Time to rethink phase 1 cardiac rehabilitation

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I have no potential conflicts of interest to disclose regarding this presentation
Plan

1) Background

2) History of cardiac rehabilitation (CR)

3) Objectives and components of phase 1 CR

4) Conclusions
Cardiac rehabilitation (CR) is defined as the “sum of activity and interventions required to ensure the best possible physical, mental, and social conditions so that patients with chronic or post-acute CVD may regain their proper place in society and lead an active life”.

CR is divided into 3 phases

- **Phase I**: in-hospital phase
- **Phase II**: early post-discharge phase (2-16 weeks)
- **Phase III**: long-term maintenance phase

World Health Organization 1980
Most studies have focused on phase 2 CR

Phase 2 cardiac rehabilitation has been demonstrated through meta-analysis to reduce all-cause mortality by 20% and is considered as a class I recommendation after a cardiovascular event.

Components of phase 2 CR programs are well defined

- Nutritional Counselling
- Clinical assessment
- Physical activity counselling

Multidisciplinary intervention

- Risk factors management
- Psycho-social management
- Exercise training

Limited evidence and no consensus for phase 1 CR

- Inclusion of 26 studies
- RR all-cause mortality: 0.79 (95% CI, 0.69-0.92) at 1 year
- Benefits only in before-after studies not in controlled studies
- Specific components could not be evaluated

In-hospital phase post-MI: PAST

Lewis T. Disease of the Heart
New York, Macmillan, 1937

8 weeks of bed rest
In-hospital phase post-MI: PAST

Lewis T. Disease of the Heart
New York, Macmillan, 1937

White PD. Heart Disease

8 weeks of bed rest

4 weeks of bed rest
In-hospital phase post-MI: PAST

**Lewis T.** Disease of the Heart
New York, Macmillan, *1937*  
8 weeks of bed rest

**White PD.** Heart Disease
4 weeks of bed rest
"A vigorous five mile walk will do more good for an unhappy, but otherwise healthy adult than all the medicine and psychology in the world."
Dr Paul D. White: the founder of preventive cardiology

Dwight Eisenhower
President of the USA
Myocardial infarction in 1955

Continued as president
Early rehabilitation

Example for millions of coronary patients that life can go on after a MI

But... 6 additional MI until his death in 1969

In-hospital phase post-MI: PAST

<table>
<thead>
<tr>
<th>Author</th>
<th>Title</th>
<th>Edition</th>
<th>Publisher</th>
<th>Year</th>
<th>Bed Rest Period</th>
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<tbody>
<tr>
<td>Lewis T.</td>
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<td>White PD.</td>
<td>Heart Disease</td>
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<td>Wood P.</td>
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<td>London. Eyre and Spottiswoode, <strong>1960</strong></td>
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<tr>
<td>Friedberg CK.</td>
<td>Diseases of the Heart</td>
<td>3rd ed.</td>
<td>Philadelphia, W.B. Saunders, <strong>1966</strong></td>
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<td>Wood P.</td>
<td>Diseases of the Heart and Circulation</td>
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<td>London. Eyre and Spottiswoode, <strong>1968</strong></td>
<td>2 weeks of bed rest</td>
</tr>
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In-hospital phase post-MI: PRESENT

- **NSTE MI ESC guidelines.** Eur Heart J. 2007;28:1598-1660
  “Patients with NSTE-ACS should be hospitalized for at least **24 hours after successful stenting** of the culprit lesion”

- **STEMI ESC guidelines.** Eur Heart J. 2008;29:2909-2945
  “...the patient who has become asymptomatic and with minimum myocardial damage may go home **after a few days**”
In-hospital phase post-MI: FUTURE

A Randomized Study Comparing Same-Day Home Discharge and Abciximab Bolus Only to Overnight Hospitalization and Abciximab Bolus and Infusion After Transradial Coronary Stent Implantation

Olivier F. Bertrand, MD, PhD; Robert De Larochellière, MD; Josep Rodés-Cabau, MD; Guy Proulx, MD; Onil Gleeton, MD; Can Manh Nguyen, MD; Jean-Pierre Déry, MD, MSc; Gérald Barbeau, MD; Bernard Noël, MD; Éric Larose, DVM, MD; Paul Poirier, MD, PhD; Louis Roy, MD;

for the Early Discharge After Transradial Stenting of Coronary Arteries (EASY) Study Investigators

- 1005 patients: 66% unstable angina, 20% NSTEMI
- Treated by transradial PCI
- Randomized to same-day discharge or overnight hospitalisation
- No significant differences in outcomes at 30 days
- Save 1141 $ at 30 days

Circulation. 2006;114:2636-2643
We have a problem...

Objectives/components

- Nutritional counselling
- Clinical assessment
- Physical activity counselling
- Multidisciplinary intervention
- Exercise training
- Psycho-social management
- Risk factors management
Why should we care about this short phase 1 CR?

1. Unique learning or teaching moment

2. Need for a «survival kit» before discharge

3. Best opportunity to refer patients to phase 2
1. Unique learning or teaching moment

<table>
<thead>
<tr>
<th>LEARNING</th>
<th>TEACHING</th>
</tr>
</thead>
<tbody>
<tr>
<td>What happened to me?</td>
<td>Inform about diagnosis</td>
</tr>
<tr>
<td>Am I going to be OK?</td>
<td>Reassure</td>
</tr>
<tr>
<td>This is because of my boss</td>
<td>Find out misconceptions</td>
</tr>
<tr>
<td>Why me?</td>
<td>Discuss CV risk factors</td>
</tr>
<tr>
<td>What can I do?</td>
<td>Initiate lifestyle changes</td>
</tr>
</tbody>
</table>
The patient education challenge « acute - chronic »

THE PATIENT EXPERIENCE

Acute coronary syndrome
- Sudden event
- Emotional shock
- Rapid therapeutic response
- Impressive technical ressources

OBJECTIVES/COMPONENTS

EDUCATIONAL INTENTIONS

Manage a chronic disease
- Make the patients aware of their chronic disease
- Promote lifestyle changes
- Improve adherence to treatment

PASSIVE - FEAR

ACTIVE - ACCEPTANCE

THE PATIENT EXPERIENCE

EDUCATIONAL INTENTIONS
Combined teaching strategies, including written and audiovisual materials in addition to motivational interviewing are the most effective and time-sparing approaches.


2. Need for a «survival kit» before discharge

- Clear information about medication
- Clear advice on managing chest pain recurrence
- Advice and information on “what they can do” (work, travel, exercise, sexual activities, etc)
- Contact phone numbers
Improvements in 1-Year Cardiovascular Clinical Outcomes Associated with a Hospital-Based Discharge Medication Program

Jason M. Lappé, MS; Joseph B. Muhlestein, MD; Donald L. Lappé, MD; Rodney S. Badger, MD; Tami L. Bair, BS; Ruth Brockman, RN, MBA; Thomas K. French, MStat; Linda C. Hofmann, MS, BSN; Benjamin D. Horne, MStat, MPH; Susan Kralick-Goldberg, RN, MSN; Nan Nicponski, RN, MBA; Janette A. Orton, RN, MS; Robert R. Pearson, BS; Dale G. Renlund, MD; Holly Rimmansch, RN, MSN; Colleen Roberts, RN, MS; and Jeffrey L. Anderson, MD

Objectives/components

% prescription of each medication increased significantly to more than 90%

Discharge medication Program

DEATH -20%
READMISSION -10%
3. Best opportunity to refer patients to phase 2

- If possible appointment date should be fixed before discharge

- For patients ineligible for (or refusing) phase 2 CR, a multidimensional in-hospital prevention program may serve as a support for a home-based phase 2 CR and for long-term phase 3 CR

- CR would probably be more coherent if viewed as a continuum using the same learning tools instead of 3 distinct phases
Cardiac rehabilitation in Europe: Results from the European Cardiac Rehabilitation Inventory Survey

Table 2  Number of eligible patients participating in phase II and phase III cardiac rehabilitation programmes by country (n=28)

<table>
<thead>
<tr>
<th>Country</th>
<th>Phase II</th>
<th>Phase III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>Republic Belarus</td>
<td>40</td>
<td>5–10</td>
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<tr>
<td>Belgium</td>
<td>15–20</td>
<td>5</td>
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<tr>
<td>Croatia</td>
<td>40</td>
<td>4</td>
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<tr>
<td>Cyprus</td>
<td>4</td>
<td>6.5</td>
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<tr>
<td>Czech Republic</td>
<td>15–20</td>
<td>5–8</td>
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<tr>
<td>Denmark</td>
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<tr>
<td>Finland</td>
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<td>10</td>
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<tr>
<td>France</td>
<td>10–30</td>
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<tr>
<td>Germany</td>
<td>≥ 50</td>
<td>25–40</td>
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<tr>
<td>Hungary</td>
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<td>Unknown</td>
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<tr>
<td>Iceland</td>
<td>≥ 50</td>
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<tr>
<td>Ireland</td>
<td>Unknown</td>
<td>Unknown</td>
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<tr>
<td>Italy</td>
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<td>Lithuania</td>
<td>90(^a)</td>
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<td>Luxembourg</td>
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<td>Portugal</td>
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<tr>
<td>Romania</td>
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<tr>
<td>Russian Federation</td>
<td>Unknown(^c)</td>
<td>(100)(^d)</td>
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<td>Slovak Republic</td>
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<tr>
<td>Sweden</td>
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<td>Switzerland</td>
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<td>Unknown</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>40–50</td>
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Ambulatory phase 2 CR programs in Switzerland
Referral to phase 2 ambulatory CR post-ACS

**BEFORE**

June-October 2010

138 eligible patients post-ACS

57 (41%) referred to phase 2 CR

**AFTER**

November 2010-March 2011

112 eligible patients post-ACS

57 (51%) referred to phase 2 CR

Courtesy Dr PF Keller
Conclusions

• There is limited evidence and consensus supporting specific in-hospital rehabilitation/prevention programs after a CV event

• Hospital stay will become shorter and this may have a negative impact on secondary prevention

• Phase 1 cardiac rehabilitation needs to be rethought using multidimensional strategies aimed to reassure, support, educate patients and to increase referral to phase 2 CR programs

• Cardiac rehabilitation should probably be viewed as a continuum using the same learning tools rather than 3 distinct phases
Thank you for your attention

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