



Does Size Matter? The Rationale for Centralising Acute Stroke Care into a Smaller Number of Larger Units

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The evidence presented here is largely based on experience in England and it is important to review its applicability to other health systems.

Papers referenced below provide the evidence that has led England to conclude that stroke services should have the following characteristics

1. Each unit should have sufficient stroke specialist staff to ensure that the hospital has access to expertise 24 hours a day, seven days a week. In the UK, as elsewhere in Europe, there are legal limits on the number of hours that doctors can work. This means that to provide effective specialist cover there need to be at least 5 consultant stroke physicians on a rota. With limited numbers of consultants and limited money, it is not possible to provide 24/7 cover in every district hospital.

2. Hospitals should be admitting at least 800 stroke patients a year but no more than about 1800. The rationale for this is that stroke unit staff need to maintain expertise in their specialty including in the management of rare causes of stroke. There are some hospitals only admitting 200 cases per year, and with this limited number of cases (less than one a day) that such expertise will not be gained or maintained sufficiently. There is evidence from the literature that larger units perform more efficiently. For example, the papers by Bray, et al. in 2013 showed that thrombolysis rates and door to needle times were better in units treating larger numbers of patients [1]. While this may partly reflect better experience for the doctors, it is probably more to do with institutional learning – the emergency department knowing exactly what to do with acute stroke patients, the radiology department understanding the need to scan immediately etc. The reason we say that a unit should not be larger than one admitting 1800 patients is that beyond that point, there are too many patients for a single admitting team to be confident that they can always offer high quality care.

3. With the need to offer intra-arterial clot retrieval and with a small number of interventional neuroradiologists, the issue of providing sufficient staffing 24/7 and

with maintaining skills through experience becomes even more acute.

4. Financially, with the system of hospital funding in England as it currently is, a hospital needs to treat about 800 patients per year to cover the costs of providing the service.

The experience from London where services were reconfigured in 2010 from 32 hospitals providing acute stroke care to just eight showed that processes of care were much improved with less door to needle time, higher thrombolysis rates, quicker access to stroke units, better swallow screening for dysphagia etc., mortality fell significantly compared to the rest of England. Although there were increased costs initially with the need to provide higher levels of medical, nursing and therapy, cover in the eight hospitals by 30 days after admission costs fell. This was due to lower use of intensive care beds and shorter lengths of stay. Projecting costs forward to 10 years fell very significantly largely down to patients having lower levels of disability and requiring less formal and informal care [2-4]. Manchester that initially reconfigured services to less stroke units but only focussing on getting potentially thrombolysable patients to the comprehensive stroke centre failed to show similar benefits. However, when they changed the model to one similar to London where all patients with acute stroke were taken to the comprehensive stroke centres, the outcomes improved to match those in London [5]. The plan in England now is to reduce the number of acute hospitals treating stroke from the current 120 to about 80, of which about half will be offering intra-arterial clot retrieval, and the remaining ones offering all other acute care and providing drip and ship facilities for patients appropriate for thrombectomy.

This model might not be suitable for the all countries or regions. Many experts believe that establishing more stroke centres and emergency stroke care maps are the key solutions in developing countries and regions [6].

References

1. Bray BD, Ayis S, Campbell J, Hoffman A, Roughton M, et

- al. (2013) Associations between the organisation of stroke services, process of care, and mortality in England: prospective cohort study. *BMJ* 346: f2827.
2. Hunter RM, Davie C, Rudd A, Thompson A, Walker H, et al. (2013) Impact on clinical and cost outcomes of a centralized approach to acute stroke care in London: a comparative effectiveness before and after model. *PloS one* 8: e70420.
 3. Morris S, Hunter RM, Ramsay AI, Boaden R, McKeivitt C, et al. (2014) Impact of centralising acute stroke services in English metropolitan areas on mortality and length of hospital stay: difference-in-differences analysis. *BMJ* 349: g4757.
 4. Ramsay AI, Morris S, Hoffman A, Hunter RM, Boaden R, et al. (2015) Effects of Centralizing Acute Stroke Services on Stroke Care Provision in Two Large Metropolitan Areas in England. *Stroke* 46: 2244-2251.
 5. Morris S, Ramsay AIG, Boaden RJ, Hunter RM, McKeivitt C, et al. (2019) Impact and sustainability of centralising acute stroke services in English metropolitan areas: retrospective analysis of hospital episode statistics and stroke national audit data. *BMJ* 364: l1.
 6. Zhao J, Ren L, Abraham S, Li D, Kung D, et al. (2019) The Stroke Prehospital Delay Summary Statement: A Global Battlefield. *Transl Perioper & Pain Med* 6: 20-26.

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