Project ECHO

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Learning Objectives

• Describe a model of care that will improve access to best practice care for chronic, common, complex diseases in underserved areas
• Describe the 4 components of the ECHO model
• Identify how to participate as a partner in the ECHO project

Moving Knowledge Instead of Patients
**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.

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**Hepatitis C**

**A Global Health Problem**

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

![Map showing global distribution of Hepatitis C](map.png)

Source: WHO 2009

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**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 to leverage scarce healthcare resources
• Sharing “best practices”
• Case based learning
• Web-based database to monitor outcomes


What is Best Practice in Medicine

• Algorithm
• Check Lists
• Process
• Wisdom Based on Experience

Steps

• Train physicians, nurse practitioners, physician’s assistants, pharmacists and their teams in HCV
• Train to use web-based software
• Conduct teleECHO clinics — “Knowledge Network”
• Initiate case-based guided practice – “Learning loops”
• Collect data and monitor outcomes centrally
Technology

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


Project ECHO Clinicians HCV
Knowledge, Skills and 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 Mean (SD) (p-value)</th>
<th>Effect Size for the Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ability to identify suitable candidates for the treatment of HCV</td>
<td>2.8 (1.7)</td>
<td>5.6 (0.8)</td>
<td>2.8 (2.2) (&lt;0.0001)</td>
<td>2.4</td>
</tr>
<tr>
<td>2. Ability to assess severity of liver disease in patients with hepatitis C.</td>
<td>3.2 (1.2)</td>
<td>5.5 (0.8)</td>
<td>2.3 (1.1) (&lt;0.0001)</td>
<td>2.1</td>
</tr>
<tr>
<td>3. Ability to treat HCV patients and manage side effects.</td>
<td>2.1 (1.3)</td>
<td>5.2 (0.8)</td>
<td>3.1 (2.0) (&lt;0.0001)</td>
<td>2.6</td>
</tr>
</tbody>
</table>

## Project ECHO Annual Meeting Survey

<table>
<thead>
<tr>
<th>N=17</th>
<th>Mean Score (Range 1-5)</th>
</tr>
</thead>
<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, in general, 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 HCV specialist expertise and consultation is a major area of need for you and your clinic.</td>
<td>4.9</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 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

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

Principal Endpoint

- Sustained viral response (SVR): no detectable virus 6 months after completion of treatment

Treatment Outcomes

<table>
<thead>
<tr>
<th>Outcome</th>
<th>ECHO sites (N=261)</th>
<th>UNM HCV Clinic (N=146)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minority</td>
<td>65 %</td>
<td>41 %</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>SVR Genotype 1</td>
<td>50 %</td>
<td>46 %</td>
<td>0.57</td>
</tr>
<tr>
<td>SVR Genotype 2 or 3</td>
<td>70 %</td>
<td>71 %</td>
<td>0.83</td>
</tr>
</tbody>
</table>
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.


ECHO Model Cost-effective for HCV

• In 60% of patients treated for HCV the model was cost savings
• Overall Cost per Discounted Quality of Life Year Gained was less than $3500

Wong, et al, oral presentation AASLD, Washington, DC 2013

Does ECHO Provide Good Value?

> $1 million

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

<table>
<thead>
<tr>
<th>UNM HSC</th>
<th>State Health Dept</th>
<th>Private Practice</th>
<th>Community Health Centers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chronic Pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rheumatoid Arthritis + Rheumatology Consultation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Substance Use and Mental Health Disorders</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Force Multiplier
Use Existing Community Clinicians

<table>
<thead>
<tr>
<th>Specialists</th>
<th>Primary Care</th>
<th>Physician Assistants</th>
<th>Nurse Practitioners</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic Pain</td>
<td></td>
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<tr>
<td>Substance Use and Mental Health Disorders</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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>8-10 a.m.</td>
<td>Hepatitis C</td>
<td>Endocrinology</td>
<td></td>
<td>Palliative Care</td>
</tr>
<tr>
<td></td>
<td>Arora</td>
<td>Bouchoville</td>
<td></td>
<td>Neale</td>
</tr>
<tr>
<td>10-12 a.m.</td>
<td>Rheumatology</td>
<td>Chronic Pain</td>
<td>Integrated</td>
<td>Complex Care</td>
</tr>
<tr>
<td></td>
<td>Bankhurst</td>
<td>Katzman</td>
<td>Medicine &amp; Psychiatry</td>
<td>Neale</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Endocrine</td>
<td>Neale</td>
</tr>
<tr>
<td>2-4 p.m.</td>
<td>HIV</td>
<td>Sandtoria</td>
<td>Prison Peer</td>
<td>Women’s Health and Genomics</td>
</tr>
<tr>
<td></td>
<td>Thornton</td>
<td></td>
<td>Educator Training</td>
<td>Komaromy</td>
</tr>
</tbody>
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Transforming Primary Care with Knowledge Networks

"Expanding the Definition of Underserved Population"
Force Multiplier
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 Specialty CHW Training Multiple Tracks

- CREW (Community Resource Education Worker)- Diabetes, Obesity, Diet, Smoking Cessation, Exercise
- CARS (Community Addiction Recovery Specialist) - Harm reduction, motivational interviewing, liaison with community resources
- Let’s Move New Mexico: Obesity Prevention Training Program
- NM PEP (New Mexico Prison Peer Education Program) – Focus on HCV, other infectious diseases and addiction

CREW (Diabetes Community Resource Education Worker)

- 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

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

ECHO Replication Sites Worldwide:

- National AIDS Control Organization and Maulana Azad (HIV) – New Delhi, India
- Institute of Liver and Biliary Sciences (HCV) – New Delhi, India
- Universidad de la República (Liver Disease) – Montevideo, Uruguay
- West/North West Hospitals Group (Diabetes) – Galway, Ireland
- ECHO Ontario (Chronic Pain) – Queens University & University of Toronto Ontario, Canada
- Northern Ireland Hospice (Hospice Care) – Belfast, NI
- National Institute for Mental Health Services (NIMHANS) (Mental Health and Drug Addiction) – Bangalore, India
- B.J. Medical College (HIV) – Ahmedabad, India
- Vietnam National Lung Hospital (TB) – Hanoi, Vietnam
- Hospital Italiano (HCV) – Buenos Aires, Argentina
Western States Consortium HCV ECHO Partner Sites

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

Number of Sites in one location:
1
2
3
4

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

ECHO Replication in the US
• University of Washington (HCV, Chronic Pain, HIV, Multiple Sclerosis) – Seattle, WA
• University of Chicago (Hypertension, Breast Cancer Survivorship, Women’s Health, Pediatric ADHD, Childhood Obesity, HCV) – Chicago, IL
• University of Nevada (Gastroenterology, Rheumatology, Sports Medicine, Mental Health, Addiction, Cystic Fibrosis, Rare Diseases) – Reno, NV
• University of Utah (HCV, Advanced Liver Care, Chronic Pain) – Salt Lake City, UT
• University of Florida (HIV/AIDS Education and Training Center, University of South Florida (Gastroenterology, Endocrinology, Pediatric, Public Health, Hepatology, Spanish Language HIV) – Tampa, FL
• Harvard/Beth Israel Deaconess Medical Center (HCV, Gerontology – ECHO AGE) – Boston, MA
• St. Joseph’s Hospital & Medical Center (HCV) – Phoenix, AZ
• Community Health Center, Inc. (HIV, HCV, Chronic Pain, Opioid Addiction – Buprenorphine) – Middletown, CT
• LA Net (AAPA Preventive Care, Nephrology, Adult Psychiatry) – Los Angeles, California
• CHI St. Luke’s Health (HCV, HBV, Infectious Disease) – Houston, TX
• University of California (HIV, Neurology, Psychiatry, Addiction) – Los Angeles, California
• Oregon Health and Science University/Health Share of Oregon (Psychiatric Medication Management) – Portland, OR
• University of Rochester Medical Center (Geriatric Mental Health) – Rochester, New York
• University of Mississippi Medical Center (Hepatology) – Jackson, MS
• University of Florida (HIV/AIDS) – Gainesville, FL
• University of Colorado School of Public Health (Children and Youth with Epilepsy) – Denver, CO

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• Vietnam National Lung Hospital (TB) – Hanoi, Vietnam
• Hospital Italiano (HCV) – Buenos Aires, Argentina
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.