Delivering safe stroke care at hospitals without acute stroke units during the COVID-19 pandemic: guidance for clinical networks and acute trusts in England

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Scope

This document is aimed at clinical networks and trusts with hospitals (with emergency departments) that do not have acutely admitting stroke services. It provides pragmatic guidance on how to provide safe and effective protocol-driven care, including thrombolysis, to patients presenting with acute stroke during the COVID-19 pandemic and should be used as a contingency measure only.

Contents

Introduction

NHS England guidance for the management of stroke patients during the COVID-19 pandemic (www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/C033-Specialty-guide_-Stroke-and-coronavirus-v1-24March_.pdf) acknowledges that the stroke inpatient bed base will need to be reduced to accommodate a potential influx of non-stroke patients. The anticipated pressures on ambulance services and inpatient beds mean it is inevitable that **patients with acute stroke will need to be transported and admitted to hospitals that do not usually accept acute stroke admissions and therefore are not experienced in delivering thrombolysis**. It is also becoming evident that patients with COVID-19 are at higher risk of stroke and also are presenting with atypical neurological symptoms not initially recognised as stroke (https://jamanetwork.com/journals/jamaneurology/fullarticle/2764549; https://ssrn.com/abstract=3550025)

During the COVID-19 pandemic, **all** hospitals need to be equipped to provide basic stroke care and be linked into regional stroke specialist clinical networks for specialist decision making for thrombolysis. Hospitals that do not usually accept acute stroke admissions will need support from remote stroke physicians and clearly defined protocols of care to enable them to deliver thrombolysis within a safe framework.

This implementation guide aims to provide pragmatic and practical advice to enable the delivery of safe, protocol-driven stroke care, supported by remote specialist decision making.

Suggested actions for strategic clinical networks/future structures

In this document, strategic clinical networks (SCNs) and integrated stroke delivery networks (ISDNs) will be referred to as 'stroke networks'. Ideally telemedicine networks for remote decision making should cover multiple hospitals over one or more stroke networks. This will enable stroke specialists to support neighbouring hospitals in times of workforce shortage.

Each stroke network should identify acute trusts with hospitals that have an emergency department with CT scanning facilities but **do not currently admit acute stroke patients.** Stroke network leads should contact these trusts to explain that they may receive acute stroke admissions during the COVID-19 crisis and to direct them to this guidance.

Stroke network leads should develop arrangements that enable specialist decision making to be available at all times across their network, anticipating that the COVID-19 pandemic may make individual hospital specialist rotas, at times, unsustainable. Any cross-hospital arrangements should be clearly communicated to all hospital switchboards, emergency departments (EDs) and stroke units.

Stroke network leads should prepare communications to ambulance trusts for deployment at the appropriate time. Networks may choose to take a stepwise, phased approach based on ambulance service pressures, workforce difficulties and geographical pressures related to variations in COVID-19 presentations.

All patients with suspected acute stroke benefit from receiving an early specialist stroke opinion. Networks should consider how they can offer 24/7 access to specialist stroke opinion and stroke multidisciplinary team support.

Suggested actions for acute trusts with hospitals that do not currently admit patients with acute stroke

Preparation phase

Governance
The General Medical Council acknowledged in recent guidance (www.gmc-uk.org/news/news-archive/supporting-doctors-in-the-event-of-a-covid19-epidemic-in-the-uk) that while doctors have a duty to recognise and work within their competence, in 'these exceptional circumstances, doctors at every level may

be required to work at the limits of their comfort zone and in some cases beyond'. This guidance aims to provides a **safe and protocol-driven** framework for delivering acute stroke care in hospitals that do not routinely provide this care. Doctors working within such hospitals will be able to access immediate telephone advice from a consultant stroke physician. The consultant stroke physician will agree an overall medical care plan for all patients who present with acute stroke and will make any necessary decisions about thrombolysis and referral for thrombectomy in patients who would benefit from these therapies.

It is recognised that remote decision support is usually associated with a higher treatment rate of stroke mimics. However, the bleeding risk in stroke mimics is low, and this concern should not prevent the implementation of a remote decision-making service.

Ambulance trusts

- Agree a system of pre-alert with the local ambulance trust. The pre-alert pathway adopted by South East Coast Ambulance service is included in **Appendix 1** of *Implementing* telemedicine to support specialist decision making in stroke care during the COVID-19 pandemic, as an example.
- When paramedics make the decision to bring a suspected stroke patient to the ED, the ED should be alerted so that they can prepare to receive the patient.

Training

- Identify a lead clinician to oversee the implementation of the action points below.
- Ensure that staff working in the ED are familiar with the Recognition of Stroke in the Emergency Department (ROSIER) tool. This tool, and a series of brief training videos, can be accessed in **Appendix 3**.
- Provide resources and support to medical staff in the ED to carry out the National Institutes for Health Stroke Scale (NIHSS). A link to the tool can be found in **Appendix 4**.
- Ensure there are staff capable of carrying out swallow screening on, or reaching into, wards receiving acute stroke patients.
- The European Stroke Organisation Angels Initiative has a number of training resources to support hospitals that have not previously delivered stroke care. Links to the various resources can be found in **Appendix 5**.

Thrombolysis

- Ensure there is a stock of alteplase and administration guidance in the ED.
- Ensure that ED/acute medical staff are aware of the checklist for alteplase administration (**Appendix 6**).
- Consider creating a 'thrombolysis box' in the ED, which contains everything required to assess patients' suitability for and administration of alteplase.
- Ensure that nursing and medical staff in the ED and on the wards are aware of the possible complications post-thrombolysis and the actions that should be taken should these complications occur (**Appendix 7**).
- Ensure that nursing and medical staff in the ED and on the wards that are likely to receive acute stroke patients are aware of the monitoring requirements for patients post-thrombolysis (**Appendix 8**).

Remote assessment

- Agree with the stroke network which remote assessment facilities will be used.
- Videoconferencing may be helpful in assessing some patients.
- In the absence of formal videoconferencing facilities, a pragmatic approach would be to use a telephone system alongside an informal videoconferencing solution such as FaceTime or WhatsApp. NHSX guidance for the COVID-19 period states that it is acceptable for clinicians to use these tools for videoconferencing (www.nhsx.nhs.uk/key-information-and-tools/information-governance-guidance/health-care-professionals).
- Agree the system for rapidly contacting the remote stroke consultant on call so that they are prepared to review the patient and CT images when available.
- Agree the criteria and timescales for contacting the remote stroke consultant on call. For example:

- Alert by telephone when a patient with suspected stroke who would be eligible for thrombolysis is referred for CT (before CT is performed)
- Telephone call or videoconference to discuss treatment plan (including thrombolysis) once imaging is available for viewing across network
- Discuss patients in whom thrombolysis is not indicated following initial assessment at the front door.

Timing is critically important when thrombolysis or mechanical thrombectomy are treatment options. However, **all** stroke patients will benefit from an early virtual review by a stroke physician and agreement of a management plan.

- Ensure the trust switchboard and the ED have the remote stroke physician rota.
- Decide how decisions made by the remote stroke physician will be recorded in the patient record.

Image sharing and artificial intelligence
- Rapid transfer of brain imaging of sufficient quality is required to enable the remote stroke physician to make treatment decisions.
- Ensure that there is the facility to share images with the remote stroke physician and test this to ensure that speed of image transfer and quality/clarity of image are acceptable.
- Ensure that staff who will be sharing the images are trained in how to use the software.
- Systems that share images and use artificial intelligence to support decision making could also be used. These have the advantage of offering rapid image interpretation to support early referral for thrombolysis or thrombectomy, even with non-contrast CT.

Suggested pathway for acute trusts/hospitals that do not currently admit acute stroke patients
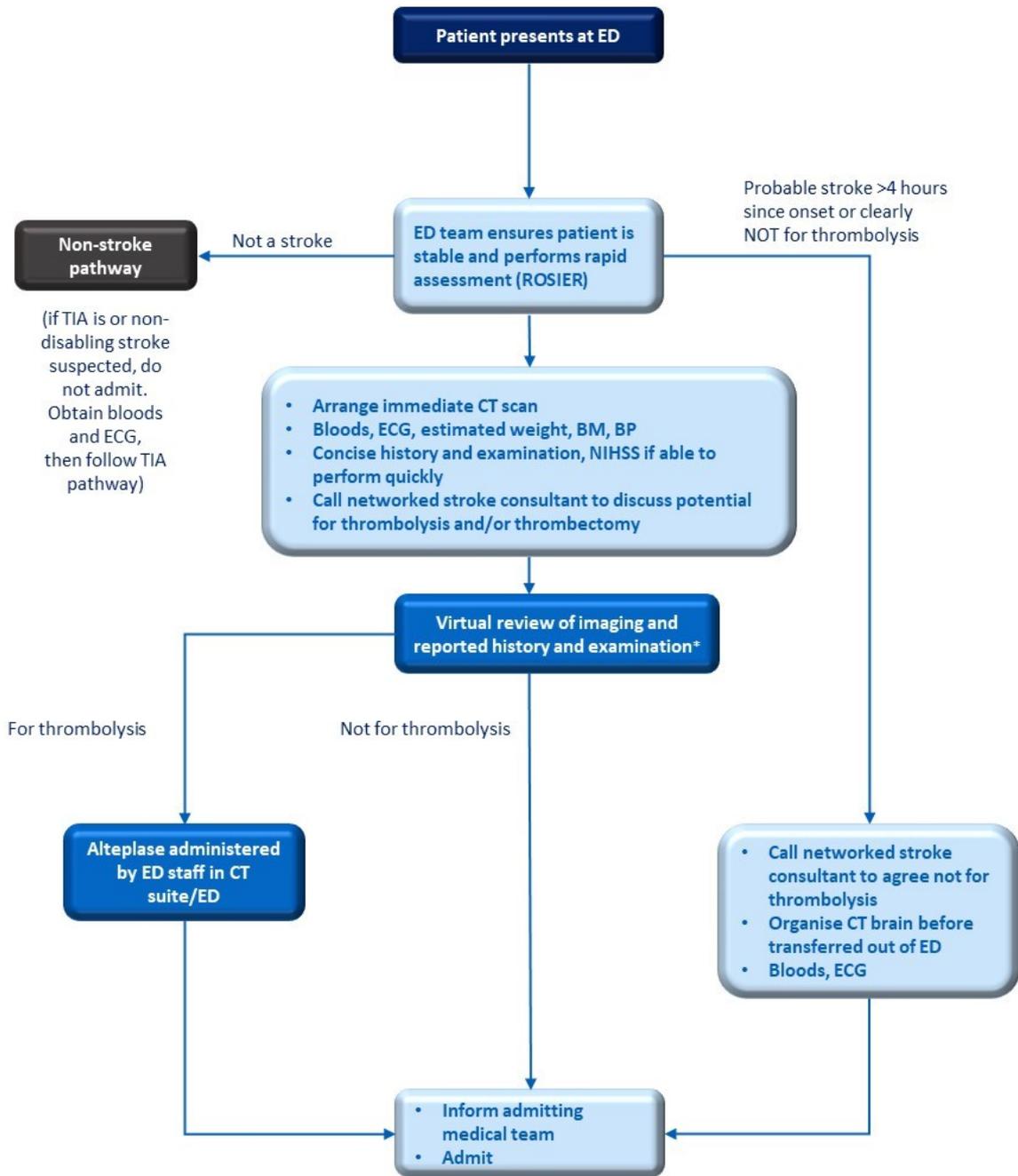
The aim of this pathway (page 19) is rapid recognition of stroke at the front door, followed by rapid assessment:
- Patients who are potentially eligible for thrombolysis should have an urgent CT brain performed as soon as possible and within 30 minutes of arrival at the hospital to differentiate between haemorrhagic and ischaemic stroke.
- The remote stroke physician should be informed by telephone in advance of the CT being performed so they are prepared to review the scan and the patient.
- The scan should be remotely reviewed by the remote stroke physician, who will advise on a treatment plan, including whether thrombolysis should be carried out and whether CT angiography (CTA) is required to determine suitability for thrombectomy.
- The stroke consultant will take responsibility for the decision to administer thrombolysis or not.
- Guidelines for carrying out thrombolysis with alteplase can be found in **Appendix 10**.
- The thrombolysis checklist can be found in **Appendix 6**.
- Guidance on informing patients on the risks and benefits of thrombolysis with alteplase can be found in **Appendix 9**.
- Key points for the management of patients with haemorrhagic stroke can be found in **Appendix 11**.

Ongoing care

- All patients with a diagnosis of stroke should have a swallow screen performed as soon as possible and within 4 hours of admission.

Suggested pathway for care of acute stroke patients in hospitals that do not usually deliver hyperacute stroke unit care

Patient presents at ED

Non-stroke pathway ← Not a stroke ← **ED team ensures patient is stable and performs rapid assessment (ROSIER)**

(if TIA is or non-disabling stroke suspected, do not admit. Obtain bloods and ECG, then follow TIA pathway)

Probable stroke >4 hours since onset or clearly NOT for thrombolysis

Arrange immediate CT scan
- Arrange immediate CT scan
- Bloods, ECG, estimated weight, BM, BP
- Concise history and examination, NIHSS if able to perform quickly
- Call networked stroke consultant to discuss potential for thrombolysis and/or thrombectomy

Virtual review of imaging and reported history and examination*

For thrombolysis   Not for thrombolysis

Alteplase administered by ED staff in CT suite/ED

- Call networked stroke consultant to agree not for thrombolysis
- Organise CT brain before transferred out of ED
- Bloods, ECG

- Inform admitting medical team
- Admit

*Note that after reviewing the CT, the stroke consultant may request a CTA to determine if mechanical thrombectomy is indicated