



ESOC 2021: Shaping the future

Professor Joanna Wardlaw, ESO Conference Planning Group Chair, Professor of Applied Neuroimaging, University of Edinburgh and NHS Lothian; Foundation Chair, UK Dementia Research Institute.

This article provides an overview covering some of the exciting research and scientific advances to be presented at the 7th European Stroke Organisation Conference (ESOC 2021) from 1-3 September 2021.

INTRODUCTION

Stroke is a severe and life-threatening disease which currently affects 1.1 million individuals in the EU each year and causes around 440,000 deaths. Projections have suggested that unless we see rapid advancements in treatments, we could face a 3% increase (from 1.12 to 1.16 million) in the number of EU stroke events, and a 27% increase (9.53 to 12.11 million) in the number of people living with stroke, between 2017 and 2047.¹

In the past, significant treatment challenges have compounded the impact of stroke. Fortunately, there have been major recent advances which will be explored further at ESOC 2021. I am particularly excited about the ongoing developments in the treatment of acute ischaemic stroke (AIS) as well as learning more from AIS management studies and studies for treating more chronic and diffuse vascular diseases in the brain. I am also looking forward to hearing about the significant progress with haemorrhagic (ICH – intracerebral haemorrhage) stroke management, helping to minimise the risk of patients having further strokes, and the extraordinary capabilities of the latest artificial intelligence (AI) and robotic devices and their impact on stroke detection.

Improving access to life-saving acute ischaemic stroke treatment

For acute ischaemic stroke (AIS), thrombolysis and



thrombectomy are now both considered to be safe and effective ways to treat the condition within a few hours of stroke onset. Thrombolysis, also known as thrombolytic therapy, is a treatment to dissolve clots in blood vessels to improve blood flow and prevent damage to tissues and organs. It is usually only given up to four and a half hours after a stroke, although increasingly we are seeing it used where the time of stroke onset is not known, for example if the patient woke up with a stroke or was alone when the stroke happened, when we can now use special scanning techniques to show if the brain can still be saved. As we know, timing is crucial with stroke treatment. With each passing minute following a stroke, the opportunity to recover brain function is reduced, so provision of these treatments is vital.

Although thrombolysis is mostly well established across Europe, there remains patchy provision in certain areas. Positive study findings and clear guidance will encourage wider use and more specialised training to ensure more patients are eligible to receive this life-saving treatment.

Thrombectomy is a newer procedure used to treat some ischaemic stroke patients and involves using a specially designed clot removal device inserted through a catheter to pull out the clot. As with thrombolysis, thrombectomy is most effective the faster it is used following a stroke and it is usually only performed up to six hours after symptoms start, although increasingly we are also seeing it used at later or unknown times of onset, guided as with thrombolysis, by scanning techniques. Again, there remain challenges with access to thrombectomy and research has suggested that this is often caused by organisational difficulties such as a lack of expertise, training and infrastructure to support the use of this procedure.² This needs to be resolved as soon as possible if we are to optimise patient outcomes. The focus now needs to be on increasing availability of clot-removing experts and streamlining stroke services to ensure that as many patients as possible can benefit from these new cutting-edge procedures.

There are several imminent trials being presented at ESOC 2021 from different regions within this topic area, including the SWIFT-Direct trial which is assessing the benefits of direct mechanical thrombectomy, to help drive improvements in the funding and implementation of these procedures.

Learnings from AIS management for wider brain vascular disease prevention

Cerebrovascular diseases and dementia are two leading contributors to impairment of brain health and neurological disability in older people.³ Unfortunately, the prevalence of these neurological disorders is increasing rapidly due to the ageing population. Patients with cerebrovascular diseases, both acute and chronic, tend to have multidimensional functional impairments to the brain and an increased risk of cognitive impairment and dementia.

Our understanding of stroke has improved greatly over the last 20-30 years, with many studies focusing on strategies to prevent and treat acute ischemic stroke, in particular. However, some experts point out that cognitive impairment rather than stroke is the most common clinical impact of blood vessel disease so we need greater long-term understanding of how to use our stroke skills to protect against dementia as well. There has been considerable progress in this area, looking at how vascular diseases affect the brain in more diffuse ways, causing untypical symptoms not previously recognised. We need to continue with this momentum and look beyond the blood vessels that cause stroke. Focus should be on how blood vessel disease affects the whole brain and how to improve the functioning of the vascular system to keep the brain functioning healthily for as long as possible.

Presentations at the conference will include findings from large studies of statins in secondary prevention of patients with ischaemic stroke and cerebral microbleeds and will certainly offer valuable insights into optimal management for these patients. The four-year follow-up data from the PROGRESS trial evaluating predictors for cognitive decline and dementia in women and men with prior stroke or transient ischaemic attack, will also provide important learnings in this area, vital for dementia prevention.

Improving outcomes for haemorrhagic stroke patients

For haemorrhagic stroke (ICH – intracerebral haemorrhage), a condition which has historically seen less attention, there is also cause for encouragement with improvements to management, helping to reduce the risk of recurrent haemorrhagic stroke and also of ischaemic damage. This can often be a delicate balancing act between the urgency to find and control the initial cause of bleeding in haemorrhagic stroke patients and assessing the risk of a further stroke (ischaemic and haemorrhagic).

Much anticipated results being presented at ESOC 2021 include those from the multi-centre cohort study examining

the risk of rupture of an intracranial aneurysm with growth detected during follow-up of over 5,000 patients, which may provide clinicians with more accurate prediction of absolute risk of rupture to improve treatment management. The important SoSTART and APACHE-AF trials will also provide clinicians with further clarity regarding whether to restart or avoid anticoagulation in the long-term for patients with atrial fibrillation who survived anticoagulation-associated intracerebral haemorrhage.

Transforming blood vessel disease care with new technologies

Treatment for acute stroke has traditionally been focused on using drugs that were thought to protect parts of the brain from ischaemia. However, studies are now looking at how AI can improve early stroke diagnosis including identifying risky features for haemorrhage, and management and, in so doing, may help to streamline diagnosis and assist with monitoring of treatment early after stroke.

For example, forthcoming studies are looking at improved cerebral microbleed detection in magnetic resonance using a multi-scale 3D convolutional neural network, or are testing automated AI haemorrhage detection software for the assessment of CT brain imaging in stroke, and may have significant impacts on speed of detection and referrals.

Increasingly, we are also now seeing ways of using robotic devices that help to stimulate various different nerves to aid recovery from stroke, for example to improve swallowing which is often damaged in stroke, or to speed up recovery of arm function. The NETS trial to be presented at ESOC, will provide interesting findings evaluating how a device can stimulate neural regeneration in the brain with a non-invasive method.

Although these new technologies are exciting and offer promising results, it is important to keep in mind that most AI devices and technological innovations are very recent,

still in evaluation and are only relevant if they can improve patient outcomes. If these tools can make diagnostics easier, more consistent and faster, or facilitate recovery, and do it simply, then they will have major impact on clinical practice.

New technologies also bring considerable training implications, particularly as stroke management requires a very broad multi-disciplinary approach. Nevertheless, harnessing these technologies and learning how best to use them in practice will dramatically improve stroke health care delivery and maximise the chances of patients making a full recovery.

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