

Clinical audit on critical time standards for hyperacute stroke management in Addenbrooke’s Hospital, Cambridge, UK: measuring against national targets

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Introduction

The hyperacute treatment of ischaemic stroke is time critical – every minute counts to maximise preservation of brain tissue. Hyperacute phase treatments include thrombolysis and thrombectomy.¹ The aim of this project was to compare the performance of Addenbrooke’s acute stroke team from September 2018 – September 2021 to the UK National Stroke Service Model time targets for hyperacute stroke management² (Fig 1). This

period was chosen to cover performance before and during COVID, because the pandemic instigated radical changes in hyperacute stroke management processes and team structure in Addenbrooke’s Hospital. From this audit, we hoped to determine the effects of these changes – the strengths and weaknesses of different team and process permutations to advise the development of an ideal stroke service model.

Materials and methods

Data on door-to-first responder time, door-to-CT time, door-to-thrombolysis time, door-to-thrombectomy time and door-to-consultant time for patients presenting during working hours (Mon–Fri, 09:00–17:00) from September 2018 to September 2021 were extracted from Addenbrooke’s Hospital’s SSNAP (Sentinel Stroke National Audit Programme) database. Statistical analysis

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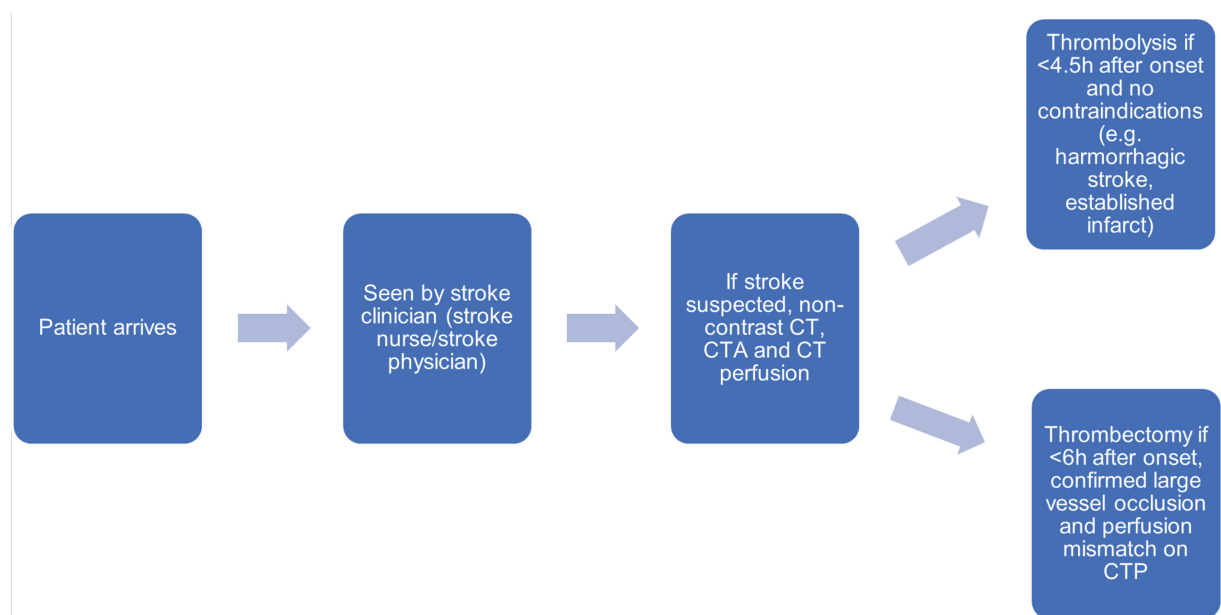


Fig 1. Schematic of the hyperacute stroke pathway at Addenbrooke’s Hospital, Cambridge, UK.

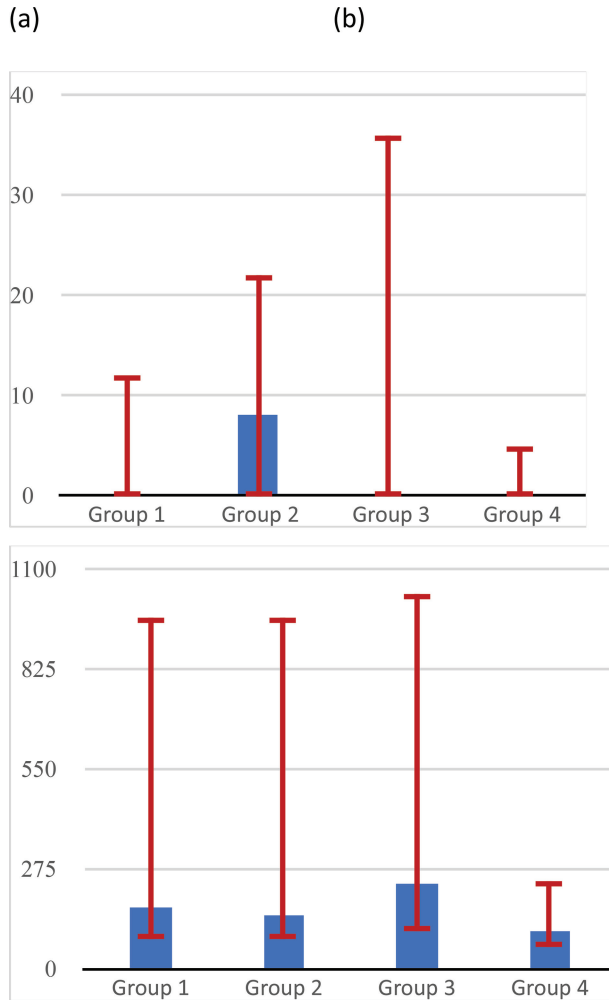


Fig 2. Median times for door-to-first responder (a) and door-to-consultant (b) in minutes for the different periods. The IQR is defined in red.

revealed a non-parametric distribution, thus median time and interquartile range (IQR) were calculated for comparison between

different covering teams (group 1: stroke, September 2018 – February 2020; group 2: neurology consultants, March 2020 – June 2020; group 3: neurology registrars, July 2020 – September 2020; group 4: stroke, October 2020 – September 2021). Kruskal–Wallis analysis was used to compare data of different teams,³ and subsequently, if significance was identified, pairwise Mann–Whitney U tests were conducted to determine statistically different groups.⁴

Results and discussion

Door-to-first responder (Fig 2a), door-to-CT, door-to-thrombolysis, door-to-thrombectomy and door-to-consultant (Fig 2b) times varied over the 3 years depending on cover. The group following the pandemic, stroke registrars as first responders, was identified as having significantly lower door-to-first responder ($p < 0.05$) and door-to-consultant ($p < 0.01$) times.

Conclusion

Better staffing and top-down prioritisation for consultant review were identified as factors supporting quicker management. Reduction of door-to-CT time, simplification of CT algorithm for rapid thrombolysis and expansion of thrombectomy services were identified as changes that could potentially improve hyperacute stroke management in Addenbrooke’s Hospital. ■

References

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