

ADDENBROOKE'S NEUROSURGERY SYSTEM FOR REFERRALS (ANSR)

- Option 1**
 - Refer via orioncloud.org & call neurosurgery registrar to discuss
 - Current standard of care
- Option 2**
 - Follow suggested disease-specific pathways below
 - May minimise time commitment & improve patient flow
- Option 3**
 - Bleep direct to first-on neurosurgery registrar on-call +/- proceed to second-on registrar on-call +/- consultant on-call
 - This option is always available and encouraged for life threatening emergencies e.g. extradural haematoma with deteriorating consciousness



REFERRAL PATHWAYS

BACK PAIN

Clinical Scenario: lower back pain without leg pain

Evidence Base: NICE guidelines do not advocate for the role of surgery in most cases of back pain ([NICE guidelines 2016](#)).

Suggested Pathway: Please refer in to the Cambridge Back Pain Service using the standard proforma or other equivalent pathway locally^

Caveats: patients with red flag symptoms^s suggestive for cauda equina syndrome should present immediately to their local secondary care / A&E department for review

UNILATERAL SCIATICA

Clinical Scenario: 'sciatic' type leg pain with or without lower back pain

Evidence Base: selected patients may benefit from neurosurgery (usually microdiscectomy) if symptoms fail to resolve in the acute period (e.g. 3 months)([NICE guidelines 2016](#))

Suggested Pathway: Please refer in to the Cambridge Back Pain Service using the standard proforma or other equivalent pathway locally^. Surgery is not the first line treatment without an attempt at conservative therapy. Referrals to neurosurgery are via outpatient triage.

Caveats: patients with red flag symptoms^s suggestive for cauda equina syndrome should present immediately to their local secondary care / A&E department for review

DEGENERATIVE SPINAL DISEASE

Clinical Scenario: MRI confirmed degenerative spinal disease with concordant clinical picture e.g. lumbar claudication pain without cauda equina compromise

Evidence Base: selected patients may be candidates for neurosurgical decompression in the elective situation if non-surgical treatment has not improved their pain or function ([NICE guidelines 2016](#))

Suggested Pathway: Please refer in to the neurosurgery department via outpatient triage directly or Cambridge Back Pain Service using the standard proforma or other equivalent pathway locally^

Caveats: patients with red flag symptoms^s suggestive for cauda equina syndrome should present immediately to their local secondary care / A&E department for review

OSTEOPOROTIC WEDGE FRACTURES IN THE ELDERLY

Clinical Scenario: x-ray or CT confirmed

Evidence Base: selected patients with severe pain after a recent unhealed vertebral fracture with concordant clinical and imaging findings may benefit from vertebroplasty ([NICE guidance 2013](#))

Suggested Pathway: Patients should be assessed via an appropriate rheumatology or back pains service to institute appropriate pain relief and secondary prevention with calcium supplementation or bisphosphonates. Patients who have persistent pain despite 4-6 weeks of conservative therapy can be referred to neurosurgery via outpatient triage.

Caveats: patients with neurological deficits, progressive deformity, or young patients without a pre-existing diagnosis of osteoporosis should be discussed directly with the neurosurgery registrar on-call immediately.

DISCITIS

Clinical scenario: suspected discitis based on clinical and MRI findings

Evidence Base: most discitis can be managed medically with antibiotic therapy under the guidance of the infectious diseases team ([IDSA guidance](#)).

Suggested Pathway: refer directly to medical team who can liaise with infectious disease team as required. If diagnostic biopsy required suggest referring to radiology for a percutaneous procedure in the first instance. If a specialist ID team require additional support, please discuss with the neurosurgical spinal on-call service.

Caveats: patients with neurological deficits or progressive deformity should be discussed directly with the neurosurgery registrar on-call immediately

MILD HEAD INJURIES

Clinical Scenario: head injury with minimal symptoms, fully conscious (i.e. GCS 15), and only minor changes on CT scanning (e.g. traumatic subarachnoid haemorrhage or linear skull fracture of the vertex)

Evidence Base: most can be managed with symptomatic care and observation over a period of 48-72 hours in their local hospital without the need for repeat imaging.

Suggested Pathway: Patients can be managed with a period of observation followed by discharge into the care of a responsible adult (NICE guideline CG176). Patients with persistent (4 weeks) post-concussional symptoms (headaches, cognitive disturbance) or any complications in the caveats section should be referred to the outpatient neurotrauma service.

Caveats: patients with GCS <15 or focal mass lesions e.g. extradural haematoma. Patients with the following complications: seizure, skull base fracture, depressed skull fracture or CSF leak should be discussed with the on-call service or referred to the neurotrauma clinic if they have been discharged.

MULTIPLE METASTASES

Clinical Scenario: new diagnosis of multiple intra-cranial lesions (likely metastases) with or without known primary site

Evidence Base: surgery has little if any role in the management of multiple intra-cranial lesions although occasionally stereotactic radiosurgery is considered under oncology ([NICE guidelines 2006](#)). In a neurologically stable patient, surgical intervention is not appropriate without appropriate oncological assessment.

Suggested Pathway: Patients should be referred to medicine/oncology for oncological staging and assessment of long term prognosis. If specialist oncology services deem neurosurgery a viable option, please refer via the CNS neuro-oncology service.

Caveats: patients with posterior fossa tumours or hydrocephalus or acutely deteriorating consciousness should be discussed with the neurosurgery registrar on-call

HYPERTENSIVE HAEMORRHAGE

Clinical Scenario: CT reported spontaneous intracerebral haemorrhage (i.e. haemorrhagic stroke) in the absence of trauma, usually in those of elderly age and with a pre-existing risk factor (e.g. hypertension or anticoagulation)

Evidence Base: For most patients with supratentorial ICH, the usefulness of surgery is not well established (*Class IIb; Level of Evidence A*) ([AHA guidelines 2015](#)).

Suggested Pathway: Patients who are neurologically stable should be managed medically under the local stroke team. If the specialist stroke team suspect neurosurgical intervention is required, please refer to neurosurgery on-call service.

Caveats: Suspicion raised by the imaging that there is an underlying vascular abnormality (aneurysm, dural AV fistula, cavernoma) or mass lesion e.g. mass lesion, intraventricular or

subarachnoid blood, cavernoma visible. Patients under age 40 without other risk factors, are at higher risk of having an underlying vascular lesion. Patients who deteriorate acutely should be discussed with the neurosurgical on-call service.

ISCHAEMIC STROKE

Clinical Scenario: clinical and imaging confirmed middle cerebral artery infarction

Evidence Base: 3 small randomised trials suggest possible improvement from death to disability in highly selected individuals ([NICE guidelines 2017](#))

Suggested Pathway: there is a local agreement within CUH between neurosurgery and stroke medicine regarding the appropriate criteria for decompressive craniectomy in this instance ('Decompressive Hemicraniectomy in Malignant MCA Syndrome (Stroke)'- MERLIN). Patients should be referred to stroke medicine in the first instance. The agreed pathway is that no patient will have surgery unless discussed with stroke medicine who will assess the clinical criteria in the referenced document.

Caveats: Thromboembolic stroke in the posterior circulation causing hydrocephalus or brainstem compression.

NB: decisions on a correct referral pathway may be facilitated by a local consultant review and formal radiology report on any imaging performed

^ Local spinal services are available in Norfolk & Norwich, West Suffolk Hospital, and Ipswich
§ Red Flag Symptoms include (not exclusively) bilateral perineal numbness and autonomic dysfunction (e.g. painless urinary disturbance), bilateral sciatica