RCH Experience With The Jostra Quadrox\textsuperscript{D} Oxygenator For ECMO
### Technical Data QuadroxD

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood flow rate</td>
<td>0.5 - 7 l/min</td>
</tr>
<tr>
<td>Total priming volume</td>
<td>250 ml</td>
</tr>
<tr>
<td>Effective surface area gas exchange</td>
<td>1.8 m²</td>
</tr>
<tr>
<td>Material of oxygenation membrane</td>
<td>Polymethylpentene</td>
</tr>
<tr>
<td>Effective surface area heat exchange</td>
<td>0.6 m²</td>
</tr>
<tr>
<td>Material of heat exchange capillary</td>
<td>Polyethylene</td>
</tr>
</tbody>
</table>
Quadrox D Hollow fibre-True membrane
Patient Details

- n = 41 (1st case 11/2001)
- Mean weight: 12.45 kg (median 4.75 kg)
- Mean age: 25 months (median 4 months)
- patients following cardiac surgery: 20
- Mean duration of support hours: 166 (median 126)
Number of Oxygenators Used

• Severe sepsis (Klebsiella) underlying acute leukaemia - 1 (141.5 hours)
• s/p BT shunt – 1 (2 hours)
• s/p AVSD – 2 (141.5 + 20.5 hours VAD)
• s/p PA reconstruction – 1 (268.8 hours)
• s/p Truncus repair – 3 (148 + 158 + 149.4 hours)
• Meconium aspiration – 1 (216 hours)
• s/p PA band – 1 (105 hours)
• Bridge to Transplant – 3 (1119 Hours)
Avecor ECMO
Minimax ECMO
Quadrox\textsuperscript{D} ECMO
Heparin Coating

• Hydrophilic heparin molecule can’t interact with a polymeric surface when no functional groups are present.
• Some coating techniques show a negative influence on the physicomechanical behaviour of the used polymer or a toxic substance has to be used to enable a stable binding of heparin to the polymer surface.
Bioline Coating

- Polypeptides are a natural & nontoxic surface active substance that are used to bind heparin to the polymer.
- Absorption can take place on hydrophilic & hydrophobic surfaces.
- Ionic & covalent bonding is achieved, to preserve heparin activity & stability
Bioline Coating
(study by Tayama E, Artif Organs, 24(8), August 2000, 618 - 623)

• Full heparinisation (3mg/kg)
• No clinical impact
• Thrombogenicity, fibrinolysis & platelet activation were not influenced
• No clinical effect for haemostasis time, post-operative bleeding or autologous blood transfusion
Quadrox D for transport on ECMO
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