Cardiothoracic Services in UK

Dr Alex Dewhurst FRCA
Consultant Anaesthetist
St George’s Hospital
London
Summary

• Overview of Cardiothoracic Service in UK
• London Cardiothoracic Service
• Cardiothoracics at St George’s Hospital
• Anaesthetic practice
• Novel procedures
• Future
United Kingdom

• Population 61 million
• 42 Cardiac centres in UK
• 35,000 operation PA
• 7 transplant centres
• 200 Cardiac surgeons in UK (1/300,000)
• 400 Cardiothoracic anaesthetists
• 526 Cardiothoracic ITU beds (data from 2006)
42 Centres in UK

12 London
24 England
5 Scotland
1 Northern Ireland
London

- Population 7 million
- 12 Centres in London
- Specialist Centres
  - Great Ormond Street - Paediatrics
  - Brompton Hospital - Paeds and Adult
  - The Heart Hospital - Grown Up
- Congenital Heart Disease (GUCH)
St George’s Hospital

- 3 Cardiac surgeons, 2 cardiothoracic surgeons 1 thoracic surgeon and 1 interventional respiratory physician
- 4 Cardiothoracic theatres, 8 catheter laboratories
- 10 Consultant cardiothoracic anaesthetists
Procedures

• Adult cardiothoracics
• Off Pump CABG
• Minimally invasive surgery
• Intrabronchial procedures
• Interventional cardiology including device closure of ASD and percutaneous AVR
# Unadjusted Mortality at St Georges NHS Trust

<table>
<thead>
<tr>
<th>Operation</th>
<th>2002/3</th>
<th>2003/4</th>
<th>2004/5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All Operations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St George's</td>
<td>3.3%</td>
<td>2.5%</td>
<td>2.5%</td>
</tr>
<tr>
<td>UK average</td>
<td>3.6%</td>
<td>3.6%</td>
<td>3.4%</td>
</tr>
<tr>
<td>Total number of cases</td>
<td>1140</td>
<td>1117</td>
<td>1068</td>
</tr>
<tr>
<td><strong>Coronary artery bypass</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St George's</td>
<td>1.7%</td>
<td>1.3%</td>
<td>1.0%</td>
</tr>
<tr>
<td>UK average</td>
<td>2.0%</td>
<td>1.7%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Total number of cases</td>
<td>815</td>
<td>776</td>
<td>684</td>
</tr>
<tr>
<td><strong>Aortic valve replacement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St George's</td>
<td>4.5%</td>
<td>0%</td>
<td>1.3%</td>
</tr>
<tr>
<td>UK average</td>
<td>3.0%</td>
<td>2.6%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Total number of cases</td>
<td>66</td>
<td>78</td>
<td>79</td>
</tr>
<tr>
<td><strong>Mitral valve replacement</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>St George's</td>
<td>7.5%</td>
<td>2.9%</td>
<td>2.6%</td>
</tr>
<tr>
<td>UK average</td>
<td>5.5%**</td>
<td>5.0%**</td>
<td>5.2%**</td>
</tr>
<tr>
<td>Total number of cases</td>
<td>40</td>
<td>34</td>
<td>39</td>
</tr>
</tbody>
</table>
# Outcomes 3 years to 3/07 on line

<table>
<thead>
<tr>
<th>2007 nationally no. cases performed</th>
<th>National mortality</th>
<th>No cases 3 years to 3/07 St George’s</th>
<th>St George’s mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>19,957 CABG</td>
<td>1.7%</td>
<td>1768 CABG</td>
<td>1.4%</td>
</tr>
<tr>
<td>3,436 AVR</td>
<td>2%</td>
<td>978 AVR</td>
<td>1.1%</td>
</tr>
<tr>
<td>3046 All cases including MVR etc</td>
<td></td>
<td>3046 All cases including MVR etc</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

Individual surgeons mortality rates published on line

www.heartsurgery.healthcarecommission.org.uk
Anaesthesia for Cardiac Cases

- Varies slightly with anaesthetist but nearly standard technique
- Morphine/hyoscine premed
- Big drip/A-line/CVP +/- PAC
- Thiopentone/Fentanyl/Rocuronium
- TOE when indicated
- Fast track appropriate patients - use remifentanil/rocuronium
Anaesthesia for thoracic cases

- Benzodiazepine pre-med
- Big drip, A-line +/- CVP
- Propofol, Fentanyl, Vecuronium
- Double lumen tube
- Post operative analgesia PCA + Paravertebral catheter
- Bronchoscopy Prop/Remi TIVA
Novel surgical procedures

- Mitral valve repair
- Minimally invasive surgery
- Percutaneous aortic valve replacement
- Off-pump CABG
- Bronchial stenting
- Robotic surgery
Mitral Valve Repair
Repair Vs Replacement

![Graph showing survival rates after repair and replacement for AL-MVP and PL-MVP.]

<table>
<thead>
<tr>
<th></th>
<th>Repair</th>
<th>AL-MVP</th>
<th>Replacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL-MVP修復</td>
<td>251</td>
<td>161</td>
<td>36</td>
</tr>
<tr>
<td>AL-MVP置換</td>
<td>150</td>
<td>103</td>
<td>55</td>
</tr>
<tr>
<td>PL-MVP修復</td>
<td>428</td>
<td>49±5%</td>
<td>49±5%</td>
</tr>
<tr>
<td>PL-MVP置換</td>
<td>56</td>
<td>70±3%</td>
<td>70±3%</td>
</tr>
</tbody>
</table>

生存率(%)  
P=0.003  
P=0.0004

[years after surgery]
# Minimally Invasive Cardiac Surgery

**What is MICS**
- Definition
- Cardiopulmonary Bypass
- Small incision
- Key Hole
- Video Assisted
- Robotic Computerised

**What drives MICS**
- Competition with endovascular tech
- Co Morbidities
- Better out come
- Shorter length of stay
- Patient preference
MIDCAB
Minimally Invasive Surgery
Minimally Invasive Surgery
Minimally Invasive Surgery
PAVR

REVALVING™ PROCEDURE
The procedure is performed in a catheterization room, with the patient sedated but conscious. Procedure takes less than an hour and recovery takes one to two days.

Catheter insertion
A valve delivery catheter is inserted in the groin and threaded up to the diseased heart valve.

Guidance
Fluoroscopy is used to position the tip of the catheter in the annulus of the aorta.

Valve deployment
A new artificial valve mounted in a self-expanding stent is deployed in the aortic annulus.

Catheter
Deploying stent

The new valve pushes the diseased valve out of the way and anchors itself in place.

Anchored stent
New valve

Beating heart
The patient’s heart continues beating.
Robotic M V Repair
UK population 61 million
Future

- Demographics
- Cost
- Minimally Invasive
- Transcatheter techniques
- Robotics
- Stem cell implants