

H1N1 Critical Care Clinical Group

ECMO sub-group Statement November 2009 (revised 23 November)

1. In September 2009, the Department of Health received advice from a sub-group of the Critical Care Clinical Group, chaired by Dr Judith Hulf, on the potential for extracorporeal membrane oxygenation (ECMO) to contribute to the NHS response to the current pandemic of influenza H1N1. This advice involved doubling of the capacity for adult respiratory ECMO available in the UK from the five beds then available at University Hospitals of Leicester (UHL) NHS Trust (Glenfield Hospital).
2. The context for this is the nature of the respiratory failure being seen during the current H1N1 pandemic and the scope for ECMO to be used for adults and children in severe respiratory failure during the current pandemic.
3. Severe respiratory failure requiring mechanical ventilation can be categorised by severity of the compromise of either oxygenation or ventilation. Patients with refractory hypoxaemia carry the greatest risk of death and can prove the most challenging to treat. There are a number of different treatment options available for this group of patients, with differing levels of evidence base to support their use. These include prone ventilation, the ARDSnet strategy of low volume ventilation and permissive hypercapnia, high frequency oscillation ventilation (HFOV), ECMO and modalities to enhance matching of ventilation and perfusion such as inhaled nitric oxide or nebulised prostacyclin.
4. No single treatment confers guarantees of universal patient benefit and consequently treatment plan are the responsibility of experienced Intensive Care Medicine consultants. Each intervention needs to be evaluated by the potential risks and benefits to individual patients before the most appropriate treatment(s) are selected. Some treatments are more efficacious in certain age groups. ICUs with limited experience of caring for patients with refractory hypoxaemia should seek advice and assistance if necessary from other units with more experience in this field. No one treatment is a panacea to survival.
5. Since September the incidence of H1N1 in the population has continued to grow and the numbers of people being hospitalised with H1N1 as well as those needing critical care has risen. Demand for ECMO has grown and the capacity at Glenfield Hospital has been increased as a result. ECMO is a very staff intensive activity requiring twice as many staff for each ECMO patient than for those cared for in a

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level 3 intensive care bed. Glenfield Hospital currently is able to staff eight ECMO beds.

6. In order to achieve the doubling of capacity that was recommended, the body responsible for funding ECMO – the National Commissioning Group (the NCG) – assessed whether hospitals in the national heart and lung transplant programme, who provide ECMO as part of that service, could develop a respiratory ECMO service during the current pandemic. The identified standard for respiratory ECMO is that delivered by Glenfield Hospital.
7. The NCG has carried out a quality assurance process to review the potential of the Royal Brompton and Harefield NHS Foundation Trust and the Papworth Hospitals NHS Foundation Trust providing additional ECMO capacity during the current pandemic to the standards established by Glenfield Hospital. As a result, the NCG is now commissioning 2 beds from each hospital. Glenfield is acting as the gatekeeper for this additional capacity and is working closely with the other two hospitals. Consequently, there are now 12 adult respiratory ECMO beds available in the UK.
8. The Critical Care Clinical Group's sub-group was reconvened on 4 November 2009 to take stock of the position given the current stage of the pandemic and the steps taken at Glenfield, the Brompton and Papworth. Its recommendations are listed below.

General

- All ECMO must be provided to the Glenfield 'Gold Standard'
- The provision of ECMO beds should be a UK resource as are the other nationally commissioned services

Immediate

- Any increase in provision in the current wave needs to be rapid (2-3 weeks)
- This is too short a timescale to consider new respiratory ECMO centres
- Therefore only those units already providing adult ECMO (Glenfield, Brompton, Papworth) should be considered for expansion
- The NCG will consult with Brompton and Papworth about possible increase in beds
- Glenfield should be supported at the current 8 active ECMO bed level in order that they are able to maintain their central gate-keeping, advice and training role
- There is no demonstrated need in the current wave for increased paediatric provision
- The burden of supporting an ECMO service (transport, staff support, dispersing other clinical load) should be spread beyond East Midlands SHA

Medium Term

- Geographical spread should be considered in the commissioning of additional ECMO centres to minimise transport burden
- Only those centres already providing ECMO as part of the nationally commissioned heart and lung transplant service and bridge to transplant service should be considered.
- From a commissioning perspective – Birmingham, Manchester and Newcastle are currently commissioned by the NCG to provide heart and lung transplantation and bridge to transplant that includes the use of ECMO. These centres should be considered as potential additional centres of surge capacity for adult ECMO if it were to be required. It was agreed that the NCG should make contact with these centres to establish their willingness and ability to provide this if required to. They would need to be (a) prepared to offer surge capacity ECMO and (b) able to do it, which would include staffing capacity and impact on other resources, and (c) undergo the quality assurance process previously described using Glenfield gold standard to bring them to a state of preparedness. There might be training requirements that would need to be identified.
- For Scotland, a similar approach (using the framework and quality assurance) should be applied. Ministers and NSD Scotland to be consulted and agreement sought

Longer Term

- The sub-group noted that the National Commissioning Group has set up a process to determine the possible future designation of adult ECMO units in England beyond the current pandemic. This will be taken forward in the remainder of 2009 and into 2010, giving NHS Trusts the opportunity to express an interest in being designated as an ECMO unit as part of the longer term provision of this service.

Background

The group recognised that the current expanded ECMO capacity now available for adults was: Glenfield (8), Brompton (2) and Papworth (2). This would leave a maximum capacity for adults currently at 12 beds.

In addition, there are beds available in
Sweden 2

There are Paediatric & Neonatal facilities available at:

| | |
|---------|---------------------------------|
| GOSH | 3 (3 paediatric and neonatal) |
| Glasgow | 4 (2 paediatric and 2 neonatal) |
| Freeman | 2 (2 paediatric and neonatal) |

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11 November 2009 (with revisions 23 November 2009)

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