Project ECHO®:
Building Specialty-Care Capacity Among Primary Care Providers in Rural and Underserved Areas

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Navajo Area IHS-UNM HIV ECHO, Co-developer & Co-facilitator
Mission & Model of Project ECHO® (Extension for Community Healthcare Outcomes)

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

1) Use telehealth technology to leverage scarce healthcare resources to
2) ...share best practices and reduce variation in care to improve quality & outcomes...
3) ....through practice-based learning that develops specialty expertise among primary care providers,
4) and monitor outcomes.
Hepatitis C
A Global Health Problem
Over 170 Million Carriers Worldwide, 3-4 M new cases/year

Source: WHO 1999
Hepatitis C in New Mexico

• Estimated patient number is greater than 28,000 [~1.5% of the population]
• In 2004 less than 5% had been treated
  – 2,300 prisoners were HCV positive (~40% of those entering the corrections system), none were treated
• Highest rate of chronic liver disease/cirrhosis deaths in the nation; 25% higher incidence than the next highest state
• Ten times more prevalent than HIV
Hepatitis C Treatment

• Good News
  – Curable in 45-81% of cases
  – Cure rates of new treatments 80-90%

• Bad News
  – Severe side effects:
    • anemia (100%)
    • neutropenia >35%
    • depression >25%

• Limited number of specialists and no primary care physicians treating HCV as of 2004
Rural New Mexico
Underserved Area for Healthcare Services

- 121,356 sq 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®

• **Founding goal**: develop local capacity to safely and effectively treat HCV in all areas of New Mexico and to monitor outcomes

• **Current goal**: create and disseminate a model to develop local capacity to safely and effectively treat complex diseases in rural and underserved locations nationally and globally
Methods of training and education

• Use Technology (multipoint videoconferencing and Internet) to leverage scarce healthcare resources
  • Linking academic experts with local primary care practitioners through the development of a learning network

• Disease Management Model focused on improving outcomes by reducing variation in processes of care and sharing “best practices,” including use of algorithms, checklists and interdisciplinary chronic care teams

• Case-based learning: Co-management of patients with academic medical center based specialists (learning by doing)

• Outcome monitoring: HIPAA compliant web-based database
Partners

- University of New Mexico School of Medicine Dept of Medicine, Telemedicine and CME
- NM Department of Health
- NM Department of Corrections
- Indian Health Service
- FQHCs and Community Clinics
- Primary Care Association
How is the ECHO® telehealth model different from telemedicine?
Telemedicine

Improves ACCESS by using technology to bridge distance
The ECHO model improves CAPACITY and ACCESS simultaneously.
Transforming Primary Care with Knowledge Networks
Benefits to Rural Clinicians

• Professional interaction with colleagues with similar interests
  – Increases professional satisfaction, decreases professional isolation; this can have a significant impact on recruitment and retention

• A mix of practical work and continuing education
  • No cost CMEs and Nursing CEUs

• Obtain certification
  • HCV
  • Rheumatology

• Access to consultation with multi-specialty team of MDs, pharmacists, patient educators, social workers, peers, etc as appropriate to the management of the particular disease (HCV, HIV, rheumatology, chronic pain, etc)
Hepatitis C Care & Treatment Clinical Trial Objectives

- To train primary care clinicians in rural areas and prisons to deliver Hepatitis C care and treatment to local populations
- To demonstrate that care and treatment provided under the Project ECHO model is equally safe and effective as that delivered at an academic medical center (UNM)
- To demonstrate that Project ECHO® improves access to Hepatitis C care for minorities
PRINCIPLE STUDY ENDPOINT

• Cure of Hepatitis C as measured by Sustained Viral Response (SVR):
  – no detectable virus 6 months after completion of treatment
Study Participants 2004-2008

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

• Subjects meeting inclusion / exclusion criteria
  – Community cases seen by primary care physicians
  – Consecutive University patients
## 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>N=261</td>
<td>N=146</td>
<td>P&lt;0.01</td>
</tr>
<tr>
<td>SVR* (Cure) Genotype 1</td>
<td>68%</td>
<td>49%</td>
<td>NS</td>
</tr>
<tr>
<td>SVR* (Cure) Genotype 2/3</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

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

• Sanjeev Arora, MD, Karla Thornton, MD, et al.
• New England Journal of Medicine, June 9, 2011, 364 (23): 2199-2207
Conclusions

• Rural primary care clinicians deliver hepatitis C care and treatment under the aegis of Project ECHO® that is equally safe and effective as that provided in a university-based clinic

• Project ECHO® improves access to hepatitis C care for New Mexico minorities
How well has model worked for Hepatitis C?

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

**CME’s/CE’s issued:**

• >6,000 CME/CE hours issued to ECHO® Clinicians for Hep C
  ▪ Total CME hours 27,000 at no cost
• 280 hours of HCV Training conducted at rural sites
• National Recognition as Model for Complex Disease Care
## Project ECHO® Clinicians

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

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

<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><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>
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### Project ECHO® Clinicians

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

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<th>Effect Size for the change</th>
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<tr>
<td><strong>4. Ability to assess and manage psychiatric co-morbidities in patients with hepatitis C.</strong></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><strong>5. Serve as local consultant within my clinic and in my area for HCV questions and issues.</strong></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><strong>6. Ability to educate and motivate HCV patients.</strong></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>
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# Project ECHO® Clinicians

HCV Knowledge Skills and Abilities (Self-Efficacy)

<table>
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<tr>
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<th>Effect Size for the change</th>
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<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

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## Project ECHO®
### Annual Meeting Survey

<table>
<thead>
<tr>
<th>N=17</th>
<th>Mean Score (Range 1-5)</th>
</tr>
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<tbody>
<tr>
<td>Project ECHO® has diminished my professional isolation.</td>
<td>4.3</td>
</tr>
<tr>
<td>My participation in Project ECHO® has enhanced my professional satisfaction.</td>
<td>4.8</td>
</tr>
<tr>
<td>Collaboration among agencies in Project ECHO® is a benefit to my clinic.</td>
<td>4.9</td>
</tr>
<tr>
<td>Project ECHO® has expanded access to HCV treatment for patients in our community.</td>
<td>4.9</td>
</tr>
<tr>
<td>Access, <strong>in general</strong>, to specialist expertise and consultation is a major area of need for you and your clinic.</td>
<td>4.9</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>
</tr>
</tbody>
</table>
Disease Selection for ECHO model

• Common diseases
• Management is complex
• Evolving treatments and medicines
• High societal impact (health and economic)
• Serious outcomes of untreated disease
• Improved outcomes with standardized evidence based disease management
Bridge Building and Network Development

Pareto’s Principle

- UNM HSC
- Dr. Health Dept
- Private Practice
- Community Health Centers

Chronic Pain

Rheumatoid Arthritis + Rheumatology Consultation

Substance Use and Mental Health Disorders
Quality Improvement through teamwork

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
Potential Benefits of ECHO® model to Health System

- Promotes Rapid Learning and Best-Practice Dissemination
- De-monopolizes Specialty Care Knowledge
- Reduces Variations in Care
- Improves Quality and Safety
- Improves Access for Rural and Underserved Patients, Reducing Disparities
- Workforce Training and Multidisciplinary Team Building
- Improves Professional Satisfaction/Recruitment & Retention
- Decreases Professional Isolation
- Supports the Medical Home Model
- Cost Effective Care Helps Avoid Excessive Testing and Travel
- Prevents High Cost of Untreated Disease (e.g.: liver transplant or dialysis)
- Integration of Public Health and Treatment Paradigms
ECHO® Replication Projects Worldwide:

- University of Washington (HCV, Chronic Pain, HIV, Addiction)
- University of Chicago (Hypertension, Breast Cancer, ADHD, Childhood Obesity)
- University of Nevada (Diabetes/Cardiovascular Risk Reduction, Sports Medicine, Thyroid & Diabetes, Antibiotic Stewardship, Mental Health)
- University of Utah (HCV)
- University of South Florida, ETAC and Florida/Caribbean, AETC (General HIV, Adolescents/Pediatrics HIV, HCV/HIC Co-Infection, Psychiatry & HIV, Spanish Language HIV)
- Harvard University, Beth Israel Deaconess Medical Center (HCV, Gerontology – ECHO AGE)
- Department of Defense – Worldwide Initiative (Chronic Pain)
- Veteran’s Administration Health System - 11 Regions (Chronic Pain, Diabetes, Heart Failure, HCV, Women’s Health, Nephrology)
- St Joseph Hospital - Arizona (HCV)
- Community Health Center, Inc. – Connecticut (HIV, HCV, Chronic Pain)
- LA Net (Nephrology, Adult Psychiatry)
- Maulana Azad Medical College – New Delhi, India (HIV)
- Institute of Liver and Biliary Sciences – New Delhi, India (HCV)
- ECHO India – Mumbai, Chandigargh, & Lucknow (Autism)
- Uruguay (Liver Disease)
- Ireland (HCV) [launch 2013]
- Viet Nam National TB Program (MDR-TB) [launch 2014]
- Hanoi Medical University, Hue School of Medicine & Pharmacy, HCMC University of Medicine & Pharmacy (Viral Hepatitis) [launch 2014]
Conclusion:
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.
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