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## Title

Factors affecting thrombolysis in acute stroke: longer door-to-needle (DTN) time in younger people?

## Introduction

Shortening the time to delivery of IV thrombolysis improves patient outcomes and reduces adverse events. This research aimed to explore patient and service delivery factors that increase or decrease DTN time for thrombolysis.

## Method

We conducted a Service Evaluation from July 2011 to March 2013, using stroke data from SINAP and DASH databases. Data was provided by six acute trusts in Lancashire and Cumbria which used telemedicine, and eleven stroke services within the North East of England which instead used face-to-face. Our investigation concentrates on admissions to hospital occurring out of routine working hours, when resources are particularly constrained. Descriptive and inferential analyses, focusing on multivariate Cox regressions models selected using a forward stepwise approach, were then carried out to determine which factors impacted on DTN time, our main outcome variable.

## Results

After testing alternative specifications, our final model included these potential risk factors: mode of thrombolysis decision-making (either face-to-face or telemedicine); hospital; age; sex. Our results show that DTN time was strongly influenced by patient's age ( $p < 0.01$ ), with older people receiving thrombolysis more quickly. Among the statistically significant variables, type of hospital ( $p < 0.001$ ) appeared to affect DTN times, together with patient's sex ( $p = 0.01$ ), suggesting that males had shorter DTN times.

## Conclusion

Older age was associated with shorter DTN times, with this effect being independent of other factors. Therefore, our research suggests that age played a predominant role in the delivery of thrombolysis, rather than solely through the choice of assessing acute stroke through face-to-face or telemedicine.