

Amazing Brains 2022

Q&A

Q: Are Brunnstrom's stages of recovery still applicable today?

Dr Terry Quinn: The 'Brunnstrom 4 stages' were developed in 1960s by the physical therapist Signe Brunnstrom. The stages describe how muscles change following a brain injury such as stroke. While the stages are still generally true, we now recognise that stroke recovery is much more than changes in muscles. Modern stroke therapy tries to challenge the traditional descriptions of how a stroke affects people. In particular, through better use of therapy we now rarely see the classical stroke survivor picture of someone struggling to get around with a stiff bent arm and stiff straight leg.

Q: What happens to the brain and brain cells after a stroke?

Dr Terry Quinn: The brain needs lots of energy to perform all its amazing functions. If the blood supply to the brain is disrupted, from a blockage or bleeding, then not enough energy gets to the brain cells. Brain cells can only survive without energy for a short time. After a while, cells deprived of energy will die. These cells disappear through a process called apoptosis. When we scan a person's brain many months after a stroke, we see a hole in the area of the brain that the stroke affected. There have been many medications and devices that have tried to restore brain cells injured by stroke. There are many exciting developments in this field, but so far none of these are proven to work.

While the brain cell changes are permanent, we know that people can still make a recovery from stroke. This is another example of our amazing brains capacity. Areas of the brain that have not been damaged can take on the work of those areas that have been injured. This process, called neural plasticity, is still not fully understood. There are lots of research studies, including many funded by the Stroke Association, that seek to give us a better understanding of neural plasticity.

Q: Is there a relationship between vaping and stroke?

Dr Terry Quinn: We know that cigarette smoking is a cause of stroke. One of the most important things people can do to reduce their chance of stroke is to stop smoking. Electronic cigarettes, or vapes, are a newer technology and so we have less information on their long-term effects. Large studies have suggested that people who vape have a higher risk of stroke than people who do not smoke at all. However, the risk of stroke with vaping may be less than the risk with traditional cigarettes. There have been interesting studies that demonstrated that inhaling from an electronic cigarette can have immediate damaging effects on blood vessels. This suggests that vaping is not a safe option for people worried about stroke and other diseases.

Q: Is there a way to access the memory tests that were discussed during the Amazing Brains lectures?

Dr Terry Quinn: There are lots of tests of memory and thinking that are used in stroke care. These are not recommended for people to use on themselves, as interpreting the results requires training, experience, and specialist knowledge.

Stroke survivors often ask me about 'brain training' tests and games. There can be fun and are a good way to keep your mind active, but they are not yet proven to help in general stroke recovery. Trying a variety of easy to access puzzles such as sudoku, wordle, cross words etc may be just as good as the more expensive apps and games that are marketed to help brain recovery.

Q: Can the tests be used to assess how someone's memory and thinking was before a stroke?

Dr Terry Quinn: A lot of my research has looked at methods to assess how someone was before their stroke. This is really important information as it helps us understand how the stroke has affected people and helps us plan treatments. There are lengthy and detailed tests that can tell us about memory and thinking before a stroke, but these are complex and require a specialist to perform and interpret the test. We wanted something that was quick and could be used by anyone in the stroke team. We found that short questionnaires work well. The questionnaires are not directed to the person who has had the stroke, but to someone that knows the person well. Asking about how the person was managing certain tasks before the stroke can give useful information on their memory and thinking. The disadvantage of these tests is that you need to have someone available that knows the person well enough to complete the questionnaire. It is a depressing reality that many people that come to our stroke unit are so isolated there is no one able to complete the questionnaire.

(For people wanting more information on these questionnaires and their accuracy, here is a link to one of research papers:
<https://onlinelibrary.wiley.com/doi/10.1002/gps.5700>)

Q: What is the one piece of advice you would give a stroke survivor?

Professor Adewale Adebajo: The one piece of advice that I would give to a stroke survivor like myself, is to persevere!

There are various reasons why I choose this advice.

Firstly, even when recovery from stroke appears to have reached a plateau, further improvement may still take place. Even if it is at a very slow rate of progress. Indeed, stroke survivors like myself have observed improvements in cognition, speech, mobility and functional ability, years after the stroke first occurred. Consequently, I would encourage stroke survivors to persevere with their exercise programs, medication and other health interventions, even when these do not appear to be yielding obvious results.

Secondly, depression is common in stroke survivors, for obvious reasons. However, those stroke survivors who endeavour to persist with a positive attitude, despite their impairments, tend to achieve the best health and quality of life outcomes.

Finally, there are numerous obstacles and challenges that stroke survivors face, including access to adequate rehabilitation, appropriate adaptations at work, social services support, suitable housing and transportation to mention a few! We need to persevere with advocacy, working together with organisations like the Stroke Association to achieve improvement in these issues for ourselves and for future stroke survivors. You can learn about how to get involved in the Stroke Association's campaigning work [here](#).

With perseverance, I am sure that we will significantly improve these things for stroke survivors and overcome these obstacles!

Q: It's frustrating when I find myself being ostracised because people think I'm rude and unsociable because of my blankness or ability to only concentrate on one thing at a time. They see nothing broken on the outside so therefore I must be absolutely fine on the inside. Is there a way or is there any material that can educate these people? Feels like I'm being discriminated because of my stroke and the abilities of my brain I have been left with.

Professor Adewale Adebajo: You are not alone in feeling this way and unfortunately, stroke survivors face many barriers and are often misunderstood, especially with regards to the unseen stroke associated impairments of altered cognitive function and also fatigue, in marked contrast to stroke associated speech difficulties or limb weakness. I totally agree with your view that the main problem is that of widespread ignorance and your recognition that there is an urgent need for more people to receive education about stroke. A good starting point for this is the [Stroke Association website](#), as it contains lots of helpful information about stroke that is designed to be useful even if you've never heard of stroke before.

Q: Post hospital discharge, rehabilitation support is very limited, why is that?

Professor Audrey Bowen: I am sorry to hear of your long wait for OT after leaving hospital. This was probably due to a lack of therapy resources in your area, later compounded by the effect of the pandemic on the NHS. You are correct that national guidelines recommend that people are offered all the therapies they need for as long as there is benefit. For example, one of the key recommendations from the current (2016) guideline is "2.11.1A People with stroke should accumulate at least 45 minutes of each appropriate therapy every day, at a frequency that enables them to meet their rehabilitation goals, and for as long as they are willing and capable of participating and showing measurable benefit from treatment."

Whilst it is true that the rate of recovery is most obvious in the first few months after stroke it is definitely not true that the benefits end at six months. Our brains are amazingly resilient and continue to adapt and learn new ways of solving difficulties for months and years after a stroke. So, it is definitely not too late for you to request an assessment for therapy and I suggest you speak to your GP and share the guideline with them <https://www.strokeaudit.org/Guideline/Guideline-Home.aspx>.

Q: When someone has a stroke that affects their memories, why does it appear that good memories are taken and bad memories remain? When these memories are taken when having a stroke, is there any chance of them ever coming back, or are they lost forever?

Professor Audrey Bowen: Thank you for sharing this troubling but interesting observation. Human memory is incredibly complex and vulnerable both to brain health conditions (such as stroke or dementia), and also to emotionally traumatic events. Unfortunately, a sudden stroke fits both of those categories which is why people may experience difficulty remembering old memories as well as difficulty learning (remembering) new things.

As you point out not all memories are equally powerful and unfortunately the painful memories often have greater salience and sticking power so they seem to dominate. But we can actively alter that imbalance and working with a counsellor to process painful emotional memories can lay them to rest and shift the focus towards positive memories which may be still there, as well as creating new positive memories and useful skills. Most people continue to learn and lay down new memories after a stroke, but may need some help organising and sorting all this knowledge so it can be retrieved from storage.

Q: There is a huge amount of on-line information (mainly American based), surely as part of the discharge process this could be signposted for stroke survivors?

Stroke Association: We provide lots of information through [My Stoke Guide](#), which has everything from videos about coping with the effects of stroke to monthly roundups of stroke news. There's also a [forum](#) where you can talk to other people – both stroke survivors and family and friends. If you need help getting started, email mystrokeguide@stroke.org.uk and we'll do our best to support you.

Q: How to recover from a 2nd stroke?

Stroke Association: As each stroke is as unique as we are, the support you might need to reach your recovery goals is also unique to you. However, one thing that is helpful for everyone is to take actions that will reduce your risk of having another stroke in the future, like being as physically active as you can and cutting down on alcohol. Your GP should be able to make suggestions for support that can help you with these changes. You can read our guide to reducing your risk [here](#).

Q: What causes post-stroke fatigue?

Stroke Association: This is often due to a combination of physical and emotional factors. On the physical side, your body is expending energy on healing, you may have lost strength or fitness, you might be doing rehabilitation exercises that are physically challenging, and your stroke could have caused sleep problems like insomnia. On the emotional side, it's common to feel sad or anxious after a stroke and this, too, can take a toll on our energy levels. There's a general guide to post-stroke fatigue [on our website](#), but because there are so many things that could cause it, it's best to talk to your GP or another health professional about what's most helpful for you specifically.

Q: How to find clinical trials for a stroke survivor?

Stroke Association: One of the easiest ways to do this is to visit clinicaltrials.gov, an online database of clinical trials all over the world. To search for trials relevant to you, scroll down to the section titled 'Find a study' on the website homepage. Then follow these steps:

1. Make sure you've selected 'Recruiting and not yet recruiting studies' from the two options at the top – this will ensure that you only see trials that are open to new participants or will do so in the future.
2. In 'Condition or disease', enter **Stroke**. You will see a list of options pop up here and you can get more specific if you want – for example, if you've had a haemorrhagic stroke and you're specifically interested in trials on that, you can select **Stroke, Haemorrhagic**.
3. In 'Other terms', you can enter any search terms for things you're especially interested in – for example, **Rehabilitation** or **Pain**. You can leave this blank if you just want to see what's out there.
4. This is a worldwide database, so under 'Country' make sure you select the country where you want to take part. Once you've done this you will then have the option to narrow it down to a specific city.
5. Once you've entered all the details above, click 'Search' to see a list of trials. You can click on any trial name under 'Study Title' to see more information and find the contact details for the investigators. Often this information will be quite technical and you may find it easier to contact the investigators and ask for a participant information sheet or video – they should have one prepared that will explain the trial in less technical terms.

It's important to talk to your GP or clinician about taking part in trials – they should know if you're involved in one so that they can help you decide if it's safe and appropriate for you (for example, if you have another medical condition that might mean you shouldn't try a new treatment) and they may also have their own suggestions for clinical trials you can take part in.

Q: Is it common that Stroke can trigger a lot bad memories?

Dr Terry Quinn: The trauma of a stroke event can trigger memories and emotions of past events. Having an emotional reaction to stroke is common and often improves with time. If the feelings are becoming difficult to manage then it is important you share this with your stroke team, GP or other professional.

Q: Is seeing tiny white moving lights when eyes are closed common post-stroke?

Stroke Association: These sound like phosphenes, which happen when the brain cells that process information from our eyes become active even though we're not looking at anything – many people see them when they gently rub their hands over their closed eyes. Phosphenes can happen for a number of reasons, but in this case it's likely that your stroke has affected part of your brain's visual system and some of the cells in it are becoming active at random. As the brain reroutes around the damage, the phosphenes will probably fade away, but if they continue to cause problems, it's worth consulting your GP.

Professor Audrey Bowen: Unusual visual images are common after stroke and, whilst many health professionals are not equipped to understand them, fortunately there are stroke-specialist orthoptists and other vision professionals and it is worth asking for a referral to better understand these and receive advice.