Project ECHO

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Project ECHO: Mission

The mission of Project ECHO® (Extension for Community Healthcare Outcomes) 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

Hepatitis C in New Mexico

- More than 30,000 HCV cases
- In 2004 less than 5% had been treated
  - 40% of state prisoners with HCV – none treated
- Highest rate of chronic liver disease/cirrhosis deaths in the nation
- Low population density, large geographic area
- 32 of 33 New Mexico counties are listed as Medically Underserved Areas (MUAs)

Hepatitis C Treatment

- 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

Partners

- University of New Mexico School of Medicine: Departments of Internal 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 (multipoint videoconferencing and internet) to leverage scarce healthcare resources
- Disease Management Model focused on improving outcomes by reducing variation in processes of care and sharing “best practices”
- Case based learning: Co-management of patients with specialists (Learning by Doing)
- HIPAA compliant centralized database to monitor outcomes

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


INTERFERON INDUCED DEPRESSION
Michael North, PharmD
Pharmacy Practice Resident
University of New Mexico Hospital

ECHO Whale


PCA Espanola


Baton Rouge


Pecos Valley MC


DOH Las Cruces


SBRT-First Choice South Vc


Memorial HDX7000


LAS VEGAS ECFH

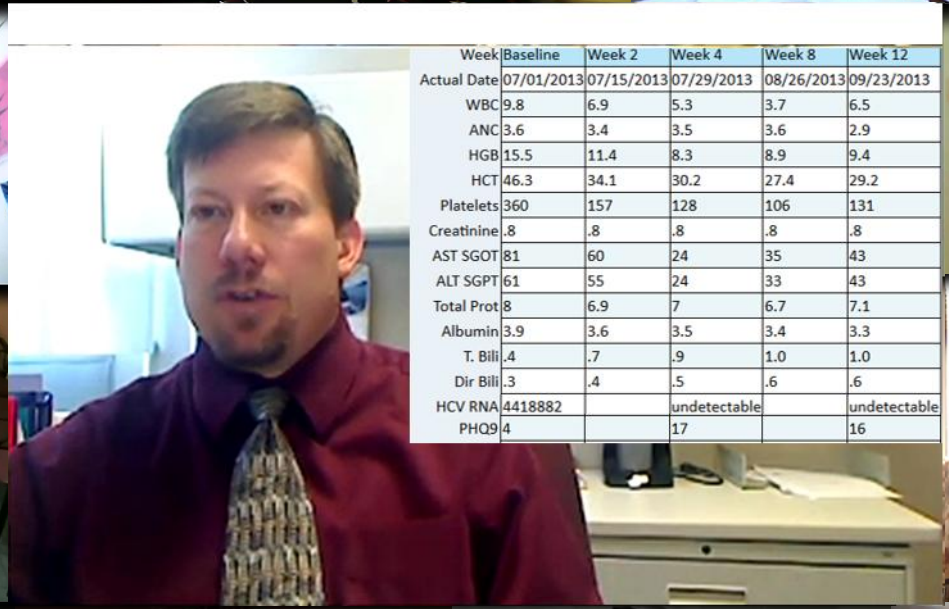
Steps

- Train physicians, mid-levels, nurses, pharmacists, educators in HCV
- Conduct telemedicine clinics – “Knowledge Network”
- Initiate co-management – “Learning loops”
- Collect data and monitor outcomes centrally
- Assess cost and effectiveness of programs

Case Presentations





Week	Baseline	Week 2	Week 4	Week 8	Week 12
Actual Date	07/01/2013	07/15/2013	07/29/2013	08/26/2013	09/23/2013
WBC	9.8	6.9	5.3	3.7	6.5
ANC	3.6	3.4	3.5	3.6	2.9
HGB	15.5	11.4	8.3	8.9	9.4
HCT	46.3	34.1	30.2	27.4	29.2
Platelets	360	157	128	106	131
Creatinine	.8	.8	.8	.8	.8
AST SGOT	81	60	24	35	43
ALT SGPT	61	55	24	33	43
Total Prot	8	6.9	7	6.7	7.1
Albumin	3.9	3.6	3.5	3.4	3.3
T. Bili	.4	.7	.9	1.0	1.0
Dir Bili	.3	.4	.5	.6	.6
HCV RNA	4418882		undetectable		undetectable
PHQ9	4		17		16





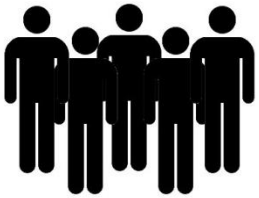


Technology

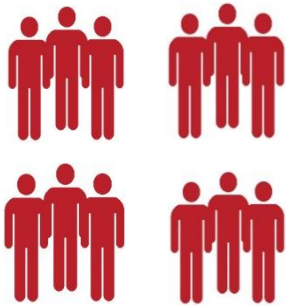
- Videoconferencing Bridge (Polycom RMX 2000)
- Webcam Interfacing Capacity (Polycom CMA 5000)
- Moving to Zoom (second generation architecture)
  - Cloud-based architecture to minimize single points of failure
  - Interoperability with existing Polycom and Cisco systems
- iHealth – Disease Management Tool
- iEcho - Customer Relation Management Solution

ECHO vs. Telemedicine

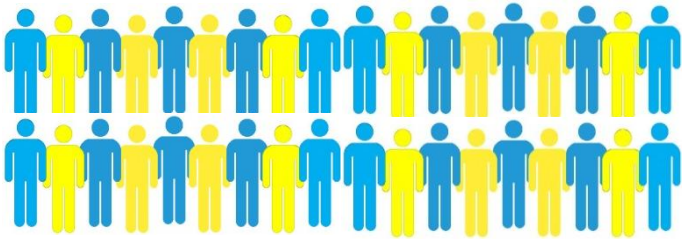
ECHO Telehealth



ECHO Supports Community Based Primary Care Teams



Patients reached with specialty knowledge & expertise



Traditional Telemedicine

Specialist Manages Patient Remotely

How well has the model worked for HCV?

- >500 HCV Telehealth ECHO Clinics have been conducted
- >5000 patients entered into HCV disease management program
- >300 prisoners treated in the DOC
- >6,000 CME/CE hours issued to ECHO HCV clinicians

Benefits to Clinicians

- No cost CMEs and Nursing CEUs
- Diminishes professional isolation
  - Professional interaction with colleagues with similar interest
  - 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

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

Project ECHO

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.

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, in general, to specialist expertise and consultation is a major area of need for you and your clinic.	**4.9**
Access to HCV specialist 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 HCV 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 HCV care for minorities

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

Participants

- Study sites
  - Intervention (ECHO)
    - Community-based clinics:16
    - New Mexico Department of Corrections:5
  - Control
    - University of New Mexico HCV Clinic
- Subjects meeting inclusion/exclusion criteria
  - Consecutive treatment naïve patients seen at the university or at an ECHO site

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

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.

Treatment Outcomes

Outcome	ECHO sites (N=261)	UNM HCV Clinic (N=146)	P Value
Minority	65 %	41 %	<0.01
SVR Genotype 1	50 %	46 %	0.57
SVR Genotype 2 or 3	70 %	71 %	0.83

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

Conclusions

- Rural primary care clinicians deliver HCV 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 HCV care for New Mexico minorities.

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

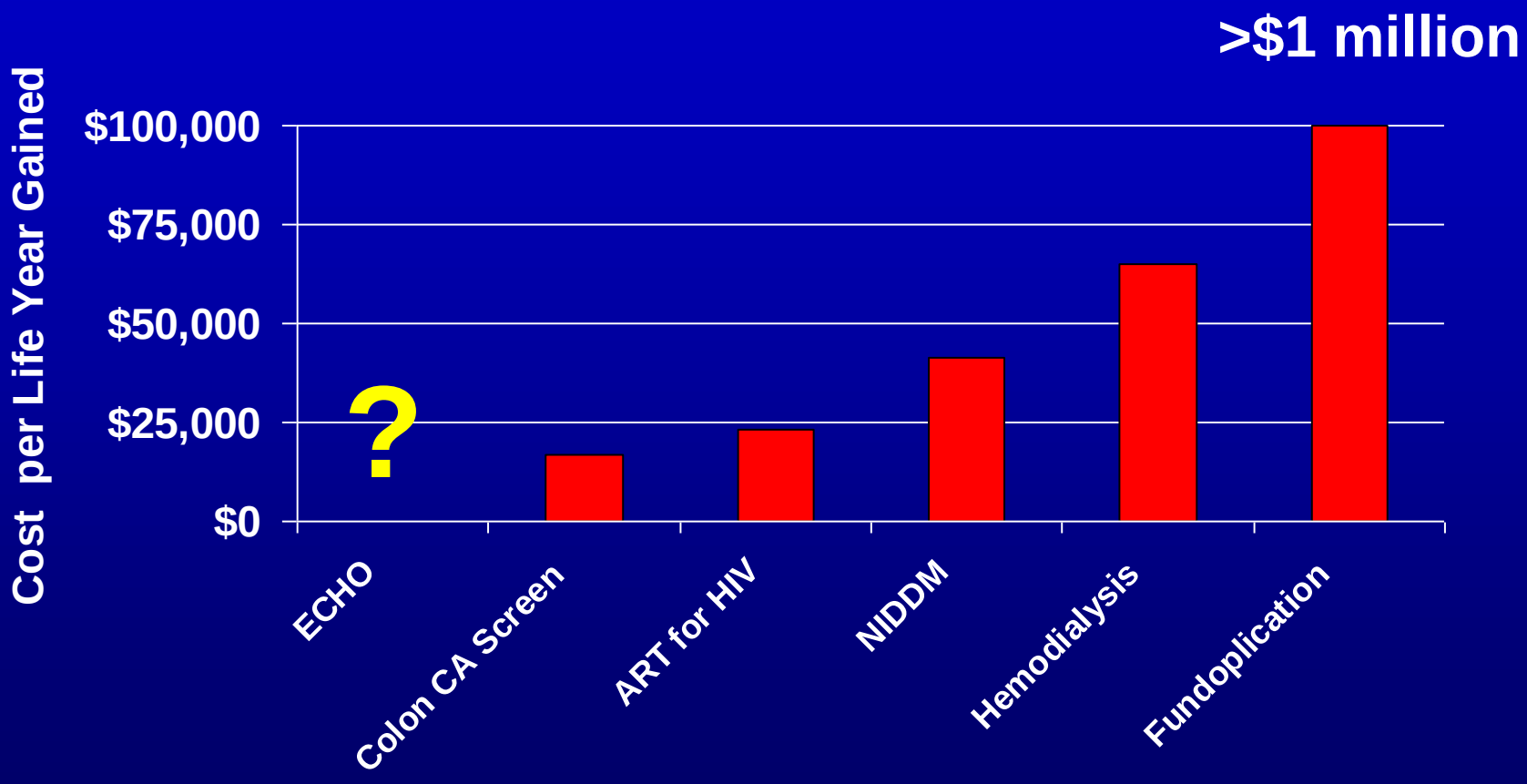
Cost-effectiveness of Hepatitis C Treatment by Primary Care Providers Supported by the Extension for Community Healthcare Outcomes (ECHO) Model

John B Wong, MD, Karla A Thornton, MD, Christie Carroll, Sanjeev Arora, MD

Tufts Medical Center, Tufts Univ. School of Medicine, Boston, MA
University of New Mexico, Albuquerque, NM

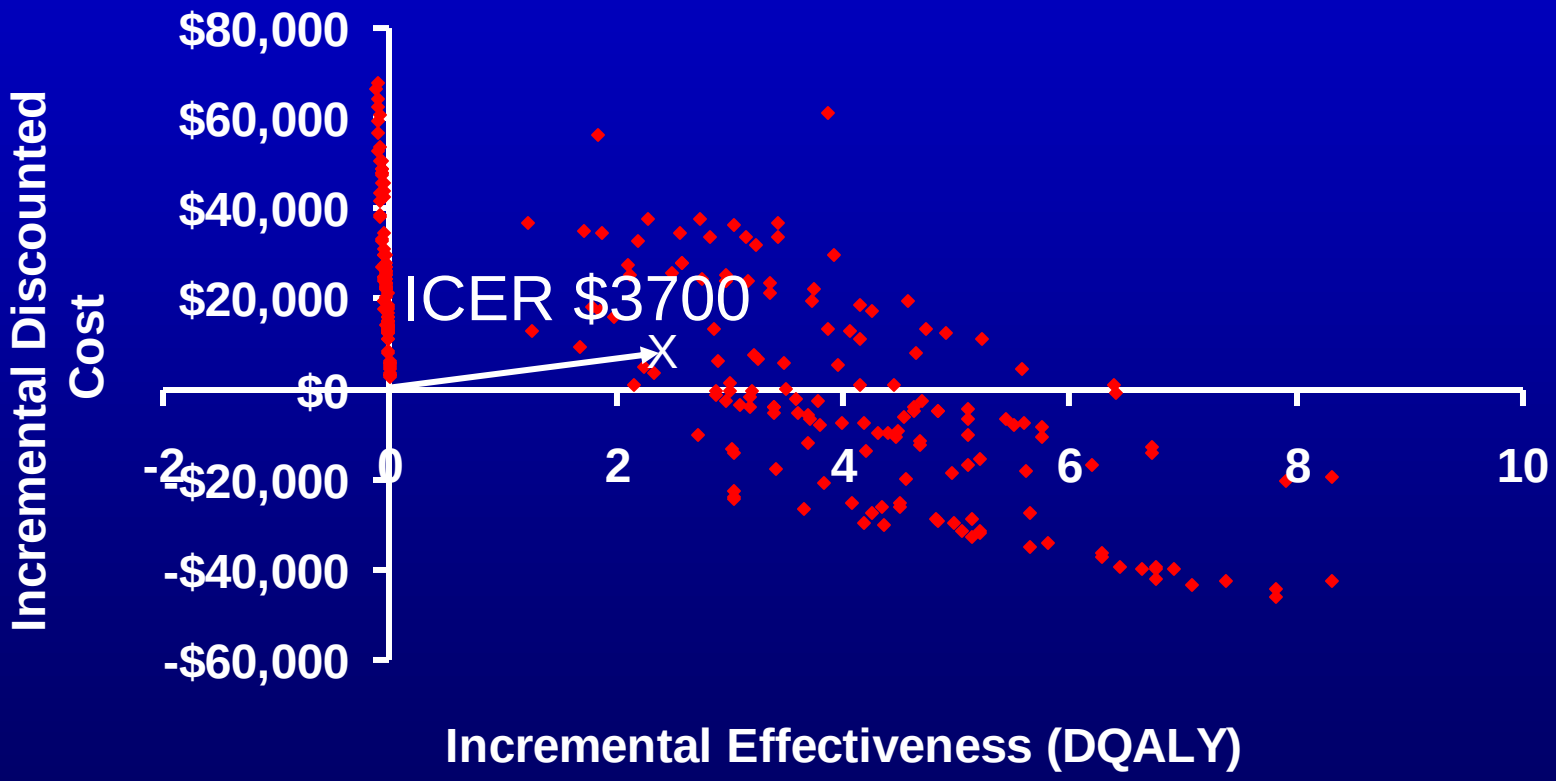
AASLD
Washington DC
November 5, 2013

Does ECHO Provide Good Value?



Pignone M *Ann Intern Med* 2002;137:96; Freedberg KA *N Engl J Med* 2001;344:824; CDC Diabetes Cost Effectiveness Group *JAMA* 2002;287:2542 Winkelmayer WC *Med Decis Making* 2002;22:417; Heudebert GR *Gastroenterology* 1997;112:1078

Incremental Cost-effectiveness of ECHO vs. No Antiviral therapy

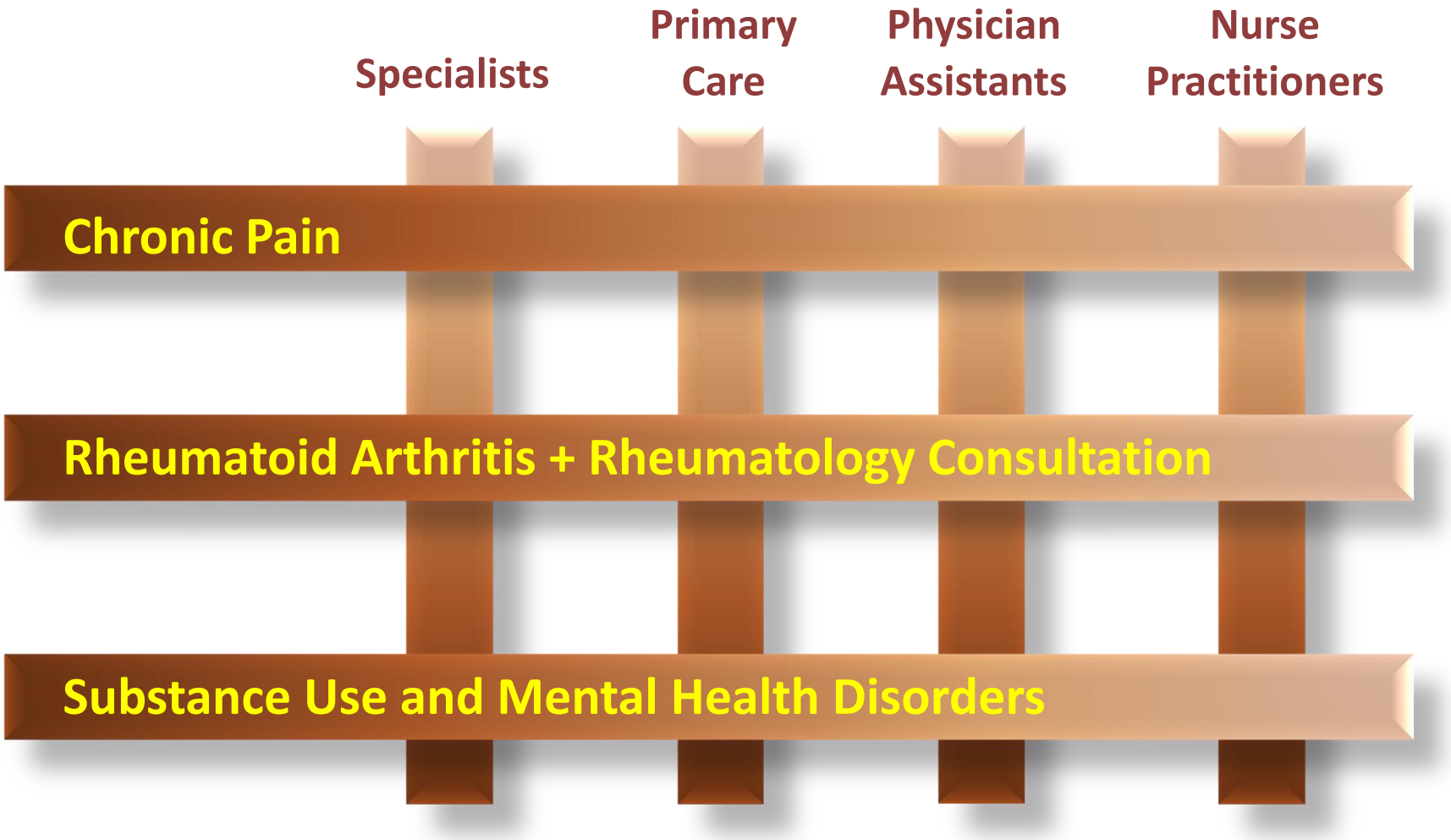


Disease Selection

- 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

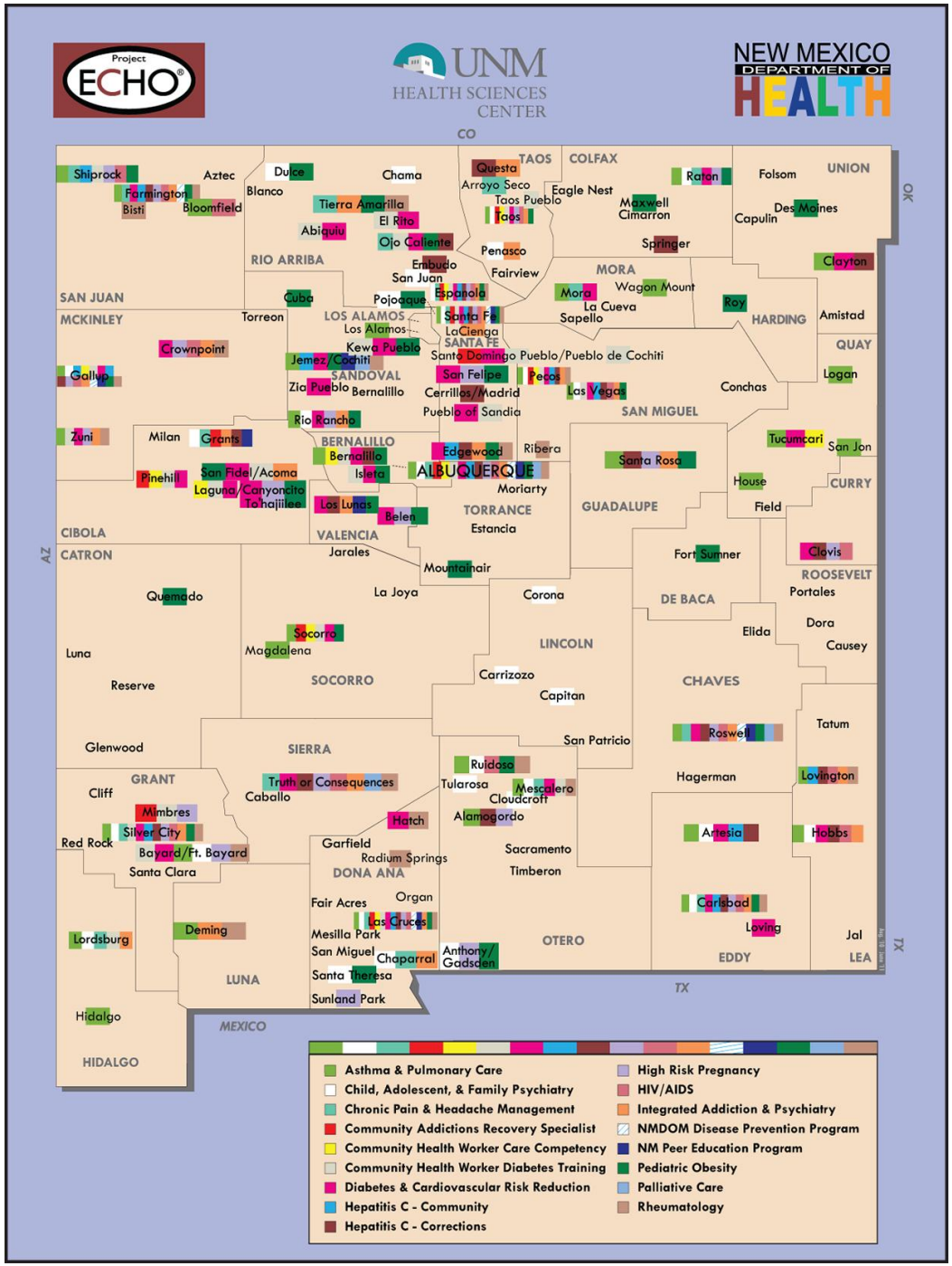
Force Multiplier

Use Existing Community Clinicians



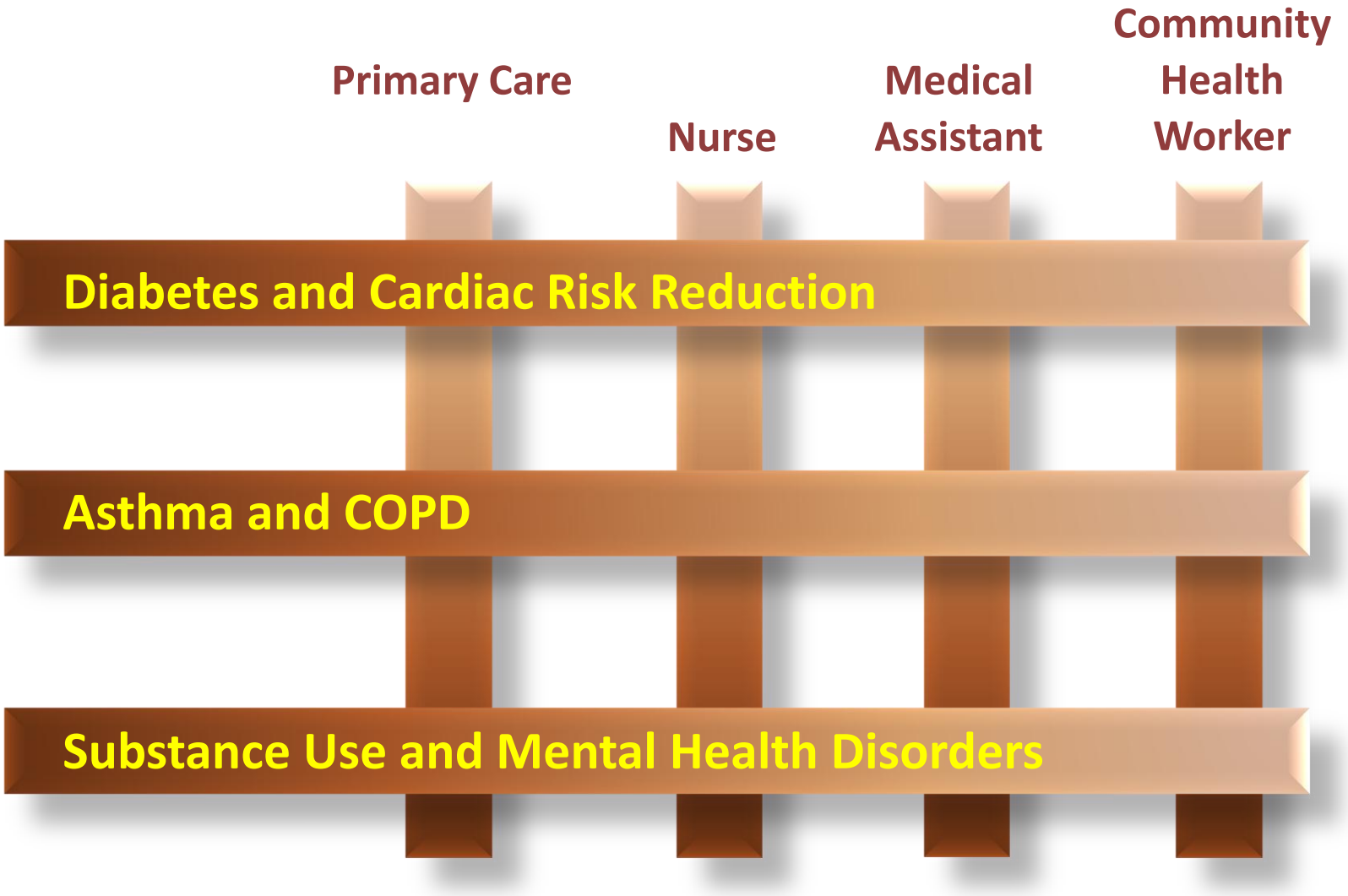
Successful Expansion into Multiple Diseases

	Mon	Tue	Wed	Thurs	Fri
8-10 a.m.	Hepatitis C Arora Thornton	Endocrinology Bouchonville		Geriatrics/ Dementia Herman	Palliative Care Neale
10-12 a.m.	Rheumatology Bankhurst	Chronic Pain Katzman	**Integrated Addictions & Psychiatry** Komaromy		**Complex Care** Neale Komaromy
2-4 p.m.	HIV Iandiorio Thornton		Prison Peer Educator Training Thornton	Women's Health Curet	


Project ECHO
UNM HEALTH SCIENCES CENTER
NEW MEXICO DEPARTMENT OF HEALTH
CO
OK
TX
AZ
MEXICO
Shiprock
Aztec
Farmington
Bisti
Bloomfield
Dulce
Blanco
Chama
Tierra Amarilla
Abiquiu
El Rito
Ojo Caliente
Embudo
San Juan
Pojoaque
Española
Santa Fe
LaCienega
Los Alamos
Kewa Pueblo
Jemez/Cochiti
Zia Pueblo
Bernalillo
Cerrillos/Madrid
Pueblo of Sandia
Rio Rancho
Edgewood
Bernalillo
Isleta
ALBUQUERQUE
Moriarty
Los Lunas
Belen
Estancia
Jarales
Mountainair
La Joya
Corona
Quemado
Socorro
Magdalena
Luna
Reserve
Carrizozo
Capitan
San Patricio
Ruidoso
Tularosa
Mescalero
Cloudcroft
Alamogordo
Hatch
Garfield
Radium Springs
Sacramento
Timberon
Truth or Consequences
Caballo
Cliff
Mimbres
Silver City
Red Rock
Bayard/Ft. Bayard
Santa Clara
Fair Acres
Organ
Las Cruces
Mesilla Park
San Miguel
Chaparral
Anthony/ Gadsden
Santa Theresa
Sunland Park
Deming
Lordsburg
Hidalgo
Questa
Arroyo Seco
Taos Pueblo
Taos
Penasco
Fairview
Eagle Nest
Maxwell
Cimarron
Springer
Raton
Folsom
Capulin
Des Moines
Clayton
Mora
Wagon Mound
La Cueva
Sapello
Roy
Santo Domingo Pueblo/Pueblo de Cochiti
San Felipe
Pecos
Las Vegas
Conchas
Logan
Amistad
Tucumcari
San Jon
Santa Rosa
House
Field
Fort Sumner
Clovis
Portales
Dora
Elida
Causey
Roswell
Tatum
Hagerman
Lovington
Artesia
Hobbs
Carlsbad
Loving
Jal
Milan
Grants
Zuni
Gallup
Crownpoint
Torreon
Cuba
Pinehill
San Fidel/Acoma
Laguna/Canyoncito
To'hajiilee
Ribera
Rio Arriba
Taos
Colfax
Union
Harding
Quay
Curry
Roosevelt
Lincoln
Chaves
Eddy
Lea
Otero
Dona Ana
Luna
Sierra
Socorro
Grant
Hidalgo
Valencia
Torrance
Guadalupe
De Baca
San Miguel
Sandoval
Los Alamos
Santa Fe
McKinley
San Juan
Cibola
Catron
Asthma & Pulmonary Care
Child, Adolescent, & Family Psychiatry
Chronic Pain & Headache Management
Community Addictions Recovery Specialist
Community Health Worker Care Competency
Community Health Worker Diabetes Training
Diabetes & Cardiovascular Risk Reduction
Hepatitis C - Community
Hepatitis C - Corrections
High Risk Pregnancy
HIV/AIDS
Integrated Addiction & Psychiatry
NMDOM Disease Prevention Program
NM Peer Education Program
Pediatric Obesity
Palliative Care
Rheumatology

Force Multiplier

Chronic Disease Management is a Team Sport



ECHO Specialty CHW Training Multiple Tracks

- CREW (Diabetes/Cardiovascular Risk Reduction)- Diabetes, Obesity, Diet, Smoking Cessation, Exercise
- CARS (Substance Use Disorders) - Harm reduction, motivational interviewing, liaison with community resources
- NM PEP (New Mexico Prison Peer Education Program) – Focus on HCV, other infectious diseases and general health literacy

CREW (Diabetes Community Resource Education Worker)

- Uses low-cost technology to take specialty training to CHWs, CHRs, Medical Assistants where they live
- Narrow focus — deep knowledge
- Standardized curriculum
- 3 Day onsite training (Diabetes, Obesity, Diet, Smoking Cessation, Exercise, Motivational Interviewing)
- Weekly video based teleECHO Clinics
- Ongoing support via knowledge networks

Community Health Workers in Prison

The New Mexico Peer Education Project

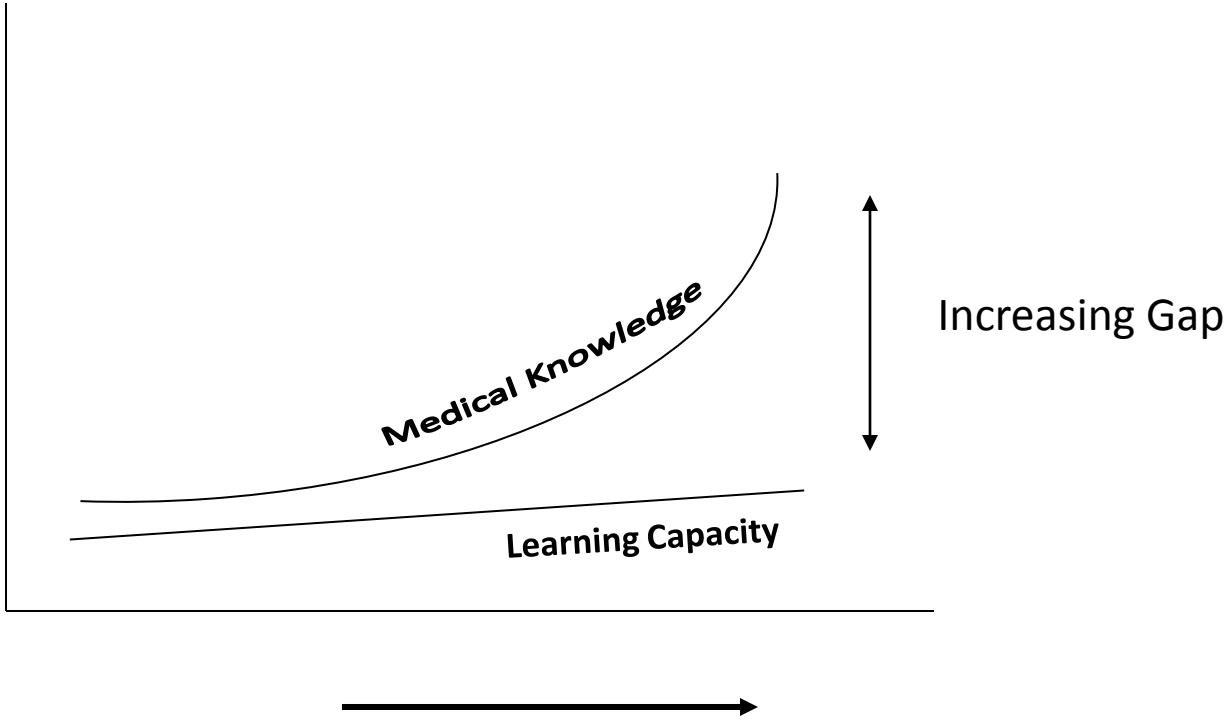
Pilot training cohort, CNMCF Level II, July 27-30, 2009

Photo consents on file with Project ECHO® and CNMCF

Prisoner Health is Community Health

The New Mexico Peer Education Project

Transforming Primary Care with Knowledge Networks



"Expanding the Definition of Underserved Population"

Replication Sites (U.S)

- University of Washington (HCV, Chronic Pain, HIV)
- University of Utah (HCV)
- St. Joseph's Hospital, Arizona (HCV)
- University of Chicago (HTN, Cancer, ADHD)
- University of Nevada (DM, Sports Medicine, Antibiotic Stewardship, Mental Health)
- University of South Florida (HCV/HIV Coinfection)
- Harvard, Beth Israel Deaconess (HCV, Gerontology)
- Veteran's Administration Health System (Chronic Pain, DM, Heart Failure, HCV, Women's Health, Nephrology)
- Community Health Center, Inc. (HIV, HCV, Chronic Pain)

Western States Consortium HCV ECHO Partner Sites

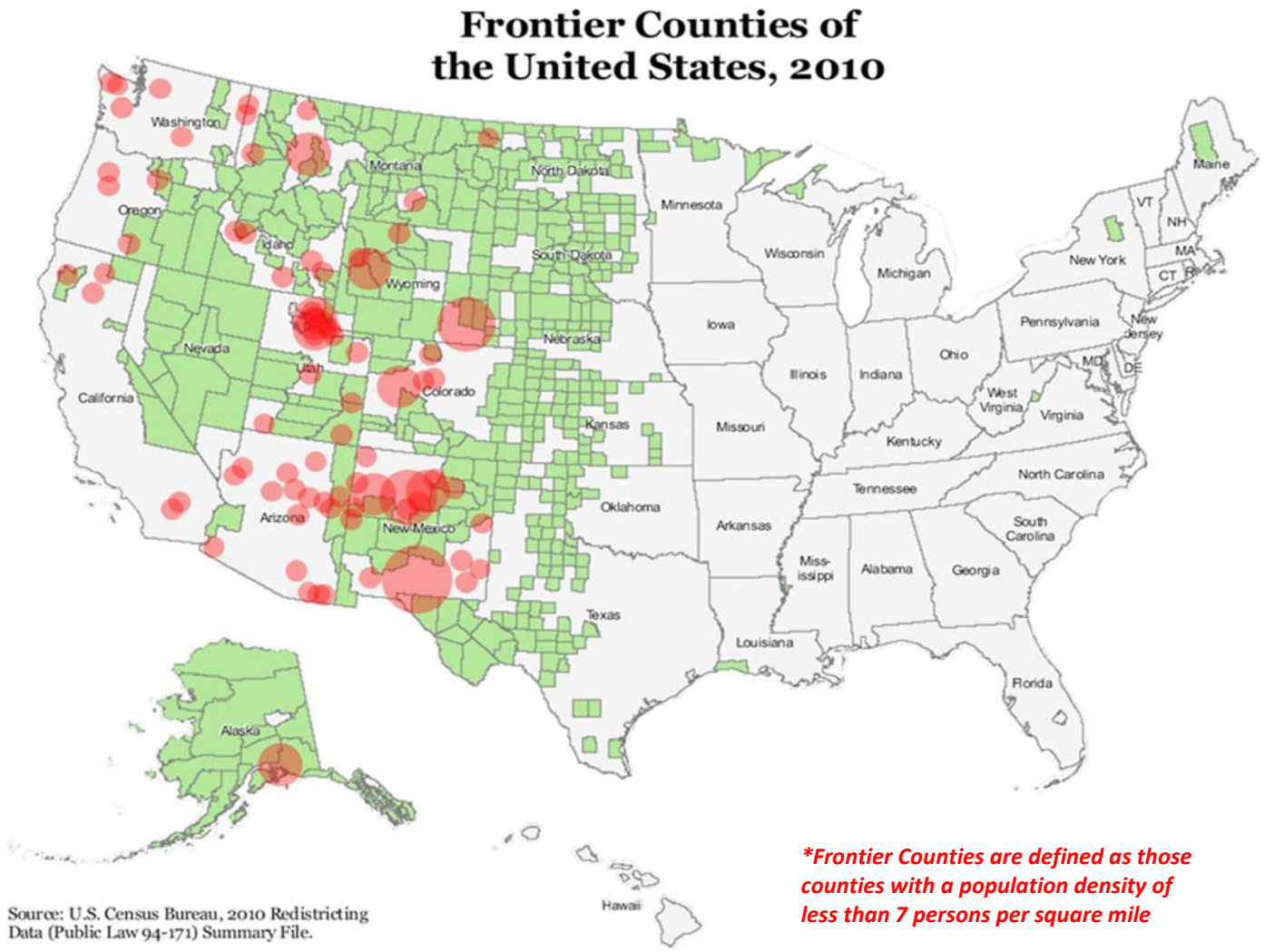
Number of Sites in one location (city):

University of New Mexico
21 Partner Sites:
New Mexico
Arizona
Montana

University of Washington
20 Partner Sites:
Washington
Alaska
Idaho
Oregon
Montana

University of Utah
35 Partner Sites:
Utah
California
Colorado
Idaho
Montana
Wyoming

St. Joseph's Hospital, AZ
18 Partner Sites:
Arizona



Frontier Counties are defined as those counties with a population density of less than 7 persons per square mile

http://www.raconline.org/racmaps/mapfiles/frontier.png

Potential Benefits of ECHO Model™ to Health System

- **De-monopolize knowledge**
- Improve quality and safety by reducing variation in care
- Rapid learning and best-practice dissemination
- Access for rural and underserved patients, reduced disparities
- Workforce training and force multiplication
- Improving Professional Satisfaction/Retention
- Cost effective care - avoid excessive testing and travel
- Prevent cost of untreated disease (e.g.: liver transplant)
- Supporting the Medical Home Model

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.