



'The London Overground' Bypassing local hospitals

Management of AMI:
Establishing a Primary PCI Service

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England



Immediate management and treatment in all acute coronary syndromes



- A,B,C,
- Vital signs
- 12 Lead ECG
- IV access
- “MONA”
 - Morphine
 - Oxygen
 - Nitroglycerine (GTN spray or tablet)
 - Aspirin 300 mg orally (crush/chew)

Reperfusion strategy if indicated

Immediate management and treatment in all acute coronary syndromes



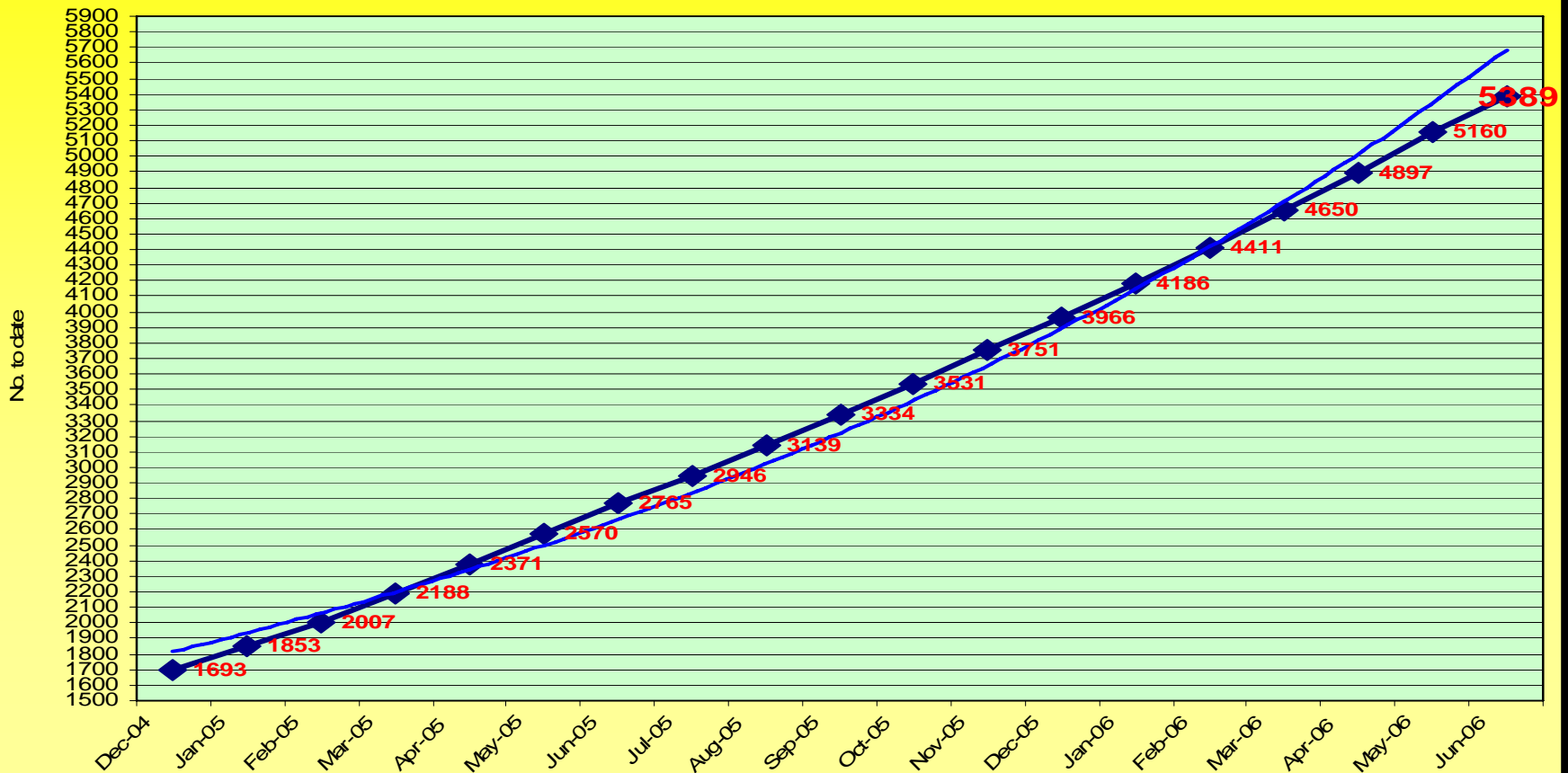
Assess the need for reperfusion

Reperfusion therapy

Time
is muscle
is survival

Pre-hospital thrombolysis in the UK (27 of 31 ambulance services participating)

Number of Patients Thrombolysed (end Dec 04 to end Jun06)
(with trendline)





“Patients with STEMI but ineligible for thrombolysis (age, hypertension, recent surgery) or in cardiogenic shock should be transferred as an emergency to a suitably experienced centre for PCI”

October 2006

- Heart Rate
- Blood Pressure
- Symptoms
- QRS width
- Weight

Problem with primary PCI.....





West

East

London

Royal Free

St Thomas's

London Chest

Harefield

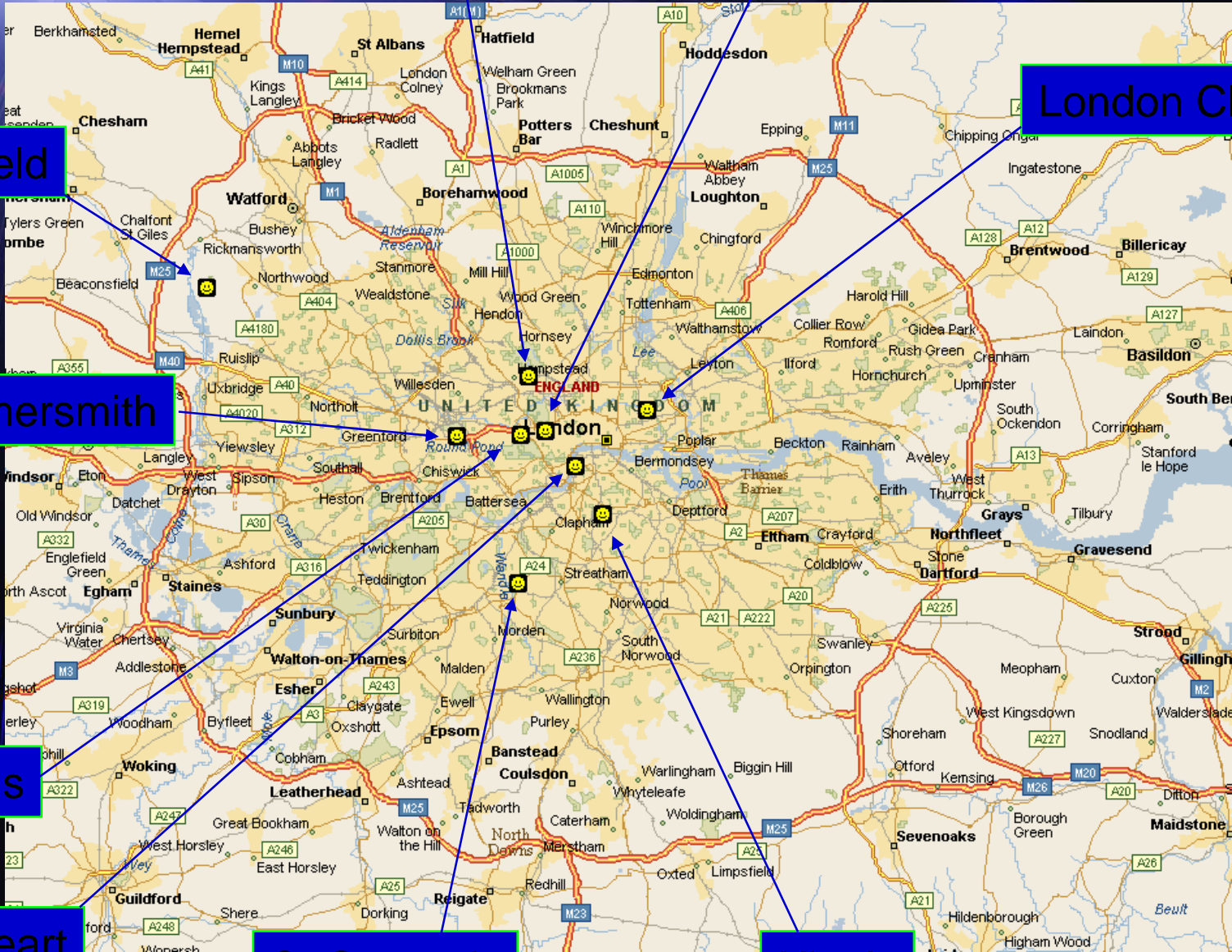
Hammersmith

St Mary's

Heart

St George's

King's



In 2003....



London Ambulance



12-Lead ECG News

999 Call to Cardiac Cath Lab

Direct admission from scene to the Cardiac Cath Labs PAN LONDON for confirmed acute MI patients

Selection criteria:

- Patients with cardiac chest pain suggestive of Acute Coronary Syndrome
- Sustained **CARDIAC CHEST PAIN** (more than 15 minutes) within the last 9 hours
- 12 Lead ECG showing **CLEAR ST Elevation** in TWO or more leads of the same group
- AT LEAST 2mm (2 small squares) Anterior leads
- AT LEAST 1mm (1 small square) non anterior leads
- Orientated and conscious

Patients **NOT** to be taken to the cardiac cath lab (should go to LOCAL A&E):

- Unconscious patients
- Intubated patients
- Patients in cardiac arrest ON ARRIVAL AT SCENE
- Patients with Left Bundle Branch Block on their ECG (Look for WIDE QRS & No Q Wave V6)
- Patients with a functioning pacemaker (Paced ECG)

BLUE CALL:

- Please state "Blue to **Cardiac Cath Lab with CONFIRMED STEMI by 12 lead ECG**
- Give ETA
- Male or Female
- Age
- BP, Heart rate
- 12 lead ECG details i.e. Anterior/Inferior/Lateral MI

NB: If carrying out a "Critical Transfer" from another hospital to a cardiac cath lab place "Blue call" on leaving hospital – Patients should be monitored with the FR2 until they reach the cath lab.

Hospitals providing Primary angioplasty:

Harefield	Hammersmith	St Mary's
London Chest	St Thomas	St George's
The Heart	Royal Free	Kings





London Ambulance Service **NHS**
NHS Trust

Medical

Directorate

22 March 2006

Change in clinical practice

Following the extensive work and planning that the Service has undertaken over the past two years, from Monday 3 April 2006 all crews who have confirmed by 12-lead ECG that a patient has ST elevation myocardial infarction (STEMI) should convey them to the nearest 'Heart Attack' centre.

This may mean bypassing local accident and emergency departments. The patient should otherwise be managed as per national clinical guidelines.

When placing a priority call via EOC please ensure that you clearly state that you have a confirmed MI by 12-lead ECG and that you are going to the cardiac cath lab.

Heart Attack centres and opening hours:

London Chest Hospital	24 hours, 7 days a week
King's College Hospital	24 hours, 7 days a week
Harefield Hospital	24 hours, 7 days a week
St George's Hospital	24 hours, 7 days a week
Hammersmith Hospital	24 hours, 7 days a week
St Mary's Hospital	24 hours, 7 days a week
The Heart Hospital	24 hours, 7 days a week
St Thomas' Hospital	24 hours, 7 days a week
Royal Free Hospital	24 hours, from 07:00 hrs on Monday to 19:00 hrs on Friday only.

Further information can be obtained from Mark Whitbread, Clinical Practice Manager.

Fionna Moore
Medical Director

Exceptional

HEART ATTACK

A myocardial infarction (MI) is caused by the rupture of a section of coronary plaque, with the formation of a thrombus (clot).

Treatment aims to restore normal blood flow along the affected artery.

Even with rapid administration of thrombolysis, the proportion of patients achieving normal (TIMI-3) flow in the infarct-related artery is no more than 60-70 per cent.

Thrombolysis may take from 60 to 90 minutes to work.

There is clear evidence that primary angioplasty, otherwise known as percutaneous coronary intervention (PCI), for acute MI preserves left ventricular function and reduces mortality, when compared to thrombolysis.

Primary angioplasty is currently the most effective way to recover normal blood flow (TIMI-3) in an infarct-related artery. It achieves this in 90 to 95 per cent of cases. It also avoids thrombolysis-associated stroke and has a much lower re-occlusion rate.

Hospitals offering primary angioplasty:

Hammersmith - 24 hrs, 7 days a week	Harefield - 24 hrs, 7 days a week
The Heart - 24 hrs, 7 days a week	St Mary's - 24 hrs, 7 days a week

London Chest - Mon to Fri, 8am - 4pm

Ambulance crews who are near to these centres should go direct using a 'blue call' & CASMEET.

For further information, please contact Mark Whitbread, Assistant Head of Clinical Education and Development on 020 8557 1791 or email Mark.Whitbread@lond-amb.nhs.uk



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STEMI Jan – March 2006 London



- 42% had direct PPCI
- Average call to reperfusion:
 - Thrombolysis 69 minutes
 - PPCI 97 minutes

Currently 72% to cath labs

Efficiency of service delivery

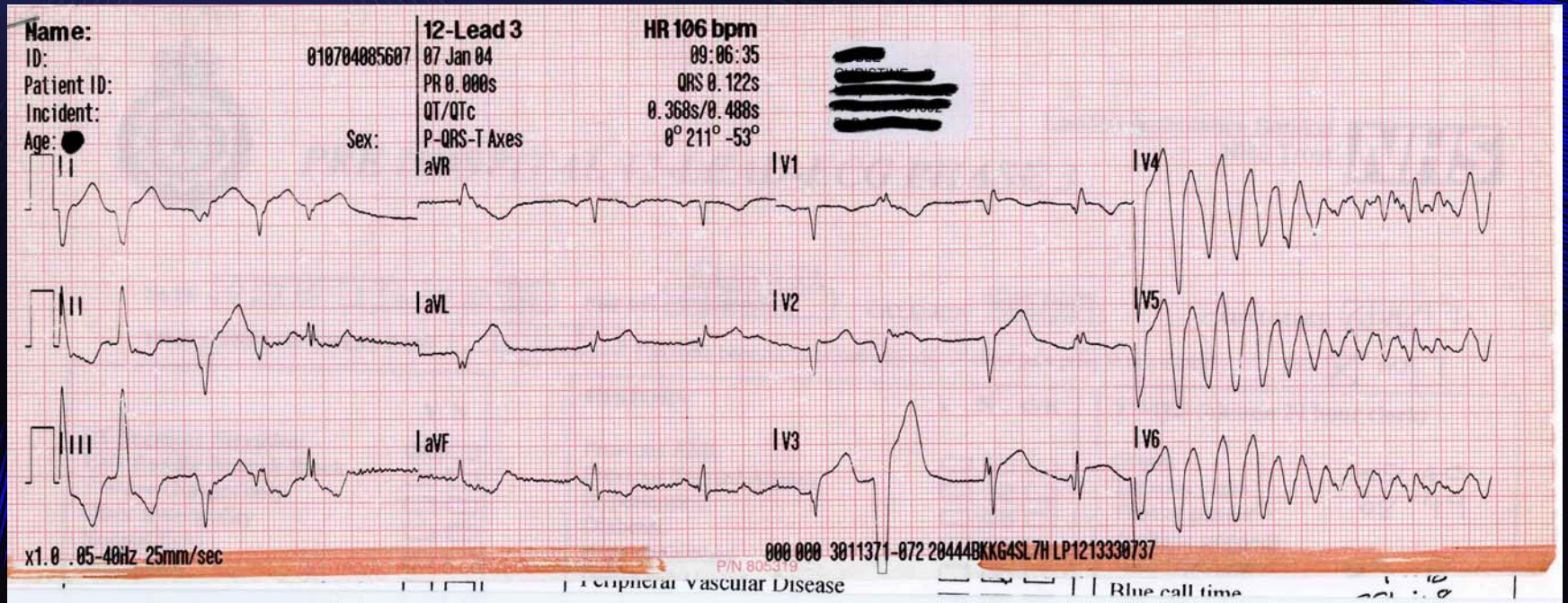


249 PPCI (London Chest Hospital)

– Call to Balloon	121mins	Target 120 mins
– Symptom to balloon	200mins	
– LAS transit time	18mins	Target 30mins
– LAS diagnostic accuracy	87.4%	Target >75%
– Serious misdiagnosis	1.12%	Target <5%
– MACE	11.9%	
– Mortality	4%	



Stop, shock and then continue!



6 V F's to date: all successfully defibrillated/treated and discharged alive

Direct to “Heart Attack” centre



Clear and agreed guidelines

- For both hospital and ambulance service

24/7 access

Ideally one point delivery- **straight to lab!**

Shared & open information to all involved

- Ambulance service
- E D/CCU/Cath Lab
- National Databases (MINAP & NIAP)

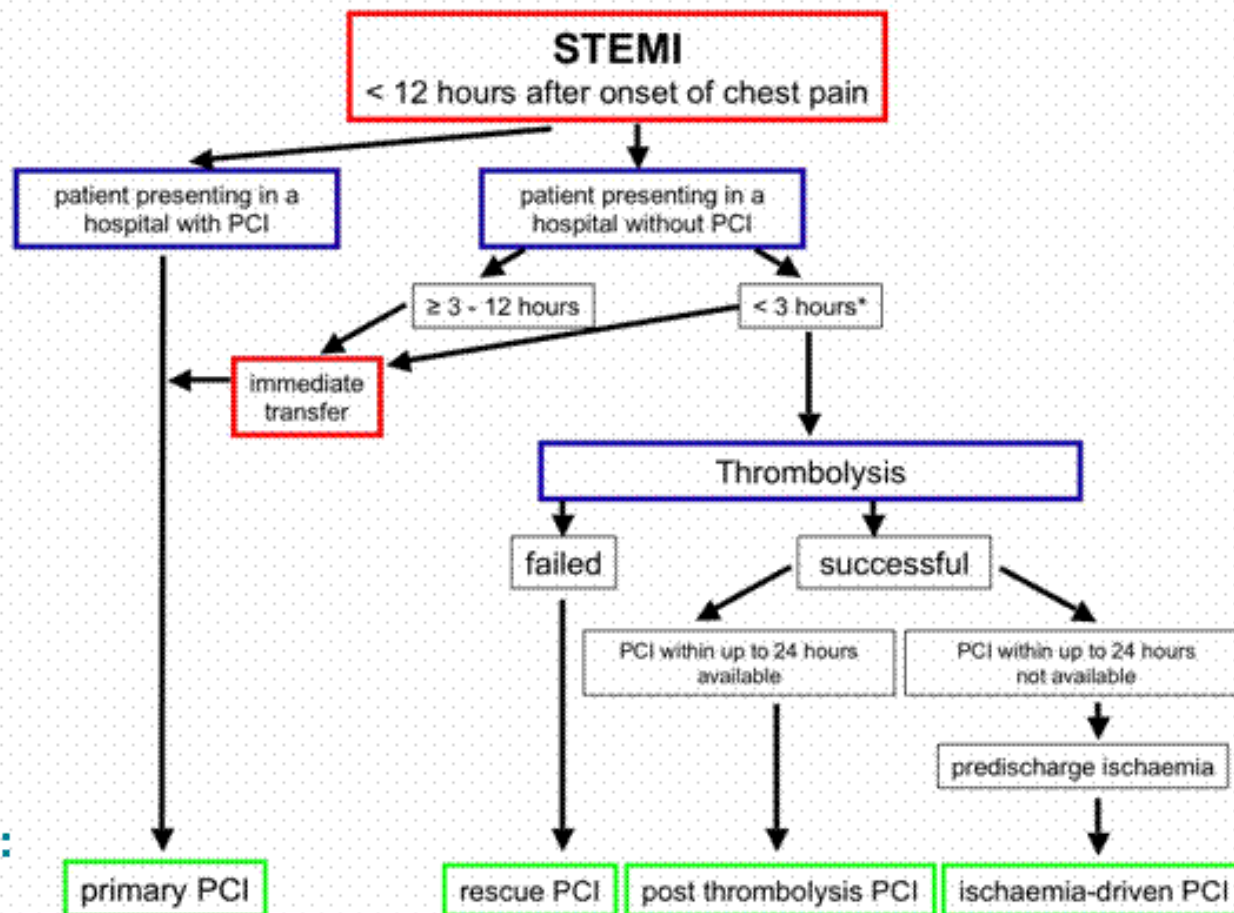


Figure 2:

Within the first 3 hours after onset of chest pain or other symptoms, thrombolysis is a viable alternative to primary PCI. If thrombolysis is contraindicated or at high risk, immediate transfer for primary PCI is strongly advised. The major rationale for possible preference of primary PCI over thrombolysis within the first 3 hours is stroke prevention. The major rationale for preference of primary PCI over thrombolysis within 3 to 12 hours is to salvage myocardium and to prevent stroke. If thrombolysis is preferred, it should not be considered to be the final treatment. Even after successful thrombolysis, coronary angiography within 24 hours and PCI, if applicable, should be considered.



CRITICAL TRANSFERS



Why have a Critical Transfer System?

Self presenters to ED (20%)

Failed reperfusion

Cardiogenic shock

Contra Indication / ineligible for thrombolysis

Other patients:

- Neurosurgical emergency
- Paediatric sepsis / Respiratory emergencies
- Vascular emergency
- Cardiovascular surgery



CRITICAL TRANSFERS

- One telephone number Pan London
- Mostly Rescue and Primary Angioplasty patients
- Open to all CCU's and Emergency Departments
- Direct conversation with Senior Control Officer
- Over rides all emergency (999) calls

Audit of critical transfers:

24 March 06 – 4th July 06

273 requests

Activation (time received to dispatched)

- Median 5 minutes (range 0 – 69 minutes)
- Average 11.16 minutes
- 102 < 3 minutes

Where are we now?



PPCI v Pre hospital lysis

Birkhead J Fifth public report 2006

<http://www.rcplondon.ac.uk/pubs/books/minap06/index.htm>

Myocardial Infarction National Audit Project (MINAP)

Fig. 4 Patients receiving primary angioplasty.

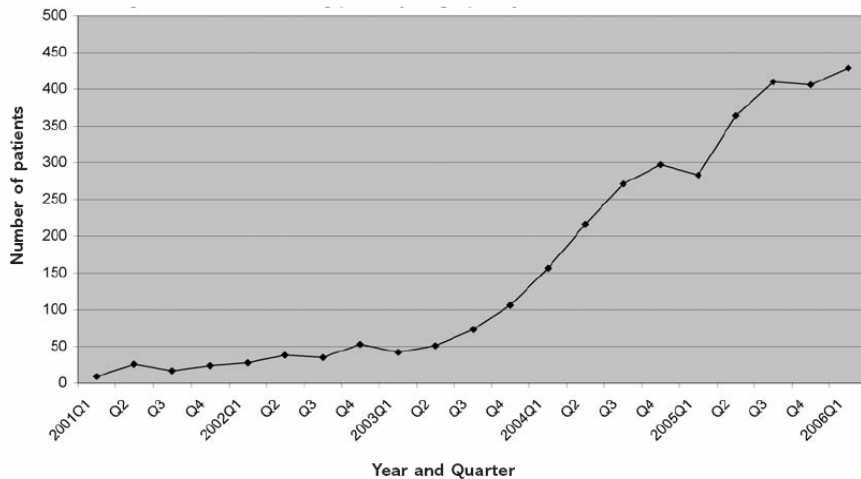
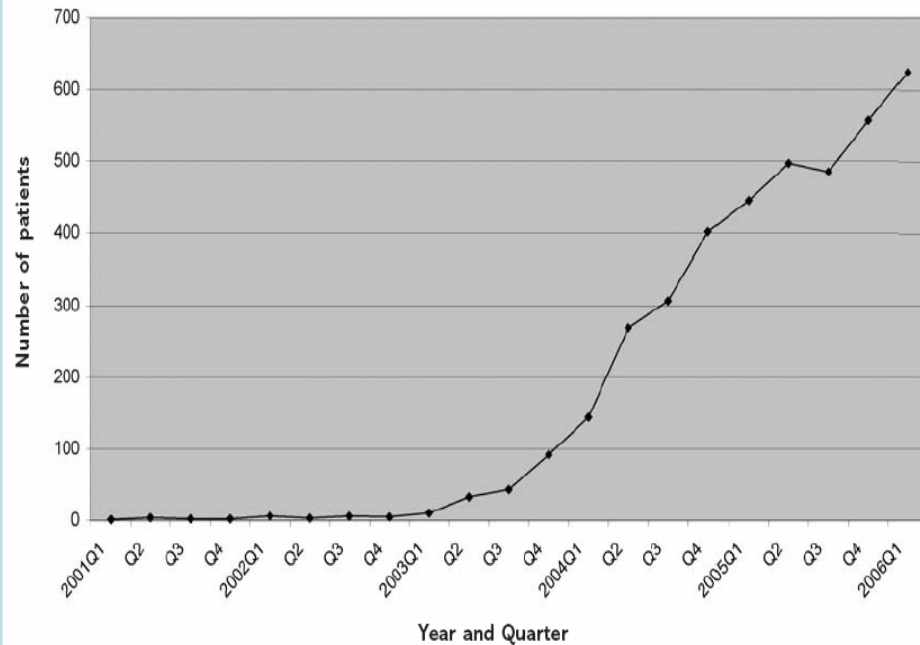
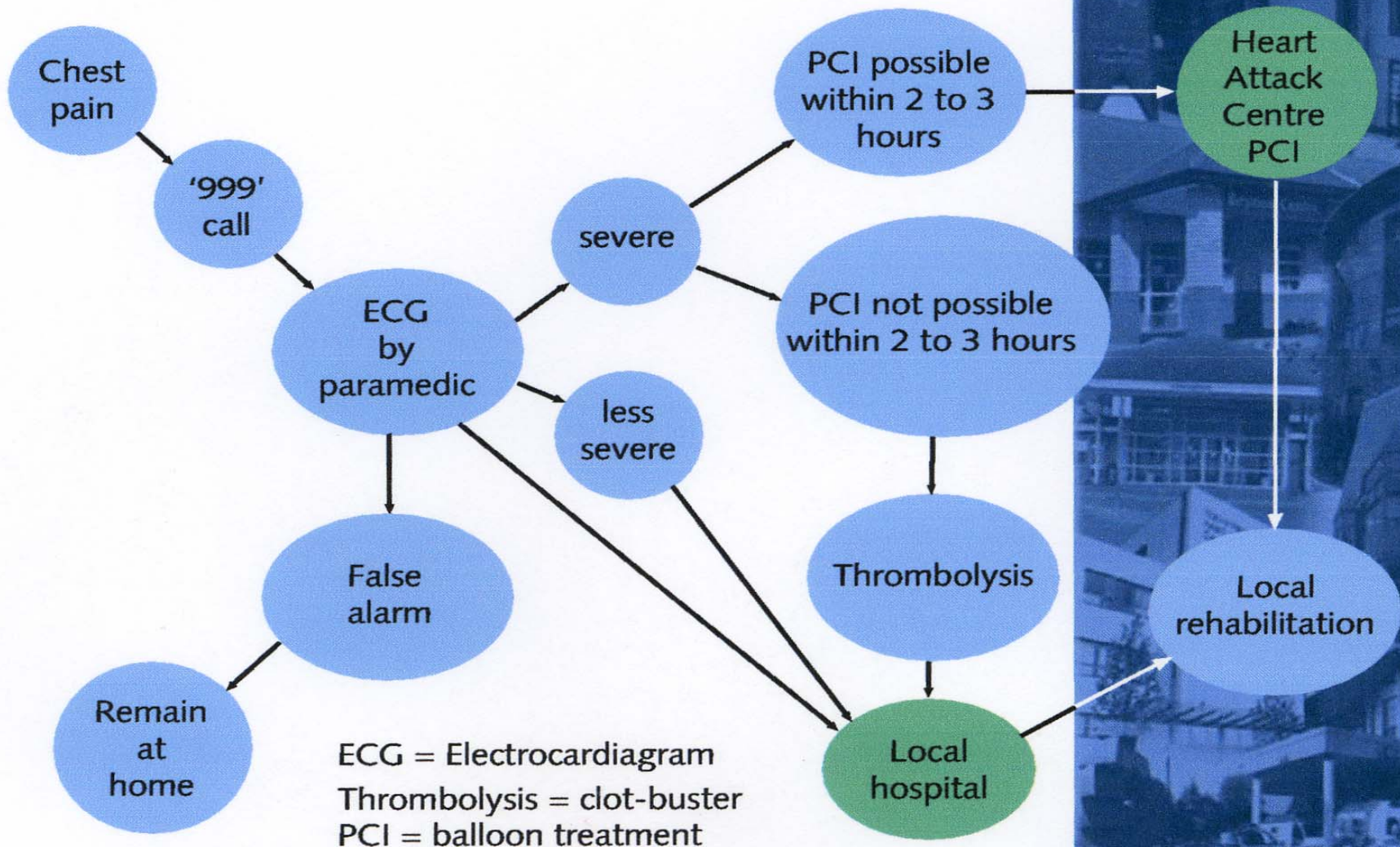


Fig. 3 Patients receiving pre-hospital thrombolysis.





Heart attack model



The vision

Paramedics deciding which hospital can give patients the best specialist treatments represents the future for heart and stroke treatment in England

Going via a local A&E adds delay that can mean it is too late for the patient to benefit from the newest drugs and procedures

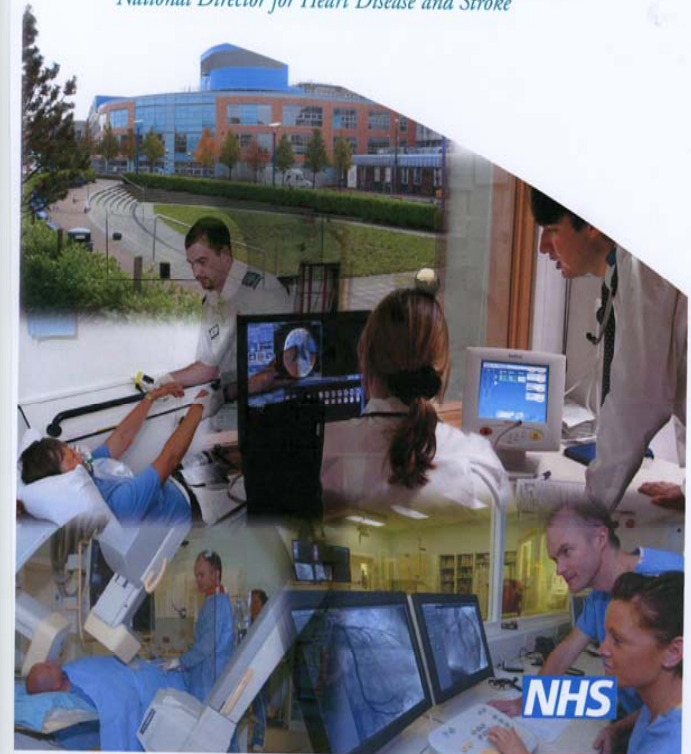
I'm giving this advice because it is going to save lives and reduce disability. Bypassing local hospitals to deliver balloon surgery for heart attack victims could save an estimated 500 lives, prevent around 1000 further heart attacks and around 250 strokes

Professor Roger Boyle
National Director for Heart Disease & Stroke
December 2006



Mending hearts and brains

*Clinical case for change: Report by Professor Roger Boyle
National Director for Heart Disease and Stroke*

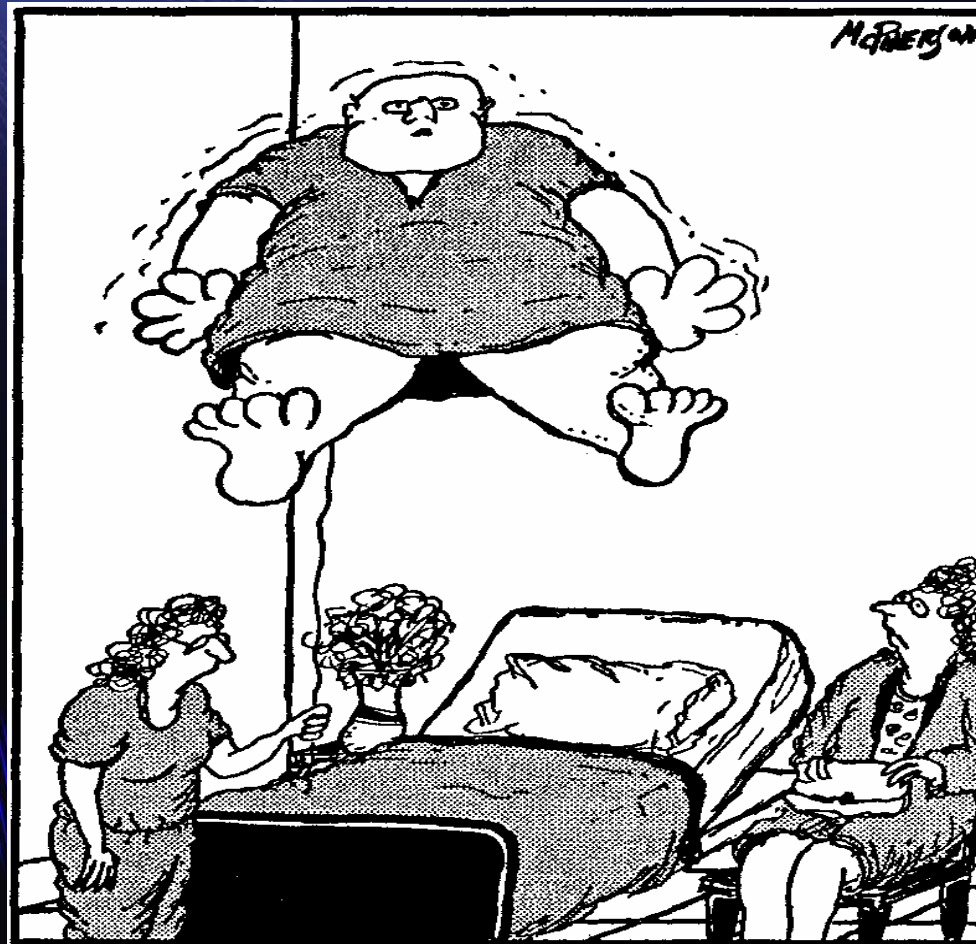


The way forward

Taking patients to the most appropriate destination

- *Strokes*
- *'Isolated severe head injuries'*
- *Inherited bleeding disorders*
- *Chronic conditions*

Thank you for listening



“They ran into some complications with your husband’s balloon angioplasty, Mrs. Meyers.”