

SAMueL Project Meeting 21st September 2022

Attendees:

- Mike Allen [MA] – PenCHORD modeller
- Richard Everson [RE] – Professor of Machine Learning
- Leon Farmer [LF] – PCI lead
- Martin James [MJ] – Stroke consultant
- Iain Lang [IL] – Qualitative researcher
- Anna Laws [AL] – PenCHORD modeller
- Kerry Pearn [KP] – PenCHORD modeller (note taker)
- Keira Pratt-Boyden [KPB] – Qualitative researcher

Apologies:

- Julia Frost – Qualitative researcher
- Kristin Liabo [KL] – PPI researcher
- Peter McMeekin [PM] – Health economist
- Tom Monks [TM] – Deputy director of PenCHORD, modeller
- Catherine Pope [CP] – Medical sociologist. Qualitative
- Ken Stein [KS] – Professor of Public Health
- Penny Thompson [PT] – PCI representative

Quantitative update (MA)

Status of key pieces of work:

Machine learning model

- Data access request: Signed off by SSNAP, ready to send to HQIP
- Machine learning model simplified to 8 features
- New model type (XGBoost) tested and selected. We will also use a model that fits to all data simultaneously
- Significant work on SAHP explainable model complete: See https://samuel-book.github.io/samuel_shap_paper_1/
- We have started on a SHAP paper

Disability-level stroke outcome model

- Disability (mRS) model complete
- Utility-adjusted mRS model complete
- We have started on a stroke outcome model paper

Work yet to start

- Demographic summary for stroke units
- Synthetic data

- Expanded machine learning model (using organisation data in new data request); this model will also de-anonymise hospitals.
 - Machine learning outcome model
 - Patient vignettes
 - Further explainable ML models with counter-factual examples
 - Further development of neural nets
 - Extended pathway model to include ambulance times; this model will also de-anonymise hospitals
 - Web app for model outputs
 - QALY output for stroke outcome
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- Cost model of key service changes
 - Prototype code for SSNAP
 - Literature review for machine learning analysis of clinical decisions

Papers in progress

- “Using explainable machine learning to understand variation in thrombolysis practice” Target: European Stroke Journal
- “Modelling disability-level and utility outcome in stroke patients depending on time to intravenous thrombolysis and mechanical thrombectomy”: International Journal of Stroke

General points raised in discussion

- On completion of SNNAP data (MJ): For some patients (5%-10%?), some data is completed after the thrombolysis decision.
- Three reasons why a patient recorded as taking anti-coagulants can receive IVT (MJ): 1) Not recently taken anti-coagulant, 2) anti-coagulant effect is not too marked (may be tested), 3) anti-coagulant effect reversed (for Vit K antagonists).
- On reproducibility of NIHSS (MJ): NIHSS may differ by 1-2 points depending on clinician.

Qualitative research update (KBP)

Note: Qualitative update was planned to be brief, as November project meeting will focus mostly on qualitative work.

- Has met with Exeter registrars to develop interview protocol
- MJ happy to facilitate contact with Integrated Stroke Delivery Networks (ISDNs, could start with West of England, or Devon and Cornwall?)
- MJ: A good focus group would be the British Association of stroke physician trainees (should be next meeting in March 2023)
- MA: We need to get some short presentations together aimed at getting discussion going.

- KPB: Planning to present theory and methods of qualitative research in November.

Patient and Carers Involvement update (LF)

Following our introductory meeting, the next PCI meeting is planned for October 27th. This will focus on a project overview.

Misc

- A discussion of authorship of papers was had. As with SAMueL-1, the report and a summary paper will have all the project team as authors. Papers on focussed work areas will have authorship depending on contribution . See: <https://www.icmje.org/recommendations/browse/roles-and-responsibilities/defining-the-role-of-authors-and-contributors.html>

Future meetings & admin

MA: The next PCI group is Thurs 27 October (will help shape communication).

MA: We're sitting in on Sussex ISDN Monday 26th September.

Next Project meeting: 16th November