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Spinal Network



SOUTH WALES SPINAL NETWORK (SWSN) CLINICAL GUIDELINE (CG)

Cauda Equina Syndrome

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| Network Implementation Board Review | |
| Sign Off | SWS Network Board |

1. Aims and Scope

The aim of this guideline is to:

- Reduce delays and barriers to diagnosis and surgery for acute cauda equina compression.
- Remove any ambiguity regarding roles and responsibilities of each healthcare provider throughout the pathway.
- Reduce the severity and life-long burden of bladder, bowel and sexual dysfunction in patients who present acutely with symptoms suggestive of cauda equina syndrome by rapid diagnosis with MRI and treatment by decompressive spinal surgery.

2. Background

Cauda Equina Syndrome (CES) is an unpredictable and potentially life-changing condition in approximately 150 patients per annum in South Wales; patients must be reliably identified from the large numbers of patients presenting to primary care with the very common symptom of acute back pain; patients reporting 'red flag' symptoms suggestive of CES must be diagnosed promptly by MRI lumbar spine and, if a compression of lumbosacral nerves is found on MRI, operated on by a spinal surgeon at the earliest opportunity. This includes emergency Out of Hours (OoH) surgery.

Approximately 20 emergency MRI scans are performed per day across South Wales for patients with suspected CES presenting directly or via primary care to emergency departments (EDs). The MRI should be performed immediately on recognition of the clinical situation. Frequently, patients are reviewed by multiple healthcare providers before an MRI scan is requested. This creates dangerous delays.

If MRI is unavailable locally e.g. out-of-hours, then emergency MRI must be provided in another hospital. This is generally local to the patient within the same Health Board. However, this is suboptimal as it causes delays, unnecessary inter-hospital transfers and patients in a hospital scanning department out-of-hours with no medical/nursing cover or duplication – having to be reassessed by the Trauma & Orthopaedic/Emergency Department (T&O/ED) team in the second hospital trying to decide what to do after the MRI; each additional activity represents a delay and opportunity for mistakes to occur. The alternative is also unsatisfactory. i.e. All OoHs scans being performed in the designated spinal hub, as this still exposes to duplication of work by the receiving team, longer travel distances and creates significant burden on the limited regional centre resource.

Patients with MRI-proven cauda equina compression need immediate seamless transfer to the designated spinal surgery service. Historically this was ambiguous in particular for South West Wales (SWW) following the decommissioning of the Morriston Neurosurgical centre in 2009/10. This has now been mitigated with one clear provider for CES in SWW 24/7 (Spinal Surgery, Morriston Hospital). South East Wales (SEW) has multiple providers (Neurosurgery, University Hospital Wales ((UHW)); Spinal Surgery UHW; Spinal Surgery, the Grange) working to historic but functioning informal pathways. It is clear however that all these pathways require formalising and ultimately commissioning so that every referrer is fully aware of their designated provider and vice-versa, and that performance and outcomes are monitored.

Patients should be nursed on a specialist ward by nurses trained in the management of the condition and the subsequent probable bladder and bowel consequences. Before discharge from hospital, patients who are unable to void their bladder and bowel need a management plan including assessment and follow up as an outpatient by the spinal injuries service.

Any delay in assessment, diagnosis, transfer, and surgery can result in permanent loss of bladder, bowel and sexual function, resulting in life-long necessity for bladder catheterisation, manual bowel evacuation and incontinence care. Complications can result in urosepsis and renal failure as well as inevitable severe anxiety, depression and disability. Patients with cauda equina syndrome rarely return to work and suffer psychologically, socially and financially for life, with deleterious effects on their families. There is a considerable burden on incontinence services,

GPs and hospitals to manage the effects of CES. There have been several high-value medico-legal settlements and claims for negligence resulting from delays and barriers to obtaining timely MRI and surgery in South Wales recently.

The Society of British Neurological Surgeons and the British Association of Spinal Surgeons published a joint statement in 2018: Standards of Care for Investigation and Management of Cauda Equina Syndrome. ⁽¹⁾

A subsequent study ⁽²⁾ has explored whether bedside bladder volume scans can predict CES. This prospective study found that a **post-void** residual bladder volume of <200 millilitres(ml) gave CES probability of 3.6%. If >200 ml, then the probability of having CES is 43% (P <0.000003). A predicted value reading (PVR) <200 ml had a negative predictive value of 97%. The conclusion is that bladder scanning is a useful adjunct in the diagnosis of CES. It had a better negative predictive value than physical examination. However, bladder scans should NOT be used in isolation or as a discriminator in deciding to request an MRI or undertake emergency surgery ⁽³⁾.

Getting It Right First Time (GIRFT) published National Suspected Cauda Equina Syndrome Pathway, February 2023 ⁽³⁾ which has also been considered and assimilated into this South Wales Spinal Network (SWSN) clinical guideline, so there is National alignment combined with South Wales regional and local considerations.

3. Primary care, initial assessment, management and triage

Red Flag symptoms for CES are back pain and/or leg pain with acute (within 2 weeks) onset of:

- bladder, bowel, or sexual dysfunction and/or loss of sensation
- saddle or genital sensory disturbance
- severe or progressive neurological deficit of both legs

Patients with any combination of these symptoms should be suspected of having a threatened or actual CES and mandates an emergency referral.

Sudden onset bilateral radicular leg pain or unilateral radicular leg pain that has progressed to bilateral leg pain (sciatica) without CES symptoms may be a warning symptom that CES may occur. This requires urgent referral (2 week wait) to an MSK triage/ interface service. All HBs must provide this and have close links to their commissioned spinal provider.

Patients contacting Welsh Ambulance Service NHS Trust (WAST), 111, CAV247 (and equivalent in other HBs), GPs or physiotherapists with clear 'red flag' symptoms, suggestive of cauda equina syndrome should be directed for emergency secondary care assessment. This is usually the closest acute hospital within their local Health Board– **BUT** must be one that has MRI scan available in the next 4 hours (i.e., patients presenting currently in late afternoon/evening should be directed to the hospital within their local Health Board with out-of-hours MRI). ***This emergency assessment unit (EAU) may be an emergency department, Same Day Emergency Care (SDEC) or equivalent, dependant on local provision.***

Local Health Boards (HBs) must develop procedures to provide real time notification of the available MRI provision in and OoHs to inform WAST, 111, GPs and physiotherapy departments.

If WAST determine that the patient needs transporting by ambulance to hospital, this is to an EAU with emergency MRI availability*. The situation of assessing patients in one hospital and then having to transfer them to another for MRI before transferring them to a third for surgery is unacceptable – it involves delay which can cause irretrievable harm.

Patients with CES ‘red flag’ symptoms attending an emergency assessment unit without immediate access to MRI (e.g. if self-presenting) should be identified **at triage** and directed to the EAU of the hospital in their local Health Board where MRI is available as an emergency.

Local HBs must have standard operating procedures (SOP) to minimise duplication of activity – if a patient has been face-to-face (F2F) assessed and referred by a GP/MSK competent Allied Health Professional (AHP) with suspected CES, then MRI is obligated and should not be delayed by waiting for further assessments by either EAU or T&O, and certainly not both.

Patients with CES may have no clinical signs at an early stage. However, on examination, altered/diminished sensation in genital or saddle areas positively predicts cauda equina compression on MRI. Any weakness of legs and neurological features should be recorded.

Patients who do **not** have ‘red flag’ symptoms should be advised about those symptoms and the need to attend EAU immediately should they occur. Giving written advice (e.g. a CES warning card ⁽⁴⁾) safeguards the patient and documenting the advice that has been given reduces the chance of any subsequent medical negligence and significantly improves the chance of a successful defence if a claim ensues (ensure all relevant EAU documentation is completed).

The SWSN Implementation Board have mandated every HB within the SWSN to implement one of three agreed options for 24/7 MRI cover in readiness for the Network launch. (Appendix 1**)*

Standard 1 – All referrals must comply with minimum data set with ‘red flag’ symptoms - acute back pain and/or sciatic pain with any disturbance of their bladder or bowel function and/or saddle or genital sensory disturbance.

Standard 2 – All HBs must have SOPs in place ensuring that patients contacting 111, WAST and/or presenting directly to EAU triaged with symptoms suspicious of CES are directed to the HB which has ability to perform an emergency MRI scan.

Standard 3 – All HBs adopt bilingual CES safety netting warning cards and adopt mandatory policy ensuring documentation is complete to ensure this information has been provided to the patient.

Standard 4- All HB MSK triage services must implement a two-week acute sciatica clinic.

4. Secondary care, Imaging and Investigation

The main priorities of secondary care management are to ensure swift clinical assessment, MRI examination and referral onwards if CES is confirmed. To achieve this, the patient must be

directed to the right place at the right time for MRI availability and have nil duplication of clinical assessments.

Every EAU should have emergency MRI available on site. As detailed in section 3, if this is not provided, then all HBs must have arrangements whereby patients are directed to the appropriate emergency MRI site (**Appendix 1**). The SWSN disposition plan can be found in **appendix 2**.

For patients attending the EAU with suspected cauda equina syndrome:

1. There are no reliable clinical signs for diagnosing or excluding CES. However, clinical examination of legs and saddle region for weakness, numbness and loss of reflexes is important to establish any loss of function at presentation and to monitor progress. Bladder scanning should be performed and documented, pre and post-void in all patients with suspected CES.
2. As the reliability of clinical diagnosis of threatened or actual CES is low, there should be a low threshold for investigation with an emergency MRI scan at the request of the examining clinician and MRI must be available at the referring hospital 24/7.
3. All Local Health Boards must have a 'Cauda Equina Fast Track Pathway'. How this is staffed and configured depends on local resources, but the aims must be to obviate duplicate clinical assessments and facilitate swift referral and transfer to MRI. There is no reason for more than one competent primary or secondary care clinician to review the patient prior to MRI scanning. SOPs must also unambiguously allow for EAU/secondary care clinicians to be able to fast track review patients directly from triage and refer swiftly onwards to MRI.
4. Patients arriving with suspected CES by ambulance should be triaged for immediate assessment.
5. If the assessing clinician identifies the CES 'red flag' symptoms (see above), then CES pathway should be triggered including clinical examination, post-void residual bladder scan and MRI lumbar spine.
6. The decision to perform an MRI does not require discussion with the spinal surgeon.
7. The MRI must be undertaken as an emergency in the patient's local hospital and a diagnosis achieved prior to any discussion with the spinal services. This requires immediate reporting of the MRI to answer the specific question 'Is there cauda equina compression?'
8. The MRI must take precedence over routine cases and any reasons for a delay or a decision not to perform an emergency scan should be clearly documented. It should be performed within 4 hours of request **at the latest**.
9. MRI protocol - The 2023 GIRFT MRI protocol for suspected CES was reviewed by the SWSN CG01 Radiology Task & Finish Group and subsequently in individual Health Board radiology business meetings. Concerns were raised regarding the real world implementation of this protocol, the possibility of it missing potential serious lumbar pathology and increasing work load for patients requiring return for further imaging. Therefore, general consensus was to continue with standard lumbar protocol and sequences.
10. Every Health Board has an obligation to provide 24/7 MRI cover for circumstances where OoHs scanning is not possible in the referring hospitals, this will require robust interhospital transfer SOPs developed by each Health Board in conjunction with WAST and supported by the SWSN, to ensure the scan is performed within 4 hours of request. The burden on interhospital transfer can be significantly reduced by "standard 2".

11. If MRI is contraindicated, discussion with local spinal services is appropriate. Emergency CT lumbar spine out of hours is the next best investigation, allowing time for in hours MRI to be organised if clinically possible, or CT myelogram.
12. The EAU must have clearly visible and disseminated instructions as to who to refer to for emergency spinal surgery and the mechanism for doing so through the SWSN digital referral form; this varies between tertiary care providers and is detailed in **appendix 3** and within the digital referral form. Emergency telephone contact to alert the referral is essential with electronic transfer of clinical information and MRI images. Every provider organisation has an obligation to adhere to the referral pathways within this clinical guidance.
13. See section 5 on referral pathways for confirmed Cauda Equina Syndrome.
14. Patients who do **not** have cauda equina compression*:
 - 14.1. Cauda equina compression excluded but a potential structural explanation of pain identified (e.g. a lumbar disc herniation compressing a single nerve root with cerebrospinal fluid [CSF] present around sacral nerve roots). This should precipitate appropriate advice about potential future cauda equina symptoms and may include referral via local spinal pathways during working hours, especially if there is presence of a correlating acute and significant motor deficit e.g. foot drop. Analgesia can be prescribed and if a patient is fit for discharge, then referral back to GP and/or advanced physiotherapy practitioners in the Community Musculoskeletal Assessment and Treatment services (CMATs) or equivalent for follow up as appropriate. If the patient requires admission for analgesia or further assessment, then a referral should be made to the local hospital Trauma & Orthopaedic department for analgesia and in-patient physiotherapy.
 - 14.2. Non-compressive pathology may be identified (e.g. demyelination/ abnormal MR signal in the conus of the spinal cord) which should precipitate referral to the appropriate service (Medicine/Neurology).
 - 14.3. No explanation of the patient's symptoms may be apparent. Referral to the local T&O team for further assessment might be appropriate. A plan for further management should include consideration of other pathology and might include a cervico-thoracic MRI and referral to continence services.

*In the rare circumstance a patient has been transferred to a spinal hub for OOH MRI provision, it is mandatory that the referring HB automatically accepts the patient back if CES is excluded and it is the referring teams responsibility to act on any other pathology that the scan may have identified.

Standard 5 – All HBs to develop fast track Cauda Equina pathways that ensures only **one** competent clinical review (one of GP, EAU, T&O) is required to refer for an emergency MRI scan.

Standard 6 – All HBs must provide 24/7 MRI and develop SOPs in conjunction with WAST for inter-hospital transfer in circumstances where patients present with suspected CES to a non MRI capability unit.

Standard 7 – All spinal emergencies must be referred, if indicated, within 1 hour of MRI being performed.

5. Tertiary care

The provider pathways for Cauda Equina Syndrome vary between regions, this is summarised in **appendix 4**.

Patients referred with acute cauda equina compression must be accepted by the pre-designated spinal surgery unit immediately (section 4, 11-14 & **appendix 3**). Spinal units must not derogate from this unless the SWSN P05 surge policy (**appendix 5**) criteria is triggered. Spinal unit hospital bed managers must arrange hospital admission immediately. The inability to identify an available bed at time of referral should not delay the transfer process. Under these circumstances a location should be identified (e.g. theatre recovery or emergency department) where the patient can be assessed by the spinal team and taken into theatre without delay.

The patient must be assessed immediately by **one of** the EAU/T&O/Neurosurgery admission doctors depending on local SOP; theatre and anaesthetist informed, pre-op investigations undertaken as required (Full Blood Count (FBC), Group & Save (G&S), ECG). Assessment and consent for surgery must be completed. The hospital must have SOPs to facilitate surgery as soon as possible, 24/7.

The theatre must have spinal instruments, image intensifier and radiographer, operating microscope and theatre staff competent to manage spinal surgical cases 24/7. Post-operatively, the patient needs to recover sufficient mobility and be able to manage bladder and bowel functions before discharge. Wards need to be equipped with bladder scans to check for post-void residual volumes. If there is urinary retention, instruction for intermittent self-catheterisation will be required.

Spinal surgical patients have very complex peri-operative needs, which if managed sub-optimally can result in catastrophic outcomes. Post-operatively all patients will be primarily managed on a spinal designated ward with nursing, physiotherapy and occupational therapy staff trained in the management of CES. These patients should be cohorted with other spinal pathology patients to develop a ward which benefits from economies of scale from a staffing and equipment perspective in line with Spinal Unit Service Specification⁵.

Standard 8 – Every non-spinal partner must have a clear unambiguous designated emergency spinal service provider 24/7 with derogation from this only in certain major incident circumstances (SWSN P05 Surge Policy).

Standard 9 – The inability to identify a bed in the receiving spinal unit hospital must not delay transfer of an emergency spinal patient.

Standard 10 – Every spinal unit must have a designated area for managing post-operative CES patients. In spinal hubs, when considering cohorted spinal non-CES patient groups, this area must constitute a formally designated spinal ward.

6. Repatriation and Rehabilitation

The specialist spinal rehabilitation team at the Welsh Spinal Cord Injury Rehabilitation Centre (WSCIRC) will be notified at the earliest post-operative opportunity regarding the presentation and progress of any patient who may be appropriate for this service, i.e. has multiple rehabilitation requirements such as ongoing bladder/bowel management, pain and mobility problems. The referral pathway is via an NHS computer at www.spinalcordinjury.nhs.uk. There will be circumstances where patients are managed non-operatively (e.g. late presentations, severely co-morbid) but will still require the input of the WSCIRC. This cohort should be referred as soon as possible after admission.

The Inreach team will be notified and will contact the referring team or visit the patient. A plan for transfer of any appropriate patients to specialist spinal rehabilitation will be agreed following the Inreach visit. Most patients post CES surgery will be followed up as an outpatient or telephone referral and will not require admission to the spinal injuries' unit. Every hospital and Health Board within the network must have equal access to the WSCIRC, their outreach and inreach teams.

If the patient is assessed capable and suitable for discharge to home, a discharge plan will be constructed with contributions from all the specialist therapies regarding future follow up plans and therapy goals. If there are delays in the above processes, the referring partner hospital will be expected to repatriate the patient back to their unit or another more appropriate hospital within the same Health Board if awaiting a spinal rehabilitation bed ⁽³⁾. This would be on a ward with abilities to manage both bladder and bowel issues as well as appropriately trained physiotherapy staff. The spinal surgical team will arrange for follow up in a timescale and location agreed with the patient. This spinal cohort area will likely be within the HB designated trauma unit.

Patients with high lumbar cauda equina syndrome may have significant and disabling weakness of legs and may require in-patient rehab in the WSCIRC, Llandough. At L4/5 level, there may be a foot drop and physiotherapy and ankle orthoses may be required to enable safe mobilisation.

Continuing urinary dysfunction would require out-patient urological assessment by the local bladder and bowel service. Patients may require urodynamic investigations and subsequent treatment. Bowel care might require laxatives, enemas, even colonic irrigation, and assessment by colorectal surgeon/incontinence team. Advice on sexual function is often indicated – currently there is some availability of advice through the charity – www.ihavecaudaequina.com

Standard 11 – Every patient with cauda equina syndrome (CES) must be referred to the WSCIRC at the earliest opportunity after admission.

Standard 12 – There must be no geographical or Health Board variation in access to the WSCIRC and their Outreach and Inreach teams.

Standard 13 – Every Health Board must commission a ward or cohorted area in at least one of their hospital sites that can manage spinal patients being treated conservatively or repatriated back following spinal surgery. This will usually be in the Health Board designated Trauma Unit.

7. Education and Training

111 and WAST policy makers/managers need to be consulted and any ‘back pain red flag’ or suspected cauda equina syndrome protocols should be revised to align with this guidance in this document.

- Prioritization of suspected CES patients needing transport to EAU
- Prioritization of secondary CES patient transfers to spinal unit
- Telephone triage of suspected CES patients to the correct MRI “capable” unit including OOHs

Primary care, EAU and secondary care will require training and engagement in the development of local/ HB level SOPs that deliver the requirement of this clinical guideline to develop fast track triage and access to MRI following one clinical assessment (GP or EAU or T &O – Only 1 required, not 2 or 3).

All local HBs should have a designated ward in one of their hospitals e.g. Teifi ward in Glangwili for all patients in Hywel Dda, for spinal repatriated patients with nursing and therapies experience in spinal issues. Nurses on these wards should receive training on cauda equina syndrome, bladder and bowel management. This training and weekly outreach should be commissioned from the WSCIRC in conjunction with the SWSN and other stakeholders to develop a spinal education programme and role.

Theatre staff in every hub must have 24/7 spinal surgical capable. This will require regular training packages for Confidential Enquiry into Perioperative Deaths (CEPOD) and generic theatre night staff in spinal hubs and partners.

8. Mandatory Workforce Requirements

The mandatory requirements for Spinal Hubs and Spinal partners are detailed in Spinal Unit Service Specification⁵.

As this is emergency surgery without time to optimise patients medically with prone anaesthesia, the Spinal Hub anaesthetist and theatre staff must be experienced in spinal surgery 24/7.

Anaesthetic and theatre staffing rotas must be planned to achieve this 24/7 cover. If this is not achievable, additional recruitment and/or spinal training must be provided by the HB.

Both hubs require either more beds to allow for immediate transfer, or at least a designated place and staff to facilitate rapid preparation for operating theatre.

All Health Boards should designate a ward in one of their hospitals for cohorting spinal patients to improve care by developing experience, training and facilities. Such wards may require additional nursing numbers to cope with spinal patients' needs. Refer to Spinal Unit Service Specification⁵.

The WSCIRC will need to provide an inreach and outreach service for this patient cohort in line with commissioning requirements from the Welsh Health Specialised Services Committee (WHSSC).

9. Mandatory Infrastructure and equipment Requirements

Image intensifier for spinal level localisation must be available at the start and any time during the procedure as well as the maintenance of lead aprons for all staff. Theatre staff must be trained in the handling and maintenance of the microscope. Scrub staff must be familiar with all aspects of the surgery, and this will include familiarity with high-speed drills. The operating table and all attachments must be maintained, available and capable of safe transfer of the patients weighing over 120Kg.

Bladder scanning equipment must be available in all EAU and wards that care for patients with CES and suspected CES.

Facilities for manual evacuation are mandatory requirements for all designated ward areas that care for spinal injured patients within the network, including the spinal units but also the designated spinal trained wards in the non-spinal Health Boards.

HBs who are receiving repatriations for rehabilitation bladder and bowel/mobility/analgesia/care packages should cohort these patients on a designated ward in one of their hospitals on a spinal designated ward area. This should be in line with Spinal Unit Service Specification CPXX.

10. Multidisciplinary Teams Meetings

There is currently a spinal injuries service Multidisciplinary Team (MDT) involving therapists, and rehab doctors: the inclusion of incontinence practitioners will improve the co-ordination of bladder and bowel care.

Patients who have established cauda equina syndrome despite surgery should be registered on National Spinal Injuries Referral Database.

11. Special Circumstances

If a major incident has been declared in one hospital which triggers the criteria in the SWSN P05 surge policy, the other regional hub should take over the responsibilities for the duration of this incident.

Patients with implanted pacemakers/pumps/defibrillators incompatible with MRI or only MRI with cardiac technician pre/post MR assessment: the delays in obtaining MRI will be unacceptable in the emergency suspected CES scenario. The patient should have CT Lumbar spine and senior doctor clinical assessment as soon as possible. Interpretation of CT Lumbar spine is more difficult and accurate clinical assessment in local hospital therefore required. Protocols for CT Lumbar spine as standard in this scenario, in lieu of MRI should be adopted by local HBs.

It is the expectation of the network that standards set out in the guidelines will be met by all member Health Boards, there will be some exceptions for Powys Teaching Health Board whose pathways will be reliant on commissioned providers. The onus will remain with Powys to negotiate these commissioning arrangements but as a network we would support these synergistic relationships between adjoining HBs for service delivery.

12. Monitoring and Audit Criteria

| Key Performance Indicator | Method of Assessment | Frequency | Lead |
|--|--|---|----------------|
| HBs to develop and implement SOP to ensure patients are directed to the right place at the right time for emergency MRI scanning 24/7 | HBs to provide written SOP | within 6 months of network launch then annually | HB spinal lead |
| | HBs to provide evidence of monitoring compliance of SOP | quarterly | HB spinal lead |
| All Health Boards demonstrate use of bilingual safety netting cards. | HBs to provide safety netting card | within 6 months of network launch then annually | HB spinal lead |
| | HBs to provide evidence of safety netting card being given to pts (service evaluation of documentation in notes) | Quarterly | HB spinal lead |
| All Health Boards demonstrate SOP fast track CES pathway | HB to provide written SOP | within 6 months of network launch then annually | HB spinal lead |
| | HBs to demonstrate compliance with SOP | Quarterly | HB spinal lead |
| Assessment by single clinician and referral for MRI within 1 hour | audit | Quarterly | HB spinal lead |
| MRI completed and reported within 4 hours of request | audit | Quarterly | HB spinal lead |

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|--|-------------|-----------|---------------------------|
| Where Cauda equina compression confirmed, patient is referred within 1 hour of completion of MRI scan | audit | Quarterly | HB spinal lead |
| Provider unit decision within 1 hour of referral | audit | Quarterly | Spinal unit clinical lead |
| Patient arrived in spinal unit within 4 hours WAST contact | audit | Quarterly | WAST |
| Operation started within 6 hours of arrival in spinal unit | audit | Quarterly | SWSN |
| All EAUs and designated spinal ward areas have bladder scanning | SWSN review | Annually | SWSN |
| All designated spinal wards areas are manually evacuation competent | SWSN review | Annually | SWSN |
| Appropriate patients referred to spinal cord injury centre | Audit | Quarterly | WSCIRC |

13. Contributors

| Name | Title | Health Board |
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14. Supporting Documents and Key References

1. The Society of British Neurological Surgeons and the British Association of Spinal Surgeons published a joint statement in 2018: Standards of Care for Investigation and Management of Cauda Equina Syndrome. SBNS: Policies, Publications, Guidelines & Journals
[SBNS :: Home](#)
2. Bladder Scans and Post-void Residual Volume Measurement Improve Diagnostic Accuracy of Cauda Equina Syndrome. Venkatesan et al. Spine 2019 Sep;44(18):1303-1308.
[Bladder Scans and Postvoid Residual Volume Measurement Improve Diagnostic Accuracy of Cauda Equina Syndrome - PubMed \(nih.gov\)](#)
3. [National CES Pathway](#)
4. [Search \(macpweb.org\)](#)
5. SWSN Spinal Hub Service Specification

15. Appendices

Appendix 1: MRI Provision communication to Health Boards

Appendix 2: SWTN Disposition Plan

Appendix 3: Procedure: Patients presenting with CES or non-malignant Cord Compression

Appendix 4: SBNS/BASS CES guidelines

Appendix 5: SWSN P05 surge policy

Appendix 6: GIRFT Suspected CES MRI protocol 2023

Appendix 1: MRI Provision communication to Health Boards



South Wales Spinal Network
Health Board Headquarters
1, Talbot Gateway,
Baglan Energy Park,
Baglan,
Port Talbot,
SA12 7BR

Dyddiad/Date: Thursday 29th June 2023

Dear Chief Operating Officers & Executive Medical Directors,

Following the South Wales Spinal Network Implementation Board that was held on Tuesday 6th June, it was agreed that a mandatory pathway requirement for each member Health Board (HB) (with the exception of Powys) to ensure 24/7 MRI provision.

The network understands that each HB may need to implement this differently depending on local factors. Therefore, the following options were deemed appropriate and HBs should implement one of these options at pace:

1. One acute site (we recommend the designated HB Trauma unit) is resourced to provide 24/7 MRI cover.
2. For those HBs with multiple acute sites: agree which unit(s) provide 24/7 MRI for your HB. This may require consideration of different units providing the service in-hours versus out-of-hours. Where a single unit is unable to cover the full 24-hour period, cover should be enabled by pooling of radiographer workforce from across your organisation. A single site is the preferable solution, but where different sites operate as the designated MRI centre at different times/days, this model must be accompanied by an SOP that describes how this will be communicated clearly as part of daily HB SitRep.
3. A commissioning agreement is established with a neighbouring HB to provide 24/7 MRI on behalf of your HB.

A robust communication strategy both internally and externally (including WAST) needs to be in place. These are the implications you must consider and how this can be implemented in your HB. Can you work with your operational teams and feedback progress to us at the next South Wales Spinal Network Implementation Board scheduled for Tuesday 11th July 2023?

Many thanks.

Yours sincerely,



Prof. Richard H. Evans MD FRCP
Executive Medical Director
Deputy Chief Executive Officer &
South Wales Spinal Network Senior Responsible Officer

Appendix 2: SWSN Disposition Plan

South Wales Spinal Network

Serving the Population of South Wales, West Wales & South Powys

The vision of the SWSN is to improve spinal health for our population, by delivering the world class treatment through an inclusive, equitable, collaborative and holistic approach.

The mission statement is:

'To deliver timely, effective and outstanding spinal care for our population'



| Cauda Equina Syndrome | Time to Treatment | Disposition |
|--|---|--|
| Cauda equina suspected requiring MRI. | 4 hours | LHB designated MRI capable unit 24/7. |
| Cauda equina compression confirmed on MRI. | 4 hours | <ul style="list-style-type: none"> AB – In hours - Grange. OOHs – CAV as per below. CAV/ CTM – 24/7 UHW NeuroSx for discogenic, UHW Spinal Sx for all other Aetiologies e.g. abscess SB/HD – 24/7 Morryston Spinal Sx. |
| Cauda equina compression excluded but MRI proven acute severe monoradiculopathy with weakness. E.g. painful foot drop. | Within 24 hours (requires discussion with spinal unit in hours) | <ul style="list-style-type: none"> AB – Grange. CAV/ CTM – UHW Spinal Sx. SB/HD – Morryston Spinal Sx. |
| Cauda equina compression excluded but structural explanation for pain, no significant acute motor deficit. | Planned inter-hospital transfer | <ul style="list-style-type: none"> Safety netting and discharge (+/- CMATS) If requires admission for pain management – <ul style="list-style-type: none"> AB/CTM/HD/SB - Refer to local T&O team CAV – refer to spinal surgery |
| Non compression neurological abnormalities e.g. demyelination. | N/A | Refer to local Neurology/ medicine team. |
| Normal study, no explanation for symptoms/ signs. | N/A | Referral to the local T&O team for further assessment may be appropriate. |

| Atraumatic Degenerative Emergencies | Time to Treatment | Disposition |
|--|---|---|
| Suspected acute and severe cervical/ thoracic spinal cord or spinal root compression with acute myelopathy and/or severe radiculopathy | 24 hours (clinical judgement) | <ul style="list-style-type: none"> LHB designated MRI capable unit 24/7. |
| MRI proven acute cervical/ thoracic spinal cord compression with acute severe myelopathy "off legs" | 24 hours (clinical judgement) | <ul style="list-style-type: none"> AB – In hours the Grange, OOHs – UHW Spinal Sx CAV/ CTM – UHW Spinal Sx 24/7 SB/HD – Morryston Spinal Sx 24/7 |
| MRI proven acute severe monoradiculopathy | Within 24 hours (requires discussion with spinal unit in hours) | <ul style="list-style-type: none"> AB – Grange. CAV/ CTM – UHW Spinal Sx. SB/HD – Morryston Spinal Sx. |

| Spinal Trauma | Time to Treatment | Disposition |
|---|-------------------|--|
| Patient with confirmed spinal fracture with new motor neurology in TU (including Morryston Hospital and Grange University Hospital). | Pathway 1 | Contact and transfer to MTC via regional trauma desk/EMRTS ASD (follow PATHWAY 1). MRI in MTC not locally |
| Patient with no spinal fracture with new motor deficit. MRI locally identifies cord haematoma or acute stenosis with cord compression requiring acute surgical decompression. | Pathway 1 | Contact and transfer to MTC via regional trauma desk/EMRTS ASD (follow PATHWAY 1) |
| Patient with a spinal fracture with no motor neurology requiring operative fixation. | Non Time Critical | <ul style="list-style-type: none"> SBUHB, refer to local spinal team ABUHB, refer to local spinal team CTUHB, refer to UHW spinal team H DUHB, refer to Morryston Hospital spinal team |

| Metastatic Spinal Cord Compression | Time to Treatment | Disposition |
|---|------------------------------------|---|
| MSCC with progressive Neurological deficit – Decision for Surgery | Within 24 hours | <ul style="list-style-type: none"> AB – In hours the Grange, OOHs – UHW Spinal Sx CAV/ CTM – UHW Spinal Sx 24/7 SB/HD – Morryston Spinal Sx 24/7 |
| Impending MSCC, with instability pain – Decision for Surgery | Planned within 48 hours (in hours) | <ul style="list-style-type: none"> AB – In hours the Grange CAV/ CTM – UHW Spinal Sx SB/HD – Morryston Spinal Sx |
| MSCC – Not for Surgery | Discuss with oncology | <ul style="list-style-type: none"> AB/CAV/CTM – Velindre or Acute Oncology Team SB/HD – Singleton |
| MSCC secondary to suspected hypervascular tumour | Within 24 hours | <ul style="list-style-type: none"> Discuss with local spinal service, who will discuss with, and arrange transfer to UHW Spinal surgery. |

| Spinal Infection | Time to Treatment | Disposition |
|--|------------------------------------|---|
| Spondylo-osteomyelitis/ discitis – no significant abscess, no sepsis, neural compression or clinical deficit | N/A | Discuss with local medical, microbiology and infection disease teams Involve local spinal team if biopsies required. |
| Spondylo-osteomyelitis/ discitis – Life threatening sepsis with drainable spinal collection | Immediate Transfer | <ul style="list-style-type: none"> Immediately involve local critical care/ medicine and interventional radiology to instigate local care Contact the following spinal teams immediately - <ul style="list-style-type: none"> AB – In hours the Grange, OOHs – UHW Spinal Sx CAV/ CTM – UHW Spinal Sx 24/7 SB/HD – Morryston Spinal Sx 24/7 |
| Epidural abscess causing neural compression and/or neurological deficit | 4 hours | <ul style="list-style-type: none"> AB – In hours the Grange, OOHs – UHW Spinal Sx CAV/ CTM – UHW Spinal Sx 24/7 SB/HD – Morryston Spinal Sx 24/7 |
| Spondylo-osteomyelitis/ discitis – severe axial pain with alignment loss/ instability | Planned within 48 hours (in hours) | <ul style="list-style-type: none"> AB – Grange. CAV/ CTM – UHW Spinal Sx. SB/HD – Morryston Spinal Sx. |



Rhwylwailth yr Asgwrn
Cefn De Cymru
South Wales
Spinal Network

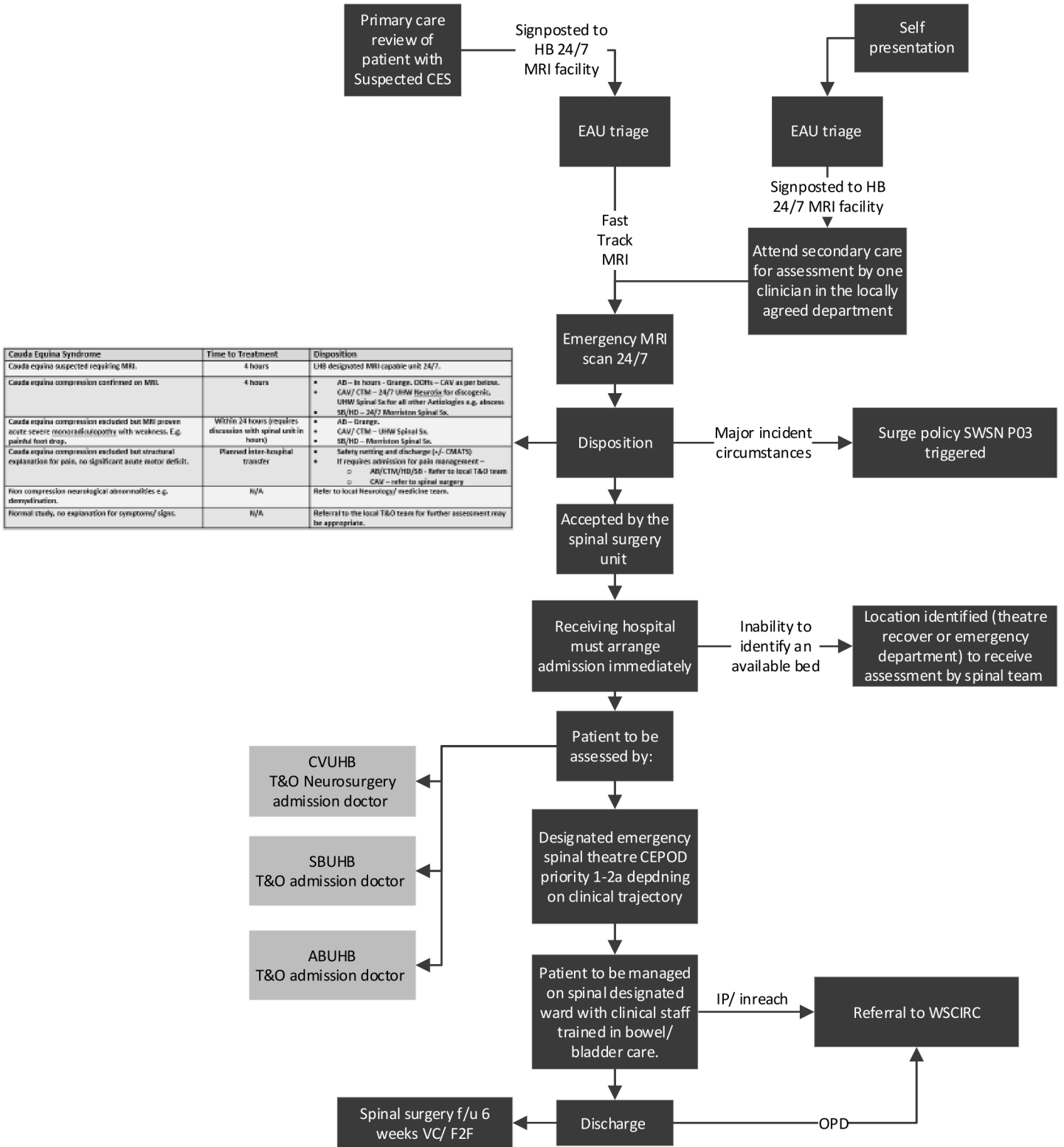
Contact the South Wales Spinal Network:

✉ SpinalNetwork@wales.nhs.uk

☎ 01792 516686

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Appendix 3: Procedure: Patients presenting with CES or non-malignant Cord Compression



| Cauda Equina Syndrome | Time to Treatment | Disposition |
|---|---|--|
| Cauda equina suspected requiring MRI. | 4 hours | LHB designated MRI capsule unit 24/7. |
| Cauda equina compression confirmed on MRI. | 4 hours | <ul style="list-style-type: none"> + AB – In hours – Grange, DCHs – CAV as per below. + CAV/ CTM – 24/7 UHW Neuros for diagnosis, UHW Spinal Sx for all other. Antitoxics e.g. abcessus + SB/HD – 24/7 Morriston Spinal Sx. |
| Cauda equina compression excluded but MRI proven acute severe neurological symptoms with weakness. Eg. painful foot drop. | Within 24 hours (requires discussion with spinal unit in hours) | <ul style="list-style-type: none"> + AB – Grange. + CAV/ CTM – UHW Spinal Sx. + SB/HD – Morriston Spinal Sx. |
| Cauda equina compression excluded but structural explanation for pain, no significant acute motor deficit. | Planned inter-hospital transfer | <ul style="list-style-type: none"> + Safety netting and discharge (-/- CMATS) + If requires admission for pain management – <ul style="list-style-type: none"> o AB/CTM/HD/SB – Refer to local T&O team o CAV – refer to spinal surgery |
| Non compression neurological abnormalities e.g. demyelination. | N/A | Refer to local Neurology/ medicine team. |
| Normal study, no explanation for symptoms/ signs. | N/A | Referral to the local T&O team for further assessment may be appropriate. |

Appendix 4: SBNS/BASS CES guidelines

[SBNS :: Policies, Publications, Guidelines & Journals](#)

Appendix 5: SWSN Surge Plan

In progress