.

ABSTRACT

BACKGROUND

The Extension for Community Healthcare Outcomes (ECHO) model was developed to improve access to care for underserved populations with complex health problems such as hepatitis C virus (HCV) infection. With the use of video-conferencing technology, the ECHO program trains primary care providers to treat complex diseases.

METHODS

We conducted a prospective cohort study comparing treatment for HCV infection at the University of New Mexico (UNM) HCV clinic with treatment by primary care clinicians at 21 ECHO sites in rural areas and prisons in New Mexico. A total of 407 patients with chronic HCV infection who had received no previous treatment for the infection were enrolled. The primary end point was a sustained virologic response.

RESULTS

A total of 57.5% of the patients treated at the UNM HCV clinic (84 of 146 patients) and 58.2% of those treated at ECHO sites (152 of 261 patients) had a sustained viral response (difference in rates between sites, 0.7 percentage points; 95% confidence interval, −9.2 to 10.7; P=0.89). Among patients with HCV genotype 1 infection, the rate of sustained viral response was 45.8% (38 of 83 patients) at the UNM HCV clinic and 49.7% (73 of 147 patients) at ECHO sites (P=0.57). Serious adverse events occurred in 13.7% of the patients at the UNM HCV clinic and in 6.9% of the patients at ECHO sites.

CONCLUSIONS

The results of this study show that the ECHO model is an effective way to treat HCV infection in underserved communities. Implementation of this model would allow other states and nations to treat a greater number of patients infected with HCV than they are currently able to treat. (Funded by the Agency for Healthcare Research and Quality and others.)

From the Department of Internal Medicine (S.A., K.T., G.M., P.D., S.K., D.D., B.P., T.B., W.P., M. Kistin, J.B., M. Komaromy) and the Clinical and Translational Science Center (C.Q.), University of New Mexico; and Presbyterian Healthcare Services, Adult and Geriatric Behavioral Health Clinic (S.J.) — both in Albuquerque; and the Department of Internal Medicine, University of Iowa, Iowa City (J.D.). Address reprint requests to Dr. Arora at Project ECHO, 1 University of New Mexico, MSC07-4245, Albuquerque, NM 87131, or at sarora@salud.unm.edu.

This article (10.1056/NEJMoa1009370) was published on June 1, 2011, at NEJM.org.

N Engl J Med 2011;364:2199-207.

Study Design

- Prospective Cohort
- Study sites
  - Intervention (ECHO)
    - Community-based clinics:16
    - New Mexico Department of Corrections:5
  - Control
    - University of New Mexico Hepatitis C Clinic
- Principal Endpoint
  - Sustained viral response (SVR): no detectable virus 6 months after completion of treatment

Arora S, Thornton K, et al.. N Engl J Med. 2011 Jun; 364:2199-207.

SVR According to Genotype and Site

HCV Genotype	ECHO sites	UNM HCV Clinic	P Value
All Genotypes	58.2%	84/146 (57.5%)	0.89
Genotype 1	73/147 (49.7%)	38/83 (45.8%)	0.57
Genotype 2 or 3	78/112 (69.6%)	42/59 (71.2%)	0.83

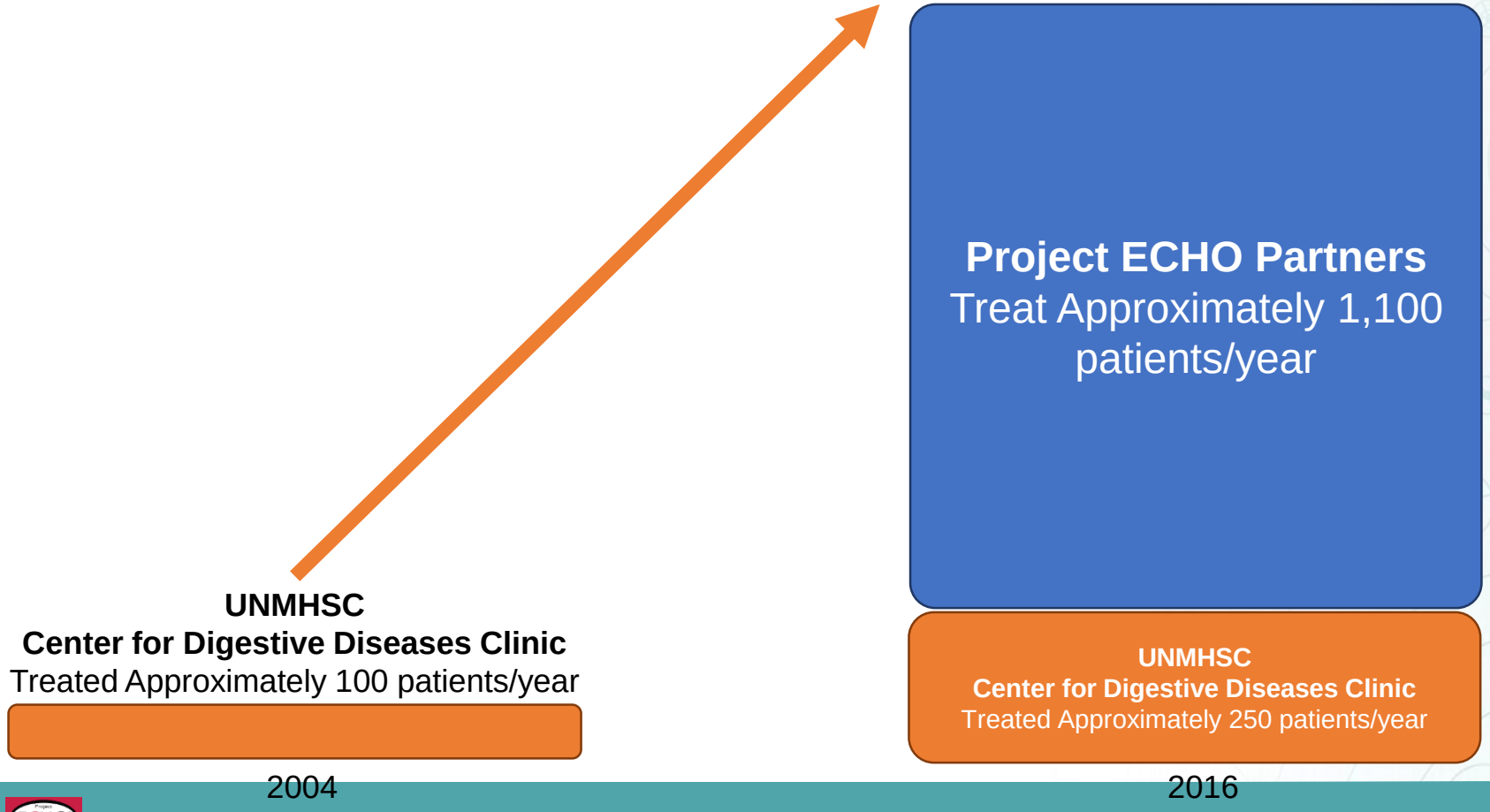
Arora S, Thornton K, et al.. N Engl J Med. 2011 Jun; 364:2199-207.

Conclusion

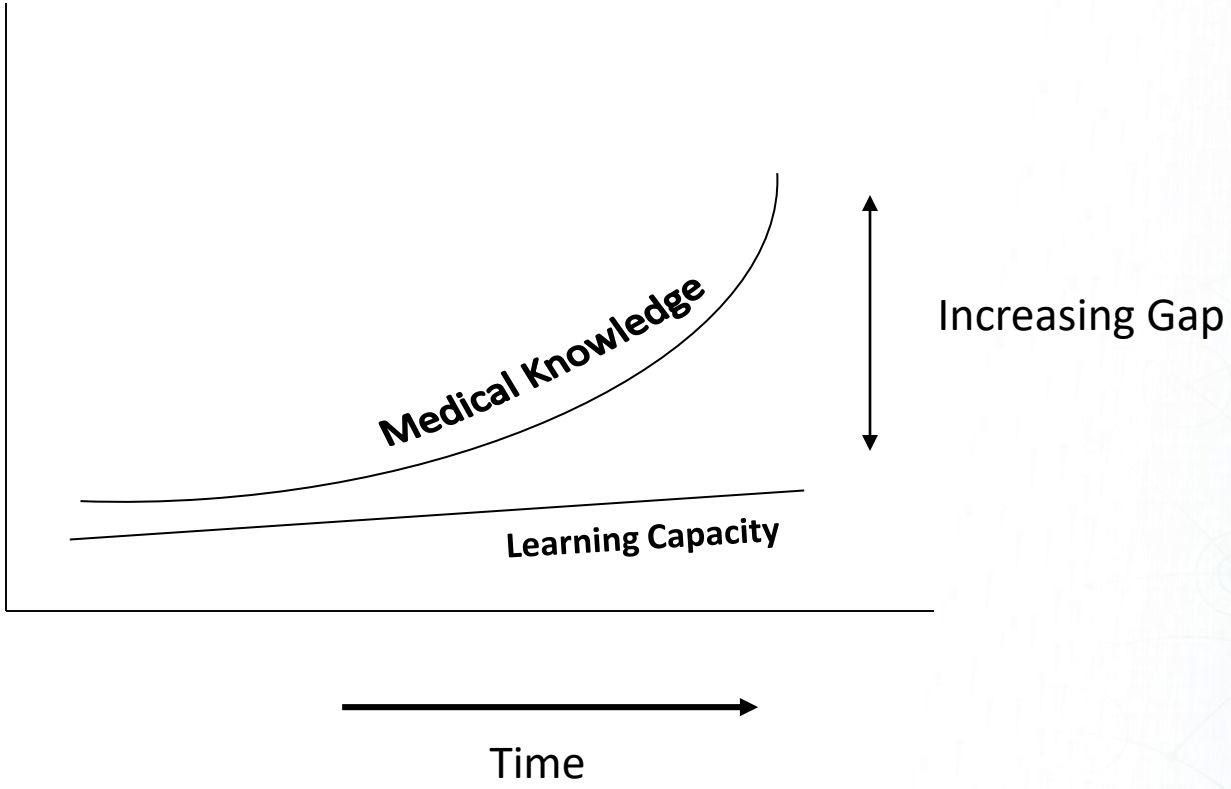
Primary care clinicians deliver hepatitis C care under the aegis of Project ECHO that is as safe and effective as that given in a university clinic.

Arora S, Thornton K, et al.. N Engl J Med. 2011 Jun; 364:2199-207.

Hepatitis C Treatment in New Mexico



Expanding the Definition of Underserved Population



Disease Selection

- Common diseases
- Management is complex
- Evolving treatments and medicines
- High societal impact
- Serious outcomes of untreated disease
- Improved outcomes with disease management

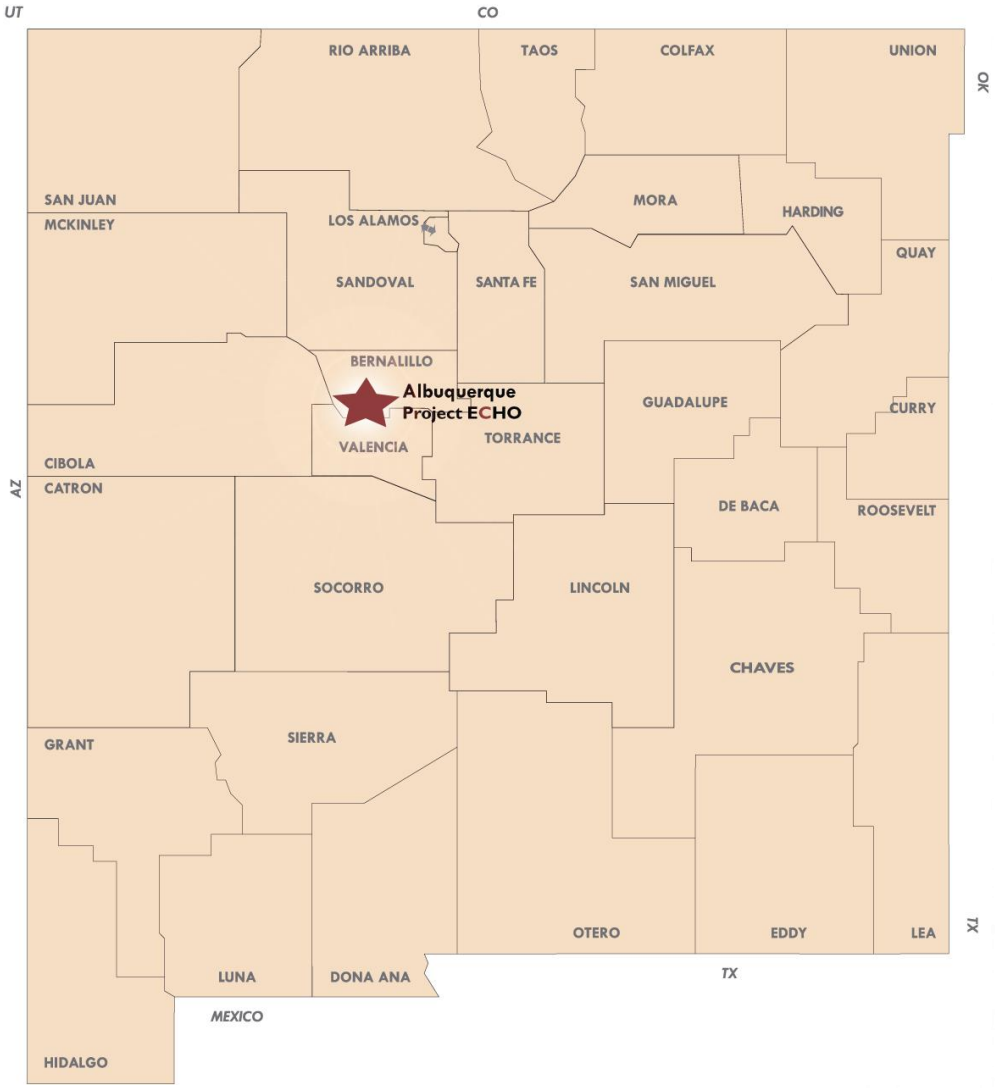
Successful Expansion into Multiple Diseases

MON	TUE	WED	THURS	FRI
Rheumatology • Bankhurst	HBV • Thornton	Community Health Workers • CHW Team	CDC Good Health and Wellness in Indian Country • Struminger	Opioid Addiction • Komaromy
Tuberculosis • Burgos	Bone Health • Lewiecki	Endocrinology & Diabetes • Bouchonville	Chronic Pain and Opioid Management • Comerci	Nurse Practitioner/ Certified Midwife Primary Care • Van Roper
Cardiology • Achrekar, Anderson & Yatskowitz	Crisis Intervention for Community Policing Agencies • Duhigg	HIV • Iandiorio	Prison Peer Education Program • Thornton	Integrated Addictions and Psychiatry (IAP) • Komaromy
Reproductive Health • Singh	Seizures and Spells • Imerman	Hepatitis C (HCV) • Arora & Thornton	HIV/ HCV Corrections • Iandiorio & Thornton	Antimicrobial Stewardship • Brett, Irizarry & Mercier

Successful Expansion into Multiple Health Conditions/Areas

- > 50 health conditions (140 hubs)
- Antimicrobial Stewardship
- Quality Improvement
- CIT (Crisis Intervention Team)
- Education/Assistive Technologies

Tobacco Education and Cessation in the Health System
Intellectual and Developmental Disabilities
Geriatric Mental Health in Primary Care
Secondary Transition
High Risk Obstetrics
Gerontology
Tuberculosis
Neurorehabilitation
Traumatic Acquired Brain Injury
Hepatitis C Case Management
Psychiatric Medication Management
Cognitive Behavioral Therapy Psychosis
Behavioral Health for Corrections
Behavioral Health Integration
Psychiatry
Primary Care
Neurology
Child Advocacy
Medication Assisted Treatment
Correctional Facility
Parent Advocacy
Pain Management
Addiction Medicine
Schizophrenia Complex Psychosis
Transgender Health
Risk Based Approach to Women s Health
Developmental Disabilities
Substance Use Disorders
Hepatitis B
Multiple Sclerosis
Care Coordination
Special Series
Long Term Care
Tuberculosis TB
Epilepsy
Teacher Mentorship
Gastroenterology
Cervical Cancer Prevention
Clinic Capacity Building
Long Term Geriatric Mental Health
Pediatric Palliative Care
Cognitive Rehabilitation
Pregnancy
Organ Donation
Heart Failure
Integrated Addictions and Psychiatry
Addictions Psychiatry ECHO for Corrections
Ambulatory Healthcare
General Psychology
Domestic Violence
Asthma
Cancer
Community Health Worker
Pulmonary Asthma
Sickle Cell Disease
Maternal and Child Health
Post Partum Hemorrhage
Sports Medicine
Resistant Hypertension
Healthcare Ethics
Business Consulting
Pediatric Nutrition
Hypertension
Cancer Hematology
Quality Improvement
Cardiology
Eating Disorders
Women s Health
Behavioral Mental Health
Dermatology
Grief Counseling
Inter professional Education
Transplant
ADHD
Liver Care
Opioid Use Disorder
Palliative Care
Patient Abuse
Pulmonary
Headaches
Chronic Pain
Geriatrics
Waiver Services
Opioid Addiction Buprenorphine
Midwives
Children and Youth Epilepsy
Chronic Disease Prevention and Management
Child Abuse
Ophthalmology
Cancer Pathology
Pediatrics
Autism Care and Education
Antibiotic Stewardship
Hepatitis C
Child Psychiatry
Obesity
Breast Cancer
Zika
Food Safety
Nursing
Cervical Cancer
Cancer Pharmacy
Behavioral Support
Cancer Survivorship
Cancer Screening and Prevention
Bone Health
Cystic Fibrosis
Pediatric ADHD
Dyslexia
HIV
Autism
Rheumatology
Liver Diseases
Childhood Obesity and Comorbidities
Endocrinology Diabetes
Infectious Disease
Opioid Medication Assisted Treatment
Accredited Social Health Activists ASHA
Assistive Technologies in Education
Medicolegal Death Investigations
STORM Sickle Cell Treatment Outcomes
School Nurses
Education for Service
Burn and Soft Tissue Injury
Complex Care
Trafficking and Sexual Assault
Liver Disease Management
Complex Pediatric Asthma
Community Health AmeriCorps HPAC Assistance
Early Childhood K 12 Counseling
Immune Disorders of the Gut
Internal Medicine Pediatrics Residency
Pediatric Emergency Care
Pediatric Psychopharmacology
Frequent Hematological Diseases
Pediatric Complex Care
Systemic Autoimmune Diseases
Educational Leadership
Public Health
Head and Neck Cancer
Family and Community Medicine
Sexually Transmitted Diseases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CURRY
VALENCIA
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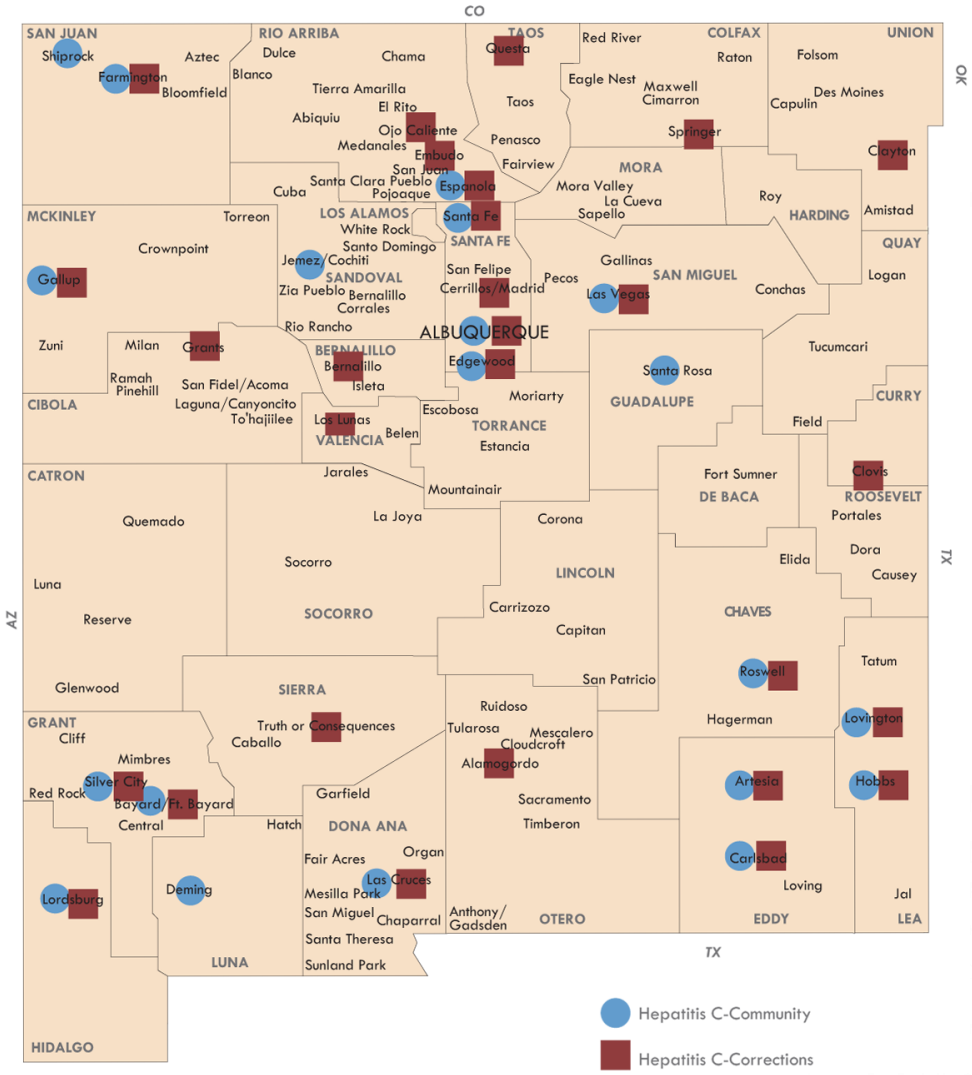
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Santa Clara Pueblo
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Espanola
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Red River
Eagle Nest
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Fairview
Mora Valley
La Cueva
Sapello
COLFAX
Raton
Maxwell
Cimarron
Springer
MORA
Roy
HARDING
UNION
Folsom
Des Moines
Capulin
Clayton
Amistad
QUAY
Logan
Conchas
SAN MIGUEL
Las Vegas
Gallinas
Pecos
MCKINLEY
Torreon
Crownpoint
Gallup
LOS ALAMOS
White Rock
Santo Domingo
SANTA FE
Santa Fe
Jemez/Cochiti
SANDOVAL
Zia Pueblo
Bernalillo
Corrales
San Felipe
Cerrillos/Madrid
Rio Rancho
ALBUQUERQUE
Edgewood
Zuni
Milan
Grants
Ramah
Pinehill
San Fidel/Acoma
Laguna/Canyoncito
To'hajiilee
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BERNALILLO
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Moriarty
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Belen
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TORRANCE
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Tucumcari
CURRY
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Mountainair
Fort Sumner
DE BACA
Clovis
ROOSEVELT
Portales
CATRON
Quemado
La Joya
Corona
Socorro
LINCOLN
Elida
Dora
Causey
Luna
Reserve
SOCORRO
Carrizozo
Capitan
CHAVES
Glenwood
SIERRA
San Patricio
Roswell
Tatum
Ruidoso
Hagerman
Lovington
GRANT
Cliff
Truth or Consequences
Caballo
Tularosa
Mescalero
Cloudcroft
Alamogordo
Mimbres
Silver City
Red Rock
Bayard/Ft. Bayard
Central
Garfield
Hatch
DONA ANA
Sacramento
Timberon
Artesia
Hobbs
Carlsbad
Loving
Fair Acres
Organ
Las Cruces
Mesilla Park
Deming
Lordsburg
San Miguel
Chaparral
Santa Theresa
Sunland Park
LUNA
Anthony/
Gadsden
OTERO
EDDY
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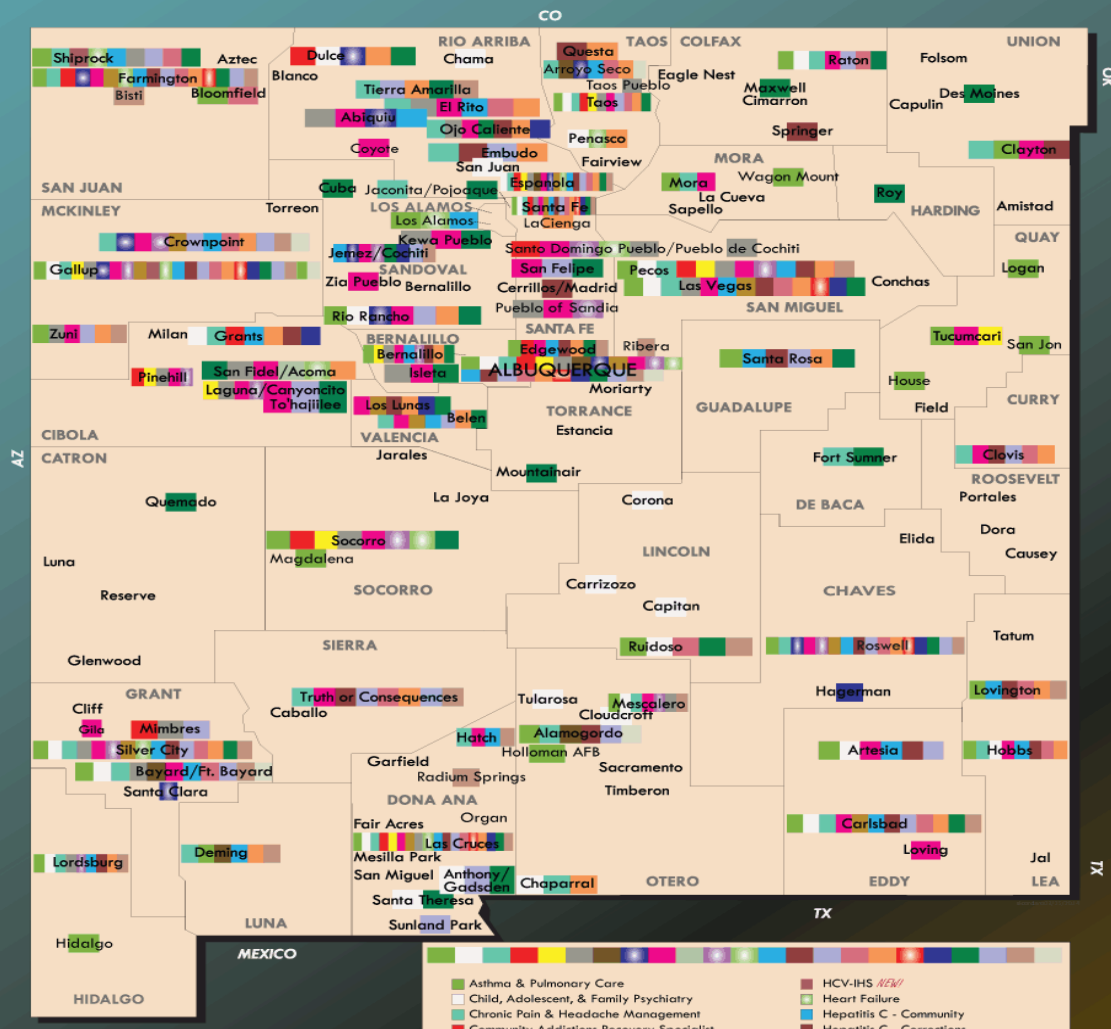
HIDALGO
Hepatitis C-Community
Hepatitis C-Corrections

UNM HEALTH SCIENCES CENTER

Cumulative 2006 to 2014

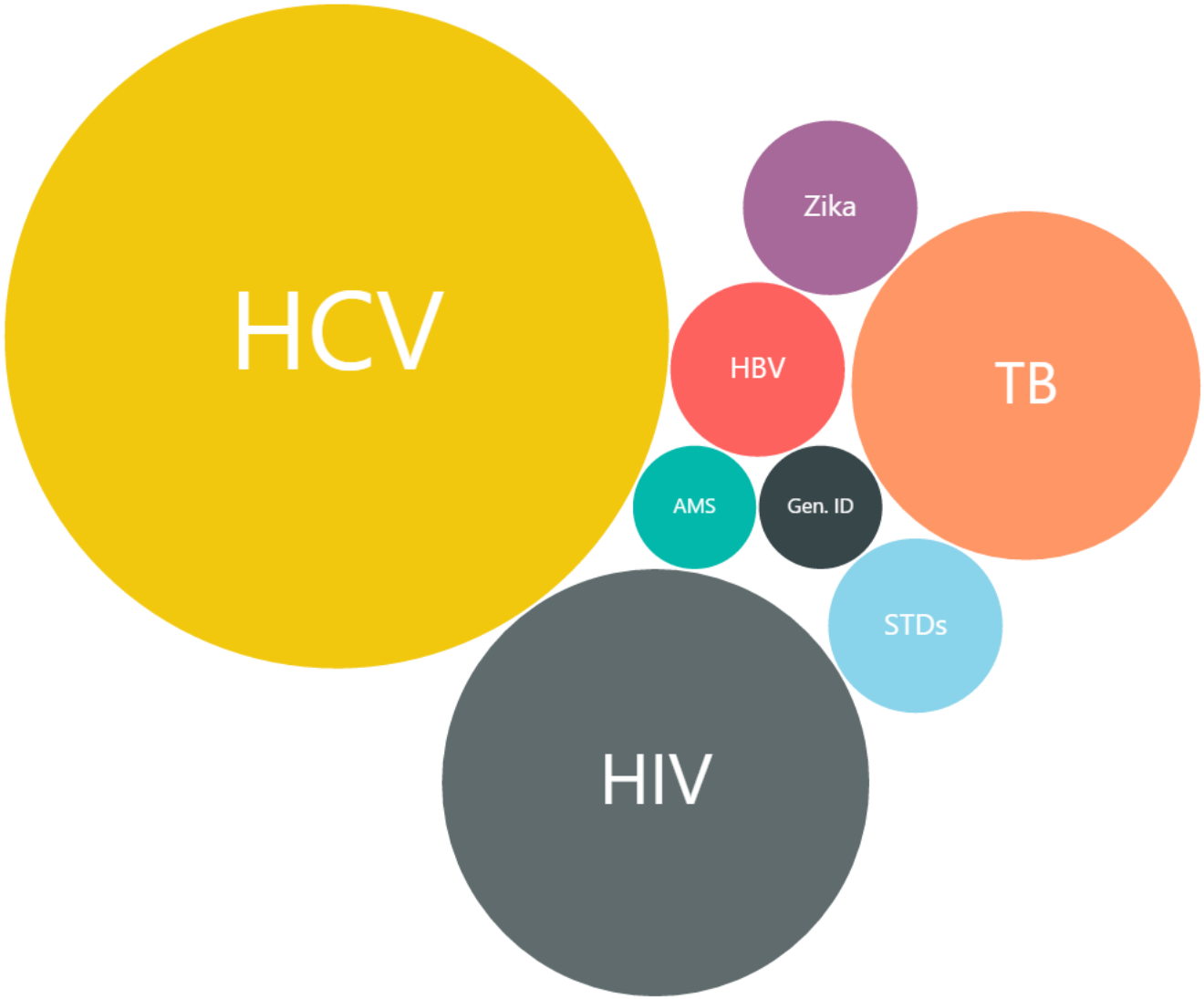
Project ECHO



ECHO Hubs and Superhubs: Global

HIV and Viral Hepatitis

ECHO activities globally


HCV
Zika
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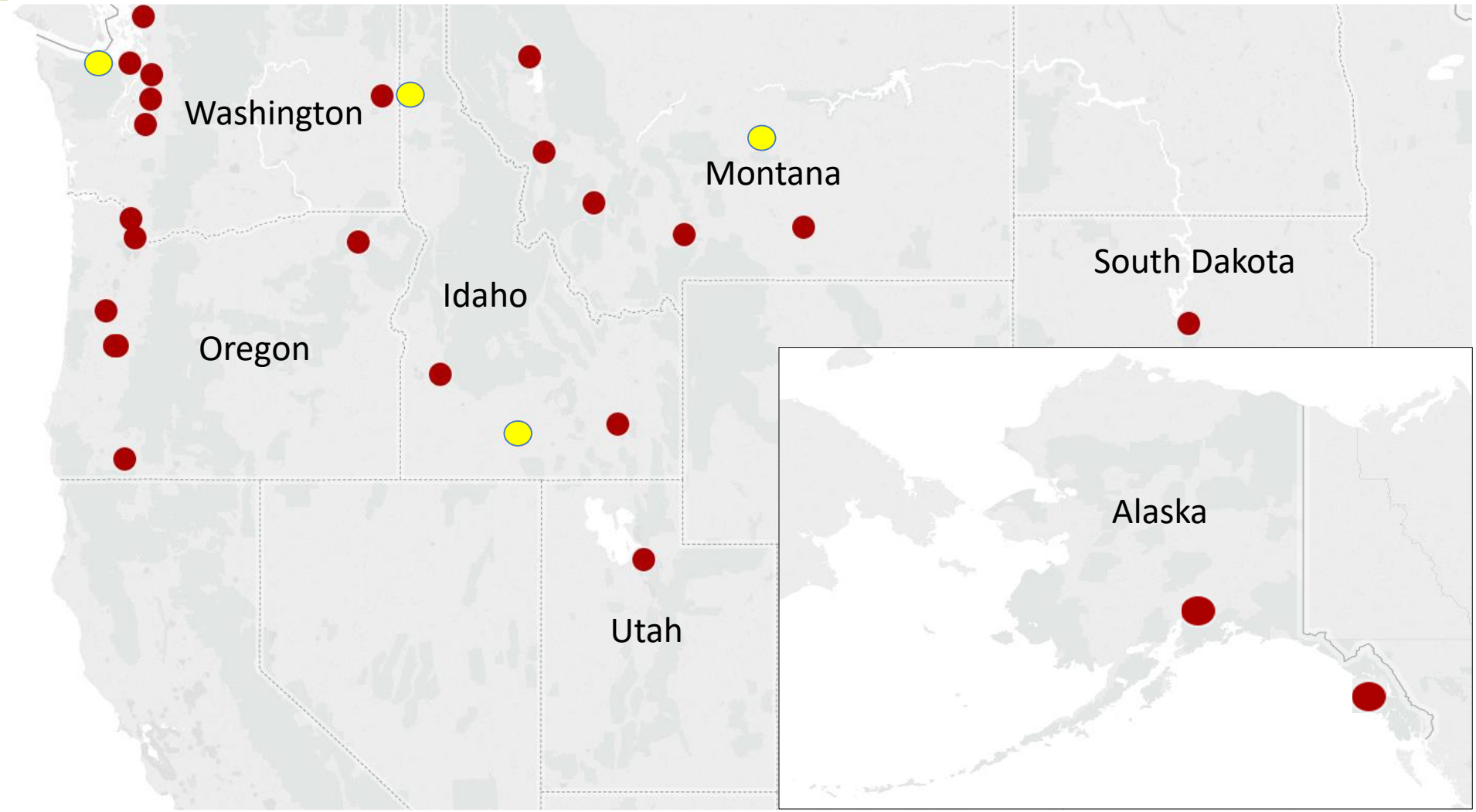
TB
AMS
Gen. ID
STDs
HIV

ECHO HIV Hubs: Global

What is ECHO?

Extension for Community Health Outcomes

HIV ECHO Distribution & Capacity Building



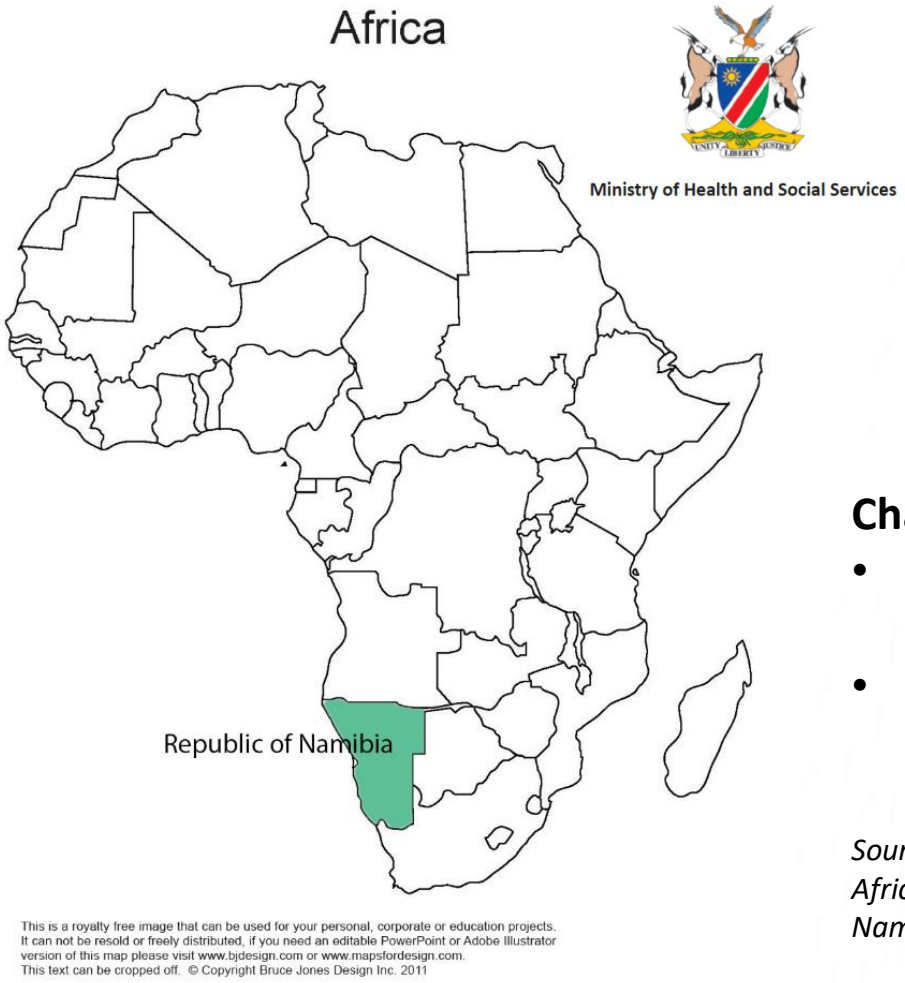
*Yellow dots = locations where an ECHO site trainee moved and continued to participate

First ECHO Launch in Africa

Namibia HIV - November 2015

Project ECHO

Namibia Ministry of Health and Social Services



Ministry of Health and Social Services

Size:
318,261 sq mi
Population:
2.3 million people
HIV Prevalence:
Age 15-49 (14%)
230,000 people living with HIV

Challenges:

- Many remote areas, patients travel far
- Chronic shortage of doctors and nurses in public sector

Source: World Health Organization, African Health Observatory, Namibia, Health workforce

ECHO Consortium and Partners

Republic of Namibia Ministry of Health and Social Services

National Institute of Pathology

PEPFAR

CDC

Centers for Disease Control and Prevention (CDC)

US Headquarters

CDC Namibia

Elizabeth Glaser Pediatric AIDS Foundation

EGPAF

UNM SCHOOL of MEDICINE

Project ECHO

The University of New Mexico

I-TECH International Training & Education Center for Health

International Training & Education Center for Health Namibia

UNIVERSITY of WASHINGTON

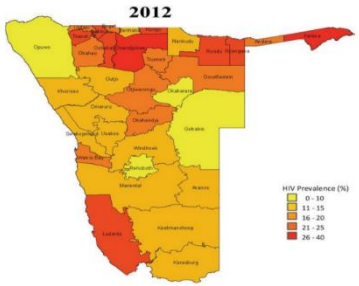
University of Washington

First ECHO Session in Africa

November 2015

Namibia MOHSS HIV ECHO Hub and Spokes

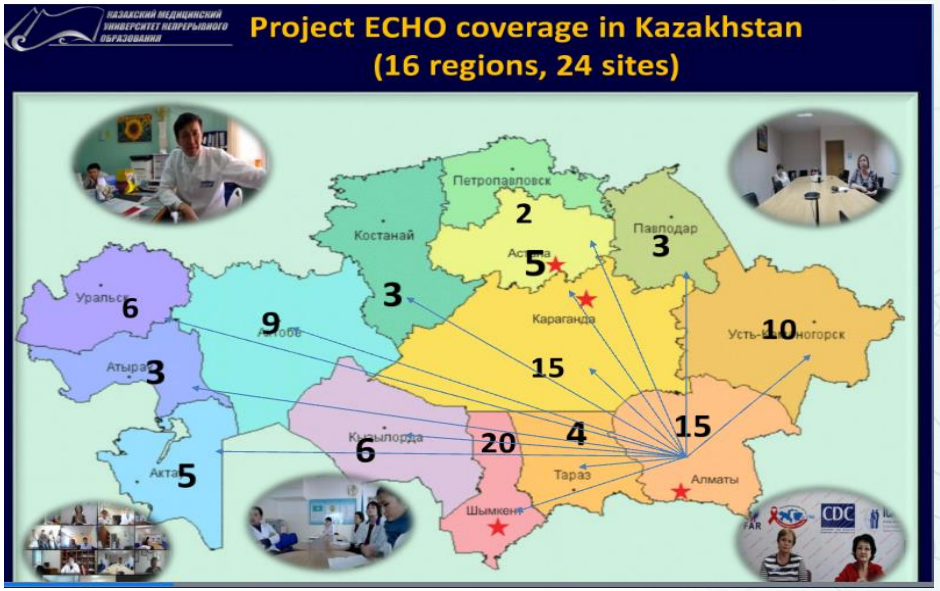
Figure 5: ANC HIV Prevalence by district in 2012



- **Ten pilot spokes**
- **Now over 20 sites are joining**
- **Goal for 2018 is 40 sites**

Central Asia – Fall 2016

UNM and ICAP at Columbia University Collaborations



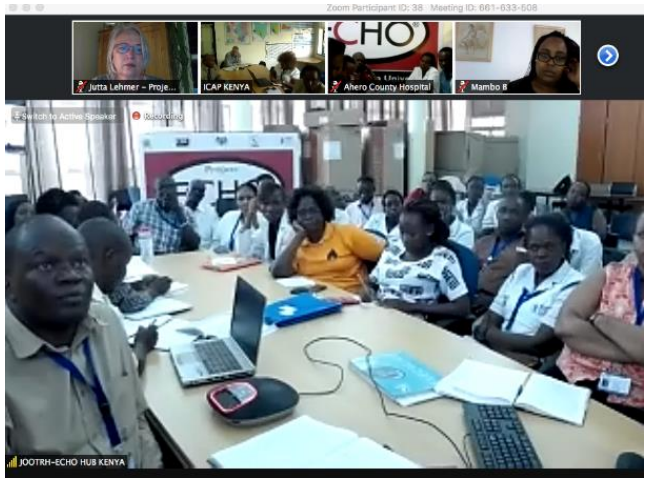
Central Asia

- Two weekly sessions held since Fall 2016 in Kazakhstan
  - Over 90 participants per session at 24 spoke sites
- Kyrgyzstan - 22 spokes
- Tajikistan implementing fall 2017

Kenya launch – Fall 2016

UNM and ICAP at Columbia University Collaborations

- Successful launch of regional hub with little support (less than 4 months after training)
- Ministry of Health fully on board
- Cases previously submitted to technical working group now are discussed in ECHO



Tanzania and Uganda – First Laboratory ECHOs

Launched November 23, 2016 and March 6, 2017

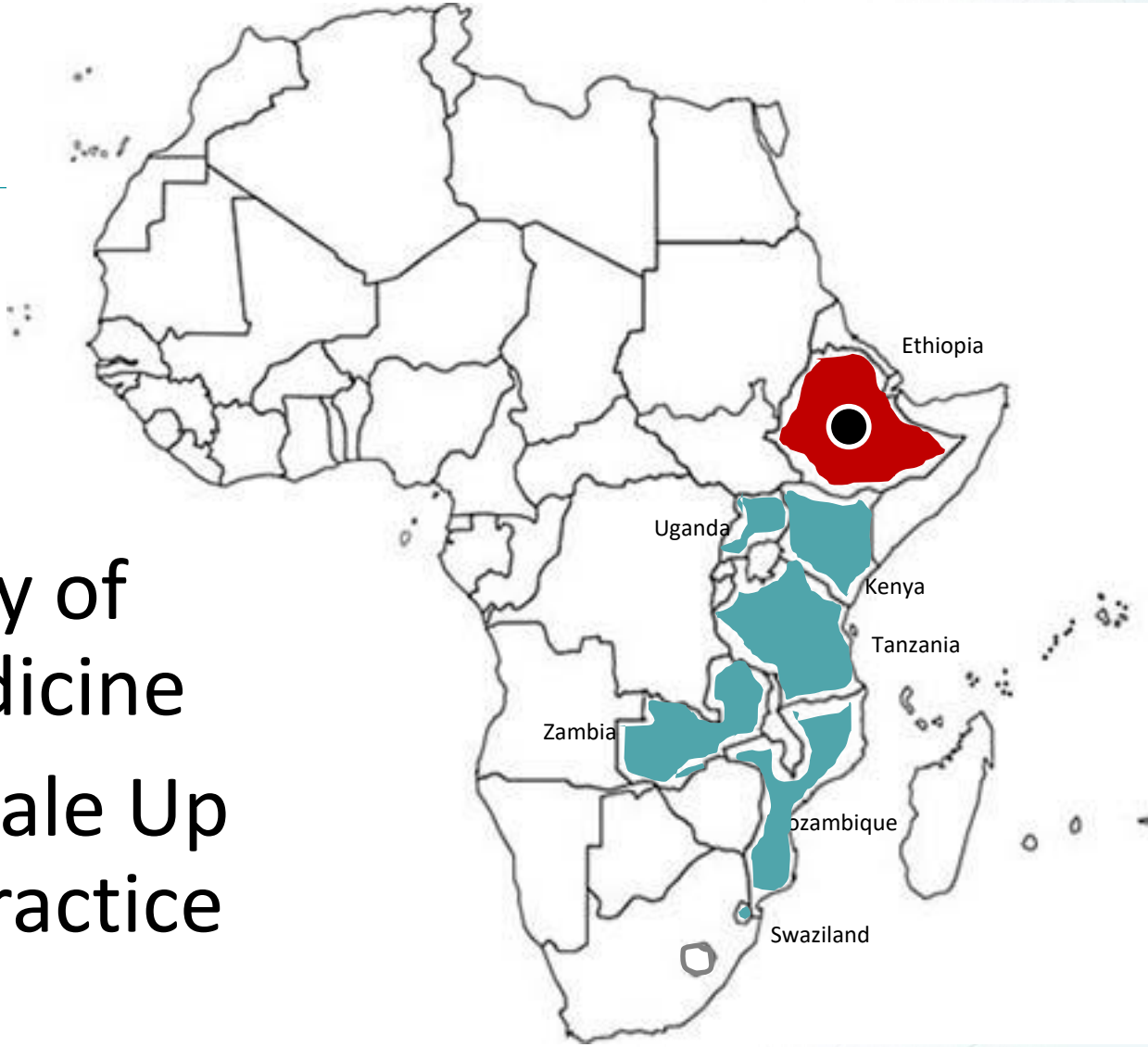
Tanzania Launch with guests from Namibia and Kenya via Zoom

Official Uganda launch

RTQI ECHOs - Training of HIV rapid testers – quality improvement

African Society of Laboratory Medicine

HIV Viral Load Scale Up Community of Practice



ECHO Hepatitis Hubs: Global

Georgia HCV Elimination Program

Expansion of ECHO in Georgia

- Blood Safety
- HCV Treatment in primary care and harm reduction centers
- HCV testing, counseling and linkage to care
- Infection Prevention and Control

Potential Benefits of the ECHO Model

- Improve Quality and Safety
- Rapid Learning and best-practice dissemination
- Reduce variations in care
- Access for Rural and Underserved Patients, reduced disparities
- Workforce Training and Force Multiplier
- Improve Professional Satisfaction/Retention
- Support Medical Home Model
- Cost Effective Care- Avoid Excessive Testing and Travel
- Prevent Cost of Untreated Disease (e.g.: liver transplant or dialysis)
- Integration of Public Health into treatment paradigm

Democratize Knowledge

Summary

- The ECHO model can be used effectively for education and workforce development in underserved areas
- Multiple successful pilots for HIV in Africa and Central Asia
- Capacity to treat HCV domestically impacted by use of the ECHO model
- Due to lack of funding, international viral hepatitis programs have been slower to start

Moving Knowledge Instead of Patients & Providers