

## At a glance:

# Impact of centralising hospital stroke services on stroke patient mortality and length of hospital stay (summary of Morris et al, 2014)

### Key findings

- Every year, London's centralised stroke services save around 96 stroke patients who would have died under standard hospital treatment, finds UCL-led research. The study, published in the BMJ, found that the 2010 centralisation of London stroke services also reduced the average hospital stay by around a day and a half.
- A less radical centralisation in Greater Manchester at a similar time had no effect on mortality but reduced the average hospital stay by two days.

### Background - the changes studied:

- A **stroke** is when brain function is lost due to impaired blood supply, caused by blood clots or internal bleeding, and is a leading cause of death and disability worldwide. In England there are an estimated 125,000 strokes, leading to 40,000 deaths, every year.
- **In London**, since 2010, anyone suffering a stroke is taken to one of eight 24/7 Hyper Acute Stroke Units (HASUs) rather than the nearest hospital. Patients are assessed immediately by specialised stroke staff equipped to instantly perform brain imaging and give clot busting treatment where appropriate. HASU locations were selected to ensure that no Londoner is more than half an hour's ambulance journey away. 24 Stroke Units provide rehabilitation services after the initial HASU visit and five hospitals no longer provide acute stroke services.
- **In Greater Manchester**, only stroke patients seen within four hours of developing symptoms are taken directly to one of three specialist stroke centres, with other patients taken to one of ten District Stroke Centres. Only one of the three specialist centres is open 24/7 and no hospitals stopped providing stroke services entirely as a result of centralisation.



### The research:

- The research was commissioned by the National Institute for Health Research (NIHR) Health Services and Delivery Research Programme, funded by the Department of Health and performed by researchers from UCL, The University of Manchester, King's College London and the Guy's and St Thomas' NHS Foundation Trust.
- To assess the effectiveness of both centralisations, the researchers looked at data from 258,915 stroke admissions across England from 2008-2012, including 17,650 in Greater Manchester and 33,698 in London. They compared stroke survival from both areas before and after reconfiguration with the average for the rest of England, which has been improving since the publication of the National Stroke Strategy for the English NHS in December 2007.

## Results:

- “The changes in London save around 96 stroke patients every year who would likely have died under a non-centralised system,” explains **lead author Professor Stephen Morris** of the UCL Department of Applied Health Research. “Centralisation in London **reduced death rates by 1.1% at 90 days** after stroke after adjusting for confounding factors including improved survival nationwide.
- “Against a backdrop of increasing stroke survival across England, looking only at changes in survival in both areas before and after centralisation is not an accurate measure of the impact of the changes. The **96 patients per year** figure represents the additional lives saved by centralisation over and above the lives saved by improvements to stroke care nationally.”
- The centralisation process also reduced the time that stroke patients had to spend in hospital, over and above the decline seen in the rest of England during the study period, by **9% in Greater Manchester and 7% in London**. This amounts to a total annual saving of **8,842 hospital days in Greater Manchester and 12,766 in London**, which is better for both patients and the public purse.

## What this means:

- “Our study shows that radical centralisation of acute stroke care in cities saves lives and reduces time spent in hospital,” says senior author **Professor Naomi Fulop** of the UCL Department of Applied Health Research. “It may seem counter-intuitive for an ambulance to drive a critical patient straight past the nearest hospital, but it saves lives. While an individual may feel that losing their local hospital’s stroke unit is bad for them, going to a specialised centre further away actually increases their chance of surviving a stroke. Now that our paper has clearly shown the benefits of centralisation in London, other urban areas should seriously consider adopting a similar model.”
- Co-author **Professor Pippa Tyrell**, Professor of stroke medicine at The University of Manchester, says: “It is really important to know whether the changes we make in the way in which people receive care really do lead to the improvements that we hope for. We have changed the way in which we provide acute services for people with stroke in Greater Manchester in the last six years and this study helps us understand how this has improved care and where further changes are needed.”
- **Professor Tony Rudd** of Guy's and St Thomas' NHS Foundation Trust, National Clinical Director of Stroke in England, who led the London centralisation, says: “This paper makes a strong case to centralise acute stroke care in large centres able to offer high quality care regardless of the day or time. The benefits in terms of reducing mortality are not achieved just by focussing on patients who might be suitable for clot busting treatment but by ensuring that all patients are looked after in a large, well-staffed specialist unit. We need to spread this model to all urban areas where a hub and spoke model is an option.”

## Find out more:

**Reference: Morris S *et al.*** Impact of centralising acute stroke services in English metropolitan areas on mortality and length of hospital stay: difference-in-differences analysis. *BMJ* 2014;349:g4757

***This summary is adapted from the UCL press release for this paper***

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