Supplementary material

Table S1 | Missing Data. ‡ ‡ indicates that this variable was a significant predictor of all-cause mortality in a single-variable model.

<table>
<thead>
<tr>
<th>Variable</th>
<th>description</th>
<th>Missing %</th>
</tr>
</thead>
<tbody>
<tr>
<td>id</td>
<td>Unique identifier</td>
<td>1</td>
</tr>
<tr>
<td>Illness date</td>
<td>Date of the index event</td>
<td>0</td>
</tr>
<tr>
<td>Entry date</td>
<td>Date entered the programme</td>
<td>0</td>
</tr>
<tr>
<td>Graduate date</td>
<td>Date graduated from the programme</td>
<td>0</td>
</tr>
<tr>
<td>Death date</td>
<td>Date of death</td>
<td>0</td>
</tr>
<tr>
<td>Diagnosis ‡ ‡</td>
<td>A number from 1 to 8 where</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 is myocardial infarction (MI),</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 is coronary artery bypass grafting (CABG),</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 is percutaneous transluminal coronary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>with or without stenting. 4 is angina pectoris(AP),</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 is valve surgery (VS), 6 is other cardiac conditions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>e.g. cardiomyopathy, ischaemic and non-ischaemic</td>
<td></td>
</tr>
<tr>
<td></td>
<td>heart failure (OC), 7 is non-cardiac conditions (NC) and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 is myocardial infarction with percutaneous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>transuminal coronary angioplasty as a single</td>
<td></td>
</tr>
<tr>
<td></td>
<td>episode of care,(MI+PCI).</td>
<td>0</td>
</tr>
<tr>
<td>Family History ‡ ‡</td>
<td>Family history, yes/no</td>
<td>0</td>
</tr>
<tr>
<td>Age ‡ ‡</td>
<td>Age in years</td>
<td>0</td>
</tr>
<tr>
<td>age category ‡ ‡</td>
<td>Age in categories: 1 is under 50, 2 is 50 to 59, 3 is 60 to 69 and 4 is 70</td>
<td>0</td>
</tr>
<tr>
<td>Sex ‡ ‡</td>
<td>Gender</td>
<td>0</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>Cholesterol measurement at recruitment</td>
<td>537</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>Triglycerides measurement at recruitment</td>
<td>787</td>
</tr>
<tr>
<td>Diabetes ‡ ‡</td>
<td>Patient has diabetes, yes/no</td>
<td>0</td>
</tr>
<tr>
<td>Comorobidity</td>
<td>List of comorbidities in free text</td>
<td>0</td>
</tr>
<tr>
<td>Height</td>
<td>Height in Metres</td>
<td>1161</td>
</tr>
<tr>
<td>Weight ‡ ‡</td>
<td>Weight in kilogrammes at recruitment</td>
<td>20</td>
</tr>
<tr>
<td>Weight category before ‡ ‡</td>
<td>A is defined as under 75kg, 75-90kg as overweight, and over 90kg as C.</td>
<td>20</td>
</tr>
<tr>
<td>sbp before ‡ ‡</td>
<td>Systolic blood pressure at recruitment</td>
<td>15</td>
</tr>
<tr>
<td>dbp before ‡ ‡</td>
<td>Diastolic blood pressure at recruitment</td>
<td>26</td>
</tr>
<tr>
<td>sbp after ‡ ‡</td>
<td>Systolic blood pressure at completion</td>
<td>742</td>
</tr>
<tr>
<td>dbp after ‡ ‡</td>
<td>Diastolic blood pressure at recruitment</td>
<td>763</td>
</tr>
<tr>
<td>vo2 before ‡ ‡</td>
<td>Fitness at recruitment in VO2 max</td>
<td>0</td>
</tr>
<tr>
<td>vo2 after ‡ ‡</td>
<td>Fitness at completion in VO2 max</td>
<td>1316</td>
</tr>
<tr>
<td>vo2 category before ‡ ‡</td>
<td>Fitness category at entry</td>
<td>0</td>
</tr>
<tr>
<td>vo2 category after ‡ ‡</td>
<td>Fitness category at exit</td>
<td>1316</td>
</tr>
<tr>
<td>anxiety before ‡ ‡</td>
<td>Anxiety measured at recruitment using the hospital anxiety and depression scale (HADS). A score between 8 and 10 indicates borderline anxiety, whilst over 10 suggests clinical anxiety.</td>
<td>89</td>
</tr>
<tr>
<td>anxiety after ‡ ‡</td>
<td>Categorisation by HADS at completion</td>
<td>748</td>
</tr>
<tr>
<td>depression before ‡ ‡</td>
<td>Categorisation by HADS at recruitment</td>
<td>89</td>
</tr>
<tr>
<td>depression after ‡ ‡</td>
<td>Categorisation by HADS at completion</td>
<td>749</td>
</tr>
<tr>
<td>overall health before</td>
<td>Patient’s perception of overall health at entry - one of six domains from the Dartmouth Coop / wonca charts used to assess functional health and quality of life. Only patients joining after April 1996 were assessed in this way</td>
<td>773</td>
</tr>
<tr>
<td>over all health after</td>
<td>1 (excellent) to 5(poor) patient’s perception of overall health at completion</td>
<td>1275</td>
</tr>
<tr>
<td>life before</td>
<td>Patient perception of life in general at recruitment</td>
<td>773</td>
</tr>
</tbody>
</table>
Table S1 | Missing Data. ‡ indicates that this variable was a significant predictor of all-cause mortality in a single-variable model.

<table>
<thead>
<tr>
<th>Variable</th>
<th>description</th>
<th>Missing</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>life after</td>
<td>patient perception of life in general at completion</td>
<td>1275</td>
<td>47.0</td>
</tr>
<tr>
<td>feelings before</td>
<td>patient perception of feelings at recruitment</td>
<td>775</td>
<td>28.5</td>
</tr>
<tr>
<td>feelings after</td>
<td>patient perception of feelings at completion</td>
<td>1275</td>
<td>47.0</td>
</tr>
<tr>
<td>painful tension before</td>
<td>patient perception of painful tension</td>
<td>775</td>
<td>28.6</td>
</tr>
<tr>
<td>painful tension after</td>
<td>patient perception of painful tension at completion</td>
<td>775</td>
<td>28.6</td>
</tr>
<tr>
<td>physical fitness before</td>
<td>patient perception of physical fitness at recruitment</td>
<td>1276</td>
<td>47.0</td>
</tr>
<tr>
<td>physical fitness after</td>
<td>patient perception of physical fitness at completion</td>
<td>775</td>
<td>28.6</td>
</tr>
<tr>
<td>social support before</td>
<td>patient perception of social support available to them at recruitment</td>
<td>775</td>
<td>28.6</td>
</tr>
<tr>
<td>social support after</td>
<td>patient perception of social support at completion</td>
<td>1274</td>
<td>46.9</td>
</tr>
<tr>
<td>risk category before ‡</td>
<td>Risk category (high, medium, low) at recruitment</td>
<td>101</td>
<td>3.7</td>
</tr>
<tr>
<td>risk category after ‡</td>
<td>Risk category at exit</td>
<td>730</td>
<td>26.9</td>
</tr>
<tr>
<td>Smoking history ‡</td>
<td>coded 0 to 4 where 0 is never smoked, 1 is not smoked for 10 years or more, 2 is not smoked for between 1 and 10 years, 3 is recent quitter, and 4 is current smoker.</td>
<td>3</td>
<td>0.1</td>
</tr>
<tr>
<td>aspirin before ‡</td>
<td>Prescription for aspirin at recruitment, yes/no</td>
<td>1</td>
<td>0.04</td>
</tr>
<tr>
<td>aspirin after ‡</td>
<td>Prescription for aspirin at completion</td>
<td>671</td>
<td>24.7</td>
</tr>
<tr>
<td>ace before ‡</td>
<td>Prescription for ACE inhibitor at recruitment</td>
<td>1</td>
<td>0.04</td>
</tr>
<tr>
<td>statin before ‡</td>
<td>Prescription for statins at recruitment</td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>statin after ‡</td>
<td>Prescription for statins at completion</td>
<td>678</td>
<td>25.0</td>
</tr>
<tr>
<td>full secondary prevention before</td>
<td>Prescription for aspirin and ACE inhibitors and beta blockers and statins at recruitment</td>
<td>1</td>
<td>0.04</td>
</tr>
<tr>
<td>full secondary prevention after</td>
<td>Prescription for aspirin and ACE inhibitors</td>
<td>100</td>
<td>3.5</td>
</tr>
<tr>
<td>resting heart rate ‡</td>
<td>resting heart rate at entry</td>
<td>7</td>
<td>0.3</td>
</tr>
<tr>
<td>heart rate after ‡</td>
<td>Heart rate after exercise</td>
<td>681</td>
<td>25.1</td>
</tr>
<tr>
<td>exercise sessions</td>
<td>number of exercise sessions attended to completion or drop-out</td>
<td>105</td>
<td>3.9</td>
</tr>
<tr>
<td>imd2004score ‡</td>
<td>Index of multiple deprivation derived from post code</td>
<td>114</td>
<td>4.2</td>
</tr>
<tr>
<td>combined total comorbidity ‡</td>
<td>D’Hoore comorbidity score</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>occupation code ‡</td>
<td>Occupational Code 1-9: Managers &amp; senior officials, Professional occupations, Associate professional, Administrative &amp; secretarial, Skilled trade, Personal service, Sales &amp; customer, Process, plant &amp; machines, Elementary occupations</td>
<td>293</td>
<td>10.8</td>
</tr>
<tr>
<td>completer category‡</td>
<td>1 is completed the programme, 2 is started but did not complete, 3 is never started.</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
**Risk stratification**

All patients who are recruited to exercise-based CR undergo risk stratification during initial assessment. Exercise testing is a part of this process. Risk stratification enables an appropriate and individualised exercise prescription to be planned for patients that reflects the severity of cardiac illness, co-morbidity and current medical state. The American Association of Cardiovascular and Pulmonary Rehabilitation [AACVPR] was the first to lay down criteria for risk stratification.

Risk stratification criteria for cardiac patients (AACVPR 1999) **LOW RISK**

- Uncomplicated MI, CABG, angioplasty or atherectomy
- Functional capacity equal to or greater than 6 METS 3 or more weeks after clinical event
- No resting or exercise induced myocardial ischaemia manifested as angina and/or ST segment displacement
- No resting or exercise-induced complex arrhythmias
- No significant left ventricular dysfunction (Ejection fraction equal to or greater than 50

**MODERATE RISK**

- Functional capacity less than 5-6 METS 3 or more weeks after clinical event
- Mild to moderately depressed left ventricular function (Ejection fraction 31-49
- Failure to comply with exercise prescription
- Exercise induced ST-segment depression of 1-2mm or reversible ischaemia defects (echocardiography or nuclear radiography)

**HIGH RISK**

- Severely depressed left ventricular function (Ejection fraction equal to or less than 30
- Complex ventricular arrhythmias at rest or appearing or increasing with exercise
- Decrease in systolic blood pressure of >15mmHg during exercise or failure to rise consistent with exercise workloads
- MI complicated by Congestive Heart Failure, cardiogenic shock and/or complex arrhythmias
- Patients with severe CHD and marked (>2mm) exercise induced ST-segment depression
- Survivor of a cardiac arrest
## Co-morbidity

### Table S2 | Co-morbidity Score

<table>
<thead>
<tr>
<th>Weight</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Myocardial infarct*</td>
</tr>
<tr>
<td></td>
<td>Congestive heart failure*</td>
</tr>
<tr>
<td></td>
<td>Peripheral vascular disease</td>
</tr>
<tr>
<td></td>
<td>Dementia</td>
</tr>
<tr>
<td></td>
<td>Cerebrovascular disease †</td>
</tr>
<tr>
<td></td>
<td>Chronic pulmonary disease</td>
</tr>
<tr>
<td></td>
<td>Connective tissue disease</td>
</tr>
<tr>
<td></td>
<td>Ulcer disease</td>
</tr>
<tr>
<td></td>
<td>Mild liver disease ‡</td>
</tr>
<tr>
<td>2</td>
<td>Hemiplegia</td>
</tr>
<tr>
<td></td>
<td>Moderate/severe renal disease (end stage)</td>
</tr>
<tr>
<td></td>
<td>Diabetes</td>
</tr>
<tr>
<td></td>
<td>Any tumour †</td>
</tr>
<tr>
<td></td>
<td>Leukaemia ‡</td>
</tr>
<tr>
<td></td>
<td>Lymphoma ‡</td>
</tr>
<tr>
<td>3</td>
<td>Moderate or severe liver disease</td>
</tr>
<tr>
<td>6</td>
<td>Metastatic solid tumour</td>
</tr>
</tbody>
</table>

*Myocardial infarct and congestive heart failure were omitted from the index because they are included in the AACVPR risk stratification for events.
†Includes patients with history of stroke or history of cerebrovascular disease.
‡Mild liver disease and hemiplegia were omitted from index because it could not be quantified in Zoghbi database.
§Includes patients with end stage renal disease.
◆Labelled as one category (malignancy)

### Table S3 | Model B All-cause survival model using fitness change Optimised all-cause survival model ordered by importance of variables to the Model. Pooled hazard ratios are from multiple imputation of missing data

<table>
<thead>
<tr>
<th>Model Term</th>
<th>complete cases model</th>
<th>Imputed data model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hazard Ratio</td>
<td>Confidence Interval</td>
</tr>
<tr>
<td></td>
<td>under 50</td>
<td>lower .95</td>
</tr>
<tr>
<td>Age category</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50-59</td>
<td>1.68</td>
<td>0.87</td>
</tr>
<tr>
<td>60-69</td>
<td>2.42</td>
<td>1.27</td>
</tr>
<tr>
<td>70+</td>
<td>3.42</td>
<td>2.82</td>
</tr>
<tr>
<td>Fitness:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High baseline, no change</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Mid baseline, improve</td>
<td>1.16</td>
<td>0.77</td>
</tr>
<tr>
<td>Mid baseline, no change</td>
<td>2.31</td>
<td>1.60</td>
</tr>
<tr>
<td>Low baseline, improve</td>
<td>2.63</td>
<td>1.75</td>
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<tr>
<td>Low baseline, no change</td>
<td>3.77</td>
<td>2.42</td>
</tr>
<tr>
<td>Aspirin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.35</td>
<td>0.23</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>ACE inhibitor</td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.48</td>
<td>1.14</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Statins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.74</td>
<td>0.57</td>
</tr>
<tr>
<td>No</td>
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</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MALE</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>FEMALE</td>
<td>0.71</td>
<td>0.50</td>
</tr>
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</table>
Table S4 | Model B Cardiovascular survival model using fitness change Optimised Cardiovascular survival model ordered by importance of variables to the Model. Pooled hazard ratios are from multiple imputation of missing data

<table>
<thead>
<tr>
<th>Model Term</th>
<th>complete cases model</th>
<th>Imputed data model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hazard Ratio</td>
<td>Confidence Interval lower .95</td>
</tr>
<tr>
<td>Fitness:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High baseline, no change</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Mid baseline, improve</td>
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<td>0.59</td>
</tr>
<tr>
<td>Mid baseline, no change</td>
<td>2.18</td>
<td>1.25</td>
</tr>
<tr>
<td>Low baseline, improve</td>
<td>3.37</td>
<td>1.86</td>
</tr>
<tr>
<td>Low baseline, no change</td>
<td>5.10</td>
<td>2.66</td>
</tr>
<tr>
<td>Statin</td>
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<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.43</td>
<td>0.29</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Age category</td>
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<td></td>
</tr>
<tr>
<td>under 50 years</td>
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<td></td>
</tr>
<tr>
<td>50-59 years</td>
<td>1.16</td>
<td>0.52</td>
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<tr>
<td>60-69 years</td>
<td>1.83</td>
<td>0.84</td>
</tr>
<tr>
<td>70+</td>
<td>3.35</td>
<td>1.50</td>
</tr>
<tr>
<td>Aspirin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.36</td>
<td>0.20</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Gender:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MALE</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>FEMALE</td>
<td>0.50</td>
<td>0.29</td>
</tr>
<tr>
<td>ACE inhibitor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.59</td>
<td>1.08</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Diagnostic Category</td>
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<td></td>
</tr>
<tr>
<td>Myocardial Infarction (MI)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Coronary Artery Bypass</td>
<td>0.64</td>
<td>0.41</td>
</tr>
<tr>
<td>Graft (CABG)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percutaneous Coronary Intervention (PCI)</td>
<td>0.20</td>
<td>0.05</td>
</tr>
<tr>
<td>MI + PCI</td>
<td>1.1</td>
<td>0.37</td>
</tr>
<tr>
<td>Angina</td>
<td>0.95</td>
<td>0.48</td>
</tr>
<tr>
<td>Other cardiac</td>
<td>1.00</td>
<td>0.24</td>
</tr>
</tbody>
</table>

Table S5 | Model B Baseline values for patients at recruitment to cardiac rehabilitation programme

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>895</td>
<td>134</td>
<td>1029</td>
</tr>
<tr>
<td>Mean years of follow-up (sd)</td>
<td>11.6</td>
<td>11.2</td>
<td>11.5</td>
</tr>
<tr>
<td>Mean age in years (sd)</td>
<td>61.1</td>
<td>63.1</td>
<td>61.3</td>
</tr>
<tr>
<td>Age group under 50 years</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>11.6</td>
<td>14</td>
<td>10.5</td>
</tr>
<tr>
<td>Age group 50-59 years</td>
<td>275</td>
<td>29</td>
<td>21.6</td>
</tr>
<tr>
<td>Age group 60-69 years</td>
<td>336</td>
<td>52</td>
<td>38.8</td>
</tr>
<tr>
<td>Age group 70 years and over</td>
<td>180</td>
<td>39</td>
<td>29.1</td>
</tr>
<tr>
<td>Diagnostic Category</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myocardial Infarction (MI)</td>
<td>456</td>
<td>73</td>
<td>529</td>
</tr>
<tr>
<td>Coronary Artery Bypass</td>
<td>269</td>
<td>34</td>
<td>303</td>
</tr>
<tr>
<td>Graft (CABG)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Percutaneous Coronary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intervention (PCI)</td>
<td>81</td>
<td>12</td>
<td>90</td>
</tr>
<tr>
<td>MI + PCI</td>
<td>36</td>
<td>3</td>
<td>52</td>
</tr>
<tr>
<td>Angina</td>
<td>41</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Other cardiac</td>
<td>12</td>
<td>1</td>
<td>7</td>
</tr>
</tbody>
</table>

N %                     | N %   | N %   | N %   |

| Age group under 50 years | 104   | 11.6% | 14   | 10.5% | 118  | 11.5% |
| Age group 50-59 years    | 275   | 30.7% | 29   | 21.6% | 304  | 29.5% |
| Age group 60-69 years    | 336   | 37.6% | 52   | 38.8% | 388  | 37.7% |
| Age group 70 years and over | 180  | 20.1% | 39   | 29.1% | 219  | 21.3% |

N %                     | N %   | N %   | N %   | N %   | N %   | N %   | N %   | N %   | N %   | N %   | N %   | N %   | N %   |

| Myocardial Infarction (MI) | 456   | 50.9% | 73   | 54.5% | 529  | 51.4% |
| Coronary Artery Bypass     | 269   | 30.1% | 34   | 25.4% | 303  | 29.4% |
| Graft (CABG)               |       |       |      |       |       |       |
| Percutaneous Coronary      |       |       |      |       |       |       |
| Intervention (PCI)         | 81    | 9.1%  | 12   | 9.0%  | 93   | 9.0%  |
| MI + PCI                   | 36    | 4.0%  | 3    | 2.2%  | 52   | 5.1%  |
| Angina                     | 41    | 4.6%  | 11   | 8.2%  | 13   | 1.3%  |
| Other cardiac              | 12    | 1.3%  | 1    | 0.7%  | 39   | 3.8%  |
Table S5] Model B Baseline values for patients at recruitment to cardiac rehabilitation programme

<table>
<thead>
<tr>
<th>Smoking history</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never smoked</td>
<td>249</td>
<td>63</td>
<td>312</td>
</tr>
<tr>
<td>Not for 10 years+</td>
<td>285</td>
<td>19</td>
<td>304</td>
</tr>
<tr>
<td>Not for 1-10 years</td>
<td>34</td>
<td>4</td>
<td>38</td>
</tr>
<tr>
<td>Recent quitter</td>
<td>273</td>
<td>40</td>
<td>313</td>
</tr>
<tr>
<td>Current smoker</td>
<td>54</td>
<td>8</td>
<td>62</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>D’Hoore Co-morbidity score</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>None (least)</td>
<td>663</td>
<td>89</td>
<td>752</td>
</tr>
<tr>
<td>1</td>
<td>111</td>
<td>14</td>
<td>125</td>
</tr>
<tr>
<td>2</td>
<td>102</td>
<td>27</td>
<td>129</td>
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<tr>
<td>3</td>
<td>12</td>
<td>3</td>
<td>15</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Diagnosis of diabetes</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>285</td>
<td>19</td>
<td>304</td>
</tr>
<tr>
<td>Not for 10 years</td>
<td>34</td>
<td>4</td>
<td>38</td>
</tr>
<tr>
<td>Recent quitter</td>
<td>273</td>
<td>40</td>
<td>313</td>
</tr>
<tr>
<td>Current smoker</td>
<td>54</td>
<td>8</td>
<td>62</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Family history of CHD</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>111</td>
<td>14</td>
<td>125</td>
</tr>
<tr>
<td>1</td>
<td>102</td>
<td>27</td>
<td>129</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
<td>3</td>
<td>15</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Weight at baseline</th>
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<th>Total</th>
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</thead>
<tbody>
<tr>
<td>I</td>
<td>402</td>
<td>35</td>
<td>437</td>
</tr>
<tr>
<td>II</td>
<td>354</td>
<td>43</td>
<td>397</td>
</tr>
<tr>
<td>III</td>
<td>139</td>
<td>53</td>
<td>192</td>
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<table>
<thead>
<tr>
<th>ACE inhibitor No</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>479</td>
<td>54</td>
<td>533</td>
</tr>
<tr>
<td>1</td>
<td>416</td>
<td>80</td>
<td>496</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ACE inhibitor Yes</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>31</td>
<td>7</td>
<td>41</td>
</tr>
<tr>
<td>1</td>
<td>864</td>
<td>124</td>
<td>988</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statin No</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>338</td>
<td>43</td>
<td>381</td>
</tr>
<tr>
<td>1</td>
<td>557</td>
<td>91</td>
<td>649</td>
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<table>
<thead>
<tr>
<th>Statin Yes</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>573</td>
<td>80</td>
<td>653</td>
</tr>
<tr>
<td>1</td>
<td>322</td>
<td>54</td>
<td>376</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Beta blockers No</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>479</td>
<td>54</td>
<td>533</td>
</tr>
<tr>
<td>1</td>
<td>416</td>
<td>80</td>
<td>496</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Beta blockers Yes</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>31</td>
<td>7</td>
<td>41</td>
</tr>
<tr>
<td>1</td>
<td>864</td>
<td>124</td>
<td>988</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers &amp; senior officials</td>
<td>152</td>
<td>11</td>
<td>163</td>
</tr>
<tr>
<td>Professional Occupations</td>
<td>98</td>
<td>7</td>
<td>105</td>
</tr>
<tr>
<td>Associate Professional</td>
<td>105</td>
<td>17</td>
<td>122</td>
</tr>
<tr>
<td>Administrative &amp; secretarial</td>
<td>75</td>
<td>41</td>
<td>116</td>
</tr>
<tr>
<td>Skilled trade</td>
<td>250</td>
<td>7</td>
<td>257</td>
</tr>
<tr>
<td>Personal service</td>
<td>14</td>
<td>16</td>
<td>30</td>
</tr>
<tr>
<td>Sales and customer</td>
<td>18</td>
<td>10</td>
<td>28</td>
</tr>
<tr>
<td>Process, plant &amp; machines</td>
<td>110</td>
<td>10</td>
<td>120</td>
</tr>
<tr>
<td>Elementary occupations</td>
<td>73</td>
<td>15</td>
<td>88</td>
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</tbody>
</table>

| Table S6] Model B Change from baseline at completion of the programme

<table>
<thead>
<tr>
<th>Fitness</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>High baseline, no change</td>
<td>397</td>
<td>44.3</td>
<td>18</td>
</tr>
<tr>
<td>High baseline, deteriorate</td>
<td>5</td>
<td>0.6</td>
<td>0</td>
</tr>
<tr>
<td>Mid baseline, improve</td>
<td>203</td>
<td>22.7</td>
<td>28</td>
</tr>
<tr>
<td>Mid baseline, no change</td>
<td>151</td>
<td>16.9</td>
<td>25</td>
</tr>
<tr>
<td>Mid baseline, deteriorate</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Low baseline, improve</td>
<td>86</td>
<td>9.6</td>
<td>20</td>
</tr>
<tr>
<td>Low baseline, no change</td>
<td>53</td>
<td>5.9</td>
<td>43</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Depression</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>Not depressed, no change</td>
<td>780</td>
<td>87.2</td>
<td>107</td>
</tr>
</tbody>
</table>
Table S6 | Model B Change from baseline at completion of the programme

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not depressed, deteriorate</td>
<td>14</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Borderline, improve</td>
<td>62</td>
<td>6.9</td>
<td>15</td>
</tr>
<tr>
<td>Borderline, no change</td>
<td>8</td>
<td>0.9</td>
<td>2</td>
</tr>
<tr>
<td>Borderline, deteriorate</td>
<td>2</td>
<td>0.2</td>
<td>0</td>
</tr>
<tr>
<td>Depressed, improve</td>
<td>26</td>
<td>2.9</td>
<td>7</td>
</tr>
<tr>
<td>Depressed, no change</td>
<td>3</td>
<td>0.3</td>
<td>1</td>
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</tbody>
</table>

Change in Model C a subset of Model A of those who also had a BMI measurement.

Table S7 | Model C, a subset of Model A of those who also had a BMI measurement. Baseline values for patients at recruitment to cardiac rehabilitation programme

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>753</td>
<td>136</td>
<td>889</td>
</tr>
<tr>
<td>Mean years of follow-up</td>
<td>9.8</td>
<td>(2.5)</td>
<td>9.7 (2.7)</td>
</tr>
<tr>
<td>Mean age in years (sd)</td>
<td>62.1</td>
<td>(9.4)</td>
<td>63.5 (9.1)</td>
</tr>
<tr>
<td>Age group under 50 years</td>
<td>71</td>
<td>9.4</td>
<td>10</td>
</tr>
<tr>
<td>Age group 50-59 years</td>
<td>214</td>
<td>28.4</td>
<td>33</td>
</tr>
<tr>
<td>Age group 60-69 years</td>
<td>297</td>
<td>39.5</td>
<td>51</td>
</tr>
<tr>
<td>Age group 70 years and above</td>
<td>171</td>
<td>22.7</td>
<td>42</td>
</tr>
<tr>
<td>Myocardial Infarction (MI)</td>
<td>302</td>
<td>40.1</td>
<td>60</td>
</tr>
<tr>
<td>Coronary Artery Bypass</td>
<td>256</td>
<td>34.0</td>
<td>37</td>
</tr>
<tr>
<td>Graft (CABG)</td>
<td>98</td>
<td>13.0</td>
<td>19</td>
</tr>
<tr>
<td>Percutaneous Coronary</td>
<td>49</td>
<td>6.5</td>
<td>7</td>
</tr>
<tr>
<td>Intervention (PCI)</td>
<td>26</td>
<td>3.5</td>
<td>11</td>
</tr>
<tr>
<td>MI + PCI</td>
<td>22</td>
<td>2.9</td>
<td>2</td>
</tr>
<tr>
<td>Smoking history</td>
<td>197</td>
<td>26.2</td>
<td>60</td>
</tr>
<tr>
<td>Never smoked</td>
<td>287</td>
<td>38.1</td>
<td>20</td>
</tr>
<tr>
<td>Not for 10 years+</td>
<td>49</td>
<td>6.5</td>
<td>7</td>
</tr>
<tr>
<td>Not for 1-10 years</td>
<td>181</td>
<td>24.0</td>
<td>41</td>
</tr>
<tr>
<td>Current smoker</td>
<td>39</td>
<td>5.2</td>
<td>8</td>
</tr>
</tbody>
</table>
Table S7 | Model C, a subset of Model A of those who also had a BMI measurement. Baseline values for patients at recruitment to cardiac rehabilitation programme

<table>
<thead>
<tr>
<th>D’Hoore Co-morbidity score</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>536</td>
<td>71.2</td>
<td>86</td>
</tr>
<tr>
<td>1 (least)</td>
<td>84</td>
<td>11.2</td>
<td>18</td>
</tr>
<tr>
<td>2</td>
<td>107</td>
<td>14.2</td>
<td>29</td>
</tr>
<tr>
<td>3</td>
<td>16</td>
<td>2.1</td>
<td>2</td>
</tr>
<tr>
<td>4 (most)</td>
<td>10</td>
<td>1.3</td>
<td>1</td>
</tr>
<tr>
<td>Diagnosis of diabetes</td>
<td>105</td>
<td>13.9</td>
<td>18</td>
</tr>
<tr>
<td>Family history of CHD</td>
<td>335</td>
<td>44.5</td>
<td>76</td>
</tr>
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<table>
<thead>
<tr>
<th>BMI at baseline</th>
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<th></th>
<th></th>
<th></th>
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</tr>
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<tbody>
<tr>
<td>BMI Normal</td>
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<td>29.2</td>
<td>36</td>
<td>26.5</td>
<td>256</td>
<td>28.8</td>
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<tr>
<td>BMI Overweight</td>
<td>363</td>
<td>48.2</td>
<td>60</td>
<td>44.1</td>
<td>423</td>
<td>47.6</td>
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<tr>
<td>BMI Obese</td>
<td>170</td>
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<td>40</td>
<td>29.4</td>
<td>210</td>
<td>23.6</td>
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<td>ACE inhibitor No</td>
<td>295</td>
<td>39.2</td>
<td>49</td>
<td>36.0</td>
<td>344</td>
<td>38.7</td>
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<tr>
<td>ACE inhibitor Yes</td>
<td>458</td>
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<td>87</td>
<td>64.0</td>
<td>545</td>
<td>61.3</td>
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<tr>
<td>Aspirin No</td>
<td>26</td>
<td>3.5</td>
<td>6</td>
<td>4.4</td>
<td>32</td>
<td>3.6</td>
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<tr>
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<td>96.5</td>
<td>130</td>
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<td>857</td>
<td>96.4</td>
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<td>18</td>
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<td>Statin Yes</td>
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<td>84.5</td>
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<td>41.9</td>
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<td>58.1</td>
<td>503</td>
<td>56.6</td>
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<table>
<thead>
<tr>
<th>Occupation</th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Managers &amp; senior officials</td>
<td>128</td>
<td>17.0</td>
<td>9</td>
<td>6.6</td>
<td>137</td>
<td>15.5</td>
</tr>
<tr>
<td>Professional Occupations</td>
<td>93</td>
<td>12.4</td>
<td>7</td>
<td>5.2</td>
<td>100</td>
<td>11.2</td>
</tr>
<tr>
<td>Associate Professional</td>
<td>81</td>
<td>10.8</td>
<td>16</td>
<td>11.8</td>
<td>97</td>
<td>10.9</td>
</tr>
<tr>
<td>Administrative &amp; secretarial</td>
<td>65</td>
<td>8.6</td>
<td>43</td>
<td>31.6</td>
<td>108</td>
<td>12.1</td>
</tr>
<tr>
<td>Skilled trade</td>
<td>212</td>
<td>28.2</td>
<td>43</td>
<td>31.6</td>
<td>255</td>
<td>28.4</td>
</tr>
<tr>
<td>Personal service</td>
<td>13</td>
<td>1.7</td>
<td>18</td>
<td>13.2</td>
<td>31</td>
<td>3.5</td>
</tr>
<tr>
<td>Sales and customer</td>
<td>15</td>
<td>2.0</td>
<td>11</td>
<td>8.1</td>
<td>26</td>
<td>2.9</td>
</tr>
<tr>
<td>Process, plant &amp; machines</td>
<td>87</td>
<td>11.5</td>
<td>7</td>
<td>5.1</td>
<td>94</td>
<td>10.6</td>
</tr>
<tr>
<td>Elementary occupations</td>
<td>59</td>
<td>7.8</td>
<td>17</td>
<td>12.5</td>
<td>76</td>
<td>8.5</td>
</tr>
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</table>

Table S8 | Model C, a subset of Model A of those who also had a BMI measurement. Optimised all-cause survival model ordered by importance of variables to the Model. Pooled hazard ratios are from multiple imputation of missing data

<table>
<thead>
<tr>
<th>Model Term</th>
<th>Hazard Ratio</th>
<th>Confidence Interval</th>
<th>Pooled Hazard Ratio</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>Imputed data model</td>
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</tr>
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<td>Age category</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>under 50</td>
<td>1.00</td>
<td>-</td>
<td>1.00</td>
</tr>
<tr>
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Table S8 | Model C, a subset of Model A of those who also had a BMI measurement. Optimised all-cause survival model ordered by importance of variables to the Model. Pooled hazard ratios are from multiple imputation of missing data

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Table S9 | Model C, a subset of Model A of those who had a BMI measurement. Optimised Cardiovascular survival model ordered by importance of variables to the Model (889 cases, 80 cardiovascular deaths). Pooled hazard ratios are from multiple imputation of missing data

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