

# Advanced imaging implications of new national guidelines for thrombolysis beyond 4.5 hours

## Data from the Sentinel Stroke National Audit Programme (SSNAP)

SSNAP

Sentinel Stroke National Audit Programme

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### Background:

The 2023 National Clinical Guideline for Stroke extends thrombolysis eligibility, encompassing patients with unclear stroke onset time and those arriving 4.5-9 hours later.

This research investigates the effect on immediate imaging and specialized assessment resources as a result of the widened criteria.

### Method:

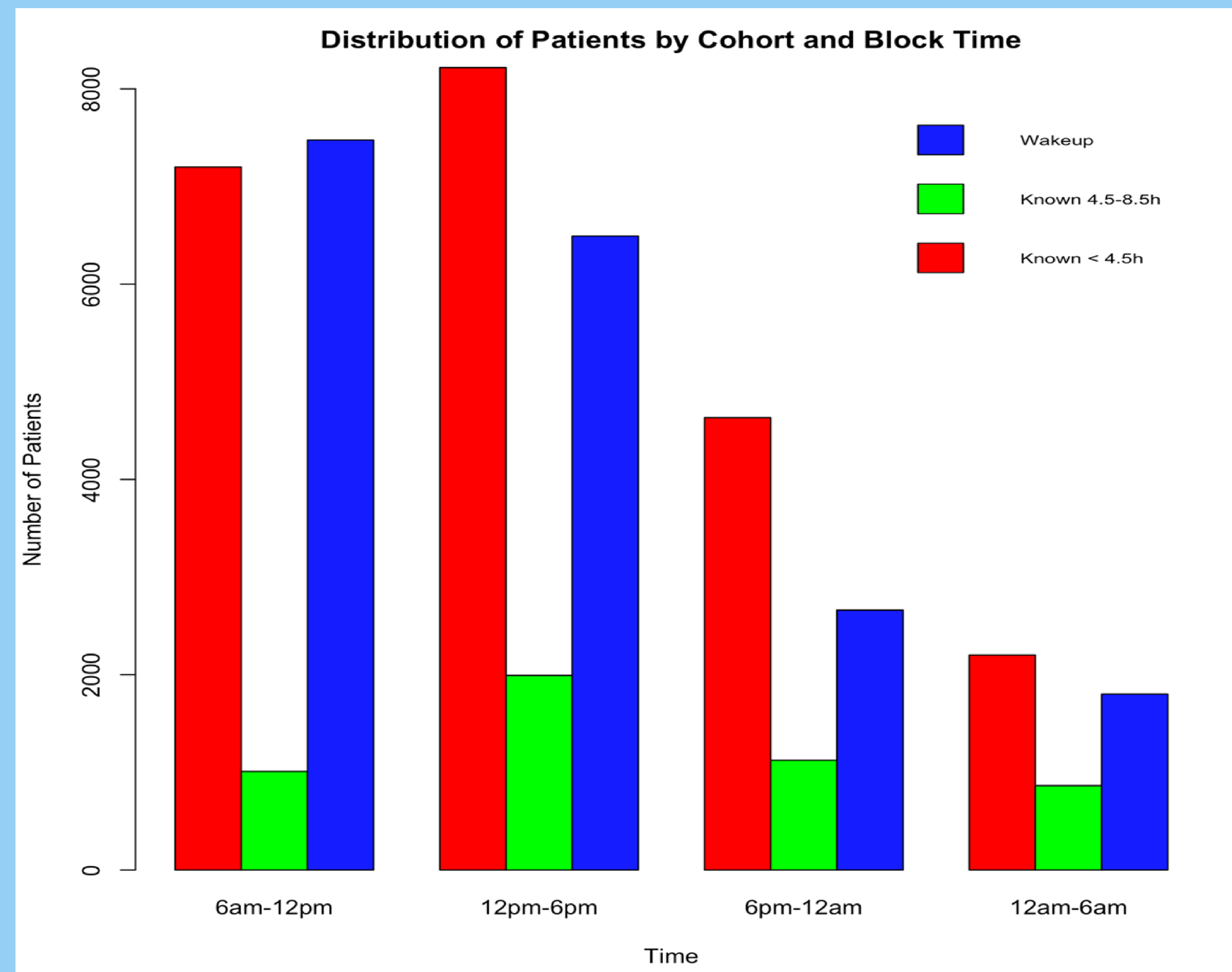
The analysis drew upon data from the national stroke registry, the Sentinel Stroke National Audit Programme (SSNAP), covering admissions between April 2022 and March 2023. SSNAP achieved a case ascertainment rate exceeding 95%.

The study identified three distinct cohorts:

1. A reference cohort with a known onset time of less than 4.5 hours.
2. Patients with a known onset time falling between 4.5 to 8.5 hours, allowing for sufficient time for imaging and treatment decisions.
3. Wake-up strokes or patients with an unknown onset time

Participants were selected based on specific criteria, which included pre-stroke modified Rankin Scale (mRS) scores of 2 or lower (independent) and National Institutes of Health Stroke Scale (NIHSS) scores of 2 or higher (indicating a disabling stroke). No age restrictions were applied.

Figure 1: Distribution of patients in each cohort by time blocks



### Results:

Out of the 45,678 examined patient population, 22,253 (48.7%) individuals fulfilled the criteria outlined in the 2016 guideline for the reference cohort. Furthermore, 18,433 (40.4%) patients presented with Wake-up/time unknown strokes, while 4,992 (10.9%) patients reported an onset time of 4.5-8.5 hours.

These results demonstrate a significant rise in eligible patients for advanced imaging selection for thrombolysis by 23,425 individuals, indicating a substantial 105% increase compared to the previous guidelines.

Table 1: mRS<2 and NIHSS scores in each cohort by time blocks

| Known onset < 4.5h (N=22253)    | 12am-6am       | 6am-12pm       | 12pm-6pm       | 6pm-12am       | Total          |
|---------------------------------|----------------|----------------|----------------|----------------|----------------|
| mRS score = 0                   | 1348 (61%)     | 4412 (61%)     | 5040 (61%)     | 2827 (61%)     | 13627 (61%)    |
| mRS score = 1                   | 513 (23%)      | 1657 (23%)     | 1955 (24%)     | 1102 (24%)     | 5227 (23%)     |
| mRS score = 2                   | 341 (15%)      | 1131 (16%)     | 1223 (15%)     | 704 (15%)      | 3399 (15%)     |
| Total                           | 2202 (10%)     | 7200 (32%)     | 8218 (37%)     | 4633 (21%)     | 22253 (100%)   |
| NIHSS Med [IQR]                 | 8.0 [4.0;14.0] | 7.0 [3.0;14.0] | 6.0 [3.0;13.0] | 7.0 [4.0;15.0] | 7.0 [4.0;14.0] |
| Wake up/unknown onset (N=18433) | 12am-6am       | 6am-12pm       | 12pm-6pm       | 6pm-12am       | Total          |
| mRS score = 0                   | 1091 (61%)     | 4440 (59%)     | 3681 (57%)     | 1532 (58%)     | 10744 (58%)    |
| mRS score = 1                   | 393 (22%)      | 1790 (24%)     | 1663 (26%)     | 689 (26%)      | 4535 (25%)     |
| mRS score = 2                   | 318 (18%)      | 1246 (17%)     | 1149 (18%)     | 441 (17%)      | 3154 (17%)     |
| Total                           | 1802 (10%)     | 7476 (41%)     | 6493 (35%)     | 2662 (14%)     | 18433 (100%)   |
| NIHSS Med [IQR]                 | 5.0 [3.0;11.0] | 5.0 [3.0;9.0]  | 4.0 [3.0;8.0]  | 5.0 [3.0;9.0]  | 5.0 [3.0;9.0]  |
| Known onset 4.5-8.5h (N=4992)   | 12am-6am       | 6am-12pm       | 12pm-6pm       | 6pm-12am       | Total          |
| mRS score = 0                   | 492 (57%)      | 623 (62%)      | 1131 (57%)     | 641 (57%)      | 2887 (58%)     |
| mRS score = 1                   | 212 (25%)      | 221 (22%)      | 504 (25%)      | 283 (25%)      | 1220 (24%)     |
| mRS score = 2                   | 160 (19%)      | 166 (16%)      | 358 (18%)      | 201 (18%)      | 885 (18%)      |
| Total                           | 864 (17%)      | 1010 (20%)     | 1993 (40%)     | 1125 (23%)     | 4992 (100%)    |
| NIHSS Med [IQR]                 | 6.0 [4.0;12.0] | 5.0 [3.0;10.0] | 4.0 [3.0;8.0]  | 5.0 [3.0;9.0]  | 5.0 [3.0;9.0]  |

### Conclusion:

The integration of the latest evidence for thrombolysis into updated national guidelines signals the need to at least double the number of patients undergoing advanced imaging selection for reperfusion therapy. A significant proportion of these patients will also be candidates for late thrombectomy. Taken together, these new recommendations indicate a reversal of the default approach to one in which all patients are considered eligible for reperfusion therapy until proven otherwise, dependent on the findings of salvageable brain tissue on advanced brain imaging.