Cardiac Rehabilitation: A life changing therapy

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Goals of this conference:
- Define cardiac rehab
- Discuss phases of rehab
- Define eligibility
- Discuss benefits of rehab
- Express the importance of rehab

Post myocardial infarction, which therapy was shown to have a 7% reduction in mortality at 5 weeks?
1) Aspirin
2) ACE inhibitors
3) Beta blockers
4) Statins
5) Cardiac Rehab

Post myocardial infarction, which therapy was shown to have a 11% reduction in cardiovascular mortality at 1 year?
1) Aspirin
2) ACE inhibitors
3) Beta blockers
4) Statins
5) Cardiac Rehab

Post myocardial infarction, which therapy was shown to have a 23% reduction in vascular mortality at 35 days?
1) Aspirin
2) ACE inhibitors
3) Beta blockers
4) Statins
5) Cardiac Rehab

Post myocardial infarction, which therapy was shown to have a 25% reduction in cardiovascular mortality at 5 years?
1) Aspirin
2) ACE inhibitors
3) Beta blockers
4) Statins
5) Cardiac Rehab
Post myocardial infarction, which therapy was shown to have a 26% reduction in cardiovascular mortality at 1 year?

1) Aspirin
2) ACE inhibitors
3) Beta blockers
4) Statins
5) Cardiac Rehab

Deaths from Cardiovascular Disease

Deaths from Cardiovascular Disease have decreased over the last 30 years

Why?

- 44% of the decline attributable to changes in risk factors
  - Lower total cholesterol--24%
  - Lower systolic blood pressure--20%
  - Lower smoking prevalence--12%
  - Decreased physical inactivity--5%
  - Increased number of death from increased BMI 8% and DM 10%

Why?

- 47% of the decline attributable to treatment
  - Secondary prevention post MI/revascularization--11%
  - Initial therapy for AMI--10%
  - Treatment of HF--9%
  - Revascularization for chronic angina--5%
  - Other therapies including antihypertensives and lipid-lowering primary prevention therapies--12%
What is Cardiac Rehab?

Cardiac Rehab Defined
Comprehensive LIFESTYLE MODIFICATION PROGRAM consisting of EXERCISE AND EDUCATION through collaboration from an interdisciplinary team.

Interdisciplinary Staff
- Medical Director (Dr. Bhalla)
- Exercise Physiologists
- Exercise Specialist
- RNs
- Dietitians
- Tobacco Treatment Specialist
- Pharmacists
- Emotional health counseling (outside referral)

How did we get here?…

Myocardial infarction first described 1912
Patients were confined to the bed for 2 months in fears that physical activity would lead to the formation of aneurysms, heart failure, cardiac rupture, or sudden death

1940
“Chair therapy” described

1950
“Early ambulation” begins
Patients were allowed 3-5 minutes of walking twice daily during the 4th week post-MI

1955
Paul Dudley White consults on President Eisenhower after his MI
He believed that “a normal person should exercise seven hours a week. If you cannot exercise an hour everyday, make up the difference on the weekend”

1960
Hospital stay after MI decreased to 3 weeks
Outpatient rehab programs began to appear

1970
Wenger and colleagues publish rehab protocols

1986
The American Association of Cardiovascular and Pulmonary Rehabilitation (AACVP) formed

1995
Clinical guideline on “Cardiac Rehab” issued by the US Department of Health and Human Services, Agency for Healthcare Policy and Research

2006
US Center for Medicare and Medicaid Services concluded that cardiac rehab is “reasonable and necessary” after certain diagnoses

Who is eligible?

CLASS 1 INDICATION
1) Myocardial infarction (NSTEMI or STEMI within past 12 months)
2) PCI (within past 12 months)
3) Cardiac surgery (CABG, valve replacement, transplant)
4) Chronic stable heart failure (EF < 35% and NYHA class II-IV symptoms)
5) Chronic stable angina
6) PVD (not covered by insurance)
Phases of Cardiac Rehab

Exercise is just one piece the puzzle!

Having fun is part of healing!

Phase I
• Usually in the inpatient setting
• Goals to increase mobility, flexibility, endurance, and balance.
• Early mobilization post-op can reduce ICU stays up to 20% and floor stays up to 40% saving an estimated $1.5 million per year.


Phase II, Early Outpatient “Cardiac rehab”

Initial Assessment / Plan Development
1. Exercise Eval — functional capacity (6 min walk) & balance
2. Nutrition Eval — BMI, lipids, eating habits
3. Psychosocial Eval — Screen for depression, anxiety, QOL, fears, concerns
4. Education Eval — Med review, BP, Ed level, etc.

*The initial treatment plan & all 4 components are a mandatory requirement by Medicare and AACVPR for program certification

Phase II “Cardiac rehab”

• Composed of aerobic exercise, strengthening exercises, flexibility, and balance exercises.
• Exercise in a monitored setting.
• Active communication with referring provider.

*Insurance Covers, generally 24-36 visits, 2-3d/wk, 2-4 months
*Can be repeated yearly for HFrEF or after each new PCI
“Phase III”
(Wellness Program)

- Self-pay
- Education
- Supervised exercise
- Can attend indefinitely

Pricing:
- 3 days/week for 30 days - $60
- 2 days/week for 30 days - $40

Evidence for cardiac rehab

Why is referring Important?
Post-PCI, referral & enrollment in CR was considered on the same plane as the use of statins and ASA

Evidence for cardiac rehab

Exercise-based cardiac rehabilitation for coronary heart disease

- Reduced hospital admissions (RR 0.82)
- Reduced CV mortality (RR 0.74)
- No change in MI or repeat revascularization (PCI or CABG)
- No change in all-cause mortality

HFrEF

- Reduced hospital admissions (RR 0.61)
- Improved QOL (-5.8 pts on MLWHF)
- No change in all-cause mortality

No Randomized Controlled Data, but...

- Between 1982 and 1998, 2019 people had an MI in Olmstead Co, Minnesota and 1821 of these survived to discharge
- Of these, 55% participated in Cardiac Rehab:
  - 38% of all women vs 67% of all men with MI
  - Participation declined with increasing age
  - Participation remained stable over the time span
Survival in the Participants and Non-participants of Cardiac Rehab

- No Rehab
- Rehab

% Survival

P<0.001

Cumulative incidence of death by number of cardiac rehabilitation sessions attended.

Despite proven benefits, CR is significantly underutilized!

- Of eligible patients, only 14-35% of MI survivors and approximately 31% of patients after CABG participate
- Lowest in women, minorities, socio-economically disadvantaged and the elderly

Barriers to Participation
- Cost (~$20-60 per session)
- Lack of insurance (Medicare covers 36 sessions)
- Time commitment
- Distance to cardiac rehab program
- Social factors
- Transportation issues
- Return to work
Cardiac Rehab Centers in KY
- Ashland
- Barbourville
- Benton
- Bowling Green
- Campbellsville
- Corbin
- Columbia
- Corydon, IN
- Cynthiana
- Danville
- Edgewood
- Elizabethtown
- Flemingsburg
- Fort Thomas
- Frankfort
- Franklin
- Georgetown
- Glasgow
- Greenville
- Hardinsburg
- Hartford
- Hazard
- Henderson
- Hopkinsville
- La Grange
- Leitchfield
- Lexington
- London
- Louisville
- Madisonville
- Mayfield
- Maysville
- Morehead
- Mt. Sterling
- Mt. Vernon
- Murray
- New Albany
- Owensboro
- Paducah
- Paris
- Pikeville
- Prestonsburg
- Princeton
- Richmond
- Russell Springs
- Russellville
- Scottsville
- Shelbyville
- Whitesburg

Lifestyle Changes are Tough!
- Smoking Cessation
- Abnormal cholesterol
- Blood pressure control
- Diabetes control
- Weight management
- Emotional health
- Sedentary lifestyle
- Medication adherence

Future of Cardiac Rehab
Telehealth Cardiac Rehab
- Uses telehealth devices such as video conferencing, fitbit, and remote telemetry to monitor exercise
- Appears to be at least as effective for improving cardiovascular risk factors and functional capacity as traditional CR

Electronic Referral vs Verbal Endorsement of CR
Physician endorsement of CR is one of the most powerful predictors of attendance
Summary

- Cardiac rehab is a comprehensive lifestyle modification program consisting of exercise and education
- Cardiac rehab reduces hospital admissions and improves QOL in HFrEF
- Cardiac rehab reduces hospital admissions and CV mortality in coronary heart disease
- There are many barriers to compliance with cardiac rehab
- Physician endorsement is one of the strongest predictors of rehab attendance

References:

- Aspirin
- Beta blocker
- ACEi
- Statin
- Nitroglycerin
- CARDIAC REHAB