



How to Democratize Medical Knowledge and Bring Best-Practice Care to One Billion People by 2025: Project ECHO®

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[@ProjectECHO](https://twitter.com/ProjectECHO)

[f UNMProjectECHO](https://www.facebook.com/UNMProjectECHO)

The Problem

Problem 1: Billions of people lack access to high quality healthcare at the right place at the right time

- This is partly due to an uneven distribution of medical and public health knowledge and expertise

Problem 2: Medical knowledge is growing exponentially

- In 1950, it was estimated that the time to double the volume of medical knowledge was about 50 years.
- By the year 2020, it is estimated that it will only take 73 days for the volume of medical knowledge to double.

CDC Report Shows Deaths from Cancer Higher in Rural America

We are creating new treatments, innovations, interventions and best practices to prevent and treat cancer. And yet disparities are growing... Inequalities in access to care are actually inequalities in access to knowledge.



Invasive Cancer Incidence, 2004–2013, and Deaths, 2006–2015, in Nonmetropolitan and Metropolitan Counties — United States
Surveillance Summaries / July 7, 2017 / 66(14);1–13

At Project ECHO our mission is to democratize medical knowledge and help get best practice care to underserved people all over the world.

Our goal is to improve the lives of 1 billion people by 2025.

Supported by New Mexico Department of Health, Agency for Health Research and Quality, New Mexico Legislature, the Robert Wood Johnson Foundation, the GE Foundation and Helmsley Charitable Trust, BMS Foundation, NM Medicaid



Moving Knowledge Instead of Patients
or Providers

Project ECHO

Project ECHO® is a lifelong learning and guided practice model that **revolutionizes medical education** and exponentially **increases workforce capacity** to provide **best practice specialty care** and **reduce health disparities** through its **hub-and-spoke** knowledge sharing networks



People need access to specialty care for complex conditions



Not enough specialists to treat everyone, especially in developing countries



ECHO® trains primary care clinicians to provide specialty care services



Patients get the right care, in the right place, at the right time.

ECHO's Origin: HCV

- 70 million in the world infected with HCV
- In New Mexico estimated number was greater than 28,000 in 2004. By 2017, 53,000 patients have tested positive for HCV antibody
- In 2004 less than 5% of patients in NM had been treated
 - 2,300 prisoners were HCV positive (~40% of those entering the corrections system), none were treated

Rural New Mexico

Underserved Area for Healthcare Services

- 121,356 square miles
- 2.08 million people
- 47% Hispanic
- 10.2% Native American
- 19% poverty rate compared to 14.3% nationally
- 21% lack health insurance compared to 16% nationally
- 32 of 33 New Mexico counties are listed as Medically Underserved Areas (MUAs)
- 14 counties designated as Health Professional Shortage Areas (HPSA's)

(Statistics from 2013)

HCV Treatment 2004

Good news...

- Curable in 70% of cases

Bad news...

- Severe side effects:
 - anemia (100%)
 - neutropenia >35%
 - depression >25%
 - No Primary Care Physicians treating HCV

Goals of Project ECHO

Develop capacity to safely and effectively treat HCV in all areas of New Mexico and to monitor outcomes.

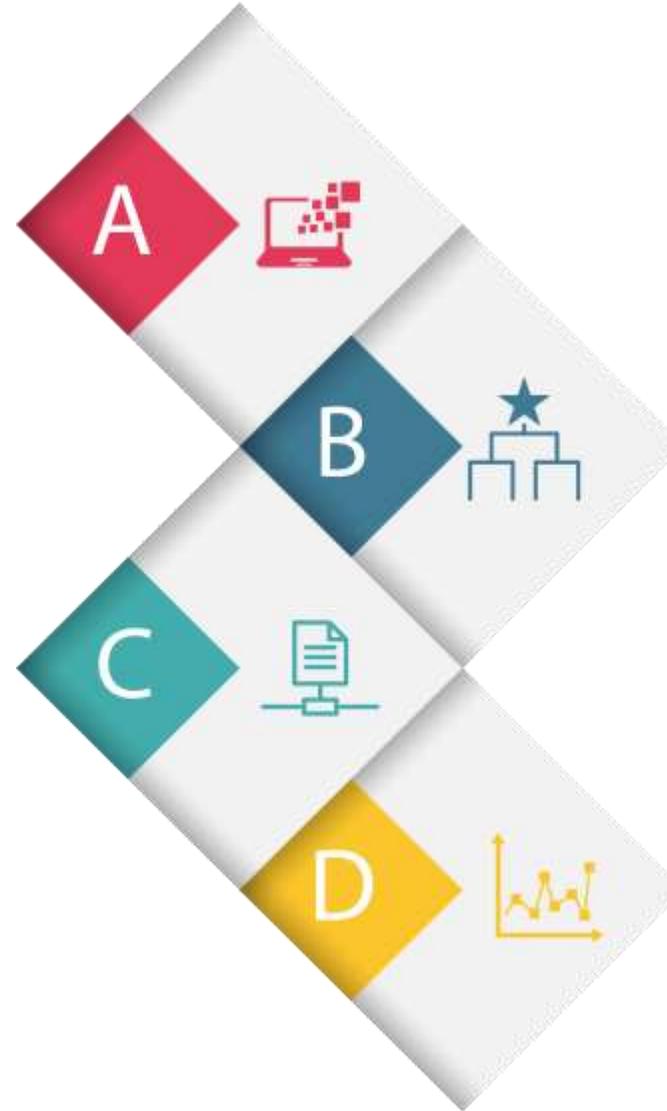
Develop a model to treat complex diseases in rural locations and developing countries.

Partnerships are Central to the Model

- University of New Mexico School of Medicine, Department of Medicine, Telemedicine and CME
- NM Department of Corrections
- NM Department of Health
- Indian Health Service
- FQHCs and Community Clinics
- Primary Care Association

The ECHO Model

Amplification – Use **T**echnology to leverage scarce resources



Share **B**est Practices to reduce disparity

Case Based Learning to master complexity

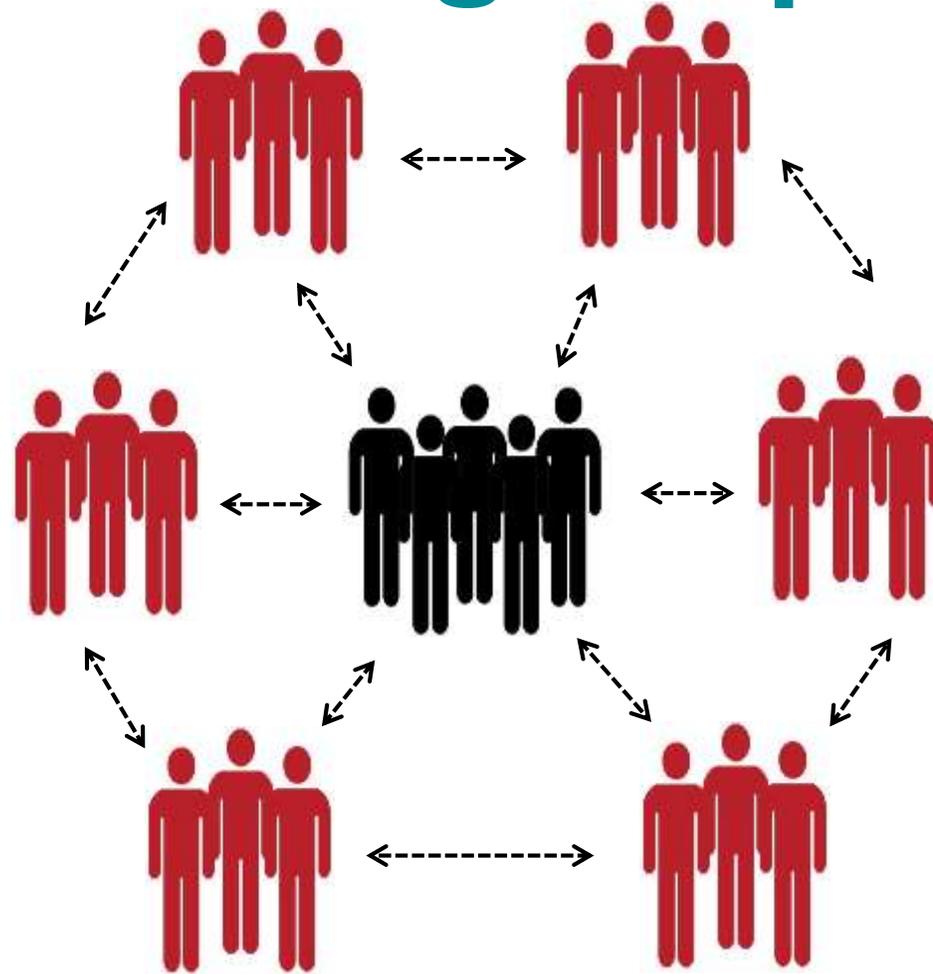
Web-based **D**atabase to **M**onitor **O**utcomes

What is Best Practice in Medicine

- Algorithm
- Check Lists
- Process
- Wisdom Based on Experience

ECHO: Dynamic 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



Expert hub team

ECHO supports
community based
primary care teams



Learners at spoke site

Patients reached with specialty
knowledge and expertise



Traditional Telemedicine



Specialist manages patient remotely



Benefits to Community Participants

- No cost CMEs and Nursing CEUs
- 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 GI, hepatology, psychiatry, infectious diseases, addiction specialist, pharmacist, patient educator



ECHO Whale



PCA Espanola



Baton Rouge



Pecos Valley MC



DOH Las Cruces



SBRT-First Choice South Vc



Memorial HDX7000



LAS VEGAS ECFH



Technology Facilitates Knowledge Sharing

- **Standard Videoconferencing Hardware** (camera, microphone, screen, computer, internet access)
- **ZOOM**
 - Videoconferencing Software
 - Video Recording System
- **ECHO BOX**
 - Online ECHO archive of all shared resources and materials
- **iECHO** – Electronic TeleECHO Program Management Solution

Project ECHO Clinicians

HCV Knowledge Skills and Abilities (Self-Efficacy)

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

Community Clinicians N=25	<u>BEFORE</u> Participation MEAN (SD)	<u>TODAY</u> MEAN (SD)	Paired Difference (p-value) MEAN (SD)	<u>Effect Size</u> for the change
1. Ability to identify suitable candidates for treatment for 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 HCV.	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

(continued)

Project ECHO Clinicians

HCV Knowledge Skills and Abilities (Self-Efficacy)

Community Clinicians N=25	<u>BEFORE</u> Participation MEAN (SD)	<u>TODAY</u> MEAN (SD)	Paired Difference (p-value) MEAN (SD)	<u>Effect</u> <u>Size</u> 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

Project ECHO Clinicians

HCV Knowledge Skills and Abilities (Self-Efficacy)

Community Clinicians N=25	<u>BEFORE</u> Participation MEAN (SD)	<u>TODAY</u> MEAN (SD)	Paired Difference (p-value) MEAN (SD)	<u>Effect Size</u> for the change
Overall Competence (average of 9 items)	2.8* (0.9)	5.5* (0.6)	2.7 (0.9) (<0.0001)	2.9

Cronbach's alpha for the BEFORE ratings = 0.92 and Cronbach's alpha for the TODAY ratings = 0.86 indicating a high degree of consistency in the ratings on the 9 items

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

Project ECHO

Annual Meeting Survey

	Mean Score (Range 1-5)
Project ECHO® has diminished my professional isolation.	4.3
My participation in Project ECHO® has enhanced my professional satisfaction.	4.8
Collaboration among agencies in Project ECHO® is a benefit to my clinic.	4.9
Project ECHO® has expanded access to HCV treatment for patients in our community.	4.9
Access, <u>in general</u> , to specialist expertise and consultation is a major area of need for you and your clinic.	4.9
Access to <u>HCV specialist</u> expertise and consultation is a major area of need for you and your clinic.	4.9

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 Jenkuszky, 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% (58 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.
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HCV Clinical Trial Objectives

- To train primary care clinicians in rural areas and prisons to deliver Hepatitis C treatment to rural populations of New Mexico
- To show that such care is as safe and effective as that give in a university clinic
- To show that **Project ECHO** improves access to Hepatitis C care for minorities

Participants

- Study sites
 - Intervention (ECHO)
 - Community-based clinics: 16
 - New Mexico Department of Corrections: 5
 - Control: University of New Mexico (UNM) Liver Clinic

Principle Endpoint

**Sustained Viral Response (SVR): no detectable virus
6 months after completion of treatment**

Treatment Outcomes

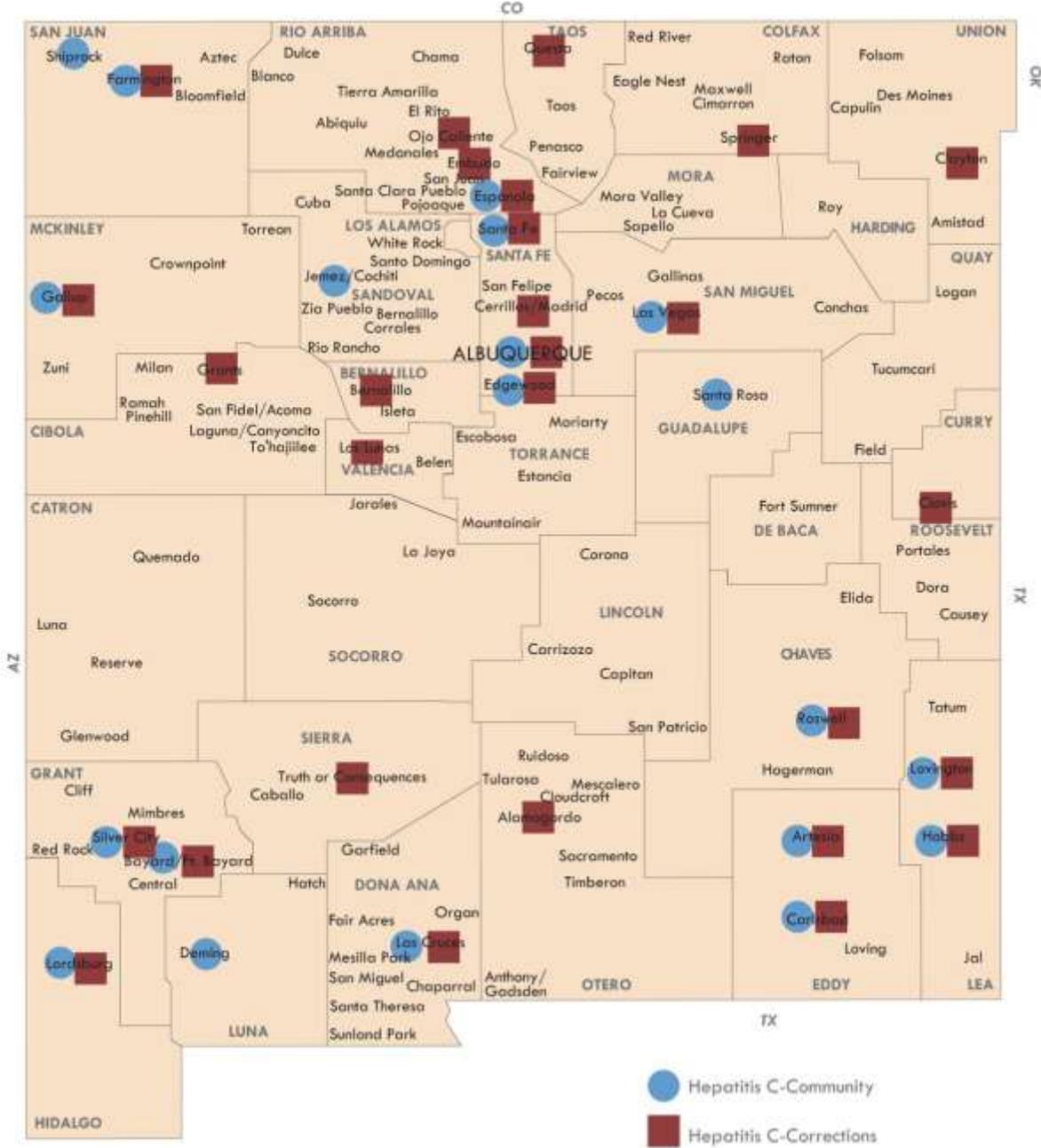
Outcome	ECHO	UNMH	P-value
	N=261	N=146	
Minority	68%	49%	P<0.01
SVR* (Cure) Genotype 1	50%	46%	NS
SVR* (Cure) Genotype 2/3	70%	71%	NS

*SVR=sustained viral response

NEJM : 364: 23, June 9-2011, Arora S, Thornton K, Murata G

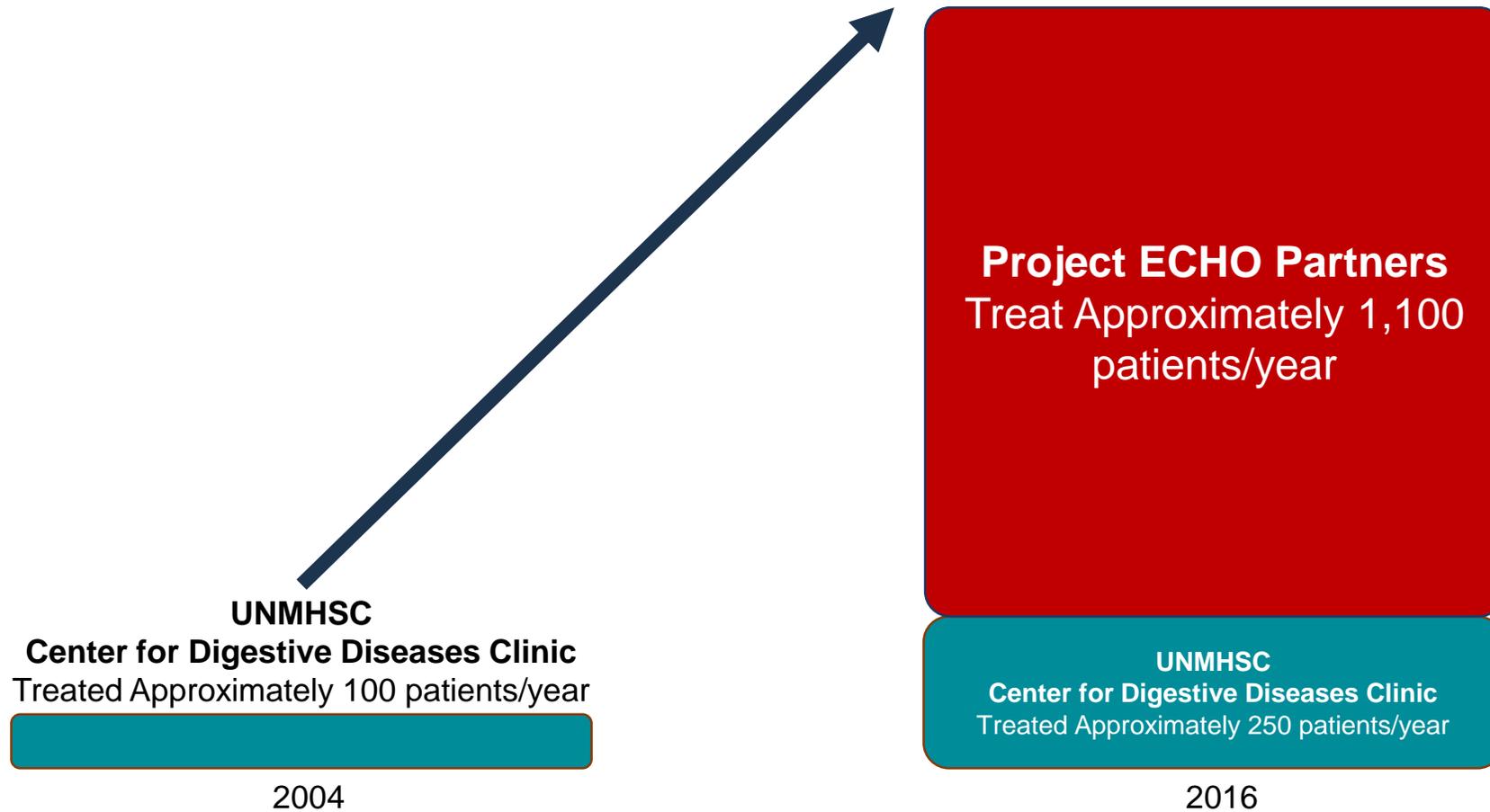
Conclusions

- Rural 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.
- Project ECHO improves access to hepatitis C care for New Mexico minorities.



 Hepatitis C-Community
 Hepatitis C-Corrections

Hepatitis C Treatment in New Mexico



Selection Criteria Beyond HCV

- Common diseases or issues
- Management is complex
- Evolving treatments and medicines
- High societal impact (health and economic)
- Serious outcomes of untreated disease
- Improved outcomes with disease management

ECHO “Sweet Spot”: DYNAMIC COMPLEXITY

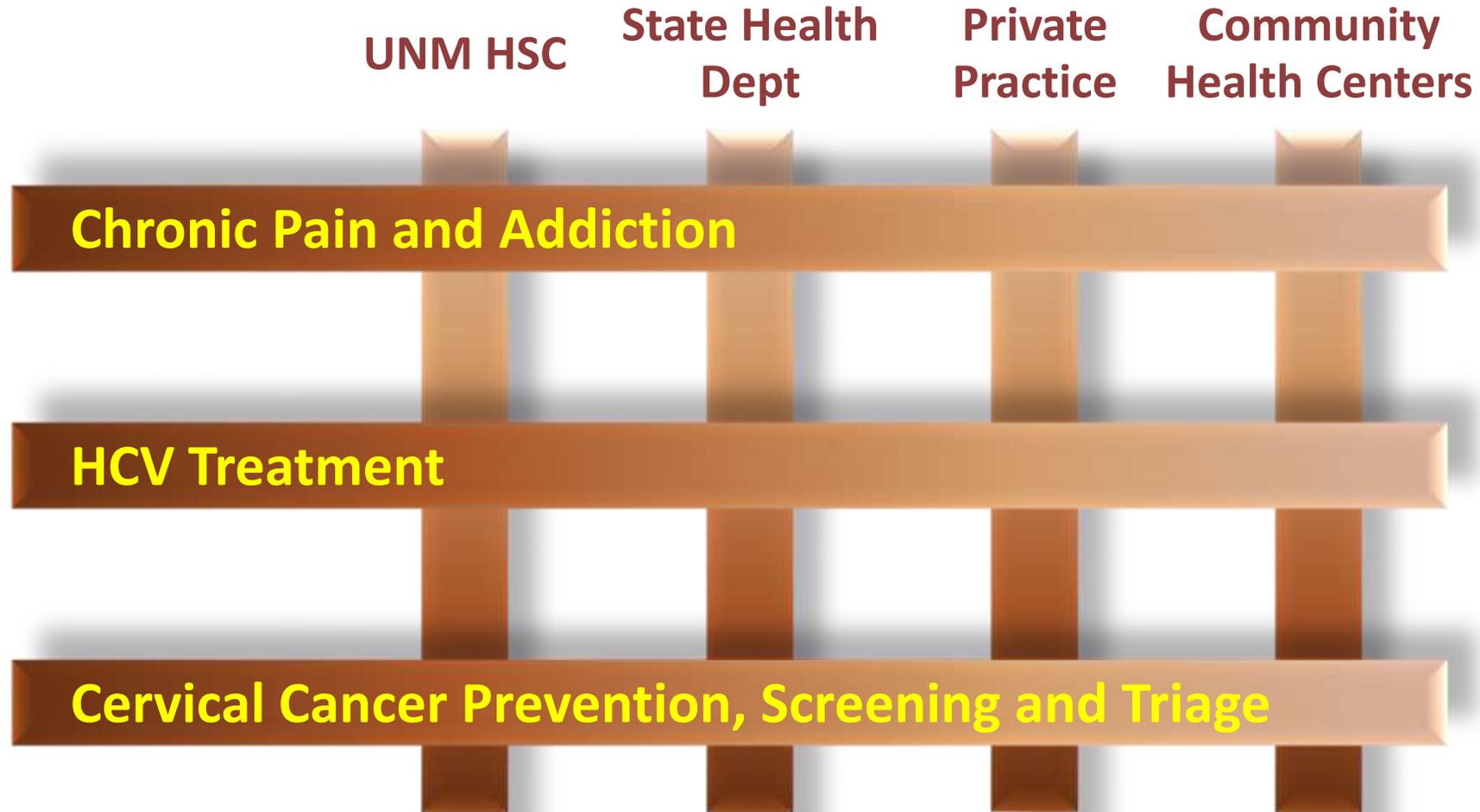
This applies in medicine and beyond.

Successful Expansion into Multiple Topics

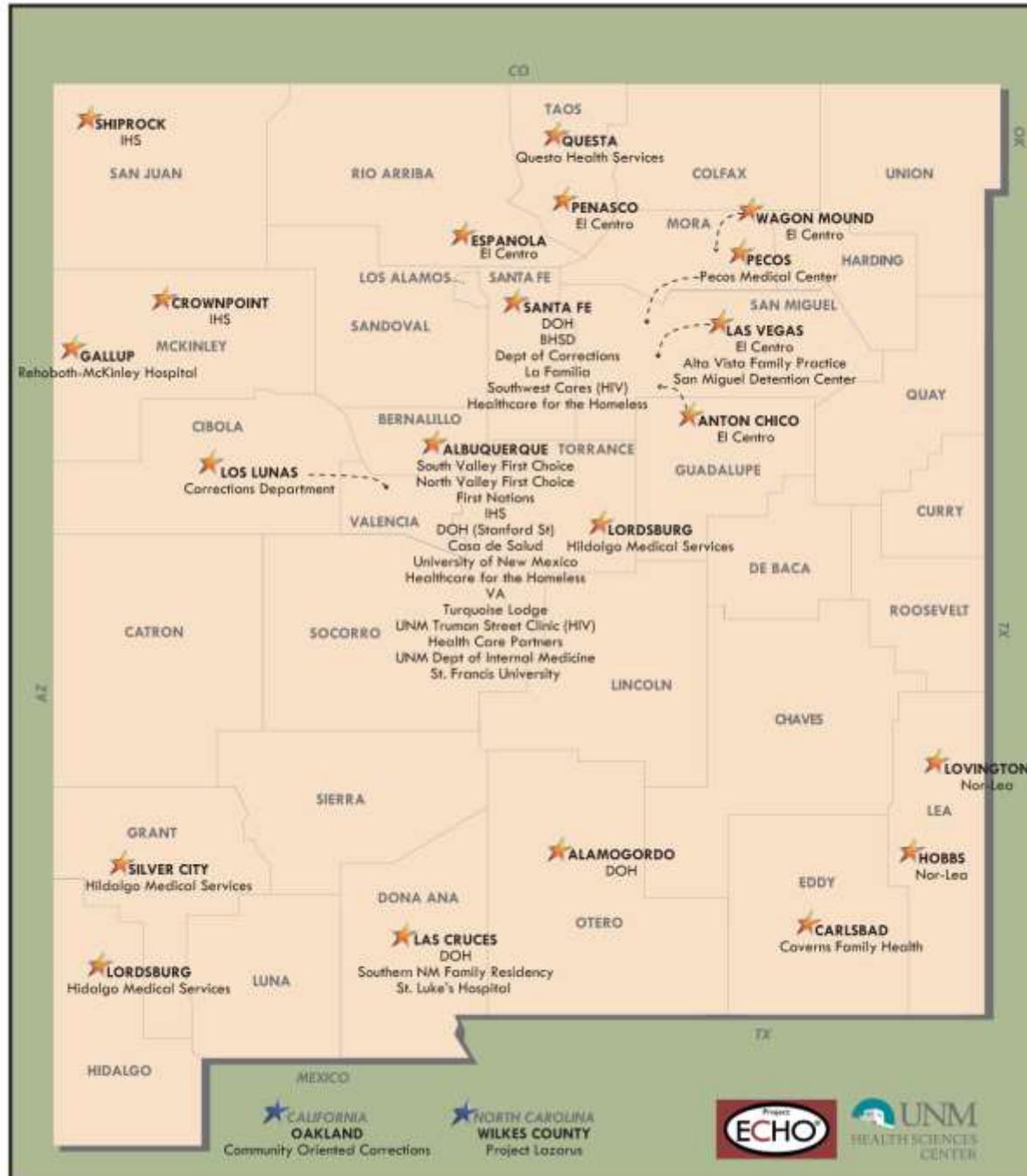
MON	TUE	WED	THURS	FRI
<u>Rheumatology</u> <ul style="list-style-type: none"> • Bankhurst 	<u>HBV</u> <ul style="list-style-type: none"> • Gish 	<u>Community Health Workers</u> <ul style="list-style-type: none"> • CHW Team 	<u>CDC Good Health and Wellness in Indian Country</u> <ul style="list-style-type: none"> • Struminger 	<u>Opioid Addiction</u> <ul style="list-style-type: none"> • Komaromy
<u>Tuberculosis</u> <ul style="list-style-type: none"> • Burgos 	<u>Bone Health</u> <ul style="list-style-type: none"> • Lewiecki 	<u>Endocrinology & Diabetes</u> <ul style="list-style-type: none"> • Bouchonville 	<u>Chronic Pain and Opioid Management</u> <ul style="list-style-type: none"> • Comerci 	<u>Nurse Practitioner/Certified Midwife Primary Care</u> <ul style="list-style-type: none"> • Van Roper
<u>Cardiology</u> <ul style="list-style-type: none"> • Achrekar, Anderson & Yatskowitz 	<u>Crisis Intervention for Community Policing Agencies</u> <ul style="list-style-type: none"> • Duhigg 	<u>Miners' Wellness</u> <ul style="list-style-type: none"> • Sood 	<u>Prison Peer Education Program</u> <ul style="list-style-type: none"> • Thornton 	<u>Integrated Addictions and Psychiatry (IAP)</u> <ul style="list-style-type: none"> • Komaromy
<u>Reproductive Health</u> <ul style="list-style-type: none"> • Singh 	<u>Seizures and Spells</u> <ul style="list-style-type: none"> • Imerman 	<u>Hepatitis C (HCV)</u> <ul style="list-style-type: none"> • Arora 	<u>HIV/ HCV Corrections</u> <ul style="list-style-type: none"> • Iandiorio & Thornton 	<u>Antimicrobial Stewardship</u> <ul style="list-style-type: none"> • Brett, Irizarry & Mercier

Bridge Building to reduce disparities in access

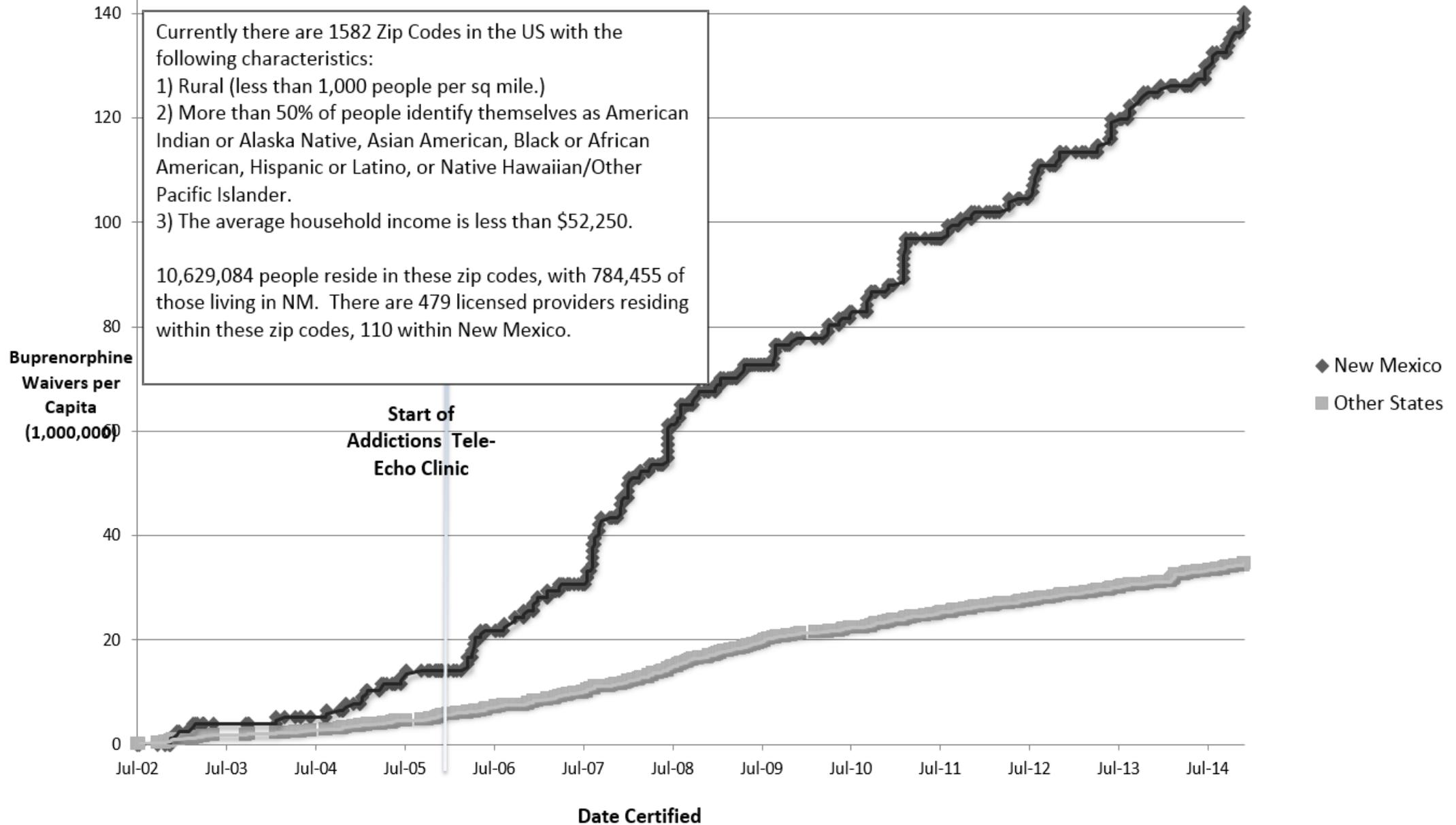
Pareto's Principle



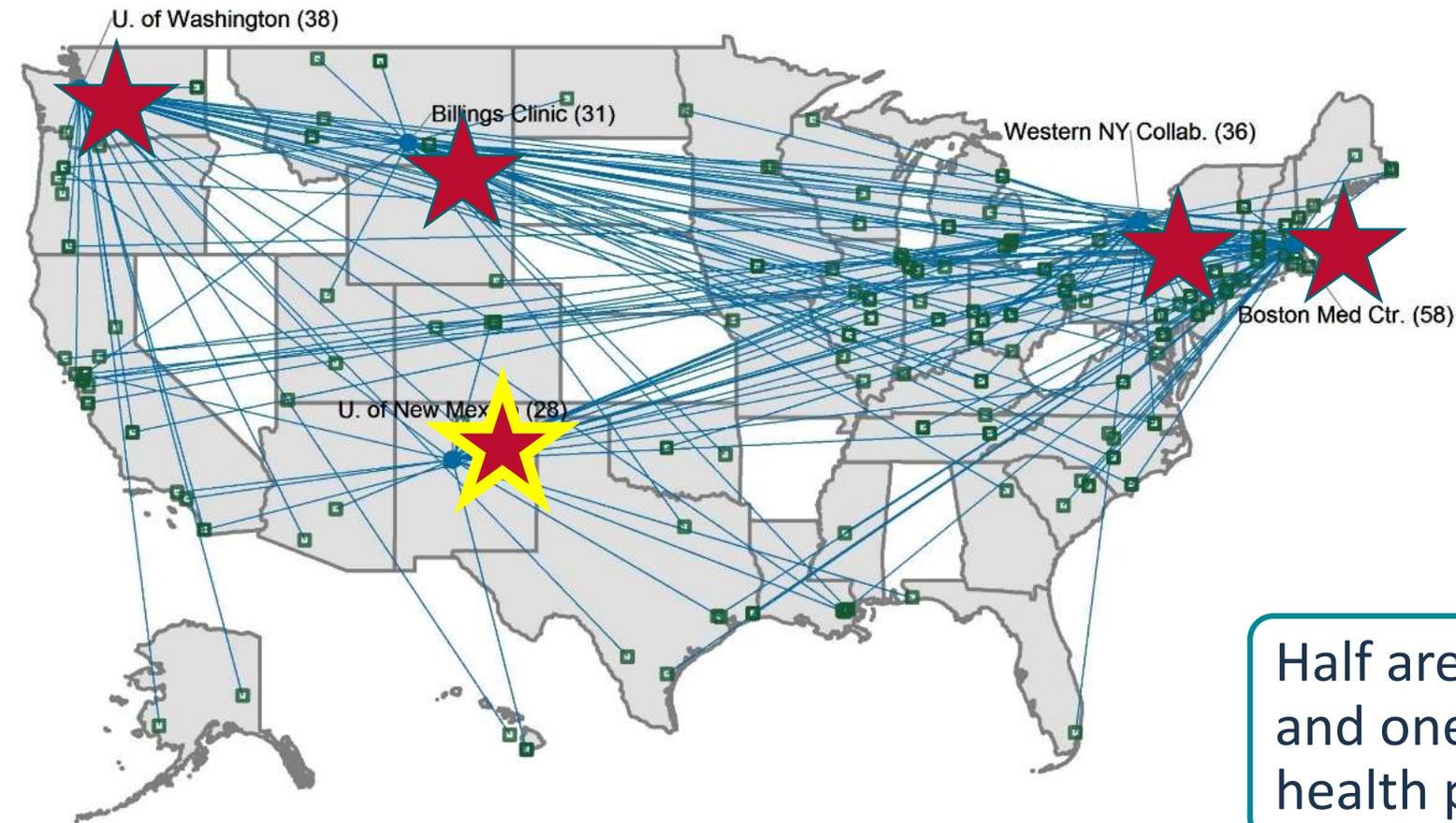
IAP CLINIC PARTICIPATION SITES



Cumulative number of buprenorphine-waivered physicians per million population in traditionally underserved zip codes in NM versus US



HRSA-funded National Opioid ECHO Program



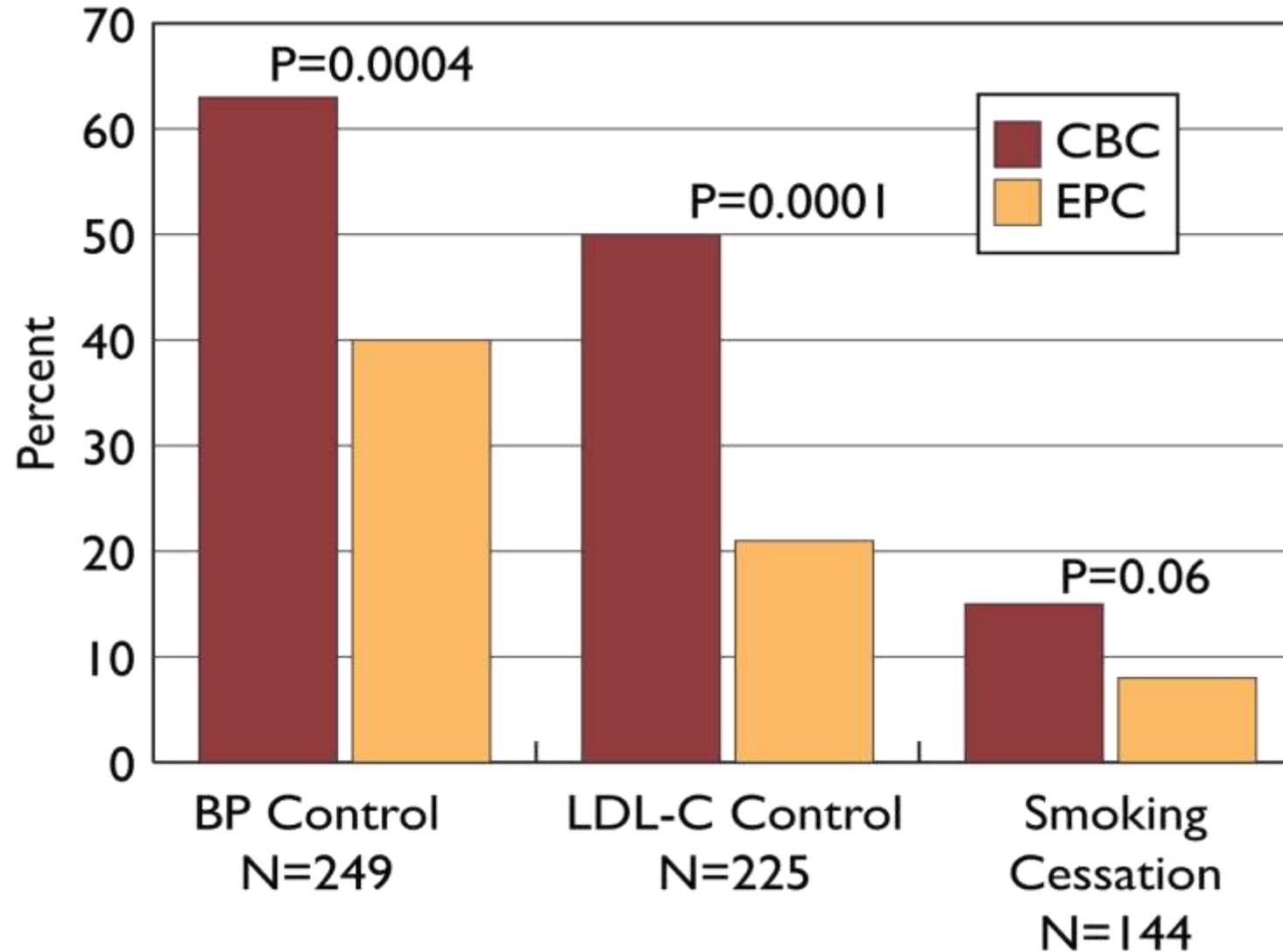
PARTICIPATION

Year one

- 355 participants from
- 147 HRSA-funded health centers

Half are medical providers,
and one third are behavioral
health providers

Community Based Care for Cardiac Risk Factor Reduction was more Effective than Enhanced Primary Care



Becker Circulation.
2005;111:1298-1304.

Community Health Workers in Prison

The New Mexico Peer Education Program: Pilot training cohort, CNMCF Level II, July 27-30, 2009



First day of peer educator training

Photo consents on file with Project ECHO[®] and CNMCF

Graduation Ceremony of First Cohort

The New Mexico Peer Education Program: Pilot training cohort, CNMCF Level II, July 27-30, 2009



Graduation as Peer Educators

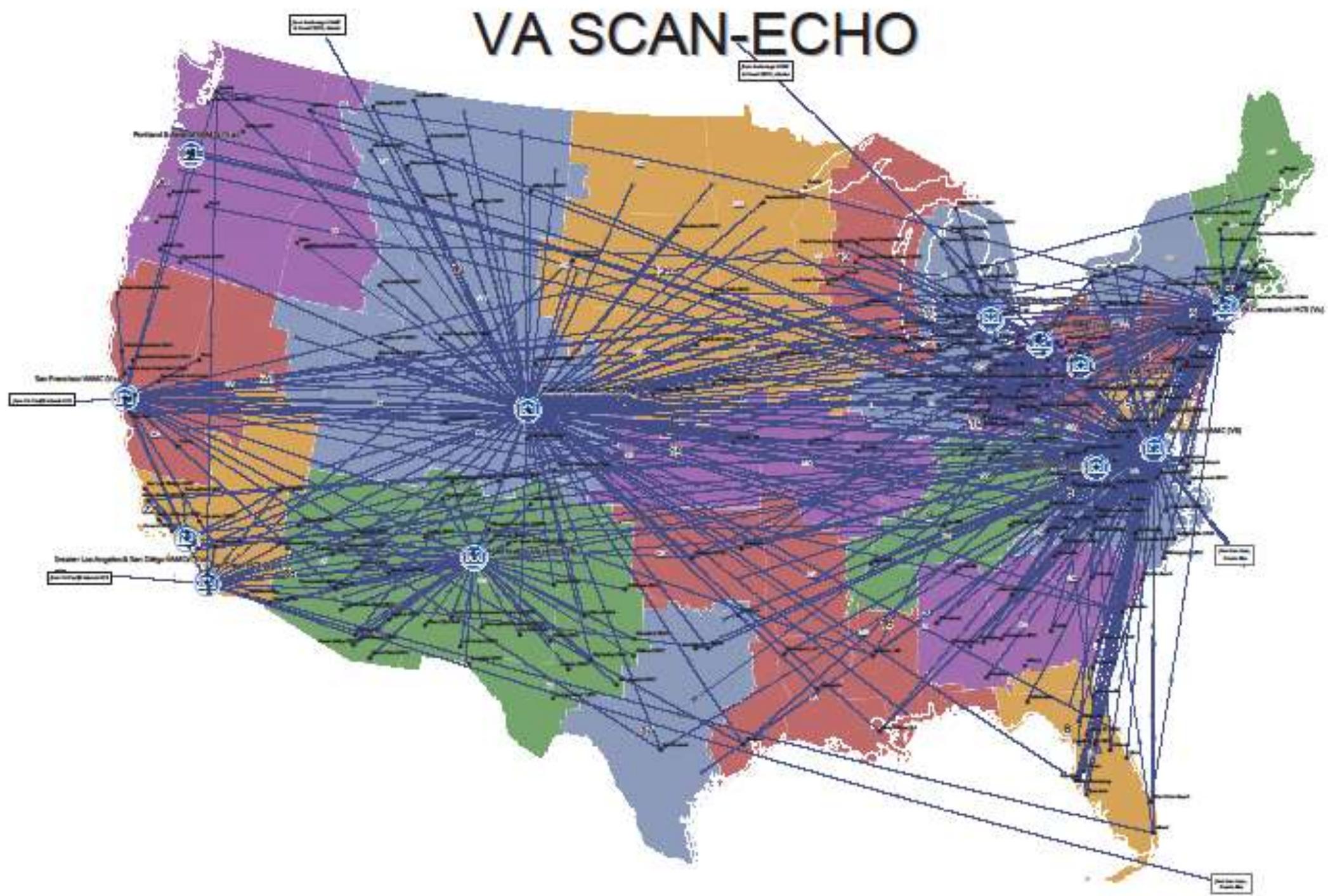
Photo consents on file with Project ECHO® and CNMCF

Potential Benefits of ECHO Model to Health System

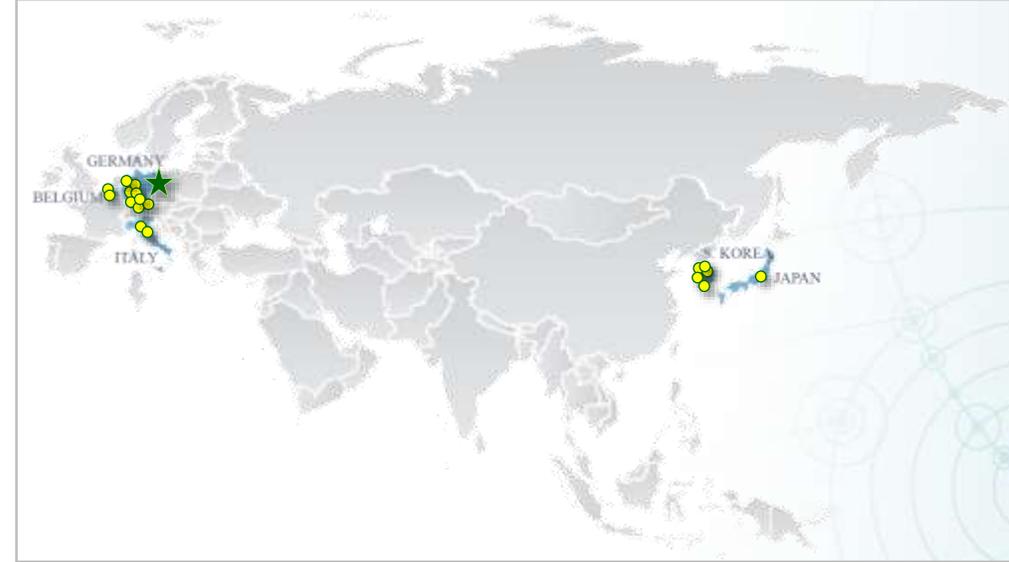
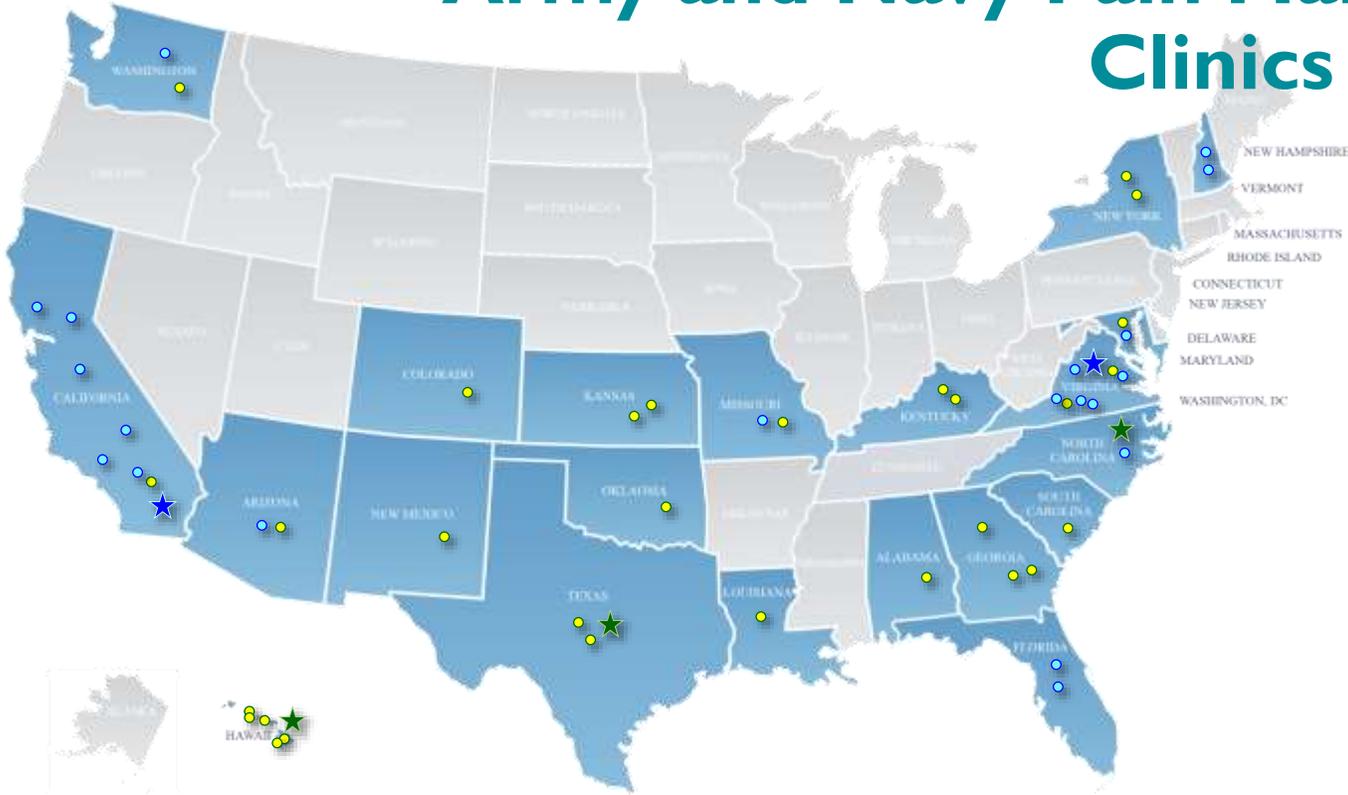
- Quality and Safety
- Rapid Learning and best-practice dissemination
- Reduce variations in care
- Access for Rural and Underserved Patients, reduced disparities
- Workforce Training and Force Multiplier
- **Democratize Knowledge**
- Improving Professional Satisfaction/Retention
- Supporting the Medical 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



VA SCAN-ECHO



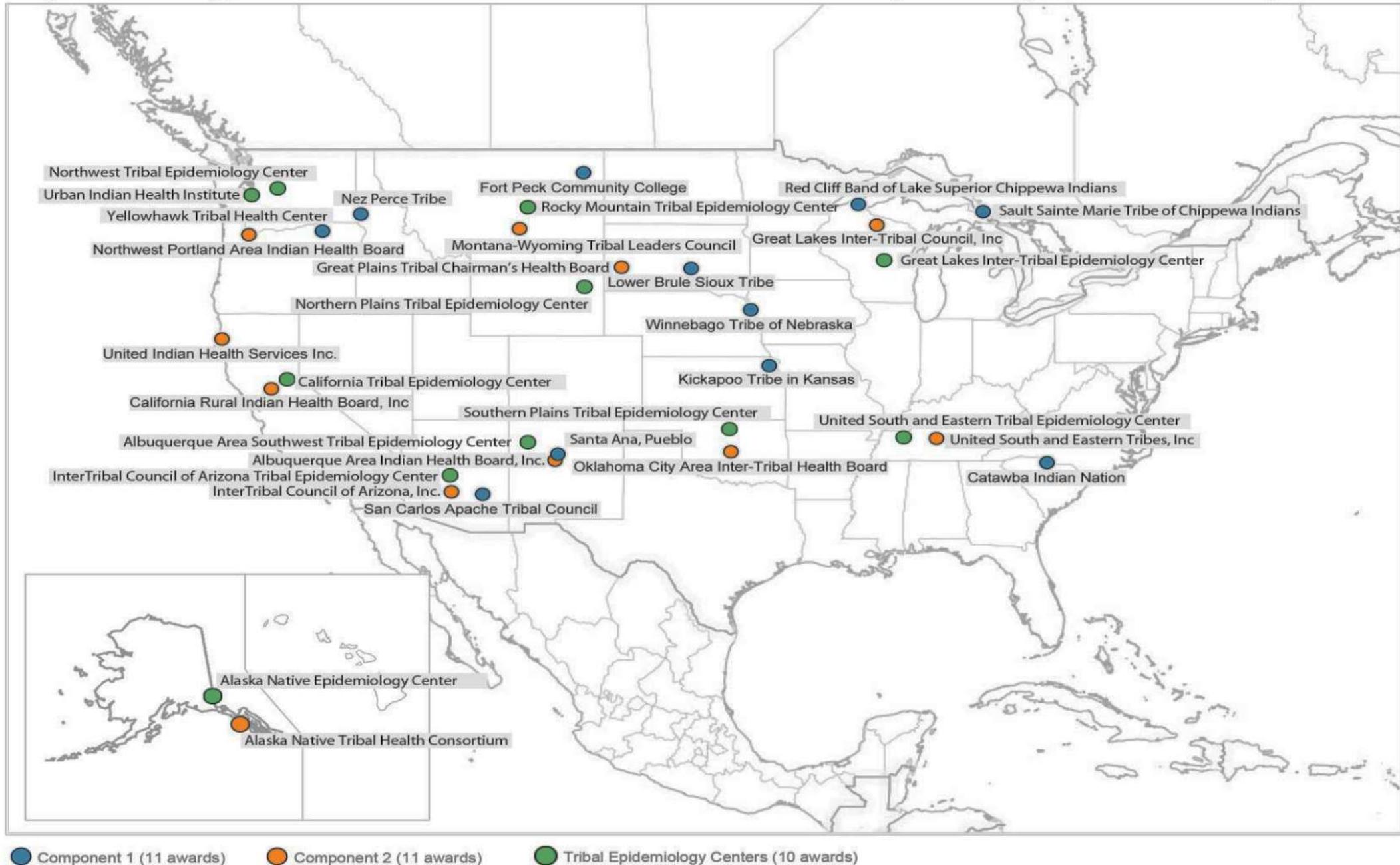
Army and Navy Pain Management ECHO Clinics



- ★ Army ECHO Hubs:** Regional Health Command-Europe (RHC-E) – Landstuhl, Germany | Regional Health Command-Central (RHC-C)-Joint Base San Antonio-Brook Army Medical Center – TX | Regional Health Command-Pacific (RHC-P)-Tripler Army Medical Center – HI | Regional Health Command-Atlantic (RHC-A) – Ft. Bragg, NC
- Belgium:**
 - Camp Casey
 - Supreme Headquarters Allied Powers Europe (SHAPE)
 - Germany:**
 - Grafenwoehr
 - Hohenfels
 - Katterbach
 - Landstuhl Regional Medical Center (LRMC)/FHC
 - LRMC/IMC
 - Stuttgart
 - Wiesbaden
 - Vilseck
 - Italy:**
 - Livorno
 - Vicenza
 - Japan:**
 - Camp Zama
 - South Korea:**
 - Camp Casey
 - Camp Humphreys
 - Camp Carroll
 - Camp Walker
 - Brian Allgood Army Community Hospital/ 121st Combat Support Hospital
 - Alabama:**
 - Redstone Arsenal
 - Arizona:**
 - Fort Huachuca
 - California:**
 - Fort Irwin
 - Colorado:**
 - Colorado Springs
 - Georgia:**
 - Fort Gordon
 - Fort Benning
 - Ft. Stewart
 - Hawaii:**
 - Schofield Barracks (Family Medicine and Troop Medical Clinic)
 - Kentucky:**
 - Adult Medicine Patient Centered Medical Home (PCMH) Tripler
 - Louisiana:**
 - Family Medicine PCMH Tripler
 - Missouri:**
 - Warrior Ohana PCMH
 - VA Pain Clinic
 - South Carolina:**
 - Fort Jackson
 - Texas:**
 - Fort Leavenworth
 - Fort Riley
 - Virginia:**
 - Fort Meade
 - Washington:**
 - Madigan Army Medical Center
 - Washington, DC:**
 - Fort Leonard Wood
 - New Mexico:**
 - White Sands Missile Range
 - New York:**
 - Fort Drum
 - West Point
 - Oklahoma:**
 - Fort Sill
 - South Carolina:**
 - Fort Jackson
 - Texas:**
 - Fort Bliss
 - Fort Hood
 - Virginia:**
 - Joint Base Langley-Eustis
 - Fort Lee
 - Washington:**
 - Madigan Army Medical Center

- ★ Navy ECHO Hubs:** Navy Medicine East (NME)- Naval Medical Center (NMC) Portsmouth, VA | Navy Medicine West (NMW)- Naval Medical Center San Diego (NMCSD), CA
- Arizona:**
 - NH Yuma
 - California:**
 - NMCSD Naval Training Center
 - NHLemoore
 - NH Twentynine Palms
 - NH Camp Pendleton
 - Naval Air Facility El Centro
 - Naval Air Station North Island
 - Florida:**
 - Naval Hospital (NH) Jacksonville
 - Naval Air Station Jacksonville
 - Maryland:**
 - NHC Pax River
 - Missouri:**
 - Behavioral Health Clinic (BHC) Boone
 - North Carolina:**
 - NH Camp LeJeune
 - New Hampshire:**
 - BHC Portsmouth NH
 - Navy Safe Harbor
 - Virginia:**
 - NMC Portsmouth (Case Management, Pain Clinic, Physiatry, Internal Medicine)
 - BHC Oceana
 - TriCare Prime Clinic (TPC) Chesapeake
 - TPC Virginia Beach
 - 633rd Medical Group-Langley

Comprehensive Approach to Good Health and Wellness in Indian Country Awards (DP14-1421PPHF14) **/22 awards



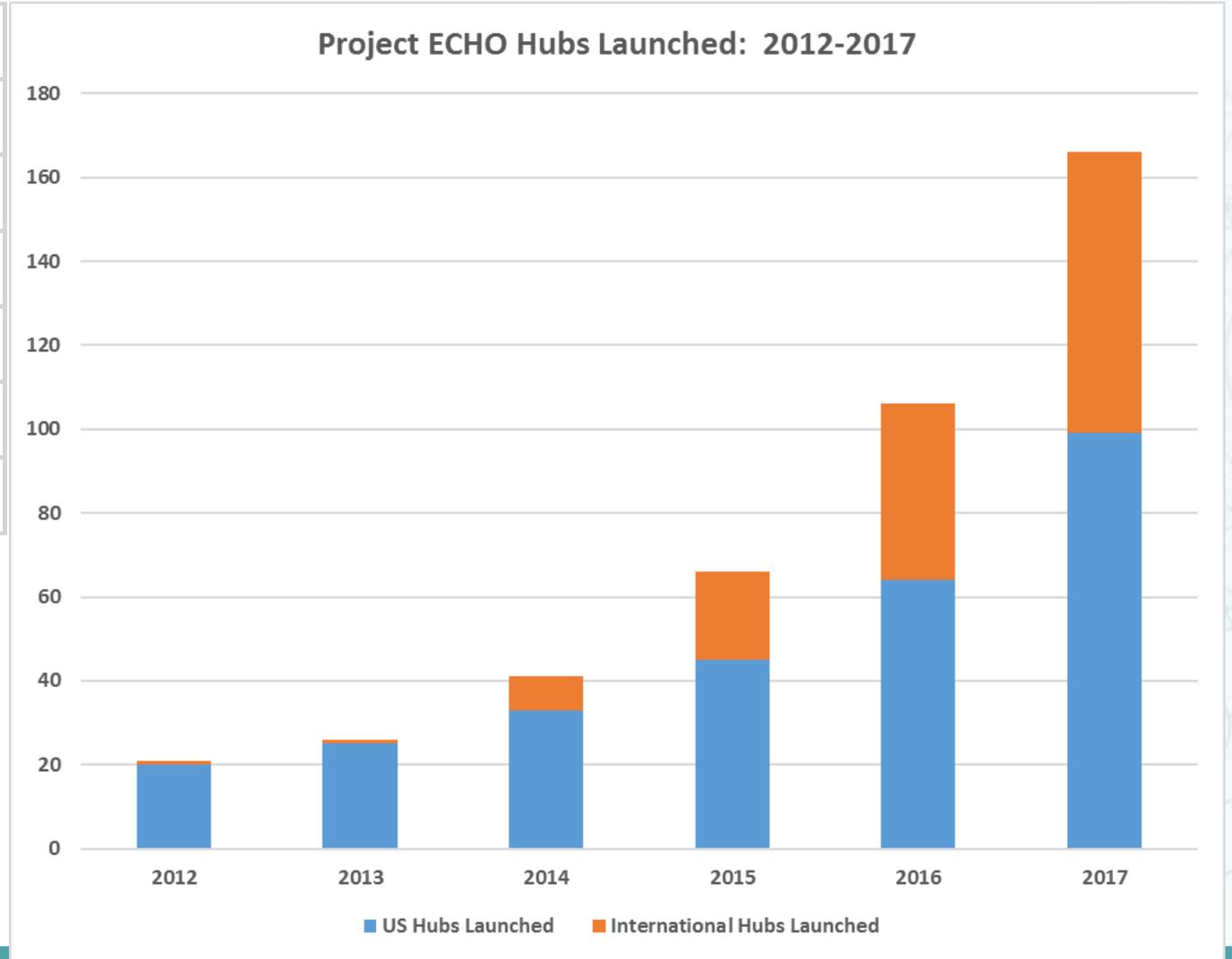
● Component 1 (11 awards) ● Component 2 (11 awards) ● Tribal Epidemiology Centers (10 awards)

**These awards are financed solely by Prevention and Public Health Funds.

ECHO's Exponential Growth



Year	US Hubs	Int'l Hubs	Total Hubs
2012	20	1	21
2013	25	1	26
2014	33	8	41
2015	45	21	66
2016	64	41	105
2017	99	67	166



ECHO Replication in US:

- **4 Breath 4 Life** – Franklin, TN (Primary Care)
- **Alaska Native Medical Center of Alaska Native Tribal Health Consortium** – Anchorage, AK (**Palliative Care**)
- **American Academy of Pediatrics** – National Headquarters, Elk Grove Village, IL (Zika)
- **American Academy of Pediatrics – Georgia Chapter** – Atlanta, GA (Endocrinology/Diabetes, Pediatrics, **HPV**)
- **Arkansas Children’s Research Institute Hospital** – Little Rock, AR (Autism)
- **Baylor St. Luke’s Medical Center** – Houston, TX (Advanced Liver Disease, Cardiology, **HBV, HCV**, Infectious Disease)
- **Beacon Health Options** – Boston, MA (Opioid Medication-Assisted Treatment)
- **Better Health for Northeast NY** – Albany NY (Asthma)
- **Boston Medical Center** – Boston, MA (Addiction Medicine)
- **Billings Clinic** – Billings, MT (Behavioral Health for Corrections, Addictions/Psychiatry ECHO for Corrections)
- **Catholic Health Initiatives ST. Gabriel’s Health** – Little Falls, Minnesota (Opioid Use Disorder)
- **Cherokee Nation at Hastings Hospital** – Tahlequah, OK (**HCV**)
- **Children’s Healthcare of Atlanta** – Atlanta, GA (Child Abuse/Advocacy)
- **Children’s Hospital and Medical Center** – Omaha, NE (**Childhood Obesity**)

More ECHO Replication in US:

- **Children's Hospital of Oakland** – Oakland, CA (Pediatrics)
- **Children's Hospital of Philadelphia** – Philadelphia, PA (Autism)
- **Cincinnati Children's Hospital Medical Center** – Cincinnati, OH (Autism, Sickle Cell Diseases)
- **Clinical Education Initiative** – New York, NY (HIV, Sexually Transmitted Diseases)
- **Community Health Center, Inc.** – Middletown, CT (Chronic Pain, Coaches International QI, HIV, **HCV**, Opioid Addiction – Buprenorphine)
- **Dyslexia Research Center** – Baton Rouge, LA (Dyslexia)
- **East Tennessee State University** – Baton Rouge, LA (Epilepsy)
- **Family Voices** – Albuquerque, NM (CHW)
- **Fenway Health** – Boston, MA (Transgender Health)
- **Harvard/Beth Israel Deaconess Medical Center** – Boston, MA (Gerontology – ECHO Age, **Care Transitions**)
- **HealthInsight** – Albuquerque, NM (Quality Improvement)
- **Intermountain Healthcare** – Salt Lake City, UT (**Liver Disease Management**)
- **Johns Hopkins University School of Medicine** – Baltimore, MD (Sickle Cell Disease)
- **Joslin Diabetes Center** – Boston, MA (Endocrinology)

More ECHO Replication in US:

- **Kennedy Krieger Institute** – Baltimore, MD (Behavioral/Mental Health, Developmental Disabilities)
- **LA Net** – Long Beach, CA (Geriatrics)
- **LiveOnNY** – New York, NY (Organ Donation)
- **Lurie Center for Autism** – Lexington, KY (Autism)
- **MaineHealth** – Portland, OR (Endocrinology/Diabetes)
- **Maniilaq Association** – Kotzebue, AK (Addiction Medicine, Integrated Addictions and Psychiatry)
- **Migrant Clinicians Network** – Austin, TX (Zika)
- **Missouri Telehealth Network/University of Missouri** – Columbia, MO (Autism, Asthma, Chronic Pain, Endocrinology, **Dermatology**)
- **MNI Great Lakes** – Grand Blanc, MI (Osteoporosis)
- **Mountain Area Health Education Center (MAHEC)** – Asheville, NC (School Nurses, Primary Care, Chronic Pain)
- **National Cancer Institute Center for Global Health (NCI-CGH)** – Bethesda, MD (**National Cancer Planning**)
- **New Mexico Office of the Medical Investigator** – Albuquerque, NM (Grief Counseling, Medicolegal Death Investigation)
- **New Mexico Public Education Department** – Santa Fe, NM (Education)

More ECHO Replication in US:

- **New Mexico Public Education Department College and Career Readiness Bureau** – Santa Fe, NM (Education)
- **Northeast Ohio Medical Center DBA 'NEOMED: Ohio Alliance** – Rootstown, OH
 - Community Health Worker, Community Health – AmeriCorps HPAC Assistance, Cystic Fibrosis , Education for Service, Schizophrenia & Complex Psychosis)
- **Northwest Portland Area Indian Health Board** – Portland, OR (**HCV**)
- **Northwell Health** – Great Neck, NY (Behavioral/Mental Health, Chronic Pain, Substance Use Disorders)
- **Ochsner Health System** – New Orleans, LA (Liver Disease Management)
- **Ohio Medical Directors Association (OMDA)** – Ohio (Geriatrics)
- **Oklahoma State University - Center for Health Sciences** – Tulsa, OK (Addiction Medicine, **Obesity**, Psychiatry)
- **Oregon Health and Science University/Health Share of Oregon** – Portland, OR (Psychiatric Medication Management)
- **Parents Reaching Out** – Albuquerque, NM (Parent Advocacy for Children with Disabilities)
- **Partners HealthCare** – Boston, MA (Substance Use Disorders)
- **Partnership for Community Care Network** – Greensboro, NC (Substance Abuse in Pregnancy)
- **Primary Health Care, Inc.** – Urbandale, IA (Behavioral/Mental Health, Primary Care, Quality Improvement)

More ECHO Replication in US:

- **Robert Wood Johnson Partners/Rutgers** – New Brunswick, NJ (Autism, Endocrinology/Diabetes, **HCV**, Pediatrics)
- **San Diego Tuberculosis Control-Cure Tuberculosis** – San Diego, CA (Tuberculosis/TB)
- **School-Based Health Alliance** – Washington, DC (Adolescent Health)
- **Southern Illinois University** – Carbondale, IL (Hypertension)
- **St. Joseph's Hospital & Medical Center** – Phoenix, AZ (**HCV**)
- **SUNY Upstate NY** – Syracuse, NY (Pediatrics)
- **TMF Health Quality Institute** – Austin, TX (Behavioral/Mental Health)
- **Trinitas Regional Medical Center** – Elizabeth, NJ (IDD population intellectual and developmental disabilities)
- **UMass Memorial Medical Group** – Worcester, MA (**HCV**, Medication Assisted Treatment)
- **University of Alabama at Birmingham** – Birmingham, AL (Autism)
- **University of Alaska Anchorage** – Anchorage, AK (Autism and Traumatic & Acquired Brain Injury)
- **University of Arizona** – Tucson, AZ, (Rheumatology)
- **University of California Davis** – Davis, CA (Pain Management)
- **University of California-Irvine** – Irvine, CA (Autism)
- **University of California Los Angeles** – Los Angeles, CA (Substance Use Disorder)

More ECHO Replication in US:

- **University of California at San Francisco** – San Francisco, CA (**HCV**)
- **University of Chicago** – Chicago, IL
 - Children and Youth with Epilepsy, **HCV**, Hypertension, **Risk Based Approach to Women's Health**, Pediatric ADHD, Pediatric **Obesity and Comorbidities**, Geriatric/Palliative, Pilot on Free & Charitable Projects
- **University of Cincinnati College of Medicine** – Cincinnati, OH (Chronic Pain)
- **University of Colorado School of Public Health** – Denver, CO
 - Children/Youth with Epilepsy Behavioral/Mental Health, **Cancer Survivorship**, **Care Coordination**, Child Abuse, Complex Care, Epilepsy, Food Safety , **HCV**, Neurology, Pediatrics, Tuberculosis/TB, Diabetes, CRC)
- **University of Hawaii** – Honolulu, HI (Endocrinology, Behavioral Health)
- **University of Kansas Medical Center** – Kansas City, MO
 - ADHD, Asthma, Children and Youth Epilepsy, Pain Management, Pediatric Psychopharmacology)
- **University of Nevada** – Reno, NV
 - Antibiotic Stewardship, Behavioral/Mental Health, Endocrinology/Diabetes, Gastroenterology, Pain Management, Rheumatology, Special Series, Sports Medicine)

More ECHO Replication in US:

- **University of New Mexico, ECHO Institute** – Albuquerque, NM
 - Chronic Pain and Headache Management, Community Health Worker Training Initiatives, Complex Care, Endocrinology, Epilepsy Across a Lifespan, **HCV, HCV Corrections**, HIV, **IHS HCV**, IHS HIV, Integrated Addictions and Psychiatry, NM Department of Health TB, NM Peer Education Project, Nurse Practitioner/Certified Nurse-Midwife, Rheumatology, **Women's Health and Genomics**, Improving Clinical Flow Pilot, Bone Health, Reproductive Health, Hepatitis B, Miner's Health
- **University of New Mexico - Center for Development and Disability** – Albuquerque, NM (Autism)
- **University of New Mexico: Envision** – Albuquerque, NM
 - **Obesity, Pediatric Nutrition**, Pediatrics, Pulmonary/Asthma
- **University of North Carolina at Chapel Hill** – Chapel Hill, NC (Opioid Medication-Assisted Treatment)
- **University of Pittsburgh** – Pittsburgh, Pennsylvania (Autism)
- **University Research Co., LLC - Center for Human Services** – Bethesda, MD (Quality Improvement, Zika, TB)
- **University of Rochester Medical Center** – Rochester, NY
 - Geriatric Health in Long Term Care, **Palliative Care in Primary Care**, **Palliative Care in Long Term Care**, Geriatric Mental Health in Primary Care, General Psychology, Eating Disorders

More ECHO Replication in US:

- **University of Texas MD Anderson – Houston, TX**
 - **Cancer Survivorship, Cervical Cancer Prevention, Management of Cervical & Breast Cancer, Management of Head and Neck Cancer, Palliative Care, Pathology Services, Tobacco Education and Cessation in the Health System (TEACH)**
- **University of Utah Health – Salt Lake City, UT**
 - Behavioral Health, Chronic Pain & Headache Management, **HCV**, High Risk Obstetrics, **Liver Care**, Immune Disorders of the Gut, Internal Medicine/ Pediatrics Residency, Interprofessional Education (Medicine, Nursing, Pharmacy, Social Work, Wellness/Nutrition), UU Community Clinics Headache, **UU Community Clinics HCV**, Pregnancy Care, Post-partum Hemorrhage, **Identifying & Managing Patients at Risk for Cancer**, Nursing Education, Burn and Soft Tissue Injury
- **University of Washington – Seattle, WA**
 - Chronic Pain, **HCV**, HIV, HIV Public Health, Multiple Sclerosis, NW Heart Failure Collaborative
- **University of Wisconsin School of Medicine and Public Health – Madison, WI (Pediatric Emergency Care)**
- **University of Wyoming – Laramie, WY**
 - Assistive Technologies in Education, Autism, Behavioral Support, Early Childhood K-12 Counseling, Educational Leadership, Geriatrics, School Nurses, Secondary Transition, Waiver Services

More ECHO Replication in US:

- **UNM Carrie Tingley Hospital** – Albuquerque, NM (Cognitive Rehabilitation)
- **Vanderbilt University Medical Center** – Nashville, TN (Autism)
- **Wake Forest Baptist Medical Center** – Winston-Salem, NC (Bone Health)
- **Washington State Department of Health** – Seattle, WA (Tuberculosis/TB)
- **Western NY Collaborative/AKA Excellus Blue Cross BS** – Rochester, NY (Chronic Pain, Opioid Addiction-Buprenorphine)
- **West Virginia Clinical and Translational Science Institute – of West Virginia University** – Morgantown, WV
 - Chronic Pain, **Hepatitis C**, Medication Assisted Treatment, Chronic Lung Disease
- **Yale University** – New Haven, CT (Child Abuse)

More ECHO Replication in US:

Veteran's Health Administration

- **9 hubs around the U.S. – Ann Arbor, Cleveland, Connecticut, Eastern Colorado, Los Angeles, Portland and Puget Sound, Richmond, San Diego, San Francisco**
 - Behavioral/Mental Health, Cardiology, Chronic Pain, **Dermatology**, Endocrinology/Diabetes, Epilepsy, **HCV**, HIV/AIDS, Infectious Disease, Liver Care, Neurology, Nephrology, Nursing, Otolaryngology, Pulmonary/Asthma, Sleep Medicine, Spinal Cord Injury/Plastics, Surgery, Transgender, Transplant, Urology, Vascular Medicine, **Women's Health**
- **Department of Defense**
 - Army (4 hubs around the world)
 - **Eastern Region Medical Command** at Landstuhl RMC – Germany (Chronic Pain)
 - **Army - Regional Health Command- Atlantic** – Fort Bragg, North Carolina (Chronic Pain)
 - **Army - Regional Health Command - Central** – Fort Sam Houston, Texas (Chronic Pain)
 - **Army - Regional Health Command- Pacific** – Honolulu, Hawaii (Chronic Pain)
- **Air Force**
 - **United States Air Force Diabetes Center of Excellence** – San Antonio, Texas (Diabetes)
- **Navy (2 hubs)**
 - **NAVMED East** – Navy Medical Center Portsmouth (Chronic Pain)
 - **NAVMED West** – Naval Medical Center San Diego (Chronic Pain)



ECHO Hubs and Superhubs: Global

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ECHO Replication Sites Worldwide:

- **Adizes Institute** – Mexico (Business Consulting)
- **Aga Khan University & Hospital** – Karachi, India (**HCV**)
- **All Ireland Institute of Hospice & Palliative Care** – Dublin, Ireland (**Palliative Care**)
- **Ambience Public School** – Delhi, India (Teacher Mentorship)
- **Ambience Public School** – Gurgaon , India (**Preventive Health**)
- **Baycrest** – Toronto, Canada (Geriatrics)
- **Centre for Addiction and Mental Health (CAMH)** – Toronto, Canada (Behavioral Health)
- **Centre Hospitalier del Universite de Montreal** – Montreal, Canada (**HCV**)
- **Children's Health Queensland Hospital and Health Service** – Brisbane, Australia (ADHD, **Childhood Overweight and Obesity Prevention**, Foot Anomalies)
- **Children's Hospital of Eastern Ontario (CHEO)** – Ottawa, Canada (Pediatrics, Psychiatry)
- **Clinica Medica Internacional - AmorPro TB** – Juarez, Mexico (Tuberculosis/TB)
- **Consortio Ecuatoriano para el Desarrollo de Internet Avanzado (CEDIA)** – Cuenca, Ecuador (Endocrinology/Diabetes)
- **Georgian-French Joint Hepatology Clinic** – Georgia (**HCV**)

More ECHO Replication Sites Worldwide:

- **Health and Social Care Board Northern Ireland (HSCNI)** – Belfast, Northern Ireland (**Dermatology for GP Trainees**, Carers, Diabetes, Ophthalmology, Lymphoedema Management, **Pregnancy and a Cancer Diagnosis**, Non-Malignant Respiratory Disease, **Head and Neck Cancer**, Heart Failure)
- **HealthNet** – Pakistan (**HCV**)
- **Highland Hospice - Scotland** – Inverness, United Kingdom (**Palliative Care**)
- **Holland Bloorview Kids Rehabilitation Hospital (ATN Site)** – Toronto, Ontario (Autism)
- **Holy Family Hospital** – New Delhi, India (Cardiology)
- **Hospice UK** – London, United Kingdom (**Care Homes**)
- **Hospital Britanico Buenos Aires** – Buenos Aires, Argentina (Inflammatory Bowel Disease)
- **Hospital de Clínicas de Porto Alegre** – Porto Alegre, Brazil (**HCV**)
- **Hospital Eva Peron** – Buenos Aires, Argentina (**Dermatology**, Psoriasis)
- **Hospital for Sick Children (SickKids)** – Toronto, Canada (Pain Management)
- **Hospital Italiano** – Buenos Aires, Argentina (**HCV**)
- **Institute for Cytology and Preventive Oncology (ICPO) and Karuna Trust** – Karnataka, India (**Cancer Screening and Prevention for Accredited Social Health Activists (ASHA) workers and Auxiliary Nurse Midwives (ANMs)**)
- **Institute for Liver and Biliary Sciences** – New Delhi, India (**Liver Disease**)

More ECHO Replication Sites Worldwide:

- Instituto Alexander Fleming – Buenos Aires, Argentina (**Coloractal Cancer**)
- Instituto de Oncology Angel H Roffo – Argentina (**Oncology**)
- Instituto de Rehabilitacion Psicofisica de Buenos Aires – Buenos Aires, Argentina (Pulmonary)
- Jamaica Ministry of Health – Mandeville, Jamaica (Chronic Disease Prevention and Management)
- Jaramogi Oginga Odinga Teaching & Referral Hospital – Kenya (HIV)
- Karuna Trust – Bangalore, India (Maternal and Child Health)
- Kazakh Medical University for Continuous Education – Almaty, Kazakhstan (HIV)
- Kyrgyz State Medical Institute of Postgraduate Education – Bishkek, Kyrgyzstan (HIV)
- Lair Centre – Vancouver, Canada (**Hepatitis C**)
- Liverpool Hospital – Liverpool, Australia (**HCV**)
- LV Prasad Eye Institute – Hyderabad, India (Ophthalmology)
- Ministry of Health and Public Hygiene – Abidjan, Cote d'Ivoire (HIV)
- Mrcheveli - Georgia – Georgia (საქართველო) (**Hepatitis C**)
- Namibia Ministry of Health and Social Services (MOHSS) – Windhoek, Namibia (HIV, Quality Improvement)
- National AIDS STI Control Program Kenya – Nairobi, Kenya (HIV, Quality Improvement)

More ECHO Replication Sites Worldwide:

- **National Center for Tuberculosis and Lung Diseases** – Georgia (საქართველო) (Tuberculosis/TB)
- **National Institute for Mental Health and Neurosciences** – Bengaluru, India (Addiction Medicine, Behavioral/Mental Health, Integrated Addictions and Psychiatry, Opioid Addiction- Buprenorphine, Pregnancy)
- **National Institute for Tuberculosis and Respiratory Diseases** – India (Tuberculosis/TB)
- **National Public Health Laboratory Services** – Kenya (Antimicrobial Stewardship)
- **National Tuberculosis, Leprosy and Lung Disease Program Kenya** – Nairobi, Kenya (Tuberculosis/TB)
- **Neolab** – Georgia (საქართველო) (**Hepatitis C**)
- **Northern Ireland Hospice** – Belfast, NI (Community Hospice Nurse Specialist Clinic, **Management of Dehydration, Care of the Younger Adult**)
- **Obra Social Ferroviaria (OSFE)** – Argentina (Rheumatology)
- **Post Graduate Institute of Medical Education and Research** – Chandigarh, India (**HCV**)
- **Reaching You - Ministry of Health and Population** – Nasr City, Egypt (Cardiology, **Hepatitis C**, Pulmonary)
- **Royal College of Surgeons in Ireland** – Dublin, Ireland (Rheumatology)
- **Solidarity and Action Against The HIV Infection in India** – Delhi, India (Maternal and Child Health)
- **St. Luke's Hospice** – Sheffield, United Kingdom (**Palliative Care**)
- **Tajik Institute for Postgraduate Education of Medical Staff** – Tajikistan (HIV)

More ECHO Replication Sites Worldwide:

- **Tata Memorial Centre** – India ()
- **The Heartbeat Trust** – Dun Laoghaire, Ireland (**Tumor Boards, Cancer Research and Clinical Trial Navigation**)
- **The Ministry of Health, Community Development, Gender, Elderly and Children** – Tanzania (HIV)
- **Trivandrum Institute of Palliative Sciences** – Thiruvananthapuram, India (**Palliative Care**)
- **Uganda Virus Research Institute HIV** – Entebbe Uganda (HIV)
- **Ummeed Child Development Center** – India (Autism)
- **Universidad Austral** – Buenos Aires, Argentina (**HCV**)
- **Universidad Central de Venezuela** – Ciudad Universitaria, Los Chaguaramos, Venezuela (Pediatrics, High Risk Pregnancy)
- **Universidad de la República** – Montevideo, Uruguay
 - HIV, **HCV**, Anemia, Heart Failure, **Cancer Of The Cervix**, Autism, **Pediatric Palliative Care, Adults Palliative Care**, Neurological Rehab And Autoimmune Diseases
- **Universidad Panamericana** – Mexico City, Mexico (Psychiatry)
- **University Health Network ('Ontario Pain')** – Toronto , Canada (Chronic Pain, **Hepatitis C**, Rheumatology)
- **Vietnam National Lung Hospital** – Hanoi, Vietnam (Tuberculosis/TB)
- **West/Northwest Hospitals Group** – Galway, Ireland (Endocrinology/Diabetes)

Africa ECHOs

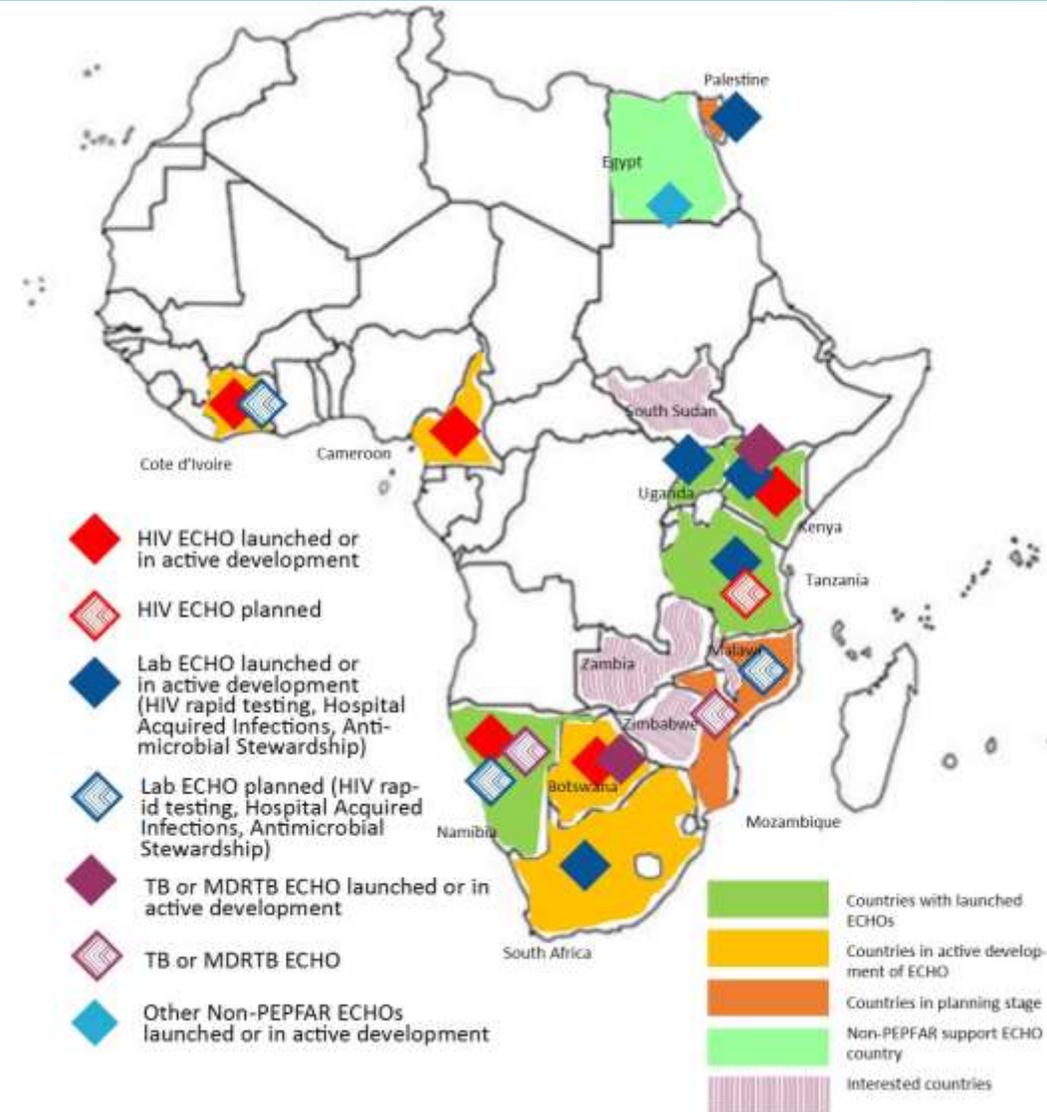


Africa Launches:

- **Namibia** (since November 2015) – HIV Pilot completed, post-pilot phase
- **Kenya** (TB July 2016 and HIV October 2016)
- **Tanzania** – first lab ECHO for HIV rapid testers (November 2016)
- **Uganda** – March 2017

Africa expected launches 2017

- **Kenya:** Pediatric TB, Palliative Care, Autism, Antimicrobial Resistance, Emergency Sonograms
- **Tanzania:** HIV
- **Mozambique:** TB
- **Cote d'Ivoire:** HIV, pediatric HIV QI, lab
- **Cameroon:** Pediatric HIV
- **Botswana:** HIV treatment failure
- **Namibia:** lab, QI, Cervical Cancer
- **South Africa:** lab
- **Multi country:** Viral Load Scale Up





Hambex

Uses of ECHO in Cancer

1. Prevention: Smoking Cessation, HPV vaccination, HCV Screening/Treatment, HBV Vaccination and Treatment, diet/nutrition counseling and obesity prevention, sun safety and skin cancer prevention
2. Screening and Early Detection: Dermatology, Breast, Cervical, Colorectal Cancer, Oral and Lung Cancer
3. Pathology Best Practices
4. Cancer Care Navigation
5. Updates in Treatment: Disseminating the science to the community to enhance implementation
6. Tumor Boards
7. Precision Medicine and Cancer Genomics
8. Pain and Toxicity Management
9. Survivorship
10. Palliative Care
11. Research Best Practices and Clinical Trial Navigation
12. Population Health: Effective Community Cancer Intervention and Prevention Program Management

Tata Memorial Cancer Centre, Mumbai

Speaker View

NCG Virtual Tumor Board

ECHO India Project ECHO

admingoa

Guwahati medical college...

PARAS CANCER CENTER, P...

GCRI

cachar cancer hospital silc...

CMC

RCC-TVM

NH_HEALTHCITY

Pallium India Team

Malabar Cancer Centre, Th...

Narayana Superspeciality...

Dr.Pavithran Amrita Hospit...

RCC JIPMER Puducherry

MAX Saket

BASAVATARAKAM IND...

GKNMH COIMBATORE

Dr.M.Ashraf Tell; SKIMS,Sri...

Start Video

Invite

Participants 18

Share Screen

Chat

Record

Tata Memorial: Virtual Tumour Board ECHO



You are viewing TMH's screen Options

2) Volumetric for PET-CT WB PET CT CA BRE 12/12/2016 AIMS COCHIN

The interface displays a virtual meeting with a central medical visualization area and a sidebar of video feeds. The central area is divided into four quadrants: top-left shows a CT Transaxial scan of the abdomen; top-right shows a PET Transaxial scan; bottom-left shows an FDG Avid Hypodense Lesion in Segment VII of the Liver; bottom-right shows a PET Transaxial scan of the torso. A text overlay in the bottom-left quadrant reads "FDG AVID HYPODENSE LESION IN SEG VII OF LIVER". The sidebar on the right contains three video feeds: the top one is labeled "ECHO India Project ECHO" and "Karan Rai; ECHO, India"; the middle one is labeled "TMH"; the bottom one is labeled "Dr.Pavithran Amrita Hospit..." and "Narayana Cancer Institute". At the bottom of the interface is a control bar with icons for Unmute, Start Video, Invite, Participants (18), Share Screen, Chat, Record, and a red "Leave Meeting" button.

CT Transaxials

PET Transaxials

FDG AVID HYPODENSE LESION IN SEG VII OF LIVER

ECHO India Project ECHO

Karan Rai; ECHO, India

TMH

Dr.Pavithran Amrita Hospit...

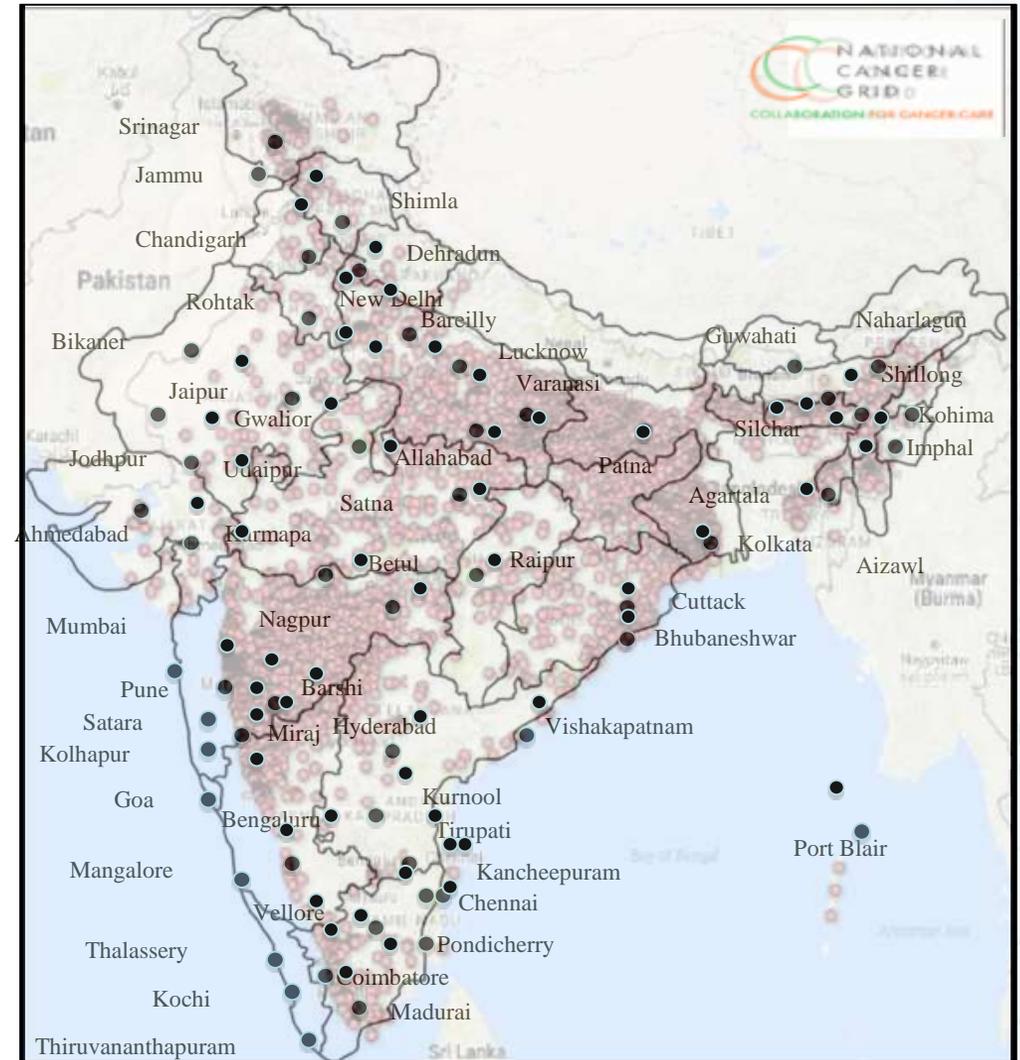
Narayana Cancer Institute

Unmute Start Video Invite Participants 18 Share Screen Chat Record Leave Meeting

India's National Cancer Grid



- National Cancer Grid - network of major cancer centers, research institutes
- Dec 2016, launched the ECHO program
 - Connect 86 hospitals of the NCG
 - 20+ centers currently participate
- Weekly ECHO clinics with over 80 participants



Courtesy Swasth India & Dr. C S Pramesh, TMH

The “ECHO Act” (Expanding Capacity for Health Outcomes Act)

Passed House/Senate by unanimous vote, November-December 2016

Signed into law by President Barack Obama, December 2016

Asks the Secretary of Health and Human Services to study the impact of Project ECHO on:

Conditions Mental and substance use disorders, chronic diseases and conditions, prenatal and maternal health, pediatric care, pain management, and palliative care

Workforce Implementation of public health programs, including those related to disease prevention, infectious disease outbreaks, and public health surveillance

Public Health Health care workforce issues, such as specialty care shortages and primary care workforce recruitment, retention, and support for lifelong learning

Rural and Underserved Populations Delivery of health care services in rural areas, frontier areas, health professional shortage areas, and medically underserved areas, and to medically underserved populations and Native Americans



Utah

- Hatch(R)



Hawaii

- Schatz (D)

Co-sponsors



Texas

- Burgess(R)



California

- Matsui(D)



Louisiana

- Sen. Bill Cassidy (R)



New Mexico

- Sen. Martin Heinrich (D)
- Sen. Tom Udall (D)
- Rep. Michelle Lujan Grisham (D)



Massachusetts

- Sen. Elizabeth Warren (D)



Oklahoma

- Sen. James Inhofe (R)



Minnesota

- Sen. Al Franken (D)



Tennessee

- Sen. Lamar Alexander (R)



Mississippi

- Sen. Roger Wicker (R)



Texas

- Sen. John Cornyn (R)
- Rep. Kay Granger (R)



Washington

- Sen. Maria Cantwell (D)
- Sen. Patty Murray (D)



Montana

- Sen. Steve Daines (R)
- Sen. Jon Tester (D)



Virginia

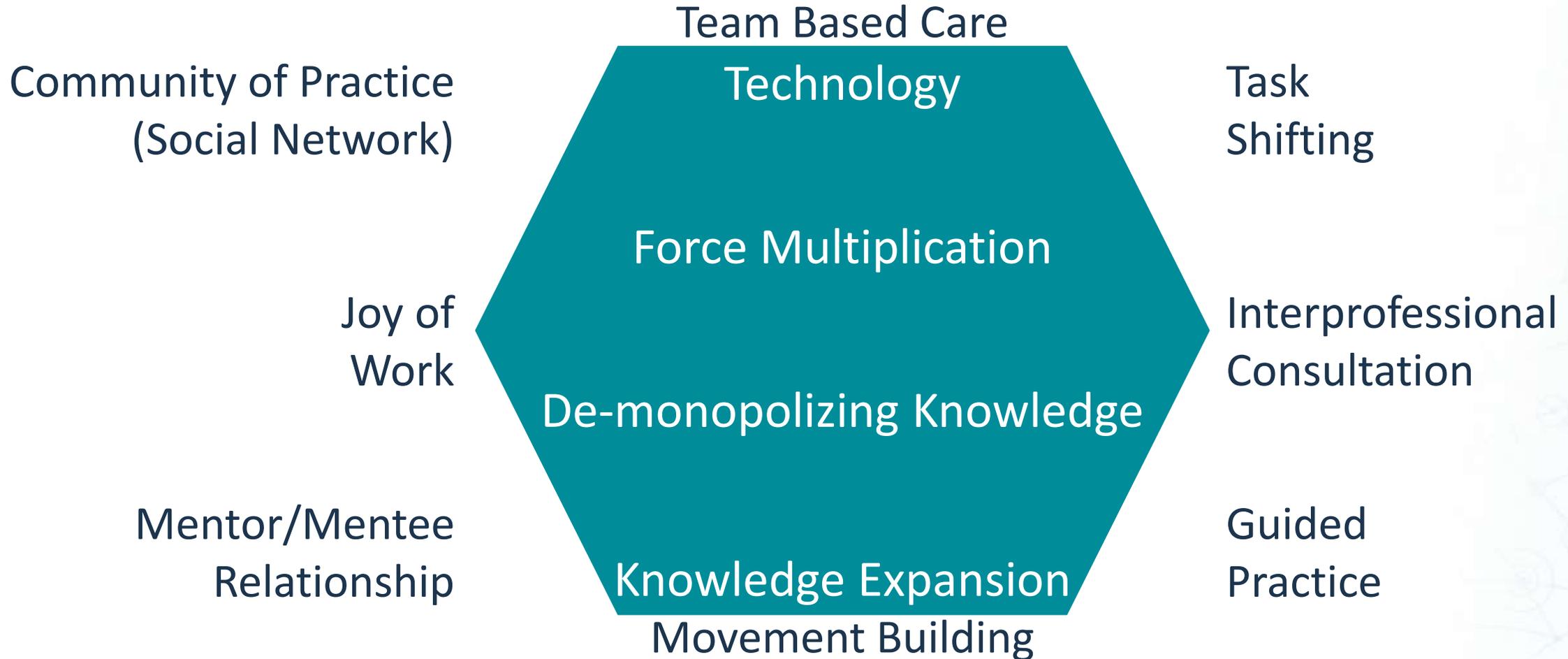
- Sen. Mark Warner (D)



Wyoming

- Sen. John Barrasso (R)

What Makes ECHO Work?



vs.

Organization Building