

Machine learning and pathway simulation – major work packages

Work Package	Notes
Data:	
Data request for additional data	(✓) Signed off by SSNAP. Ready to send to HQIP
Machine learning:	
Simplified ML model	✓ 8-feature model developed
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	✗ Not started
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	✗ Work in prep/planning
Link to qualitative and PPI work:	
Seek feedback from qual and PPI work	✗ Work in prep/planning
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:	
Demographic summary for stroke units	✗ Not started
Literature review of ml for analysis of clinical decisions	
Papers:	
Explainable ML	(✓) In progress
Detailed outcome model	(✓) In progress