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## Emergency ambulance services for heart attack and stroke during UK's COVID-19 lockdown

Attendance at Accident and Emergency departments in the UK is widely reported to have decreased precipitously since national lockdown was introduced on March 23, 2020. Anecdotal reports have suggested that heart attacks and strokes have “vanished from hospitals”,<sup>1</sup> and that such patients “delay seeking help”.<sup>2</sup> ST-segment elevation myocardial infarction (STEMI) and stroke are conditions for which hospital treatment is highly effective.

Daily ambulance callouts for these two conditions are routinely recorded by ambulance crews for the

West Midlands Ambulance Service University NHS Foundation Trust, the second largest such service in the UK. We analysed data collected between Jan 10, 2018, and April 19, 2020 (figure). We tested for the presence of a structural break in the time series of annually differenced weekly admissions (using a linear model with AR [1] errors). There was little evidence for such a break in either the STEMI (year-on-year change in mean callouts associated with lockdown:  $-9.1$ , 95% CI:  $-21.8$  to  $3.6$ ;  $p=0.17$ ) or stroke ( $-21.7$ ,  $-47.6$  to  $4.2$ ;  $p=0.11$ ).

These data do not confirm a reduction in ambulance callouts for our two tracer health conditions. Although we cannot exclude such an effect, any effect must be of small magnitude. The COVID-19 pandemic might be associated with negative

collateral health effects, but we find no evidence that people are reluctant to call an ambulance when they experience symptoms of stroke or heart attack.

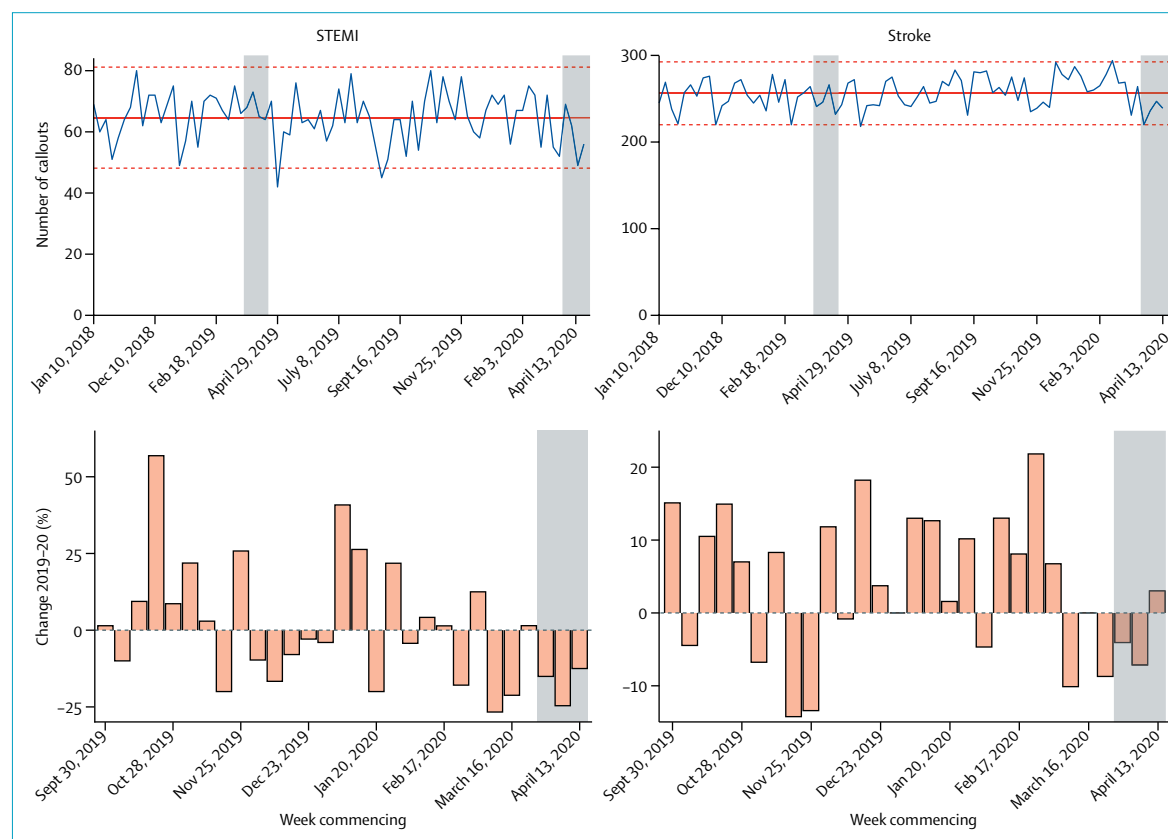
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**Figure:** Time series of weekly callouts for STEMI and stroke

Upper panels show number of weekly ambulance callouts for STEMI (left) and stroke (right), with mean (solid red line) and two standard deviation (dashed red lines) marked. Bottom panels show the proportionate year-on-year change in weekly ambulance callouts for STEMI (left) and stroke (right). Shaded grey areas indicate weeks 13 to 16 of the year, corresponding to the UK's lockdown period up to April 19, 2020. STEMI=ST-segment elevation myocardial infarction.

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- 1 Bernstein L, Stead Sellers F. Patients with heart attacks, strokes and even appendicitis vanish from hospitals. April 20, 2020. [https://www.washingtonpost.com/health/patients-with-heart-attacks-strokes-and-even-appendicitis-vanish-from-hospitals/2020/04/19/9ca3ef24-7eb4-11ea-9040-68981f488eed\\_story.html](https://www.washingtonpost.com/health/patients-with-heart-attacks-strokes-and-even-appendicitis-vanish-from-hospitals/2020/04/19/9ca3ef24-7eb4-11ea-9040-68981f488eed_story.html) (accessed May 12, 2020).
- 2 Spinney L. Concern as heart attack and stroke patients delay seeking help. April 16, 2020. <https://www.theguardian.com/world/2020/apr/16/coronavirus-concern-heart-attack-stroke-patients-delay-seeking-help> (accessed May 12, 2020).