Scaling up ECHO to address the Opioid Epidemic

Miriam Komaromy, MD
Associate Director, ECHO Institute
February, 2018
Clustering of Poor Prognostic Factors in Heavy Patients
ECHO model is not ‘traditional telemedicine’.
“Hub”

“Spokes”
The ECHO Model

**Amplification** – Use **Technology** to leverage scarce resources

**Case Based Learning** to master complexity

Share **Best Practices** to reduce disparity

Web-based **Database** to Monitor Outcomes

Copyright 2017 Project ECHO®
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
Goals of Project ECHO

Develop capacity to safely and effectively treat Hepatitis C 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

Copyright 2017 Project ECHO®
How well has model worked?

- 600 HCV teleECHO Clinics have been conducted
- >6,000 patients entered HCV disease management program

**CME’s/CE’s issued:**
- Total CME hours 79000 hours at no cost for HCV and 19 other disease areas
### Project ECHO Clinicians

**HCV Knowledge Skills and Abilities (Self-Efficacy)**

<table>
<thead>
<tr>
<th>Community Clinicians N=25</th>
<th>BEFORE Participation MEAN (SD)</th>
<th>TODAY MEAN (SD)</th>
<th>Paired Difference (p-value) MEAN (SD)</th>
<th>Effect Size for the change</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Ability to assess and manage psychiatric co-morbidities in patients with hepatitis C.</td>
<td>2.6 (1.2)</td>
<td>5.1 (1.0)</td>
<td>2.4 (1.3) (&lt;0.0001)</td>
<td>1.9</td>
</tr>
<tr>
<td>5. Serve as local consultant within my clinic and in my area for HCV questions and issues.</td>
<td>2.4 (1.2)</td>
<td>5.6 (0.9)</td>
<td>3.3 (1.2) (&lt;0.0001)</td>
<td>2.8</td>
</tr>
<tr>
<td>6. Ability to educate and motivate HCV patients.</td>
<td>3.0 (1.1)</td>
<td>5.7 (0.6)</td>
<td>2.7 (1.1) (&lt;0.0001)</td>
<td>2.4</td>
</tr>
</tbody>
</table>
### Project ECHO Clinicians

**HCV Knowledge Skills and Abilities (Self-Efficacy)**

<table>
<thead>
<tr>
<th>Community Clinicians N=25</th>
<th><strong>BEFORE</strong> Participation</th>
<th><strong>TODAY</strong></th>
<th>Paired Difference (p-value)</th>
<th>Effect Size for the change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MEAN (SD)</td>
<td>MEAN (SD)</td>
<td>MEAN (SD)</td>
<td></td>
</tr>
<tr>
<td>Overall Competence (average of 9 items)</td>
<td>2.8* (0.9)</td>
<td>5.5* (0.6)</td>
<td>2.7 (0.9) (&lt;0.0001)</td>
<td>2.9</td>
</tr>
</tbody>
</table>

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.

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 Jenkusz, 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 40.2% (76 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.)
## Treatment Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>ECHO</th>
<th>UNMH</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N=261</td>
<td>N=146</td>
<td></td>
</tr>
<tr>
<td>SVR* (Cure) Genotype 1</td>
<td>50%</td>
<td>46%</td>
<td>NS</td>
</tr>
<tr>
<td>SVR* (Cure) Genotype 2/3</td>
<td>70%</td>
<td>71%</td>
<td>NS</td>
</tr>
<tr>
<td>Minority</td>
<td>68%</td>
<td>49%</td>
<td>P&lt;0.01</td>
</tr>
</tbody>
</table>

*SVR=sustained viral response

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

- Chronic Pain
- Rheumatoid Arthritis + Rheumatology Consultation
- Substance Use and Mental Health Disorders

UNM HSC  State Health Dept  Private Practice  Community Health Centers

Copyright 2017 Project ECHO®
Force Multiplier
Use Existing Community Clinicians

- Specialists
- Primary Care Providers
- Nurses
- Community health workers

Chronic Pain
Rheumatoid Arthritis + Rheumatology Consultation
Substance Use and Mental Health Disorders

Copyright 2017 Project ECHO®
### Successful Expansion into Multiple Diseases

<table>
<thead>
<tr>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THURS</th>
<th>FRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rheumatology</td>
<td>HBV</td>
<td>Community Health Workers</td>
<td>CDC Good Health and Wellness in Indian Country</td>
<td>Opioid Addiction</td>
</tr>
<tr>
<td>• Bankhurst</td>
<td>• Gish</td>
<td>• CHW Team</td>
<td>• Struminger</td>
<td>• Komaromy</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>Bone Health</td>
<td>Endocrinology &amp; Diabetes</td>
<td>Chronic Pain and Opioid Management</td>
<td>Nurse Practitioner/Certified Midwife Primary Care</td>
</tr>
<tr>
<td>• Burgos</td>
<td>• Lewiecki</td>
<td>• Bouchonville</td>
<td>• Comerci</td>
<td>• Van Roper</td>
</tr>
<tr>
<td>Cardiology</td>
<td>Crisis Intervention for Community Policing Agencies</td>
<td>Miners' Wellness</td>
<td>Prison Peer Education Program</td>
<td>Integrated Addictions and Psychiatry (IAP)</td>
</tr>
<tr>
<td>• Achrekar, Anderson &amp; Yatskowitz</td>
<td>• Duhigg</td>
<td>• Sood</td>
<td>• Thornton</td>
<td>• Komaromy</td>
</tr>
<tr>
<td>Reproductive Health</td>
<td>Seizures and Spells</td>
<td>Hepatitis C (HCV)</td>
<td>HIV/ HCV Corrections</td>
<td>Antimicrobial Stewardship</td>
</tr>
<tr>
<td>• Singh</td>
<td>• Imerman</td>
<td>• Arora</td>
<td>• Iandiorio &amp; Thornton</td>
<td>• Brett, Irizarry &amp; Mercier</td>
</tr>
</tbody>
</table>
ECHO Hubs and Spokes: State of New Mexico
2:1 Matched Cohort Study

11 nursing homes received ECHO intervention. Matched with 22 controls

Residents in ECHO Age facilities were 75% less likely to be physically restrained

Residents were 17% less likely to be prescribed antipsychotics

University of Rochester experts in geriatric psychiatry help train and mentor primary care clinicians in NY

Since 2014, 500 clinicians have participated in their ECHO project funded by AHRQ

There was a 20% reduction in ED visits

24% reduction in overall costs

ECHO Care: ADMISSIONS/1,000/MONTH

First Month Of ECHO
ED Visits/1,000

Months Before/After ECHO Enrollment

First Month of ECHO

Copyright 2017 Project ECHO®
ECHO Care: TOTAL EXPENDITURES/MONTH

First Month Of ECHO

Expenditures/Month

Months Before/After ECHO Enrollment

Copyright 2017 Project ECHO®
“Pain ECHO” changes knowledge, confidence, and prescribing patterns

• VA PCPs who attended a mean of 28 sessions had increased confidence and knowledge about pain management

• PCPs from FQHCs who attended a Pain ECHO program for a mean of 39 sessions decreased prescribing of opioids

1. Ball, Pain Medicine, 2017
2. Anderson, Pain Medicine, 2017
CHW Specialist Training

- Diabetes and cardiovascular risk reduction: Diabetes, Obesity, Hypertension, Cholesterol, Smoking Cessation, Exercise Physiology
- Opioid Use Disorder
- ECHO Care™: Complex Multiple Diagnoses
- Obesity Prevention: Diet, Exercise, Motivational Interviewing
- Prevention of Child Abuse and Neglect (PCAN)
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
Community Based Care for Cardiac Risk Factor Reduction was more Effective than Enhanced Primary Care

Diabetes Specialty CHW Program

- Narrow Focus — Deep Knowledge
- Standardized Curriculum
  - 3 Day Onsite
  - Weekly ECHO sessions for 16 weeks
    - Diet
    - Exercise
    - Smoking Cessation
    - Motivational Interviewing
    - Gentle Nudges
    - Finger Stick
    - Foot Exam
- Part of Disease Management Team
Community Health Workers in Prison
The New Mexico Peer Education Program

First day of peer educator training
Photo consents on file with Project ECHO® and CNMCF
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-Brown 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:
- Brussels
- Supreme Headquarters Allied Powers Europe (SHAPE)

Germany:
- Grömitz
- Hohenfels
- Katterbach
- Landstuhl Regional Medical Center (LRMC)/VHCA
- LRMC/IMC
- Stuttgart
- Wiesbaden
- Vilseck

Italy:
- Livorno
- Vicenza

Japan:
- Camp Zama

South Korea:
- Camp Casey
- Camp Humphreys
- Camp Carroll
- Camp Walker
- Bhan Alford Army Community Hospital
- Kunsan Combat Support Hospital

Arizona:
- Fort Huachuca

California:
- Fort Irwin
- Colorado Springs
- Georgia:
- Fort Gordon
- Fort Benning
- Ft. Stewart

Hawaii:
- Schofield Barracks (Family Medicine and Trauma Medical Home)
- Adult Medicine Patient Centered Medical Home (PCMH) Tripler
- Family Medicine PCMH Tripler
- Warrior Care PCMH
- VA Pain Clinic

Kansai:
- Fort Leavenworth
- Fort Riley
- Kentucky:
- Fort Knox
- Fort Campbell
- Louisiana:
- Fort Polk

Maryland:
- Fort Meade

Missouri:
- Fort Leonard Wood
- New Mexico:
- White Sands Missile Range

New York:
- Fort Drum
- West Point

Ohio:
- Fort Sill

South Carolina:
- Fort Jackson

Texas:
- Fort Bliss
- Fort Hood

Virginia:
- Joint Base Langley-Eustis
- Fort Lee

Washington:
- Madigan Army Medical Center

Army ECHO Hubs: Regional Health Command-Europe (RHC-E) – Landstuhl, Germany | Regional Health Command-Central (RHC-C)-Joint Base San Antonio-Brown 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:
- Brussels
- Supreme Headquarters Allied Powers Europe (SHAPE)

Germany:
- Grömitz
- Hohenfels
- Katterbach
- Landstuhl Regional Medical Center (LRMC)/VHCA
- LRMC/IMC
- Stuttgart
- Wiesbaden
- Vilseck

Italy:
- Livorno
- Vicenza

Japan:
- Camp Zama

South Korea:
- Camp Casey
- Camp Humphreys
- Camp Carroll
- Camp Walker
- Bhan Alford Army Community Hospital
- Kunsan Combat Support Hospital

Arizona:
- Fort Huachuca

California:
- Fort Irwin
- Colorado Springs
- Georgia:
- Fort Gordon
- Fort Benning
- Ft. Stewart

Hawaii:
- Schofield Barracks (Family Medicine and Trauma Medical Home)
- Adult Medicine Patient Centered Medical Home (PCMH) Tripler
- Family Medicine PCMH Tripler
- Warrior Care PCMH
- VA Pain Clinic

Kansai:
- Fort Leavenworth
- Fort Riley
- Kentucky:
- Fort Knox
- Fort Campbell
- Louisiana:
- Fort Polk

Maryland:
- Fort Meade

Missouri:
- Fort Leonard Wood
- New Mexico:
- White Sands Missile Range

New York:
- Fort Drum
- West Point

Ohio:
- 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:
- NMCSO Naval Training Center
- NH Lemoore
- NH Twentyfifteen Palms
- NH Camp Pendleton
- Naval Air Facility El Centro
- Naval Air Station North Island

Florida:
- Naval Hospital (NH) Jacksonville
- Naval Air Station Jacksonville

Maryland:
- NH Pax River

Missouri:
- NH Fort Leonard Wood

New Hampshire:
- BHC Portsmouth NH
- Navy Safe Harbor

Virginia:
- NM Portsmouth (Case Management, Pain Clinic, Psychiatry, Internal Medicine)
- BHC Oceana
- TriCare Prime Clinic (TPC)
- Chesapeake
- TPC Virginia Beach
- 633rd Medical Group-Langley

North Carolina:
- NH Camp LeJune

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:
- NMCSO Naval Training Center
- NH Lemoore
- NH Twentyfifteen Palms
- NH Camp Pendleton
- Naval Air Facility El Centro
- Naval Air Station North Island

Florida:
- Naval Hospital (NH) Jacksonville
- Naval Air Station Jacksonville

Maryland:
- NH Pax River

Missouri:
- NH Fort Leonard Wood

New Hampshire:
- BHC Portsmouth NH
- Navy Safe Harbor

Virginia:
- NM Portsmouth (Case Management, Pain Clinic, Psychiatry, Internal Medicine)
- BHC Oceana
- TriCare Prime Clinic (TPC)
- Chesapeake
- TPC Virginia Beach
- 633rd Medical Group-Langley

North Carolina:
- NH Camp LeJune
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 |

Copyright 2017 Project ECHO®
Scaling ECHO to address the Opioid Epidemic
Cumulative number of buprenorphine-waivered physicians per million population in traditionally underserved zip codes in NM versus US

Currently there are 1582 Zip Codes in the US with the following characteristics:
1) Rural (less than 1,000 people per sq mile.)
2) More than 50% of people identify themselves as American Indian or Alaska Native, Asian American, Black or African American, Hispanic or Latino, or Native Hawaiian/Other Pacific Islander.
3) The average household income is less than $52,250.

10,629,084 people reside in these zip codes, with 784,455 of those living in NM. There are 479 licensed providers residing within these zip codes, 110 within New Mexico.
“Hub-lets” provide specialist teams.

ECHO Shared Services Model

Supporting hub leads development of curriculum and provides IT, evaluation, and admin support, and participant recruitment for all hubs.
Half are medical providers, and one third are behavioral health providers.
HRSA
Opioid Addiction Treatment ECHO

• Participants in ECHO for addiction/mental health report that presenting cases changes their management plan \(^1\)
• For this national Opioid ECHO, early results show:
  • Impact of case-based learning in each session
    For those who presented a case:
      • 92% say input changed management plan
  Learning from cases presented by others:
    • 81% learned something new from a case presented that day which will change their care of their own patients
    • Marked increase in confidence and significant increase in positive attitude

Komaromy, Psychiatric Services, 2017
In 2017 $0.5B was distributed to states through the CURES Act to address Opioid Use Disorder. 20 states are implementing Opioid ECHO using CURES funds.
De-monopolizing medical knowledge

The vast majority of ECHO hubs around the US and around the world do not charge learners/learner organizations

<table>
<thead>
<tr>
<th>ECHO Hub</th>
<th>ECHO Focus</th>
<th>Contact</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arkansas Children's Research Institute Hospital</td>
<td>Autism</td>
<td>Sarah Porter-Osen</td>
<td>SPorterOsen@Billii</td>
</tr>
<tr>
<td>Billings Clinic</td>
<td>Addictions/Psychiatry ECHO for Corrections</td>
<td>Sarah Porter-Osen</td>
<td>SPorterOsen@Billii</td>
</tr>
<tr>
<td>Billings Clinic</td>
<td>Autism</td>
<td>Sarah Porter-Osen</td>
<td>SPorterOsen@Billii</td>
</tr>
<tr>
<td>Billings Clinic</td>
<td>Behavioral Health for Corrections</td>
<td>Sarah Porter-Osen</td>
<td>SPorterOsen@Billii</td>
</tr>
<tr>
<td>Billings Clinic</td>
<td>Behavioral/Mental Health</td>
<td>Sarah Porter-Osen</td>
<td>SPorterOsen@Billii</td>
</tr>
<tr>
<td>Children's Hospital of Philadelphia</td>
<td>Autism</td>
<td>Christina DiSandro</td>
<td><a href="mailto:DISANDRO@Gem.com">DISANDRO@Gem.com</a></td>
</tr>
<tr>
<td>Cincinnati Children's Hospital Medical Center</td>
<td>Autism</td>
<td>Elizabeth Cordova</td>
<td><a href="mailto:ecordova@slud.edu">ecordova@slud.edu</a></td>
</tr>
<tr>
<td>Community Health Center, Inc.</td>
<td>Behavioral/Mental Health</td>
<td>Agi Eridson</td>
<td><a href="mailto:eridson@chc1.com">eridson@chc1.com</a></td>
</tr>
<tr>
<td>East Tennessee State University</td>
<td>Epilepsy</td>
<td>Linda Gall Adams</td>
<td><a href="mailto:actmd@etsu.edu">actmd@etsu.edu</a></td>
</tr>
<tr>
<td>Kennedy Krieger Institute</td>
<td>Behavioral/Mental Health</td>
<td>Mary Leport</td>
<td>Leport@kennedy</td>
</tr>
<tr>
<td>Lurie Center for Autism</td>
<td>Autism</td>
<td>Audrey Wolfe</td>
<td><a href="mailto:AWOLFE2@mgh.harvard">AWOLFE2@mgh.harvard</a></td>
</tr>
<tr>
<td>Missouri Telehealth Network</td>
<td>Autism</td>
<td>Lindsey Beckmann</td>
<td><a href="mailto:showmeecho@hec.net">showmeecho@hec.net</a></td>
</tr>
<tr>
<td>Missouri Telehealth Network</td>
<td>Child Psychiatry</td>
<td>Lindsay Bedermann</td>
<td><a href="mailto:showmeecho@hec.net">showmeecho@hec.net</a></td>
</tr>
<tr>
<td>Northwell Health</td>
<td>Behavioral/Mental Health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oklahoma State University - Center for Health Sciences</td>
<td>Psychiatry</td>
<td>Tara Jackson</td>
<td><a href="mailto:tarajackson@ohsu.edu">tarajackson@ohsu.edu</a></td>
</tr>
<tr>
<td>Oregon Health &amp; Science University</td>
<td>Child Psychiatry</td>
<td>Bryan Cochran</td>
<td><a href="mailto:cochran@ohsu.edu">cochran@ohsu.edu</a></td>
</tr>
<tr>
<td>Oregon Health &amp; Science University</td>
<td>Psychiatric Medication Management</td>
<td>Bryan Cochran</td>
<td><a href="mailto:cochran@ohsu.edu">cochran@ohsu.edu</a></td>
</tr>
<tr>
<td>Primary Health Care</td>
<td>Behavioral/Mental Health</td>
<td>Beny Engelbreten</td>
<td>bengelbreten@ph</td>
</tr>
<tr>
<td>Robert Wood Johnson Partners/Rutgers</td>
<td>Autism</td>
<td>Kathy Dodsworth-Rugani</td>
<td>Kathy.DodsworthRugani@ph</td>
</tr>
</tbody>
</table>
Support for starting/expanding Opioid ECHO in your state

• 3-day “immersion” training offered monthly in New Mexico for ECHO partners

• Tools available for Opioid ECHO shared services model
  • Materials for outreach and recruitment
  • 12-session curriculum
  • Evaluation tools
  • Consultation

• Opioid ECHO collaborative recently launched to support evaluation and research on the impact of Opioid Addiction Treatment ECHO
States can use the ECHO shared-services model to scale-up their workforce to meet the need for prevention, screening, and treatment of opioid use disorder.
miriamk1@salud.unm.edu