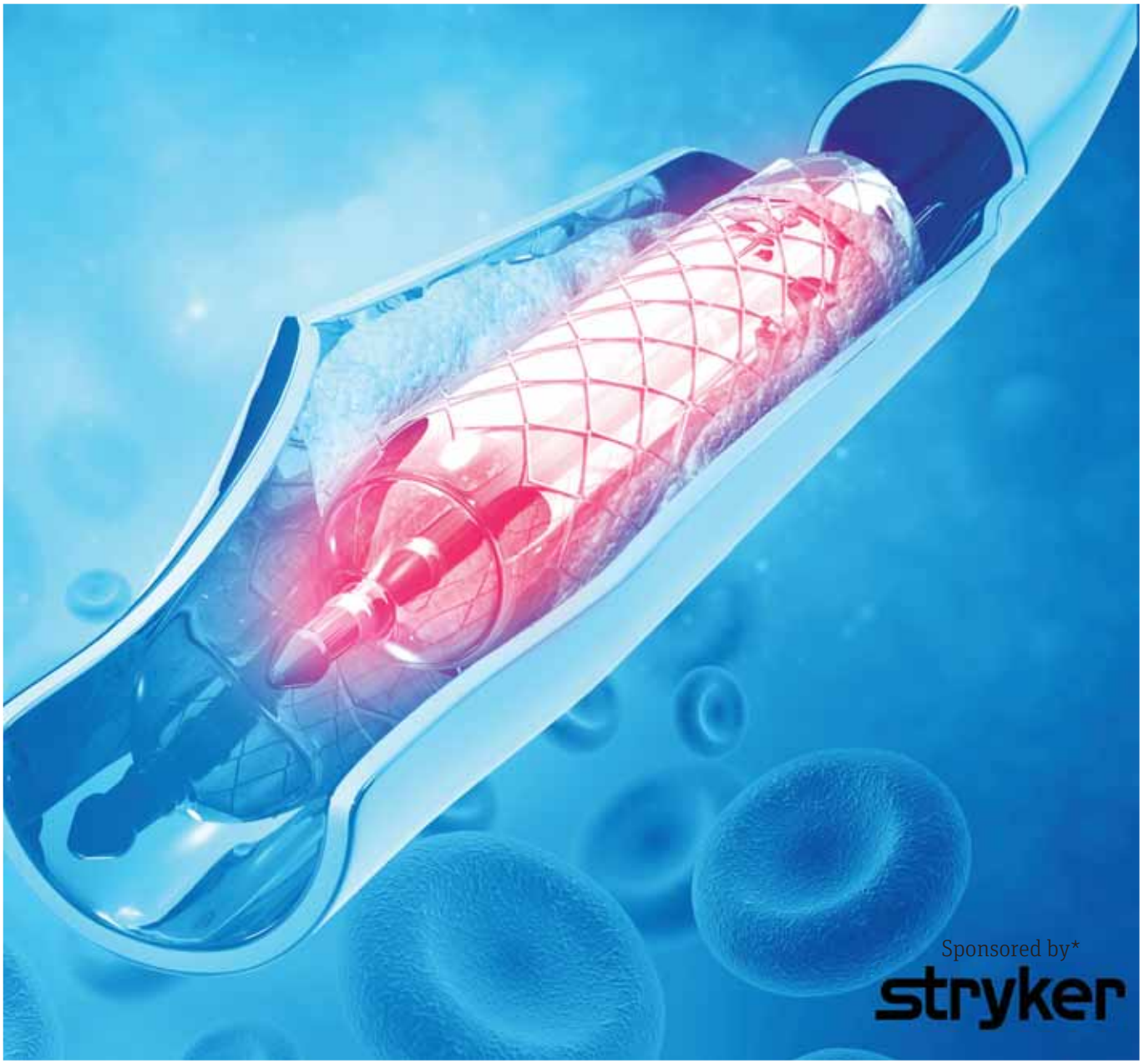
NewStatesman

Mechanical thrombectomy

A game-changer for stroke treatment

Juliet Bouverie / Professor Gary Ford / Andrew Gwynne MP



BY THE NUMBERS

The cost of stroke treatment

£25.6bn
Aggregate costs of stroke treatments in the UK per year

194%
Stroke treatment costs will rise to £43bn in 2025 and £75bn in 2035, representing an increase of 194% over 20 years

0.008%
Mechanical thrombectomy is delivered in just 0.008% of 85,122 acute stroke admissions, versus the EU benchmark of 3%

1
St George's in London is the only fully operational 24/7 thrombectomy hospital service in England

80
There are only 80 interventional neuroradiology operators in the UK. Consensus forecasts predict 150 are required to run a fully functioning 24/7 national service

SHUTTERSTOCK/HILCH, THE STROKE ASSOCIATION

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A revolution waiting to be rolled out

Mechanical thrombectomy represents a game-changer for stroke treatment, according to Juliet Bouverie, chief executive of the Stroke Association

The damage caused by a stroke can be devastating. People of any age can be affected by the condition, which strikes someone every five minutes in the United Kingdom. In the blink of an eye, a stroke can leave someone with a huge range of disabilities which last a lifetime, including communication problems, loss of mobility, depression and fatigue. That's why new stroke treatments are desperately needed.

With the number of strokes expected to rise over the next 20 years, and the number of stroke survivors in the UK expected to double by 2035, we need to give as many stroke patients as possible a better chance of making a good recovery. Mechanical thrombectomy is a ground-breaking new stroke treatment, which we hope will help to do just that. Mechanical thrombectomy is an exciting and effective new way of treating some of the most serious strokes caused by a blood clot. It involves inserting a catheter into a patient's artery to access the clot, which is then mechanically removed.

The treatment is hugely effective at reducing disability, removing clots which are too big to be broken down by clot-busting drugs alone. It is highly cost-effective – a crucial consideration at a time where the NHS is under extreme pressure to tighten its belt. We believe it's a real game-changer for the way strokes are treated, and it's currently estimated that at least 10,000 UK patients every year could benefit.

Rolling out thrombectomy to as many people as possible could mean that more stroke survivors can live independently in their own homes, return to work and take control of their lives again. And there's no doubt that this would save the NHS and social care services money in long-term health, care and welfare costs.

But too many eligible patients are currently missing out on thrombectomy. We know that there are real challenges in ensuring that the treatment can be given to eligible patients in many parts of the country. There are not enough trained specialists to be able to provide a 24/7 service in all areas, resulting in a postcode lottery when it comes to stroke treatment. As a result, only a fraction of those people eligible for thrombectomy actually receive it, putting lives and futures at risk. Indeed, it is thought that in the UK, fewer than 10 per cent of eligible patients are given thrombectomy treatment – a situation that desperately needs to change.

National leadership is needed to drive forward new treatments like thrombectomy. We warmly welcome NHS England's decision this year to fund thrombectomy across the country, but we need to do more to make a full roll-out of the procedure a reality for the thousands of people who are currently missing out.

We're working with NHS England to look at ways to increase the number of clinicians trained to deliver the procedure, but also to encourage more centralisation of acute services in which thrombectomy can thrive. And we're also calling for thrombectomy to be rolled out across Wales, Scotland and Northern Ireland, as well as England.

Thrombectomy can be a powerful catalyst for change to drive improvements in stroke services across the UK, as well as encouraging areas and regions to work together for the benefit of those affected by stroke. Our challenge now is to ensure that thrombectomy is effectively rolled out across the country, so that future generations can benefit from this revolutionary treatment.

Juliet Bouverie has been chief executive of the Stroke Association since June 2016

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The *New Statesman* hosted a group of experts to discuss the opportunities and challenges associated with the mass adoption of mechanical thrombectomy

A new era in stroke treatment

Mechanical thrombectomy's game-changing potential for stroke treatment cannot be overstated. But transitioning that potential into practice, a roundtable on the subject concluded, will require a revamp of staff, systems and wider healthcare infrastructure across the United Kingdom. Last month, the *New Statesman* and Stryker gathered a group of parliamentarians, policy influencers, stroke specialist doctors and academics at Portcullis House, to discuss how to achieve the mass roll-out of one of modern medicine's most exciting, if challenging, breakthroughs.

The pressures of a growing and ageing population are well-documented. The National Health Service is thought to deal with more than 100,000 strokes every year, and there are 1.2m stroke survivors. However, the way strokes are treated and the standards of aftercare vary from region to region, as part of what **Dr Peter Flynn**, UKNG chair and consultant diagnostic and interventional neuroradiologist at Belfast HSC Trust, described as a "postcode lottery". To this effect, only 600 out of 10,000 eligible patients are receiving clot retrieval therapy, a procedure which has a proven track record of reducing the likelihood of disability after a stroke. With two out of three stroke survivors currently leaving hospital with a long-term disability, adding £1.7bn to the costs of the NHS and social care, it's clear that something needs to change.

Sir David Amess, Member of Parliament for Southend West and vice-chair of the all-party parliamentary group (APPG) on thrombosis, noted in his opening remarks the difficulties he was facing in his constituency. He said: "In Southend, we have the largest population of septuagenarians in the country, so the healthcare problems are going to be increased. We have a hyper acute stroke department that's serving the whole of Essex. Our service is led and delivered by only one interventional neuroradiologist, and only she can perform the procedure. The service might be available, but if only one person is able to deliver it, then it means that it's being provided on a best endeavour basis, and not as a regular service, so therefore we need to ensure there is a consistent 24/7 service across the region."

Implementing a 24/7 service, though, involves a lot of work. **Professor Gary Ford**, chief executive of the Oxford Academic Health Science Network,

called mechanical thrombectomy a "ground-breaking development in stroke management", but one that was earnestly caveated by timescale. "It becomes an issue beyond expertise," he explained, "and one that extends to efficiency of the [healthcare] systems you have in place. Mechanical thrombectomy is a hugely important change, but a lot of its success depends on how quickly you can treat the patient."

"It becomes an issue beyond expertise"

Ford went on to invite his fellow discussants to consider the complexities of the procedure within the context of an emergency. Thrombectomy is used to remove a blood clot in someone's brain which has not dissolved despite the patient receiving clot-busting thrombolytic drugs. It requires a doctor putting a thin tube into a patient's artery, usually through their groin, and then feeding it up through their body to where the clot is in their brain. Once there, a wire mesh tube or stent – similar to those used in vascular surgery – on the top of the tube, is wrapped around the clot and then pulled out by the interventional neuroradiologist. Doing this restores normal blood flow to the brain and greatly reduces damage to brain tissue, which is what causes patients to suffer long-term, and often serious, damage to their physical and mental capacities. Ford emphasised: "All of this, ideally, needs to be done within six hours of the stroke occurring."

Dr Soma Banerjee, consultant in stroke medicine at Imperial College Hospital, described mechanical thrombectomy as "amazing", but also pointed out that strokes are not considerate of convenience. "It's a fantastic improvement on how we treat strokes; it can literally be done on the table, under local anaesthetic with the patients awake. You can see someone who is unable to speak or move their right side, by the end of the procedure, talking back to you. It's amazing. The issue is that strokes are not always going to occur Monday to Friday inside office hours. The business case for a 24/7 service is there – to save money on aftercare costs – but we know it's not easy."

Dr David Werring, professor of clinical neurology at UCL Institute of Neurology, chipped in that mechanical thrombectomy required an "entire team" and the prospect of delivering the treatment safely hinged on assembling one. He said: "It's not just the interventionists or the stroke physician diagnosing the condition, it's an entire team that you need: specialist nurses, anaesthetists, bed managers and so on. It's not as easy as just getting someone who can take the clot out or tell you there is a clot there." Regional disparities in funding, Banerjee ceded, have made the staffing issue more complicated. "You have to hire enough people and have the infrastructure to do it. We're a central London teaching hospital so we're relatively well off in that department but elsewhere in the country this is a challenge."

On the barriers to mechanical thrombectomy's mass option, Ford added: "As with any disruptive innovation, you don't get an immediate uptake. You need a number of things in place – systems, the people who can

do it, and the commissioning power to agree to funding in the first place. The fact is that the amount of patients who need treatment is around 10,000, but the vast majority aren't getting it, owing to restricted operating hours and it only being available in certain centres. The challenges are in having enough people trained suitably to provide 24/7 care. We have a limited number of interventionist neuroradiologists with the right skill-set, for example analysing and interpreting scan imagery. And you've got the challenge of rapidly transporting patients. There are currently 123 hospitals in England that accept acute stroke patients and that can pretty much provide round-the-clock thrombolysis, but there are only 24 neuroscience centres, which will be among those 123 that can provide thrombectomy. You've got to think about it in terms of future service planning."

St George's Hospital in London is currently the only hospital in the UK to offer thrombectomy on a 24/7 basis. **Dr Jeremy Madigan**, one of the resident interventional neuroradiologists at St George's, said that the benefits of the procedure were clear. "Our patients are benefiting from the thrombectomy service we provide, with an 80 to 90 per cent chance of opening up blocked vessels with this technique, compared to 30 per cent with traditional clot-busting drugs. Providing a thrombectomy service at all times of the day, as we do at St George's, radically improves the range and mix of interventions available to us as clinicians."

Like Amess, however, Madigan highlighted the issues with bottle-necking service delivery within regions. He said: "So at St George's our traditional catchment area would be local patients presented to our emergency department in south-west London, Tooting specifically, but also from the home counties in Surrey. Since we've opened our doors 24/7 we've seen a flux and our catchment area has been extended to Sussex, Kent, and some parts of north London. We're on track at the moment to deal with maybe 200 to 250 cases per annum, accepting of course that it's a wider catchment area than we expected to have."

Madigan suggested a possible solution in managing this increased demand lay in pooling resources. He added: "We're lucky in London that we have more neuroradiologists than anywhere else in the UK. If it was up to me, I would pool the teams – the nurses and the neuroradiologists – and move them to the patient. They'd go to their local centre and they'd be kept at their first hospital. Move the team to them and that'll save you time and space. If you consider that ambulances measure their journey times via Google maps without the traffic on and one journey from one side of London to the other in that case is 1 hour and 20 minutes. As doctors, we might like our centres and our bases, but if we can be braver and work a bit more fluidly, it's ultimately easier for us to move than the patients."

When discussing the medical profession, it's easy to overlook the human aspect of treatment delivery. In the haste to enhance services, working conditions and employee welfare are often at risk of being overlooked. **Dr Tufail Patankar**, consultant interventional neuroradiologist at Leeds General Infirmary, warned that any shift towards 24/7 services must include extra incentives for doctors on call. "There needs to be an incentive. You're seeing people who want to do it, but what's the difference to them when they might have to come into work in the middle of the night?" Patankar said that his position wasn't cynical, but realistic. "To find the manpower required, money will inevitably have to come into play." **Dr John Thornton**, interventional neuroradiologist at Beaumont Hospital in Dublin, agreed. "There is a need for new stroke physicians, but you've got to convince people. A lot of the people who did neurology or went into the geriatrics field went in there without the expectation of being up at all hours and in the middle of the night, or having to rush to the hospital on call. You're talking about a total transformation of care for stroke patients. You've got to think about how many people you'll need on a rota and how you can organise that fairly."

Alexis Kolodziej, deputy director of the Stroke Association, said that mechanical thrombectomy's best chance of success lies in being centralised. She said it should be factored into a "wider national stroke strategy" and argued that centres of excellence would offer better care by having larger numbers of patients, and would tackle the shortage of specialist staff by concentrating them in fewer places.

Kolodziej said: "Thrombectomy is the catalyst for wider service improvement, but it's not going to happen unless you organise services in the right way. You've got to maximise workforces, both in numbers and by skills, you've got to manage patient flow. Patients need quick scans and care. The case for centralisation is very strong, but it's not happened yet."

"The case for centralisation is very strong"

Lyn Brown, Member of Parliament for West Ham, and chair of the APPG on thrombosis, concurred. "The jigsaw puzzle needs to see the best possible care at the centre."

Ultimately, stroke treatment is irrefutably on the precipice of something special. Flynn beamed that mechanical thrombectomy is "the most stunning medical treatment I've ever seen", and Thornton highlighted immediate advantages to the taxpayer in "cost savings on nursing homes and rehabilitation clinics". But mass adoption will require more than just enthusiasm to achieve. Funding and follow-through from government is necessary, alongside an adaptive and progressive approach to human resources management.

Investment in innovation will be money well spent

Mechanical thrombectomy can decrease the risk of long-term disability and save millions of pounds in national health and social care costs, explains Andrew Gwynne MP, vice-chair of the APPG on thrombosis

Just before the 2010 general election I collapsed in Euston Station, later discovering that I had a pulmonary embolism. As a young man, I had not expected to face a life-threatening condition. But whilst recovering from a chest infection, I developed a blod clot in one of my legs. As I left the station to travel to Parliament to make an important vote, the clot travelled to my lungs and I collapsed. With some help from my wife I managed to get a taxi to make the vote, finding out from a hospital bed the following day that it had been won. After my recovery I became vice-chair of the all-party parliamentary group on thrombosis, helping to raise awareness and advancements in thrombosis prevention.

Despite well-established links between Venous thromboembolism (VTE) and potentially avoidable deaths, it has often felt like the urgency that is needed on the issue has failed to move beyond discussions within the medical community and those with immediate experience. In April, it was refreshing to read that NHS England were investing to expand the provision of medical thrombectomy as a revolutionary new form of treatment which can not only save lives, but also reduces the risk of someone being disabled after a stroke.

NHS England has said that the procedure, which involves removing a blood clot from the brain using a stent, would be introduced across 24 specialist neuroscience centres throughout the country from 2017, eventually benefiting around 8,000 patients each year. Although the procedure itself costs over £12,000 to perform, the savings to the NHS at large, both in terms of medical and social care for patients who would otherwise have been left with life-changing disabilities, are staggering.

Yet despite the benefits, the availability of this treatment across England remains sparse. I fear that like much we have seen from this government, its actions will again fail to live up to promises. The Royal College of Radiologists also reacted to government plans with scepticism, describing the procedure as an "amazing, disability-sparing treatment" but raising concern that NHS England has not indicated how its plans would be achieved, and that there were not enough doctors trained for the procedure.

Currently there are only 70 consultant neuroradiologists working in the NHS in the United Kingdom, barely half the number the Royal College of Radiologists says is needed to cope with the rising demand. This recruitment and retention problem is one that is seen across all areas of the NHS as year-on-year staff face an increasing workload and cuts to their pay. The worsening state of the NHS has added to pressure on existing staff and affected access to, and the quality of, patient care. This is not a problem that will be fixed by an app allowing nurses to "work more flexibly".

We need to listen to the advice of medical professionals; they understand that if central government gets this right and the roll-out of this service is not simply used as an attempt to grab a headline, then we could revolutionise stroke aftercare. But also fundamentally we need to invest in our NHS and our health and care workforce to give patients the modern, well-resourced services they need for the 21st century. That is why the Labour Party has promised to deliver a long-term workforce strategy for our health service, and why we set out a plan to invest over £30bn in our NHS, to ensure that patients get the high quality of care they need and that staff are able to deliver the standards that patients expect and deserve.

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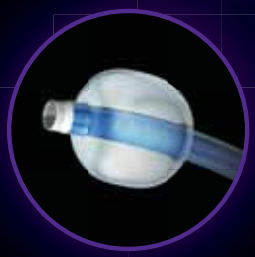

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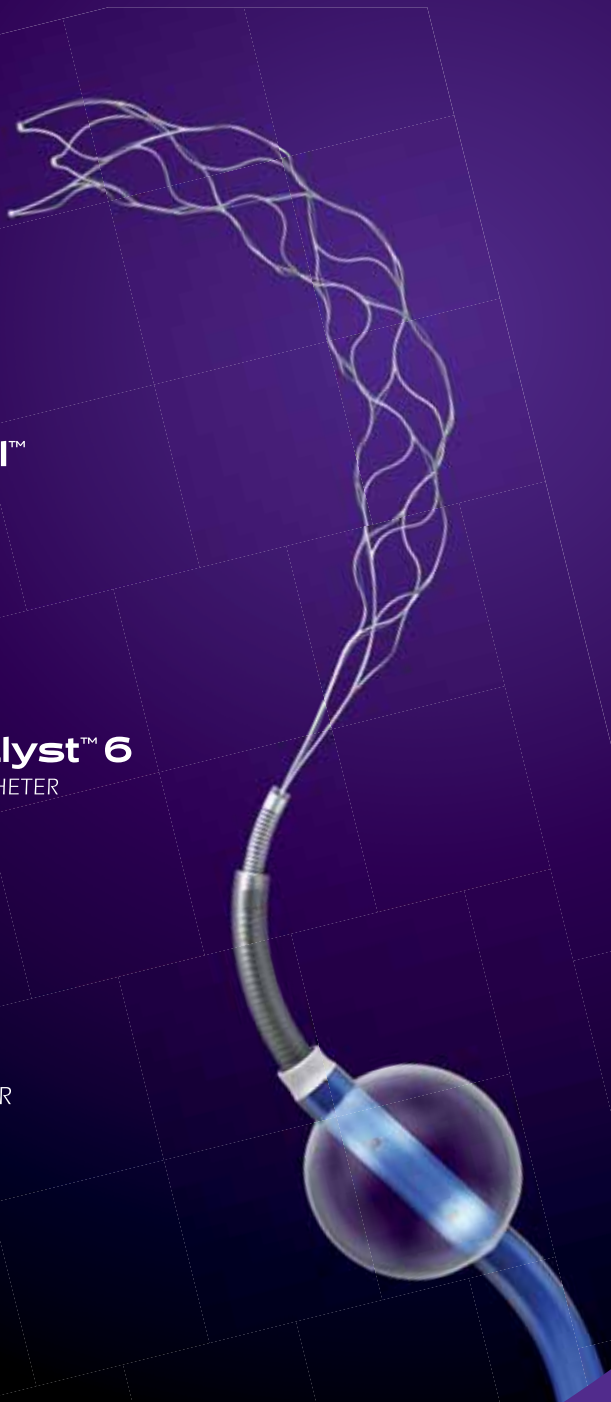

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