T4 - Emergency and Urgent Care

Cardiology services

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T4 - Emergency and Urgent Care

- Recognising need for change
- Change Management
- Optimising Healthcare Pathways
 - For patient
 - For staff
- Resource Management
 - o Local
 - o Network

Heart Attack Management





Heart Attack Management





Heart Attack Management Drawbacks of Thrombolysis

Ineligibility, Contraindications, Not Given, up to 30%

Optimal Reperfusion (TIMI-3 flow) no more than 60-70%

In those who do achieve reperfusion, the rate of re-occlusion is high (up to 30%)

The GUSTO angiographic investigators. *N Engl J Med* 1993, 329:1615-22 Antman EM, Giugliano RP, Gibson CM et al. (TI MI) 14 trial. *Circulation* 1999 Jun 1;99(21):2720-32 Ohman EM, Califf RM, Topol EJ et al .TAMI Study Group.

Heart Attack Management Primary Angioplasty

- TIMI-3 90-95%
- Visualisation of anatomy
- Deals with Thrombus and Plaque

EVOLUTION OF PCI

- Better outcome with Stents
 STENT PAMI, ADMIRAL, CADILLAC
- Better outcome with GpIIbIIIa

Meta-analysis of 23 randomised trials 7739 patients: 4-6 week data

Keeley EC, Boura JA, Grines CL The Lancet 2003;361:13-20







Heart Attack Management Mr KJ 52yrs old No known risk factors for Coronary disease Former Competitive Badmington player Brought in from Oldchurch direct Symptoms 0830hrs













Key Benefits

- Reduced DGH bed days
- Reduced hospitalisation with acute coronary syndromes at Network hospitals
- Reduction in inter hospital transfers from DGHs for cardiac catheterisation / angioplasty
- Reduced admissions through A&E, with associated reduction in trolley waits
- Reduced readmission rates

Percentage increment in angioplasty Cost per PCT



Bed days saved per PCT



What are the results?



Heart Attack Centre: Activity Report



September 2009

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Conclusions

- Development of a Network HAC is achievable
- Projected activity (600-700 cases pa) and length of stay (2 days) seen in practice
- Excellent clinical results
- Reduction in wait for transfers (~14 to ~3 days)
 but multifactorial
- PbR favours direct admission to a centre where all revascularisation activity can be performed
- Commissioners need to realise savings in secondary care

HACX – HAC Expansion

- Extend to include NSTEMI from A&E (ECG& biomarker positive)
- Estimate 2000+ patients in NE London pa (~5 per day)
- 60% PCI, 30% medical, 10% CABG



Projection for Network HACX

1500 patients per annum* from A/E

600 patients per annum* from DGH

(120 additional CABG)**
 Case load 2100 patients per annum

* Based on 23 per month per sector DGH

* Based on early biomarkers that become troponin positive after admission

** Some may already be in our workload

Network benefits

Network saves £3.4 - £2.2 (£1.2million) pa

 'CCUs' can focus more on heart failure/ rhythm management (previously left on general wards)

Increased revascularisation rate (currently below minimum target)

Increased equity of service (priority in 08/09 PCT DoH operating framework)

Reduced risk of Hospital associated infections (priority in 08/09 PCT DoH operating framework)

Infrastructure requirements



BLT benefits

BLT Cardiac makes £1.2 million pa

Increases procedures

Potential to attract new staff

Positive pathfinder service

Patient perspective

- Patients get faster treatment by cardiologist
- Reduced LOS
- Hopefully reduced morbidity/mortality
- Access to comprehensive follow-up programme
- Increased satisfaction with patient journey



The London Chest Hospital, Barts and the London NHS Trust



Transcatheter Aortic Valve Implantation (TAVI)





Natural History of Severe Aortic Stenosis



• LVF – 50% 2 year survival

- Syncope 50% 3 year survival
- Angina 50% 5 year survival



Natural History of Severe Aortic Stenosis

A contemporary series of elderly patients with severe AS showed that there was a wide range of survival rates in non-operated patients. The three predictive factors of poor spontaneous outcome were New York Heart Association (NYHA) class III or IV, associated mitral regurgitation, and left ventricular systolic dysfunction.⁵ The combination of these three factors identified a subgroup at particularly high risk, with a 3 year survival rate of only 20%. On the other hand, 3 year survival was over 80% in patients who did not have any of these three factors.


EC – 90 male



Extubated same day
Left ITU next day
Home day 4





Effectiveness

Compared with the control treatment the experimental treatment has:

- 1. Evidence of greater effectiveness
- 2. Evidence of no difference in effectiveness
- 3. Evidence of less effectiveness

Cost

Compared with the control treatment the experimental treatment has:

- A. Evidence of cost savings
- B. Evidence of no difference in costs
- C. Evidence of greater costs

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Apart from delivering expert emergency help to the highest risk group of cardiac patients, reducing mortality and morbidity.....

.....Why should we commission a HAC?

- Additional Benefits
- Additional Costs
- PbR
- Actual results
- Expansion of HAC

Hospital	All ACS	STEMI	% STEMI
BLT	390	94	24%
НОМ	222	54	24%
NEW	392	98	25%
WHIPPS	321	129	40%
KGH	466	118	25%
OCH	582	201	35%
Total	2373	694	29%

These patients will be admitted directly to the N-HAC Reduces total ACS by c. 30% Non Emergency Inter Hospital Transfers from 10 DGHs to London Chest Hospital October 2002-Feb 2003



20% - increases to 30% when emergencies included

T Hyde, J Graham, L Yap, Z Whinnett, C Knight. Prospective Transfer Audit 2003

What is the extra activity and cost?

North East London Cardiac Invasive Procedures 2004-5

PCT	Total Angioplasty 04/05
TOWER HAMLETS PCT	314
CITY & HACKNEY	203
NEWHAM PCT	311
REDBRIDGE PCT	313
HAVERING PCT	302
WALTHAM FOREST PCT	152
BARKING AND DAGENHAM PCT	205

The N- HAC Increases angioplasty across the Network by 12% (209/1800)

How did we get a Network Heart Attack Centre?

Not that easily....





A team approach

- Network collaboration
 - -LAS
 - A&E
 - Cardiology
- Multidisciplinary, crossing professional and geographical boundaries
- NE London Cardiac Network support
- Consultant Cardiologist body support
- Chief executive BLT, Cardiac Directorate support
- LAS support, A&Es at 6 hospitals support
- Strong Patient support

- April 2003 Pilot started
- October 2004
- December 2004
- January 2005
- April 2005
- April 2005

Business case for Network 24/7 HAC Network approval as No 1 commissioning priority **Objection from 1 PCT** Needs to go thro' PEC Network agrees HAC live **Oct 05** PCT CEO's Not enough funds, 'don't know about proposal'

- June 2005 Presentation to PCT CEO's June 2005 Presentation to 1 PCT ulletPEC August 2005 Start date agreed for April ullet2006 August 2005 **Objection from another** ightarrowPCT – needs to go through PEC September 2005 PEC approval •
- September 2005- February 2006
 Staff recruitment

- February 2006 Funding cancelled 3% topslice for London PCT's
- March 2006 NE London PCT Market
 Place presentation
- 3rd April 2006 HAC approved (16 days before start date)

 Commissioners need to commission more PCI
 – REAL MONEY

Costs need to be recouped from DGH's

 POTENTIAL MONEY

Total PPCI Cases

patients

Pathway activation

- 94% Cardiac
- 83% STEMI
- 63% PPCI

Pathway route (Cumulative)

All activations

1st Medical contact-Balloon (April-July)

Cumulative In hospital Mortality

	Mortality	Mortality
	(intervention cohort)	(All activations)
April	4%	5%
Мау	2%	6%
June	9%	9%
July	8%	7%
August	5%	6%
September	5%	5%
October	4%	10%
November (incomplete)	5%	4%
Cumulative	6%	7%

Cumulative Mortality April-November Post hoc analysis

	Fibrinolysis Ineligible and no PCI	Fibrinolysis Eligible (PCI Cohort)	Fibrinolysis Ineligible (PCI Cohort)
Patients	10 (33)	5 (329)	16 (329)
Mortality	30.3%	1.5%	4.9%

Entire PCI group Mortality 6.4%

Contemporary mortality rates

- Keeley meta analysis 2003
- Lytic mortality = 9.3%
- PPCI mortality= 7%
- Real world Tower Hamlets data 2003-5
- Lytic mortality = 11.8%

Keeley et al

Primary angioplasty versus intravenous thrombolytic therapy for AMI Lancet 2003 361; 13-20

HAC Length of Stay

N=412 Median= 2 days Mean= 3.2 days 45% by 48hrs (STEMI only) Days Transferred to DGH Length of stay

Repatriation 12% (12.3) Total Bed days 1333

No. of patients

Acute ST segment MI

ST depression/ T wave changes

Symptoms suggestive of Acute Cardiac Ischaemia

UK-PACES In-hospital Costs

400 consecutive patients

Does cMR have a role in HACX?

- c.2400 patients from RLH/Hom will be d/c with a dx of low risk acs back to GP
- Recommendation is usually for ETT as OP
- c.30% of patients will not be suitable for ETT
- Hom has high prevalence of cardiomyopathy presenting as chest pain syndromes (mainly hypertensive ?other)
- This cohort could be Ix with cMR instead of Nuclear as routine?
- £500 x 720= £360K pa
- A network policy for low-risk acs NOT suitable for ETT could increase revenue further??

POTENTIAL IMPACT ON HOSPITAL STAY

	Thrombolysis	Primary Angioplasty	
Days	8.5 (6)	3.6 (2.4)	

- Very early discharge
- 48 hours if uncomplicated
- 42% home at 48 hours
- 78% home day 3

Saves 490 bed days per hundred patients treated

3038 bed days saved p.a. across sector 5270 bed days saved p.a. at the DGHs

N-HAC benefit to inter hospital transfers

- Reduction in the absolute number of inter-hospital transfers by 30%
- Increase in capacity for ACS transfers (as more revascularisation for STEMI will be performed out of hours)
- Increase in capacity for ACS transfers as STEMI patients will be admitted to ring fenced N-HAC beds, not regional transfer beds
- Reduced hospital stay for ACS patients without ST elevation waiting for inpatient transfer

Case History

55 male admitted to DGH with anterior MI	U
Thrombolysis within 20 minutes	
CCU – 5 days	5 -
Exercise test on day 5 – positive	
Booked for inpatient angiogram	
Waits for 14 days	
Further Chest pain day 20 with ECG changes	20 -
Urgent transfer to tertiary centre day 21	21 -
Has uncomplicated angioplasty day 22	22 -
Discharged home day 23	23 -

SPELL 2

DGH SPELL

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Hospital	ADMIT STEMI	DISCH STEMI	Popn
BLT	72	94	.25m
HON		<u> </u>	
NGI 620 PATIENTS 75			
WXI			
KGI PROJECTED PER ANNUM			
OCH	154	201	1.8m
Total	535	694	

Comparison of Service Models n=620

Costs under PbR Non-elective tariff

•	A&E admission	£99
•	Acute MI with complications or >69 (E11)	£4737
•	Acute MI <70 w/o complications (E12)	£3,111
•	Cardiac Catheterisation (E14)	£2847
•	Cardiac Angioplasty (E15)	£4758
Assumptions

- 30% STEMI >69 (audit data)
- No complications in <70 age group
- Market Forces Factor not included
- Note: in-patient angiography never dominant

Costs under PbR

•	DGH STEMI	£3698
•	DGH STEMI and DGH CC	£3698
•	DGH STEMI and Tertiary CC	£6047
•	DGH STEMI and Tertiary PCI	£7968
•	HAC STEMI direct	£3599
•	HAC STEMI via A&E	£3698
•	HAC STEMI and CC	£3698
•	HAC STEMI and PCI	£4758

Comparison of Service Models n=620



Costs for 620 patients

CONVENTIONAL SYSTEM £ 3,797,527 • N-HAC SYSTEM £ 2,843,072 \bullet 954,455 TOTAL SAVING £ SAVING PER PATIENT £ 1,539 DGH WITH LAB £ 3,390,406 • TOTAL SAVING £ 547,334 SAVING PER PATIENT f 883



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* Denotes missing LAS Call to D1 times

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HACX network rollout 🌣

c.250 more patients pa will be seen at BLT than before

c.350 more revasc procedures pa at BLT than before

This translates to a 15% increase in ACS patient flow

A Based on 5 DGH participation with volumes similar to RLH/NUHT

Costs under PbR

Non-elective tariff

A&E admission £99
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Cardiac Angioplasty (E15) £4758

BLT financial position pa

Ept	ifibatide	£225K?	PCI Full tariff	£2.1M
Sta	ff invest.	£500K?		
Equ	uipment	£150K?		
	?Monitors	+ Stents		

Total invest.= £875K? Total income= £2.1M

Min.Net income = £1.2 M 10% variation = £120K

If cMR used to help stratify low-risk post a/e d/c from RLH and Hom The HACX could bring additional £360K (see next slide)

Currently				
■ 2000 x MI (£3698)	£7,396,000			
1200 x PCI (£4758)	£5,709,600			
<u>200 x CABG (£8748)</u>	£1,749,600			
TOTAL	£14,855,200			
HAC Extension				
1200 x PCI (£4758)	£5,709,600			
200 x CABG (£8748)	£1,749,600			
■ <u>600 x MI (£3698)</u>	£2,218,800			
■ TOTAL	£9,678,000			

Saving of £5,177,200 or £2589 per patient

Network financial position pa



- * Low risk/rule out AMI at £300 x 6000 (not including A/E tariff)
- * Based on IP ETT at £120 x 6000 patients
- $\Omega~$ £1500 x 500 (1/3rd of 1500 patients admitted post IHT)