A Virtual ‘Community of Practice’ Approach by Rural Stakeholders in Managing Pneumoconiosis in the U.S.

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Objective

Discuss evidence basis for a virtual ‘community of practice’ approach in pneumoconiosis
Increasing prevalence and severity of Black Lung (CMDLD)
Project ECHO: a movement to demonopolize knowledge & amplify capacity to provide best practice care for underserved people

Principles of the ECHO Model

A. Amplification – Use technology to leverage scarce resources
B. Share Best practices to reduce disparity
C. Case-based learning to master complexity
D. Web-based Database to Monitor Outcomes

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Miners’ Wellness TeleECHO Program

Jointly held by the University & a community hospital in NM twice a month
Recognized by the American Thoracic Society as an innovation in fellowship education in 2019 & 2020
Rural COVID-19 innovation by HRSA Rural Health Information Hub

About 25 attendees per session
Clinical providers
Respiratory therapists
Benefits counselors
Attorneys
Mine safety officers
Home health professionals

75-minute format

10 min  Introduction & Announcements
15 min  Didactic
20 min  Didactic Q&A
10 min  Case Presentation
20 min  Case Discussion and Q&A
Pneumoconiosis hotspots are rural Appalachia & Mtn. West
Participants originate from these hotspots

Mortality hotspot counties for other pneumoconiosis in the United States
Dwyer-Lindgren JAMA. 2017;318(12):1136-1149

Geographical mapping indicates that participants in the ‘community of practice’ are located in pneumoconiosis mortality hotspots in the US, 2018-2019.
Characteristics of Surveyed Participants (n=70)

Sood et al. RRH 2020; 20: 5784

**Stakeholder group**
- Clinician: 29%
- Respiratory therapist: 20%
- Lawyers: 17%
- Benefits counselors: 13%
- Home health company professionals: 11%
- Others: 10%

**Proportion of rural miners served**
- >60%: 55%
- 41-60%: 26%
- 0-40%: 19%

**Duration of miner care (in years)**
- 1 yr.: 14%
- 2-5 yrs.: 21%
- 6-10 yrs.: 13%
- 11-20 yrs.: 19%
- >20 yrs.: 31%
% Participants Demonstrating Correct Responses to the Following Questions (n=70)

- Legal pneumoconiosis: 14%
- COPD GOLD criterion: 56%
- Supplemental oxygen eligibility: 57%
- B read profusion score: 57%
- Home-based interventions: 64%
- Compensation program eligibility: 70%
- Dust-related diffuse fibrosis: 73%
- Silica-related lung diseases: 74%
- Consequential conditions: 77%
- Exercise desaturation: 96%

Percent correct responses (n=70)
% Participants Rating Themselves as ‘Competent’, ‘Very Competent’ or ‘Expert’ on Self-efficacy Items, from a Convenience Sample of 70 Participants

- Interpret B-read reports of chest radiographs: 36%
- Ability to diagnose common health conditions in miners: 39%
- Determine eligibility for compensation under compensation programs: 43%
- Help manage common health conditions in miners: 46%
- Serve as the miners’ expert in your region: 53%
- Interpret arterial blood gas test results: 54%
- Interpret pulmonary function test results: 56%
- Advocate for miners to help them navigate the compensation process: 56%
- Assess the quality of the pulmonary function test: 58%
- Collaborate with and educate other team members: 63%
- Collect information required under the miners’ compensation programs: 64%
- Refer patients with diseases to appropriate experts: 70%
- Identify social, linguistic, cultural, economic, and educational barriers: 74%
- Empathy towards miners: 87%
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<thead>
<tr>
<th>Collective efficacy item (n=70 participants)</th>
<th>% who rate the item as agree or strongly agree</th>
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<tbody>
<tr>
<td>People in this learning community…</td>
<td></td>
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<tr>
<td>…are willing to help other members</td>
<td>93%</td>
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<tr>
<td>…build respect for each other's particular interests</td>
<td>91%</td>
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<tr>
<td>…help each other to improve patient care</td>
<td>91%</td>
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<tr>
<td>…find and share resources with each other</td>
<td>91%</td>
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<tr>
<td>…are a close-knit learning community</td>
<td>89%</td>
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<tr>
<td>…generally get along with each other</td>
<td>87%</td>
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<tr>
<td>…foster all members' ability to care for miners</td>
<td>87%</td>
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<tr>
<td>…can be trusted</td>
<td>87%</td>
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<tr>
<td>…able to manage conflicts of interests</td>
<td>86%</td>
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<tr>
<td>…figure out what choices to make when the clinic faces decisions</td>
<td>83%</td>
</tr>
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<td>…would intervene if a fellow member was arriving at a wrong conclusion</td>
<td>77%</td>
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<tr>
<td>…support each other in times of stress</td>
<td>73%</td>
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Knowledge transfer

<table>
<thead>
<tr>
<th>Description</th>
<th>Mean (SE)</th>
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<tbody>
<tr>
<td>Number of knowledge sources (N=70)</td>
<td>4.33 (0.36)</td>
</tr>
<tr>
<td>Proportion of knowledge sources outside of professional group (N=68)</td>
<td>0.47 (0.04)</td>
</tr>
<tr>
<td>Proportion of knowledge sources outside of stakeholder group (n=60)</td>
<td>0.51 (0.05)</td>
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Non-clinicians play a vital role in transfer of knowledge.
Knowledge Transfer among Rural-based Members

As rural patient base increases, participants report receiving knowledge from:

• Larger numbers of community members
• Greater variety of stakeholder groups
• Larger proportion of members outside their stakeholder group
Change in self-efficacy

Diagram showing scores for various clinical, medical logic, and soft skills categories before and after an intervention, with retrospective pre-test and post-test data indicated.
Change in self-efficacy between fresh & existing participants.
Change in self-efficacy between clinicians & non-clinicians
Summary: A virtual ‘community of practice’ in pneumoconiosis mortality hotspots

- Multiple professions represented, including 29% clinicians
- Lowest knowledge on ‘legal’ pneumoconiosis, among the questioned areas
- Rated highly on trust, respect, willingness to help, and being closely knit
- Knowledge transfer for most participants occurs from outside their stakeholder group
- Rural participants more likely to seek information
- Attorneys & benefits counselors play a disproportionate role in knowledge transfer
Summary

ECHO model can be successfully applied to professionals providing complex multidisciplinary care to miners.

Telementoring improves participants’ self-efficacy with respect to clinical, medicolegal, and soft skills.

Are we ready for a virtual developmental network model for black lung rural professionals?
Acknowledgements


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Questions