The London Stroke Strategy: Impact on quality of hyperacute care

Hilary Walker and Tony Rudd on behalf of the London Clinical Advisory Group
The scale of the problem of stroke in London

- Second biggest killer and most common cause of disability
- Population >8 million
- 8,500 strokes a year in London with 2000 deaths
A quick reminder of where we have come from

London Stroke Providers against Sentinel Audit 12 key indicators 2006

Change in London Stroke Providers against Sentinel Audit 12 key indicators 2006 vs 2004 scores
London Stroke Strategy

- Additional £21m per year for acute stroke care but only paid if hospitals delivering the required quality
- Centralise hyperacute (HASU) care into 8 units situated to provide easy access to the whole population (no more than 30 minutes by ambulance)
- All acute stroke patients admitted to HASU. This is not just a thrombolysis service
- 24 stroke units for ongoing rehabilitation
- Improve community care and longer term rehabilitation
- Neurovascular services for patients with TIA
30-minute blue light ambulance travel time to the hyper-acute stroke units

The green area shows the areas that are within 30 minutes travel time (under ambulance blue light conditions) of a HASU
Journey Times

Avg Time from Scene to Hospital

- Charing Cross
- King’s College
- Northwick Park
- Princess Ryl Hosp, Farnborough
- Queens Hospital, Romford
- Ryl London (Whitechapel)
- St Georges, Tooting
- St Thomas’
- University College
- Overall Average

Apr-10
Early Data

- Data on 5227 patients between April and Sept 2011
  - 695 (13%) TIAs
  - 3228 (62%) strokes
  - 1304 (25%) mimics
- 4235 (81%) patients arrived by ambulance
- 135 (2.5%) in hospital strokes
- 38% brain imaging within 30 mins arrival
- 95% brain imaging within 24 hours
Early Data

- 74% in a HASU within 4 hours of arrival hospital
- 14% thrombolysed (range between HASUs 9-27%)
- Median door to needle time 46 mins (range 10-504 mins)
- 93% swallow screened within 24 hours
- 86% of patients assessed by physiotherapist within 72 hours
Early Outcomes

% of patients spending 90% of their time on a dedicated SU
Early Outcomes

Average length of stay
Early Outcomes

Thrombolysis rates

Feb-July 2009: 3.5%
Aim: 10%
Feb-July 2010: 12%
April-Sept 2011: 14%
Cost-effectiveness analysis of the London Stroke Service

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**Dr. Charles Davie**, Clinical Lead for North Central London Cardiovascular and Stroke Network

**Prof. Alan Thompson**, Garfield Weston Professor of Clinical Neurology & Neurorehabilitation, UCL

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**Dr. Neil Thomson**, Assistant Medical Director, London Ambulance Service NHS Trust

**Dr. James Mountford**, Director of Clinical Quality, UCLPartners
Model comparisons

• Before-and-after comparison:
  – After: July 2010 to present

• This is an imperfect comparison!

• We have adjusted for national trends (decline) in mortality and LOS

• All unit costs in 2010/11 prices

• Cost-effectiveness depends on changes in health outcomes and resource use
### Results based on 6438 strokes per annum

<table>
<thead>
<tr>
<th>Differences in</th>
<th>Unadjusted</th>
<th>Adjusted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differences in total costs at 30 days</td>
<td>3,307,677</td>
<td>3,763,472</td>
</tr>
<tr>
<td>Differences in total deaths at 30 days</td>
<td>-214</td>
<td>-68</td>
</tr>
<tr>
<td>Differences in total QALYs at 30 days</td>
<td>51</td>
<td>44</td>
</tr>
<tr>
<td>Incremental cost per death averted at 30 days</td>
<td>15,451</td>
<td>55,371</td>
</tr>
<tr>
<td>Incremental cost per QALY gained at 30 days</td>
<td>64,478</td>
<td>86,106</td>
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<tr>
<td>Differences in total costs at 90 days</td>
<td>-5,393,533</td>
<td>-3,544,210</td>
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<tr>
<td>Differences in total deaths at 90 days</td>
<td>-238</td>
<td>-98</td>
</tr>
<tr>
<td>Differences in total QALYs at 90 days</td>
<td>112</td>
<td>86</td>
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<tr>
<td>Incremental cost per death averted at 90 days</td>
<td>Dominant</td>
<td>Dominant</td>
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<tr>
<td>Incremental cost per QALY gained at 90 days</td>
<td>Dominant</td>
<td>Dominant</td>
</tr>
<tr>
<td>Differences in total costs at 10 years</td>
<td>-21,318,180</td>
<td>-22,786,954</td>
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<tr>
<td>Differences in total QALYs at 10 years</td>
<td>4,492</td>
<td>3,886</td>
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<tr>
<td>Incremental cost per QALY gained at 10 years</td>
<td>Dominant</td>
<td>Dominant</td>
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Summary points

- Based on our calculations, the new London stroke model represents good value for money when costs and benefits beyond 30 days are accounted for.

- Our cost-effectiveness model is of necessity a stylised representation of the real world.

- We have populated it with the best available data, but these data are imperfect.

- Our study design is a before-and-after study; we have attempted to account for trends in mortality and LOS over time, but there may be other factors that changed over time that we have not accounted for.

- But, even after much sensitivity analysis the conclusions remain unchanged.

- Our final report is as yet unpublished; we are awaiting scrutiny by a peer-reviewed journal.
London Stroke Care: How is it working now?

- In the latest round of the National Sentinel Audit of stroke care in 5 of the 6 top performing hospitals were in London. All of the HASUs were in the top quartile of performance.
- London is providing better quality stroke care for less cost.