Technology to Support Aging in Place: A Community-Based Pilot Program for Older Adults with Heart Failure

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Critical Policy Concern

• Are we prepared to meet the health and social service needs of an aging population, both now and in the future?

• “Aging in place” policy approach for aging well:
  • “The ability to live in one’s own home and community safely, independently, and comfortably, regardless of age, income, or ability level for as long as one is able, as one ages” CDC, 2014
Accommodating a growing aging population...

- Technology can play a role in staying independent and managing health.
  - A number of technologies are available (e.g., sensor-based networks for activity monitoring, emergency help systems, robotics, online tools to support self-management).
  - Implementation of gerontechnologies is frequently unsuccessful in daily practice.

- Overarching question remains: How to successfully implement technology aimed to support aging in place?

Research Questions

• Can a technology approach be implemented by a community-based organization to support an independent living, but medically underserved and high-need population?

• Does the program help reduce hospital admissions and keep high-risk clients in the community?

• Are clients willing to adopt the technology and adhere to the monitoring regime? Are care coordinator staff able to support implementation?
Technology to Support Aging in Place

- TSAP is a remote client monitoring program emphasizing client education and chronic illness self-management.
- Program implemented by Area Agency on Aging & Disabilities (AAAD) in community.
TSAP Participants

- Eligible AAAD clients aged 60+ diagnosed with heart failure who were already enrolled in Care Coordinator program** were invited to participate in pilot ($N = 43$).

- Completed a personalized Heart Failure Care Plan and received education on HF self-management.

- Clients utilized the remote monitoring technology for a 6-month trial period.
  - Daily weight; blood pressure; medication management; health journal

**Clients in CC program were considered highest acuity based on health and dual eligibility for Medicaid/Medicare.
Personalized Care Plans

PERSONAL HEART FAILURE CARE PLAN

Overview
Heart failure is a chronic medical condition, and it is the nation’s leading cause of hospitalization in people age 65 and older. Individuals with this condition have benefitted from advances in medical care and treatment. The Area Agency on Aging & Disabilities of Southwest Washington, with Legacy Health, PeaceHealth, Sea Mar Community Health Centers and other collaborators, is inviting eligible individuals diagnosed with heart failure to participate in an educational program designed to support their heart condition, while they remain under the direct care of their physician(s). Through your participation in this voluntary educational program, we will determine if expanding these services would be beneficial to other individuals with heart failure or similar chronic medical conditions.

Personal Information
- **Your Name:**
- **Home phone #:**
- **Cell phone #:**
- **Date of birth (month/day/year):**
- **Home address (street, city, state, ZIP):**
- **Emergency Contact (optional):**
  - **Name:**
  - **Phone #:**
- **AAADSW Care Coordinator:**
  - **Name:**
  - **Phone #:**

Your Caregivers
- **Cardiologist:**
  - **Name:**
  - **Phone #:**
- **Primary Care Physician:**
  - **Name:**
  - **Phone #:**

Your Personalized Heart Failure Care Plan

**Important!** The following Care Plan is to be completed by your cardiologist or physician

Cardiologist’s or physician’s name:

**Date prepared:**

**Ejection fraction:**

1. **Weight** – Check your weight daily first thing in the morning after emptying your bladder and before eating breakfast. Your current weight is: ______ pounds.

**ACCEPTABLE:** It is acceptable or normal for your weight to increase by ______ pounds in two days, or ______ pounds in a week. Anything more than this amount should be addressed as detailed in the yellow (“CAUTION”) section or the red (“EMERGENCY”) section below.

**CAUTION:** If your weight INCREASES by more than ______ pounds in TWO days, or ______ pounds in a WEEK, take THIS action:

**EMERGENCY:** If your weight INCREASES by more than ______ pounds WITHIN 24 HOURS, or ______ pounds in a WEEK, take THIS action:

**Immediately contact your physician’s office for advice.**

**Call 911 or have someone take you to a local emergency department.**

2. **Blood Pressure (BP)** – Check your BP daily at _____ AM (+ or - 1 hour).

**ACCEPTABLE:** Your acceptable BP reading is between ____/____ and ____/____. Anything LESS than the lower acceptable level or MORE than the higher acceptable level should be addressed as detailed in the yellow (“CAUTION”) section or the red (“EMERGENCY”) section below.

**CAUTION:** If your BP reading at ANYTIME is BELOW ____/____ or ABOVE ____/____, take THIS action:

**Immediately contact your physician’s office for advice.**

3. **Heart Failure Journal:** Answer questions daily at _____ AM (+ or - 1 hour).

A. Today, have you felt dizzy, like you were going to faint or fall down?
- **Yes**
- **No**

B. Today, do you have increased swelling in your feet, ankles, legs or stomach?
- **Yes**
- **No**

C. Today, do you have a dry cough or feel more tired?
- **Yes**
- **No**

D. Today, is it hard to breathe when you lay down?
- **Yes**
- **No**

E. Today, do you have increased shortness of breath?
- **Yes**
- **No**

F. Overall, how are you feeling today?
- **Doing well**
- **Getting worse**
- **Much worse**

**ACCEPTABLE or NORMAL:** Your Heart Failure Journal responses (see question A through Q) should all be “No,” or “Doing Well” in response to question F. Any “Yes” responses should be addressed as detailed in the yellow (“CAUTION”) section or red (“EMERGENCY”) section below.

**CAUTION:** If you responded “Yes” or “Getting Worse” to any ONE of your Journal questions, take THIS action:

**Immediately contact your physician’s office for advice.**
Findings:

- Participants ranged in age from 60 – 89 years.
- Most reported poor (30%) or fair (53%) health.

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<th>Characteristics</th>
<th>Avg or N</th>
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<tbody>
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<td>Age</td>
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<tr>
<td>Gender</td>
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<td>Russian-speaking</td>
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<tr>
<td>Vocational/tech school/some college</td>
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<tr>
<td>Bachelor’s degree</td>
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</tbody>
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Data Sources

**Quantitative data:**

- Monthly data (over 1 year timeframe; 6 months pre/post TSAP):
  - PRISM risk scores
    - Inpatient, outpatient, ER visits
    - Health services costs
  - Patient Activation Measure (PAM)
  - AAAD contact with care coordinators
- Pre/post TSAP:
  - Social Functioning-12 scale
  - Health literacy
- Daily monitoring health data for 6 months:
  - Blood pressure, weight, journals, medication, and adherence alerts

**Qualitative data:**

- Focus groups with AAAD staff who implemented/facilitated the program (n = 17)
- Interviews with clients who participated in the 6 month trial (n = 15).
- Care coordinator and AAAD case notes.
<table>
<thead>
<tr>
<th>Challenges</th>
<th>Opportunities</th>
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<tbody>
<tr>
<td>• Time delays (e.g., connecting with providers; accessing electronic data)</td>
<td>• Educating clients/families about HF and health.</td>
</tr>
<tr>
<td>• Equipment problems (e.g., scale weight limit; blood pressure cuff size)</td>
<td>• Accountability; seeing clients change and improve in many ways.</td>
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<tr>
<td>• Establishing accurate HF dx.</td>
<td>• Staff became more invested with more information and involvement.</td>
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<tr>
<td>• Health acuity of clients (e.g., dialysis, high comorbidity)</td>
<td>• Clients seemed interested/excited about the program and technology.</td>
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<td>• Client schedule/routine issues.</td>
<td>• The “team” aspect of the project.</td>
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<td>• Literacy issues.</td>
<td></td>
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<td>• Additional, ongoing, staff training and education needed.</td>
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<tr>
<td>• Time burden for some staff.</td>
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Is TSAP associated with fewer hospital admissions?

- Hospital admissions among participants were reduced by 54%.
  - From 1.12 admissions per patient year to 0.51 admissions.

- Days spent in hospital by participants were reduced by 57%.
  - From 3 days per patient year to 1.3 days.
Participant Interviews (n = 15)

- Did participating in the program change anything for you?
  - Doing this helped to improve my routine so that I did not forget anything.
  - It really gave me something to look forward to every morning.
  - I became better about my meals – I actually lost some weight while on the project!
  - I am more organized with what I want to ask my doctor.
  - I still weigh myself often, which I never did before.
Considering next steps...

• Adapt program based on lessons learned in initial pilot test:
  - Identify one key Care Coordinator to implement program and provide follow-up with clients?
  - Utilize predictive analytics to improve alert system and feedback to clients?
  - Provide additional, on-going staff education and training?
  - Minimize the time lag with specialty care?
  - Expansion to capture additional chronic conditions and target younger age groups?
  - Better engage clients and their caregivers in the alerts?
  - Is the program sustainable and cost-effective?
Additional Parting Thoughts...

- Take into consideration:
  - Historical context and social change.
  - Importance of linked lives.
  - Life transitions and turning points.
  - Diverse populations
  - Balancing dignity, autonomy, health, and safety (e.g., see "Uninvited Guest")

Source: https://vimeo.com/superflux
One more gerontechnology resource at Washington State University:

• Tech4aging.wsu.edu
Thank you!

• For questions or additional information:

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