



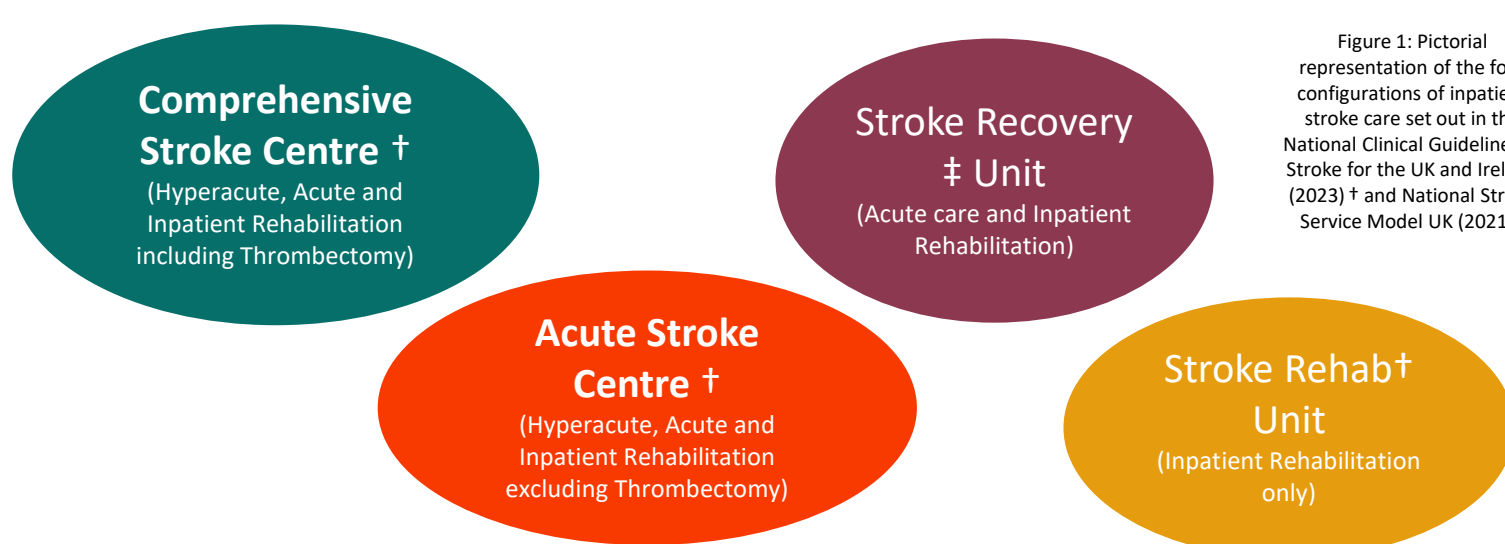
A study to map the configurations of inpatient stroke services in England

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Background

The introduction of stroke units has substantially improved the treatment of stroke patients¹. In recent years, configurations of inpatient stroke care have undergone change to help reduce inequalities in care, especially hyperacute care.

In England, national guidelines and policy documents set out configurations of acute inpatient stroke care. Figure 1 is a pictorial representation of the configurations of acute stroke care from the National Clinical Guideline for Stroke for the UK and Ireland² and National Stroke Service Model³.



It is unclear how closely inpatient stroke services delivered in a real-world setting fit these typologies.

This study aims to understand existing configurations of inpatient stroke care in the NHS in England and compare these to the typologies set out in policy.

Methods

A quantitative online survey, distributed via established professional networks, was completed by inpatient stroke therapists and nurses in England. Participants were invited to detail their local stroke inpatient configuration.

Duplicate responses for hospitals were tested for agreement then systematically reduced to a single entry.

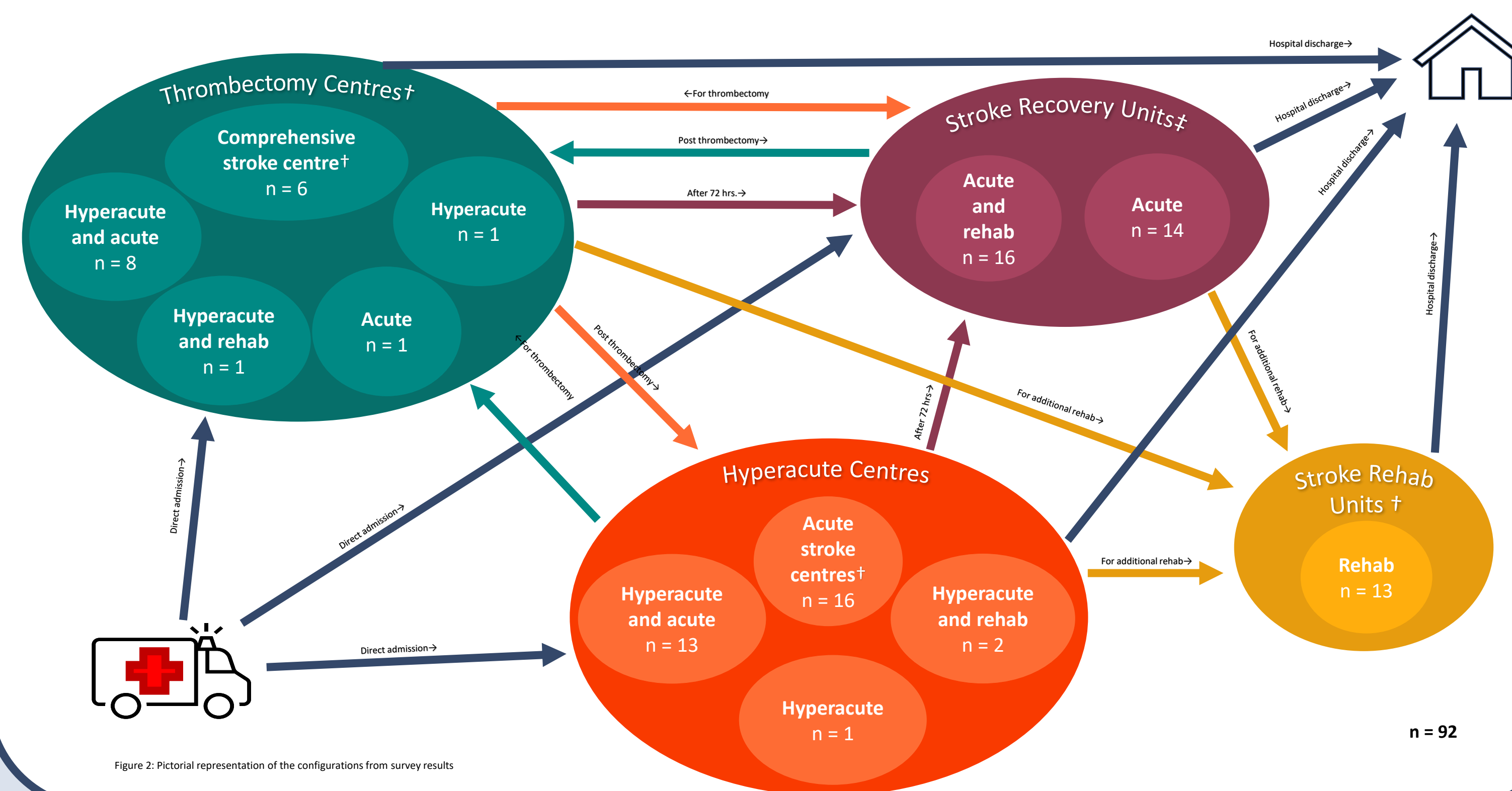
Descriptive statistics, completed in R-studio™, were used to explore and summarise the data. Configuration strings were generated using a bespoke algorithm.

Policy documents and previous research were used as a deductive framework to group similar configurations²⁻⁴. Publicly available data, including the Sentinel Stroke National Audit Program⁵, were used to triangulate findings.

Results

Responses were received from 49.7% (92/185) of hospitals providing inpatient stroke services in England. Based on annual admission figures for 21/22 this represents services for 60.3% of patients recorded in the Sentinel Stroke National Audit Programme. Six hospitals met the criteria for comprehensive stroke centres, 16 for acute stroke centres and 13 for stroke rehabilitation units. The remaining hospitals described different variations which did not reflect the typologies. When accounting for routine admission and transferring patterns, there was high variability in the full pathway with 474 different configuration strings.

Using policy and research as a deductive framework these have been condensed into the following summary of configurations below in figure 2.



Definitions of terms

Thrombectomy centres † :

Units which provide thrombectomy

Comprehensive stroke centre † :

Units which provide thrombectomy and hyperacute and acute care and inpatient rehabilitation.

Hyperacute centres:

Units which provide hyperacute care.

Acute stroke centres † :

Units which do not provide thrombectomy but provide hyperacute and acute care and inpatient rehabilitation

Stroke recovery units ‡ :

Units which provide acute stroke care and rehabilitation

Stroke rehab units † :

Units which provide inpatient rehabilitation only

† Taken from National Clinical Guideline for Stroke for the UK and Ireland²
‡ Taken from National Stroke Service Model³

Conclusion

In practice, stroke inpatient care configurations are not as well defined as the typologies set out in clinical guidelines and policy.

High levels of variation exist across NHS England creating a more complex picture. It is not known whether these variations are context, infrastructure or financially driven.

The impact that configurations have upon mortality and hospital length of stay has been reviewed within the hyperacute phase within the NHS. However, the impact that the configurations of acute and rehabilitation care on patient outcomes and length of stay needs to be investigated.

It is unclear whether this level of complexity is unique to NHS England, or if is present across other health systems.

Discussion

The results demonstrate high levels of variability within the stroke inpatient care configurations in NHS England. The typologies set out in UK policy and research, including comprehensive stroke centres, acute stroke centres and hub and spoke models were reflected within the survey results, however with several different iterations and a higher degree of complexity. Complexity was introduced with participants reporting different configurations for different patient types or patient addresses. This led to single hospitals providing all elements of stroke care, a comprehensive service, for some patients and requiring onward transfer for others, a separated service. Equally, some patients were reported not to follow the set pathway, with direct admission into the stroke recovery units, with thrombolysis taking place outside of the hyperacute setting. It is unclear what the impact of these variations are across the country.

To the author's knowledge, this is the first study to attempt to map the configurations of inpatient stroke services using health care professionals. A limitation was that only 49.7% of hospitals were covered within the survey although these represented an estimated 60% of patient admissions. If repeated, specific invitations for participation could be sent to each hospital to achieve more directed recruitment.