

The ABC of Stroke

AUTHORS

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What is STROKE?

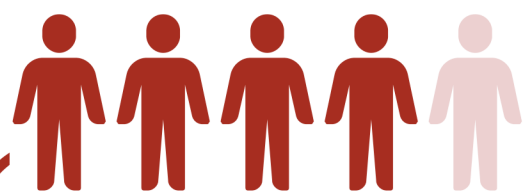
Stroke is a *life-threatening medical emergency*. Depending on its cause, it can be classified into two types.

Ischaemic stroke: a blood clot stops blood flow to the brain, killing brain cells.

Haemorrhagic stroke: a cerebral blood vessel ruptures, causing bleeding into or around the brain. When bleeding occurs *within* the brain, it is called an **INTRACEREBRAL HAEMORRHAGE** (ICH).

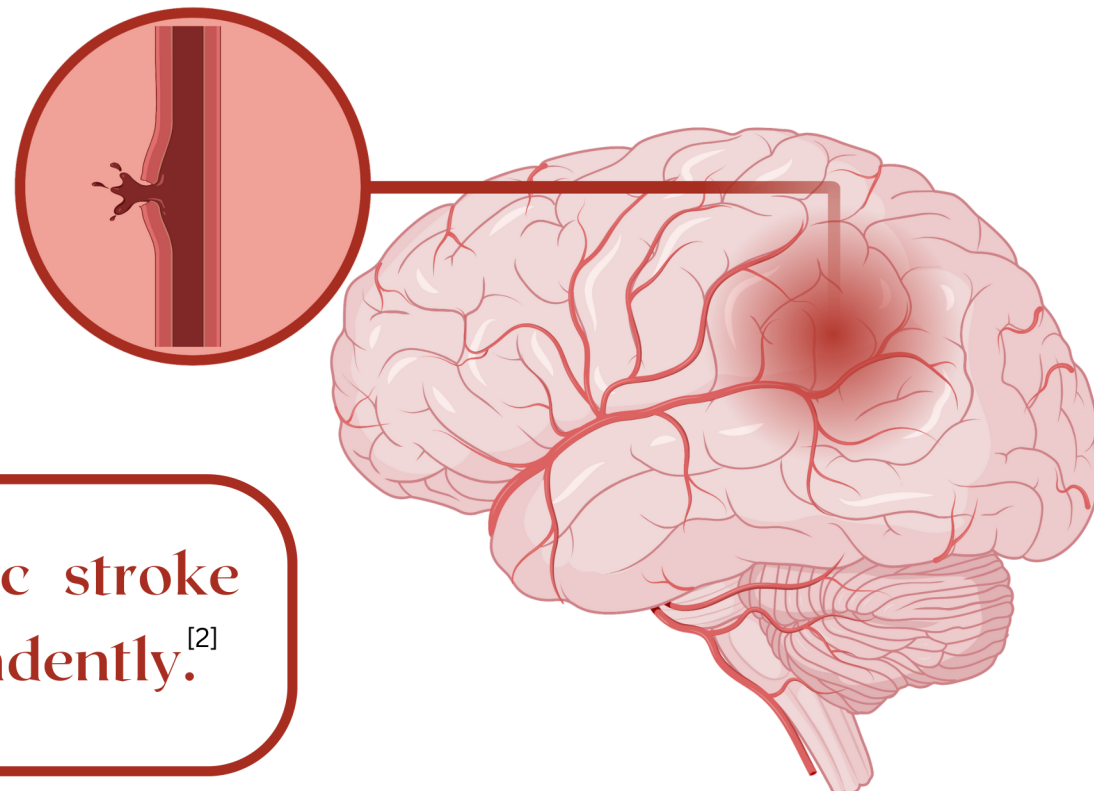
INTRACEREBRAL HAEMORRHAGE

ICH ONLY ACCOUNTS FOR **10%** OF ALL STROKE CASES, BUT IS RESPONSIBLE FOR **HALF OF ALL ANNUAL STROKE DEATHS**.^[1]



4 in every 5 haemorrhagic stroke patients cannot live independently.^[2]

“Stroke strikes every **5 minutes.**”
— Stroke Association



THE ACUTE BUNDLE OF CARE

In stroke, halting further brain damage is highly time-dependent: the more quickly the bleeding is stopped, the less damage it can provoke and the better outcomes patients can expect. However, **not enough ICH patients get treatment promptly**, potentially causing increased fatality and disability in ICH patients, relative to other stroke types.

To improve the delivery of care for ICH patients, the Geoffrey Jefferson Brain Research Institute developed the **THE ACUTE BUNDLE OF CARE FOR ICH (ABC-ICH)**.

This is a kit comprising of 3 already existing, evidence-based, and guideline-recommended ICH treatments:

Anticoagulant reversal

10–20% of acute haemorrhagic stroke patients take anticoagulants (also called *blood thinners*). Anticoagulants are used to treat blood clots and prevent serious conditions like ischaemic strokes and heart attacks. Anticoagulants are associated with an **increased risk of bleeding expansion**.^[3] Rapid **normalization of coagulation can reduce this risk**.

Blood pressure lowering

Intensive **blood pressure lowering** within 6 hours of stroke onset **can improve quality of life and reduce disability**.^[4] Such a rapid intervention can be *tricky* to implement – but the ABC-ICH project aims to reduce the wait time between antihypertensive agent administration and BP normalisation to less than 60 minutes.^[5]

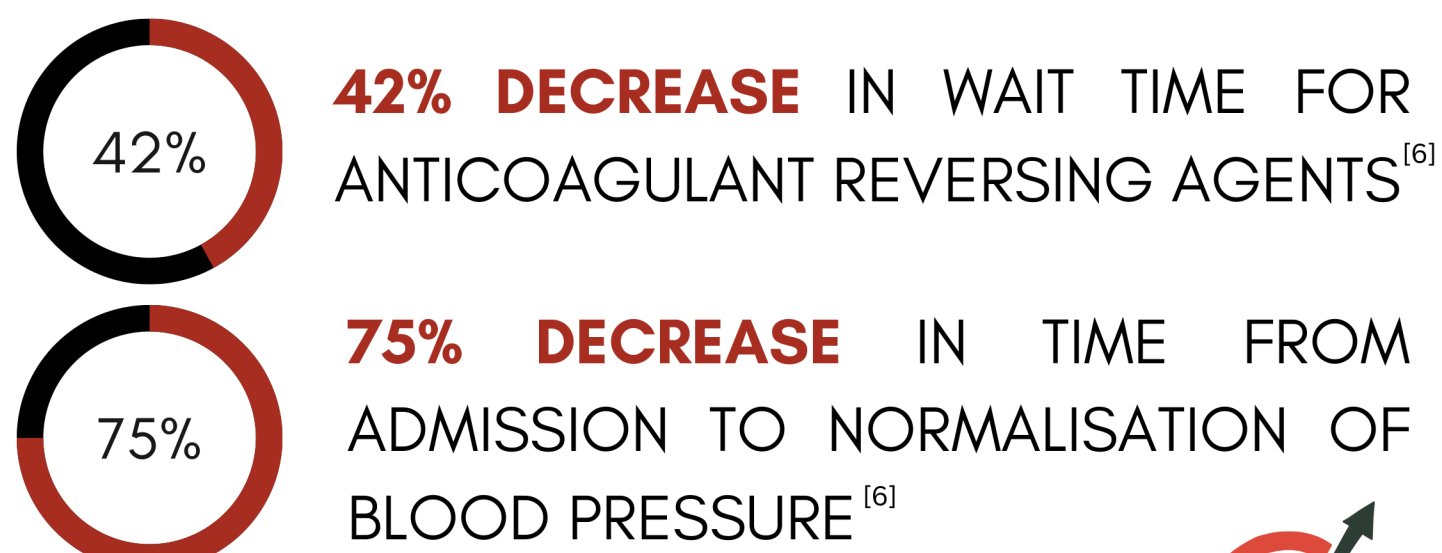
Care pathway

Neurosurgery to treat build-up fluid in the brain might **improve patient outcomes**, although not single randomized controlled trial has studied this intervention.^[5] The ABC-ICH kit predicts adherence to a care pathway prompting immediate neurosurgical referral of all patients with good premorbid function.^[5]

WHY IS ABC IMPORTANT?

The ABC-ICH bundle was implemented at Salford Royal Hospital Hyperacute Stroke Unit, **reducing 30-day deaths by a third and saving 29 lives per year**.^[5] This showcased how a relatively simple but effective delivery of the ABC care bundle could significantly decrease mortality rate of this otherwise severe stroke.

The project has since been implemented in the two other hyperacute stroke units in Greater Manchester. In one of the units, this resulted in:



LESSONS FOR THE FUTURE

Introduction of the bundle in the other stroke unit was more challenging, thus highlighting some **lessons** to take forward for the subsequent **North of England expansion**.^[6]

1. Internal project teams within the hyperacute stroke units must have clear role definitions.
2. These teams must provide continued support for ABC implementation.
3. Data and feedback collection must be standardised to achieve consistent results.

WHAT NEXT?

THE NORTH OF ENGLAND SCALE-UP: The ABC-ICH project has been rescaled to cover **25 hospitals** and a population of around **10 million** across the north of England. This expansion will also investigate the potential effect of the care bundle on **post-stroke disability**.^[7]

[1] Rymer, Marilyn M. "Haemorrhagic stroke: intracerebral haemorrhage."

[2] Feigin, Valery L et al. "Update on the Global Burden of Ischemic and Hemorrhagic Stroke in 1990–2015: The GBD 2015 Study." doi:10.1159/000441085

[3] Kuramatsu, Jiji B et al. "Anticoagulant reversal, blood pressure levels, and anticoagulant resumption in patients with anticoagulation-related intracerebral haemorrhage." doi:10.1001/jama.2015.0846

[4] Anderson, Craig S et al. "Rapid blood-pressure lowering in patients with acute intracerebral haemorrhage." The New England journal of medicine. doi:10.1056/NEJMoa1214609

[5] Parry-Jones, Adrian R et al. "An Intracerebral Hemorrhage Care Bundle Is Associated with Lower Case Fatality." doi:10.1002/ana.25546

[6] Brunton, Lisa et al. "Scale-up of ABC care bundle for intracerebral haemorrhage across two hyperacute stroke units in one region in England: a mixed methods evaluation of a quality improvement project." doi:10.1136/bmjqa-2021-001601

[7] Geoffrey Jefferson Brain Research Centre. "Our Research - Stroke and dementia". <https://gjbainresearch.org/our-research/stroke-and-dementia/>