

Randomized trials of secondary prevention programs in Coronary Heart Disease: A systematic review

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Context of review

- A high burden of CVD on the USA
- Estimated costs of \$393 billion (2005)
- 700 million Americans have CVD
- 13 million with known CAD

- Multifaceted strategy needed:
 - Target 9 modifiable risk factors
 - Primary prevention
 - Secondary prevention
 - Promote evidence-based care

- Multifaceted strategy needed:
 - Target 9 modifiable risk factors
 - Primary prevention
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The need for clarification

- Evidence for the benefit of exercise-based cardiac rehabilitation
- Guidelines recommend addressing the *range* of modifiable CV risk factors
- *Consider:*
 - *Physician-supervised Behavioral Interventions for Symptomatic CAD*

Physician-supervised Behavioral Interventions for Symptomatic CAD

- **Comprehensive Cardiac Rehabilitation (CCR)**
 - Group exercise *plus* education and counseling on RFs
- **Cardiac Rehabilitation (CR)**
 - Group education and counseling on RFs with no structured exercise
- **Individual Counseling (IC)**
 - Individual-based education, counseling and follow-up around RFs

- Comprehensive multidisciplinary programs
- Including:
 - Patient education
 - Risk factor interventions
 - Provider use of guidelines
 - Assessments and consultations
 - Drug therapies and ancillary services

Aim of review

- To determine whether programs (CCR, CR, IC) for patients with established CAD improve health outcomes

Methods

- Searched:
 - Medline (1966-2004)
 - Cochrane Central Register of controlled trials (2004)
 - Embase (1980-2004)
 - CINAHL (1982-2004)
 - SINGLE (1980-2004)
 - PubMed (Jan-Dec 2004)
 - Cited references in WoS (1999-2004)
 - Hand search / author contact

Selection and Abstraction

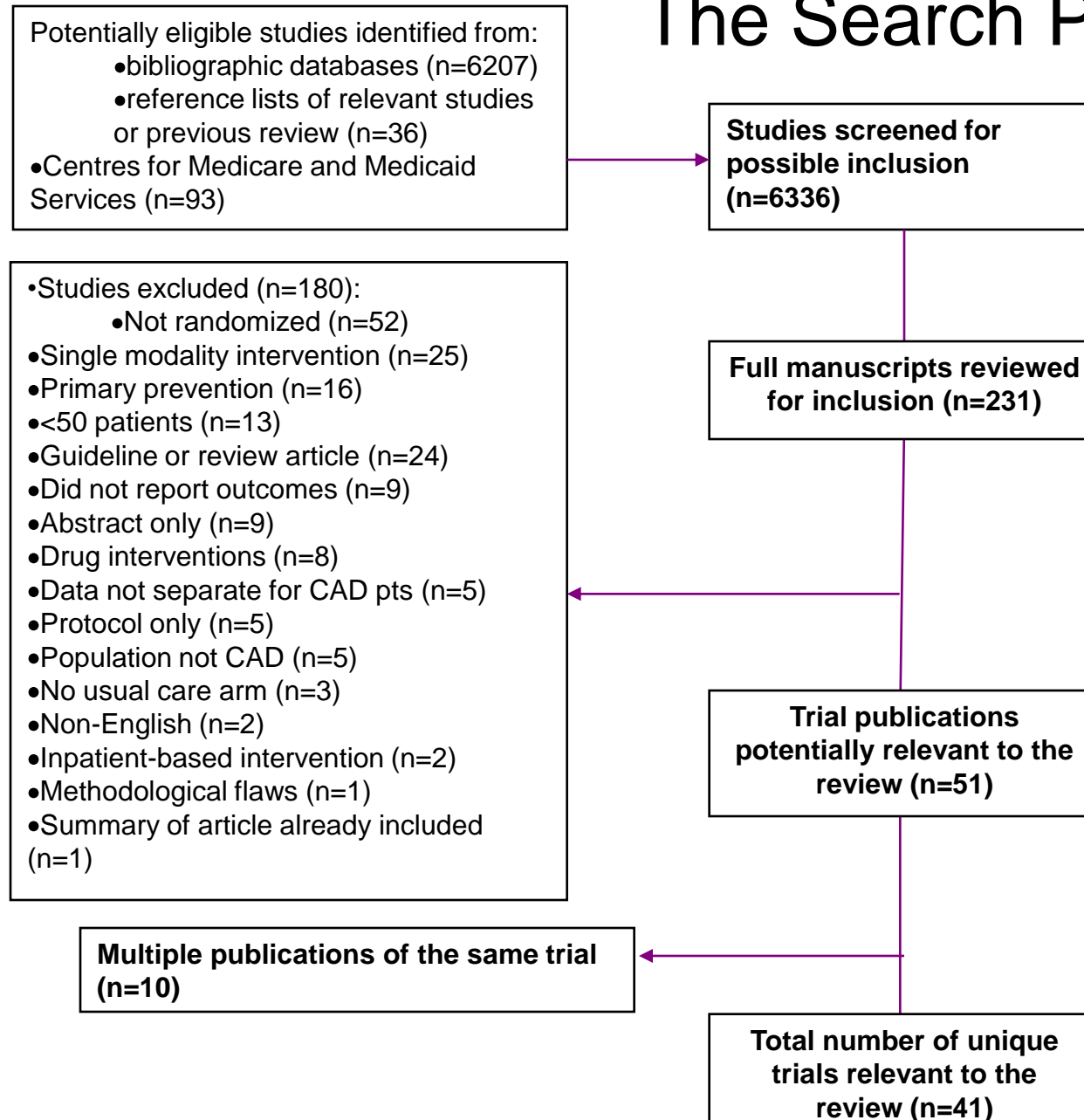
- Two investigators (AC & FM) independently reviewed :
 - Titles and abstracts
 - Full texts of potentially relevant papers based on *a priori* eligibility criteria
- Outcomes data extracted and double checked independently (BV)

- Original investigator contacted where possible if outcomes of interest not reported
- Assigned to:
 - CCR
 - CR
 - IC

Exclusion Criteria

- Not randomized
- Primary prevention only
- Single-modality interventions
- No outpatient component
- No 'usual care' arm
- Interventions not provided by health professionals
- Outcomes data for < 50 patients

The Search Process



Statistical analysis

Primary outcomes: Mortality

Secondary outcomes: Recurrent MI
Hospitalizations

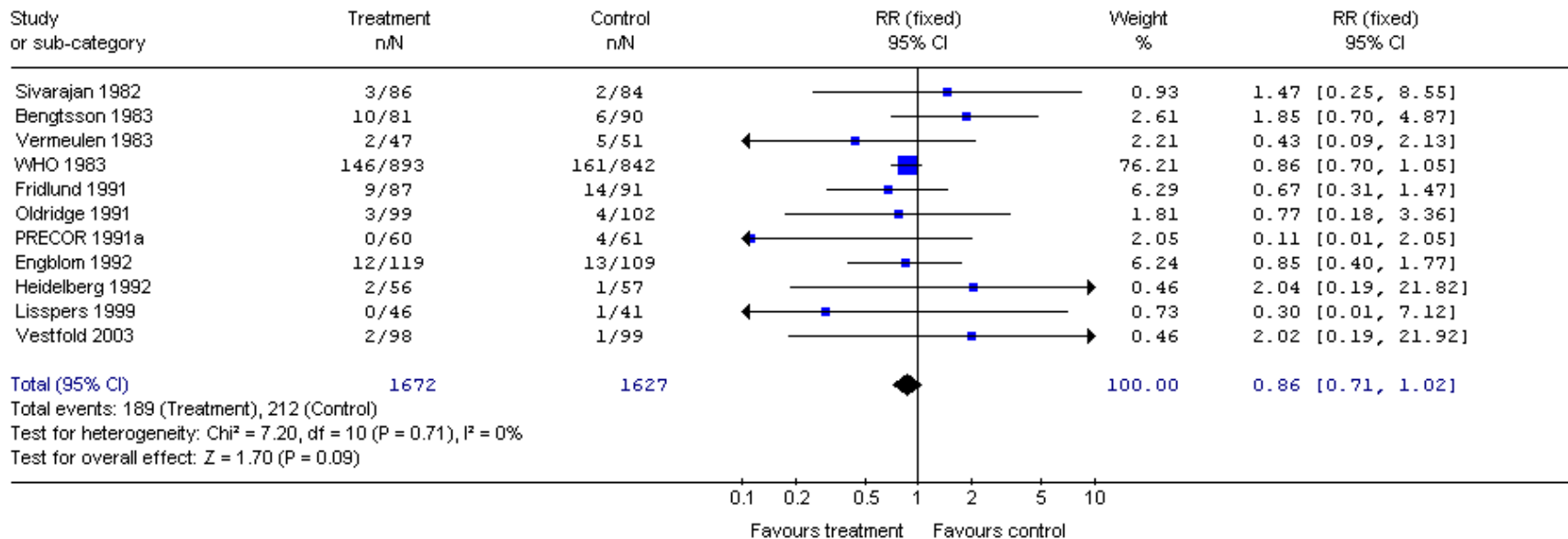
Other outcomes:	QOL
	Effect on RFs
	Use of therapies
	Funct. status

Results: All-cause mortality

- 1 / 27 trials reported significant survival benefit at 12m
- RR 0.89 (CI 0.79-1.01), 13625 pts.

All-cause mortality (12m, CCR)

Review: Secondary prevention programmes in coronary heart disease (Jan 14; 10:20)
 Comparison: 02 All-Cause Mortality
 Outcome: 09 Comprehensive Cardiac Rehabilitation



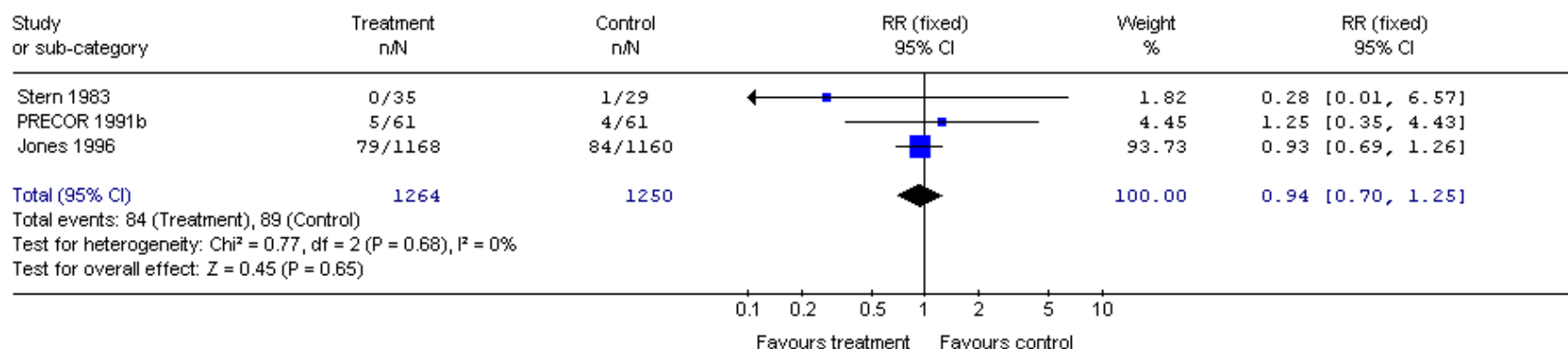
RR 0.86

95% CI 0.71-1.02

pts=3254

All-cause mortality (12m, CR)

Review: Secondary prevention programmes in coronary heart disease (Jan 14; 10:20)
 Comparison: 02 All-Cause Mortality
 Outcome: 10 Group Cardiac Rehabilitation (without exercise component)



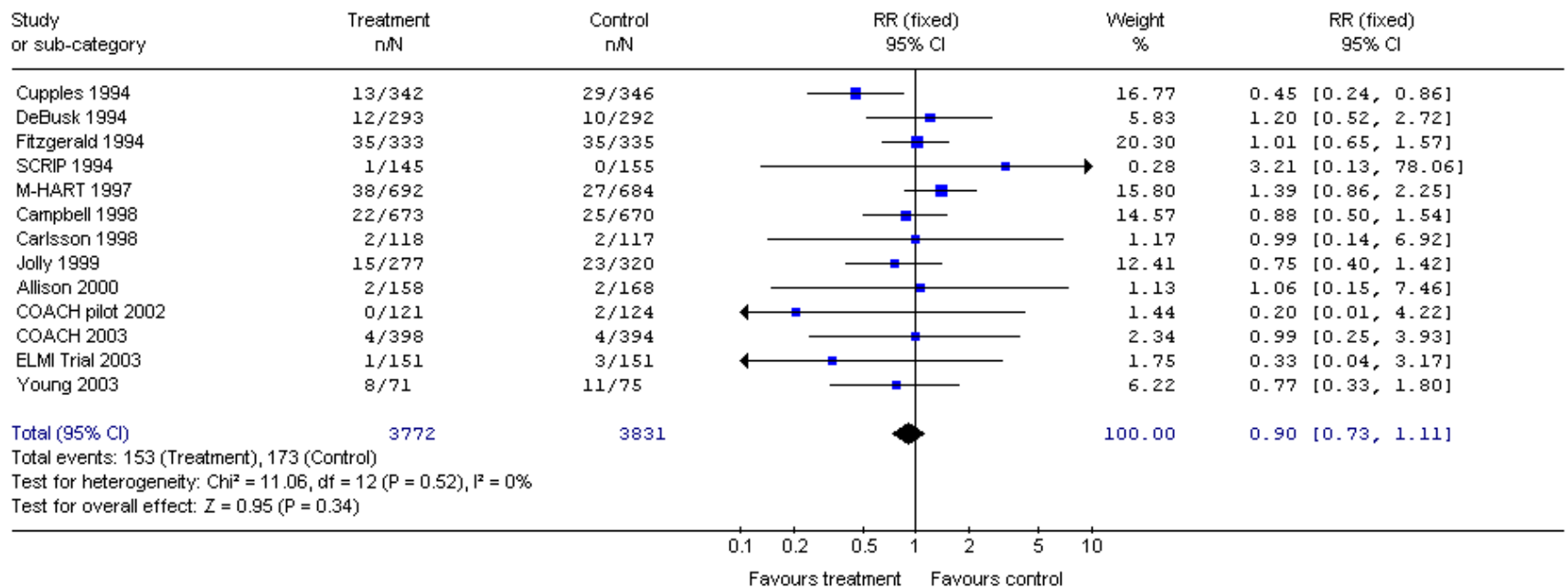
RR 0.94

95% CI 0.70-1.25

pts=2514

All-cause mortality (12m, IC)

Review: Secondary prevention programmes in coronary heart disease (Jan 14; 10:20)
 Comparison: 02 All-Cause Mortality
 Outcome: 11 Individual Counselling



RR 0.90

95% CI 0.73-1.11

pts=7603

All-cause mortality (short and long term)

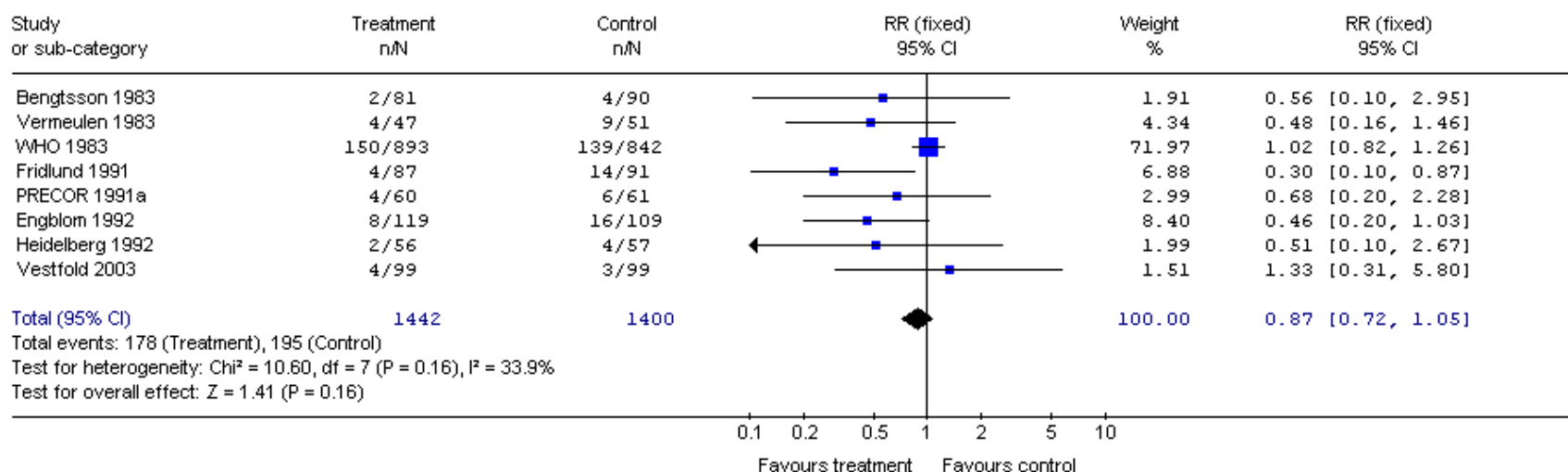
Follow up	n	RR	CI (95%)	Pts
12m	18	0.97	0.82-1.14	9912
24m	4	0.53	0.31-0.92	1367
60m	4	0.76	0.62-0.92	2225

Re-infarction rates

- 1 / 16 trials reported significant difference in event rates
- At 12m:
 - RR 0.89 (95% CI 0.77-1.04), 9210 pts

Re-infarction rates (12m, CCR)

Review: Secondary prevention programmes in coronary heart disease (Jan 14; 10:20)
 Comparison: 03 Recurrent Myocardial Infarctions
 Outcome: 01 Comprehensive Cardiac Rehabilitation



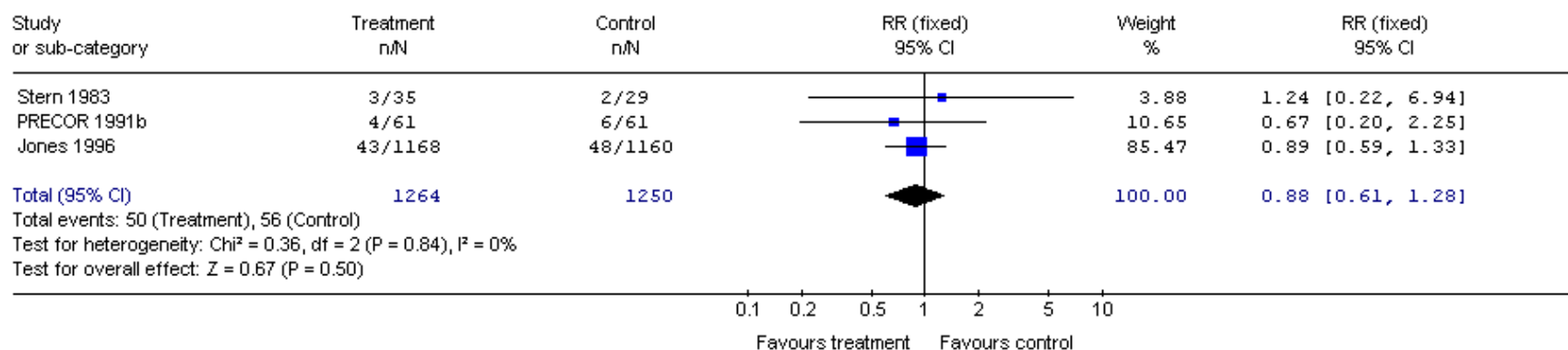
RR 0.87

95% CI 0.72-1.05

pts=2842

Re-infarction rates (12m, CR)

Review: Secondary prevention programmes in coronary heart disease (Jan 14; 10:20)
 Comparison: 03 Recurrent Myocardial Infarctions
 Outcome: 02 Group Cardiac Rehabilitation (without exercise component)



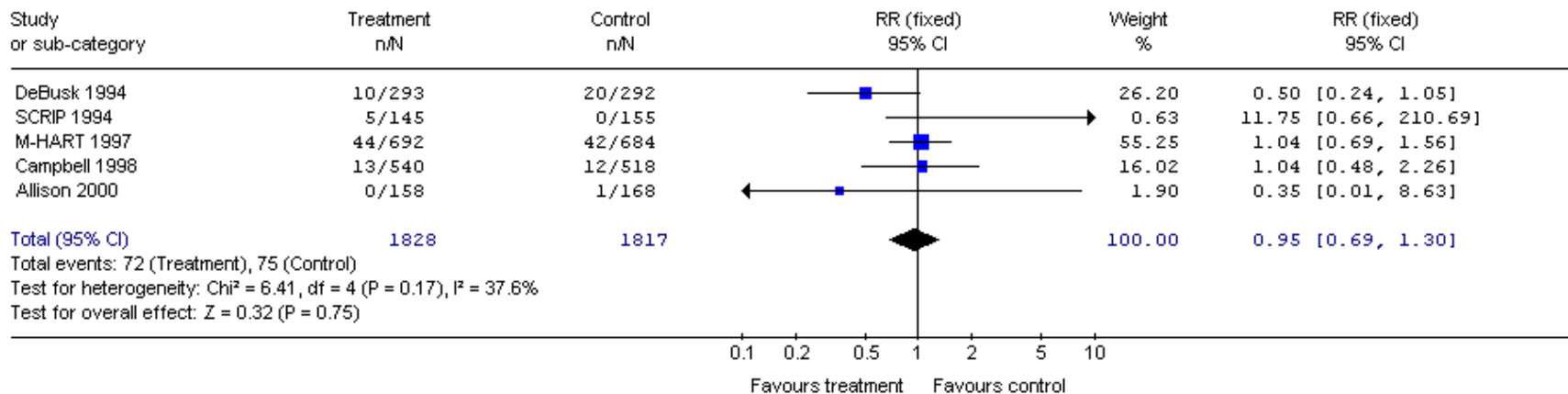
RR 0.88

95% CI 0.61-1.28

pts=2514

Re-infarction rates (12m, IC)

Review: Secondary prevention programmes in coronary heart disease (Jan 14; 10:20)
 Comparison: 03 Recurrent Myocardial Infarctions
 Outcome: 03 Individual Counselling



RR 0.95

95% CI 0.69-1.301

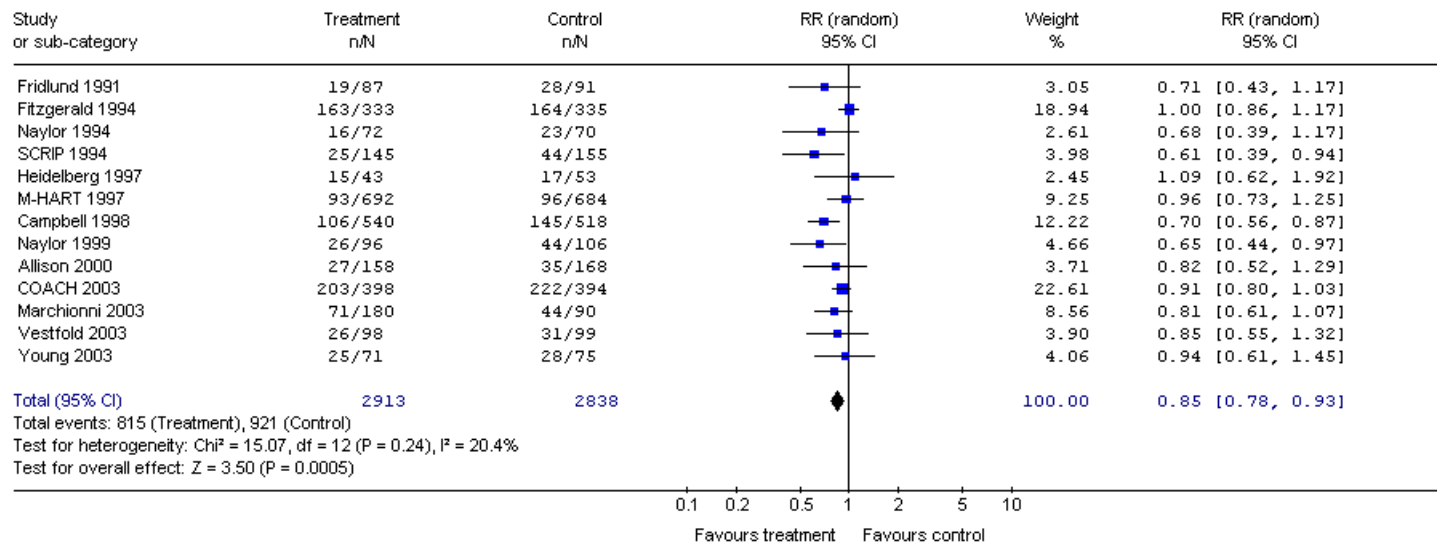
pts=3645

Hospitalization Rates

Reason	n	RR	CI (95%)	Pts
All-cause & CV	13	0.85	0.78-0.93	5751
All-cause only	9	0.84	0.74-0.97	3653
CV only	7	0.76	0.58-0.98	3233

Hospitalization rates (All-case and CV)

Review: Secondary prevention programmes in coronary heart disease (Jan 14; 10:20)
Comparison: 06 Hospitalizations
Outcome: 04 All Programs



RR 0.85

95% CI 0.78-0.93

pts=5751

Other Endpoints

- QOL / functional status
 - 14 /26 trials reported significant improvements
 - Measurement tools used very heterogeneous
- Cholesterol
 - 20/24 trials reported improvements in profiles
 - 12/20 these improvements were significant

- Use of effective medications
 - 8/20 showed significantly better application of at least 1 therapy
- Costs
 - Only 6 /41 reported costs
 - 3 also reported or implied being 'cost saving' with no data
 - 1 reports lower inpatient bed days at 48 m follow up

Conclusions

- *In patients with CAD, the programs reviewed :*
 - *Reduce long term mortality*
 - *Reduce hospitalizations*
 - *Improve processes of care*
 - *Improve quality of life*
 - *May reduce health care costs*

General considerations

- Inconsistencies in effectiveness of program
- Little understanding of 'the black box' of interventions
- Generalizability to:
 - Older patients
 - Women
 - The 'real world'

Methodological considerations

- Possibility of:
 - Atypically optimal care in usual care groups
 - Effects of unpublished studies
- Lack of:
 - Detail in program descriptions
 - Analysis of component impact
 - Double-blinding
 - Details regarding randomization concealment