

Ambulance documentation of stroke symptoms during the UK COVID-19 'Stay at Home' message

On 23 March 2020 the UK government urged the public to 'Stay Home, Protect the NHS, Save Lives' in order to reduce consequences from the COVID-19 pandemic.¹ Three large National Health Service (NHS) stroke units subsequently reported a 16% (95% CI 27.2 to 3.2) decrease in the weekly trend for stroke admissions during March–April compared with January–February 2020.² Other countries have also reported unexpected reductions in admissions of up to 40% during similar lockdown campaigns.^{3,4} In contrast, one NHS ambulance service described no impact on suspected stroke callouts during the early lockdown interval between 23 March and 19 April 2020.⁵ However, this metric reflects caller information, which is known to be less reliable than on-scene clinician assessment. To explore an apparent disagreement between ambulance and hospital reports, we examined whether there was a reduction in practitioner identification of stroke symptoms during an extended lockdown interval using routine data from the North East Ambulance Service.

Time series data for suspected stroke callouts from 16 March 2019 until 31 May 2020 (n=23 948) and clinical records with a positive Face Arm Speech Test (FAST) from 01 January 2019 until 31 May 2020 (n=8107) were modelled with an interruption term (23 March 2020) to estimate the mean difference before and during lockdown (figure 1). The best-fitting models, based on lowest AIC (Akaike Information Criterion) were ARIMA(2,1,4)(2,0,0)₇ for callouts and MA(1) on daily differenced data for FAST symptoms.

There was little evidence of a change in the number of daily emergency callouts for suspected stroke (mean difference -2.82 (95% CI -10.70 to 5.05)) or documented FAST positive cases (mean difference -0.48 (95% CI -2.04 to 1.08)).

These data support the view that regional ambulance activity for suspected stroke did not change significantly during UK lockdown. Although national stroke service reports are still awaited to confirm an overall reduction in NHS admissions, we propose the following possible explanations why ambulance data appear unchanged: (1) reductions were in non-ambulance attendances; (2) stroke patients with (milder) non-FAST symptoms called emergency services less often; (3) FAST positive

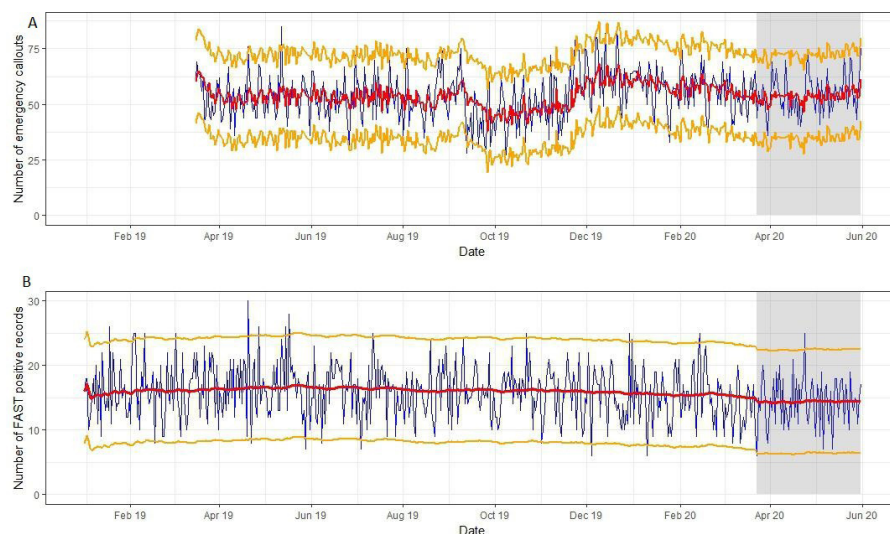


Figure 1 Daily emergency callouts for suspected stroke cases (A) and practitioner identified stroke symptoms (B) with estimated mean (red line) \pm 1.96 SD (orange lines). Shaded areas indicate lockdown. FAST, Face Arm Speech Test.

patients were not conveyed to hospital due to concerns about catching COVID-19 and service pressures; (4) the positive predictive value for FAST fell due to changes in ambulance assessment processes (eg, barriers from protective equipment) or population (eg, COVID-19 infection mimicked stroke symptoms through decompensation). As ambulance practitioner identification of stroke symptoms is not highly predictive of a definite stroke diagnosis,⁶ examination of linked multi-regional ambulance and hospital data are now required to investigate these complex effects further and determine implications for stroke-related staff training and/or public health messages during a pandemic response.

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