Intensive Cardiac Rehabilitation

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Financial Disclosures

- None to disclose.
Overview

- Evolution of Cardiac Rehab and Influence of Lifestyle Medicine
- Introduction to Intensive Cardiac Rehabilitation (ICR)
- Overview of ICR Programs
- Areas of Consideration for Potential Partners
Evolution of Cardiac Rehabilitation

1930s-1950s—Development of Cardiac Rehab
• Bedrest after acute myocardial infarction (AMI)
• Chair therapy introduced, walking incorporated

1970s—Structured Physical Exercise
• Exercise Alone—ECG-monitored exercise

Over Time to Present—Cardiac Risk Factor Modification
• Reducing lipids, blood pressure, weight
• Smoking cessation
• Nutrition counseling
• Psychosocial support

(Levine, SA; Lown, B, 1951) (Saltin, B, 1968) (Mampuya, W, 2012)
Influence of Lifestyle Medicine

- **Definition**
  - The integration of lifestyle practices into medicine
  - Scientific, evidence-based guidelines
  - Lower risk factors for chronic disease
  - Accommodate recovery, treatment, and/or management of conditions

## Introduction to ICR

<table>
<thead>
<tr>
<th>Traditional Cardiac Rehabilitation</th>
<th>Intensive Cardiac Rehabilitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 36 sessions</td>
<td>• 72 sessions</td>
</tr>
<tr>
<td>• 36 week limit</td>
<td>• 18 week limit</td>
</tr>
<tr>
<td>• 2 session limit per day</td>
<td>• 6 session limit per day</td>
</tr>
<tr>
<td>• Outpatient format</td>
<td>• Outpatient format</td>
</tr>
<tr>
<td>• Supervising Physician</td>
<td>• Supervising Physician</td>
</tr>
<tr>
<td>• Individualized treatment plan</td>
<td>• Individualized treatment plan</td>
</tr>
<tr>
<td>• ECG Monitored Exercise</td>
<td>• ECG Monitored Exercise</td>
</tr>
<tr>
<td>• Limited lifestyle education</td>
<td>• Comprehensive lifestyle</td>
</tr>
<tr>
<td>• Traditionally unprofitable</td>
<td>education</td>
</tr>
<tr>
<td>• CHF approved</td>
<td>• Sustainable</td>
</tr>
</tbody>
</table>

Intensive Cardiac Rehabilitation

- Qualifying Events or Conditions
  - **Acute myocardial infarction**
    - Within the preceding 12 months only
  - **Coronary artery bypass graft surgery**
    - No time limit
  - **Percutaneous transluminal coronary angioplasty or stenting procedure**
    - No time limit
  - **Current stable angina pectoris**
    - No time limit
  - **Heart or heart-lung transplant**
    - No time limit
  - **Heart valve repair or replacement**
    - No time limit

CMS Approval Stipulations

- An ICR program must show, in peer-reviewed published research, that it accomplished *one or more* of the following for its patients:
  1. Positively affected the progression of coronary heart disease
  2. Reduced the need for coronary bypass surgery
  3. Reduced the need for percutaneous coronary interventions
The ICR program must also demonstrate through peer-reviewed published research that it accomplished a statistically significant reduction in *five or more* of the following measures for patients from their levels before cardiac rehabilitation services to after cardiac rehabilitation services:

1. Low density lipoprotein
2. Triglycerides
3. Body mass index
4. Systolic blood pressure
5. Diastolic blood pressure
6. The need for cholesterol, blood pressure, and diabetes medications
# Medicare Reimbursement Rates for ICR

<table>
<thead>
<tr>
<th></th>
<th>Traditional Cardiac Rehab</th>
<th>Intensive Cardiac Rehab (ICR)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Visits Covered</strong></td>
<td>36</td>
<td>72</td>
</tr>
<tr>
<td><strong>Physician Office</strong></td>
<td>$17 - $25</td>
<td>$103</td>
</tr>
<tr>
<td><strong>Hospital</strong></td>
<td>$103</td>
<td>$103</td>
</tr>
<tr>
<td><strong>Program Availability</strong></td>
<td>No restrictions</td>
<td>Ornish Program for Heart Disease Reversal (Healthways)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pritikin Program (Pritikin)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benson-Henry Institute Cardiac Wellness Program (Massachusetts General Hospital)</td>
</tr>
</tbody>
</table>

**New ICR Reimbursement Rate**

**CMS’S CALENDAR YEAR 2017 HOSPITAL OUTPATIENT REIMBURSEMENT RATE:**

- CMS has announced a new national average rate of $110.24 per ICR session, effective January 1, 2017

<table>
<thead>
<tr>
<th>HCPCS Code</th>
<th>Short Descriptor</th>
<th>CI</th>
<th>SI</th>
<th>APC</th>
<th>Relative Weight</th>
<th>Payment Rate</th>
<th>National Unadjusted Copayment</th>
<th>Minimum Unadjusted Copayment</th>
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<tbody>
<tr>
<td>G0422</td>
<td>Intens cardiac rehab w/exerc</td>
<td>S</td>
<td></td>
<td>5771</td>
<td>1.4717</td>
<td>$110.24</td>
<td></td>
<td>$22.05</td>
</tr>
<tr>
<td>G0423</td>
<td>Intens cardiac rehab no exer</td>
<td>S</td>
<td></td>
<td>5771</td>
<td>1.4717</td>
<td>$110.24</td>
<td></td>
<td>$22.05</td>
</tr>
</tbody>
</table>
Medicare ICR Reimbursement Rates Over Time

Hospital Outpatient Dept (Intensive Cardiac Rehab)
Overview of ICR Programs

- **Pritikin Program**
  - Effective date 08/12/2010

- **Dr. Ornish's Program for Reversing Heart Disease**
  - Effective date 08/12/2010

- **Benson-Henry Institute Cardiac Wellness Program**
  - Effective date 05/06/2014
Nathan Pritikin

- Nathan Pritikin–1950s
  - Personal History
    - Serious coronary problems at 40 years old
    - Changed his diet to follow after the diet of the Tarahumara Indians
    - Reduced his serum cholesterol from 280 mg/dL to 122 mg/dL within 3 years
  - Lectured in Santa Barbara
  - Development of Pritikin Longevity Program
  - Autopsy in 1985
    - “...near absence of atherosclerosis and the complete absence of its effects...” (Hubbard et al., 1985)
Pritikin Intensive Cardiac Rehab

- 40 years of expertise
- Over 100 peer-reviewed published studies
- Licensed to providers and easy to implement
- Opportunity for improved outcomes, reduced readmissions, and enhanced revenue and program sustainability

(https://www.pritikinicr.com)
Pritikin Program Pillars

Regular Exercise  Healthy Eating Plan  Healthy Mind-Set

(© Pritikin ICR LLC, 2016. Confidential and Proprietary. Not to be duplicated.)
The Pritikin Eating Plan

- Predominately plant-based
  - Minimally processed vegetables, fruits, whole grains, starchy vegetables, and plant-based proteins
- Modest amount of animal foods
  - Egg whites, nonfat dairy and dairy substitutes
  - Lean protein-rich animal foods
    - ≤ 1 serving (3.5 to 4 oz.)/day
    - Omega-3-rich fish at least 2x/week
    - White meat poultry, game meat ≤1x wk
    - Other lean red meat ≤1x mo.
- Low in sodium
  - ≤1500 mg sodium/day
  - A 1:1 calorie to mg sodium ratio in packaged foods
- Low in all added and refined fats
  - No more than 20% calories from fat in packaged foods
  - No more than 1 teaspoon (oil)/1000 calories consumed
- Low in added sugar
  - No sugar in the first 3-5 ingredients of packaged foods

(https://www.pritikin.com)
CMS Analysis – Pritikin ICR

An ICR program must show, in peer-reviewed published research, that it accomplished *one or more* of the following for its patients:

1. Positively affected the progression of coronary heart disease
2. Reduced the need for coronary bypass surgery
3. Reduced the need for percutaneous coronary interventions

YES

- Research by Barnard and colleagues (1983)
  - Small sample size (n=64), long term follow up—all recommended for bypass prior to enrollment
  - Four deaths in five years (6%)
  - Twelve patients had bypass surgery after five years (19%)
- Participation in Pritikin Program—significant reductions:
  - Low density lipoprotein
  - Triglycerides
  - Body Mass Index
  - Systolic blood pressure
  - Diastolic blood pressure

Studies by Barnard and colleagues (1992, 1997)
- Participation in Pritikin Program—significant reductions:
  - Low density lipoprotein
  - Triglycerides
  - Body Mass Index
  - Systolic blood pressure
  - Diastolic blood pressure
  - Medication use
A Typical Day with Pritikin ICR

- **Pritikin ICR**
  - Typically two sessions a day/ three times a week
    1. ECG monitored cardiovascular exercise and stretching
      - Yoga available after regular exercise
    2. Education
      1. Class offering for the day
        a. Nutrition class
        b. Cooking class
        c. Healthy mind-set class
      2. Pritikin video
        - Various class times throughout the week
          - Convenient for working individuals
          - Efficient with two hour time blocks
        - Consistent scheduled class groups
          - Develops community
          - Predictability for patients and staff
Dr. Ornish’s Program for Reversing Heart Disease ®

- Dr. Dean Ornish, MD, –1970s
  - The Ornish Program for Reversing Heart Disease
    - Multisite Cardiac Lifestyle Intervention Program and the Lifestyle Heart Trial Program was initially described in the 1970s

- 37 years of scientific evidence
  - Conducted by Dr. Ornish, MD, and colleagues in collaboration with the UC San Francisco and other leading academic institutions
Dr. Ornish’s Program for Reversing Heart Disease ®

- Healthways
  - Certifies sites
  - Trains multidisciplinary teams
  - Annual re-certiﬁcation
- Increasing number of commercial payer coverage
- Opportunity for strategic service line development
- Proven clinical outcomes and reduced readmissions

Four Lifestyle Elements

Eat Well
Move More
Stress Less
Love More

(https://www.ornish.com)
Ornish Lifestyle Medicine™ Dietary Guidelines

• Eat mostly plants in their natural form
  ○ Vegetables, fruits, whole grains, legumes, and soy

• Eat mostly plant-based proteins
  ○ Non-fat dairy foods (≤2 servings/day) and egg whites
  ○ Tofu, tempeh, beans, and legumes
  ○ Meat, poultry, fish and any products made from these foods are eliminated

• Limit bad carbs
  ○ Refined carbs, white flour, white rice, sugar, and concentrated sweeteners

• 4 grams of good fat a day
  ○ Fish oil, flaxseed oil, nuts, seeds, and plankton based omega-3 fatty acids

• Moderate salt use
  ○ Spices, herbs, citrus and vinegars are encouraged

• Caffeine
  ○ Up to 2 cups of green tea a day
  ○ Coffee limited to 1 cup or 2 cups of decaf or 2 cups of black tea a day

(https://www.ornish.com)
CMS Analysis – Ornish Program

- An ICR program must show, in peer-reviewed published research, that it accomplished **one or more** of the following for its patients:
  1. Positively affected the progression of coronary heart disease
  2. Reduced the need for coronary bypass surgery
  3. Reduced the need for percutaneous coronary interventions

- **YES**
  - The Lifestyle Heart Trial—(Ornish et al., 1998)
    - Small sample size (n=43)
    - Significant regression of coronary atherosclerosis measured by angiography
  - Multicenter Lifestyle Demonstration Project—(Ornish et al., 1998)
    - Reduction in revascularization at 3 year follow-up
    - Continued reduction in revascularization at 5 year follow-up
      - Usual care group had a 2.5 times greater risk of cardiac events
      - 87.9% of people who began the 73 hr program were still following the program one year later (Ornish, 2011)
The Multisite Cardiac Lifestyle Intervention Program
(Daubenmeir et al., 2007; Frattaroli et al., 2008; Silberman et al., 2010)
- Participation in Ornish Program—significant reductions:
  - Low density lipoprotein
  - Triglycerides
  - Body Mass Index
  - Systolic blood pressure
  - Diastolic blood pressure

The Lifestyle Heart Trial—(Ornish et al., 1983, 1990, 1983)
- Participation in Ornish Program – significant reductions:
  - Low density lipoprotein
  - Triglycerides
  - Body Mass Index
  - Systolic blood pressure
  - Diastolic blood pressure
  - Medication use
A Typical Day with the Ornish Program

- The Ornish Program
  - Delivered over the course of nine weeks
  - Four hour sessions twice a week—18 sessions total
    - Exercise
    - Group support
    - Stress workshop
      - Curative yoga at the end
    - Nutrition lecture over mealtime
  - Cohort groups
    - 8-16 patients
    - Small and consistent
    - Develops close community
    - Adequate staff attention and follow through
  - Alumni groups after completion
Benson-Henry Intensive Cardiac Rehabilitation

- **Dr. Herbert Benson, MD,–1960s**
  - Relaxation Response researcher
  - Connection between stress and hypertension
  - Disease prevention through self care and healthy lifestyle choices
  - Between 60-90% of healthcare visits are related to stress

(http://bensonhenryinstitute.org)
CMS Analysis – Benson-Henry Program

• An ICR program must show, in peer-reviewed published research, that it accomplished one or more of the following for its patients:
  1. Positively affected the progression of coronary heart disease
  2. Reduced the need for coronary bypass surgery
  3. Reduced the need for percutaneous coronary interventions

• YES
  1. Medicare Lifestyle Modification Program Demonstration—(Zeng, 2013)
     - Mortality rate was lower at one year and three years compared to controls – specific hospital diagnoses not reported
     - Reductions in all-cause mortality and cardiovascular mortality
     - Reduction in death hazard among participants
     - Not fully published in a peer-reviewed journal
Journal of Cardiopulmonary Rehabilitation and Prevention
(Casey, 2009)
- Participation in Benson-Henry—significant reductions:
  - Low density lipoprotein
  - Triglycerides
  - Body Mass Index
  - Systolic blood pressure
  - Diastolic blood pressure

Journal of Alternative and Complementary Medicine
(Dusek, 2008)
- Participation in Benson-Henry—significant reductions:
  - Systolic blood pressure
  - Medication use
Transition Time for Benson-Henry ICR

- Partnership with Massachusetts General Hospital
  - Benson-Henry ICR team trained group at Mass. General
  - Restructuring program to launch at Mass. General

- Anticipated Program Structure
  - Three hours once a week
    - Cardiac exercise
    - Stress management and meditation
    - Nutrition counseling and classes
OHH Outpatient Cardiac Rehabilitation

Established November 3rd, 2014
Our Patient Population

Current OHH Outpatient Cardiac Rehab
Patient Enrollment Classification by Age

Number of Patients

- 60s: 92
- 70s: 67
- 80s: 27
- 90s: 4
- 20s: 1
- 30s: 4
- 40s: 9
- 50s: 36

Average Age: 64.4 years
Total Enrolled: 240

R. Adamiec. April 2016
# Sample Patient Outcomes

## Male - 59 Years Old

**MI/Stent RCA**

<table>
<thead>
<tr>
<th>Metric</th>
<th>Pre Rehab</th>
<th>Post Rehab</th>
<th>% Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cholesterol</td>
<td>123</td>
<td>100</td>
<td>18</td>
</tr>
<tr>
<td>Non-HDL</td>
<td>92</td>
<td>46</td>
<td>50</td>
</tr>
<tr>
<td>HDL</td>
<td>31</td>
<td>54</td>
<td>74</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>198</td>
<td>68</td>
<td>65</td>
</tr>
<tr>
<td>HA1C</td>
<td>11.4</td>
<td>5.8</td>
<td>49</td>
</tr>
<tr>
<td>Weight</td>
<td>196.4</td>
<td>175</td>
<td>10</td>
</tr>
<tr>
<td>Body Fat</td>
<td>26.31</td>
<td>20.8</td>
<td>5</td>
</tr>
<tr>
<td>Waist</td>
<td>40.5</td>
<td>36</td>
<td>9</td>
</tr>
<tr>
<td>BMI</td>
<td>30.8</td>
<td>27.4</td>
<td>10</td>
</tr>
<tr>
<td>VO2 Max</td>
<td>22.4</td>
<td>49.1</td>
<td>83</td>
</tr>
</tbody>
</table>
Support on All Levels

- Doctor’s automatic referral
- Staff visits to inpatients with referral
- Hospital’s inpatient menu – Pritikin offerings
- Orientation classes
- Initial evaluation
- Monthly newsletter
- Supportive environment
- Phase III for graduates
Why Intensive Cardiac Rehabilitation

- Supported by peer-reviewed evidence
- Integrative patient centered care
- Comprehensive education and exercise
- Evidence of patient adherence and benefit
- Opportunity for improved outcomes
- Opportunity for reduced readmissions
- Opportunity for reduced healthcare costs
Areas of Consideration for Potential Partners

• Considerations
  ○ Hospital culture and processes
  ○ City/state openness
  ○ Physician agreement
  ○ Patient population response
  ○ Contractual commitment
  ○ Changes in healthcare
  ○ Healthcare costs and readmissions
CHANGED LIVES!
Thank You

Questions?

FOR ADDITIONAL QUESTIONS
RADAMIEC@OKHEART.COM
(405) 608-4645

FOR MORE ABOUT ICR:
PRITIKIN ICR: HTTP://WWW.PRITIKINICR.COM/
ORNISH ICR: HTTPS://WWW.ORNISH.COM/
BENSON-HENRY ICR: HTTP://BENSONHENRYINSTITUTE.ORG/