

Cardiologia Riabilitativa

Un approccio multidisciplinare

AHA/AACVPR Scientific Statement

Core Components of Cardiac Rehabilitation/ Secondary Prevention Programs: 2007 Update

A Scientific Statement From the American Heart Association
Exercise, Cardiac Rehabilitation, and Prevention Committee,
the Council on Clinical Cardiology; the Councils on Cardiovascular Nursing,
Epidemiology and Prevention, and Nutrition, Physical Activity, and Metabolism;
and the American Association of Cardiovascular and Pulmonary Rehabilitation

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Follow up per mantenimento
dei risultati a distanza

Stabilizzazione clinica

Intervento educazionale
sui fattori di rischio

Stratificazione prognostica
Valutazione funzionale

Training fisico

Counseling attività
fisica

Counseling
dietetico/nutrizionale

Valutazione ed intervento
psicologico

Circulation 2007; 115: 2675-2682

Indicazioni alla Riabilitazione Cardiologica

Ischemic heart disease

- Acute coronary syndrome
- Cardiac surgery CABP, valve, congenital)
- PTCA
- Stable angina

Other heart conditions

- Chronic heart failure
- ICD/CRT/pacemaker
- Cardiomyopathy
- Heart transplantation
- Peripheral vascular disease

High risk of developing CVD

Emerging indications for CR

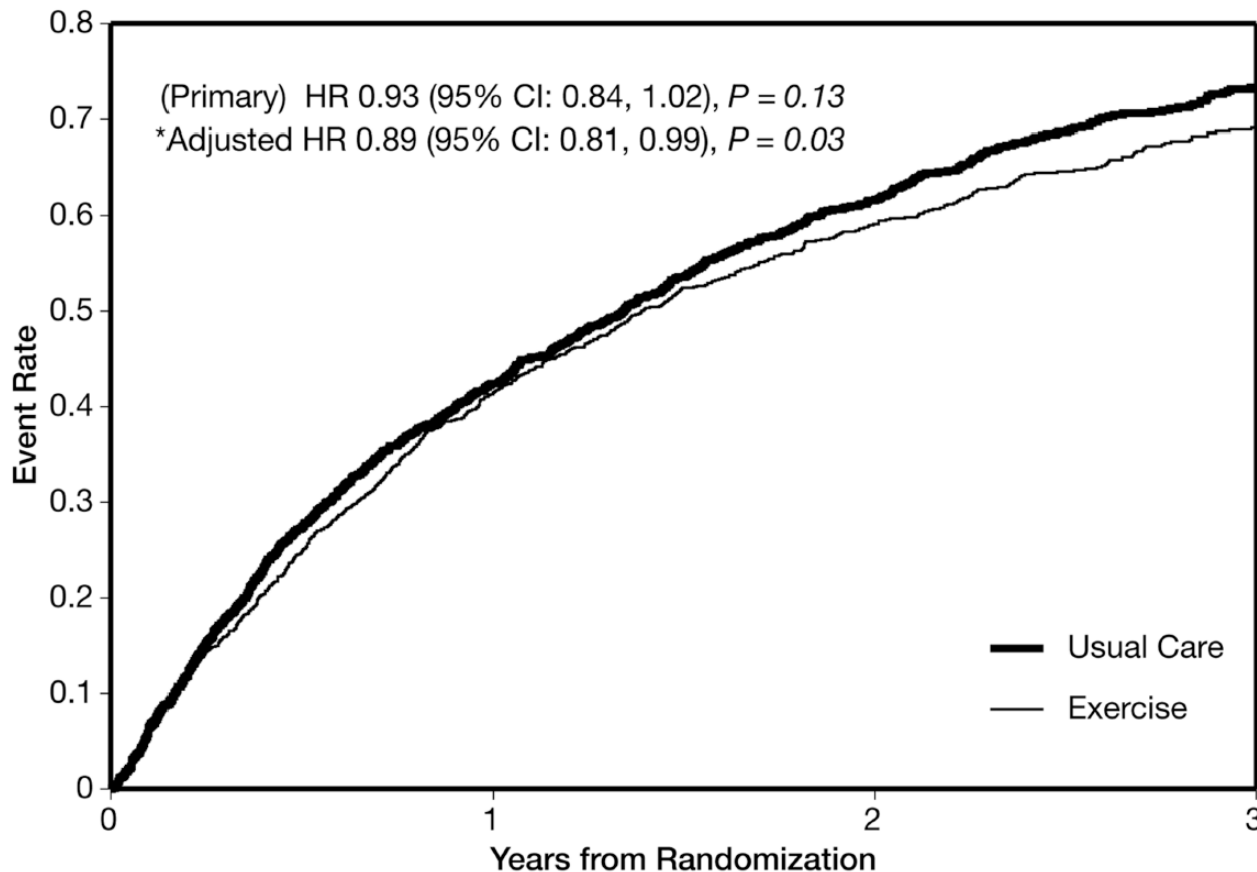
- **LVAD**
- **Pulm. Hypertension**
- **TAVI**
- **Mitra clip**
- **CHFpEF**
- **Acute decompensated HF**
- **Stroke**
- **Frail elderly**

Efficacy and Safety of Exercise Training in Patients With CHF

HF-ACTION Randomized Controlled Trial

2331 stable outpatients with CHF and reduced LVEF
36 supervised sessions followed by home-based training, or usual care alone

Time to All-Cause Death or All-Cause Hospitalization



Impact of in-hospital cardiac rehabilitation on mortality and readmissions in heart failure: A population study in Lombardy, Italy, from 2005 to 2012

140,552 patients with HF

100,843 (71%) hospitalised for heart failure in acute care only (group A)

39,709 (29%) patients with admission for an in-hospital cardiac rehabilitation programme (group B)

After adjustment for covariates, group B had a significantly lower risk of mortality (hazard ratio 0.5768, 95% confidence interval 0.5650-0.5888, $P < 0.0001$) and readmissions (0.7997, 0.7758-0.8244, $P < 0.0001$) than group A.

Given its potential significant benefit, referral of heart failure patients to an in-hospital cardiac rehabilitation programme should be promoted.

CR benefits: only mortality and rehospitalization?

«Other» benefits of CR

- Cardio-respiratory fitness
- Quality of life
- Risk factor management
- Adherence to medications
- Diet
- Smoking cessation
- Psychosocial health
- Return to work
- Cost effectiveness

2016 European Guidelines on cardiovascular disease prevention in clinical practice

Recommendations for specialized prevention programmes

Recommendations	Class ^a	Level ^b	Ref ^c
Participation in a CR programme for patients hospitalized for an acute coronary event or revascularization, and for patients with HF, is recommended to improve patient outcomes.	I	A	555, 556
Preventive programmes for therapy optimisation, adherence and risk factor management are recommended for stable patients with CVD to reduce disease recurrence.	I	B	557–560
Methods to increase referral to and uptake of CR should be considered such as electronic prompts or automatic referrals, referral and liaison visits, structured follow-up by physicians, nurses or therapists, and early starts to programmes after discharge.	IIa	B	557, 558
Nurses and allied health professional led programmes should be considered to deliver CVD prevention across healthcare settings.	IIa	B	550–552, 561

2016 ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure

Recommendations for exercise, multidisciplinary management and monitoring of patients with heart failure

Recommendations	Class ^a	Level ^b	Ref ^c
It is recommended that regular aerobic exercise is encouraged in patients with HF to improve functional capacity and symptoms.	I	A	321, 618–621
It is recommended that regular aerobic exercise is encouraged in stable patients with HFrEF to reduce the risk of HF hospitalization.	I	A	618, 619
It is recommended that patients with HF are enrolled in a multidisciplinary care management programme to reduce the risk of HF hospitalization and mortality.	I	A	622–625
Referral to primary care for long-term follow-up may be considered for stable HF patients who are on optimal therapy to monitor for effectiveness of treatment, disease progression and patient adherence.	IIb	B	626, 627
Monitoring of pulmonary artery pressures using a wireless implantable haemodynamic monitoring system (CardioMems) may be considered in symptomatic patients with HF with previous HF hospitalization in order to reduce the risk of recurrent HF hospitalization.	IIb	B	628, 629
Multiparameter monitoring based on ICD (IN-TIME approach) may be considered in symptomatic patients with HFrEF (LVEF ≤35%) in order to improve clinical outcomes.	IIb	B	630

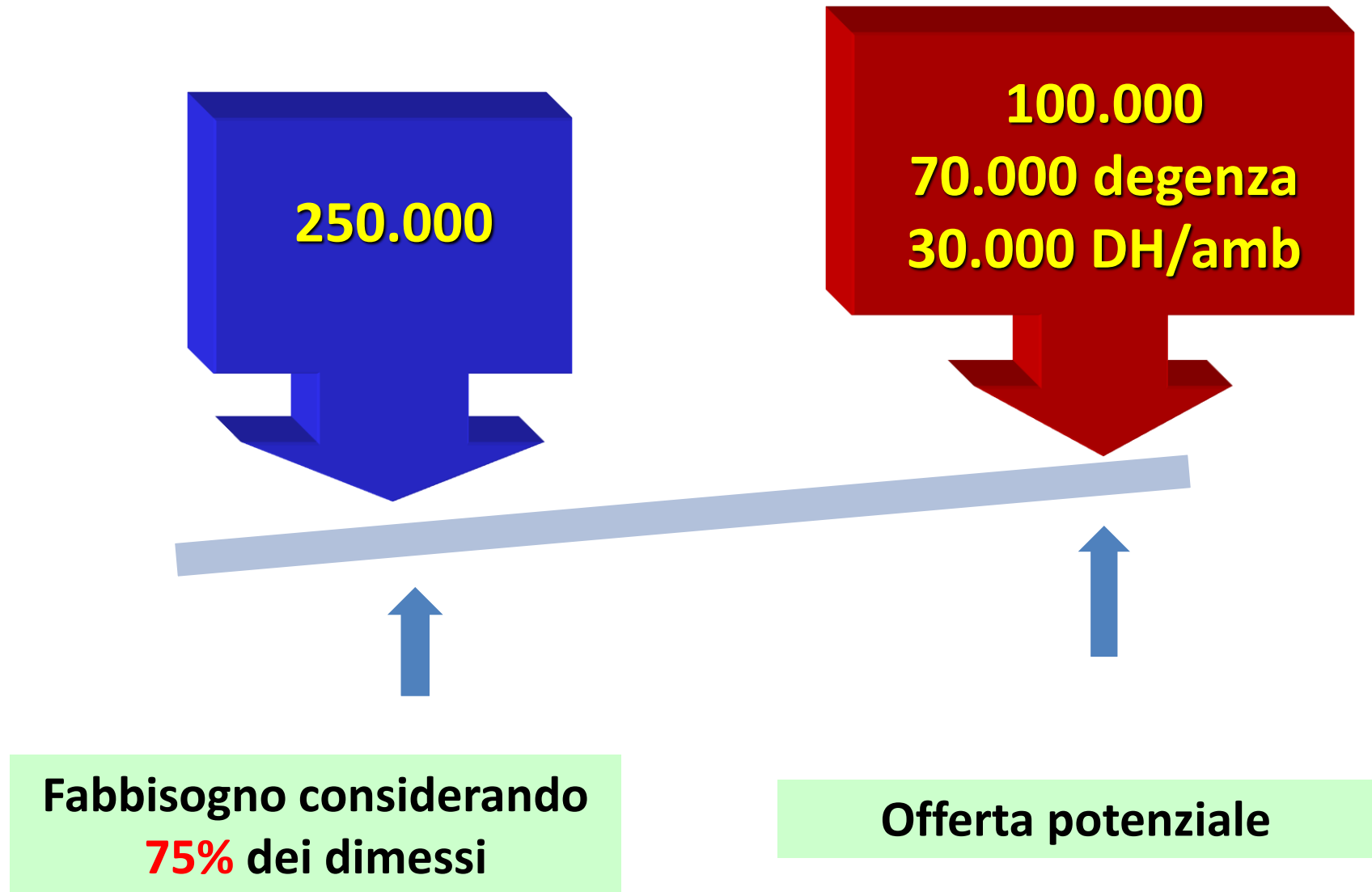
2018 ACC/AHA Clinical Performance and Quality Measures for Cardiac Rehabilitation

TABLE 6 New CR Measures

No.	Care Setting	Measure Title	Rationale for Creating New Measure
PM-2	Inpatient	Exercise Training Referral for Heart Failure From Inpatient Setting	Exercise training is a Class I recommendation for patients with HFrEF and is typically provided through an outpatient CR program. Exercise training has been shown to help improve functional capacity for patients with HFrEF. In addition, CR has been shown to improve functional capacity, exercise duration, HRQOL, and mortality (Class IIa, Level of Evidence: B).
PM-4	Outpatient	Exercise Training Referral for Heart Failure From Outpatient Setting	Exercise training is a Class I recommendation for patients with HFrEF and is typically provided through an outpatient CR program. Exercise training has been shown to help improve functional capacity for patients with HFrEF. In addition, CR has been shown to improve functional capacity, exercise duration, HRQOL, and mortality (Class IIa, Level of Evidence: B).

Cardiologia Riabilitativa in Italia-dati ISYDE 2013

Rapporto offerta/fabbisogni PL



Secondary prevention in the clinical management of patients with cardiovascular diseases. Core components, standards and outcome measures for referral and delivery

Cardiac Rehabilitation and Healthy Life-Style Interventions

Rectifying Program Deficiencies to Improve Patient Outcomes*

Carl J. Lavie, MD,† Ross Arena, PhD, PT,‡ Barry A. Franklin, PhD§



Piepoli MF. Eur J Prev Cardiol. 2014;21:664-81

JACC 2016; 67: 13-15



European Heart Journal (2016) 37, 2315–2381
doi:10.1093/eurheartj/ehw106

JOINT ESC GUIDELINES

2016 European Guidelines on cardiovascular disease prevention in clinical practice

Secondary prevention through cardiac rehabilitation: physical activity counselling and exercise training

Key components of the position paper from the Cardiac Rehabilitation Section of the European Association of Cardiovascular Prevention and Rehabilitation

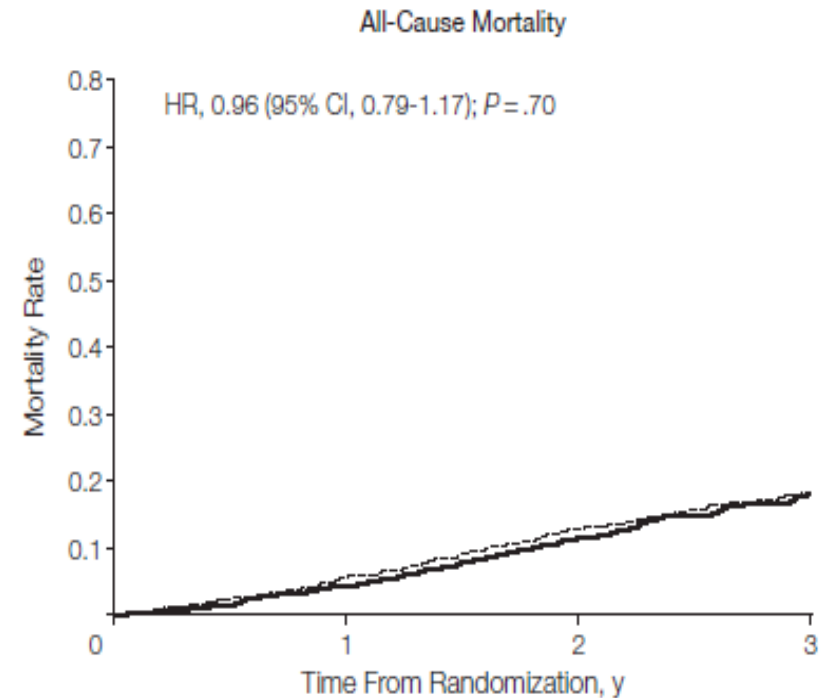
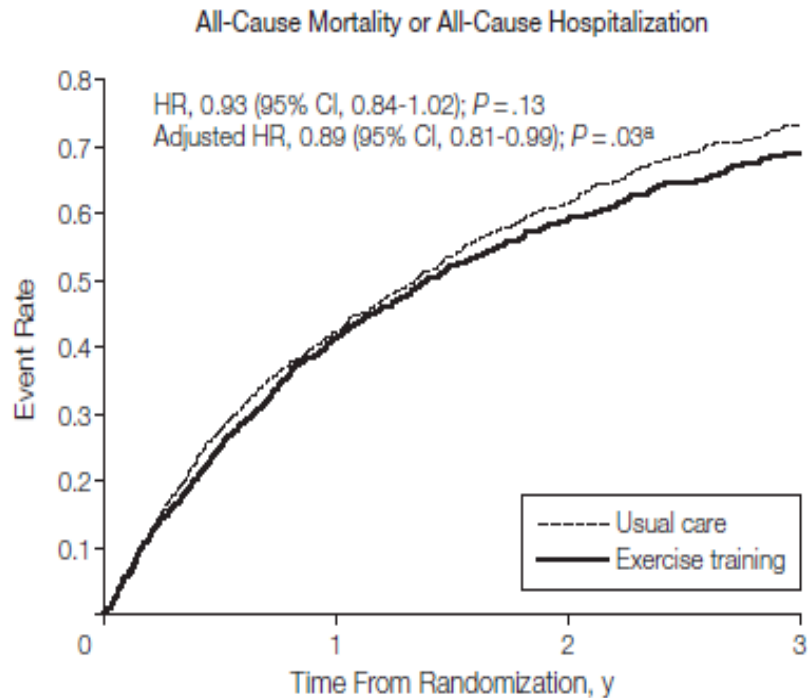
European Heart Journal
2016;37:2315–2381

European Heart Journal
2010;31: 1967–1976

Efficacy and Safety of Exercise Training in Patients With CHF

HF-ACTION Randomized Controlled Trial

2331 medically stable outpatients with heart failure and reduced LVEF
36 supervised sessions followed by home-based training, or usual care alone
2 years follow up



Exercise-based rehabilitation for heart failure (Review)

Taylor RS, Sagar VA, Davies EJ, Briscoe S, Coats AJS, Dalal H, Lough F, Rees K, Singh S

33 trials with 4740 patients with chronic heart failure and NYHA class II and III.

Borderline reduction in mortality in trials with >one year of follow-up (RR 0.88; 95% CI 0.75 to 1.02)

Reduced hospitalisation rate (RR 0.75; 95% CI 0.62 to 0.92)

Improved Quality of life (mean: -5.8 points; 95% CI -9.2 to -2.4)

Exercise-based cardiac rehabilitation for adults with heart failure (Review)

Long L, Mordi IR, Bridges C, Sagar VA, Davies EJ, Coats AJS, Dalal H, Rees K, Singh SJ, Taylor RS

44 trials (5783 participants) with predominant HFrEF)

- **No impact on mortality in the short term (< 12months' follow-up).**
- **CR probably reduces the risk of all-cause hospital admissions**
- **CR may reduce HF-specific hospital admissions in the short term (up to 12 months)**
- **CR may improve health-related quality of life**
- **Future CR trials need to consider the recruitment of traditionally less represented HF patient groups including older, female, and HFpEF patients, and alternative CR delivery settings including home- and using technology-based programmes.**

Home-based cardiac rehabilitation improves quality of life, aerobic capacity, and readmission rates in patients with chronic heart failure

Yan-Wen Chen, MS^a, Chi-Yen Wang, MD^b, Yuan-Hui Lai, MS^{b,c}, Ying-Chieh Liao, MD^{b,d}, Yan-Kai Wen, MS^a, Shin-Tsu Chang, MD, MS, PhD^{a,e,*}, Jin-Long Huang, MD, PhD^{b,d,*}, Tsu-Juey Wu, MD, PhD^{b,d}

Results: Patients enrolled in the home-based cardiac rehabilitation programs displayed statistically significant improvement in $\dot{V}O_2$ peak (18.2 ± 4.1 vs 20.9 ± 6.6 mL/kg/min, $P = .02$), maximal 6-Minute Walking Distance (6MWD) (421 ± 90 vs 462 ± 74 m, $P = .03$), anaerobic threshold (12.4 ± 2.5 vs 13.4 ± 2.6 mL/kg/min, $P = .005$), and QOL. In summary, patients receiving home-based cardiac rehabilitation experienced a 14.2% increase in $\dot{V}O_2$ peak, a 37% increase in QOL score, and an improvement of 41 m on the 6MWD test. The 90-day readmission rate for patients reduced to 5% from 14% after receiving cardiac rehabilitation.

Medicine (2018) 97:4(e9629)

Exercise-based rehabilitation for heart failure: systematic review and meta-analysis

Viral A Sagar,¹ Edward J Davies,² Simon Briscoe,³ Andrew J S Coats,⁴ Hasnain M Dalal,⁵ Fiona Lough,⁶ Karen Rees,⁷ Sally Singh,⁸ Rod S Taylor⁹

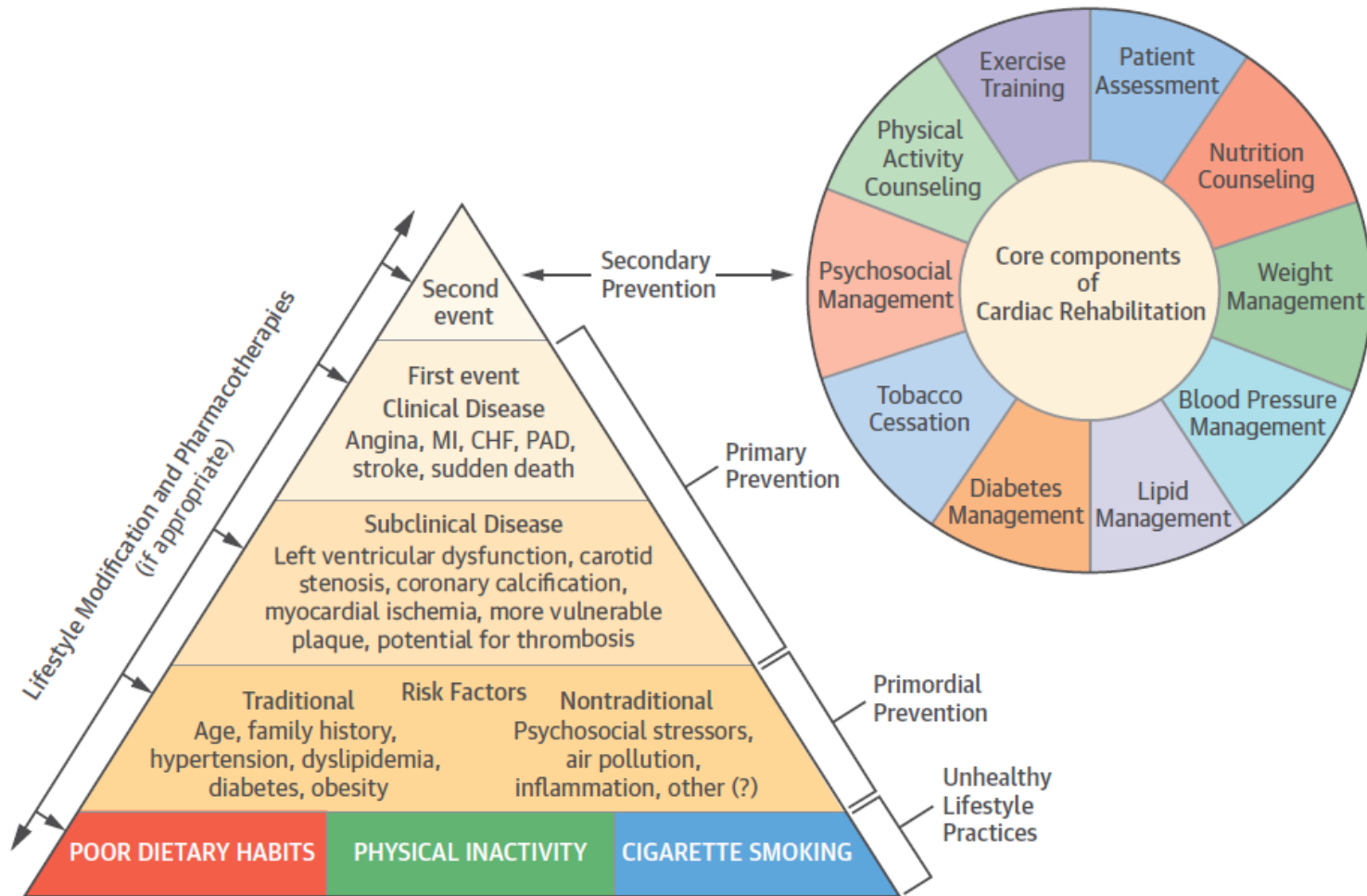
Improvements in hospitalization and QOL with exercise-based CR appear to be consistent across patients regardless of CR programme characteristics and *may reduce mortality* in the longer term

Table 4 Univariate metaregression results

	All-cause mortality p Value	All hospitalisations p Value	MLWHF p Value	All HRQoL outcomes p Value
Type of rehabilitation (exercise only vs comprehensive)	0.76	0.77	0.23	0.28
Type of exercise (aerobic training alone vs aerobic plus resistance training)	0.74	0.56	0.28	0.54
Exercise dose (number of weeks×number of sessions/week×average duration of session in hours)	0.15	0.80	0.15	0.28
Exercise setting (hospital only, home only, both hospital and home)	0.23	0.11	0.85	0.23
Single versus multicentre	0.94	0.70	0.14	0.01
Publication date	0.54	0.54	0.46	0.60
Risk of bias*	0.40	0.57	0.04	0.08

*'Low' risk of bias trial: absence of bias in >5 out 8 of risk of bias items vs 'high' risk of trial: absence of bias in <5 out 8 items. HRQoL, health-related quality of life; MLWHF, Minnesota Living with Heart Failure questionnaire.

CENTRAL ILLUSTRATION Cardiac Rehabilitation and the ASCVD Prevention Pyramid



Cardiologia Riabilitativa in Italia

Rapporto offerta/fabbisogni

Fabbisogno considerando
75% dei dimessi

250.000

2012

SCA dimesse = 145.000

Operati in CCH = 50.000

Scompensi dimessi = 135.000

Offerta ipotizzando il
100% delle strutture

135.000

