### Reference

### Study Details
- **Study type/evidence level**: Observational study
- **Number of patients**: Total acute MI = 83599, N (STEMI) = 33163, N (NSTEMI) = 50436

### Patient Characteristics
- **Inclusion**: MINAP database provided patient records of patients with acute MI admitted to hospital between Jan 2004 – March 2005. People transferred from admitting hospital to a hospital with coronary intervention procedures only counted once.
- **Exclusion**: inpatient deaths, transfers to other hospitals; unknown destinations

### Baseline Characteristics
- Compared with people who were treated by non-cardiologists, people treated by cardiologists were younger, more likely to be male, smoke, have ST elevation, and have lower co-morbidity (lower rates of HF, diabetes, CVD, COPD, CKD in people admitted under cardiologists).
- Cardiologists cared for 46% of STEMI.
- Non-cardiologists cared for 70% of NSTEMI patients

### Intervention
- **Care under cardiologist**: patient admitted under responsibility of a cardiologist and received care from cardiologist and team at least during the first 24 h of admission.
- **N= 30383**

### Comparison
- **Care under non-cardiologist**: care initially under a non-cardiologist, subsequent cardiology involvement was not possible to establish
- **N=53216**

### Length of follow-up
- 90 days

### Outcome measures
- **Mortality**
- **Prescription of secondary prevention drugs**

### Source of funding
Healthcare Commission

### Effect Size
Ratios adjusted for sex, smoking, hospital cluster, age, presence/absence of ST elevation, previous MI, previous angina, hypertension, hyperlipidaemia, heart failure, diabetes, PVD, cerebrovascular disease, CKD with creatinine > 200 mmol, COPD, asthma

### Prescription of secondary prevention drugs (N=57508 people discharged from hospital)
There was NS difference for non-use of ASA for cardiology vs non-cardiology care.
There was NS difference for non-use of ACE inhibitors for cardiology vs non-cardiology care.

People treated by cardiologists had a significantly lower risk of non-prescription of beta blockers than those treated by non-cardiologists [RR 0.92 (95% CI 0.87-0.97)].
People treated by cardiologists had a significantly lower risk of non-prescription of statins than those treated by non-cardiologists [RR 0.83 (95% CI 0.71-0.97)].

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Use of Angiography (N=79374)
In non-interventional hospitals, people treated by a cardiologist were significantly more likely to undergo angiography than those treated by a non-cardiologist [RR 1.20 (95% CI 1.07-1.38)].
In interventional hospitals, there was NS difference in angiography for people treated by cardiologists versus non cardiologists.

Mortality at 90 days (N=76376 with valid NHS number for tracking)
In people with NSTEMI, treatment under a cardiologist was associated with a significant decrease in the risk of death at 90 days [RR 0.84 (95% CI 0.78 to 0.91)] compared with a non-cardiologist.

The result was similar whether the hospital was an interventional or non-interventional hospital.

For all infarctions (STEMI + NSTEMI), treatment under a cardiologist was associated with a significant decrease in the risk of death at 90 days [RR 0.86 (95% CI 0.81 to 0.91)] compared with a non-cardiologist.

Authors discuss a selection bias – cardiologists tend to have referred to them younger, lower risk patients. May be due to a perception that NSTEMI patients are lower risk.
Authors speculate that other differences in management exist, which impact mortality.

Ref ID: 102

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study type/ Evidence level</th>
<th>Number of patients</th>
<th>Patient characteristics</th>
<th>Intervention</th>
<th>Comparison</th>
<th>Length of follow-up</th>
<th>Outcome measures</th>
<th>Source of funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roe MT, Chen AY, Mehta RH et al. Influence of inpatient service specialty on care processes and outcomes for patients with non ST-segment elevation acute coronary syndromes. Circulation. 2007; 116(10):1153-1161. Ref ID: 102</td>
<td>Observational study 3 Multicentre USA CRUSADE database</td>
<td>Total NSTE ACS = 55994 N (NSTEMI) = 49274</td>
<td>Inclusion: CRUSADE database provided patient records of patients with NSTEACS admitted to tertiary hospitals with revascularisation capabilities (PCI and CABG) admitted to hospital between Jan 2001 – Sept. 2003. NSTEACS defined as ischemic pain at rest (&gt; 10 minutes) within 24 h of hospital presentation and at least 1 of: ST-depression ≥ 0.5 mm; transient ST elevation 0.5-1.0 mm lasting for &lt; 10 min.; and/or positive cardiac markers greater than ULN of laboratory reference. Exclusion: people transferred to other hospitals when in-hospital data was missing; missing inpatient data for primary inpatient service</td>
<td>Care under cardiologist N= 35374</td>
<td>Care under non-cardiologist –defined as family practice/internal medicine/other N=20620</td>
<td>Not stated</td>
<td>In-hospital Mortality In-hospital reinfarction In-hospital non-CABG RBC transfusion Prescription of secondary prevention drugs Angiography</td>
<td>Schering-Plough Corp; Bristol Myers Squibb/Sanofi-Aventis Pharma; Millennium Pharmaceuticals</td>
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</table>
Baseline characteristics:
Compared with people who were treated by non-cardiologists, people treated by cardiologists were significantly younger, more likely to be male. People cared for by cardiologists had significantly lower prevalence of hypertension, diabetes, renal insufficiency, prior stroke, signs of heart failure at presentation, lower HR, lower SBP. People cared for by cardiologists were significantly more likely to smoke, had higher prevalence of a family history of CAD, hyperlipidaemia, prior MI, prior CHF, prior PCI, prior CABG, have ST depression.

**Effect Size**
Odds Ratios (OR) adjusted for sex, BMI, white race, insurance status, family history pf premature CAD, hypercholesterolemia, total number of hospital beds, geographic region in USA, prior CABG, prior PCI, prior stroke, positive cardiac biomarkers, presenting heart rate, presenting SBP, presenting signs of HF, smoking, hospital cluster, age, presence/absence of ST elevation, previous MI, hypertension, heart failure, diabetes, renal insufficiency

**Patient features by Primary Inpatient Service**
Multivariable model showed that factors most strongly associated with care by cardiologists were slower presenting HR, younger age, male sex, prior PCI, transient ST elevation, lack of renal insufficiency, lack of prior stroke, lack of diabetes, lack of CHF.

**Prescription of secondary prevention drugs: cardiology versus non-cardiology care**

<table>
<thead>
<tr>
<th>Drug given (≤ 24 h)</th>
<th>Adjusted OR (95% CI)</th>
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<tbody>
<tr>
<td>ASA</td>
<td>1.28 (1.17 -1.39)</td>
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<tr>
<td>Beta-blocker</td>
<td>1.28 (1.20 -1.36)</td>
</tr>
<tr>
<td>UFH</td>
<td>1.50 (1.42 -1.60)</td>
</tr>
<tr>
<td>LMWH</td>
<td>0.90 (0.84-0.95)</td>
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<tr>
<td>GP IIb/IIIa inhibitor</td>
<td>2.11 (1.95-2.27)</td>
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<tr>
<td>clopidogrel</td>
<td>1.58 (1.49-1.69)</td>
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</table>

<table>
<thead>
<tr>
<th>Drug prescribed at discharge</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA</td>
<td>1.37 (1.27 –1.48)</td>
</tr>
<tr>
<td>Beta-blocker</td>
<td>1.13 (1.06-1.21)</td>
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<tr>
<td>ACE inhibitor</td>
<td>1.06 (1.01-1.12)</td>
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<tr>
<td>Lipid-lowering agents</td>
<td>1.12 (1.03-1.22)</td>
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<tr>
<td>clopidogrel</td>
<td>1.49 (1.40-1.59)</td>
</tr>
</tbody>
</table>
People treated by cardiologists versus non-cardiologists were significantly more likely to receive:
ASA
Beta- blockers
UFH
GPI
Clopidogrel
ACEi (post-discharge)
Lipid lowering agents (post-discharge)

**Invasive procedures: cardiology versus non-cardiology care**

<table>
<thead>
<tr>
<th>Invasive procedure</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catheterisation</td>
<td>2.55 (2.32-2.80)</td>
</tr>
<tr>
<td>Catheterisation &lt; 48 h</td>
<td>2.25 (2.08-2.43)</td>
</tr>
<tr>
<td>PCI</td>
<td>1.86 (1.73-2.00)</td>
</tr>
<tr>
<td>PCI &lt; 48 h</td>
<td>2.06 (1.91-2.23)</td>
</tr>
<tr>
<td>CABG</td>
<td>NS</td>
</tr>
</tbody>
</table>

People treated by cardiologists versus non-cardiologists were significantly more likely to receive:
Cardiac catheterisation
PCI
PCI < 48 h
There was NS difference between cardiology and non-cardiology care for CABG.

**In-hospital Outcomes**

<table>
<thead>
<tr>
<th>In-hospital outcome</th>
<th>Cardiology care (%)</th>
<th>Non-cardiology care (%)</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Death</td>
<td>3.2</td>
<td>5.7</td>
<td>0.80 (0.73-0.88)</td>
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<tr>
<td>Re-infarction</td>
<td>2.8</td>
<td>3.4</td>
<td>0.74 (0.65-0.84)</td>
</tr>
<tr>
<td>Non-CABG red blood cell transfusion</td>
<td>7.0</td>
<td>11.8</td>
<td>0.75 (0.69-0.82)</td>
</tr>
</tbody>
</table>

People who received cardiology care compared with those who received non-cardiology care had significantly lower odds of:
In-hospital death
In-hospital re-infarction
Non-CABG RBC transfusion

After further adjusting for differences in acute (<24 h) medications, individual patient contraindications to acute medications, and the use of cardiac catheterisation within 48h, the mortality difference was NS [adjusted OR 0.92 (0.83-1.02)]

Limitations: Authors discuss a selection bias – cardiologists tend to have referred to them younger, lower risk patients. They did not collect detailed data regarding physician treatment decisions for individual patients; documentation of medication contraindications may have varied; no data on contraindications to catheterisations; hospitals were not surveyed to identify differences in decision support or quality infrastructures for cardiology vs non-cardiology; mortality of excluded patients (N=472) was 2-fold higher than overall mortality of the analysis group, thus potential bias. Study is specific to tertiary hospitals.