

NEUROSURGERY DEPARTMENT

Adult Referral Evaluation and Management Guidelines

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EVALUATION AND MANAGEMENT GUIDELINES

For Emergency Referrals: Phone on call Neurosurgery Registrar via RBWH switch (07) 3646 8111 and send patient to the RBWH Department of Emergency Medicine (DEM).

Spinal fractures please phone the on call Spinal Registrar via RBWH switch (07) 3646 8111. This service is covered by both orthopaedic and neurosurgeons at different times.

Category 1

- i. Appointment within thirty (30) days is desirable; AND
- ii. Condition has the potential to require more complex or emergent care if assessment is delayed; AND
- iii. Condition has the potential to have significant impact on quality of life if care is delayed beyond thirty (30) days.

Category 2

- i. Appointment within ninety (90) days is desirable; AND
- ii. Condition is unlikely to require more complex care if assessment is delayed; AND
- iii. Condition has the potential to have some impact on quality of life if care is delayed beyond ninety (90) days.

Category 3

- i. Appointment is not required within ninety (90) days; AND
- ii. Condition is unlikely to deteriorate quickly; AND
- iii. Condition is unlikely to require more complex care if assessment is delayed beyond 365 days.

Aesthetic surgery is not available at RBWH.

The Neurosurgery Department provides a high standard of complex patient care. Our outpatient waiting times are available on the <http://www.health.qld.gov.au/hospitalperformance> website.

All urgent cases must be discussed with the on call Neurosurgery Registrar. Contact through RBWH switch (07) 3646 8111 to obtain appropriate prioritisation and treatment. Urgent cases accepted via phone must be accompanied with a written referral and a copy faxed immediately to the Central Patient Intake Unit: 1300 364 952.

When possible all non-metropolitan patients referred to RBWH must include travel, accommodation, and escort arrangements. An inpatient bed may not be possible or relevant once the patient has been assessed by RBWH Neurosurgery Department.

Referrals containing insufficient information or that are illegible will be returned to the referral centre. This may result in delayed appointment/treatment for your patient.

NEUROSURGERY DEPARTMENT HOURS

Monday – Friday: 8:30am to 4:00pm

Level 7, Ned Hanlon Building, Royal Brisbane and Women's Hospital

IN-SCOPE FOR NEUROSURGERY OUTPATIENT SERVICES

Please note this is not an exhaustive list of all conditions for Neurosurgery outpatient services and does not exclude consideration for referral unless specifically stipulated in the out-of-scope section.

<ul style="list-style-type: none">• Back pain• Brain tumours (intracerebral, meningioma, skull base, pituitary)• Hydrocephalus and VP shunt• Neck pain• Non acute skull fracture/ non acute traumatic brain injury	<ul style="list-style-type: none">• Peripheral nerve compression• Trigeminal neuralgia and other cranial nerve abnormalities• Vascular disorders (AVM, Aneurysm)
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OUT-OF-SCOPE FOR NEUROSURGERY OUTPATIENT SERVICES

Not all services are funded in the Queensland public health system. The following are not routinely provided in a public Neurosurgery service.

<ul style="list-style-type: none">• Chronic neck and back pain with degenerative changes on imaging and no neurological abnormality on examination.<ul style="list-style-type: none">○ Chronic pain is defined as any pain lasting more than 6 months.○ Back and neck chronic pain – degenerative changes nil acute neurology• Non-specific headache without red flags (see emergency section) or requiring surgical intervention

EMERGENCY

If any of the following are present or suspected, arrange immediate transfer to the emergency department

- Collapse/altered level of consciousness/new neurological deficit
- Suspected subarachnoid haemorrhage or other intracranial haemorrhage
- Headache with Red flags:
 - sudden onset/thunderclap headache
 - severe headache with signs of systemic illness (fever, neck stiffness, vomiting, confusion, drowsiness)
 - first severe headache age over 50 years
 - severe headache associated with recent head trauma
- Symptomatic benign or malignant space-occupying lesion
- Suspected or proven blocked or infected VP shunt
- Acute hydrocephalus
- Head injuries/trauma including extensive scalp laceration or suspected traumatic brain injury
- Trigeminal neuralgia – severe uncontrollable pain

Spine, Neck, Back Pain Emergency

NB: contact the Orthopaedic/Neurosurgery/Spine Registrar on-call for advice.

- High risk of irreversible deficit if not assessed urgently
- Spinal trauma
- Spinal infections
- Significant spinal nerve root compression or spinal cord compression with progressive neurological signs/symptoms e.g.
 - Spinal cord compression with severe or rapidly progressing neurological deficit
 - Cauda equina syndrome
 - Bilateral nerve pain (leg pain below knees)
 - Bladder / bowel dysfunction
 - Perineal anaesthesia
 - Progressive weakness
 - Bone infection

METRO NORTH CENTRAL PATIENT INTAKE (CPI)

<https://www.health.qld.gov.au/metronorth/refer/>

GENERAL REFERRAL INFORMATION

<p>Patient's Demographic Details</p> <ul style="list-style-type: none"> • Full name (including aliases) • Date of birth • Residential and postal address • Telephone contact number/s – home, mobile and alternative • Medicare number (where eligible) • Name of the parent or caregiver (if appropriate) • Preferred language and interpreter requirements • Identifies as Aboriginal and/or Torres Strait Islander 	<p>Relevant Clinical Information about the Condition</p> <ul style="list-style-type: none"> • Presenting symptoms (evolution and duration) • Physical findings • Details of previous treatment (including systemic and topical medications prescribed) including the course and outcome of the treatment • Body mass index (BMI) • Details of any associated medical conditions which may affect the condition or its treatment (e.g. diabetes), noting these must be stable and controlled prior to referral • Current medications and dosages • Drug allergies • Alcohol, tobacco and other drugs use
<p>Referring Practitioner Details</p> <ul style="list-style-type: none"> • Full name • Full address • Contact details – telephone, fax, email • Provider number • Date of referral • Signature 	<p>Reason for Request</p> <ul style="list-style-type: none"> • To establish a diagnosis • For treatment or intervention • For advice and management • For specialist to take over management • Reassurance for GP/second opinion • For a specified test/investigation the GP can't order, or the patient can't afford or access • Reassurance for the patient/family • For other reason (e.g. rapidly accelerating disease progression) • Clinical judgement indicates a referral for specialist review is necessary
<p>Clinical Modifiers</p> <ul style="list-style-type: none"> • Impact on employment • Impact on education • Impact on home • Impact on activities of daily living • Impact on ability to care for others • Impact on personal frailty or safety • Identifies as Aboriginal and/or Torres Strait Islander 	<p>Other Relevant Information</p> <ul style="list-style-type: none"> • Willingness to have surgery (where surgery is a likely intervention) • Choice to be treated as a public or private patient • Compensable status (e.g. DVA, Work Cover, Motor Vehicle Insurance, etc.)

NEUROSURGERY CONDITIONS

Brain Tumours (Intracerebral, Meningioma, Skull Base, Pituitary)

Minimum Referral Criteria

Category 1

(appointment within 30 days is desirable)

- Intracerebral space-occupying lesion, (suspected or confirmed on CT) with minimal and/or slowly progressing symptoms
- Symptomatic small benign intracranial tumours (e.g. acoustic neuroma/vestibular schwannoma, meningioma, craniopharyngioma epidermoid cyst, arachnoid cyst) without cerebral oedema
- Pituitary tumour associated with visual field deficits and/or symptomatic hyper/hypopituitarism

Category 2

(appointment within 90 days is desirable)

- Functioning or non-functioning pituitary adenoma, pituitary tumours with slowly progressive visual field deficit
- Incidental finding on imaging e.g. epidermoid cyst, arachnoid cyst and/or unusual pathology e.g. adults with newly diagnosed chiari malformation, empty sella, temporal lobe herniation, venous angioma

Category 3

(appointment within 365 days is desirable)

- Pituitary tumours with no visual impairment, normal pituitary function and/or mild hyper-prolactinemia

Essential referral information (Referral may be rejected without this)

- General referral information
- CT/MRI results
- Pituitary function tests including prolactin if suspected pituitary tumour

Additional referral information (Useful for processing the referral)

- Details of previous malignancy including treatment/any relevant imaging results

Other useful information for referring practitioners (Not an exhaustive list)

- Monitor neurological function
- CT+/-contrast and/or MRI for patients with suspected space-occupying lesion;
 - headache suspicious for raised intracranial pressure i.e. morning headache, vomiting and papilloedema and/or
 - associated neurological features i.e. new onset seizures, cognitive, behavioural or personality changes, neurological deficits

- Consider endocrinology referral for any of the following:
 - functioning pituitary adenoma
 - pituitary tumours with slowly progressive visual field deficit
 - marked hyper-prolactinemia serum prolactin > 5000 mU/L
 - pituitary tumours with no visual impairment
 - normal pituitary function
 - mild hyper-prolactinemia

Hydrocephalus and VP Shunt

Minimum Referral Criteria

Category 1

(appointment within 30 days is desirable)

- Previously diagnosed hydrocephalus with evidence of raised intracranial pressure
- New diagnosis of hydrocephalus on CT or MRI
- Patient with complications or suspected complications of an insitu VP shunt
- Idiopathic intracranial hypertension – in patients with persistent symptoms or visual deterioration despite medical therapy including repeat lumbar punctures

Category 2

(appointment within 90 days is desirable)

- No category 2 criteria

Category 3

(appointment within 365 days is desirable)

- Routine review of VP shunt in an asymptomatic patient

Essential referral information (Referral may be rejected without this)

- General referral information
- CT/CTA and/or MRI results

Additional referral information (Useful for processing the referral)

- CT and/or MRI results and details of previous treatment

Other useful information for referring practitioners (Not an exhaustive list)

- CT for patients with suspected raised intracranial pressure
- Consider neurology referral for debilitating persistent intracranial hypertension despite treatment, including medical therapy and lumbar puncture:
 - suggestive symptoms i.e. morning headache, vomiting and papilloedema
 - associated neurological features i.e. new onset seizures, cognitive, behavioural or personality changes, neurological deficits

Neurovascular Disorders (AVM, Aneurysm)

Minimum Referral Criteria

Category 1 (appointment within 30 days is desirable)	<ul style="list-style-type: none">Asymptomatic AVM or aneurysm, i.e. not associated with an intracranial haemorrhage or acute neurological deficit
Category 2 (appointment within 90 days is desirable)	<ul style="list-style-type: none">No category 2 criteria
Category 3 (appointment within 365 days is desirable)	<ul style="list-style-type: none">Counselling – investigation of patients at high risk of intracerebral aneurysms e.g. family history in first degree relatives, polycystic kidney disease, inherited connective tissue diseases, coarctation of the aorta

Essential referral information (Referral may be rejected without this)

- General referral information
- CT/CTA and/or MRI results

Additional referral information (Useful for processing the referral)

- Family history of aneurysm or AVM

Other useful information for referring practitioners (Not an exhaustive list)

- Monitor neurological function
- CT+/-contrast and/or MRI for patients with suspected space-occupying lesion:
 - headache suspicious for raised intracranial pressure i.e. morning headache, vomiting and papilloedema
 - associated neurological features i.e. new onset seizures, cognitive, behavioural or personality changes, neurological deficits

Non Acute Skull Fracture / Non Acute Traumatic Brain Injury

Minimum Referral Criteria

Category 1

(appointment within 30 days is desirable)

- Non acute skull fracture
- Non acute traumatic brain injury

Category 2

(appointment within 90 days is desirable)

- No category 2 criteria

Category 3

(appointment within 365 days is desirable)

- No category 3 criteria

Essential referral information (Referral may be rejected without this)

- General referral information
- CT results
- Mechanism of injury

Peripheral Nerve Compression

Minimum Referral Criteria

Category 1

(appointment within 30 days is desirable)

- Carpal tunnel syndrome or severe ulnar entrapment neuropathy with weakness/wasting and electrophysiological confirmation of diagnosis
- Peripheral nerve compression with neurological deficit and/or severe pain syndrome

Category 2

(appointment within 90 days is desirable)

- No category 2 criteria

Category 3

(appointment within 365 days is desirable)

- Carpal tunnel syndrome refer after 6 months of maximal medical management
- Ulnar entrapment neuropathy when no response to ≥ 6 months of maximal medical management

Essential referral information (Referral may be rejected without this)

- General referral information

Additional referral information (Useful for processing the referral)

- Medications trialled
- Nerve conduction studies

Other useful information for referring practitioners (Not an exhaustive list)

- Rest, physiotherapy, splint
- Consider anti-inflammatory medication/steroid injection
- Nerve conduction studies for suspected carpal tunnel syndrome and ulnar neuropathy

Spine / Neck / Back Pain

Minimum Referral Criteria

Category 1

(appointment within 30 days is desirable)

- Risk irreversible deficit if not seen within 1-4 weeks
- Significant spinal nerve root compression or spinal cord compression with slower evolving neurological signs/symptoms
- Severe pain with significant functional impairment
- Suspected spinal tumours (benign or malignant)
- Moderate to severe sciatica with recent reflex and muscle power deficit e.g. foot weakness
- Moderate to severe neck and arm pain with recent reflex and muscle power deficit

Category 2

(appointment within 90 days is desirable)

- Less severe and more long-standing pain with significant functional impairment
- Acute cervical and lumbar disc prolapse with stable neurological signs/symptoms
- Severe degenerative spinal disorders with limitation of activity of daily living (ADL)
- Acute cervical or lumbar disc prolapse with mod-severe limb pain but minimal neurological deficit
- Documented severe lumbar canal stenosis with significant neurogenic claudication/limitation of walking distance
- Acute Pars defect in young adult
- Anterolisthesis/spondylolisthesis with lower limb neurology and/or instability on flexion/extension X-rays

Category 3

(appointment within 365 days is desirable)

- Mechanical lower back pain without lower limb pain
- Stable mild neurological symptoms/signs which is unlikely to progress if left untreated or in whom a good surgical outcome is uncertain
- Pain that is manageable or reasonably controlled with analgesia
- Chronic LBP/neck pain (without leg or arm pain)
- Most cases of chronic cervical and lumbar disc prolapse and degenerative spinal disorders with no to stable mild neurological deficit
- Long-standing spondylolisthesis with stable neurology

Essential Referral Information (Referral may be rejected without this)

- General referral information
- Presence and duration of neurological signs and symptoms
- Weight loss, loss of appetite and lethargy
- Fever and sweats
- Management to date (including previous spinal surgery)
- History of malignant disease / IV drug use
- Recurrence of injury and mechanism

- Severity or evolution of injury
- General medical condition
- Continence difficulties/sexual function
- Work status, functional impairment/time of work
- X-ray results – AP & lateral spine including standing views and CT/MRI results (if available)
- ELFT FBC ESR CRP results rheumatoid serology (in specific cases)

Additional Referral Information (Useful for processing the referral)

- Plain lateral standing X-rays in flexion and extension for lumbar spondylolisthesis
- [Spinal referral questionnaire](#)
- Calcium and phosphate, electrophoresis, immunoglobins, PSA, rheumatoid serology (in specific cases)
- Physiotherapist report

Other useful information for referring practitioners (Not an exhaustive list)

NB: Back pain with red flags – if clinical circumstances indicate the patient requires immediate treatment, refer to emergency.

Sheffield back pain Red Flags:

- age (at onset) < 16 or > 55
- motor deficit e.g. foot weakness
- recent significant trauma
- unexplained weight loss
- history of cancer
- history of IV drug use
- prolonged use of corticosteroids
- severe night pain
- infection/fever

Many Category 2 and 3 patients referred for a surgical opinion do not require surgery or a surgical opinion. Evidence demonstrates that non-surgical management is as effective for a number of spinal conditions.

Where services are available, category 2 and 3 patients will initially be assessed / reassessed and case managed by an expert musculoskeletal physiotherapist. Outcomes from this or subsequent review may include discharge, provision of appropriate non-surgical management plans, discussion or appointment with a spinal surgeon.

Management:

- analgesia/anti-inflammatories/ NSAIDs as appropriate
- physiotherapy/hydrotherapy/ back education group (if available) – minimum 6 week program
- strengthening exercises and aerobic fitness training
- activity modification (remain comfortably active)
- Heat/gentle massage/acupuncture
- Monitor neurological function

- Complete '[Keele STarT Back](#)' screening tool to identify risk of developing chronic spinal pain. Low to medium risk suggests ongoing management in primary care is appropriate.

Trigeminal Neuralgia and Other Cranial Nerve Abnormalities

Minimum Referral Criteria

Category 1 (appointment within 30 days is desirable)	<ul style="list-style-type: none">• Severe/intractable trigeminal neuralgia• Failed maximal medical management, including difficulty swallowing/eating/drinking
Category 2 (appointment within 90 days is desirable)	<ul style="list-style-type: none">• Moderately severe trigeminal neuralgia partially controlled with medication for consideration of surgical treatment, including patients with side effects to medical therapy
Category 3 (appointment within 365 days is desirable)	<ul style="list-style-type: none">• No category 3 criteria

Essential referral information (Referral may be rejected without this)

- General referral information
- CT and/or MRI results
- Medications trialled

Other useful information for referring practitioners (Not an exhaustive list)

- Trial of directed neuropathic pain medications as a priority
- CT and/or MRI
- Consider initial referral to neurology for confirmation of diagnosis and/or pain clinic for medical optimisation of pain