

Case Study: Promoting quality improvement using data modelling techniques in the South West

Challenge:

How to organise stroke services in a way which ensures that thrombolysis (clot busting drugs) is provided as quickly as possible to those stroke patients who could benefit from it

Solution:

Collaboration formed between SSNAP and the operational modellers at the South West Peninsula Collaboration for Leadership in Applied Health Research and Care (PenCLAHRC)

Understand current state of play

Compared individual site performance with national norms to highlight variations in thrombolysis provision

Established important performance measures

3 parameters identified on which would clinically benefit people with stroke if rates were improved:

- increasing the proportion of patients with a known onset time
- shortening the door-to-needle time
- increasing the proportion of patients that are treated having been scanned with 30 minutes remaining in the licence period for alteplase (the clot busting drug used to administer thrombolysis)

Highlighted potential gains from improving processes

The modelling team used SSNAP data from 7 acute stroke sites in the South West to model a potential three-fold increase in the number of stroke patients successfully thrombolysed and left with minimal disability compared to current practice

Used results to gain clinical buy in and build momentum

This modelling work helped to foster a region wide acceptance of the improved patient outcomes that were possible by incrementally improving each metric, and acted as the stimulus to deliver a treatment rate that may not previously have been considered achievable.

Impact:

Targeted quality improvement activity in several of these sites in response to the thrombolysis modelling work is already delivering improved treatment rates and door-to-needle times: for example, at Derriford Hospital, Plymouth, they have increased their thrombolysis rate by a third (from 8.0% to 11.7%) over the last two years, with a corresponding fall in door-to-needle times of 15 mins (from 69 minutes to 53 minutes) There is a growing acceptance now that relatively modest amendments to clinical practice and expectations can yield significant improvements in thrombolysis rates.

Next Steps:

We intend to apply this same modelling analysis and quality improvement methodology to the increasing numbers of patients receiving mechanical thrombectomy – modelling processes and outcomes in the comprehensive stroke centres delivering the treatment as well as the new quality measure of ‘door-in door-out’ time at referring primary stroke centres.

Reflection:

Quality improvement driven by national comparative audit offers the prospect of accelerating the implementation of a paradigm shift in the treatment of acute ischaemic stroke, and reaching the point where nearly 1,500 people with severe stroke annually are spared major disability with its enormous personal, health and social care costs.

This case study was submitted by Dr Martin James, consultant stroke physician at Royal Devon and Exeter NHS Foundation Trust.