Supplementary Material

Table S1 – European society of cardiology quality indicators

Number	Domain	Type	Description
1.1	Centre organisation	Main	The centre should be part of a network organisation with written protocols for rapid and efficient management covering the following points: • Single emergency phone number for the patient to be connected with a medical system for triage. • Pre-hospital interpretation of ECG for diagnosis and decision for immediate transfer to a centre with catheterisation laboratory facilities. • Pre-hospital activation of the catheterisation laboratory. Numerator: all centres that are part of a network organisation. Denominator: all centres.
1.2	Centre organisation	Secondary	Routine assessment of relevant times for the reperfusion process in STEMI patients (i.e. times from 'call to first medical contact', 'first medical contact to door', 'door to arterial access'; and 'door-in-door-out' for centres without a catheterisation laboratory on site). Numerator: all centres with routine assessment of relevant intervals for the reperfusion process. Denominator: all centres.
1.3	Centre organisation	Secondary	The centre should participate in a regular registry or programme for quality assessment. Numerator: centres participating in a registry. Denominator: all centres.
2.1	Reperfusion-invasive strategy	Main	Proportion of STEMI patients reperfused among those eligible (onset of symptoms to diagnosis <12 h). Numerator: STEMI patients with onset of symptoms to diagnosis <12 h who receive reperfusion therapy. Denominator: all STEMI patients eligible for reperfusion (onset of symptoms to diagnosis <12 h, without contraindication or patient refusal).
2.2	Reperfusion-invasive strategy	Main	Proportion of patients with timely reperfusion. Timely is defined as: • For patients treated with fibrinolysis: <30 min from Fist Medical Contact FMC to needle. • For patients treated with primary PCI and admitted to centres with catheterisation laboratory facilities: <60

			min from door-to-arterial access for reperfusion with PCI. • For transferred patients: door-in-door-out time of <30 min. Numerator: number of STEMI patients treated with primary PCI within the above delays. Denominator: all STEMI patients eligible for reperfusion by primary PCI (onset of symptoms to diagnosis <12 h, without contraindication or patient refusal).
2.3	Reperfusion-invasive strategy	Main	Proportion of patients with NSTEMI and no contraindication who receive coronary angiography within 72 h after admission. Numerator: number of NSTEMI patients at high-intermediate ischaemic risk undergoing coronary angiography within 72 h after diagnosis. Denominator: all NSTEMI patients at high-intermediate ischaemic risk without contraindications or patient refusal.
2.4	Reperfusion-invasive strategy	Main	Reperfusion-invasive strategy. Secondary QI (STEMI): The time between the FMC and arterial access (absolute value) for primary PCI.
3.1	In-hospital risk assessment	Main	Proportion of patients with NSTEMI in whom ischaemic risk assessment using the GRACE risk score is performed. GRACE score should be assessed and the numerical value of the score recorded for all patients admitted with suspected NSTEMI. Numerator: number of NSTEMI patients who have been stratified according to the GRACE risk score. Denominator: number of NSTEMI patients.
3.2	In-hospital risk assessment	Main	Proportion of patients admitted with STEMI or NSTEMI who have bleeding risk assessment using the CRUSADE bleeding score. The CRUSADE bleeding score should be assessed and the numerical value of the score recorded for all patients admitted with STEMI or NSTEMI. Numerator: number of STEMI or NSTEMI patients who have been stratified according to CRUSADE bleeding score. Denominator: number of STEMI or NSTEMI patients.
3.3	In-hospital risk assessment	Main	Proportion of patients with a numerical assessment of LVEF before discharge Numerator: number of AMI patients with measured LVEF. Denominator: All AMI patients
4.1	Anti-	Main	Proportion of patients with ‘adequate $P2Y_{12}$- inhibition’ defined as: (number of patients discharged with

	thrombotics during hospitalisation		prasugrel or ticagrelor or clopidogrel)/(patients eligible). Eligible is defined as follows: • For ticagrelor: AMI patients without previous haemorrhagic stroke, high bleeding risk, fibrinolysis or oral anticoagulation. • For prasugrel: PCI-treated AMI patients without previous haemorrhagic or ischaemic stroke, high bleeding risk (patients ⩾75 years and/or <60 kg body weight are also considered as high bleeding risk), fibrinolysis or oral anticoagulation. • For clopidogrel: no indication for prasugrel or ticagrelor and no high bleeding risk. Numerator: number of STEMI and NSTEMI patients with 'adequate $P2Y_{12}$ inhibitor' at discharge. Denominator: STEMI and NSTEMI patients alive at discharge and without contraindications to $P2Y_{12}$ inhibitors
4.2	Anti-thrombotics during hospitalisation	Main	Proportion of patients with NSTEMI treated with fondaparinux, unless candidate for immediate (⩽2 h) invasive strategy or with eGFR<20 ml/min. Numerator: number of NSTEMI patients with eGFR ⩾ 20 ml/min, not candidates for urgent invasive strategy, treated with fondaparinux. Denominator: all NSTEMI patients with eGFR ⩾ 20 ml/min, not candidates for urgent invasive strategy.
4.3	Anti-thrombotics during hospitalisation	Secondary	Proportion of patients discharged on dual antiplatelet therapy, defined as: (number of patients discharged on dual antiplatelet therapy)/(number of patients with AMI without clear and documented contraindication). Numerator: number of AMI patients, without contraindication, discharged with dual antiplatelet therapy. Denominator: all AMI patients, without contra indications to dual antiplatelet therapy.
5.1	Discharge treatment	Main	Proportion of patients with AMI discharged on statins, unless contraindicated Numerator: the number of patients with AMI who receive high intensity statin therapy at discharge. Denominator: STEMI and NSTEMI patients alive at discharge and without contraindications, refusal, side effects, allergy, or history of intolerance to high-intensity statin therapy.
5.2	Discharge treatment	Secondary	Proportion of patients with AMI and clinical evidence of heart failure or a LVEF ⩽40% who are discharged on ACEI (or ARBs if intolerant of ACEI) unless contraindicated Numerator: the number of patients with AMI who have heart failure or a LVEF⩽40%, and who receive an ACEI/ARB before discharge. Denominator: all AMI patients who have heart failure or a LVEF⩽40%, and who are eligible for

			ACEI/ARBs (no hypotension, acute renal failure, hyperkalaemia, contraindications, refusal, side effects or allergy).
5.3	Discharge treatment	Secondary	Proportion of patients with AMI and clinical evidence of heart failure or an LVEF<40% who are discharged on beta-blockers, unless contraindicated. Numerator: the number of patients with AMI who have heart failure or a LVEF⩽40% and receive a beta-blocker before discharge. Denominator: all AMI patients who have heart failure or a LVEF⩽40%, and are eligible for beta-blockers (no evidence of a low output state, increased risk for cardiogenic shock, PR interval >0.24 s, second- or third-degree heart block, active asthma, or reactive airways disease).
6.1	Patient satisfaction	Main	Feedback regarding the patient's experience systematically collected in an organised way from all patients. It should include the following points: • Pain control. • Explanations provided by doctors and nurses (about the coronary disease, the benefit/risk of the discharge treatment, and medical follow-up). • Discharge information regarding what to do in case of recurrence of symptoms and recommendation to attend a cardiac rehabilitation programme (including smoking cessation and diet counselling). Numerator: number of STEMI and NSTEMI patients discharged alive with feedback collected. Denominator: STEMI and NSTEMI patients discharged alive.
7.1	Composite QI	Main composite QI	Opportunity based CQI, with the following individual indicators: • The centre is part of a network organisation. • Proportion of patients reperfused among eligible (STEMI with FMC<12 h after onset of pain). • Coronary angiography in STEMI and NSTEMI patients at high ischaemic risk and without contraindications. • Ischaemic risk assessment using the GRACE risk score in NSTEMI patients. • Bleeding risk assessment using the CRUSADE risk score in STEMI and NSTEMI patients. • Assessment of LVEF before discharge. • Low dose aspirin (unless high bleeding risk or oral anticoagulation). • Adequate $P2Y_{12}$ inhibition (as defined in the treatment during hospitalisation section). • ACEI (or ARB if intolerant) in patients with clinical evidence of heart failure or an LVEF⩽40%.

			• Beta-blockers (unless clear contraindication) in patients with clinical evidence of heart failure or an LVEF⩽40%. • High intensity statins. • Feedback regarding the patient's experience and quality of care is systematically collected for all patients. Numerator: all AMI patients discharged: sum of points (one point for each individual indicator, all individual indicators are weighted equally). Denominator: all AMI patients discharged: sum of points (one point for each applicable indicator, according to patient and centre characteristics).
7.2	Composite QI	Secondary composite QI	All-or-none CQI based on 3 or 5 components, according to the LVEF. Calculated on 3 individual QIs in patients without heart failure and with LVEF>40%. • Low-dose aspirin. • $P2Y_{12}$ inhibitor (unless documented contraindication). • High-intensity statins. Calculated on 5 individual QIs in patients with heart failure or with LVEF⩽40%. • Low-dose aspirin. • $P2Y_{12}$ inhibitor (unless documented contraindication). • High-intensity statins. • ACEI (or ARB if intolerant to ACEI) in patients with clinical evidence of heart failure or LVEF⩽40%. • Beta-blockers (unless clear contraindication) in patients with clinical evidence of heart failure or LVEF⩽40%.
7.3	Outcome QI	Secondary outcome QI	30-day mortality rate adjusted for the GRACE 2.0 risk score. Numerator: all AMI patients who died within 30 days after admission, with assessment of the GRACE risk score. Denominator: all AMI patients with assessment of the GRACE risk score and 30-day follow-up.

ACEI: angiotensin-converting enzyme inhibitors; AMI: acute myocardial infarction; ARB: angiotensin receptor blocker; CQI: composite quality indicator; ESC: European Society of Cardiology; FMC: first medical contact; LVEF: left ventricular ejection fraction: NSTEMI: non-ST segment elevation myocardial infarction; PCI: percutaneous coronary intervention; QI: quality indicator; STEMI: ST segment elevation myocardial infarction.

Table S2 – Variable calculation and inclusion

No.	Name	Qualifiers	Variables used in calculation – MINAP	Variables used in calculation- ACSIS
1.1	Centre part of a network	Single emergency phone number for patient to be connected to triage	None, assumed 100% by nature STEMI system in UK	None, assumed 100% by nature STEMI system in Israel
		Pre-hospital interpretation of ECG	ECG performed pre-hospital in patients who were admitted by ambulance	ECG performed pre-hospital in patients who were admitted by ambulance
		Pre-hospital activation cath lab	None, assumed 100% by nature STEMI system in UK	None, assumed 100% by nature STEMI system in Israel
1.2	Routine assessment of times to reperfusion for STEMI patients		None, assumed 100% as in MINAP	None, assumed 100% in ACSIS
1.3	Participate in regular registry		None, assumed 100% as in MINAP	None, assumed 100% as in ACSIS
2.1	Proportion of those eligible reperfused within 12hours		STEMI who present within 12 hours based on symptom time and arrival time	STEMI who present within 12 hours based on symptom time and arrival time
2.2	Proportion patients with timely reperfusion	Lysis within 30mins of diagnosis	Presented within 12 hours, received lysis within 30minutes of arriving in hospital. No contraindications	Presented within 12 hours, received lyisis within 30minutes of arriving in hospital. No contraindications
		PCI <60mins from admission	Presented within 12 hours, received PCI within 60 minutes of arriving in hospital. No contraindications	Presented within 12 hours, received PCI within 60 minutes of arriving in hospital. No contraindications

		DIDO time of <30mins for transferred patients	Presented within 12 hours to a non PPCI hospital, discharged within 30 minutes.	Not relevant per hospital system in Israel
2.3	NSTEMI (angiography within 72 hours)		Received angiography, data on time of angiography, data on time of admission	Received angiography, data on time of angiography, data on time of admission
2.4	Median time of reperfusion		Time of reperfusion from arrival time in STEMI patients treated with PPCI	Time of reperfusion from arrival time in STEMI patients treated with PPCI
3.1	GRACE score documented in notes		Not performed	Not performed
3.2	CRUSADE score documented in notes		Not performed	Not performed, no documentation in registry
3.3	Assessment of LV and numerical value recorded in notes		Value existing for ejection fraction	Value existing for ejection fraction
4.1	Adequate $P2Y_{12}$		Excluded patients died in hospital.	Excluded patients died in hospital.
4.2	NSTEMI patients received fondaparinux		Received fondaparinux, eGFR>20, no angiography within 2 hours of admission	Received fondaparinux, eGFR>20, no angiography within 2 hours of admission
4.3	AMI discharged on DAPT		Excluded died in hospital. Discharged on both aspirin and $P2Y_{12}$	Excluded died in hospital. Discharged on both aspirin and $P2Y_{12}$
5.1	High intensity statins		Used statin at discharge as surrogate	Used statin at discharge as surrogate where high-intensity statin data not

				available
5.2	HF or EF<40% on an ACE		Excluded died in hospital. Patients with HF and ACE at discharge	Exclude died in hospital. Patients with HF or otherwise reduced EF receiving ACE at discharge
5.3	HF or EF<40% on a BB		Excluded died in hospital. Patients with HF and beta-blockers at discharge	Excluded died in hospital. Patients with HF and beta-blockers at discharge
6	Patient satisfaction		Not performed	Not performed
7.1	Composite opportunity		Opportunity score based upon $P2Y_{12}$, statin, aspirin, BB, ACE, ejection fraction, angiography, reperfusion in STEMI patients who present within 12 hours	Opportunity score based upon $P2Y_{12}$, statin, aspirin, BB, ACE, ejection fraction, angiography, reperfusion in STEMI patients who present within 12 hours
7.2	Composite all or none (non HF)		Received aspirin/$P2Y_{12}$/statin if eligible	Received aspirin/$P2Y_{12}$/statin if eligible
	Composite all or none (HF)		Received Aspirin/$P2Y_{12}$/statin/BB/ACEI if eligible	Received aspirin/$P2Y_{12}$/statin/BB/ACEI if eligible
7.3	30-day adjusted mortality		30 day mortality adjusted for GRACE risk score	30 day mortality adjusted for GRACE risk score

ACEI – Angiotensin converting enzyme antagonists, AMI – acute myocardial infarction, BB- beta-blockers, HF- heart failure, NSTEMI: non-ST segment elevation myocardial infarction; PCI: percutaneous coronary intervention; QI: quality indicator; STEMI: ST segment elevation myocardial infarction.
*HF/EF based on history of heart failure, loop diuretic use during admission, killip class and ejection fraction variable

Table S3- Baseline and treatment characteristics

	Israel				UK			
	Total cohort	Years			Total cohort	Years		
	(n=4761)	2006 (n=1731)	2010 (n=1539)	2013 (n=1491)	(n=17,608)	2006 (n=5,171)	2010 (n=6,765)	2013 (n=5,672)
Demographics								
Age in years, mean (SD)	63.8 (13.1)	63.5 (13.3)	63.6 (12.9)	64.1 (13.0)	69.3 (13.9)	70.0 (13.6)	68.9 (14.0)	69.1 (14.1)
Age in years, median (IQR)	63 (54.0-74.0)	63 (53.0-74.0)	63 (54.0-73.0)	64 (55.0-74.0)	70 (59.0-80.0)	71 (59.0-80.0)	70 (59.0-80.0)	70 (58.0-80.0)
Female	1059 (22.2)	384 (22.2)	328 (22.0)	347 (22.5)	5954 (33.9)	1818 (35.3)	2240 (33.1)	1896 (33.5)
Medical history								
Prior myocardial infarction	1366 (28.7)	469 (27.1)	448 (30.0)	449 (29.2)	6068 (34.5)	1882 (36.4)	2351 (34.8)	1835 (32.4)*
Hypertension	2946 (61.9)	986 (57.1)	960 (64.4)	1000 (65.0)*	8120 (49.5)	2388 (48.5)	3084 (49.9)	2648 (50.0)
Diabetes	1725 (36.3)	559 (32.3)	556 (37.3)	610 (39.6)*	3290 (19.6)	881 (19.9)	1282 (19.9)	1127 (20.7)
Dyslipidaemia	3309 (69.5)	1076 (62.3)	1093 (73.3)	1140 (74.1)*	5273 (33.0)	1451 (30.9)	2091 (34.5)	1731 (33.2)*

Family history of IHD	1213 (25.5)	414 (24.0)	417 (28.0)	382 (24.8)*	4192 (31.3)	1186 (33.0)	1688 (32.4)	1318 (28.8)*
Smoker (current or previous)	2941 (62.5)	1064 (62.4)	948 (64.7)	929 (60.4)	10159 (62.9)	2990 (64.7)	3916 (62.8)	3253 (61.4)*
Peripheral vascular disease	429 (9.0)	175 (10.1)	132 (8.9)	122 (7.9)*	700 (4.4)	220 (4.6)	261 (4.3)	219 (4.2)
Heart failure	405 (8.5)	149 (8.6)	134 (9.0)	122 (7.9)	837 (5.2)	256 (5.4)	315 (5.1)	266 (5.1)
Chronic kidney disease	612 (12.9)	221 (12.8)	181 (12.1)	210 (13.6)*	897 (5.6)	171 (3.6)	386 (6.3)	340 (6.5)*
Cerebrovascular disease	400 (8.4)	156 (9.0)	119 (8.0)	125 (8.1)*	1375 (8.5)	447 (9.4)	518 (8.5)	410 (7.8)*
Clinical Presentation								
Out of hospital cardiac arrest	160 (3.4)	58 (3.4)	42 (2.8)	60 (3.9)	371 (2.2)	83 (1.7)	131 (2.0)	157 (2.9)*
ST deviation on admission	3323 (69.8)	1260 (72.9)	1051 (70.5)	1012 (65.8)*	9203 (55.0)	2824 (58.7)	3410 (53.1)	2969 (53.8)*
Killip class								
I	3946 (84.0)	1384 (80.1)	1273 (85.4)	1289 (87.2)*	3301 (79.4)	Not available	2 (66.7)	3299 (79.4)
II	424 (9.0)	199 (11.5)	115 (7.7)	110 (7.4)*	571 (13.7)		0 (0)	571 (13.8)

III	239 (5.1)	115 (6.7)	71 (4.8)	53 (3.6)*	226 (5.4)		1 (33.3)	225 (5.4)
IV	89 (1.9)	30 (1.7)	32 (2.1)	27 (1.8)	59 (1.4)		0 (0)	59 (1.4)
GRACE score, mean (SD)	110.5 (34.0)	111.9 (35.2)	109.4 (33.9)	110.2 (32.9)	121.0 (34.4)	123.6 (31.6)	120.8 (34.7)	121.1 (34.2)
GRACE STEMI, mean (SD)	96.6 (29.3)	97.5 (30.6)	96.9 (29.7)	95.5 (27.5)	122.4 (33.6)	137.1 (31.2)	122.7 (33.8)	121.9 (33.3)
GRACE NSTEMI, mean (SD)	123.1 (33.1)	123.9 (34.4)	122.4 (33.0)	122.8 (31.9)	120.2 (34.8)	117.9 (30.3)	119.9 (35.0)	120.7 (34.6)
Low risk GRACE category	2050 (51.7)	660 (50.8)	720 (53.2)	670 (50.9)	3913 (43.9)	23 (40.4)	2062 (43.7)	1828 (44.2)
Medium risk GRACE category	1078 (27.2)	352 (27.1)	353 (26.1)	373 (28.3)	2665 (29.9)	21 (36.8)	1421 (30.1)	1223 (29.5)
High risk GRACE category	782 (19.72)	277 (21.5)	261 (19.6)	244 (19.0)	2341 (26.3)	13 (22.8)	1239 (26.2)	1089 (26.3)
In-hospital revascularisation								
Coronary angiography†	4168 (87.6)	1439 (83.3)	1349 (90.5)	1380 (89.7)*	10218 (64.8)	1926 (37.3)	4316 (72.7)	3976 (85.5)*
PCI	3344 (70.3)	1135 (65.7)	1086 (72.8)	1123 (73.0)*	6325 (41.0)	711 (14.4)	2776 (52.5)	2838 (66.0)*
CABG surgery	254 (5.3)	106 (6.1)	64 (4.3)	84 (5.5)	321 (2.0)	75 (1.5)	149 (2.5)	97 (2.1)*
Medications at discharge								

Aspirin	4460 (93.7)	1606 (92.8)	1405 (94.2)	1449 (94.2)	12634 (89.1)	3635 (81.4)	4853 (91.2)	4146 (94.4)*
$P2Y_{12}$ inhibitor	3871 (81.3)	1279 (73.9)	1269 (85.1)	1323 (86.0)*	8762 (62.4)	51 (1.1)	4731 (91.4)	3980 (94.9)*
β-blocker	3782 (79.4)	1387 (80.1)	1201 (80.5)	1194 (77.6)	11166 (86.5)	2916 (73.7)	4,396 (90.3)	3854 (94.3)*
Statin	4458 (93.6)	1589 (91.8)	1439 (96.5)	1430 (92.9)	13079 (90.9)	3916 (85.4)	4990 (92.7)	4173 (94.4)*
ACEi/ARB	3625 (76.1)	1261 (72.8)	1184 (79.4)	1180 (76.7)*	11436 (84.7)	3210 (74.2)	4486 (88.7)	3740 (91.0)*

Values are presented as n (%) unless otherwise stated.

ACEi – Angiotensin converting enzyme inhibitor, ARB- angiotensin receptor blocker, IHD- ischaemic heart disease.
IQR- interquartile range, SD- standard deviation, PCI- percutaneous coronary intervention

*** Denotes p<0.05 compared to 2006.**

Table S4 – Quality indicators according to year and country

		Israel			United Kingdom		
QI	**QI Type**	**Cohort 1**	**Cohort 2**	**Cohort 3**	**Cohort 1**	**Cohort 2**	**Cohort 3**
		2006 (n=1731)	2010 (n=1539)	2013 (n=1491)	2006 (n=5,171)	2010 (n=6,765)	2013 (n=5,672)
2.1: Proportion reperfused within 12 hours (STEMI)	Main	581 (96.2)	555 (96.0)	595 (95.0)	1141 (84.6)	1492 (90.8)	1405 (91.7)*
2.2: STEMI timely reperfusion	Main	236 (42.1)	299 (56.6)	294 (54.0)*	600 (50.6)	1017 (60.6)	1133 (72.3)*
2.2a: fibrinolysis (<30 minutes)		19 (14.6)	7 (46.7)	10 (71.4)*	595 (50.6)	214 (52.2)	22 (45.8)
2.2b: Primary PCI (<60 minutes)		213 (50.5)	214 (56.9)	246 (53.6)	5 (50.0)	803 (66.3)	1111 (74.9)
2.3: NSTEMI	Main	334 (59.4)	416 (81.2)	506 (78.1)*	79 (37.4)	292 (53.0)	358 (57.9)*

angiography <72 hours							
2.3: NSTEMI angiography <72 hours (no HR features)	Main	227 (67.0)	295 (87.5)	341 (83.8)*	224 (41.7)	742 (58.9)	820 (64.1)*
2.4: arterial access (STEMI), minutes (median, IQR)	Secondary	70.3 (43-115)	66.5 (39-111)	67.0 (35-107)	80.4 (30-165)	46.2 (31-71)	40.2 (29-60)*
3.3: Assessment of LV function recorded in notes	Main	1522 (87.9)	1181 (79.2)	1112 (72.3)*	1111 (22.1)	2550 (40.0)	2731 (50.1)*
4.1: Proportion with adequate	Main	1279 (77.3)	1269 (86.5)	1323 (86.3)*	51 (1.1)	4731 (91.4)	3980 (94.9)*

$P2Y_{12}$ inhibition on discharge							
4.2: Proportion NSTEMI getting fondaparinux	Main	0 (0)	0 (0)	46 (2.4)	0 (0)	562 (14.5)	1549 (49.5)*
4.3: Proportion discharged on DAPT	Secondary	1255 (72.2)	1242 (83.0)	1294 (83.4)*	47 (1.1)	4,477 (88.9)	3,819 (93.5)*
5.1: Proportion discharged with statins	Main	1589 (92.4)	1439 (96.6)	1430 (93.0)	3916 (85.4)	4990 (92.7)	4173 (94.4)*
5.2: ACEI/ARB in those with HF or EF $\leq$40	Secondary	232 (83.1)	189 (84.9)	160 (82.9)	1024 (77.3)	1473 (89.1)	1416 (92.0)*

5.3: β- blocker in those with HF or EF ≤40	Secondary	239 (85.0)	194 (88.8)	158 (81.9)	845 (72.7)	1469 (91.9)	1499 (96.8)
7.1: Main Composite QI (opportunity-based)		86.8	88.2	85.9	46.2	74.7	80.0*
7.2: Composite QI (all or none, overall score)		70.2	81.4	78.0*	1.0	81.6	85.8*
7.2a: Composite QI (all or none, 3 measures)[1] , %		73.5	83.2	79.7*	51.0	88.2	93.0*
7.2b: Composite		54.0	70.9	65.5*	1.1	83.3	88.9*

QI (all or none, 5 measures)[1] , %							
7.3 Mortality at 30-days adjusted for GRACE		5.1	4.7	4.2*	8.1	7.7	7.6*
Crude mortality rate at 30-days		5.3	5	3.8*	11.0	7.5	7.8*
Crude mortality at 1 year		10.9	9.5	8.6	22.0	16.4	10.1

ACEI: angiotensin-converting enzyme inhibitors; ARB: angiotensin receptor blocker; DAPT- dual anti-platelet therapy; EF: ejection fraction; LV: left ventricle; NSTEMI: non-ST segment elevation myocardial infarction; PCI: percutaneous coronary intervention; QI- quality indicator; STEMI: ST segment elevation myocardial infarction

Table S5: Missing data

	ACSIS	MINAP
Age	0	38
Female, n (%)	3	32
History of IHD	3	0
Hypertension	3	1,216
Diabetes	3	822
Dyslipidaemia	3	1,642
Family history of IHD	3	4,229
Smoker (current or previous)	53	1,452
Peripheral vascular disease	3	1,512
Congestive cardiac failure	3	837
COPD	3	2,421
Chronic kidney disease	3	897
Cerebrovascular disease	3	1,441
Out of hospital cardiac arrest	0	794

	ACSIS	MINAP
ST deviation on admission	0	865
Killip class	63	12,703
GRACE score	141	8,689
Angiogram	3	1,434
PCI	3	1,943
CABG	3	1,943
Aspirin	95	257
$P2Y_{12}$ inhibitor	101	5,707
β-blocker	96	270
Statin	15	272
ACEI/ARB	77	257

Numbers represent counts. ACEI – Angiotensin converting enzyme inhibitors, ARB- angiotensin receptor antagonist, CABG – coronary artery bypass grafting COPD- chronic obstructive pulmonary disease, IHD – ischemic heart disease, PCI- percutaneous coronary intervention;

Table S6: Comparison of registry characteristics

Characteristic	MINAP	ACSIS
Country	United Kingdom	Israel
Registry type	Continuous	Snapshot
Total number of patients	930,358 (2003-13)	13434 up to 2013
Cases included	All cases of suspected acute coronary syndrome admitted to UK hospitals.	Consecutive patients over 2 month period every 2-3 years
Main funder	Health Quality Involvement Partnership on behalf Department of Health	IACT
Adjudication	By treating physicians	By treating physician
Validation	Each centre undergoes annual validation, re-entering	Cases are selected randomly for re-examination

Outcome monitoring	All-cause mortality via linkage with Office for National Statistics	All 30-day outcomes by physician and by patient contact. Follow-up data is compared with HMO and national mortality registry
Definition of STEMI	According to ESC guidelines	According to ESC guidelines
Definition of NSTEMI	According to ESC guidelines;	According to ESC guidelines; Necessitates rise in cardiac Troponin and adjudication of treating cardiologist
Ensuring case completion	MINAP monitors 20 key fields for completeness	Survey is not completed until follow-up is entered for all patients
Incentives for data collection	None, costs of local data entry	Collection done by

	borne by participating hospitals	cardiologists that receive compensation for completed form

ACSIS - acute coronary syndrome Israel survey, IACT – Israeli association for cardiovascular trials, ESC- European Society of Cardiology, HMO – health maintenance organization, MINAP – myocardial ischemia national audit project

Table S7 – Selected quality indicators in MINAP patients with missing mortality data

Year	2006	2010	2013
QI2.1 Received reperfusion if eligible and presented within 12 hours	21 (87.5)	42 (95.5)	118 (88.1)
QI 2.2 Received timely reperfusion	17 (77.3)	2 (50)	0 (0)
QI 3.3 EF documented within the notes	22 (24.0)	72 (61.0)	200 (43.3)
QI 4.1 Received $P2Y_{12}$	47 (54.7)	94 (93.1)	341 (91.4)
QI 2.4 Revascularization time (mins)	777 (74-1,476)	47 (31-76)	52 (29-65)
QI 4.3 DAPT received	43 (50)	92 (92)	311(86.2)
QI5.1 Statin received	77 (90.6)	98 (95.2)	355 (92.0)
QI5.2 ACEI received if either EF<40% or HF	15 (71.4)	27 (90)	125 (89.3)
QI 5.3 BB received if either EF<40% or HF	16 (100)	30 (90.9)	139 (93.9)

QI 7.1 proportion , percent (+/- SD)	61.3% (+/-23.6)	84.5% (+/- 23.5)	76.6% (+/-26.0)

Data is N (%) unless otherwise stated. ACEI: angiotensin-converting enzyme inhibitors; DAPT- dual antiplatelet therapy; EF: ejection fraction.

1 Description of health systems and design factors influencing treatment

Israel – the state provides National Health Insurance (NHI) which is universal and compulsory for all, funded by the government. Within the NHI a resident can choose one of four countrywide healthcare providers. The hospitals and their coronary care units are owned by the government or healthcare providers. The government defines a "health basket" which defines the medication and procedures that are funded and provided. Hospitalization for acute care and all necessary treatment including catheterization is provided free without co-payment. Drugs given after hospital discharge are subject to subsidized co-payment. Private health insurance and providers are available but are not used for acute cardiac care. Hospitals are reimbursed for care by healthcare providers according to length of stay but for urgent care, not by volume of procedures.

Clopidogrel was approved by the health basket in 1997

Newer $P2Y_{12}$ inhibitors came under the health basket in 2012

Performance of catheterization for NSTEMI is decided by treating physicians, with no specific financial incentive

No specific directives exist regarding care under specific risk (or GRACE score) or age or sex.

United Kingdom- the National Health Service (NHS) is entrusted with provision of healthcare, under which coverage is universal for all. Funding for NHS care is by the government, and is generally free at point of access, including ambulance services and A&E care. Hospitalization for acute care and all necessary treatment including

catheterization is provided free without any requirement for payment. Drugs given after hospital discharge are subject to subsidized payment, with certain populations (e.g age over 60 years , those with certain long term conditions) exempt from this payment.

Guidelines are defined by the National Institute for Health and Care Excellence. They recommend treatments based on their cost effectiveness.

Clopidogrel was not used throughout the NHS until 2007.

Newer $P2Y_{12}$ inhibitors such as Ticagrelor were used since 2013

The decision on whether to perform angiography lies with the treating physician and team.

There are no specific guidelines regarding the treatment for those identified at specific risk (or GRACE score) or age or sex, other than the ESC guidelines.

2 Expanded methods

Adjustment for GRACE

For the mortality adjusted to GRACE scores, we used the predicted probabilities derived from a logistic regression model where the dependent variable was 30-day mortality and the independent variable was each patient's calculated GRACE risk score. For both cohorts, the GRACE score was calculated using the mini-GRACE methodology which has been previously validated with MINAP data[18]. This method allows for the substitution of 'use of loop diuretic' for Killip class and chronic renal failure in lieu of creatinine concentration for those records with missing

information. Specifically, for ACSIS, GRACE scores were recalculated from the raw data to ensure compatibility with the MINAP GRACE risk score method.

The score performance was re-validated in the ACSIS cohort against actual observed mortality. The GRACE score had high discrimination value of with a c-statistic of 0.85. The R^2 was 0.25. Brier Score was 0.06

The validation of mini-GRACE was presented by Simms[1] , where it had a c-statistic of 0.84, R^2, and a Brier score of 0.09, and R^2 of 0.22. For the current cohort, the GRACE score had a c-statistic of 0.79.

1 Simms AD, Reynolds S, Pieper K, et al Evaluation of the NICE mini-GRACE risk scores for acute myocardial infarction using the Myocardial Ischaemia National Audit Project (MINAP) 2003–2009: National Institute for Cardiovascular Outcomes Research (NICOR) Heart 2013;99:35-40.

Figure S1 – Calibration plot and performance indices of GRACE score against actual probability of death