The prognostic effect of cardiac rehabilitation in the era of acute revascularization and statin therapy: a systematic review and meta-analysis of randomized and non-randomized studies. The Cardiac Rehabilitation Outcome Study (CROS)

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Background: Although recent studies, meta-analyses, and guidelines, suggest a beneficial effect of cardiac rehabilitation (CR) in patients with coronary artery disease (CAD), considerable scientific doubt is still apparent because:
• The type of CR offered varies considerably between and within the countries with respect to content, duration, intensity, and volume
• There are no accepted minimal standards worldwide to judge quality of CR delivery, leaving doubt about the effectiveness of CR
• Developments within the past 20 years (interventional therapies, surgery, medication) had a large impact on the quality of care delivered to patients participating in CR

Aim of the study: To evaluate CR-effectiveness on clinical prognosis after a recent cardiac event exclusively in the modern era of statin therapy and acute revascularization for acute coronary syndromes (ACS). To better reflect actual clinical practice, RCTs and controlled cohort studies (CCS) were included into the meta-analysis

Population

<table>
<thead>
<tr>
<th>After ACS</th>
<th>After CABG</th>
<th>Mixed population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>No restriction</td>
<td></td>
</tr>
<tr>
<td>Time of events</td>
<td>1995 or later</td>
<td></td>
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<tr>
<td>Acute treatment</td>
<td>in-hospital standard therapy according to actual guidelines</td>
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Intervention Multi-component cardiac rehabilitation (CR)

Start Not later than 3 months after hospital discharge
Supervision CR under supervision and responsibility of a rehabilitation center (center-based CR)
Definition of "multi-component" CR including supervised and structured physical exercise at least twice a week as basic requirement plus at least one, preferably more, of the following components: Information, motivational techniques, education, psychological support and interventions, social and vocational support
CR setting In-patient, out-patient or mixed. Tele-rehabilitation included if the major part of CR sessions was center-based and all other predefined criteria were fulfilled
Control Usual care Patients with index event, but not participating in CR. They may be supervised by GPs and/or cardiologists and participate in non-structured, non-supervised exercise programs outside a CR program

Records identified through database searching: n=24,610
Medline (PubMed): n=8,965
Central (Cochrane Library): n=2,178
Embase (Ovid): n=9,780
CINAHL (Ebsco): n=2,358
LILACS (iAHx): n=177
CIRRIE: n=791
ICTPR: n=401
Remaining records after removing duplicates: n=18,534

Primary selection (Studies potentially meeting CROS criteria): n=243
Ongoing studies of potential relevance: n=17
Studies selected for full text evaluation: n=67
Studies selected for structured study evaluation, qualitative analysis: n=39
Studies included into meta-analysis quantitative analysis: n=25

Conclusion: From the basis of 24 CCS including 218,524 patients and reflecting routine clinical care in 9 countries worldwide, participation in structured multi-component CR is associated with reduced mortality after an acute coronary event even in the era of statins and acute revascularizations

*The authors of this presentation do not have competing interest to declare