Preventing Cardio-Metabolic Syndrome:
Lessons Learned from the Skyland Trail
Healthy Challenge Pilot

Background
Cardiometabolic syndrome

- Major risk factor for morbidity and early mortality
- Associated with atypical antipsychotics, mood stabilizing medications
- Aberrations in following domains
  - Body Mass Index (BMI)
  - cholesterol (hypercholesterolemia)
  - triglycerides (hypertriglyceridemia)
  - blood pressure (hypertension)
  - fasting glucose levels (hyperglycemia)
Healthy Challenge Pilot

Program Purpose and Goals:

- Healthy Challenge program is an evidence-based intervention program that is designed to delay, stabilize, or reverse the indicators of cardiometabolic syndrome
- Based on “Best Practices” from exhaustive literature review
- The program is designed to provide another layer of treatment and program offerings in addition to those already in place
- Healthy Challenge emphasizes self-directed behavior as client moves through continuum of care
- Springboard for scholarship in health promotion, disease prevention

Determining Eligibility for Participation

Qualifying Factors

- Clients taking a mood stabilizer and/or atypical antipsychotic
- Clients must commit to the following for 3 months or their entire length of stay:
  - participating in weekly individual and/or group psychoeducational activity
  - wearing an activity monitor that tracks daily movement
  - working with a personal trainer to complete at least 2 exercise sessions per week and complete at least one other independent exercise session for a total of 2 hours total weekly exercise
  - eating a restricted carbohydrate, high lean protein diet
  - participating in additional mindfulness and compassion meditation therapies
  - Structured monitoring of indices with continuous feedback
Disqualifying Factors

- Not taking and/or discontinuing use of a mood stabilizer/atypical antipsychotic
- Having an active eating disorder (BMI < 18)
- Not medically cleared for moderate to strenuous physical activity
- Severe dietary restrictions that would not allow client to comply with dietary restrictions
- Recent use of drugs that may impact cardiovascular functioning; i.e. cocaine

2014 Healthy Challenge Pilot Began

- Recruited eligible patients to attend Healthy Challenge Orientation
- Created strategies for engagement including
  - Drawing for a iPad for all current participants
  - Drawing for a gift cards for all current participants
  - Socialization opportunities
  - Fee incentive (paper submitted for publication)
- Collected data from 11 participants
- Analyzed results
  - BMI
  - Total Cholesterol
  - Triglycerides
  - Knowledge, attitudes and sense of self-efficacy
### BMI

Comparison of Average BMI between Skyland Trail Population and *Healthy Challenge* Participants

<table>
<thead>
<tr>
<th></th>
<th>Average BMI at Admission</th>
<th>Most Recent Average BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>ST Clients</td>
<td>27.96</td>
<td>30.7</td>
</tr>
<tr>
<td>Healthy Challenge</td>
<td>33.8</td>
<td>30.7</td>
</tr>
</tbody>
</table>

*80% of ST Patients experience an increase in BMI

### Total Cholesterol

Average Monthly Measure of Total Cholesterol for patients enrolled in *Healthy Challenge*

<table>
<thead>
<tr>
<th>Months Enrolled in Healthy Challenge</th>
<th>Total Cholesterol Level (mg/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>150</td>
</tr>
<tr>
<td>2</td>
<td>145</td>
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<tr>
<td>3</td>
<td>140</td>
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<td>4</td>
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<tr>
<td>6</td>
<td>125</td>
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<tr>
<td>7</td>
<td>120</td>
</tr>
</tbody>
</table>

Average
Triglyceride Levels

Average Monthly Triglyceride Level for Patients enrolled in Healthy Challenge

- Average

Months Enrolled in Healthy Challenge

Attitudes and Self-Efficacy

Self-Reported Attitudes and Self-Efficacy Associated with Participating in Healthy Challenge

- HC Beginning
- HC End

- % of patients reporting increase knowledge of cardiometabolic syndrome
- % of patients who thought sessions with personal trainer were effective
- % of patients who would recommend the program to someone else like them
- % of patients who believed they feel or would feel better after completing the program
- % of patients who were satisfied with overall program

Percentage

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

- 67% 67% 83% 83% 83% 60% 83% 83%
Results

- Body Mass Index (BMI) manifested a statistically significant decrease of three points for 7 of the 11 healthy challenge clients, p<.008
- Non-Healthy Challenge clients at the rehabilitation facility manifested a statistically significant 2-point increase in their BMI during the course of treatment
- Healthy Challenge clients also manifested a decrease in their total cholesterol during treatment (mean =22 points), p=.07
- Out of 11 participants, 5 had more than one day where they walked more than 10,000 steps, 7 had 2 or more days with more than 8,000 steps, and 9 clients did not have a day without 6,000 or more steps, thus showing that the intervention is associated with excellent levels of physical activity
- Ironic increase in triglyceride levels roughly a month into the program (ongoing research)

Implications

- The Healthy Challenge intervention leads to decreased BMI and high levels of physical activity
- This BMI decrease is more substantial when considering the fact that the typical client manifested a treatment related weight gain of 2 BMI points, reflecting a net loss of 5 BMI points
- Activity levels were high for most patients and cholesterol levels manifested a marginally significant decrease for the sample as a whole, with the decrease being over 20 points on average
- These findings suggest that a healthy living intervention is feasible in the context of a community mental health setting
The Next Phase of *Healthy Challenge*

**Lessons Learned**

- *Healthy Challenge* has saved 10 years of life across the 11 participants
- Clients who participate for less than 12 weeks can experience clinical improvements; but may not be in services long enough to determine statistical significance
- Find a way to continue wellness tracking for clients after discharge from treatment services
  - THRIVE Wellness Clinic
  - Post-discharge assessments with “booster” as needed
- Clients find value in the idea of personalized services, specifically personal trainer

- Meditation component was not used, valued by participants
- Motivation that is intrinsic much more powerful than extrinsic
  - Integrate into “recovery plan”
  - Key is sense of self efficacy
- Education and support are keys to success in maintaining healthy dietary and activity choices
  - Menu planning
  - Creating grocery shopping lists
  - Scheduling exercise
  - Personalizing goals and plans
Going Forward

Scholarship
- Assess predictive qualities of physical health indices and mental health indices
- "Drill down" by specific medication
- Organization-wide culture shift

Program
- Will become an opt-out program
- Staff involvement
- Maintain individual attention, goal planning
- Necessitate smoking cessation

Bibliography


