

## North West London Cardiac Network

### Discussion Paper Options Appraisal for provision of Primary PCI across NWL

#### Background

North West London has been selected as one of a number of national pilot sites for primary angioplasty. The National Director for Heart Disease, Dr Roger Boyle, has written to lead clinicians at Hammersmith and St Mary's Hospitals inviting them to express an interest in becoming a pilot as part of a joint North West London project. He has also made it clear that an expression of interest should have the support of the Cardiac network.

The Cardiac Network wishes to support the development of primary angioplasty in North West London in a planned and coordinated way. The approach from the Department of Health provides an opportunity to do this and to evaluate the results for national use. This paper sets out - for discussion with clinicians and managers from acute hospitals and colleagues from PCTs - some possible options for how primary angioplasty might be developed in the sector.

This initiative is not taking place in isolation. PCTs and acute trusts in North West London, encouraged by the SHA, have recently agreed to take steps to provide faster access for patients with acute coronary syndrome who are waiting in hospital for appropriate diagnosis and treatment. Work to achieve this must take account of the arrangements being set up to provide primary angioplasty – and vice versa.

Discussion of the options in this paper for primary angioplasty will therefore need to be followed by discussion of how to provide faster diagnosis and treatment for other acutely ill cardiac patients. We will also need to identify the issues that need to be resolved: clinical, organisational and financial.

#### Context

Three cardiac centres are currently providing primary angioplasty on a 24 hour a day, seven days a week basis, Hammersmith, Harefield and St Mary's and have therefore been the starting point for planning a joint sector-wide approach. However, Royal Brompton are committed to supporting the concept of Primary Angioplasty and, as a large cardiac centre, would wish to join a NWL programme as part of a shared initiative with the other organisations within the sector.

The contribution of Northwick Park Hospital in supporting the agreed future model and in future decisions about patient flows for the effective management of ACS patients across the sector will be crucial, but has not been explored further at this stage.

At present, primary angioplasty is only available to approximately 1/3 of the North West London population. A key issue for the next phase of work on primary angioplasty must be to ensure that everyone in North West London has access to this service.

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A key issue for planning a North West London primary angioplasty network is that all the cardiac centres are also likely to provide primary angioplasty for patients outside the sector. This reflects the fact that the four hospitals are cardiac centres for local hospitals in North West London, as well as hospitals outside of the London area.

To be a national pilot for primary angioplasty it will be necessary to demonstrate what a joint project will evaluate. One aspect of this will be evaluating the clinical impact of this service through the collection of data between the sites using a common data set. Another aspect will be to explore how centres can work together, for example, in having clinical and technical staff on shifts and on shared rotas. This requires the involvement of all interested parties, including catheter lab nurses, technicians and radiographers.

The following broad options might be considered for managing primary angioplasty in North West London but will need to be carefully considered to ensure that there is adequate capacity within the chosen NWL model to deliver significant reductions in current waiting times for inter-hospital transfers –

### **Option 1 – 4 site option:**

*Primary angioplasty is provided within the four cardiac centres on a 24/7 basis with NWL patient flows directed as follows:*

Hammersmith Hospital taking flows from Hammersmith & Fulham, Hounslow and Ealing (circa 700,000)

St Mary's Hospital taking flows from Westminster and Brent (circa 517,000)

Royal Brompton taking flows from Kensington & Chelsea (circa 205,000)

Harefield Hospital taking flows from Hillingdon & Harrow (circa 400,000)

Depending upon bed capacity within the above three centres, the above proposed patient flows may need to be reconsidered.

### Advantages

- Allows a more stepped approach for centres to start to merge their programmes as they individually develop
- Cath lab staff remain working with only the centre they are employed by and familiar with
- Staff may be able to remain “non-resident” on call.
- Less requirement to ring fence large numbers of cardiac beds as the work load for the population served is spread over more organisations
- Less requirement to re-direct significant flows of ACS to other centres, (this will vary from site to site as some of the current centres have a larger bed capacity than others)
- May free up more capacity within these centres for managing ACS patients more effectively as labs will be working over their traditional capacity by operating on 50% of patients out of normal working hours, (beds may still be a limiting factor)

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### Disadvantages

- May be most expensive option as each centre will have to pay significant on-call fees to their Consultants and lab teams
- Royal Brompton Hospital may not be in a position to provide a 24/7 service without Cardiologists from other sites supporting their rota
- Hammersmith, St Mary's and Harefield Hospitals may not currently be able to sustain a 24/7 service and extend their existing programmes to incorporate other parts of the NWL population
- May impact upon the centres ability to provide elective services if staff are unavailable because of rest periods following nights of on-call
- Does not demonstrate true joined up working and therefore doesn't demonstrate the ability or willingness of centres to significantly work with each other to manage inter-hospital transfers more effectively
- May lead to problems in recruiting some specialist Cath Lab teams if the need for on-call and the development of full shift patterns is required
- May impact upon ability to deliver a speedy service to ACS patients as a whole across NWL as there will potentially be less impetus to re-direct traditional patients flows for ACS away from their current providers if the overall numbers of primary angioplasty patients per centre is perceived to be relatively small
- Difficulty in supporting rotas for both consultants and lab teams (smaller pool to operate the service)
- Possible concern about patients transferred from home direct to a centre without full A+E facilities. Royal Brompton & Harefield hospital do not have an A+E department. However, other centres in the world do provide PPCI in this manner.

The disadvantages stated above in relation to individual centres having to extend their current catchment populations whilst maintaining a 24/7 service would appear to rule out this option as a viable model.

### **Option 2 – 4 site option during normal working hours condensing to a dual site model for inner & outer London to cover an out of hours service:**

*Primary angioplasty would be provided at all 4 cardiac centres within agreed working hours e.g. 9am – 5pm. Outside of these hours and at weekends, the service would be provided by an inner and outer centre.*

Within this option, the outer London centre would be Harefield Hospital. However, in terms of the inner London centre, consideration could be given to the possibility of providing the service from one fixed centre or to the possibility of Hammersmith Hospital, St Mary's Hospital and Royal Brompton providing the inner London service on a rotational basis. However, in general terms, the advantages and disadvantages of this option are detailed below:

### Advantages

- Allows a more stepped approach for centres to start to merge their programmes as they individually develop whilst still demonstrating joint working between the inner London centres

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- Has the potential for the inner London centres to develop joint on-call rota's for medical and non-medical staff
- Less demand on staff to provide an out of hours service if the workload is rotated between 3 inner London sites
- Less requirement to ring fence large numbers of cardiac beds at individual centres as the work load for the population served is spread over more organisations
- Less requirement to re-direct significant flows of ACS to other centres, (this will vary from site to site as some of the current centres have a larger bed capacity than others)
- May free up more capacity within these centres for managing ACS patients more effectively as labs will be working over their traditional capacity by operating on 50% of patients out of normal working hours, (beds may still be a limiting factor)

### Disadvantages

- May be potentially confusing and disruptive for LAS by having rotating sites at specific times of the day
- Would still have cost implications as each centre would potentially still have to maintain an on-call service for their own in-patients (albeit, there would be less demand than option 1 for staff to have to physically attend their centre out of hours)
- May mean that Harefield would require support from Interventionalists at other centres e.g. Northwick Park to sustain the service for an increased population on a 24/7 basis.
- Traditional provider flows of ACS patients may need to be redirected to another centre (either on a fixed or rotational basis depending on how the inner London service is operated) to provide adequate bed capacity to deliver the service 24/7 for the centre on call
- Possible concern about patients transferred from home direct to a centre without full A+E facilities. Royal Brompton & Harefield hospital do not have an A+E department. However, other centres in the world do provide PPCI in this manner.
- Need to expand consultant on-call rota and staff provision at the outer London centre to allow for increased on-call work from larger catchment area.

Proposed patient flows, out of hours, for such a model are detailed below:

Inner London Centre taking patient flows from Westminster, Kensington & Chelsea, Hammersmith & Fulham, Hounslow and Ealing (circa 1.1m)

Outer London Centre taking patient flows from Brent, Harrow and Hillingdon (circa 700,000)

### **Option 3 – dual site option (inner & outer London):**

*Primary angioplasty is provided by one site within the centre of London and one site on the outskirts of NWL*

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Within this option, the outer London centre would be Harefield Hospital. However, in terms of the inner London centre, consideration could be given to the possibility of providing the service from one fixed centre or to the possibility of Hammersmith Hospital, St Mary's Hospital or Royal Brompton providing the inner London service on a rotational basis. However, in general terms, the advantages and disadvantages of a dual site option are detailed below:

### Advantages

- Demonstrates joint working with inner and outer centres strategically positioned to cover the NWL population in a sensible configuration at each end of the region
- Less impact on LAS transfer times as less geographic skew
- Sharing of on call staff at inner London centres would allow reduction of number of days on-call whether rotating or at one site.
- Greater economies of scale in having shared rota's for medical and non-medical teams; allowing protected time off and less burden of on-call commitment to individuals working lives

### Disadvantages

- May lead to problems in recruiting some specialist Cath Lab teams as the need for on-call and the development of full shift patterns is required
- Non-medical staff concerns about providing a service within an organisation that is not their "normal" place of work which may impact upon recruitment and retention. This would be particularly true if there were large distances between centres sharing staff.
- Significant traditional provider flows of ACS patients may need to be redirected to another centre (either on a fixed or rotational basis depending on how the inner London service is operated) to provide adequate bed capacity to deliver the service 24/7
- Possible concern about patients transferred from home direct to a centre without full A+E facilities. Royal Brompton & Harefield hospitals do not have an A+E department. However, other centres in the world do provide PPCI in this manner.
- Need to expand consultant on-call rota and staff provision at the outer London centre to allow for increased on-call work from larger catchment area.

Proposed patient flows for such a model are detailed below:

Inner London Centre taking patient flows from Westminster, Kensington & Chelsea, Hammersmith & Fulham, Hounslow and Ealing (circa 1.1m)

Outer London Centre taking patient flows from Brent, Harrow and Hillingdon (circa 700,000)

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### Option 4 – Inner London Option for the whole of NWL:

*Primary angioplasty for NWL is provided by three sites within the centre of London. Harefield hospital continues its PPCI program and expands to service the surrounding regions including Bucks, Berkshire.*

Consideration could be given to the possibility of Hammersmith Hospital, St Mary's Hospital and Royal Brompton providing the NW London service on a rotational basis. The advantages and disadvantages of this dual site option are detailed below

#### Advantages

- Both institutions have a large number of consultant's available or expressing interest in joining the on-call rota.
- Demonstrates joint working. Discussions already advanced on joint protocols, joint rotas etc
- Will benefit from greater economies of scale in having 2 relatively closely positioned centres having shared rota's for medical and non-medical teams; allowing protected time off and less burden of on-call commitment to individuals working lives
- Clinical governance issues for staff working across 2 centres likely to be less of an issue with adequate training, support and cross-working during the normal working day.
- Facilitates better sharing of staffing resources potentially during the working day as well as out of hours
- Staff travelling to cover the 2 inner London sites out of hours should be less of an issue as both locations are geographically close to each other

#### Disadvantages

- May lead to problems in recruiting some specialist Cath Lab teams as the need for on-call and the development of full shift patterns is required
- Staff concerns about providing a service within an organisation that is not there "normal" place of work which may impact upon recruitment and retention
- Significant traditional provider flows of ACS patients may need to be redirected to another centre (either on a fixed or rotational basis depending on how the service is operated) to provide adequate bed capacity to deliver the service 24/7
- LAS journey time increased, in particular from outer parts of sector, and concern about provision of service for non-chest pain calls.
- Royal Brompton Hospital may find this model difficult to sustain on a 24/7 basis without the support of other Cardiologists on their rota.

Proposed patient flows for such a model are detailed below:

London Centre taking patient flows from Westminster, Kensington & Chelsea, Hammersmith & Fulham, Hounslow and Ealing, Brent, Harrow, Hillingdon (circa 1.8m)

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The disadvantages, particularly in relation to skewing LAS journey times, is likely to rule out this option as a model for NWL.

### **Option 5 – single rotating site option:**

*Primary angioplasty is provided by one site at any one time providing the service to the entire population of NWL*

The service would be provided from one centre operating on a rotational basis across the sector, i.e. Hammersmith, St Mary's, Royal Brompton and Harefield providing this service on a rotational basis. The advantages and disadvantages of a rotating single site option are detailed below

#### Advantages

- Would suggest joint working throughout sector if joint protocols agreed
- Reduce bed-base impact at each individual site compared to other models.
- Less demand on individual's on-call commitments as less time spent with 24/7, so therefore more staff "buy-in".
- A clear NWL primary angioplasty centre on each day may be a more attractive option for LAS in planning and scheduling ambulance services

#### Disadvantages

- Still requires the provision of on call team's at all three acute hospitals 24/7 even when not performing PPCI services, reducing any financial advantage.
- May lead to problems in recruiting some specialist Cath Lab teams as the need for on-call and the development of full shift patterns is required
- Travel distances for LAS may mean that there is a knock-on effect for ambulance availability within some areas of NWL making this option non viable
- Potential clinical governance issues around the requirement for Cath Lab teams having to work in a centre on a very infrequent basis, dealing with acutely ill patients, in unfamiliar surroundings if staff were to be shared.
- May potentially lead to a negative effect for recruitment and retention for the reasons detailed above
- The numbers of patients requiring the service across the whole of NWL, would likely necessitate the requirement of 2 catheter labs and 2 on-call teams being available within the single centre which within the current context of services in NWL would not be a viable option
- Significant traditional provider flows of ACS patients may need to be redirected to another centre (either on a fixed or rotational basis depending on how the service is operated) to provide adequate bed capacity to deliver the service 24/7

The disadvantages of this model appear to significantly outweigh the benefits in the current context of services within NWL are it is therefore recommended that this model is not pursued further.

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### **Option 6 – single unique site option:**

*Primary angioplasty is provided by one site providing the service to the entire population of NWL*

The service could be provided from one fixed nominated primary angioplasty centre. If the service were designed from scratch, a new centre in the geographical centre of the sector would be built. More realistically one of the existing centres (Hammersmith, Royal Brompton, Harefield or St Mary's) would have to do all the work. The advantages and disadvantages of a single site option are detailed below

#### Advantages

- Economies of scale may result in a more cost effective option
- Potential increase in clinical outcomes by having larger cohorts of patients being seen within the centre
- Less demand on individual's on-call commitments as a larger pool of people available to support the medical and cath lab rota's & therefore more staff "buy-in".
- A clear NWL primary angioplasty centre at all times may be a more attractive option for LAS in planning and scheduling ambulance services

#### Disadvantages

- May lead to problems in recruiting some specialist Cath Lab teams as the need for on-call and the development of full shift patterns is required
- Travel distances for LAS may mean that there is a knock-on effect for ambulance availability within some areas of NWL making this option non viable
- Potential clinical governance issues around the requirement for Cath Lab teams having to work in a centre on a very infrequent basis, dealing with acutely ill patients, in unfamiliar surroundings.
- On call staff may not be able to get to the centre within 30 minutes of notification and may not be willing to "live-in" during periods of on-call to support such a programme.
- May potentially lead to a negative effect for recruitment and retention for the reasons detailed above
- The numbers of patients requiring the service across the whole of NWL, would likely necessitate the requirement of 2 catheter labs and 2 on-call teams being available within the single centre which within the current context of services in NWL would not be a viable option
- Significant traditional provider flows of ACS patients may need to be redirected to another centre (either on a fixed or rotational basis depending on how the service is operated) to provide adequate bed capacity to deliver the service 24/7

The disadvantages of this model appear to significantly outweigh the benefits in the current context of services within NWL are it is therefore recommended that this model is not pursued further.

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### Conclusion & Recommendations

The requirements for beds, impact on staffing and potential problems with delivery of such a service by the London ambulance service rules out option 5 and 6 for any further consideration.

Options 1, 2, 3 and 4 are feasible and require further detailed analysis. Option 3 would, on initial examination, appear to be the preferred model as it demonstrates significant joint working whilst at the same time consolidating the service within 2 centres. However, although appearing to be the preferred option, existing staffing arrangements and stages of developments of the current services may not allow an immediate progression to option 3 in the short term; making option 1 or 2 a more viable short term option with a stepped approach agreed to reach option 3 within, e.g. an 18 month time scale. Option 4 is only viable if LAS agreement is reached on increased provision.

### Next Steps

- Views on these options need to be widely gauged and considered with clinicians and managers from across NWL
- Cardiac catheter lab staff and LAS need to be consulted on impact on working practices
- The contribution of Royal Brompton & Northwick Park Hospitals need to be discussed and progressed as appropriate
- Predicted numbers of STEMI and ACS patients for each individual centre within NWL must be gauged and modelled alongside staffing, lab and bed capacity for the preferred model
- Financial costs need to be established for options 1, 2, 3 and 4 before a final decision is reached.
- Funding needs to be directed accordingly to support development and expansion of the current services

Finally,

- Once the preferred model for primary angioplasty is identified and agreed, significant analysis of ACS patients across the sector needs to be modelled to ensure existing capacity is fully utilised allowing this group of patients to receive faster access to diagnosis and treatment

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