Using the ECHO Model to Expand Access to Care and Treatment for HIV and Viral Hepatitis

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11/3/17
Conflicts of Interest

- I have no conflicts of interest to disclose
Moving Knowledge Instead of Patients
Objectives

• Describe the history and development of Project ECHO
• Describe how Project ECHO has impacted care for persons living with HIV and hepatitis C
• Discuss the replication of the ECHO model nationally and internationally
Hepatitis C in New Mexico (2004)

- Large geographic area, low population density
- Few health care providers and no specialists
- More than 35,000 reported HCV cases, < 5% had been treated
- Highest rate of chronic liver disease/cirrhosis
Hepatitis C Treatment in 2004

• 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
Methods

• Use technology to leverage scarce healthcare resources (specialty knowledge and expertise)
• Share “best practices”- reduce disparities by reducing variation in care
• Case based learning (learning by doing) to master complexity
• Web-based database to monitor outcomes

Project ECHO: Multidisciplinary Teams

**ECHO Facilitators**
- Multidisciplinary Team
- Infectious Diseases
- Hepatology
- Psychiatry
- Pharmacy

**ECHO Partners**
- Community Clinic
- Primary Care Team
Steps

• Train physicians, nurses, pharmacists and their teams in HCV care
• Conduct teleECHO clinics – “Knowledge Network”
• Initiate case-based guided practice – “Learning loops”
• Collect data and monitor outcomes centrally
Learning Loops

- Interactive Learning Environment
- Co-management of Cases
- Learning by doing
- Learning from didactics
- Learning from each other
- Collaborative Problem Solving
ECHO vs. Telemedicine

TeleECHO™ Clinic

- Expert hub team
- ECHO supports community based primary care teams
- Learners at spoke site
- Patients reached with specialty knowledge and expertise

Traditional Telemedicine

- Specialist manages patient remotely
Benefits to Clinicians and Teams

• No cost continuing education credits
• 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 infectious diseases, hepatology, psychiatry, addiction specialist, pharmacist

Benefits to Communities

• Increased access to HCV treatment
• Decreased HCV related mortality and suffering
• Training of the local workforce
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 (1.2)</td>
<td>5.6 (0.8)</td>
<td>2.8 (1.2) (&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 (0.9)</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>2.0 (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>

Project ECHO Clinicians HCV Knowledge, Skills and Self-Efficacy
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</thead>
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<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>

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 Jenkusky, M.D., Miriam Kornaromy, 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 49.5% (77 of 157 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.)
Study Design

• Prospective Cohort
• Study sites
  • Intervention (ECHO)
    • Community-based clinics: 16
    • New Mexico Department of Corrections: 5
  • Control
    • University of New Mexico Hepatitis C Clinic
• Principal Endpoint
  • Sustained viral response (SVR): no detectable virus 6 months after completion of treatment

SVR According to Genotype and Site

<table>
<thead>
<tr>
<th>HCV Genotype</th>
<th>ECHO sites</th>
<th>UNM HCV Clinic</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Genotypes</td>
<td>58.2%</td>
<td>84/146 (57.5%)</td>
<td>0.89</td>
</tr>
<tr>
<td>Genotype 1</td>
<td>73/147 (49.7%)</td>
<td>38/83 (45.8%)</td>
<td>0.57</td>
</tr>
<tr>
<td>Genotype 2 or 3</td>
<td>78/112 (69.6%)</td>
<td>42/59 (71.2%)</td>
<td>0.83</td>
</tr>
</tbody>
</table>

Conclusion

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.

Hepatitis C Treatment in New Mexico

UNMHSC Center for Digestive Diseases Clinic
Treated Approximately 100 patients/year

2004

UNMHSC
Center for Digestive Diseases Clinic
Treated Approximately 250 patients/year

2016

Project ECHO Partners
Treat Approximately 1,100 patients/year
Expanding the Definition of Underserved Population

Time

Increasing Gap

Medical Knowledge

Learning Capacity

Time
Disease Selection

• Common diseases
• Management is complex
• Evolving treatments and medicines
• High societal impact
• Serious outcomes of untreated disease
• Improved outcomes with disease management
<table>
<thead>
<tr>
<th>MON</th>
<th>TUE</th>
<th>WED</th>
<th>THURS</th>
<th>FRI</th>
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</thead>
<tbody>
<tr>
<td><strong>Rheumatology</strong></td>
<td><strong>HBV</strong></td>
<td><strong>Community Health Workers</strong></td>
<td><strong>CDC Good Health and Wellness in Indian Country</strong></td>
<td><strong>Opioid Addiction</strong></td>
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<tr>
<td>• Bankhurst</td>
<td>• Thornton</td>
<td>• CHW Team</td>
<td>• Struminger</td>
<td>• Komaromy</td>
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<td><strong>Tuberculosis</strong></td>
<td><strong>Bone Health</strong></td>
<td><strong>Endocrinology &amp; Diabetes</strong></td>
<td><strong>Chronic Pain and Opioid Management</strong></td>
<td><strong>Nurse Practitioner/Certified Midwife</strong></td>
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<td>• Burgos</td>
<td>• Lewiecki</td>
<td>• Bouchonville</td>
<td>• Comerci</td>
<td>• Van Roper</td>
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<tr>
<td><strong>Cardiology</strong></td>
<td><strong>Crisis Intervention for Community Policing Agencies</strong></td>
<td><strong>HIV</strong></td>
<td><strong>Prison Peer Education Program</strong></td>
<td><strong>Integrated Addictions and Psychiatry (IAP)</strong></td>
</tr>
<tr>
<td>• Achrekar, Anderson &amp; Yatskowitz</td>
<td>• Duhigg</td>
<td>• Iandiorio</td>
<td>• Thornton</td>
<td>• Komaromy</td>
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<td><strong>Reproductive Health</strong></td>
<td><strong>Seizures and Spells</strong></td>
<td><strong>Hepatitis C (HCV)</strong></td>
<td><strong>HIV/ HCV Corrections</strong></td>
<td><strong>Antimicrobial Stewardship</strong></td>
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<td>• Singh</td>
<td>• Imerman</td>
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<td>• Iandiorio &amp; Thornton</td>
<td>• Brett, Irizarry &amp; Mercier</td>
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</tbody>
</table>

**Successful Expansion into Multiple Diseases**
Successful Expansion into Multiple Health Conditions/Areas

- > 50 health conditions (140 hubs)
- Antimicrobial Stewardship
- Quality Improvement
- CIT (Crisis Intervention Team)
- Education/Assistive Technologies
ECHO Hubs and Superhubs: Global
HIV and Viral Hepatitis

ECHO activities globally
ECHO HIV Hubs: Global
What is ECHO?
**Extension for Community Health Outcomes**
HIV ECHO Distribution & Capacity Building

*Yellow dots = locations where an ECHO site trainee moved and continued to participate*
First ECHO Launch in Africa
Namibia HIV - November 2015

Size:
318,261 sq mi

Population:
2.3 million people

HIV Prevalence:
Age 15-49 (14%)
230,000 people living with HIV

Challenges:
• Many remote areas, patients travel far
• Chronic shortage of doctors and nurses in public sector

Source: World Health Organization, African Health Observatory, Namibia, Health workforce
First ECHO Session in Africa

November 2015
Namibia MOHSS HIV ECHO Hub and Spokes

- Ten pilot spokes
- Now over 20 sites are joining
- Goal for 2018 is 40 sites
Central Asia – Fall 2016
UNM and ICAP at Columbia University Collaborations

Central Asia

• Two weekly sessions held since Fall 2016 in Kazakhstan
  • Over 90 participants per session at 24 spoke sites
• Kyrgyzstan - 22 spokes
• Tajikistan implementing fall 2017
Kenya launch – Fall 2016
UNM and ICAP at Columbia University Collaborations

- Successful launch of regional hub with little support (less than 4 months after training)
- Ministry of Health fully on board
- Cases previously submitted to technical working group now are discussed in ECHO
Tanzania and Uganda – First Laboratory ECHOs

Launched November 23, 2016 and March 6, 2017

Tanzania Launch with guests from Namibia and Kenya via Zoom

Official Uganda launch

RTQI ECHOs - Training of HIV rapid testers – quality improvement
African Society of Laboratory Medicine

HIV Viral Load Scale Up Community of Practice

ASLM in Ethiopia, Addis Ababa
Priority Countries
ECHO Hepatitis Hubs: Global

Key: Country Shading
- ECHO impact (11)
- Awaiting ECHO impact (159)

Key: ECHO Focus Area
- Hepatitis (29)
Georgia HCV Elimination Program
Blood Safety

HCV Treatment in primary care and harm reduction centers

HCV testing, counseling and linkage to care

Infection Prevention and Control
Potential Benefits of the ECHO Model

- Improve 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

- Improve Professional Satisfaction/Retention
- Support 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

Democratize Knowledge
Summary

- The ECHO model can be used effectively for education and workforce development in underserved areas
- Multiple successful pilots for HIV in Africa and Central Asia
- Capacity to treat HCV domestically impacted by use of the ECHO model
- Due to lack of funding, international viral hepatitis programs have been slower to start
Moving Knowledge Instead of Patients & Providers