Access to advanced brain imaging according to the National Optimal Stroke Imaging Pathway (NOSIP): data from the National Stroke Registry SSNAP

SSNAP Sentinel Stroke National Audit Programme

Figure 2.

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Percentage of first imaging modality Background **Results** 100% The National Optimal Stroke Imaging Pathway (NOSIP) is a GIRFT 155,381 patients were initiative that was introduced in 2021 in England to improve access to admitted over the 21-month advanced imaging and thereby ensure patients receive time dependant period since the introduction of reperfusion treatments urgently (Figure 1 below). In July 2021, the the NOSIP. From July -80 Sentinel Stroke National Audit Programme (SSNAP) dataset was December 2021 CT amended to allow reporting of first imaging in acute stroke and Angiography (CTA) accounted compliance with the NOSIP recommendations. for 8% and CT Perfusion (CTP) for 1% of the initial 60 Suspected stroke in person with persistent acute neurological deficit: as determined by senior stroke team decision maker imaging modality, while Non-Contrast CT (NCCT) alone Do you clinically suspect an acute stroke Is there significant diagnostic uncertainty accounted for 87%, with 4% or acute very mild stroke symptoms? for any other imaging modality. 40 Plain CT-head & CT-angiogram* MRI head Inc. T1, T2, DWI & Haern sequence Has the criteria for IV thrombolysis been met? +/- AI If carotid territory By January 2022 - March acute ischaemio stroke confirmed 2023. CTA had increased to 20 carotid Imaging <24hrs 12% and CTP to 2% while IV thrombolysis: started Consider CT-Perfusion** in CT department KEY: NCCT alone had decreased to Clinical 83% (P <0.001; Figure 2, right). is there salvageable Penumbra? diological vestigation Intervention Jul Oct Jan Jul Oct Consider IV thrombolysis: started in CT department 2021 2022 2023 Proceed to thrombector a Large Vessel Occlusion? Conclusions +/- AI Figure 1: the NOSIP Pathway

Methods

Data for first imaging modality were extracted from the SSNAP database for England, Wales, and Northern Ireland. The national stroke registry SSNAP has a case ascertainment of approximately 95%. This analysis included all acute stroke patients from July 2021 – March 2023 who had brain imaging. Pearson's chi-squared test was used to test for a significant difference between the proportions.

There has been a small but significant increase in the proportion of patients receiving either CTA or CTP on their first visit to the imaging department in line with the NOSIP. Recent observational studies would indicate a typical incidence of large artery occlusion of approximately 30%, suggesting that this is a reasonable expectation for the proportion of patients who should receive advanced imaging on their first visit to the imaging department. Furthermore, changes in the eligibility for reperfusion treatment (both thrombolysis and thrombectomy) contained within the updated 2023 National Clinical Guideline for Stroke would indicate that the proportion of patients for whom advanced imaging is appropriate will increase significantly beyond the levels reported here – to at least 50% of ischaemic strokes.