CPPP/S6/25/3/7

Citizen Participation and Public Petitions Committee
Wednesday 19 February 2025
3rd Meeting, 2025 (Session 6)

PE2048: Review the FAST stroke awareness campaign

Introduction

Petitioner James Anthony Bundy

Petition summary Calling on the Scottish Parliament to urge the Scottish Government to increase awareness of the symptoms of stroke by reviewing its promotion of the FAST stroke campaign, and ensuring that awareness campaigns include all the symptoms of a potential stroke.

Webpage https://petitions.parliament.scot/petitions/PE2048

1. The Committee last considered this petition at its meeting on 5 February 2025. At that meeting, the Committee heard evidence from –

    - Sophie Bridger, Policy and Campaigns Manager, Chest Heart and Stroke Scotland
    - Michael Dickson, Chief Executive, Scottish Ambulance Service
    - Professor Arshad Majid, Professor of Cerebrovascular Neurology, University of Sheffield
    - John Watson, Associate Director - Scotland, Stroke Association

    and then from –

    - Dr Ron Cook, Medical Director, NHS 24
    - Professor Mary Joan Macleod, Clinical Pharmacologist, University of Aberdeen
    - Professor William Whiteley, Centre for Clinical Brain Sciences, University of Edinburgh.

2. The petition summary is included in **Annexe A** and the Official Report of the Committee's last consideration of this petition is at **Annexe B.**

3. The Committee has received a new written submission from the Stroke Association, which is set out in **Annexe C.**

4. Written submissions received prior to the Committee's last consideration can be found on the petition's webpage.

5. Further background information about this petition can be found in the SPICe briefing for this petition.

6. The Scottish Government gave its initial position on this petition on 17 October 2023.

7. Every petition collects signatures while it remains under consideration. At the time of writing, 1,544 signatures have been received on this petition.

Action

8. The Committee is invited to consider what action it wishes to take.

Clerks to the Committee
February 2025

Annexe A: Summary of petition

PE2048: Review the FAST stroke awareness campaign

Petitioner

James Anthony Bundy

Date Lodged

19 September 2023

Petition summary

Calling on the Scottish Parliament to urge the Scottish Government to increase awareness of the symptoms of stroke by reviewing its promotion of the FAST stroke campaign, and ensuring that awareness campaigns include all the symptoms of a potential stroke.

Previous action

I have contacted Keith Brown MSP and requested a meeting be set up to discuss the petition.

Background information

Anthony (Tony) Bundy tragically lost his life on 29th June 2023 after suffering a Basilar Artery Ischaemic Stroke. When Tony started suffering a stroke, his face and arms were unaffected, and his speech was not slurred. This meant that Tony passed the "FAST" stroke test, and was denied the emergency treatment required to save his life until it was too late.

Tony's family are now raising awareness of all the symptoms of stroke, including the inability to stand, cold sweats, eyes struggling to focus, slowed speech, nausea, and vomiting.

We are calling for a review of the FAST stroke campaign, looking at international examples, in order to ensure stroke awareness campaigns include the wider range of symptoms of stroke. This is intended to maximise knowledge amongst the general public and medical profession.

Increasing awareness will hopefully mean fewer families will have to experience the pain and loss that Tony’s family has endured.

Annexe B: Extract from Official Report of last consideration of PE2048 on 5 February 2025

The Deputy Convener: The next item on our agenda is consideration of continued petitions. The first of those is PE2048, which is a review of the FAST—face, arms, speech, time—stroke awareness campaign. It was lodged by James Anthony Bundy, who joins us in the public gallery this morning.

The petition calls on the Scottish Parliament to urge the Scottish Government to increase awareness of the symptoms of stroke by reviewing its promotion of the FAST campaign and ensuring that stroke awareness campaigns include all the symptoms of a potential stroke.

We previously considered the petition at our meeting on 9 October 2024, when we agreed that, in addition to seeking written evidence from national health service regional health boards, we would hold a round-table discussion on the issues that the petition raises.

I am delighted to say that we have two panels with us this morning to explore those issues. Our first panel includes Sophie Bridger, who is policy and campaigns manager at Chest Heart & Stroke Scotland; Michael Dickson, who is chief executive of the Scottish Ambulance Service; Professor Arshad Majid, who is a professor of cerebrovascular neurology at the University of Sheffield; and John Watson, who is an associate director of the Scottish Stroke Association. I extend a warm welcome to you all.

With the exception of Professor Majid, who joins us remotely, our first set of witnesses have previously had an opportunity to provide written evidence to the committee. If participants are content to do so, we will move straight to our discussion, which will broadly focus on the public awareness campaign on stroke.

How would less-common stroke symptoms be incorporated into a public awareness campaign?

John Watson (Stroke Association): I think that this is a contentious issue. I am sure that all of us who give evidence to the committee today will be of a mind that the current situation is not good enough and that we need to see change. The petition has come about because of a failure in the system, and such failures happen too often for stroke patients.

The Stroke Association has concerns about the idea of bringing the less-common stroke symptoms into public awareness campaigns. From the beginning, I want to make the distinction between the messaging that we give out publicly, which is primarily the FAST campaign, and the information, training and education that is given to stroke professionals.

Our concern over the idea of changing the FAST campaign is, first, that the campaign works very well. It is simple and memorable, but it is also very focused on the specific symptoms of stroke. It captures most strokes, and it leads to very few false alarms. FAST works well as a triaging tool, but it is not the be-all and end-all; it

needs to be backed up by other opportunities for professionals to take more nuanced consideration.

The concern with extending FAST to include wider symptoms is that not only are many of the symptoms vague and related to conditions other than stroke, but adding to them would decrease the propensity of people to remember what the symptoms are. The committee will hear later from researchers, and I think that there is good research evidence of a real risk to people's retention of the messaging, the more the amount of information that they are given is increased.

Sophie Bridger (Chest Heart & Stroke Scotland): I echo what my colleague said. We know that, in general, awareness of stroke symptoms is not as high as we would like it to be. Chest Heart & Stroke Scotland currently co-ordinates the national FAST campaign. Before we started the campaign, we did some polling to ascertain what the general awareness was of FAST as an acronym and of stroke systems. We found that only just over 60 per cent—62 per cent—of the public had an awareness of FAST. That is much lower than we would like it to be.

After the initial wave of that campaign, we were able to raise that to 68 per cent, which we are very pleased with and hope to build on in the coming years. However, it demonstrates just how low public awareness is in general of not just stroke symptoms, either FAST or BE FAST—balance, eyes, face, arms, speech, time—but the need for urgent action. We know that unfortunately, that is one of the last messages to get through. Stroke is always a medical emergency, and too often, we hear that people delay taking action. The awareness of the need for very swift action is, unfortunately, still not high enough.

We know that, as my colleague alluded to, the best health campaigns are built on the repetition—which I am sure will be very familiar to committee members—of short and simple messaging over time. We are not yet advanced enough in that awareness—we need to keep repeating the message to build awareness of key stroke symptoms and of the urgency of acting very swiftly.

Michael Dickson (Scottish Ambulance Service): I support my colleagues entirely. The progress that has been made in FAST is really welcome, but the Scottish Ambulance Service still often sees patients who have delayed contacting us because they are waiting for all the symptoms to present, rather than just one or more of the significant ones. That has been backed up by the research that has been carried out regarding the acceptance of FAST as a process. There is a concern, of course, that adding elements to it could further delay any patients coming forward and seeking urgent support and attention from the Scottish Ambulance Service.

Professor Arshad Majid (University of Sheffield): Research from the United States that was published very recently has shown—we found a similar issue in Sheffield—that if we complicate the message a little bit more, just by adding the two letters B and E to FAST, the retention of what those letters mean at 30 days decreases. If we want to get the message out to the public, and improve its retention and improve action, keeping it as simple as possible is the way to go.

We considered moving to BE FAST in England; I have spoken to a number of my colleagues in NHS England, and the British and Irish Association of Stroke

Physicians has considered it. However, we decided not to move forward with that, partly because of the concern about retention of the message and the action that needs to be taken. We also felt that it would increase the number of mimics—cases where symptoms mimic stroke—coming through; I know that that is not what we are talking about just now, but it is a potential consideration. We decided, therefore, not to move to BE FAST, because of the concerns that I have just raised and the concerns that my colleagues have highlighted.

The Deputy Convener: If we were to have a public awareness campaign that included more symptoms, can you highlight what risks you feel that there would be?

Professor Majid: Is that a question for me?

The Deputy Convener: I will let you go first, Professor Majid.

Professor Majid: As I just highlighted, people have looked at that in the United States. In the United States, they want more people to come to hospital so that hospitals make more money. The US researchers found that if you take two groups and you educate one group on FAST and the other group on BE FAST, the retention of the message is decreased in the BE FAST group in comparison with the FAST group. There is research to support that—there are two studies that have shown that simply adding those two letters complicates the message.

Sophie Bridger: Professor Majid touched on the subject of mimics. I will leave it to my more qualified colleagues to speak to the nature of stroke mimics, but there is a concern that, if we widen the net, we will not necessarily catch more people with atypical stroke symptoms, but will instead make them harder to find. That is because of the large number of people who present with symptoms that come, for example, from labyrinthitis, migraine or seizures. Instead of having more people with a posterior circulation stroke presenting at A and E, we would have a much bigger number of other people presenting there who need to be triaged as well. We would make it harder to find the people with stroke.

Professor Majid has already touched on the context. In America, where a lot of the research on this is being done, there is a very different healthcare system from the one here. We know that, despite the very best efforts of stroke clinicians, who work exceptionally hard, stroke healthcare is really struggling. Only just over 50 per cent of people who had a stroke last year received the stroke bundle, which is the package of treatment that we would expect to see being used for someone who is admitted with a stroke. Only half received that, but the national target is 80 per cent, so stroke healthcare in Scotland is already well below where it needs to be. If we widen the net, we risk reducing the probability that someone could get that healthcare in time.

Michael Dickson: From a clinical point of view, for us in the Ambulance Service, FAST is an initial trigger. It is about where we start our triage and assessment processes, from the initial call onwards.

There is a risk that, if we widen the opportunity for people to come forward to raise symptoms that might have another cause, people with stroke will either get missed, which is not what we want to see, or the number of medical emergencies—we do

see a stroke as a medical emergency—will start to get diluted, because we will be taking more patients to accident and emergency, as they will have an appropriate presentation for being taken in based on the widened specification.

John Watson: I will briefly hammer home that point. Professor Majid referred to some recent research. When we submitted our written evidence to the committee, we said that there was no clear evidence either way from comparisons of FAST and BE FAST. Two new studies have been published since then, which I looked at yesterday. I will give the one-line conclusions from each of them, because they are very clear. One study said:

> "Significantly higher retention and ability to recall stroke symptoms, fully or partially, was found with FAST. Adding B and E to FAST resulted in lower retention of more common symptoms."

The second study said:

> "F.A.S.T. outperformed BE-FAST in the ability for people to remember key stroke warning signs ... suggesting the additional letters of B and E hinder memory recall."

The concerns that we have about diluting the message are real and are very well founded, and I think that the research backs them up.

Professor Majid: I think we all agree that we need something better. FAST is good, but there are opportunities to do better.

One thing that we have been researching in England is video triage. When the ambulance arrives at a patient's house, we can use video triage—we can see the patients on our screens via camera. The video is sent to us, and we can assess the patient. The research on that is yet to be published and properly assessed, but we have found that it helped to distinguish strokes from non-strokes and to reduce the burden on the stroke services.

I know that I am talking about something slightly different and not a patient education campaign, but if we want to identify more stroke patients and reduce the number of non-stroke patients who come in and overwhelm an already-stretched service, we will have to think about novel approaches that allow specialists to identify stroke patients who need to get to a centre very quickly. As we all know, "time is brain".

Maurice Golden (North East Scotland) (Con): I will perhaps start with Professor Majid. In relation to your previous point, are you aware of any work around the use of artificial intelligence to triage potential stroke victims?

Professor Majid: Yes. It has huge potential. In Sheffield, we have been looking at Vision AI, which Tesla is using for self-driving cars. With Vision AI, it might be possible to identify stroke patients—indeed, patients might be able to do that with their camera. However, the research will take time. It is too early to say at the moment.

I reviewed the grant application, so I am aware that work is going on for a blood test that could be combined with FAST to identify patients with large-vessel occlusions—

so patients who are potential candidates for thrombectomy. There is opportunity, but the AI and the blood tests are not here yet.

Maurice Golden: I am also interested in BE FAST as a stroke screening tool. What is your view of the current evidence surrounding BE FAST and other stroke screening tools, and how could the evidence base improve?

Professor Majid: Colleagues might disagree with this, but from my reading of the literature, I think that FAST and BE FAST are very similar in picking up stroke. They have similar sensitivity and specificity—that is, a similar level of identifying false positives. I am not completely convinced that BE FAST adds a great deal—that is my opinion and, as I have said, colleagues might disagree—and it risks increasing the number of mimics that come into the stroke service. However, I would appreciate hearing the views of colleagues.

Maurice Golden: I would like to bring in the witnesses in the room on the current evidence base around BE FAST. Sophie?

Sophie Bridger: I will touch on it briefly and summarise a position that I have read in the clinical stroke guideline, which was reviewed in 2023—so only about 18 months ago. The guideline is for all stroke clinicians across Great Britain, Northern Ireland and the Republic of Ireland, and the working party that pulled it together reviewed the evidence comprehensively and very well, so I am inclined to trust its assessments. It found that there was simply not enough evidence to deviate from FAST for any other screening tool—I say “screening tool” as opposed to “awareness campaign”, because the two things are slightly different. The most recent Cochrane review, which considered the stroke awareness screening tools as well, backed that up. FAST is the only screening tool that is mentioned in the clinical guideline, because it is used consistently and has a very good evidence base. Until that changes, there is no reason for any of us to use a different one—there is simply not the evidence at this point. That is not to say that individual papers will not find a particular benefit to a particular screening tool but, in my opinion, the body of evidence as a whole does not justify a move away from FAST.

Michael Dickson: The Scottish Ambulance Service is, first and foremost, clinically led. When clinical research changes and there is evidence for how we should change our practice, we change accordingly. Our view backs the position that the evidence is not there to make that change. Should that evidence come forward, or should a new tool prove to be more effective, we will adopt it.

John Watson: I have nothing further to add about the evidence. I agree with my colleagues on that.

I would, however, like to pick up on what Professor Majid said about other areas of research. We are all, I think, of a mind that the status quo is not okay, that we need to do this better and that we need to do further research. The question is about where we put that research investment. One of the key things about stroke that you need to know is that very little money is spent on stroke research, and we need to be careful about where we spend that money.

For example, the golden hour for stroke—GHoSt—study that Professor Majid referred to is about either a blood test or a saliva test that looks for the protein evidence in the bloodstream that there has been major damage to the brain. That has fantastic potential to be a way of getting around the lack of visible symptoms and identifying what is going on inside the brain, and that work is under way.

We can do research that can help us to bypass a lot of the problems that we have, particularly with identifying posterior strokes that do not have obvious symptoms. We need to focus our energies and more money on those areas of research.

Fergus Ewing (Inverness and Nairn) (SNP): I am sure that all the witnesses will be well aware that the petition arose because of the tragic loss of the life of Tony Bundy. The petitioner stated that, when Tony suffered a stroke, his face and arms were unaffected and his speech was not slurred, and that meant that he passed the FAST test because face, arms, speech and time were not affected. The petitioner went on to say that the family is now raising awareness of the symptoms of stroke, including the inability to stand, which is balance, cold sweats, and eyes struggling to focus. That is where the B and the E come from—balance and eyes.

The evidence that you have all given is consistent: you do not think that, from the available studies and the evidence, the alteration of the awareness campaign from FAST to BE FAST would work. Mr Watson began by stating that there is a problem. To put that problem in layperson's terms, the current system is not identifying all of those who might have suffered a stroke, but you think that FAST is best, and if we are to depart from that, it might make things worse, not better.

I can understand that. I am not a clinician, so it is not for me to second guess anybody. However, the committee wrote to all the health boards in Scotland and the written response from NHS Ayrshire and Arran describes the work that it has already done, which is quite substantial and quite impressive. I will not read it all out because it would take too long, but it says that

> "the team at NHS Ayrshire and Arran would very much welcome the opportunity to be a pilot site if this was agreed."

I have a point that I want to try out on you, to see what you say. Studies are one thing, but a health board is willing to carry out a pilot, and the Minister for Public Health and Women's Health, Jenni Minto, has said that it is up to health boards to do that. As I understand it, she is not standing in the way of a pilot, although I am not sure that she is advocating one. Given all that, would it not be sensible to actually try it out? I do not mean to be impertinent in any way. Your evidence and knowledge come from your experience as professionals and clinicians, but a layperson might say, "For goodness' sake, give it a try."

Studies are one thing and, as has been pointed out, studies from the USA may be of limited efficacy because of different circumstances and the profit element, but surely it would make sense to have a pilot scheme. If it were conducted under scrupulously pre-arranged terms, it might be possible to measure the outcome and see whether it actually works.

I know that that idea was promoted by Stephen Kerr and Alexander Stewart, two other MSPs who have been supportive of the family in this case. I would like to know from all the witnesses whether they think that that might be worth trying.

Sophie Bridger (Chest Heart & Stroke Scotland): If health boards would like to pilot a different stroke awareness test, that is, obviously, entirely their prerogative. We would stress that it would be extremely important to do that in partnership with the Scottish Ambulance Service and to involve their emergency departments, too.

We are aware of pilots that previously took place in another health board, though I note that that board did not mention that in its written evidence, which may mean that it no longer holds records on it. Unfortunately, that pilot lent itself to the false positives that we are aware of.

The other thing I will stress is that we have not yet really spoken about the importance of professional education, which provides the opportunity to ensure that we are picking up on posterior strokes and atypical symptoms across the whole of Scotland. Once again, to build on John Watson's point, we do not accept that the status quo is good enough. Clearly, we must do more to pick up on posterior strokes, and professional education has a significant role to play in that.

Chest, Heart & Stroke Scotland has just begun a new programme of stroke education for the coming year. We hope to reach 1,000 healthcare professionals this year and we have had 950 sign up so far. In that training, we talk about stroke awareness and about FAST as the crux of the clinical guidelines, but we also talk about atypical symptoms and the importance of listening to carers and families. Someone can be FAST-negative and still have a stroke, so there are limitations to using FAST.

Stroke is incredibly complex and FAST is not perfect, but it does an incredible job of distilling a very complex event into something that can be recognised by members of the public. That is challenging and I have a lot of sympathy for colleagues—including my colleagues at the Ambulance Service, who do so much of the triage—who are working around the clock to detect and treat as many strokes as possible. If we can do more to upskill them, increase their confidence and ensure that they, as the people who are often on the front line, are able to detect and recognise strokes—even those with atypical symptoms—that is where we would get the most benefit from our investment of energy.

Fergus Ewing: Which health board were you referring to?

Sophie Bridger: That would be NHS Fife.

Michael Dickson: We are also aware of the NHS Fife pilot.

We seem to be looking at this as an either/or situation. As Professor Majid said, the use of video technology enables us to better assess patients who contact the Scottish Ambulance Service or NHS 24 because something is not right or is different. That is often the reason why people call us. Whether they are based on FAST or on balance or eyesight changes, those are really reasonable justifications for contacting

NHS 24 or the Ambulance Service. The use of video technology could be powerful and effective in helping us further triage or stratify why something is not quite right.

I entirely support the point about the wider education of staff, including understanding what could be happening and knowing about atypical as well as typical symptoms. Education can be more powerful than just revisiting a pilot that has already concluded or looking at the wealth of evidence that already exists about the use of FAST as an initial triage tool and then as an assessment tool.

John Watson: For me, the issue of pilots by health boards comes down to what the board is looking to pilot. We would have concerns about piloting public messaging in a particular area because, if the messaging was different, it would have the potential to confuse people. However, a pilot that looked at how professionals within the health board were briefed, prepared and able to give time to more detailed examination of potential stroke patients would be very welcome.

FAST is one tool for us. It is a very effective tool and we think that it should remain on the front line of stroke diagnosis. However, as the petitioner has pointed out, it does not do everything—it misses a lot of people. For the system to work better, we need to look at the next step. For people who do not show obvious symptoms and who are showing vague symptoms, there is no substitute for having time with a professional who knows what they are doing and who can try to figure out what is going on.

From the symptoms that somebody is showing, they might have an ear infection, they might be dehydrated or they might be having a stroke. It takes time and expertise to work through that. One way that our system is failing at the moment is that the emergency departments that people arrive at are overloaded. We probably all saw the Royal College of Nursing report a few weeks ago that talked about corridor care now being the norm. We need to have a back-up for FAST, and that is through professionals helping people. That requires the information and guidance that Sophie Bridger has referred to, and it also requires people to have time to spend with patients to figure out what is going on when there is no easy way of doing so.

All of us working in stroke are very conscious that the figures and performance at the moment are absolutely not good enough, despite the excellent efforts by stroke teams. Partly, that is about the resourcing of stroke services, but partly it is because the effective treatment of stroke patients relies on people getting to the stroke team quickly and efficiently. At the moment, emergency departments are an absolute bottleneck for that.

This is going outwith the committee’s remit, and it is not a stroke issue per se, but one big factor is that emergency departments are so overwhelmed that they cannot give the time and attention that are needed to identify what is going on when people present with vague symptoms.

Professor Majid: I have two points. My colleagues have eloquently made a lot of important points, but the way that I look at this is that the priority should be to get the right patient into the right place as quickly as possible. I do not think that BE FAST is going to take us there. We need the other things that we have talked about, such as video technology, blood tests and artificial intelligence. Those are not there just yet,

but certainly video technology is moving very fast, and we are using it a lot here and in other parts of the world. We will see it being adopted much more frequently in the future.

I want to add to what was said about current services. The current situation is distressing to me, as someone who is involved in the service and as a consumer of the service, having recently had a family member who had a stroke. If you have a posterior circulation stroke, which potentially could be devastating, and if that is correctly identified and you arrive in the hospital at 6 o'clock in the evening, although you would be eligible for life-saving or life-altering therapy, you might be too late because, in many places, you will not get that treatment after 5 o'clock. At the moment, stroke services are so stretched that we are not even able to provide life-saving or life-altering treatment, which patients who get to hospital quickly enough would be eligible for.

My humble suggestion is that our focus should be on looking at technologies or processes that allow us to identify the right patients so that they can go to the right place. I am not sure that we should be putting a lot of resources into BE FAST. Perhaps video technology, which is currently being piloted around England and in other places, is where our priority should be. That is just an opinion.

Fergus Ewing: Thank you all for your responses. I understand that the issue is complex and multifaceted, and that the role of education is vital. A and E facilities not being available after 5 o'clock, where that occurs, is an obvious and very serious failing, and a gap in the service. I do not gainsay any of that: I accept it all. The petition is concerned with one aspect, and one aspect alone, although I am sure that the petitioner would welcome a much improved service in all those respects.

However, I go back to this question: given that what is involved is a potentially life-threatening condition, and one that the petitioner's family lost their father to, does that not, when it comes to determining whether a pilot should be carried out, tend to push the balance towards conducting a proper test, as Mr Watson has said, with a set of pre-arranged and fixed criteria governing both the role of the Ambulance Service and the consultants and other clinicians involved? Surely, if a health board is willing to do that, it would be beneficial.

If, as the consistent evidence that we have heard from all four of you suggests, that does not work, then it does not work, but there seems to be a very strong presumption that people are not quite smart enough to be able to deal with complex matters. That could be interpreted as being somewhat dismissive—or a word that is even stronger than that, to be frank. After all, we are talking about a life-threatening condition. Some people, as Mr Watson said in his opening answer, lose their lives as a result of not coming under the FAST criteria.

Is the idea not worth trying? If it does not work, you will at least have tried it, and you will have a better cohort and evidence base on which to proceed as you focus largely on all the other issues that you have fairly and reasonably brought to our attention.

The Deputy Convener: I will bring in Sophie Bridger, first.

Sophie Bridger: I apologise to Michael Dickson for cutting in.

We would all agree that, as John Watson has said, the status quo is not good enough. We are all acutely aware of the fact that the petition has come about through a tragic loss of life, and I want to recognise what the Bundys have done to raise awareness of posterior circulation stroke with decision makers as well as clinicians. It has given us all a chance to ask how we are making sure that we get this right.

I think that we all agree on the problem—we just do not believe that the suggested approach is the right solution. As I have said before, if a health board wants to pilot the approach, that is entirely its prerogative, but my concern would be that, instead of making it easier for posterior circulation stroke patients and patients with atypical symptoms to get to the right place at the right time—to use Professor Majid's expression—we would lose them in the noise, and we would get too many people with what we call stroke mimics, which make it harder for us to find the people who need to be found and to get them to that right place at the right time.

In its significant adverse event review, which I know has been published, NHS Greater Glasgow and Clyde concluded that BE FAST is not suitable for universal application, which was based on its finding that up to one in six or one in seven of all patients could have some of the BE FAST symptoms at some point. That gives you an idea of the sort of scale that we are talking about. We all very much want to ensure that patients with any kind of stroke are getting the right treatment at the right time, but we are also very concerned about the possibility of creating so many false positives that we cannot find those people and get to them in time.

Michael Dickson: That was a really fair reflection. We work routinely with health boards on innovative projects and different ways of working, recognising the unique nature of health and social care across Scotland. Pilots should be undertaken within well-bounded scope and with a good grounding in evidence, and a decision about whether they are going to make an impact.

However, the core principle of all such studies is that you seek not to cause anyone further harm, and the risks that we are talking about—the wrong patients being identified, and the already limited capacity for stroke teams to be able to see their number being reduced, because of the number of mimics that come forward—are a real consideration for us.

The other thing to note is that a study would have also to consider other factors, such as whether there are alternative methods that could make a greater difference. In that regard, the Scottish Ambulance Service has been exploring the use of video technology. At the end of the day, we are all talking about better outcomes for patients who have been diagnosed with stroke.

I recognise the petitioner's tragic loss and, again, I extend my personal condolences to them, but there are other methods that we should explore, and the evidence is pointing to methods over and above the BE FAST method.

The Deputy Convener: Do other witnesses have any comments?

John Watson: I will perhaps make some of the same comments, but I will wrap them up in the perspective of the Stroke Association.

We are conscious of how much needs to change in stroke care in Scotland, and we are conscious of how little in the way of resourcing is available at the moment. Although I appreciate that we could approach the issue by saying, “Let’s test things and find out about this, because any knowledge will be useful to us”, we have so many things in front of us that we could test and research, and we have to triage those things, based on our judgment about which appear to be best placed to help us and to have the least negative impact.

One concern that we have about a widespread BE FAST message is that, as Sophie Bridger said, it would flag up a very large number of people as potential stroke patients. What would we do with those people? Our stroke service, stroke physicians, scanners and stroke beds are already under huge pressure just from dealing with the current numbers. If many more priority calls were to go to the Scottish Ambulance Service, every one of them would result in somebody else being deprioritised.

There is real potential for harm by doing what is suggested, and it does not feel to us as if there is evidence or any indication that the likely benefits would justify that.

Maurice Golden: I think that the nub of the issue is that James Bundy’s father received video from the Scottish Ambulance Service that ruled out a stroke, so an ambulance was not dispatched. From the evidence that we have heard, the issue appears largely to be about capacity and the need to prioritise patients. Ultimately, the NHS is free at the point of delivery, and, in my view, capacity management should not come into an evidence-based approach to triaging people. Yes, there might be people who present falsely, but that is a matter for the Scottish Government, which can provide capacity and allow people to access the treatment. I invite the panel to take a step back and answer this question. If there was capacity in the system, would your reflections on BE FAST be the same?

John Watson: We continually come up against the reality of lack of resourcing in stroke care, but, leaving that aside for the moment, the key issue for me is that, if somebody is suddenly very unwell, they should contact medical services. We should have medical services that are well briefed about the obvious symptoms of stroke and about the fact that people who present with general symptoms could be suffering from one of a number of things. We then need to have pathways such that people get to see somebody who is best placed to determine what is going on.

My concern about BE FAST as a general rule is that it would automatically flag a very large number of people as potential stroke victims who would be sent to stroke departments. When we do not know what is going on with someone who is showing very general symptoms, the right place to deal with them is an emergency department, where they will be seen by generalists.

The problem with BE FAST is that we would end up simply transferring a lot of difficult-to-diagnose patients from the emergency department, which is there to deal with them, into the stroke department, which is not well placed to deal with them, and most of them would then be sent back, because most of them would not be having

strokes. That would be an inefficient way to treat people, even if we were not worried about resources.

The issue is about getting people to the right place at the right time, as quickly as possible. The emergency department is where people should be going when it is not clear what is happening with them.

Underneath all that is just the unavoidable and unfortunate fact that some strokes do not give obvious physical symptoms that show what is going on and are, therefore, hard to diagnose. In preparation for this discussion, I have spoken to various stroke clinicians and heard the same thing all the time, which was that it is just really hard to identify what is going on.

I know that we, on the panel, keep jumping on to other issues, but there are other ways that we hope would get around such things, including blood tests and video triaging, to improve people's chances, even if they do not guarantee a good result. The key thing for us is that we get those things lined up.

Foysol Choudhury (Lothian) (Lab): Before I go to the last question, I will ask Sophie Bridger, who mentioned training, a question. Does that training happen only in NHS Fife, or does it happen in other places?

Sophie Bridger: The training that we offer is online, and we are making it accessible to any healthcare professional in Scotland who wants to join. The first session this year was last week, and 250 people joined us from across the country, including people from primary care, the Scottish Ambulance Service, emergency departments and others.

Foysol Choudhury: You talked about resources and getting to patients. Do you have any data on how quickly the Ambulance Service gets to a patient, how quickly the patient is seen after they call and what happens in between?

Michael Dickson: We recognise stroke as a key priority, so it is one of our most urgent responses. The routine is that we pre-alert the hospital to say that a stroke patient is coming in, so that the teams can prep for the patient. That is a well-rehearsed triage process, but I acknowledge the points that have been discussed about the challenges that exist in relation to identifying certain types of stroke. We measure the times clearly, and because all our patient interactions are coded, we can provide more evidence to the committee, if it would be useful, about our turnaround times. There are factors that affect those times, and I do not think that we necessarily want to go into the scope of hospital turnaround times and so on, but we prioritise our most urgent responses, and stroke treatment is considered to be one.

Foysol Choudhury: I guess that you do not have any data on how many stroke patients have to wait and how long they have to wait from the call to the Ambulance Service arriving.

Michael Dickson: I am happy to provide that information to the committee, if it would be useful.

Foysol Choudhury: How could awareness of the symptoms be improved? That question is for all the witnesses.

Michael Dickson: As colleagues have said, awareness has been improved. The public health campaigns are very welcome. We would always encourage patients to come forward and not wait for all the symptoms to line up before contacting the Scottish Ambulance Service, and we acknowledge that it is a continuing messaging process to the public to make sure that the urgency and the impact of the symptoms is reinforced.

Sophie Bridger: On increasing awareness with clinical audiences, including the Scottish Ambulance Service and healthcare professionals, we are making good progress with the training that we provide. We hope to reach 1,000 people this year, and the vast majority of them have already signed up to a session. We know that healthcare professionals want to know more—they want information and education about what FAST does and does not do, and how to act accordingly for someone whom they suspect is having a stroke, even if they are FAST negative.

John Watson: To reiterate the earlier point, I say that a twin-track approach is needed. There is a definite need for education, training and guidance for clinical practitioners and for people working in the medical profession who will see patients.

Public awareness campaigns need to run alongside that. I hope that we have not given the wrong impression by questioning the idea of BE FAST, but a FAST awareness-raising campaign has not been funded by the Government for some years in Scotland. All the other constituent parts of the United Kingdom have done that. The Stroke Association was part of a working group with NHS England to review the FAST campaigns. It struck me from those reports how quickly public recognition and awareness fade over time. The recommendation was to have a properly funded and visible awareness-raising campaign every couple of years. We have not had a campaign such as that for quite a few years in Scotland. If the public in Scotland is like the public elsewhere in the UK, there will be an on-going decline in awareness because of that.

There is no getting away from the fact that you need to spend some money on it. At a time when money is tight, I point to the fact that the NHS England evaluation found that there was a return on investment of eight or nine to one; so, every pound that was spent on FAST awareness-raising campaigns resulted in economic savings down the line of £8 to £9 because of reduced, earlier and better treatment. That was over and above the benefits to patients.

Foysol Choudhury: Professor Majid, do you have anything to add?

Professor Majid: No, I think that my colleagues have made all the points that I would want to make. A member asked a question earlier about what would happen if resources were not a problem. I understand the question, but the reality is that resources are a problem. As John Watson said, if someone comes in who is not having a stroke, they are potentially using a resource, such as a CT scan or another test, that a stroke patient would be denied.

The Deputy Convener: I have a final question for Mr Dickson and Professor Majid. How are less-common stroke symptoms currently considered when patients are assessed for potential strokes?

Michael Dickson: We have a very detailed triage process when patients contact 999. The first two questions are whether the patient is breathing and whether they are conscious, which triggers a response. Often, we will work the patient in some detail through a range of options that could be appropriate for them, depending on the symptoms that are presented, using either our integrated clinical hub or our teams that are embedded.

If we feel that the patient warrants an ambulance, we will send an ambulance, although it might take some time to get there. If we think that the patient's presentation requires an alternative treatment that could be achieved in a different way, such as by them directly attending an accident and emergency department or going to their general practitioner to access primary care, we will advise accordingly. We have a robust set of triage processes. We acknowledge that no system is perfect and we are always looking to make improvements based on learning when things have not gone as we intended them to go. We understand the impact on individual patients when that occurs.

Professor Majid: It would be useful for the committee to hear what happens in Sheffield. When the ambulance service there arrives at a patient's house, if it is very clear that the patient is having a stroke, they alert us and will bring the patient in. If they are not certain—for example, if they think that a patient is having a stroke but they are unsure about whether they are FAST positive or not—they will set up a video call with us. We have a stroke nurse specialist who helps us to evaluate the patient. If the nurse is unsure, they can ask another colleague to evaluate the patient. That is one way that we can identify patients who present with the less-common, or atypical, symptoms of stroke. We will miss patients, because no test is 100 per cent effective, but that system works very well for us and could be a model for the future.

The Deputy Convener: Before we draw this item to a close, does anyone want to add anything that we have not covered?

Sophie Bridger: I would like to speak to one of the points that the petitioner made in his most recent submission, which was not about FAST or BE FAST but stroke care in general, and specifically thrombectomy, which has been an issue of great concern to stroke clinicians in Scotland, to Chest Heart & Stroke Scotland and to the Stroke Association for a considerable time.

Thrombectomy is a life-changing treatment for stroke and, at the moment, it is not available outside daytime working hours and there is only one place in Scotland where it is available at the weekend. There is a significant issue around the time availability of that game-changing stroke treatment, which should be available to every stroke patient. That issue, which the petitioner has raised in his most recent correspondence, is particularly important. I suspect that his view is shared by many of us in the stroke community.

The Deputy Convener: Thank you. If there are no other contributions, I thank you for your evidence and suspend the meeting briefly to allow a changeover of witnesses.

10:26 Meeting suspended.

10:27 On resuming—

The Deputy Convener: On our next panel, we have Dr Ron Cook, who is medical director of NHS 24; Professor Mary Joan Macleod, who is a linical pharmacologist at the University of Aberdeen; and Professor William Whiteley, from the centre for clinical brain sciences at the University of Edinburgh. I welcome you all.

Following on from the discussions of public awareness of stroke symptoms, the committee would like to explore more issues around clinical awareness of symptoms. We will go straight to questions, and I will lead off.

How are less-common stroke symptoms currently considered when assessing patients for potential strokes?

Professor Mary Joan Macleod (University of Aberdeen): They are possibly not considered very well, but we usually see them in the emergency department. We are called to see patients if an emergency doctor thinks that a patient might have a stroke. Probably three quarters of the patients whom we see in those circumstances have not had a stroke. About 3 per cent of patients who come to the emergency department will have dizziness as a symptom and, of those, less than 5 per cent will have a stroke, so there are a lot of patients to sift through to pick up the people with stroke. It is important to understand the patient's history clearly, and to conduct a thorough examination using validated tools to try to differentiate stroke from other causes of dizziness or vertigo.

It is mostly a clinical diagnosis, and there is pretty good evidence that a clinical diagnosis is better than imaging for identifying those patients. However, it is still difficult to do. There is a proportion of patients who might just have isolated vertigo, which looks like a peripheral cause, but they have a stroke, and that can be very hard to diagnose.

Professor William Whiteley (University of Edinburgh): There are people with severe symptoms and people with mild symptoms. As you have heard, there is a range of symptoms related to posterior circulation stroke, however, many people experience such symptoms and they are not related to strokes. If those symptoms are severe and the person has come to the emergency department, they are usually assessed either in triage or after admission by an emergency department doctor or nurse who needs to raise the suspicion of stroke to get the assessment of someone like me or Professor Macleod. Raising that suspicion is the important thing in the case of people with severe symptoms.

In people with mild symptoms—we should remember that mild symptoms are extremely common and are a major source of work for the stroke service—a GP usually refers a patient either by telephone or directly to a stroke physician, and then

we see them in out-patient clinics, where the majority of the patients we see have not had either a mini stroke or stroke.

Dr Ron Cook (NHS 24): From my experience in emergency medicine and with NHS 24, I would agree with both of those statements. Key to this point is that tools such as FAST should not be used as exclusion criteria. FAST is inclusion criteria, and that is really important when it is considered in relation to public messaging. It is there to identify very quickly those people who are obviously having a stroke so that they can be availed of life-changing treatment. The key part of FAST is the T—time to call emergency services.

A majority of people who call their GP or NHS 24 or turn up to an emergency department because they are experiencing dizziness or issues with their balance do not have stroke. Similarly, in cases of people who have blurring of vision, that usually results from some sort of a local eye condition. Therefore, in line with previous evidence that you have heard, if you included those people, you would completely reduce the people who would be seen, to the detriment of folk who are having a stroke. It would also affect an emergency department's ability to pick up the unusual symptoms of stroke and the unusual patients.

In terms of assessing the more uncommon symptoms of stroke, the key at front doors—emergency departments, GP practices—is education to raise the awareness of health professionals and the introduction of systems in emergency departments that avail senior doctor review of those patients very early so that they can muster the appropriate response within the hospital.

The Deputy Convener: On that point, do you feel that there is an awareness of less-common stroke symptoms among clinical staff?

Professor Whiteley: There is a variation in awareness of stroke, as is the case with all conditions, but we have to remember that we are dealing with professionals, and the continuing education of professionals, nurses, paramedics and emergency department doctors is important.

If you speak to any specialist, they will always say that there is under-awareness of their particular condition. Stroke is particularly important and, in my view, there is under-awareness of the symptoms, and we should continue our efforts to raise awareness. However, that is probably the case for most conditions. If we had a cardiologist here, they would say the same.

Professor Macleod: I would reiterate that. Particularly at the more severe end of the spectrum in our emergency department, we had an issue with basilar stroke being missed because a patient presented with a reduced conscious level and nobody thought of stroke. We had awareness sessions with the emergency department, but it was over a year until there was another case. Staff turnover—junior staff in particular in those departments change every four to six months—means that you need to keep re-educating medical staff, as you have to keep re-educating the public. Education is a huge part of what needs to be done, in order to ensure that doctors and, increasingly, nurses are aware of the symptoms.

Professor Whiteley: One thing that is relevant to the earlier point that was made about thrombectomy is that when a very effective treatment becomes available, doctors are much more interested in identifying people who are suitable for it.

Thrombolysis is quite effective if you work in a place where thrombectomy is not available, which is many places in Scotland, but it is simply not as effective as thrombectomy. If doctors or nurses have an effective treatment that they can give, they will work very hard to identify suitable patients, but, as we have heard before, that treatment is not available to most people in Scotland during the weekend and in the evenings or at night.

Dr Cook: There are also far more detailed tools available to health professionals in emergency departments for the assessment of patients who are presenting with stroke. Such tools include details around vision and balance problems. The National Institutes of Health's stroke scale is widely used to assess patients who present for eligibility for thrombectomy and thrombolysis. Although those tools are more detailed than FAST, being able to elicit the physical signs requires training and on-going professional education and development, and it requires reminders in how unusual strokes present.

Information and education are available to the general public through NHS Inform, which is governed by NHS 24. Although our stroke webpages lead with the FAST message, there is information immediately below that about the more unusual details of stroke. That is where FAST is such a useful tool: it is simple, short and punchy and it can be used as a gateway to provide more detailed information about stroke.

The Deputy Convener: Just to let the witnesses know, the technical staff will operate the microphones.

Maurice Golden: The petitioner mentions research from Australia—it has a similar healthcare system to ours—which showed that when BE FAST was used in a live medical setting the result was quicker detection and treatment and better outcomes. What is your assessment of how many strokes FAST might miss? Are we talking about one in five, one in 10 or one in 20?

Professor Macleod: I have looked at that specific issue. FAST misses about 14 per cent of all strokes, and, from some studies, it misses about 40 per cent of posterior circulation strokes. The FAST message is not that specific in relation to posterior circulation strokes, but bear in mind that there is a huge range of posterior circulation strokes, from the very severe to very mild.

Dr Cook: What is key with regard to the application of FAST in a healthcare setting—I made a point earlier about being clear on this to healthcare professionals, junior doctors and clinicians who are triaging patients—is that it is about inclusion, not exclusion. You do not say that someone is FAST-negative then say that therefore they are not having a stroke. Recognising that comes down to the education in your department and board and being aware of different stroke symptoms. The practice of healthcare professionals is nuanced.

I am not aware of the Australian study. On the earlier references to video consultation, I have practised in Australia, where video consultation supports the

remote treatment of stroke and where the more nuanced and detailed tools can be employed as an aid in remote consultations.

Professor Whiteley: On the Australia question, I spoke with a colleague in Perth in preparation for this session and I think that the study that you are referring to was done in Perth. The study was carried out over two years and identified 200 people with stroke in the hospital. However, remember that hospitals in Glasgow and Edinburgh see between 1,000 and 1,500 strokes a year, so that is on a very different scale.

The second thing to consider is how the different assessment scales perform. There are very few studies that look at the real world and consider everybody who comes to an emergency department with symptoms for which there is suspicion of stroke, which is what we are interested in. Where those studies have been done, they find that many of the scales perform very similarly. That was true for my study, which compared FAST with one other scale—not BE FAST. The key thing is not the scales, but the training of the people using them. The scale is there to increase awareness and to make someone think about it. If someone is thinking about stroke and neurological symptoms, that is just as important as the scale that they use.

Fergus Ewing: I want to follow up on what Dr Cook said about making the distinction and FAST not being a measure to exclude people but to include people. I understand the distinction, but the two issues of balance and the loss of fully functioning eyesight—balance and eyes—are not included in FAST, so, as far as the public is concerned, it is exclusive. We are using an information and awareness campaign that does not include two of the factors that, in the case of the individual who tragically lost his life, appear to have been the symptoms that were detectable.

I am playing devil's advocate a little bit but surely, as far as the general public is concerned, FAST is exclusive, not inclusive, by definition.

Dr Cook: The detail of the training of the application in healthcare professionals is that it should not be exclusive.

Fergus Ewing: I am talking about the public. I understand about the professionals.

Dr Cook: The problem with that is the face and speech symptoms are included in FAST because the majority of people who complain of those are having a stroke. That is why they are applicable to the T, which is "Time to phone the emergency services now". The majority of people who complain of being dizzy or having blurred vision are not having a stroke—it is a vast majority. If those symptoms were linked to the advice to call 999 immediately, it would have a significant impact on the ability of ambulance services and emergency departments to respond to strokes.

Fergus Ewing: I have one further question for Dr Cook, if I may. I do not mean to neglect the other witnesses, but the question relates to NHS 24. Many people's experience of NHS 24 is that it is not quick. It can be extremely slow, and there are practical reasons for that. People are often told that they will get a call back from a GP, for example, and that can take quite a long time. I am not really making a criticism, Dr Cook, but I am genuinely curious. What role does NHS 24 have in

relation to strokes? Given the risk of very quick death, surely NHS 24 is really not the applicable service for strokes.

In the triaging that goes on in the first interview, how do staff who are dealing with those cases take account of the BE part?

Dr Cook: In identifying life-threatening or life-changing strokes, when someone phones NHS 24, we are very careful about providing information immediately in the recorded message and the information that they receive about stroke symptoms from the outset. If you think that you are suffering from a stroke, you should hang up and phone 999 straight away.

Fergus Ewing: If I phone up and say that my balance and eyesight are affected, what does the triage do? You have protocols and matrices—I do not know what the right word is—that determine the response given by the NHS operatives. However, I am not sure to what extent they are qualified—excuse my ignorance, Dr Cook. If I am asked whether I feel dizzy or I have slurred speech and I say, “No, but my balance is affected and my eyesight has suffered a bit”, what would you do then?

Dr Cook: Our decision support system is set up to be used by selecting keywords. The most severe symptom is selected first for analysis, and then the most significant possibility of that keyword is assessed by our clinical staff. If it was visual blurring, the first line in differentiating that would be, “Is this person having a stroke?” If there are balance problems, that would be at the top of our clinical assessment and excluded before we moved on to different things. Under our clinical algorithms and clinical training, those more significant presentations are assessed and excluded first before we move on to others.

Fergus Ewing: Well, that is interesting. “Algorithms” was the word that I was unsuccessfully hunting for.

Dr Cook: We use a limited number of algorithms, because we rely a lot on direct clinical supervision by experienced staff. We use clinical support to enable our initial call handlers to gain as much useful information from the patient as possible, which makes the clinical supervision more efficient and effective.

Fergus Ewing: Thank you. It would be very helpful, convener, if Dr Cook would follow that up with a letter setting out what the protocols say—just for our information, on a sort of factual, evidential basis.

Foysol Choudhury: Good morning. From your clinical perspective, what are the risks and benefits of including less-common stroke symptoms in clinical stroke assessment guidance?

Professor Whiteley: I just want to follow up quickly on the previous point, which is relevant. If you are looking at communicating messages of uncommon symptoms to the public, you need to make sure that there has already been a lot of effort on FAST, so that there is at least some community awareness. If we decided to change that to a more complicated and difficult to remember algorithm or acronym, work would need to be done to check that people are happy to remember that.

There are also conflicting messages. I was in a pharmacy yesterday and picked up a public health awareness campaign about migraine, which says that you should seek help for migraine if you have nausea, vertigo and visual symptoms. The more complicated we make it, the more there will be all sorts of conflicting issues. Does that answer your question?

Foysol Choudhury: Yes.

Professor Macleod: Can I give you some data from the Scottish Stroke Care Audit report for 2023? There were 28,300 calls to the Ambulance Service that were coded as stroke by the call handlers. On the scene, the paramedics diagnosed 7,891 of those as potential hyperacute stroke, which is less than a third of what the call handlers coded as potential stroke. We know that, certainly in Grampian, potentially half of those actually turned out to be strokes. Hopefully, for this year, we will have all that data linked up in our national report.

One can imagine that if we added B and E into FAST, those 28,000 calls could go up to 33,000, 34,000 or 35,000, with a knock-on effect on the Ambulance Service and the emergency department. Those are huge numbers. If about a quarter of strokes are posterior circulation strokes, that might be about 2,000 across Scotland. The number of posterior circulation strokes in a health board region might be quite small, so there might not be enough data for a meaningful study. It might not be possible to do a study within one health board.

Dr Cook: The question was about including less-common symptoms in clinical training. It comes down to identifying how strokes commonly present, squaring that away, then having a very directed focus. In emergency departments, posterior stroke has recently been an area of priority for increasing awareness and early detection, so that those patients can be availed of therapy. Again, that is through departmental training and process, and ensuring that, in the initial assessment, either at triage or by, say, a junior doctor, if they are FAST-negative, that does not exclude them from being a stroke patient. It also involves being aware of trigger points, which would mean senior staff mustering specialist assessment.

The Deputy Convener: Dr Cook, this question is specifically for you. NHS 24 is a point of contact for most of the public. You are preparing a revised stroke training package. Have you seen it and does it cover the symptoms that we are talking about?

Dr Cook: The symptoms of balance and eye changes are definitely included in stroke education packages. We would be clear in all our education of clinical staff that if there were significant upsets in the algorithms, in keeping with a potential stroke, those would be identified.

The Deputy Convener: Thank you. Do any of the witnesses have anything else to say that we have not covered?

Professor Whiteley: I have just one thing to say. I am also the clinical lead for the Scottish stroke research network. The questions that the committee is asking about the performance of BE FAST and whether there are other scales or other ways of identifying strokes are research questions. There is a recent Medical Research

Council report, which came out just a week ago, which Anna Dominiczak, the chief scientist, contributed to. The report really tells us about the decline in the number of clinical researchers—the people whom you need to answer the questions that the committee is asking.

The Deputy Convener: I thank the witnesses for their contributions today. Does the committee agree to consider the evidence that we have heard and the written submissions at a future meeting?

Members *indicated agreement.*

Annexe C: Written submission

Stroke Association written submission, 6 February 2025

PE2048/R: Review the FAST stroke awareness campaign

When speaking to the Committee at the meeting on 5 February 2025, I referenced two new pieces of research that compared FAST and BEFAST as public messaging. Here are the quotes I used, and the links to the actual studies, to aid with your reporting.

1) September article in Journal of American Heart Association: Randomised trial comparing retention of FAST and BEFAST messaging –

   "Significantly higher retention and ability to recall stroke symptoms, fully or partially, was found with FAST. Adding B and E to FAST resulted in lower retention of more common symptoms."

2) Pre-publication note from American Stroke Association about another trial they have just done, released just last week –

   "F.A.S.T. outperformed BE-FAST in the ability for people to remember key stroke warning signs (face, arm and speech), suggesting the additional letters of B and E hinder memory recall."

Please let me know if I can help with any further information on this.