Project ECHO® (Extension for Community Health Outcomes)

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

Our goal is to touch the lives of 1 billion people by 2025.
Moving Knowledge Instead of Patients
A Global Health Problem
Over 170 Million Carriers Worldwide, 3-4 Million new cases/year

Source: WHO 1999
HCV in New Mexico

- Estimated number was 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
**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.
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

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Methods

- **Use Technology** to leverage scarce resources
- **Sharing “best practices”** to reduce disparities
- **Case based learning** to master complexity
- **Web-based database** to monitor outcomes

Steps

- Train physicians, physician assistants, nurse practitioners, nurses, pharmacists, educators in HCV

- Train to use web-based software — iECHO & ECHO Health®

- Conduct teleECHO™ clinics — “Knowledge Networks”

- Initiate case-based guided practice — “Learning Loops”

- Collect data for program assessment
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

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Technology

- Videoconferencing Hardware
- Videoconferencing Software
- Video Recording System
- You Tube-like Website/Archive
- **iECHO** – Electronic TeleECHO Clinic Management Solution
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><strong>BEFORE Participation</strong> MEAN (SD)</th>
<th><strong>TODAY</strong> MEAN (SD)</th>
<th><strong>Paired Difference</strong> (p-value) MEAN (SD)</th>
<th><strong>Effect Size for the change</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1.</strong> Ability to identify suitable candidates for treatment for HCV.</td>
<td>2.8 (1.2)</td>
<td>5.6 (0.8)</td>
<td>2.8 (1.2) (&lt;0.0001)</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>2.</strong> Ability to assess severity of liver disease in patients with HCV.</td>
<td>3.2 (1.2)</td>
<td>5.5 (0.9)</td>
<td>2.3 (1.1) (&lt; 0.0001)</td>
<td>2.1</td>
</tr>
<tr>
<td><strong>3.</strong> Ability to treat HCV patients and manage side effects.</td>
<td>2.0 (1.1)</td>
<td>5.2 (0.8)</td>
<td>3.2 (1.2) (&lt;0.0001)</td>
<td>2.6</td>
</tr>
</tbody>
</table>

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

(continued)
# Project ECHO Clinicians

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

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<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>

(continued)
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)

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Not/Minor Benefits</th>
<th>Moderate/Major Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced knowledge about management and treatment of HCV patients.</td>
<td>3% (1)</td>
<td>97% (34)</td>
</tr>
<tr>
<td>Being well-informed about symptoms of HCV patients in treatment.</td>
<td>6% (2)</td>
<td>94% (33)</td>
</tr>
<tr>
<td>Achieving competence in caring for HCV patients.</td>
<td>3% (1)</td>
<td>98% (34)</td>
</tr>
<tr>
<td>Statement</td>
<td>Mean Score (Range 1-5)</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------------------</td>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td>Project ECHO® has diminished my professional isolation.</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td>My participation in Project ECHO® has enhanced my professional satisfaction.</td>
<td>4.8</td>
<td></td>
</tr>
<tr>
<td>Collaboration among agencies in Project ECHO® is a benefit to my clinic.</td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>Project ECHO® has expanded access to HCV treatment for patients in our community.</td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>Access, in general, to specialist expertise and consultation is a major area of need for you and your clinic.</td>
<td>4.9</td>
<td></td>
</tr>
<tr>
<td>Access to <strong>HCV specialist</strong> expertise and consultation is a major area of need for you and your clinic.</td>
<td>4.9</td>
<td></td>
</tr>
</tbody>
</table>
Outcomes of Treatment for Hepatitis C Virus Infection by Primary Care Providers

Results of the HCV Outcomes Study

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

<table>
<thead>
<tr>
<th>Outcome</th>
<th>ECHO</th>
<th>UNMH</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority</td>
<td>68%</td>
<td>49%</td>
<td>P&lt;0.01</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>
</tbody>
</table>

*SVR = sustained viral response

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.
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
<table>
<thead>
<tr>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thurs</th>
<th>Fri</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hepatitis C</strong></td>
<td>Namibia HIV</td>
<td>IHS Navajo HIV</td>
<td>Hepatitis C in Prisons</td>
<td>Nurse Practitioners</td>
</tr>
<tr>
<td>• Arora</td>
<td>• Struminger</td>
<td>• Iandiorio</td>
<td>• Thornton</td>
<td>• Van Roper</td>
</tr>
<tr>
<td>• Thornton</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rheumatology</strong></td>
<td>Partners in Good Health and Wellness</td>
<td>Endocrinology &amp; Diabetes</td>
<td>Chronic Pain and Headache</td>
<td>Integrated Addictions and Psychiatry</td>
</tr>
<tr>
<td>• Bankhurst</td>
<td>• Struminger</td>
<td>• Bouchonville</td>
<td>• Shelley</td>
<td>• Komaromy</td>
</tr>
<tr>
<td><strong>HIV</strong></td>
<td>Bone Health</td>
<td>Crisis Intervention for Community Policing Agencies</td>
<td>Improving Clinical Flow</td>
<td>Tuberculosis</td>
</tr>
<tr>
<td>• Iandiorio</td>
<td>• Liewicki</td>
<td>• Duhigg</td>
<td>• IHI</td>
<td>• Struminger</td>
</tr>
<tr>
<td><strong>Complex Care</strong></td>
<td>Prison Peer Educator Training</td>
<td>Epilepsy</td>
<td>• Clewett</td>
<td></td>
</tr>
<tr>
<td>• Komaromy</td>
<td>• Thornton</td>
<td>• Immerman</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Project ECHO

Views of Participating Providers, Health Workers, And Educators

1 = Strongly Disagree, 5 = Strongly Agree

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Through the Project ECHO telehealth clinics, I am <strong>learning best-practice care</strong> in chronic disease.</td>
<td>4.68</td>
</tr>
<tr>
<td>I am <strong>connected with peers</strong> in the ECHO telehealth clinic whose opinion I respect for professional advice and consultation.</td>
<td>4.55</td>
</tr>
<tr>
<td><strong>I learn with guidance</strong> from Project ECHO academic specialists in chronic disease management whose knowledge and skills I respect.</td>
<td>4.73</td>
</tr>
<tr>
<td>I am <strong>connected to and respected by the academic specialists</strong> in the ECHO telehealth clinic in which I participate.</td>
<td>4.40</td>
</tr>
<tr>
<td>I am <strong>developing my clinical expertise</strong> through participation in Project ECHO.</td>
<td>4.48</td>
</tr>
<tr>
<td>After gaining expertise in the clinical diseases addressed in Project ECHO, I am <strong>comfortable teaching others what I have learned.</strong></td>
<td>4.33</td>
</tr>
</tbody>
</table>

Source: “Partnering Urban Academic Medical Centers and Rural Primary Care Clinicians to Provide Complex Chronic Disease Care,” Arora, et al., Health Affairs 2011
### Project ECHO

**Participants’ Views of Patient Benefits**

1 = Strongly Disagree, 5 = Strongly Agree

<table>
<thead>
<tr>
<th>Patient Benefit</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>My participation in Project ECHO benefits patients under my care whom I co-manage with ECHO specialists.</td>
<td>4.45</td>
</tr>
<tr>
<td>The patients under my care whom I co-manage with ECHO specialists receive best-practice care.</td>
<td>4.43</td>
</tr>
<tr>
<td>My participation in Project ECHO benefits the patients under my care whom I do not co-manage with ECHO specialists.</td>
<td>4.19</td>
</tr>
<tr>
<td>I apply what I have learned about best practices through Project ECHO to all of my patients with similar chronic diseases.</td>
<td>4.45</td>
</tr>
<tr>
<td>I feel comfortable applying the principles I learned from Project ECHO to other patients in my practice with similar chronic disease, independently, without presenting them on the network.</td>
<td>4.23</td>
</tr>
</tbody>
</table>

Source: “Partnering Urban Academic Medical Centers and Rural Primary Care Clinicians to Provide Complex Chronic Disease Care,” Arora, et al., Health Affairs 2011
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

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.
What The Mind Does Not Know The Eye Cannot See

“Expanding the Definition of Underserved Population”
Chronic Disease Management is a Team Sport

- Primary Care
- Nurse
- Medical Assistant
- Community Health Worker

- Diabetes and Cardiac Risk Reduction
- Asthma and COPD
- Substance Use and Mental Health Disorders
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
  - Obesity Prevention: Diet, Exercise, Motivational Interviewing

- Prison Peer Educator Training
Diabetes 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

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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

Graduation as Peer Educators
Photo consents on file with Project ECHO® and CNMCF

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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
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

Navy ECHO Hubs: Navy Medicine East (NME) - Naval Medical Center (NMC) Portsmouth, VA | Navy Medicine West (NMW) - Naval Medical Center San Diego (NMCSD), CA

Belgium: • Brussels • Supreme Headquarters Allied Powers Europe (SHAPE)

Germany: • Grafenwoehr • Hohenfels • Katterbach • Landstuhl Regional Medical Center (LURMC)/VRH • 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

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) • Adult Medicine Patient Centered Medical Home (PCMH) Tripler • Family Medicine PCMH Tripler • Warrior Owens PCMH • VA Pain Clinic

Kansas: • Fort Leavenworth • Fort Riley

Kentucky: • Fort Knox • Fort Campbell

Louisiana: • Fort Polk • Fort Meade

Maryland: • 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

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South Carolina: • Fort Jackson

Texas: • Fort Bliss • Fort Hood

Virginia: • Joint Base Langley-Eustis • Fort Lee

Washington: • Madigan Army Medical Center
ECHO Consortium and Partners

Republic of Namibia Ministry of Health and Social Services

Centers for Disease Control and Prevention (CDC)

US Headquarters

CDC Namibia

Elizabeth Glaser Pediatric AIDS Foundation

EGPAF

International Training & Education Center for Health Namibia

The University of New Mexico

University of Washington
Potential Uses of ECHO in Cancer

1. Prevention: Smoking Cessation, HPV vaccination, HCV Treatment, HBV Vaccination and Treatment
2. Screening and Early Detection: Breast, Cervical, Colorectal Cancer, Oral and Lung Cancer
3. Cancer Treatment and Tumor Boards
4. Precision Medicine and Cancer Genetics
5. Survivorship
6. Palliative Care
7. Workforce Training and Development
What Makes ECHO Work?

Team Based Care

- Technology
- Force Multiplication
- De-monopolizing Knowledge

Knowledge Expansion

Movement Building vs. Organization Building

Community of Practice (Social Network)

Joy of Work

Mentor/Mentee Relationship

Task Shifting

Interprofessional Consultation

Guided Practice

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