An Insight into Stroke Care during COVID-19
SSNAP Update

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Clinical Director, Stroke Programme, King’s College London
What happened in Europe?

Stroke activity in Northern Spain, Jan-April 2020

- Regional Stroke Network with popn. 11.5M and approx. 9000 strokes/year
- Significant fall in stroke admissions from early March
- IVT (17%) and Thrombectomy (22%) maintained

- In-hospital mortality rose (6.5% to 9.9%)

[Graph showing total case numbers pre- and during COVID-19 pandemic]

Tejada Meza et al
Int J Stroke
June 26 online
Stroke and COVID-19: four questions

1. What has happened to stroke admissions?
2. What has happened to reperfusion?
3. What has happened to clinical quality?
4. What has happened to mortality?

Please note these findings are from ‘SSNAP COVID-19 Portfolio for 23 March - 30 April 2020 admissions’ and ‘SSNAP COVID-19 Portfolio for May 2020 admissions’ that has not yet published and therefore these results may be subject to change and are not for onward sharing.
Stroke and COVID-19

What happened to stroke after lockdown?

• ‘COVID period’: UK lockdown (23 March) to end May
• 128 of 159 teams registered over 50% of expected admissions during this period, most using full dataset
• 23 Mar-April (6/52): 7090 admissions; 6028 discharges
  May (4/52): 5498 admissions; 4121 discharges (75%)
• 85% white; 6.2% non-white; 8.7% unknown
• NB: interim analysis of monthly data

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**Stroke and COVID-19**

<table>
<thead>
<tr>
<th>COVID status</th>
<th>Confirmed</th>
<th>Suspected</th>
<th>Negative</th>
<th>Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>261</td>
<td>439</td>
<td>2331</td>
<td>9198</td>
</tr>
<tr>
<td>23 March – 30 April</td>
<td>3%</td>
<td>4%</td>
<td>18%</td>
<td>75%</td>
</tr>
<tr>
<td>1 May -31 May</td>
<td>1%</td>
<td>3%</td>
<td>20%</td>
<td>76%</td>
</tr>
</tbody>
</table>

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What happened to stroke admissions?

Pre-stroke disability

- 17/18  Median age=77
- 18/19  Median age=77
- COVID Apr  Median age=76
- COVID May  Median age=76

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What happened to stroke admissions?

Stroke Severity (NIHSS categories)

At peak:
- Mild ↓13%
- Asympt ↓23%

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What happened to stroke admissions?

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What happened to stroke admissions?

Fig. 1

London (UCL): Feb 2020 v April 2020

Distribution of National Institutes of Health Stroke Scale (NIHSS) for patients presenting in the 40 days from 1st February 2020 (blue triangles, total 175 patients) and for those presenting during the 40 days from 1st April (red circles, total 84 patients). The NIHSS is a score between 0 and 42 representing the degree of neurological impairment, higher scores representing more severe strokes. Bin width = 2

Perry R et al, J Neurol: June 29 online
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MT caveat:
There are NHS E1 concerns around the current activity for 2020 versus the planned trajectory. This may be due to this data being benchmarked against last year’s data, which naturally would be lower.
What happened to Clinical Quality?

Mar-April 2020: Comparison with equivalent period 2017-19

<table>
<thead>
<tr>
<th></th>
<th>unadjRR</th>
<th>adjRR*</th>
<th>p (adj)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brain scan &lt;1 hr</td>
<td>1.09 [1.07,1.12]</td>
<td>1.07 [1.05,1.10]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Intravenous thrombolysis</td>
<td>1.05 [0.97,1.12]</td>
<td>1.00 [0.93,1.07]</td>
<td>0.97</td>
</tr>
<tr>
<td>Direct admission to SU &lt;4 hrs</td>
<td>1.16 [1.14,1.18]</td>
<td>1.15 [1.13,1.17]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Swallow screen &lt;4 hrs</td>
<td>1.04 [1.03,1.06]</td>
<td>1.03 [1.02,1.05]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Stroke specialist assessment &lt;24 hrs</td>
<td>1.07 [1.06,1.08]</td>
<td>1.06 [1.05,1.07]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Stroke nurse assessment &lt;24 hrs</td>
<td>1.02 [1.02,1.03]</td>
<td>1.02 [1.01,1.03]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Physiotherapy assessment &lt;72 hrs</td>
<td>1.02 [1.01,1.02]</td>
<td>1.01 [1.01,1.02]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>OT assessment &lt;72 hrs</td>
<td>1.03 [1.02,1.04]</td>
<td>1.03 [1.02,1.03]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Swallow assessment &lt;72 hrs</td>
<td>1.04 [1.03,1.05]</td>
<td>1.03 [1.02,1.04]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Communication assessment &lt;72 hrs</td>
<td>1.04 [1.03,1.06]</td>
<td>1.04 [1.03,1.05]</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>At least 90% stay in stroke unit</td>
<td>1 [0.98,1.02]</td>
<td>1 [0.98,1.02]</td>
<td>0.97</td>
</tr>
</tbody>
</table>

*Adjusted for Age and NIHSS at Arrival

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What happened to early mortality?

SSNAP Mortality rates by COVID status

<table>
<thead>
<tr>
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<th>Suspected</th>
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<th>Unknown</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>199</td>
<td>351</td>
<td>1878</td>
<td>7043</td>
<td></td>
</tr>
<tr>
<td>7-day in-hospital mortality</td>
<td>22.1%</td>
<td>21.4%</td>
<td>14.1%</td>
<td>6.0%</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Mortality by discharge*</td>
<td>54.8%</td>
<td>45.6%</td>
<td>21.0%</td>
<td>10.4%</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*Underestimated by early analysis

For March-April admissions

<table>
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<th>unadjRR</th>
<th>adjRR*</th>
<th>p (adj)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7-day in-hospital mortality</td>
<td>2.58 [2.10, 3.17]</td>
<td>1.41 [1.11, 1.80]</td>
<td>0.006</td>
</tr>
<tr>
<td>In-hospital mortality</td>
<td>3.62 [3.22, 4.07]</td>
<td>2.15 [1.84, 2.51]</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

*Adjusted for age and stroke severity

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What happened to Mortality?

SSNAP 7-day crude mortality rate

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Stroke and COVID-19: four answers

1. What has happened to stroke admissions?
   - fell overall by about 13%; fewer milder strokes

2. What has happened to reperfusion?
   - seemed to hold up pretty well

3. What has happened to clinical quality?
   - improved thanks to fewer admissions and more beds

4. What has happened to mortality?
   - increased significantly, and dramatically so if your patient had stroke + COVID-19

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Please remember to keep yourself muted during the Q&A session.

If you would like to ask any questions, please use the chat function (you can find it at the bottom of your screen).
Thank you for attending
An Insight into Stroke Care
during COVID-19

If you would like to send us any comments remember you can do it by email to ssnap@kcl.ac.uk

Remember you can find SSNAP Helpnotes and guidance going to
https://ssnap.zendesk.com/

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