Predictors of Telemedicine Use for Chronic Disease Specialty Care in the Alaska Tribal Health System, 2015-2019

ELIZABETH D. FERUCCI, MD, MPH
JUNE 10, 2021
ALASKA NATIVE HEALTH RESEARCH CONFERENCE
We acknowledge the Dena’ina, on whose traditional lands we gather. We are grateful for the Dena’ina’s past and present stewardship of the waters, plants, animals and spiritual practices of this place.
Specialty Care in the ATHS

Specialists based at the Alaska Native Medical Center (ANMC) in Anchorage

Care delivery options:
- Hospital-based clinics (ANMC)
- Field clinics
- Telehealth

Example: Rheumatology Field Clinic Sites
Telehealth in the ATHS - History

Asynchronous:
Store and Forward - AFHCAN

Synchronous:
Live Video Visits
Research Specific Aims

Aim 1 • Determine the predictors of receiving care by video telemedicine for chronic disease

Aim 2 • Investigate the relationship between video telemedicine and clinical outcomes of chronic diseases

Aim 3 • Perform a cost comparison of video telemedicine and in-person visits for chronic disease specialty care
Research Specific Aims

Aim 1

• Determine the predictors of receiving care by video telemedicine for chronic disease

• Study funded to start 4/1/2019
• Collect data in setting of usual care
• Data collection for this presentation completed prior to COVID-19 pandemic
• Video telemedicine (VTC) almost 100% clinic-to-clinic at that time
Methods: Predictors of Telemedicine Use

Mixed methods including quantitative and qualitative data

Quantitative:
- Administrative data from electronic health record

Qualitative:
- Focus groups with patients

Mixed:
- Patient and provider surveys

What types of patients, providers, clinics, conditions more likely to use telemedicine?

Why?
**Recruitment and Data Collection**

Study approved by Alaska Area IRB and participating regional tribal health organizations

<table>
<thead>
<tr>
<th>Quantitative (EHR)</th>
<th>Qualitative (Focus Groups and Surveys)</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 4 regions of ATHS</td>
<td>• 3 recruitment locations</td>
</tr>
<tr>
<td>• Eligible patients:</td>
<td>• Eligible patients:</td>
</tr>
<tr>
<td>• Chronic disease</td>
<td>• Chronic disease</td>
</tr>
<tr>
<td>• Specialty care in ATHS</td>
<td>• Specialty care in ATHS</td>
</tr>
<tr>
<td>• Ever or never used telemedicine</td>
<td>• Ever or never used telemedicine (separate focus groups)</td>
</tr>
<tr>
<td>• Data collected 1/1/15-6/30/2019 from Cerner</td>
<td>• Recruited 8/2019-12/2019</td>
</tr>
<tr>
<td></td>
<td>• Providers surveyed in same regions</td>
</tr>
</tbody>
</table>

Plans for repeat data collection 3-4 years later to evaluate for changes
Data Analysis

Quantitative (EHR)
- Comparison groups:
  - Ever used telemedicine
  - Never used telemedicine
- Variables analyzed:
  - Demographics (patient/community)
  - Chronic conditions (types/number)
  - Visits (rates, inpatient/outpatient/emergency)
  - Types of specialty clinics visited
- Multivariate models:
  - Used logistic regression to consider influence of multiple variables on use of telemedicine (ever)

Qualitative (Focus Groups and Surveys)
- Focus groups:
  - Atlas.ti used for coding
  - Transcripts coded, grouped into themes
  - Coded as benefits, barriers, or deciding factors
- Patient and provider surveys:
  - Descriptive statistics
  - Compared ever vs. never users of telemedicine
  - Free text answers analyzed using qualitative methods as above, with themes identified
Factors Associated with Telemedicine Use: Quantitative (EHR Data)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Odds Ratio</th>
<th>95% CI</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (10 year increase)</td>
<td>1.20</td>
<td>1.13-1.27</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Male sex</td>
<td>1.49</td>
<td>1.22-1.80</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Region 2 (vs. 1)</td>
<td>2.36</td>
<td>1.49-3.80</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Region 3 (vs. 1)</td>
<td>2.44</td>
<td>1.67-3.73</td>
<td></td>
</tr>
<tr>
<td>Region 4 (vs. 1)</td>
<td>3.79</td>
<td>2.57-5.74</td>
<td></td>
</tr>
<tr>
<td>Outpatient visit rate/year (increase of 5)</td>
<td>1.25</td>
<td>1.17-1.34</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Cardiology clinic visit (any)</td>
<td>5.27</td>
<td>4.35-6.41</td>
<td>&lt;0.01</td>
</tr>
</tbody>
</table>

*Final multivariate model presented. Other factors considered in univariate analysis but not in final model: marital status, AN/AI vs. not, community access level, community level SES, # chronic conditions, inpatient visits/year, emergency visits/year
Results: Qualitative (Focus Groups)

Benefits
- Access to health care
- Saves time
- Improves communication
- Less travel
- Saves money

“If you looked at it in a sense that some places in Alaska are very hard to get to. Some people are more handicapped than others and don’t have the ability to come to town to see a doctor.”

Barriers
- Technology limitations
- Privacy/security concerns
- Clinic support required
- Patient preference for in-person visits

“Yeah, it was kind of glitch. And when you’re doing like a therapy session or like any doctor’s appointment, like missing a word is kind of crucial. And there’s a little bit of a delay”

Deciding Factors
- Availability of appointments
- Patient preference
- Type of service needed
- Phase of care
- Difficulty of travel
- Comfort with technology

“In my case, the provider couldn’t do an exam, and so, really couldn’t see what was wrong. And so that was kind of a disadvantage for me.”
### Results: Patient Survey

<table>
<thead>
<tr>
<th></th>
<th>Telemedicine ever user (n=49)</th>
<th>No telemedicine ever (n=104)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age 50 years or over</td>
<td>24 (49%)</td>
<td>65 (63%)</td>
<td>0.114</td>
</tr>
<tr>
<td>Female gender</td>
<td>39 (80%)</td>
<td>71 (68%)</td>
<td>0.096</td>
</tr>
<tr>
<td>Very comfortable or comfortable with new technology</td>
<td><strong>32 (65%)</strong></td>
<td><strong>75 (72%)</strong></td>
<td><strong>0.024</strong></td>
</tr>
<tr>
<td>Telemedicine visit worked well or very well for me</td>
<td>30 (61%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telemedicine worked well or very well for my provider</td>
<td>30 (61%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is acceptable to use telemedicine for a new condition</td>
<td>11/23 (48%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is acceptable to use telemedicine with a new provider</td>
<td>13/23 (57%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ever offered a telemedicine visit</td>
<td></td>
<td>9 (9%)</td>
<td></td>
</tr>
<tr>
<td>Open to a telemedicine visit if offered</td>
<td></td>
<td>71 (68%)</td>
<td></td>
</tr>
</tbody>
</table>

Similar demographics, overall health and health literacy in patients who had or had not used telemedicine*

Slightly higher comfort with new technology in those had had NOT used telemedicine

61% feel telemedicine works well overall for patient and provider

About half felt it was acceptable for a new condition or new provider

Most never users had never been offered telemedicine (91%) and were open to telemedicine if offered (68%)

*not all data shown
### Results: Provider Survey

<table>
<thead>
<tr>
<th></th>
<th>n (%) of providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very comfortable or comfortable with new technology</td>
<td>27 (93%)</td>
</tr>
<tr>
<td>More than 5 video visits performed in past month</td>
<td>10 (34%)</td>
</tr>
<tr>
<td>Telemedicine visits work well or very well for the patient, on average</td>
<td>19 (66%)</td>
</tr>
<tr>
<td>Telemedicine visits work well or very well for the provider, on average</td>
<td>16 (55%)</td>
</tr>
<tr>
<td>Best phase of care for using telemedicine is follow-up (vs. initial visit or no preference)</td>
<td>27 (93%)</td>
</tr>
</tbody>
</table>

- Similar to patients in views of how telemedicine works overall
- Most (93%) prefer telemedicine in follow-up phase of care
- Open ended data gathered on deciding factors (patient, clinic, and chronic condition-related)

It is awkward to meet someone and develop rapport with someone over video, but when you already have a relationship with them, then follow-up by video is relatively easy.
Conclusions

Quantitative research:
- Age, sex, region, outpatient visit rate, and visits to cardiology clinic were associated with ever using telemedicine in people with chronic diseases

Qualitative research:
- Many benefits and barriers identified
- Deciding factors include patient, provider, clinic, and condition-specific considerations
- Providers favor using telemedicine in follow-up phase of care, while patients have mixed opinions

This study adds to the literature on deciding factors for the use of telemedicine prior to the COVID-19 pandemic. These are expected to change over time.
Future Plans

Aim 1
• Evaluate changes in predictors of telemedicine use after the COVID-19 pandemic

Aim 2
• Investigate the relationship between video telemedicine and clinical outcomes of chronic diseases

Aim 3
• Perform a cost comparison of video telemedicine and in-person visits for chronic disease specialty care

Funding for 5 year period, 4/1/2019-3/31/2024
Acknowledgements

We are grateful to all study participants for their contribution to this work. We appreciate the support from tribal health organization leadership.

This project was supported by grant number R01 HS026208 from the Agency for Healthcare Research and Quality (AHRQ).

The content is solely the responsibility of the authors and does not necessarily represent the official views of the Agency for Healthcare Research and Quality.

Research Team:
Tammy Choromanski, MPH
Rabecca Arnold
Peter Holck, PhD
Connie Jessen, MA
Mouhcine Guettabi, PhD
Tzu-Ching Liu, ANP
Jaclynne Richards
*Sarah Freeman, PharmD
*Janet Johnston, PhD, MPH
*study design