

AI In Stroke Care, What Have We Learned Post-Deployment:

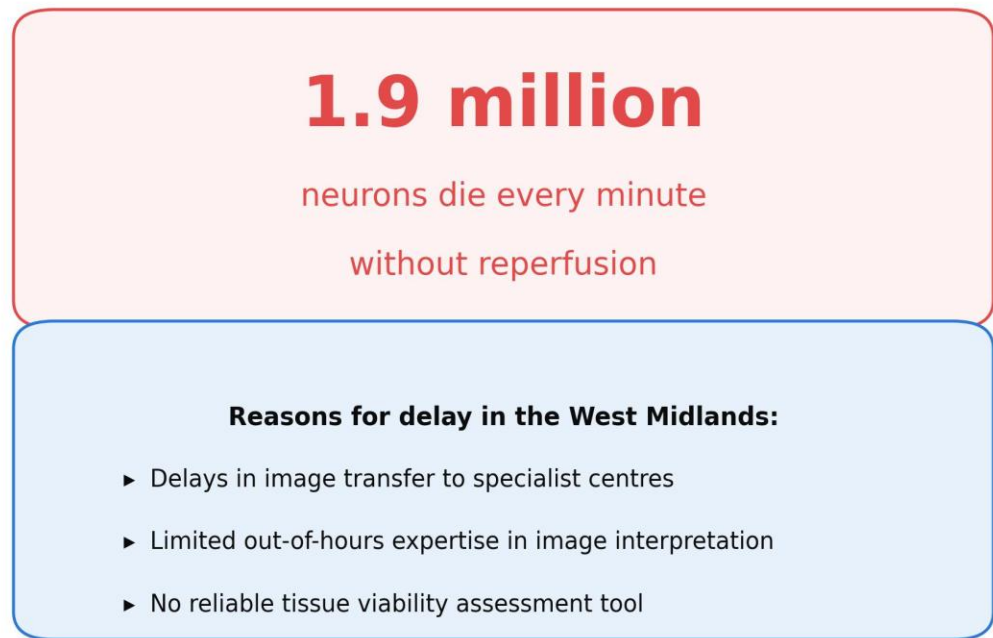
A regional evaluation of a Stroke AI tool deployed in the West Midlands

Dr Christian Oyor Okonkwo, NHS Clinical AI Fellow, College of Medicine and Health, University of Birmingham
Dr Jeffrey Hogg, Clinical Assistant Professor, Bright, University of Birmingham, Clinical Innovation Officer in AI, University Hospitals Birmingham NHSFT
Dr Kurdow Nader, Neuroradiologist, University Hospitals Birmingham NHSFT
oyor.okonkwo@nhs.net

Clinical Need & Selected AI Solution

Stroke is a medical emergency, but in the West Midlands, like most of the country, there is a limited ability to manage stroke patients with Large Vessel Occlusion due to delays in image transfer, limited clinical expertise in image interpretation out-of-hours, amongst other factors¹. Delays lead to adverse outcomes as 1.9 million neurons die every minute without reperfusion². A Class IIa CE-marked AIaMD that analyses brain scans to support clinical decision making in stroke management was deployed. This post-deployment evaluation reviews its performance at a region wide scale in a qualitative and quantitative manner, carried out with close collaboration with the West Midlands Integrated Stroke Delivery Network.

The Clinical Problem



Network Deployment Timeline

Queen Elizabeth Hospital Birmingham	Hub	Jun 2023
Hereford County Hospital	Spoke	Nov 2023
MMUH (Sandwell & West Birmingham)	Spoke	Jan 2024
Worcester Acute Hospital	Spoke	Mar 2024
Coventry & Warwickshire (UHCW)	Spoke	Apr 2024
Russells Hall Hospital	Spoke	Apr 2024

AI Post-Deployment Audit - West Midlands ISDN - Clinical AI Fellowship 2025-26

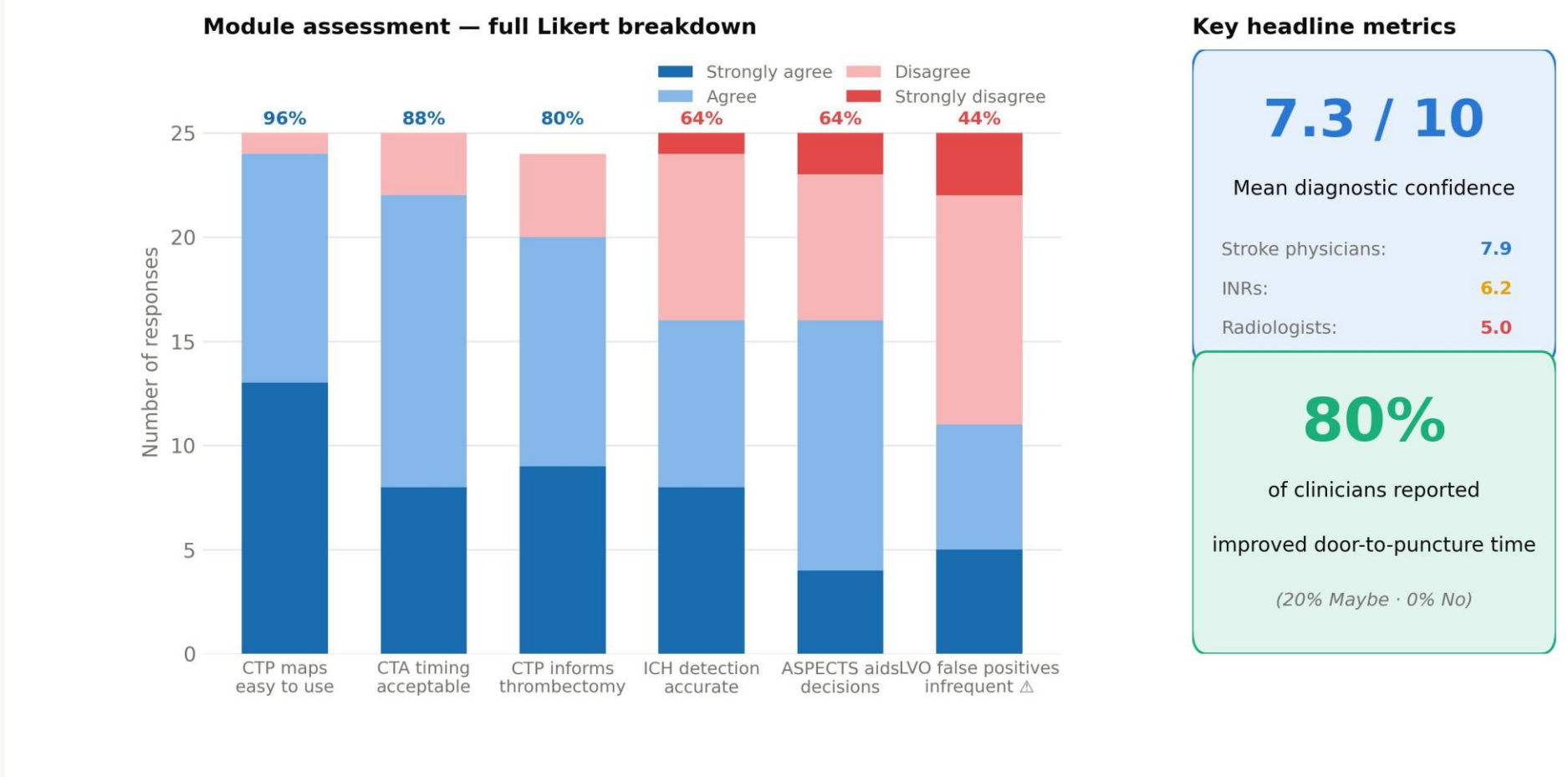
Timeline For Stroke-AI Deployment in The West-Midlands

Post-Deployment Evaluation Process

A mixed-methods approach was utilised in this evaluation. A qualitative arm deployed across the 6 NHS Trusts as a survey which included a benefits analysis, impact on diagnostic confidence, and grading of the different modules of Stroke AI. The second arm was a quantitative process which involved recruitment of registrars from the different trusts, looking at the concordance between Stroke AI's out and the radiologist's report for the ICH and CTA modules of Stroke AI, and utilising an Interventional Neuroradiologist to resolve the conflicts and provide the ground truth. For this phase, only 5 trusts provided the needed data with the exclusion of The Dudley Group NHS Trust.

Qualitative Arm: Staff Survey Results (n = 25)

6 NHS Trusts · 15 stroke physicians · 4 INRs · 3 radiologists · 3 nurse practitioners



Likert Scale For Stroke-AI Modules

Region-wide Evaluation Findings

For the qualitative arm, the average rating for the impact of Stroke AI on diagnostic confidence was 7.3, with lower ratings among super-specialised clinicians vs the less specialised ones. 80% of the surveyed clinicians thought Stroke AI had contributed to improving the door to puncture time for thrombectomy. On the quantitative arm, we found potential FN of 5% (29), out of 578 scans reviewed across 5 NHS trusts in the region. The potential false positive rate was 17% (98), showing potentially that Stroke AI's CTA module overcalls occlusion. One anecdotal report from the survey was that Stroke AI mistook calcification for occlusions. Another potential issue was its limitation in identifying posterior circulation occlusions. There was an absence of proper post market surveillance as there was no central governance process for reviewing patient safety issues, problems were escalated to the AI vendor directly, and the ISDN did not know different sites were running different versions of the AI tool.

Quantitative Arm: Concordance Analysis & Governance Findings

578 CTA scans reviewed across 5 NHS Trusts · INR ground truth · Dec 2025 - Jan 2026

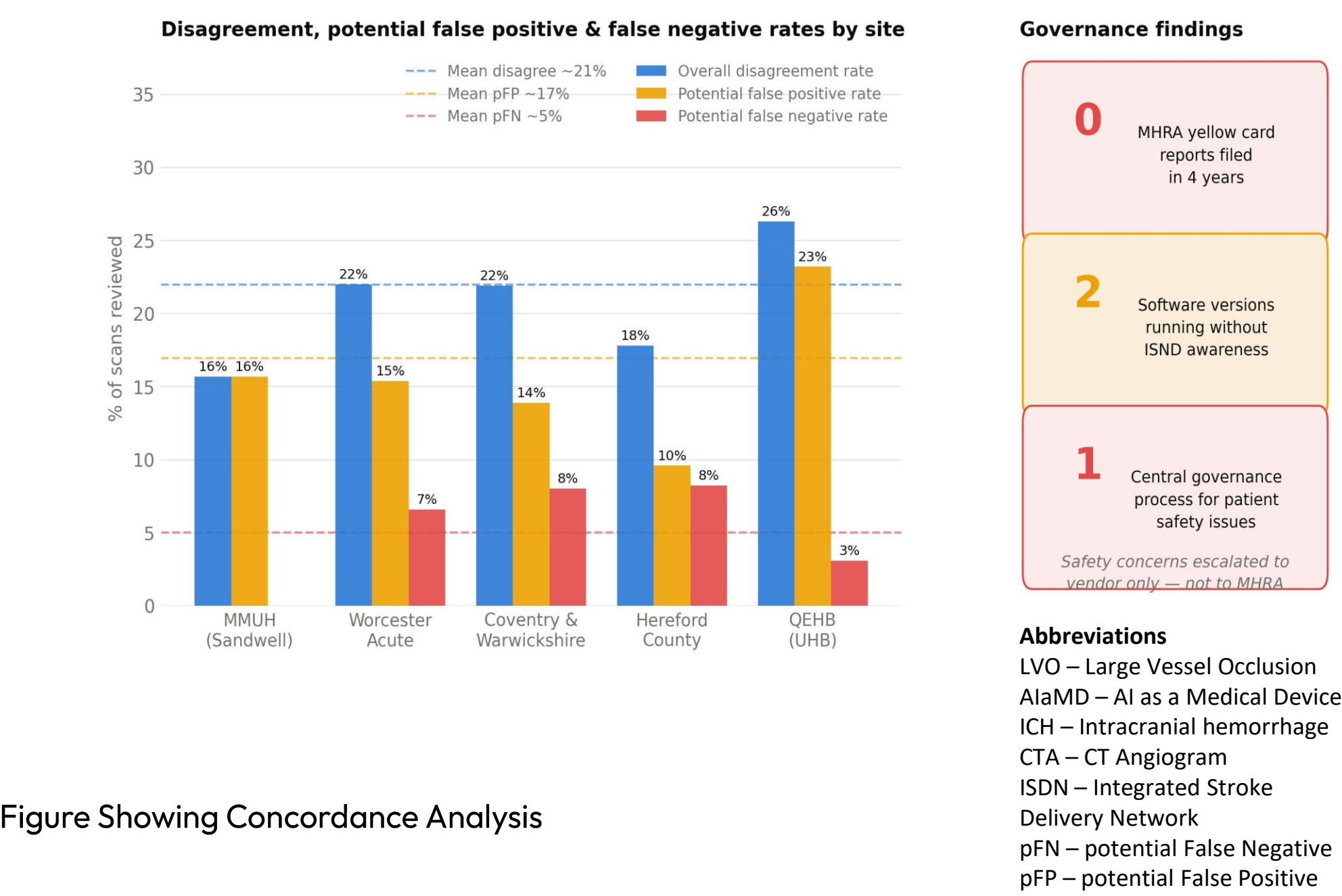
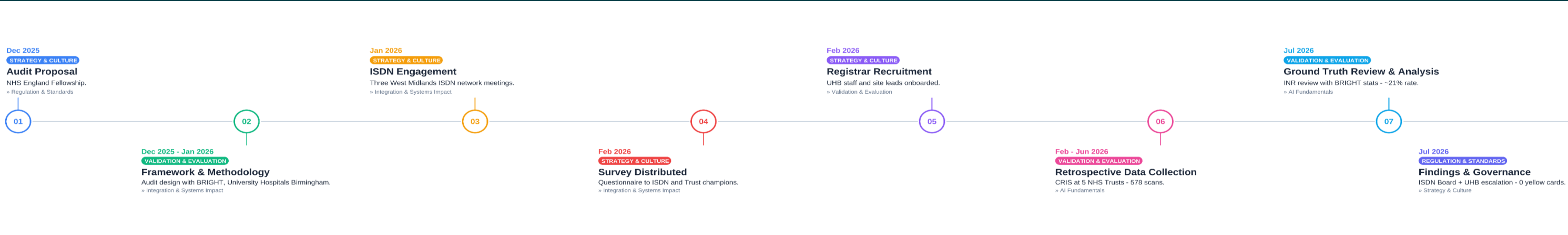


Figure Showing Concordance Analysis



Three Takeaways

- No MHRA yellow card report
 - Two versions of the AI software
 - No central incident log
- Future Planning**
- Ground truth by INR
 - Sensitivity, specificity for CTA module

References

- Artificial Intelligence (AI) Software in Neuroscience for Stroke Decision Making Support Framework Agreement | SBS/21/AP/WAS/10157
- Time Is Brain—Quantified | Stroke

