



Project ECHO (Extension for Community Health Outcomes)

Sanjeev Arora MD

Distinguished Professor of Medicine
(Gastroenterology/Hepatology)

Director of Project ECHO®

Department of Medicine

University of New Mexico Health Sciences Center

Tel: 505-272-2808

Fax: 505-272-6906

sarora@salud.unm.edu

The mission of **Project ECHO**[®] is to expand the capacity to provide best practice care for common and complex diseases in rural and underserved areas and to monitor outcomes.

Supported by New Mexico Department of Health, Agency for Health Research and Quality, New Mexico Legislature, the Robert Wood Johnson Foundation and the GE Foundation.

Hepatitis C

A Global Health Problem

Over 170 Million Carriers Worldwide, 3-4 Million new cases/year



Source: WHO 1999

New Mexico

- Estimated number is greater than 28,000
- In 2004 less than 5% had been treated
 - 2,300 prisoners were HCV positive (~40% of those entering the corrections system), none were treated

Treatment

Good news ...

- Curable in 70% of cases

Bad news ...

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

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)

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.

Partners

- 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

Methods

- Use Technology
- sharing “best practices”
- Case based learning
- web-based database to monitor outcomes

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

What is Best Practice in Medicine

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

Steps

- Train physicians, mid-level providers, nurses, pharmacists, educators in HCV
- Train to use web based software — “*i*Health”
- Conduct telemedicine clinics — “Knowledge Network”
- Initiate co-management — “Learning Loops”
- Collect data and monitor outcomes centrally
- Assess cost and effectiveness of programs

Benefits to Rural Clinicians

- 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



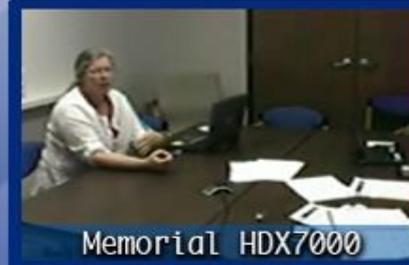
Pecos Valley MC



DOH Las Cruces



SBRT-First Choice South Vc



Memorial HDX7000



LAS VEGAS ECFH



Clustering of Poor Prognostic Factors in Heavy Patients

	n = 78.8 (1,148)	n = 78.8 (1,261)**
Weight, kg (SD)	800 (100.0)	807* (100.0)**
Black Race, n (%)	79 (10.0)	80 (10.0)**
Age, years†	41.8 ± 10.8	43.8 ± 10.8**
APACHE II‡	21.0 ± 8.7	21.0 ± 8.8**
Mortality, n (%)	221 (28.3)	205 (28.3)**
Log (APACHE II)§	1.30 ± 0.37	1.30 ± 0.38**
APACHE II, n (%)	102 (13.0)	100 (13.0)**
APACHE II, n (%)	100 (12.8)	100 (12.8)**
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* n = 78.8 (1,261)† n = 78.8 (1,261)‡ n = 78.8 (1,261)§ n = 78.8 (1,261)** n = 78.8 (1,261)**

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

Technology

- Videoconferencing Hardware
- Videoconferencing Software
- Video Recording System
- You Tube-like Website/Archive
- **iHealth** – Electronic Clinical Management Tool
- **iECHO** – Electronic TeleECHO Clinic Management Solution

How well has model worked?

- 500 HCV TeleECHO™ Clinics have been conducted
- >5,000 patients entered HCV disease management program

CME's/CE's issued:

- Total CME hours 57000 hours at no cost for HCV and 12 other disease areas

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 Size</u> for the chang e
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

(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
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

Clinician Benefits

(Data Source; 6 month Q-5/2008)

Benefits N=35	Not/Minor Benefits	Moderate/Major Benefits
Enhanced knowledge about management and treatment of HCV patients.	3% (1)	97% (34)
Being well-informed about symptoms of HCV patients in treatment.	6% (2)	94% (33)
Achieving competence in caring for HCV patients.	3% (1)	98% (34)

Project ECHO[®]

Annual Meeting Survey

N=17	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



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

Results of the HCV Outcomes Study

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

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 given 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.

ECHO Model is Cost Effective

- In 60 Percent of Patients treated for HCV the model was cost savings
- Overall Cost per Discounted Quality of Life Year Gained was less than 3500 dollars

AASLD Presentation Washington DC
November 2013

Disease Selection

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

Bridge Building

Pareto's Principle

UNM HSC

State
Health
Dept

Private
Practice

Community
Health Centers

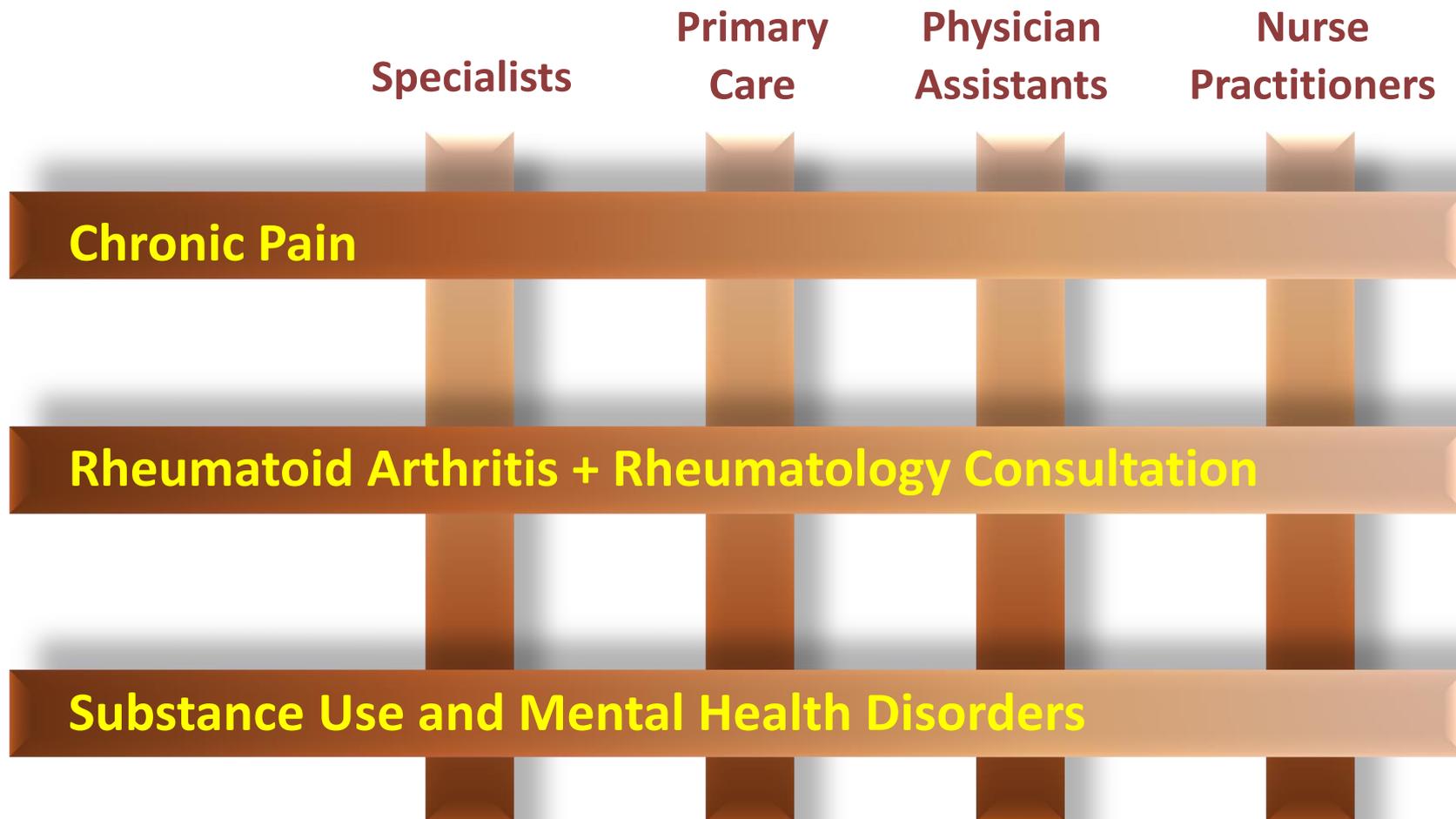
Chronic Pain

Rheumatoid Arthritis + Rheumatology Consultation

Substance Use and Mental Health Disorders

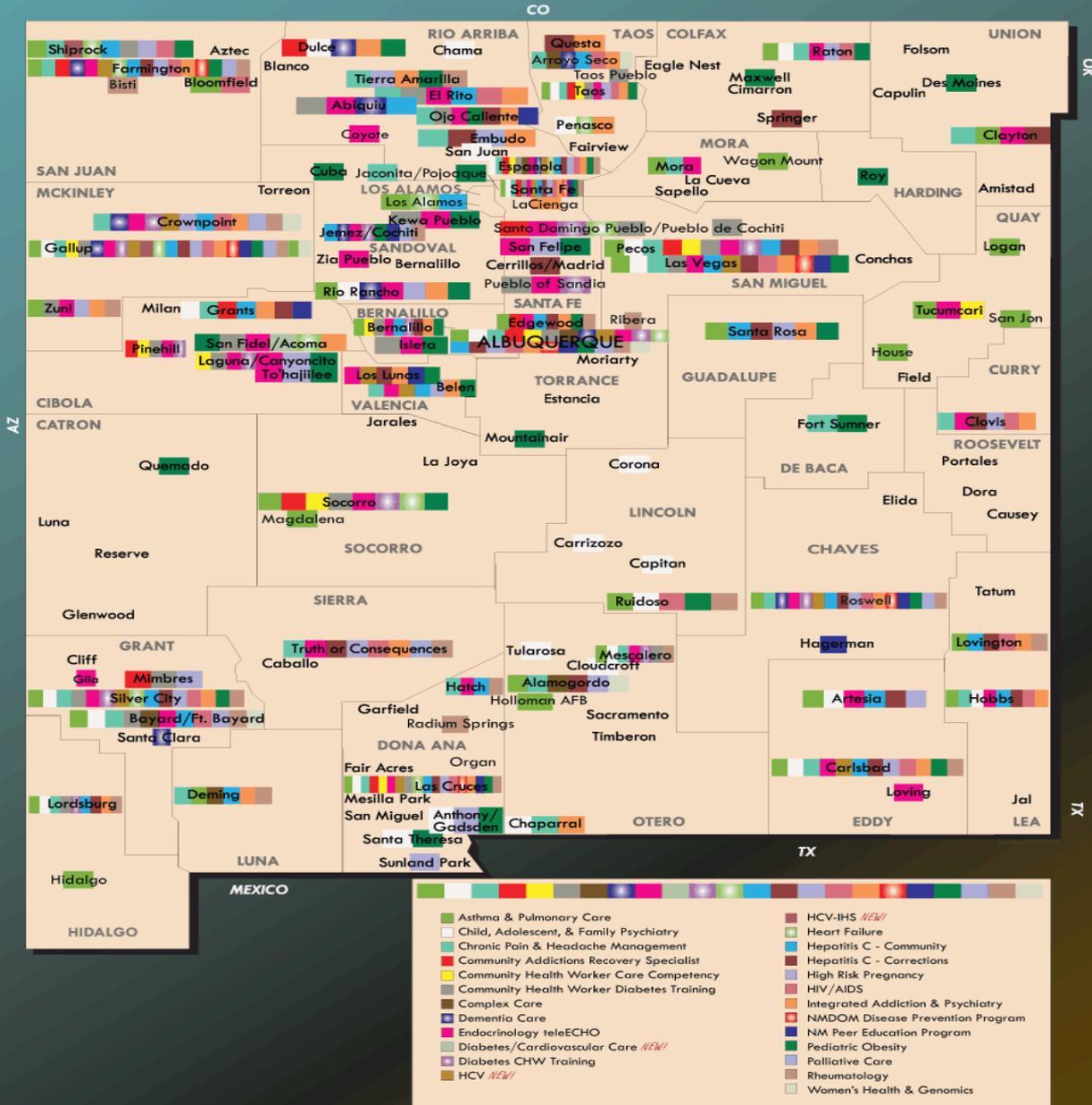
Force Multiplier

Use Existing Community Clinicians

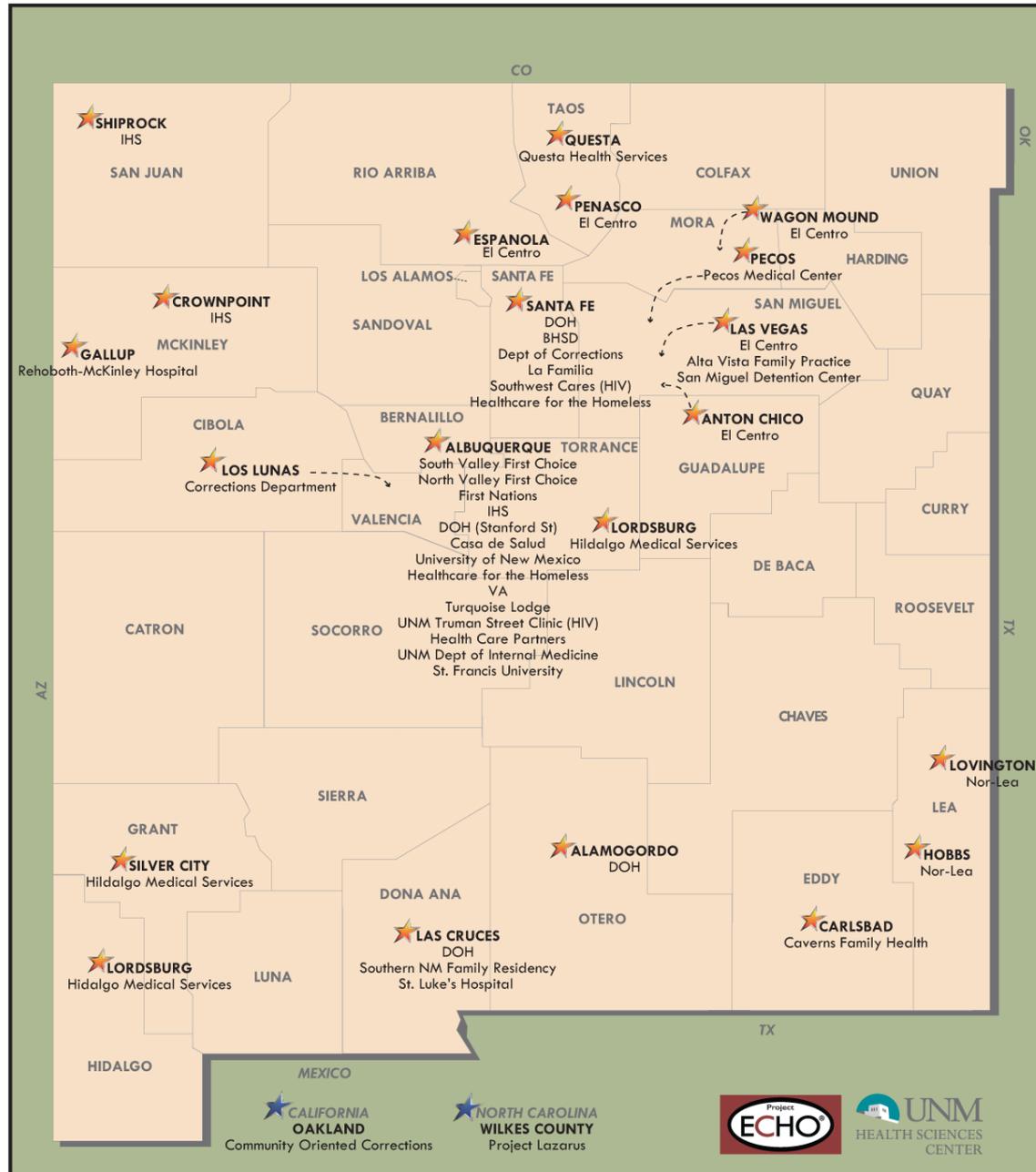


Successful Expansion into Multiple Diseases

	Mon	Tue	Wed	Thurs	Fri
8-10 a.m.	<u>Hepatitis C</u> <ul style="list-style-type: none"> • Arora • Thornton 	<u>Diabetes & Endocrinology</u> <ul style="list-style-type: none"> • Bouchonville 		<u>Geriatrics/ Dementia</u> <ul style="list-style-type: none"> • Herman 	<u>Palliative Care</u> <ul style="list-style-type: none"> • Neale
10-12 a.m.	<u>Rheumatology</u> <ul style="list-style-type: none"> • Bankhurst 	<u>Chronic Pain</u> <ul style="list-style-type: none"> • Katzman 	<u>Integrated Addictions & Psychiatry</u> <ul style="list-style-type: none"> • Komaromy 		<u>Complex Care</u> <ul style="list-style-type: none"> • Neale • Komaromy
2-4 p.m.	<u>HIV</u> <ul style="list-style-type: none"> • Iandiorio • Thornton 		<u>Prison Peer Educator Training</u> <ul style="list-style-type: none"> • Thornton 	<u>Women's Health & Genomics</u> <ul style="list-style-type: none"> • Curet 	



IAP CLINIC PARTICIPATION SITES

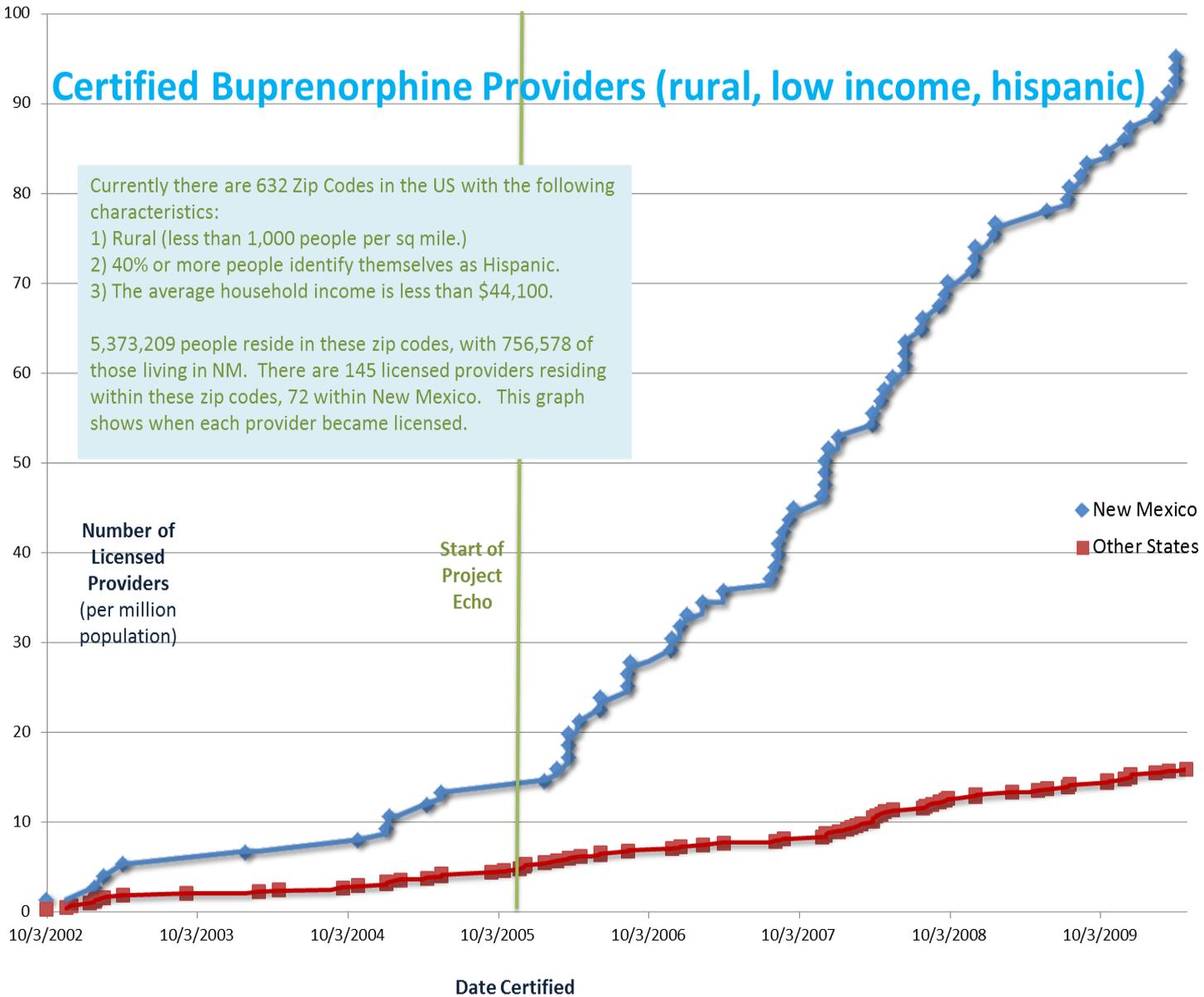


Certified Buprenorphine Providers (rural, low income, hispanic)

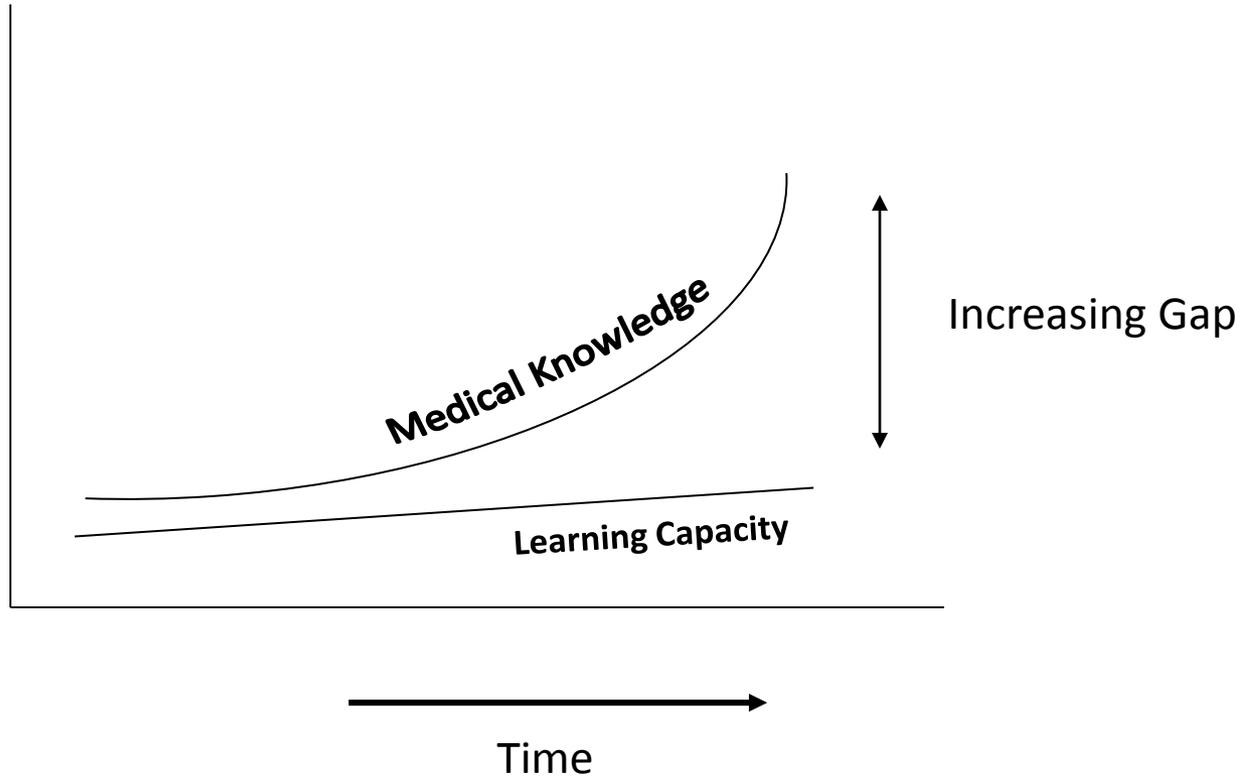
Currently there are 632 Zip Codes in the US with the following characteristics:

- 1) Rural (less than 1,000 people per sq mile.)
- 2) 40% or more people identify themselves as Hispanic.
- 3) The average household income is less than \$44,100.

5,373,209 people reside in these zip codes, with 756,578 of those living in NM. There are 145 licensed providers residing within these zip codes, 72 within New Mexico. This graph shows when each provider became licensed.



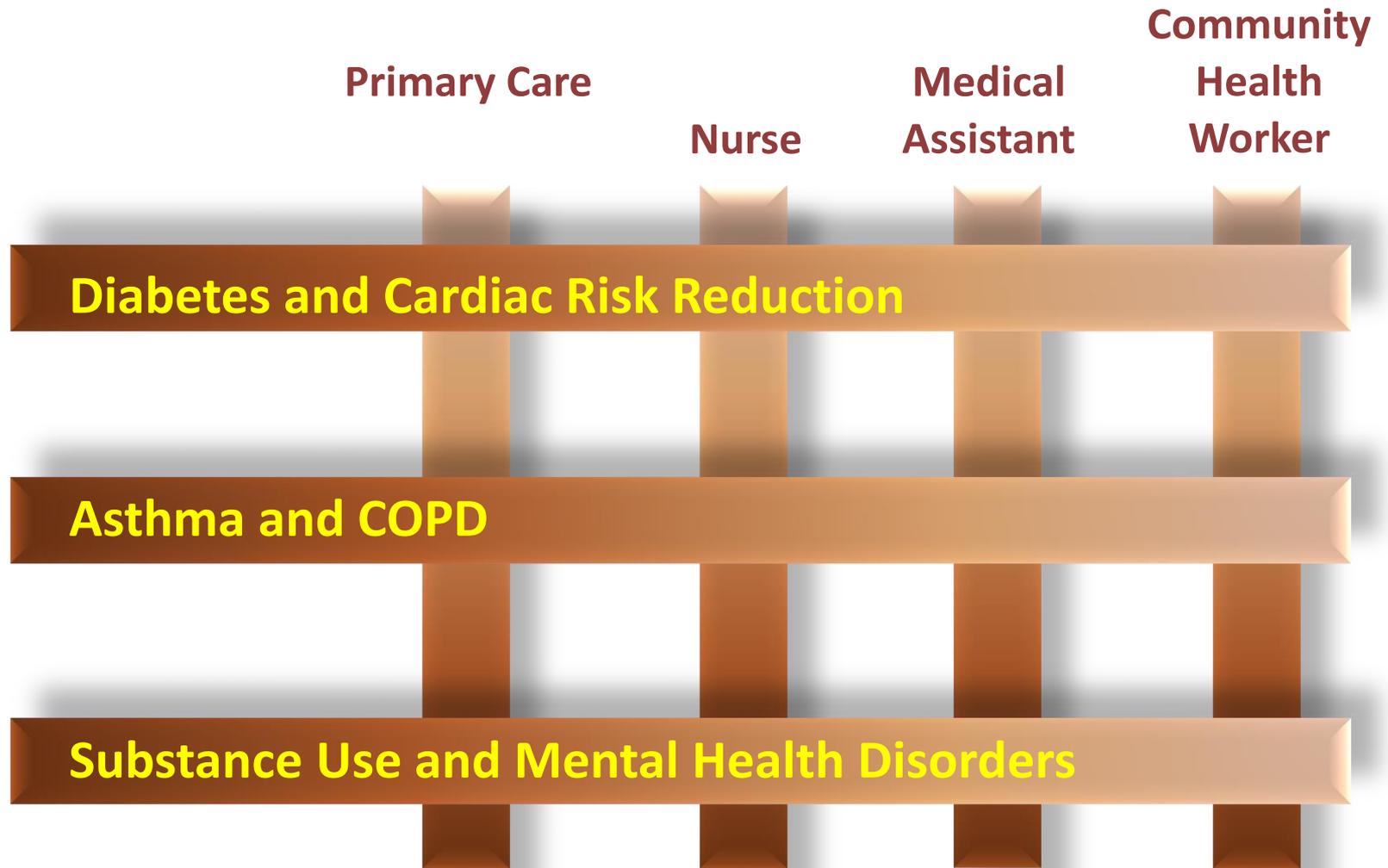
Transforming Primary Care with Knowledge Networks



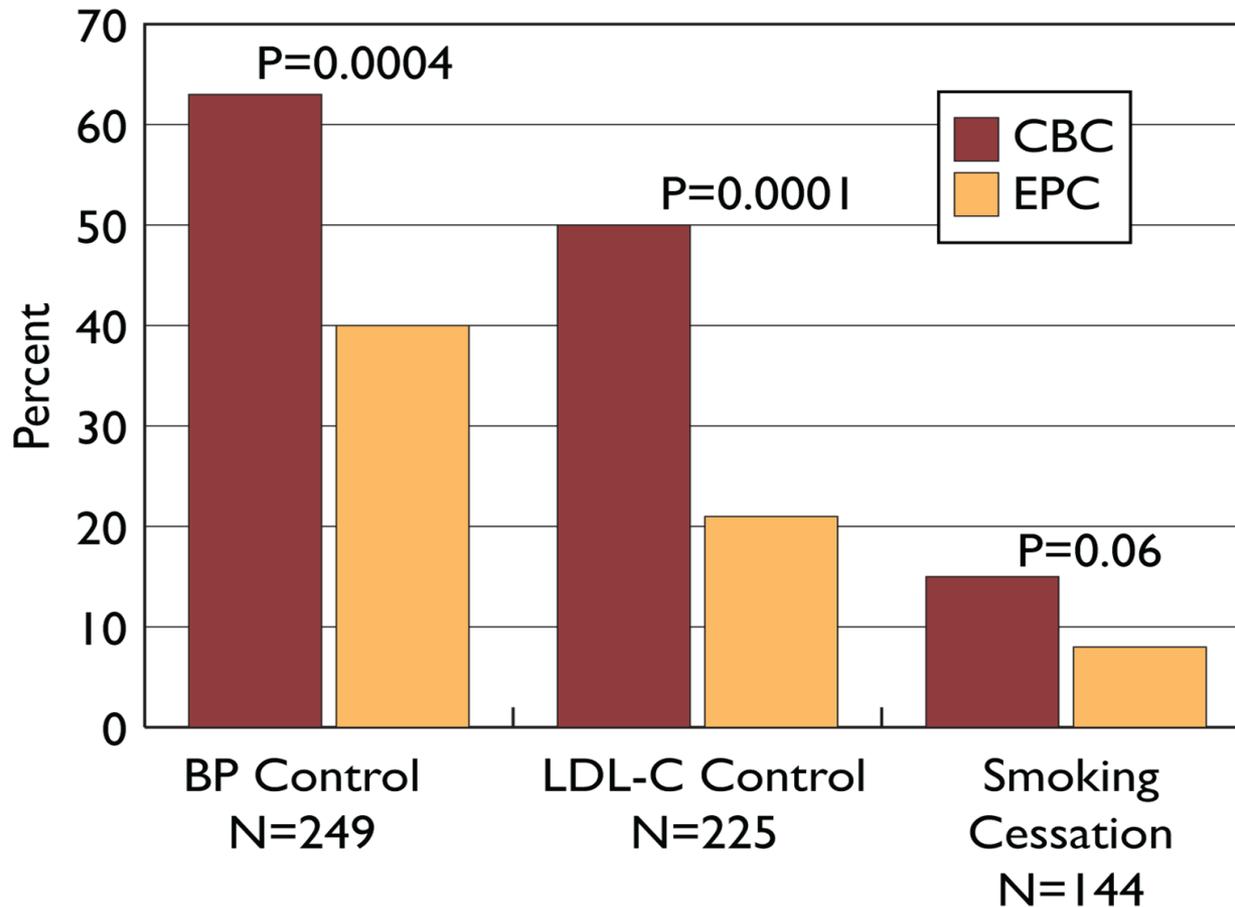
“Expanding the Definition of Underserved Population”

Force Multiplier

Chronic Disease Management is a Team Sport



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



Why is a CHW Intervention Effective?

- Live in Community
- Understand culture
- Appreciate economic limitations of patient and know community resources available to patient
- Often know family and can engage other social resources for patient
- Spend more time with patient

ECHO CHW Training

Multiple Tracks

- CHW Specialist Training
 - **CREW**: Diabetes, Obesity, Hypertension, Cholesterol, Smoking Cessation, Exercise Physiology
 - **CARS**: Substance Use Disorders
 - **ECHO Care™**: Complex Multiple Diagnoses
- Prison Peer Educator Training

Specialty CHW Program

- Narrow Focus — Deep Knowledge
- Standardized Curriculum
 - 3 Day Onsite
 - Webcam/Weekly Video Based Clinics
 - Diet
 - Exercise
 - Smoking Cessation
 - Motivational Interviewing
 - Gentle Nudges
 - Finger Stick
 - Foot Exam
 - Ongoing support via knowledge networks
 - Part of Disease Management Team

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

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
- **Demonopolize 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

UT

CO



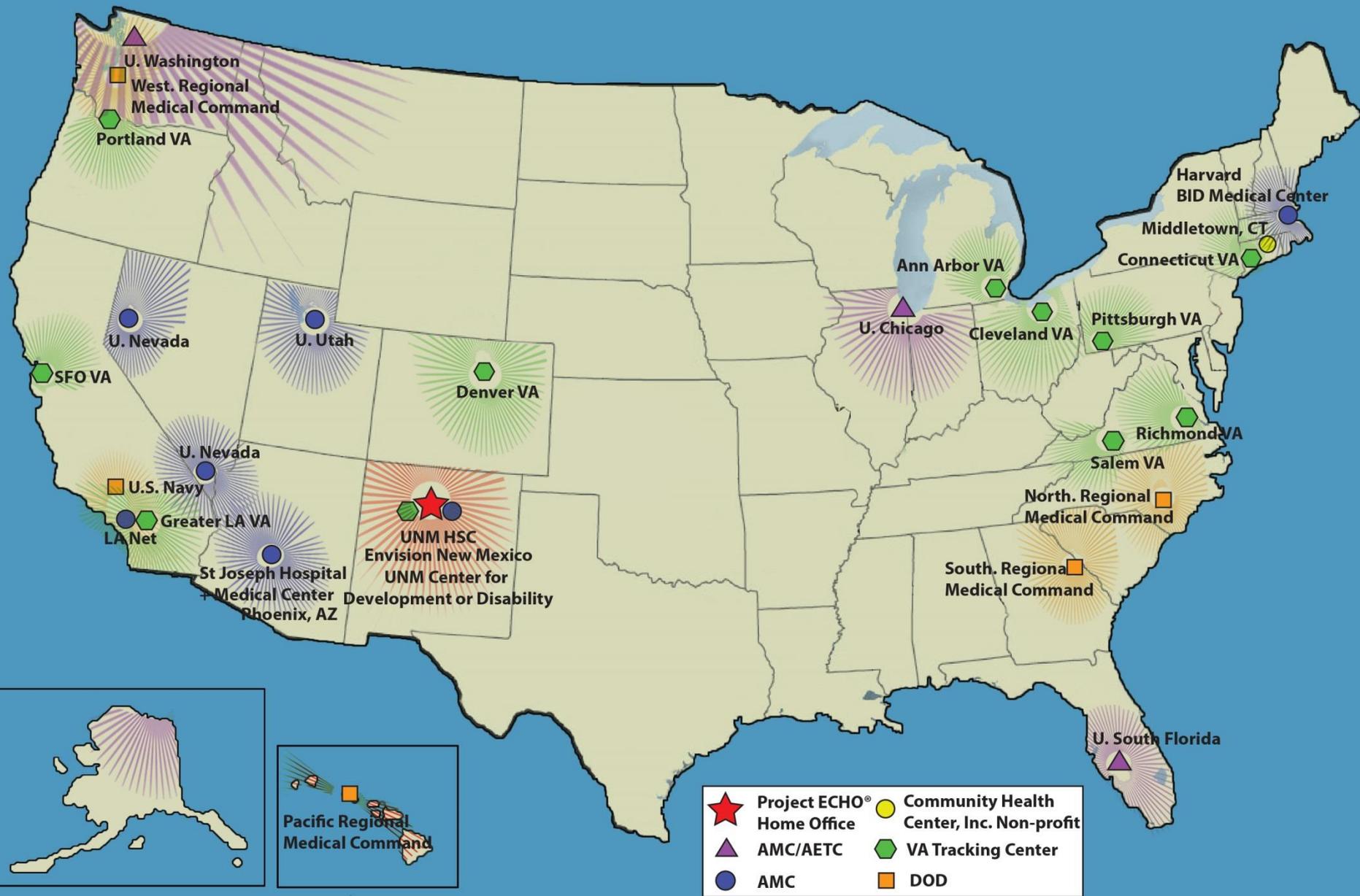
OK

AZ

TX

MEXICO

TX

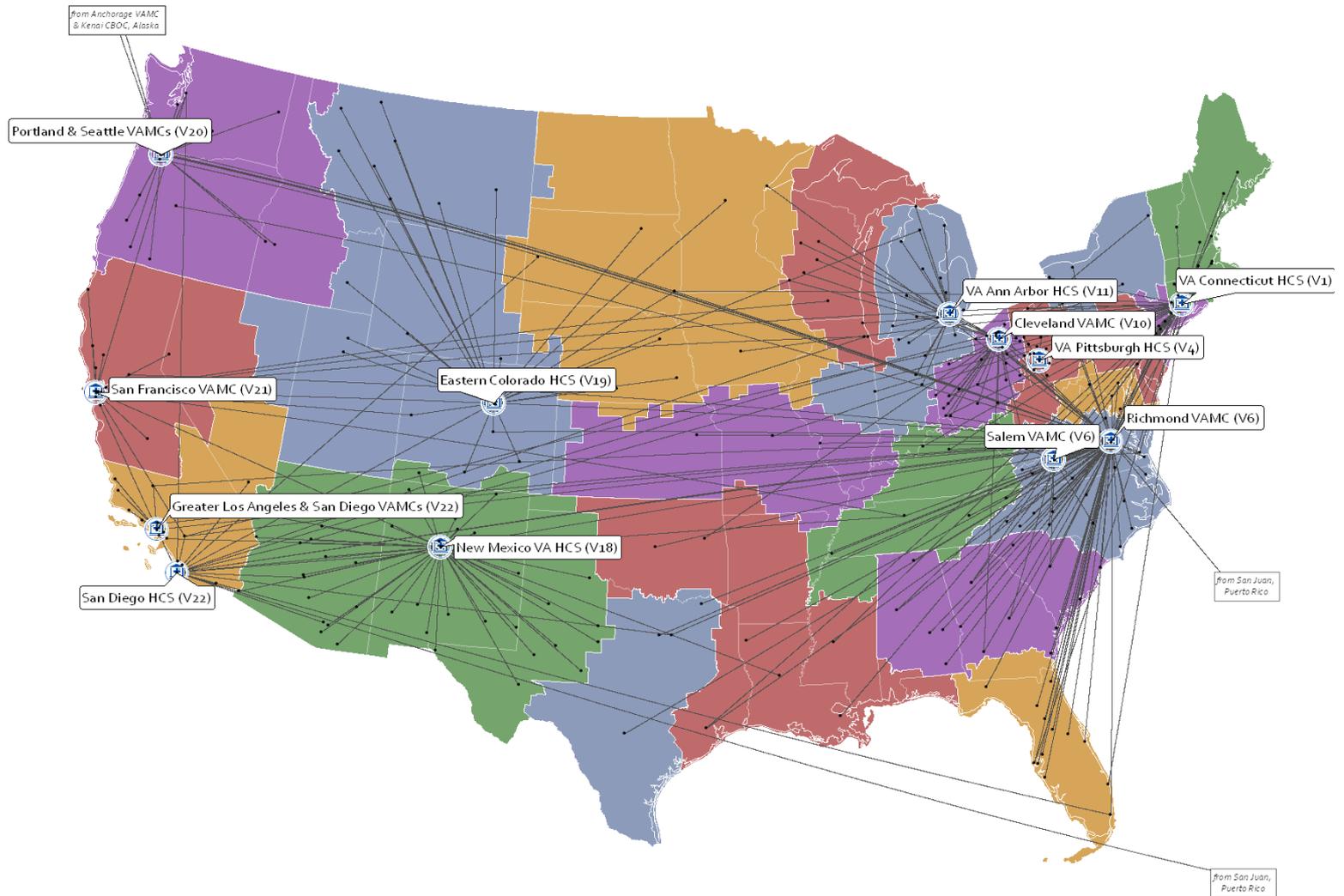


- | | | | |
|---|---------------------------|---|--|
|  | Project ECHO® Home Office |  | Community Health Center, Inc. Non-profit |
|  | AMC/AETC |  | VA Tracking Center |
|  | AMC |  | DOD |

ECHO Replication in US:

- **University of Washington** (HCV, Chronic Pain, HIV, Addiction)
- **University of Chicago** (Hypertension, Breast Cancer, ADHD, Childhood Obesity)
- **Department of Defense – Worldwide Initiative** (Chronic Pain)
- **Veteran’s Administration Health System** - 11 Regions (Chronic Pain, Diabetes, Heart Failure, HCV, Women’s Health, Nephrology)
- **University of Nevada** (Diabetes/Cardiovascular Risk Reduction, Sports Medicine, Thyroid & Diabetes, Antibiotic Stewardship, Mental Health, Rheumatology)
- **University of Utah** (HCV, Advanced Liver Care)
- **University of South Florida, ETAC and Florida/Caribbean, AETC** (General HIV, Adolescents/Pediatrics HIV, HCV/HIV Co-Infection, Psychiatry & HIV, Spanish Language HIV)
- **Harvard, Beth Israel Deaconess Medical Center** (HCV, Gerontology – ECHO AGE)
- **St Joseph Hospital and Medical Center – Arizona** (HCV)
- **Community Health Center, Inc. – Connecticut** (HIV, HCV, Chronic Pain, Opioid Addiction – Buprenorphine)
- **LA Net, Project ECHO LA** (AAPA Preventive Care, Nephrology, Adult Psychiatry)
- **CHI St. Luke’s Health Baylor St. Luke’s Medical Center – Texas** (HCV)
- **UNM: Envision NM** (Childhood Overweight Medical Management, Pediatric Nutrition, Psychiatry, Asthma/Pulmonary)

SCAN-ECHO Spread in VHA-600 CBOCs



ECHO Replication Sites Worldwide:

- **Maulana Azad Medical College** – New Delhi, India (HIV)
- **Institute of Liver and Biliary Sciences** – New Delhi, India (HCV)
- **ECHO India** – Mumbai, Chandigarh, & Lucknow (Autism)
- **Canada- Chronic Pain**
- **Uruguay** (Liver Disease)
- **Northern Ireland** (Hospice)
- **Irish Republic** (Rheumatology, Endocrinology)

The ECHO Team



Use of multipoint videoconferencing, best practice protocols, co-management of patients with case based learning (the ECHO model) is a robust method to safely and effectively treat common and complex diseases in rural and underserved areas and to monitor outcomes.