Telemedicine and Telehealth in Corrections
Topics for Discussion

- What is telemedicine and what is telehealth?
- How are telemedicine and telehealth used in the community?
- How are telemedicine/telehealth used in a correctional system? What are the potential positive impacts? What are potential challenges?
- What are some practical suggestions for implementing telehealth/telemedicine in your local correctional systems?
Presenters

Dr. Melissa Badowski, PharmD BCPS, AAHIVP
Clinical Assistant Professor, Section of Infectious Diseases Pharmacotherapy
Clinical Specialist, Illinois Department of Corrections Telemedicine Program

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Professor, Division of Infectious Diseases, University of New Mexico

Dr. Lara Strick, MD
Infectious Disease Physician, Washington Department of Corrections
Corrections Program Director, Northwest AETC
Clinical Assistant Professor, University of Washington
Telemedicine in the Community and Correctional Settings
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University of Illinois at Chicago, College of Pharmacy
Badowski@uic.edu
## Telehealth vs. Telemedicine

<table>
<thead>
<tr>
<th><strong>Telehealth</strong></th>
<th><strong>Telemedicine</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Delivery of health-related services and information via telecommunications technologies allowing long-distance interaction</td>
<td>Seeks to optimize patient health through electronic two-way, real-time, interactive communication and medical information exchange between the patient and practitioner at the distant site.</td>
</tr>
<tr>
<td>Broader definition of remote health services compared to telemedicine</td>
<td>Branch of telehealth</td>
</tr>
</tbody>
</table>
| May include remote **clinical and non-clinical services**  
  - Provider training  
  - Administrative meetings  
  - Continuing education activities | At a minimum, must include audio and video equipment |
| Provision of remote **clinical services** when medical providers, staff, and participants are at a different location |  |

### Telehealth and Telemedicine

Two-way videoconferencing, internet, email, smart phones, store-and-forward imaging, remote monitoring and testing, wireless tools and communications

http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Delivery-Systems/Telemedicine.html
Types of Telemedicine

- **Store and forward**
  - Asynchronous
  - Patients are physically separated from the provider by space and time
  - Typically involves taking images, storing them, and forwarding them so a provider can view them later
  - Utilized in dermatology, radiology, pathology, wound

- **Remote monitoring**
  - Self-monitoring or testing using technological devices
  - Allows medical providers to monitor a patient remotely with the assistance of electronic devices that transmit patient information
  - Commonly used in the management of chronic diseases

- **Interactive telemedicine**
  - Real-time, synchronous interaction between patient and provider
  - Similar to face-to-face visits
  - Patient separated from medical provider by space only
  - May be used in chronic and acute illnesses

Benefits of Telehealth

- Reduces barriers to access
- Increases efficiency for providers
- Reduces travel
- Reduces overall health care costs
- Improves health outcomes
- Supports improved quality
- Reduces delays in care
- Retains resources locally
- Increases patient satisfaction
History of Telemedicine
Telemedicine: Not a new idea!

Visionary cover of *Radio News* depicting a "radio doctor" who could see & be seen by his patient.
Current and Expected Growth of Telemedicine

- In 2012, the global revenue from telemedicine was $14.2 billion dollars.
- Currently, in the US, 3500 telemedicine service sites serve approximately 1,000,000.
- Anticipated growth rate of telemedicine expected to be 18.5% through 2018.

Source: IHS Technology, January 2014

www.americantelemed.org/about-telemedicine/faqs#.VNul3_l4pcQ
Telemedicine in the Community
# Telemedicine in the Community

## Advantages
- Provides access to care in rural settings
- Eliminates geographic barriers
- Affords access to specialty care
- Can improve patient outcomes
- Can be used for virtually any chronic disease
- Similar to a face-to-face provider visit
- Parts of the physical exam and self-monitoring can be transmitted through equipment
- Secure connection
- Can eliminate transmission of infections diseases to patients and providers

## Disadvantages
- Training of patient and provider to use telemedicine equipment
- Internet connection required
- Audio and visual equipment required
- Troubleshoot technological problems
- Questionable reimbursement
- Additional licensure if providing medical care across state lines
- Cannot provide full physical exam
Telemedicine in Corrections
The Need and Advantages of Telemedicine in Corrections

- Provides a secure, confidential audio & video link to replace an in-person clinic visit
- Provides the same level (or better) care to those incarcerated
- Increases more timely access to subspecialty and primary care services as well as medications
- Minimizes geographic, security, and transportation barriers to care
- Captive audience (medication and appointment adherence)
- Ease of use
- Improves clinical outcomes
- High patient satisfaction
- Cost-efficient care and savings
Disadvantages of Telemedicine in Corrections

- Equipment failure
- High staff turnover requiring additional training
- Disconnect between on-site provider and telemedicine provider
- Initial start-up costs and implementing change
The UIC Telemedicine Experience
The “New Wave” Of Telemedicine

- Occurs in real-time

- Patient, provider, pharmacist, and case manager in same virtual room

- Specialized videoconferencing and diagnostic equipment
Manage 26 male and female adult facilities

Manage all detainees in IDOC system with HIV infection & some detainees with HCV (based on length of incarceration and extent of disease)

Began: July 13, 2010

- HIV
  - Patients seen: ~1200
  - Patients seen annually: ~500
  - Re-incarcerated patients: ~275

- HCV
  - Completed treatment: 217
  - Did not qualify for treatment: 177
HIV

- Scheduler contacted for appointment for self-reported or newly diagnosed HIV/AIDS infection
  - New patient: 30-minute appointment
  - Follow-up/Re-incarcerated patient: 15-minute appointment
- Appropriate labs drawn prior to initial and subsequent follow-up visits
- Patient seen within 30-days of incarceration and/or transfer
- Multidisciplinary visit with subspecialty doctor, clinical pharmacist, and case manager
- Antiretroviral (ARV) medications mailed by our UIC-based pharmacy
  - Monthly basis for refills
  - Overnight shipping available when starting or changing medications
- Follow-up
  - As clinically indicated
    - 6-weeks if starting or changing ARVs
    - 3-4-months if adherence issues, unable to achieve virologic suppression, or AIDS diagnosis
    - 6-months if clinically stable and virologically suppressed for > 12 months
HCV

- Scheduler contacted for appointment after patient referred by IDOC provider for work-up and treatment of HCV
  - APRI score > 0.5
  - FibroSpect/Sure results of Fibrosis Stage > 3
  - Liver biopsy with Stage 3 or 4 disease
  - Length of incarceration at least 12 months
- Appropriate labs drawn prior to initial and subsequent follow-up visits
- Multidisciplinary visit with subspecialty doctor and clinical pharmacist
- HCV medications mailed by our UIC-based pharmacy
  - Monthly basis for refills
  - Overnight shipping available when starting medications
- Follow-up
  - As clinically indicated
    - 4-6 weeks or as clinically indicated
    - Labs monitored on a weekly basis, if required
Improving HIV Care in IDOC through Telemedicine

Improved Virologic Suppression With HIV Subspecialty Care in a Large Prison System Using Telemedicine: An Observational Study With Historical Controls

Jeremy D. Young,1 Mahesh Patel,1 Melissa Badowski,2 Mary Ellen Mackesy-Amiot,3 Pyrai Vaughn,1 Louis Shicker,4 Michael Puisis,1 and Lawrence J. Ouellet3

1Department of Medicine, Division of Infectious Diseases, Immunology and International Medicine, 2College of Pharmacy, and 3School of Public Health, University of Illinois at Chicago; and 4Illinois Department of Corrections, Chicago

Table 1. Proportion of Subjects With a Suppressed HIV Load (First 6 Visits), Stratified by Baseline CD4 T-Lymphocyte Count

<table>
<thead>
<tr>
<th>CD4 Category</th>
<th>Outcome</th>
<th>Pretelemedicine</th>
<th>Telemedicine</th>
<th>( \chi^2 )</th>
<th>( P ) Value</th>
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</thead>
<tbody>
<tr>
<td>&lt;350 cells/µL</td>
<td>1</td>
<td>59.2%</td>
<td>92.8%</td>
<td>69.5</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>28.6%</td>
<td>83.7%</td>
<td>66.1</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>351–500 cells/µL</td>
<td>1</td>
<td>49.1%</td>
<td>95.8%</td>
<td>73.0</td>
<td>&lt;.001</td>
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<tr>
<td></td>
<td>2</td>
<td>19.4%</td>
<td>89.1%</td>
<td>58.7</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>&gt;500 cells/µL</td>
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<td>64.4%</td>
<td>87.6%</td>
<td>39.2</td>
<td>&lt;.001</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>17.8%</td>
<td>59.1%</td>
<td>33.0</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

*1 = first 6 visits, 2 = visits 2–6, viral load not suppressed at first visit.
Treating HCV in the Prison System: Project ECHO

Karla Thornton, MD, MPH
Professor of Medicine (Infectious Diseases)
Associate Director, Project ECHO
University of New Mexico Health Sciences Center
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.

Supported by New Mexico Department of Health, Agency for Health Research and Quality, New Mexico Legislature, the Robert Wood Johnson Foundation and the GE Foundation.
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 (multipoint videoconferencing and internet) to leverage scarce healthcare resources

• Disease Management Model focused on improving outcomes by reducing variation in processes of care and sharing “best practices”

• Case based learning: Co-management of patients with specialists (Learning by Doing)

• HIPAA compliant web-based database to monitor outcomes

##Case Presentations

<table>
<thead>
<tr>
<th>Actual Date</th>
<th>07/01/2013</th>
<th>07/15/2013</th>
<th>07/29/2013</th>
<th>08/26/2013</th>
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<td>6.9</td>
<td>6.7</td>
<td>6.5</td>
<td>6.5</td>
</tr>
<tr>
<td>ANC</td>
<td>3.6</td>
<td>3.1</td>
<td>3.6</td>
<td>2.9</td>
<td>3.6</td>
</tr>
<tr>
<td>HGB</td>
<td>11.4</td>
<td>11.4</td>
<td>8.9</td>
<td>9.4</td>
<td>8.9</td>
</tr>
<tr>
<td>HCT</td>
<td>34.1</td>
<td>34.1</td>
<td>30.2</td>
<td>27.4</td>
<td>29.2</td>
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<tr>
<td>Platelets</td>
<td>360</td>
<td>157</td>
<td>128</td>
<td>106</td>
<td>131</td>
</tr>
<tr>
<td>Creatinine</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>AST SGOT</td>
<td>81</td>
<td>60</td>
<td>24</td>
<td>35</td>
<td>43</td>
</tr>
<tr>
<td>ALT SGPT</td>
<td>61</td>
<td>55</td>
<td>24</td>
<td>33</td>
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<tr>
<td>Total Prot</td>
<td>6.9</td>
<td>7</td>
<td>6.7</td>
<td>7.1</td>
<td>7.1</td>
</tr>
<tr>
<td>Albumin</td>
<td>3.9</td>
<td>3.6</td>
<td>3.5</td>
<td>3.4</td>
<td>3.3</td>
</tr>
<tr>
<td>T. Bill</td>
<td>4</td>
<td>7</td>
<td>9</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>Dr. Bill</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>HCV RNA</td>
<td>undetectable</td>
<td>undetectable</td>
<td>undetectable</td>
<td>undetectable</td>
<td>undetectable</td>
</tr>
</tbody>
</table>

PHQ9: 17
ECHO vs. Telemedicine

ECHO Telehealth

ECH0 Supports Community Based Primary Care Teams

Patients reached with specialty knowledge & expertise

Traditional Telemedicine

Specialist Manages Patient Remotely
HCV Treatment in DOC

- In 2008, started screening routinely for HCV at intake – 45% prevalence
- 9/2004-7/2012
- Weekly TeleECHO clinics with the Treatment Review Committee (TRC)
- TRC consisted of multidisciplinary team: UNM ID/GI specialist, pharmacist and DOC psychiatrist, nurse, addiction specialist.
- Over 300 patients started on HCV treatment
- Thousands of patient presentations
HCV Treatment in DOC

- Protocol included the following phases of evaluation and treatment:
  - Phase 1 screening and initial diagnosis which included presentation to the TRC
    - Psychiatric evaluation and a baseline screening for depression
    - Addiction screening with Texas Christian University (TCU) Drug Screen.
  - Phase 2 pre-treatment work-up including HCVRNA.
  - Phase 3 HCV antiviral treatment.
  - Phase 4 concluded the treatment and 6 month follow
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

Principal Endpoint

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

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

## SVR According to Genotype and Site of Treatment

<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>152/261 (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>

Community Health Workers in Prison
The New Mexico Peer Education Project

Photo consents on file with Project ECHO® and CNMCF
What does the NM PEP include? (Peer Educators)

- 40-hour intensive training
- Monthly site visit with Project ECHO™ staff to increase skills and knowledge
- 1 ½-hour monthly video-conferences
- Continuing education credits from Project ECHO™
NM PEP Statistics (since July 2009)

• 28 – 40 hour training sessions
• 307 peer educators trained
• 1,902 inmates attended 10-hour health classes led by peer educators
• 4,882 recently incarcerated individuals received the 1½-hour class led by peer educators
Success of the ECHO Model in Corrections

• Prior to ECHO, no inmates had received HCV treatment
• Access to multidisciplinary specialty care for underserved population
• Clinicians in the prisons reported high satisfaction with the teaching and co-management
Challenges

- Turnover of medical staff
- Multiple private medical vendors over time
- Access to room where technology housed (lock-downs, etc…)
- Cost of HCV medications
Use of Technology in Correctional Medicine

Lara Strick, MD, MS
Infectious Disease Physician, WA DOC
Corrections Program Director, Northwest AETC
Clinical Assistant Professor, University of Washington

Webex NCHN
Last Updated: Feb 18, 2015
Modified Project ECHO

- Weekly conference call all Hep C treaters at 8 facilities
  - MD & RN

- Support for clinical protocol and management

- Learning from colleague’s experience

- Combined with Care Review Committee decision making by vote

- Education
  - [http://www.hepatitisc.uw.edu](http://www.hepatitisc.uw.edu)
Direct Patient Care

• Pros:
  - More efficient when patients geographically dispersed
  - Face-to-face via Webex more personal than phone
  - Able to be more timely and address urgent issues as needed

• Cons:
  - Not as personal as true face-to-face
  - Unable to do exam
  - Difficult in higher custody levels, especially segregation
Email Consultation

- Clinical summary accompanied by photos for dermatology consultation
- Diagnosis and clinical recommendation
- Associated supporting articles
- Requires secure transfer of information via email