



, London

Cite this as: *BMJ* 2024;384:q601<http://dx.doi.org/10.1136/bmj.q601>

Published: 14 March 2024

The impact of response times on effect of thrombolysis and other research

Tom Nolan reviews this week's research

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Waiting for thrombo(lysis)

One of the many terrifying aspects of our healthcare system that we seem to be quietly accepting of is ambulance response times. In England in December 2023 the median response time for a category 2 emergency call—which includes stroke calls—was 45 minutes, compared with a target of 18 minutes. Of the callouts, 10% had a wait time of 1 hour 40 minutes or longer. For those unlucky people who are waiting this long and have had a stroke amenable to intravenous thrombolysis (IVT) followed by thrombectomy, the time for any added benefit from IVT and thrombectomy versus thrombectomy alone is nearly up before the ambulance arrives, according to a new meta-analysis. The study looked at individual patient data from six randomised control trials, assessing levels of disability at 90 days. Benefits of IVT plus thrombectomy versus thrombectomy alone were greater the sooner after symptom onset that treatment was received, and by 2 hours 20 minutes no statistically significant difference between the two interventions was found.

JAMA doi:10.1001/jama.2024.0589

Testing times

One of the many lessons from the story of Theranos—the healthcare startup whose founder, Elizabeth Holmes, is now serving an 11 year prison sentence for fraud and conspiracy—is that people love the idea of rapid testing. Investors loved it so much they pumped in \$700 million despite the fact that the rapid blood testing technology didn't work. But even if the tests had worked, would they have been a game changer?

In the world of rapid respiratory virus testing, a systematic review and meta-analysis looked at randomised clinical trials of people in emergency departments having rapid viral testing. They measured the impact of rapid viral tests on antibiotic prescribing and found that they made no difference. But I'm not sure that will stop them being used. To test is best, right?

JAMA Intern Med doi:10.1001/jamaintern-med.2024.0037

Central line complications

On one harrowing night as an out of my depth foundation 2 on-call doctor for a renal ward, I asked for help from a registrar. "Put a central line in" was their advice. When I told them I couldn't, they decided to shame and bully me for the rest of the night.

This all came flooding back to me while reading a systematic review and meta-analysis of central venous catheters. It found that a serious complications occur 30 times for every 1000 catheters placed—including arterial cannulation (3 per 1000), arterial puncture (16 per 1000), and pneumothorax (4 per 1000). Ultrasound guidance reduced the risk of arterial puncture and pneumothorax by around 80% and 75% respectively. That night put me off hospital medicine for good, but I'm still glad I didn't do as I was told.

JAMA Intern Med doi:10.1001/jamaintern-med.2023.8232

Plastic people

Expect to hear a lot more about microplastics and nanoplastics (MNPs). A prospective observational study in the *New England Journal of Medicine* has two remarkable and troubling findings: firstly, the researchers found that 150 people out of 257 who underwent carotid endarterectomy for asymptomatic carotid artery disease had the microplastic polyethylene in their carotid artery plaque. Secondly, those with MNPs within their plaques were far more likely to reach the primary endpoint of myocardial infarction, stroke, or death from any cause at 35 weeks' follow-up (hazard ratio 4.53 (95% confidence interval 2.00 to 10.27), $P < 0.001$). However, this observational study doesn't prove causality and didn't adjust for common confounding factors such as socioeconomic status.

N Engl J Med doi:10.1056/NEJMoa2309822

Competing interests: None declared

Provenance and peer review: Not commissioned; not peer reviewed