

Irish Heart Attack Audit National Report 2017-2020

IRISH HEART ATTACK AUDIT NATIONAL REPORT 2017-2020



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STEMI Pathway development

2010-2012 HSE initiated clinical pathways to standardise best practice clinical care across a number of disease categories

2012 Model of Care for Acute Coronary Syndrome pathway

- Standardize care pathway for STEMI
- Improve geographic access to and timeliness of optimal reperfusion therapy
- Aim to reduce mLOS for STEMI <4 days
- Standardize care for NSTEMI; improve timeliness of PCI access <24hours
- Reduce mLOS for NSTEMI <5 days
- Improve smoking cessation rates and increase referrals to cardiac rehabilitation
- Improve discharge prescription rates of appropriate secondary prevention medical therapy
- Introduce an Audit programme to monitor and measure improvement and feedback information quarterly to hospital groups



Heartbeat Dataset development



Standardized dataset developed from original Heartbeat audit 2005; updated last 2018



Based on review of international databases (UK MINAP Audit; ACC/AHA get with the guidelines; ESC STEMI guidelines; IHI; Canadian CV outcomes research team; ANZ guidelines) and cardiology input



Standard EU CARDS variable definitions



- 63 data variables**
- Demographic data (from HIPE)
 - Arrival information
 - Risk factor data
 - Discharge data
 - Reperfusion/Intervention data
 - Follow-up 30 day vital status



Data is collected from 9 PCI sites- now all 10 PCI sites since Jan 2021

Key Performance Indicators for STEMI

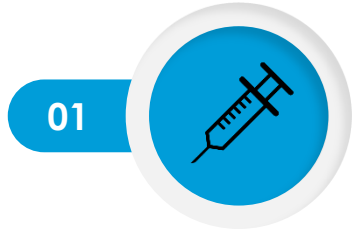
% STEMI patients (without CI to reperfusion) who get PPCI- target 90%- increased to 95%



% reperfused STEMI patients who get timely PPCI- defined as FMC to balloon \leq 120 minutes or first door to balloon \leq 120 minutes- target is 80%

All STEMI KPIs defined in Heartbeat Audit

Key Performance Indicators (KPIs) for ACS Clinical Programme



01

% STEMI patients (or LBBB) who get PPCI or thrombolysis or are contraindicated to reperfusion therapy



02

% STEMI patients (or LBBB) who get timely reperfusion therapy:
a) First medical contact (FMC) to balloon ≤ 120 mins
OR
b) First door to balloon ≤ 120 mins



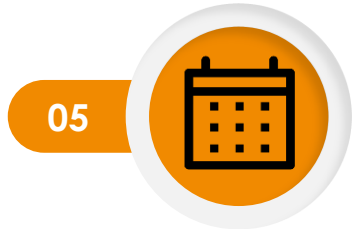
03

Mean and Median LOS and bed days for a) STEMI and b) NSTEMI pts



04

Number and % of STEMI patients referred to cardiac rehabilitation Phase 3



05

Number and % of STEMI patients with a start date for CR Phase 3 programme within 4 weeks of discharge



06

The % of eligible STEMI patients who receive a) Aspirin and b) dual anti-platelet on discharge



07

The % of eligible STEMI patients who receive Beta Blockers on discharge



08

The % of eligible STEMI patients who receive Statin therapy on discharge



09

The % of eligible STEMI patients who receive ACE/ARBs on discharge



10

The % of eligible STEMI patients who receive smoking cessation counselling on discharge

HEARTBEAT DEVELOPMENT

2012-2019



2012/2013

HEARTBEAT Established under ACS
National Clinical Programme

2014

2016

2015

Heart Attack Care 2014



2017

Heart Attack Care 2016

2018

2019

2020

NOCA

KEY FINDINGS 2017-2020

RISK FACTORS



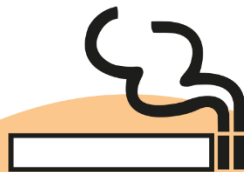
43% of patients had a previous history of high blood pressure (known as hypertension)



43% of patients had a previous history of high cholesterol (known as hypercholesterolemia)



14% of patients had a diagnosis of diabetes



26%

26% of patients with a previous heart attack presenting with a new heart attack continue to smoke

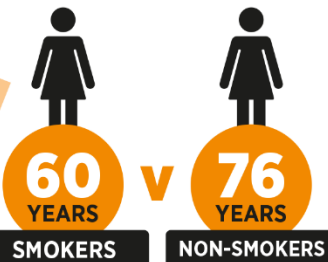
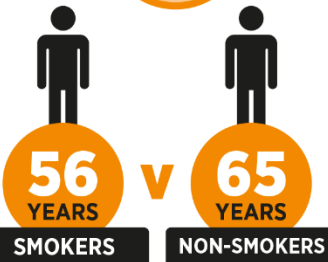
64%

64% of patients under 40 were current smokers

34%

34% of patients smoked at the time of admission

Current smokers present with heart attack at a much younger age



81% of patients who were brought by ambulance to the PCI centre bypassed the Emergency Department and were brought directly for primary PCI treatment



84% of patients brought directly by ambulance to a PCI centre arrived within the 90 minutes or less goal



22% of patients transferred from another hospital to a PCI centre arrived within the 90 minutes or less goal



67% of patients received timely treatment to restore blood flow (known as reperfusion)



In patients brought directly to PCI centres by ambulance, the median time between diagnosis of a heart attack and treatment with primary PCI was **84 minutes** compared to **155 minutes** for patients transferred from another hospital



91% of patients received primary PCI through radial access



85% of patients who were smokers received advice on how to quit smoking (90% is the national target)



76% of patients were prescribed all five recommended medications to reduce their risk of future heart attacks (90% is the national target)



71% of patients were referred to cardiac rehabilitation (90% is the national target)



Patients who received timely primary PCI had a **2.8%** mortality rate compared to **5.2%** for patients who did not receive timely primary PCI

Findings - demographics and gender



**5629 confirmed
STEMIs 2017-2020**



**75% of those presenting
STEMI was first
manifestation of CHD**



**78% male
Median age 63 y.o**



**516 contra-indicated to
reperfusion - 85%
presenting too late**



**25% had prior
CVD/CHD or
major comorbidity**

**56% of males with STEMI
were aged between
40-64 years old**



**Females were older
25% over 80 y.o.**

**Higher rates of prior
stroke, CKD, and lung
disease**

Findings - risk profile

75% had more than one CV risk factor



43% had hypertension)



43% had hyperlipidaemia



14% had confirmed diagnosis of DM*



21% had prior CHD/CVD

*Likely underdiagnosed



34%

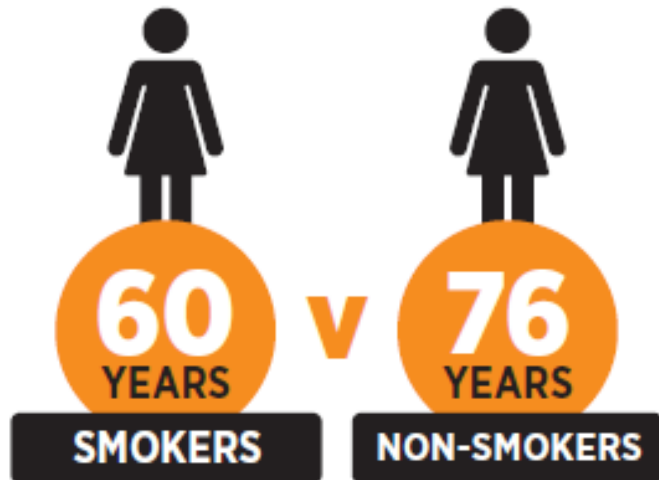
34% smokers - Smoking is associated with MI at a younger age

64%

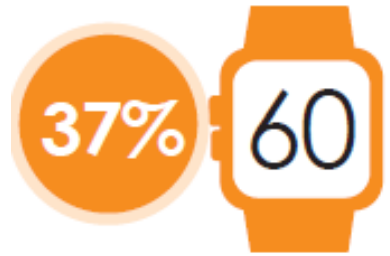
64% of MI's in persons under 40 were active smokers

26%

26% of patients prior MI had returned to smoking after their event on presentation with a new index STEMI



Findings - Accessing reperfusion service



37% of patients contacted EMS/sought help within 60 minutes of symptom onset



58% of patients brought directly by ambulance service to PCI centre



28% of patients presented to non PCI centre and required hospital to hospital transport



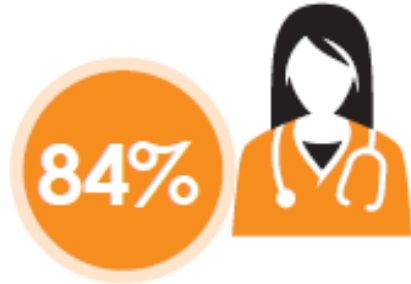
10% of patients self present to PCI centre

Right patient Right location Right treatment

Findings - Reperfusion service



67% of patients with confirmed STEMI received timely reperfusion (decline from 2016; 70.3%); median FMC to balloon 98 minutes



Direct PCI centre admissions 84% received timely reperfusion; median FMC to balloon 84 minutes



22% Hospital to Hospital Transfer received timely reperfusion; median FMC to balloon 155 minutes (declined)



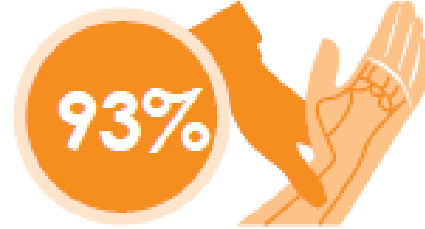
39% Timely thrombolysis

Right patient Right location Right treatment

Findings - PPCI centre quality



**81% - ED bypass
(improving)**

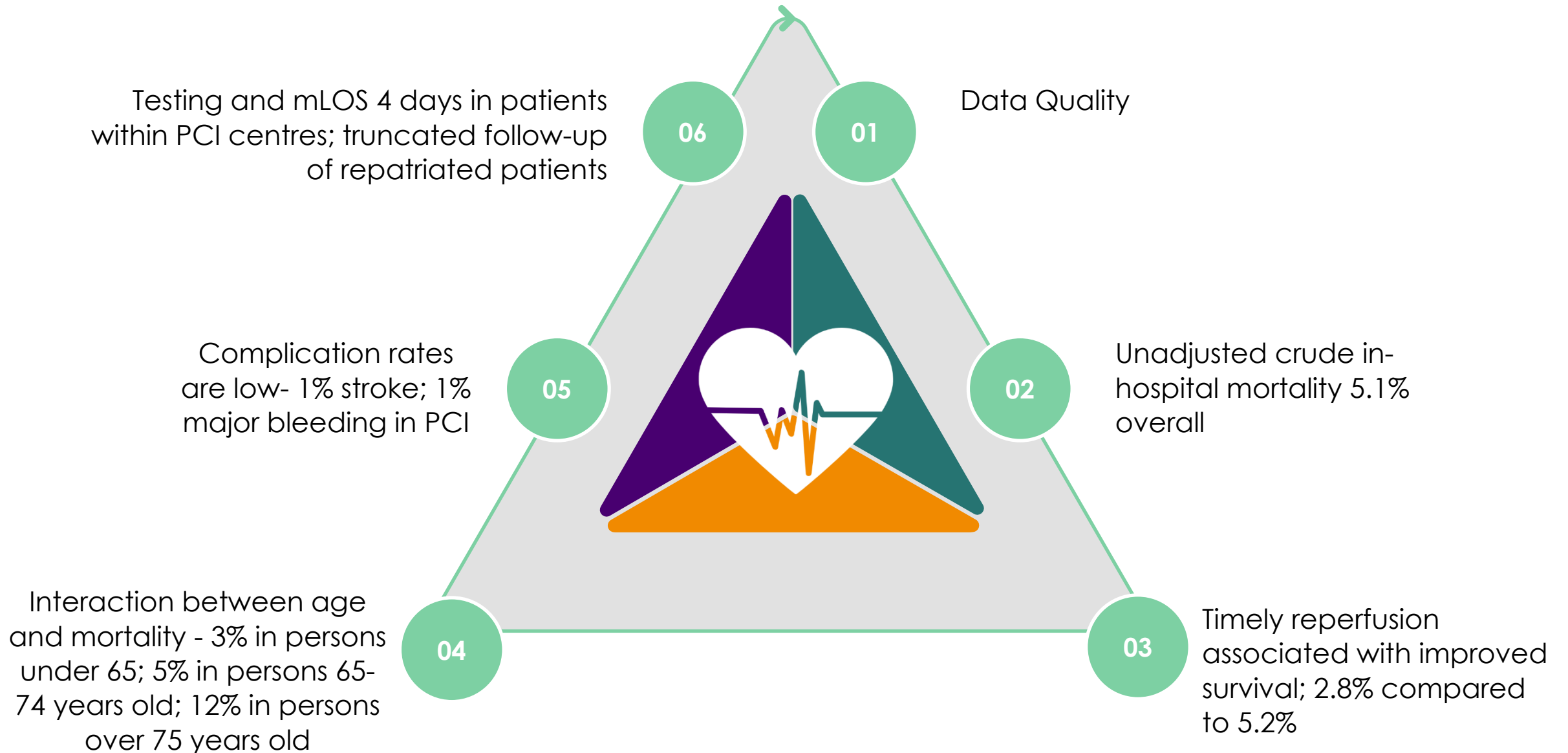


**93% - radial access
(improving)**



**27 minutes - Median DTB
times (arrival in PCI centre
to open artery)
(international goal <30 minutes)**

Findings - Outcomes



Findings - Secondary care



85% of smokers received smoking cessation advice/counselling (nKPI >90%)



71% documented referral to cardiac rehab programme (nKPI >90%); again referral to CR and enrolment/completion are different



76% of patients with complete data were discharged on secondary prevention 5-medication bundle (nKPI >90%)

Good (and Bad) News so far

	2016 report	Current Report	Trend
% eligible for reperfusion without CI who received PPCI	96%	92%	↓
% Cases direct to PCI centre	66%	74%	↑
% ED Bypass	NA	81%	↑
% Radial Access	85%	93%	↑
% Timely reperfusion	71%	67%	↓
% Timely reperfusion directly admitted	83%	84%	↑
% Timely reperfusion transferred from non PCI site	44%	27%	↓
Median Reperfusion time (minutes)	NA	84 minutes direct patients; 155 minutes for transfers	↑
Smoking	38%	34%	↓
% Discharge bundle medications	96-98% APA/statin 77-84% BB/ACEI	76% prescribed all 5	↓
Mortality in PPCI	4.9%	4.2% (impact of age 3% <65; 4% 65-74; 12% >75 and timeliness 2.8% versus 5.2%)	↓
% Referred for CR	66%	71%	↑

RECOMMENDATIONS

RECOMMENDATIONS FOR THE IRISH HEART ATTACK AUDIT



- **RECOMMENDATION 1.** Implement a national ST elevation myocardial infarction (STEMI) transfer form for use when transferring patients from a non-percutaneous coronary intervention (PCI) hospital to a PCI centre.
- **RECOMMENDATION 2.** Improve the data quality of the follow-up dataset within the Heartbeat portal.
- **RECOMMENDATION 3.** Develop a process for accessing accurate 30-day mortality rates in patients with a STEMI using the death register in the Central Statistics Office (CSO).

RECOMMENDATIONS FOR THE HEALTH SERVICE EXECUTIVE



- **RECOMMENDATION 4.** Introduce a key performance indicator that measures the 'door in door out' time with the aim of achieving the European Society of Cardiology's guideline target of 30 minutes or less.
- **RECOMMENDATION 5.** Improve timeliness of reperfusion for patients with a STEMI presenting to non-PCI centres.
- **RECOMMENDATION 6.** Develop a public awareness campaign to encourage people with heart attack symptoms to call 112 or 999 immediately for emergency help in order to facilitate pre-hospital electrocardiogram (ECG) diagnosis of a STEMI.
- **RECOMMENDATION 7.** Improve the identification and control of cardiovascular risks.
- **RECOMMENDATION 8.** Improve public awareness of the adverse impact of smoking on heart attack risk.

Recommendation 1. Implement a National STEMI transfer form for use when transferring from a non-PCI hospital to a PCI centre

- ❑ Delay in reperfusion for these patients
- ❑ Understand where delay occurs
- ❑ Collaboration with NAS; PCI centres; non PCI model 3 centres
- ❑ Standardized data collection with Emergency Medicine/Acute Medicine programme on national transfer form



Recommendation 2. Improve the follow-up data quality within Heartbeat

- ❑ Developed verification and validation process
- ❑ Standardized data collection across PPCI Centres
- ❑ Feedback audit findings with quarterly dashboard

- ❑ Resourcing of data collection
- ❑ Unique health identifier; tracking patients across hospital network and primary care



Recommendation 3. Develop a process to access 30-day mortality outcomes in patients with STEMI using central statistics office (CSO) death registrations

- ❑ In the absence of a UHI, tracking patients across the hospital network and into primary care is problematic
- ❑ Early repatriation truncates follow-up of STEMI patients currently
- ❑ Mortality events may be missed
- ❑ Mortality at 30-days and even 1 year are important indicators of quality of MI care
- ❑ Death registration data would facilitate accurate mortality statistics- process similar to National Cancer Registry



Recommendation 4. Introduce a key performance indicator that measures the 'Door-in Door-out' time with the aim of achieving the 30-minute or less European Society of Cardiology guideline target

- ❑ Delay in reperfusion therapy for patients presenting to non PCI centres first
- ❑ If transport to PPCI centre feasible within 90 minutes; then door-in door-out time <30 minutes (ESC standard of care recommendation; QI recommendation); if not then t-PA should be administered
- ❑ Tracking the D-I-D-O times to understand delays



Recommendation 5: Improve timeliness of reperfusion for STEMI patients presenting initially to non PCI centres

- ❑ Local QI initiatives between PCI centres; non PCI model 3 hospitals; national ambulance centre
- ❑ Identify barriers to diagnosis and timely transfer of STEMI patients
- ❑ Improve timely transfer for PPCI
- ❑ Where this is not possible, improve timely thrombolysis and transfer after thrombolysis (drip and ship protocols)



Recommendation 6. Improve public awareness on the impact of smoking on heart attack risk

- ❑ 34% smoking rate in STEMI
- ❑ 26% Recalcitrant/relapsed in smokers with a history of prior MI
- ❑ Heart Attack at younger age

- ❑ Target for health promotion, preventative care and Tobacco Free Ireland



Recommendation 7. Improve the identification and control of cardiovascular risks

- ❑ 75% of STEMI cohort had more than 2 CV risk factors
- ❑ Burden of smoking
- ❑ Burden of hypertension and elevated lipids
- ❑ Next iteration of the dataset will also include BMI data
- ❑ Females with multimorbidity

- ❑ Target for chronic disease management programmes and primary prevention/health promotion programmes



Recommendation 8. Develop a public awareness campaign to encourage people with symptoms of heart attack to ring 112/999 immediately for emergency help to facilitate pre-hospital ECG diagnosis of STEMI

- ❑ Right patient Right location Right care
- ❑ Change behaviour to direct public to PCI centres where timely reperfusion more likely to be achieved
- ❑ Pre-hospital ECG diagnosis and transport direct to PCI Cath Lab



Audit Developments

TRAINING, EDUCATION AND SUPPORT

- ✓ Training manual revision
- ✓ Audit coordinator workshop
- ✓ National Ambulance Service ePCR pilot

DATA QUALITY INITIATIVES

- ✓ Data validation report
- ✓ Data verification
- ✓ Dashboard

REVIEW OF DATASET

Additions - DIDO
- Risk adjustment
HIU mapping for transport times

Next Report

Variation in outcomes
Site by site comparisons

DASHBOARD

1. % patients with a STEMI who had radial access for primary PCI
2. % of eligible patients with a STEMI who were offered reperfusion]
3. % of patients with a STEMI who had timely reperfusion
4. % completeness of the 30-day survival status data point
5. the percentage of patients with a STEMI who received an appropriate secondary prevention discharge bundle
5. % patients with a STEMI who smoke who were offered smoking cessation advice
6. % of patients with a STEMI referred for CR phase 3





Thank you for your time and attention

Any questions? – Please put them in the Question box