A Telephone Intervention to Improve Cardiac Rehabilitation Return Rates Among Patients at Risk for Non-Adherence: A Randomized Controlled Pilot Study

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Disclosure

• All authors have no conflicts of interest
CR is underutilized

Early drop out is common

Bundling has increased focus on adherence

Telephone interventions have been effective in other settings

(AHA/ACC, 2017; Balady et al., 2011; Doll, Hellkamp, & Ho 2015; Mampuya, 2012; Office of Disease Prevention and Health Promotion, 2017)
Purpose

• Primary Aim:
  • To determine if a motivational telephone intervention delivered shortly after outpatient CR intake would improve patient return rates

• Secondary Aims:
  • Estimate effect size
  • Feasibility
Design

• Randomized single-blinded trial

• IRB approved
  • Process intervention, rather than true “scientific experiment.”
Methods

- Study participants and setting:
  - Jan to Dec 2016 patients were sequentially selected
  - Baystate Medical Center Phase II CR program

- Inclusion criteria:
  - 21 years of age or greater referred to the program
  - Moderate to high risk for non-adherence

- Exclusion criteria:
  - Patients returning the next business day
  - Participants who scored low risk for non-adherence
## Risk Stratification

<table>
<thead>
<tr>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosis of MI PCI, HF or Stable Angina</td>
</tr>
<tr>
<td>Current smoker or quit less than 3 months ago</td>
</tr>
<tr>
<td>Diagnosis of depression and/or &gt;10 on PHQ9</td>
</tr>
<tr>
<td>Reported levels of work stress, financial stress or general stress</td>
</tr>
<tr>
<td>Travel issues Identified</td>
</tr>
<tr>
<td>Schedule conflicts recognized</td>
</tr>
<tr>
<td>Lives alone and/or no support system</td>
</tr>
<tr>
<td>&gt;75 years of age</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Risk Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-2</td>
<td>Low</td>
</tr>
<tr>
<td>3-5</td>
<td>Moderate</td>
</tr>
<tr>
<td>6-8</td>
<td>High</td>
</tr>
</tbody>
</table>

Methods

• Randomized
• Telephone call delivered after the participants initial exercise orientation and prior to the next anticipated date of return
• Semi-structured script
• Script grounded in the *Transtheoretical Model*
• Control group received the standard of care

*Prochaska & Norcross, 1999*
Outcome Measures

- Anticipated date of return
- Overall return rate
- Phone call length
- Days between orientation to return date
Analysis

• Two different analysis
  • Intention to treat
  • Per-protocol analysis
    • Excluded 11 out of 49 in the intervention group due to inability to be contacted
## Baseline Characteristics

<table>
<thead>
<tr>
<th>Baseline Characteristics</th>
<th>Intervention (n=49)</th>
<th>Control (n=51)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>63 ± 14</td>
<td>61 ± 16</td>
<td>0.50</td>
</tr>
<tr>
<td>Sex (Male)</td>
<td>19 (39%)</td>
<td>27 (53 %)</td>
<td>0.16</td>
</tr>
<tr>
<td>Risk Score</td>
<td>3.55 ± 0.89</td>
<td>3.31 ± 0.58</td>
<td>0.11</td>
</tr>
</tbody>
</table>

Values are n (%) or mean ± SD
## Baseline Characteristics

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Intervention (n=49)</th>
<th>Control (n=51)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surgical</td>
<td>12 (24%)</td>
<td>12 (23%)</td>
<td>0.90</td>
</tr>
<tr>
<td>Interventional</td>
<td>31 (63%)</td>
<td>28 (55%)</td>
<td>0.41</td>
</tr>
<tr>
<td>Other</td>
<td>5 (10%)</td>
<td>11 (22%)</td>
<td>0.10</td>
</tr>
</tbody>
</table>

Values are n (%)
# Results

<table>
<thead>
<tr>
<th></th>
<th>Intervention (N=51)</th>
<th>Control (N=51)</th>
<th>Absolute Effect</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Outcome: Anticipated Date of Return</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention to Treat N=49</td>
<td>39 (80%)</td>
<td>26 (51%)</td>
<td>29%</td>
<td>0.002</td>
</tr>
<tr>
<td>Per Protocol Analysis N=38</td>
<td>33 (86%)</td>
<td>26 (51%)</td>
<td>35%</td>
<td>0.0006</td>
</tr>
</tbody>
</table>

Values are n (%)
## Results

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control (N=51)</th>
<th>Absolute Effect</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Primary Outcome: Overall Return</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention to Treat N=49</td>
<td>40 (82%)</td>
<td>34 (66%)</td>
<td>16%</td>
<td>0.06</td>
</tr>
<tr>
<td>Per Protocol Analysis N=38</td>
<td>33 (86%)</td>
<td>34 (66%)</td>
<td>20%</td>
<td>0.03</td>
</tr>
</tbody>
</table>

Values are n (%)
## Secondary Outcomes

<table>
<thead>
<tr>
<th></th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Number of Days</td>
<td>3.36 ± 1.38</td>
<td>3.40 ± 0.89</td>
</tr>
<tr>
<td>Length of the Intervention</td>
<td>4.75 ± 2.86</td>
<td>-------</td>
</tr>
<tr>
<td><em>(minutes)</em></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Values are mean ± SD*
Discussion

- **Strengths**
  - Randomization
  - Blinding

- **Limitations**
  - Drop-out rate (n=11)
  - Single-center
Summary

• A 29% increase in return rates in the intention to treat group
• A 35% increase in return rate in the per-protocol analysis group
• Minimal resources needed
• Minimal time invested
Implications and Next Steps

• Implications:
  • Clinical practice
  • Financial and road to reform

• Next Steps:
  • Validating a risk stratification tool for non-adherence
  • Explore “booster” telephone interventions to support completion
Acknowledgments

• CR staff at BMC
• Capstone Team Members:
  • Quinn R.Pack MD, MSc
  • Heidi Szalai, MA, ACSM-CEP
  • Andrew Storer DNP, ACNP-BC, FNP-C, ENP-C
• IRB and H&V Research Team
• College of Our Lady of the Elms
Q&A

- Grace.LaValley@BaystateHealth.org
Reasons for Non-Return

- Medical Concerns
- Transportation
- Family Stressors/Lack of Support
Hello Mr./Ms. ______________. I am [caller’s name], a [type of clinician] from Baystate’s Cardiac Rehabilitation Program. I’m calling to see if you have any questions regarding your initial exercise class and to review some of the education that was provided to you. Is this a good time to talk? If yes, continue. If no, CALLER: Is there a better time that I can call you back?

CALLER: How was your initial exercise orientation?

CALLER: On a scale from 1-10, 10 being extremely committed to exercise and 1 being not at all committed, how ready are you to make exercise part of your lifestyle?

CALLER: What are your top reasons for making this commitment?

After asking questions regarding commitment, the caller should classify the patient into one of the following categories and provide the appropriate interventions based on stage of change.

CALLER: How would you like your health to be different?

The caller should focus how the patient’s health could be different with exercise. Review the benefits of exercise with the patient.

CALLER: Let’s review your short and long term exercise goals.

The caller should assist the patient on goal setting if goals were not established.

CALLER: Do you have any areas of concern regarding your individualized exercise plan?

CALLER: Now let’s review some of your risk factor for heart disease. There are some risk factors that we cannot change like family history and age, but there are some risk factors that we can change. Do you know your personal risk factors?

Review specific modifiable risk factors, how they relate to the patient’s diagnosis and how exercise can help modify those risk factors if appropriate.

CALLER: Is there any other concerns or questions you may have that you’d like to review?

If yes, explain, using plain language (no jargon or medical terms). If no, conclude telephone call.

CALLER: Thank you for your time. We look forward to seeing you back in the gym on [patient’s next exercise session]. If you have additional questions throughout the exercise program do not hesitate to ask while you’re in the gym or call us at 413-794-7175.


References


