VIDEO CONFERENCE SHARED MEDICAL APPOINTMENTS IMPROVES RURAL DIABETES CARE

VA Pacific Islands Healthcare System

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LEARNING OBJECTIVES

- Examine the fundamental attributes of Shared Medical Appointments (SMA).
- Evaluate challenges and barriers for rural health care.
- Identify the impact of a multi-disciplinary care team through SMA and the use of video-conferencing to improve Diabetes Mellitus (DM) outcomes in remote rural settings.
Faculty

Lisa Tokuda  Pharm D, CDE
Clinical Pharmacist for VA Primary Care Patient Aligned Care Team (PACT) PIHCS
Principle Investigator (PI): Video SMA to improve DM Care and Group Intervention for DM in Honolulu and American Samoa.

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Primary Care Provider, Post Traumatic Stress Disorder Rehabilitation Program, VA Pacific Islands Health Care System (PIHCS)

Dr. Tokuda Principle Investigator and Dr. Lorenzo Co-Investigator are the providers of VIDEO-CONFERENCE SHARED MEDICAL APPOINTMENTS IMPROVES RURAL DIABETES CARE"

Dr. Lorenzo and Dr. Tokuda declare that in the past 12 months they have nothing to disclose.
Current guidelines recommend the use of multi-disciplinary care models to improve diabetes outcomes. However, this can be difficult to accomplish in rural areas due to limited access to healthcare specialists. It is unknown whether increased access to multi-disciplinary care through SMA and the use of video-conferencing will improve diabetes outcomes in remote rural settings. This study targets the above obstacles using the Honolulu VA Medical Center advanced video-conferencing system in the Guam Community Based Outreach Clinic with telemedicine capabilities.
### Rural Population

**California**

- Low Population Density

<table>
<thead>
<tr>
<th></th>
<th>California</th>
<th>United States</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>5.1 million (10%)</td>
<td>50.1 million</td>
</tr>
</tbody>
</table>

- About 13% of CA's Population is Rural
- 44 of CA's 58 Counties are Rural Counties
- 80% of California's Land is Designated Rural

45% of Rural Californians live in Shortage Areas

http://www.csrha.org/factsheet.html
RURAL HEALTH CHALLENGES - PACIFIC ISLANDS
HOSPITAL ACCESS DISPARITIES

- 75% of Urban Area Residents live 1 - 78 mi away from a Hospital, average 10 mi

http://www.csrha.org/factsheet.html
“The entire county may only have one ambulance, so if that ambulance is bringing a [LTC] resident and somebody happens to have a wreck, there’s no EMS there to take care of them.”

Director of Telemedicine at Texas Tech
BENEFITS OF TELEHEALTH IN RURAL AREAS

3.5 million older Veterans live in rural areas & face singular challenges

- Limited access to providers
- Limited local health programs
- Transportation barriers
- Poverty

RURAL CONTEXT FOR HEALTHCARE

People Need Services
Not Locally Available
RURAL BARRIERS TO ACCESS

- Providers are Limited in Number & Type
- Geographic Location
  * Distance
  * Travel Time
- Fewer Healthcare Workers
- Fewer Facilities
CAN WE OVERCOME THE BARRIERS?
TECHNOLOGY . . .

PART OF THE SOLUTION?
Telehealth Overview for California Association of NPs

Image from http://www.ci.st-joseph.mo.us/health/health_history.cfm
“Telehealth is the use of electronic information and telecommunications technologies to support long-distance clinical health care, patient and professional health-related education, public health and health administration.”

US Dept of Health and Human Services (DHHS), Health Resources and Services Administration (HRSA) 2012
Telehealth Technology Retrospective

S. Korea 13.8 megabits, US 5.8

Wireless Connectivity

Internet Speeds ↑

Dial-Up Internet, Wires
Invest in building an ICT infrastructure, which has enormous potential to enhance health and health care over the coming decades.” (p 4)

<table>
<thead>
<tr>
<th>Technology</th>
<th>Technology Exists to Allow Remote Access to Providers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td><strong>Remote Access to Providers Can Decrease Distance &amp; Travel Time</strong></td>
</tr>
<tr>
<td>*Distance</td>
<td><strong>Remote Access Can Increase the Number &amp; Types of Providers Available</strong></td>
</tr>
<tr>
<td>*Travel Time</td>
<td><strong>Technology Can Be Used to Build a Support Network for Rural Healthcare Workers &amp; Facilities</strong></td>
</tr>
</tbody>
</table>
SOME COMMON BARRIERS TO TELEHEALTH

- Reimbursement
  - Technology
    * Appropriate
    * Affordable
    * Agreeable to User
  - Regulation
  - Resistance to Change
“There are times to stay put, and what you want will come to you, and there are times to go out into the world and find such a thing for yourself.”

Lemony Snicket, *Horseradish: Bitter Truths You Can’t Avoid*
HYPOTHESIS

We hypothesize that a non-physician multi-disciplinary SMA care model delivered to a remote rural setting via video-conferencing would improve diabetes outcomes.
SPECIFIC AIMS

Using video-conference technology and a non physician multi-disciplinary team “SMA” approach based from the VA Medical Centers in Hawaii and Rhode Island, we wish to:

1. Explore changes in hemoglobin A1c, blood pressure, and lipid values for veterans with diabetes in the Guam VA CBOC before and after receiving SMA video-conferencing (Intervention Group).

2. Compare these changes with veterans with diabetes from Guam with individualized appointments for self-care (Control Group).

· Such study could contribute to better care management of diabetes in remote and rural areas.
Diabetes mellitus (DM) is a complex chronic condition where quality comprehensive care is best provided in an interdisciplinary manner. Despite data showing success in SMA’s in improving DM care, the spread and access of these services is limited in rural areas due to lack of healthcare specialists & skill sets to conduct SMA’s. This geographic barrier may be overcome by video-teleconferencing SMAs. The overall objective of this study is to improve diabetes care at VA facilities lacking local expertise through video-SMAs, and to evaluate the efficacy the video SMA strategies compared to usual care.
METHODOLOGY: THEORETICAL UNDERPINNINGS

- **The Social Cognitive Behavior Theory** promotes healthy self-care behaviors such as healthy eating, exercise, glucose and blood pressure self monitoring and medication adherence.

- **The Trans Theoretical Model of Behavior Change** is a cyclic evolutionary process where individuals may recognize a need for change (knowledge) and based on readiness stage may act, prepare, or contemplate action.

- **The Chronic Care Model**, principles assist with the delivery of video-SMA and to fulfill the mission of patient-centered care. The CCM defines the basic elements for improving care in health systems at the organization and patient levels. As such, the group visit intervention comprehensively completes the elements of the chronic care model, within a systemic structure that promotes patient engagement and success.
**STUDY DESIGN**

**CONTROL GROUP**
- N=69 (no SMA)
- Diagnosis of DM & A1c >7
- Selected from electronic patient records
- Collected data at baseline and 4-8 months
- Endpoints: HbA1c, BP, lipids

**INTERVENTION GROUP**
- N=31 (SMA 6 grps of 4-6 veterans)
- Diagnosis of DM & A1c >7%
- Weekly SMA visits (Weeks 1-4)
  - Self-management education, Medication management, Patient assessment of care, Focus groups
- Monthly SMA Visits (month 3 & month 5)
- Endpoints: HbA1c, BP, lipids
A multi-disciplinary multi-expertise team of providers sees a group of patients (7-12) in a 1.5 to 2 hour visit.

The interactive visit incorporates education as well as clinical management & medication adjustment.
# Session and Format Parameters

## Logistics
- **Number Pts Invited** - 7-10
- **How many show?** - 5-8
- **Family members invited.**
- **Confidentiality/ Rules**
  - Each SMA in Introduction
- **Space requirements**
  - Large conference type room
- **Location Needs**
  - Diabetes education tools
  - BP, wt and lab work
- **Length of session**
  - 90 – 120 minutes

## Structure of sessions
- **Introduction and information education sharing:**
  - 45 minutes
- **Group discussion:**
  - integrated 20 minutes
- **Medical appointment session/medication titration**
  - 45 minutes
  - May be individual or in groups
STRATEGIES & TOOLS

- Team Based Care
- Group/Shared Appointments for Peer Support
- Motivational Interviewing
- Action Plans
- Conversation Map
- Therapeutic Options
- Self Management Education
- Cultural sensitivity
CONVERSATION MAPS
RESULTS & DISCUSSION
<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Control</th>
<th>SMA-Intervention</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>69</td>
<td>31</td>
<td>-</td>
</tr>
<tr>
<td>Age (yrs)</td>
<td>61.3 ± 9.1</td>
<td>60.4 ± 7.7</td>
<td>0.48</td>
</tr>
<tr>
<td>Asian/Pacific Islander (%)</td>
<td>71</td>
<td>55</td>
<td>0.17</td>
</tr>
<tr>
<td>Male (%)</td>
<td>89.9</td>
<td>100</td>
<td>0.07</td>
</tr>
<tr>
<td>HbA1c (%)</td>
<td>8.6 ± 1.4</td>
<td>9.1 ± 1.9</td>
<td>0.21</td>
</tr>
<tr>
<td>Weight (lbs)</td>
<td>204.8 ± 38.2</td>
<td>211.5 ± 51.9</td>
<td>0.61</td>
</tr>
<tr>
<td>Insulin, all forms (%)</td>
<td>78.2</td>
<td>64.5</td>
<td>0.21</td>
</tr>
<tr>
<td>Metformin (%)</td>
<td>66.6</td>
<td>74.2</td>
<td>0.44</td>
</tr>
<tr>
<td>Duration of diabetes (yrs)</td>
<td>2.6 ± 1.7</td>
<td>2.5 ± 1.2</td>
<td>0.91</td>
</tr>
<tr>
<td>CAD (%)</td>
<td>43.5</td>
<td>38.7</td>
<td>0.66</td>
</tr>
<tr>
<td>Hypertension (%)</td>
<td>95.7</td>
<td>96.8</td>
<td>0.79</td>
</tr>
<tr>
<td>Stroke (%)</td>
<td>10.1</td>
<td>6.5</td>
<td>0.55</td>
</tr>
<tr>
<td>Systolic BP (mmHg)</td>
<td>135.1 ± 15.9</td>
<td>141.8 ± 16.7</td>
<td>0.07</td>
</tr>
<tr>
<td>Diastolic BP (mmHg)</td>
<td>75.0 ± 11.3</td>
<td>80.8 ± 12.2*</td>
<td>0.03</td>
</tr>
<tr>
<td>Smokers (%)</td>
<td>62.3</td>
<td>61.3</td>
<td>1.00</td>
</tr>
<tr>
<td>Total cholesterol (mg/dL)</td>
<td>168.6 ± 47.5</td>
<td>173 ± 50.0</td>
<td>0.68</td>
</tr>
<tr>
<td>Triglycerides (mg/dL)</td>
<td>195.0 ± 144.7</td>
<td>232.1 ± 344.3</td>
<td>0.57</td>
</tr>
<tr>
<td>LDL cholesterol (mg/dL)</td>
<td>93.9 ± 39.8</td>
<td>94.5 ± 38.5</td>
<td>0.95</td>
</tr>
</tbody>
</table>
HbA1c levels were measured in the Control Group (N=69) and the Intervention-SMA Diabetes Education Group (N=31). Values represent the mean ± SE, *P=0.03.
HbA1c levels were measured in the Intervention-SMA Diabetes Education Group at baseline, 1 month, 3 months, and 5 months.
HbA1c levels were measured at 5 months (end of study) in the SMA-Diabetes Education Group according to two age groups (<65 yrs, N=19, >65 yrs, N=15). Values represent the mean ± SE. *Different from <65 Years, P=0.03.
HbA1c levels were measured at baseline and 5 months in the SMA-Diabetes Education Group according to two duration groups (<10 yrs, N=16; >10yrs, N=15). Values represent the mean ± SE. *Different from 65 Years, P<0.05.
Blood pressure (systolic & diastolic) were measured in the Control Group (N=62) and the Intervention-SMA Diabetes Education Group (N=31). Values represent the mean ± SE.
Blood pressure (systolic & diastolic) were measured in the Control Group (N=62) and the Intervention-SMA Diabetes Education Group (N=31). Values represent the mean ± SE.
LDL-cholesterol (LDL-c) and triglycerides (TG) were measured in the Control Group (N=69) and the Intervention-SMA Diabetes Education Group (N=31 LDL-c, N=29 TG). Values represent the mean ± SE.
LDL-cholesterol (LDL-c) and triglycerides (TG) were measured in the Control Group (N=69) and the Intervention-SMA Diabetes Education Group (N=31 LDL-c, N=29 TG). Values represent the mean ± SE.
### SMA HAS FEWER NUMBER OF EMERGENCY DEPARTMENT VISITS

<table>
<thead>
<tr>
<th></th>
<th>CONTROL (N = 69)</th>
<th>SMA INTERVENTION (N = 31)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Affected/at Risk (%)</td>
<td># Events</td>
<td>Affected/at Risk (%)</td>
</tr>
<tr>
<td>Emergency Department Visits</td>
<td>17.39%</td>
<td>16</td>
<td>3.23%</td>
</tr>
<tr>
<td>Hospital Visits</td>
<td>2.89%</td>
<td>4</td>
<td>3.23%</td>
</tr>
</tbody>
</table>
DISCUSSION

- 31 patients received SMA & charts of 69 controls were abstracted for a total of 100 patients in the study. Mean age was 61 ±8.4, and 93% (93 of 100) were males. Sixty one percent of patients had 6-15 years duration for diabetes and 13% (13 of 100) of patients had diabetes for greater than 15 years.

- Over the 5 month period, the intervention SMA group showed a significant decline in A1c vs. the control group.

- Within the SMA group, a remarkable decrease in A1c levels at the 5 month period among those age 65 & greater was observed. Similarly, a significant decrease in A1c levels was noted in the SMA group by the end of the study (5 mo.) that had diabetes for greater than 10 years vs. those with less than 10 years.

- No significant changes over time in blood pressure or lipid levels were found between the SMA versus the control group.

- Interestingly, the SMA group showed a significant reduction in incident rates for phone visits, unscheduled visits, ER visits, & hospitalizations compared to controls.
LIMITATIONS

- Controls are contemporaneous and not randomized

- Data analysis not adjusted for differences.

- Small sample size.
CONCLUSION

The SMA improved diabetes outcomes with potential to reduce healthcare utilization in a rural setting.
These results allow for the design of a large scale randomized-controlled trial of video-SMA vs. usual care for rural areas without multi-disciplinary expertise in diabetes.
ACKNOWLEDGEMENTS

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- The assistance from Mr. Arnold Lucero, Telehealth Technician, Guam CBOC, is kindly acknowledged.
REFERENCES


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