Machine learning and pathway simulation – major work packages

Work Package	Notes
Data:	
Data request for additional data	(✔) Sent to HQIP. Being reviewed 16th November
Machine learning:	
Simplified ML model	✔ Following stakeholder engagement, simplified model extended to 10 features
Explainable ML - SHAP	(✔) Substantial progress. Paper in preparation.
Explainable ML – Counterfactual examples	✘ Not started
New models – XGBoost and LightGBM	✔ Completed: XGBoost selected as a key model type
Machine learning outcome model	✘ Not started (need new HQIP data)
Add in organisational factors	✘ Not started (need new HQIP data)
Model with identified stroke units	✘ Not started (need new HQIP data)
Patient vignettes	(✔) Simplified patient vignettes produced and used at first stakeholder engagement
Further development of neural nets	(✔) Recently started (embedding nets for analysing, ordering and clustering patients and hospitals)
Synthetic data:	
Produce synthetic data	✘ Work in prep/planning
Stroke outcome model (based on time to IVT):	
Disability (mRS) level model	✔ Completed
Utility-adjusted mRS	✔ Completed
Pathway model:	
Extend pathway model to include ambo time	✘ Not started
Web app for output:	
Streamlit web app for hospital-level output	(✔) In progress. First StreamLit app produced (stroke outcome model)
Health econometrics model	
QALY output	✘ Not started (will do when life expectancies available)
Health Economics model with service costings	✘ Not started
Production code for SSNAP	
Prototype code for SSNAP	✘ Not started
Other:	
Automated hospital profiles	✘ New November 2022: following stakeholder feedback produce hospital profiles
Demographic summary for stroke units	✘ Not started
Literature review of ml for analysis of clinical decisions	✘ Not started
Papers:	
Explainable ML	(✔) In progress
Detailed outcome model	(✔) In progress