Metastatic Spinal Cord Compression Pathway Guidelines for Cheshire & Merseyside

December 2017

Contact MSCC Co-ordinator/ CCC Triage team
24hr service on

0800 169 5555

- Using the MSCC Referral Proforma
- Patient Information Sheet
- Transfer Information

Version: 1.0
Ref: GCLAMSCC
This pathway is for all patients who have suspected or confirmed impending metastatic spinal cord compression (IMSCC) or established metastatic spinal cord compression (MSCC)

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**Foreword**

This Guideline is to support the Cheshire & Merseyside (C&M) Network to ensure that facilities are available and treatment is co-ordinated to effectively manage patients with metastatic spinal cord compression.

We are committed to promoting best practice by reducing delays and avoidable disability, including preventing paralysis, from adversely affecting the quality of life for people with metastatic spinal cord compression.

**Definition of metastatic spinal cord compression**

Metastatic Spinal Cord Compression (MSCC): occurs when there is pathological vertebral body collapse or direct tumour growth causing compression of the spinal cord or cauda equina which may result in irreversible neurological damage and possible paralysis.

Cauda equine syndrome: occurs at or below the level of the conus medullaris in the lumbosacral region.

Impending Metastatic Spinal Cord Compression (IMSCC): occurs where the spinal cord is threatened but not yet compressed and should be managed the same way as established MSCC.
Presentation and Diagnostic Phase

Section 1: Referrer Checklist

**Recommendation:** Complete MSCC referral proforma and contact the MSCC coordinator (MSCC-C) triage team urgently on **0800 1695555** to discuss patients with any of the following 4 cardinal red flag symptoms suggestive of MSCC:

1. **Pain**
   - Pain in the middle (thoracic) or upper (cervical) spine
   - Progressive or severe unremitting lower (lumbar) spinal pain
   - Spinal pain aggravated by straining (for example, at stool, or when coughing or sneezing)
   - Localised spinal tenderness
   - Nocturnal spinal pain preventing sleep

2. **Motor Dysfunction**

3. **Sensory Dysfunction**

4. **Bladder and Bowel Dysfunction**

****Advice and support can be requested at ANY point during the pathway****

Approaching End of Life

- Consider pre-triage assessment to ensure patient is not approaching end of life to avoid inappropriate diagnostic testing:
  - **Performance Status**
    - If PS 4 with no pain and neurological deficit has been longer than 24 hours do not perform MRI - discuss with MSCC-C for advice
  - **Pain or neurological deficit**
    - If pain is present but full diagnostic procedures are not appropriate, radiotherapy may still be appropriate for symptom control
  - **Neurology**
    - If there is no neurological deficit and no pain and patient is approaching end of life, radiotherapy will not prevent MSCC, therefore Best Supportive Care (BSC) will be more appropriate

- Discuss with MSCC Co-ordinator (MSCC-C) for oncology opinion even if patient is not fit for treatment to ensure additional support service referrals are made

Patient Experience and Psychological Need

- Ensure that communication with patients with known or suspected MSCC is clear and consistent, and that the patients, their families and carers are fully informed and involved in all decisions about treatment.
- **Mental capacity assessment:** should be completed if there are any concerns regarding capacity

- Psychological distress: needs to be identified at the earliest opportunity to enable appropriate support
**Protect Spine**

- On admission and until clinical/ radiographic assessment is complete, avoid weight bearing and keep on bed rest- as flat as possible with neutral spinal alignment (pain, respiratory and cardiac symptoms permitting)
- Log roll if spinal instability suspected (severe mechanical pain)
- Will need cervical collar if cervical spine lesion suspected and as flat as possible with neutral spinal alignment (pain, respiratory and cardiac symptoms permitting)
- Urgent Physio referral will be made at the point of management decision making- be guided by MSCC-C

**Complete MSCC Referral Proforma**

- Areas greyed out are for information, education and audit, to be completed by medical decision making team at CCC

**Neurology**

- NICE recommended neurological assessment completed before imaging request (in referral proforma)

**Analgesia**

- Do not start Morphine unless already on at least regular weaker opioids (Codeine, Tramadol)
- Severe pain on movement: consider Fentanyl 100mcg tab sublingual for MRI scan

**Imaging**

- MRI scan **WHOLE SPINE** (T1 and T2 sequences with T2 axials of any region of interest)
  - Ensure referral via CRIS system includes:
    - patient demographics
    - hospital number
    - where the patient is
    - referrer
    - Consultant
    - clinical rationale for imaging
  - ***** If urgent you should discuss in person with radiologist to ensure timely reporting******
  - CT Thorax, Abdo, Pelvis + contrast if no contraindication or recent scan within 8 weeks(see section 8- Imaging )** Do not delay referral for this**

**Steroids**

- Dexamethasone 16mg stat followed by either 16mg O.D. (morning) or 8mg B.D. (morning and lunch time))
- PPI (Lansoprazole 30mg or Omeprazole 40mg)
- Stop NSAIDs and Aspirin
- Monitor for hyperglycaemia and candida
**Thrombo-prophylaxis**

- Complete organisational VTE assessment and be guided by advice. If organisation does not have VTE assessment, use assessment form below

  ![VTE assessment forms.pdf](image)

- Low molecular weight heparin (LMWH) eg. Enoxaparin (see section 10-Thrombo-prophylaxis) unless for surgical intervention

- If unable to have low molecular weight heparin (LMWH) offer all patients who are on bed rest with suspected MSCC thigh-length graduated compression/anti-embolism stockings unless contraindicated, and/or intermittent pneumatic compression or foot impulse devices

**Bladder & Bowel Management**

- Palpable bladder / not passed urine > 4 hrs – bladder scan
- Bowels not opened for 48 hrs, commence bowel regime (see section 12-Bladder & bowel management)

**Review/ Request Bloods**

- To be done on admission:
  - **FBC, INR, LFTs, U&Es** - normal eGFR for CT?
  - **Bone profile** - hypercalcaemia?
  - **Glucose** - Dexamethasone can precipitate hyperglycaemia
  - **Consider LDH** - high with poor prognosis
  - **Unknown primary** – Myeloma screen:
    - **Protein electrophoresis, Immunoglobulins, Bence Jones protein, PSA**

**Referrals**

- Ring C&M MSCC Coordinator/ Triage team – **0800 169 5555**

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**Section 2 : Advice & Support**

**Recommendation:** Advice can be requested at any point during the pathway from MSCC-C/ Triage team **0800 1695555**

**Acute Oncology / Haematology Teams/ Nursing Teams:**

<table>
<thead>
<tr>
<th>Acute Oncology Team</th>
<th>Contacts</th>
<th>Phone numbers</th>
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</tr>
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</table>
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| Countess of | Alison | 01244 | <a href="mailto:coch.acuteoncology@nhs.net">coch.acuteoncology@nhs.net</a> |</p>
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<thead>
<tr>
<th>Haematology Team</th>
<th>Contacts</th>
<th>Phone numbers</th>
<th>Email addresses</th>
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<tbody>
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**Section 3 : Roles & Responsibility**

**Roles & Responsibilities**

<table>
<thead>
<tr>
<th>Clinical team diagnosing bone mets</th>
<th>- Counsel patient on risks of MSCC - Give MSCC leaflet &amp; alert card</th>
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<tbody>
<tr>
<td>Patient</td>
<td>- Be aware of MSCC signs and symptoms</td>
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<tr>
<td>IT</td>
<td>- Ensure alert system in place when people known to have bone mets are admitted</td>
</tr>
<tr>
<td>Primary care team</td>
<td>- Use red flag alert cards for signs and symptoms of impending MSCC -Refer urgently for investigation as per guidance</td>
</tr>
<tr>
<td>Acute hospital team/ hospice team</td>
<td>- Complete “referrer checklist”</td>
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<tr>
<td>Imaging department</td>
<td>- Perform and report whole spine MRI within: 1 week with new diagnosis of metastasis is suspected 24 hrs of request when MSCC is suspected</td>
</tr>
<tr>
<td>Acute Oncology Service</td>
<td>- Liaise with MSCC-C and clinical oncology</td>
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### Clinical Oncology team CCC
- Be accessible to provide prompt oncology opinion
- Liaise with spinal surgeons, palliative care Consultants and Radiologist if appropriate through patient specific MDT prior to primary intervention
- Management decision & intervention to be within 24 hrs of diagnosis

### Consultant Spinal Surgeons WC & RLBUHT
- Be accessible as per C&M spinal on call rota to provide prompt surgical opinion including spinal stability advice

### Radiologist
- To ensure whole spine MRI is completed & reported in 24hrs in patients with suspected MSCC
- To use C&M reporting tool and SINS scoring system when possible to aid management decision making
- To ensure MSCC-C/ triage team are alerted when an MRI shows IMSCC/MSCC

### MSCC-C/ CCCTriage Team
- Coordinate the care pathway at all times
- Provide a central point of contact for clinicians/ health professionals/ patients
- Perform an initial telephone triage by assessing requirement for, and urgency of, investigations, transfer, and treatment
- Gather baseline information to aid decision-making and collate data for audit purposes
- Liaise with senior clinical advisers to optimise patient treatment and care

### Section 4: Psychological Needs

**Recommendation:** Psychological well-being consideration should be given to the patients’ and families’ concerns, emotions, distressing issues, mood and interests, anxiety, adjustment to illness and treatment, strengths and existing support.

**Screening**
- People with MSCC often experience significant functional losses coupled with the emotional distress associated with advancing disease
- The brief screening tool (pg 6 Psychological Distress Thermometer) should be used at presentation to identify the level and nature of the initial distress- this is to be handed over to team of primary intervention
- Once received at organisation of primary intervention, a more robust assessment of psychological need should be completed e.g. Holistic Needs Assessment (HNA)

### Section 5: Spine Protection

**Recommendation:** If there is spinal instability (severe mechanical pain) or
neurological symptoms present- protect spinal alignment and maintain cord perfusion until radiologic exclusion of MSCC

Lay Flat
- On admission and until clinical/ radiographic assessment is complete, avoid weight bearing and keep on bed rest- as flat as possible with neutral spinal alignment (pain, respiratory and cardiac symptoms permitting)
- Log roll if spinal instability suspected (severe mechanical pain)
- Contact departmental physio/ manual handling team for further information on log rolling

Possible Cervical Lesion
- Will need cervical collar if cervical spine lesion suspected and lay as flat as possible neutral spinal alignment (pain, respiratory and cardiac symptoms permitting)
  - Assess for neurological deficit in arms/hands - sensory and/ or movement
  - If neck pain +/- motor /sensory deficit in upper limbs, immobilise neck with collar
  - Lie flat and log roll

Commence High Dose Dexamethasone if MSCC Suspected
- Check no contraindications to using steroids/ steroid dose
  - Dexamethasone 16mg stat O or SC followed by 16mg O.D. (morning) or 8mg B.D. (morning and lunch time) until primary intervention
  - PPI (Lansoprazole 30mg or Omeprazole 40mg)
  - Stop NSAIDs and Aspirin
  - Monitor for hyperglycaemia and candida

Analgesia For Movement
- If pain at rest, give analgesia prior to rolling
  - Give analgesia before imaging
  - Consider Fentanyl 100mcg tab sublingual for MRI scan if pain severe on movement or proving difficult to control

Do NOT place patient on air wave mattress for pressure relief
- Ensure 2-3 hourly pressure relief / assessment pressure areas (see section 11-Pressure ulcer prevention and management)

Section 6: Examination and Neurological Assessment

Recommendation: Full clinical history, presentation, and sensory & motor function baselines to be documented on MSCC referral proforma prior to ringing MSCC-C/ triage team.

Pain
- Location and type
- Onset and duration
- Character and description of pain (intermittent or constant, “burning”, “a tight
**Sensory function** - (sensation & proprioception)

- Light touch sensation (Anterior spinothalamic tract)
- Sharp / blunt or pin-prick sensation (Lateral spinothalamic tract)
- Joint proprioception

<table>
<thead>
<tr>
<th>Dermatome chart - sensory levels</th>
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<tbody>
<tr>
<td><strong>C2-C3</strong></td>
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<tr>
<td><strong>C4</strong></td>
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<td></td>
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<tr>
<td><strong>C5</strong></td>
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<td><strong>S2</strong></td>
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<td><strong>S3, S4, S5</strong></td>
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## Motor Function

### Muscle Power

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<tr>
<td>5/5</td>
<td>Movement against gravity with full resistance</td>
</tr>
<tr>
<td>4/5</td>
<td>Movement against gravity with some resistance</td>
</tr>
<tr>
<td>3/5</td>
<td>Movement against gravity only</td>
</tr>
<tr>
<td>2/5</td>
<td>Movement with gravity eliminated</td>
</tr>
<tr>
<td>1/5</td>
<td>Visible /palpable muscle contraction but no movement</td>
</tr>
<tr>
<td>0/5</td>
<td>No muscle contraction</td>
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### Muscle tone: flaccidity or spasticity

#### The Modified Ashworth Scale of Spasticity

<table>
<thead>
<tr>
<th>Score</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>0</td>
<td>No increase in muscle tone</td>
</tr>
<tr>
<td>1</td>
<td>Slight increase in muscle tone, manifested by a catch and release or by minimal resistance at the end of the range of motion when the affected part(s) is moved in flexion or extension</td>
</tr>
<tr>
<td>1+ (2)</td>
<td>Slight increase in muscle tone, manifested by a catch, followed by minimal resistance throughout the remainder (less than half) of the ROM (range of movement)</td>
</tr>
<tr>
<td>2 (3)</td>
<td>More marked increase in muscle tone through most of the ROM, but affected part(s) easily moved</td>
</tr>
<tr>
<td>3 (4)</td>
<td>Considerable increase in muscle tone passive movement difficult</td>
</tr>
<tr>
<td>4 (5)</td>
<td>Affected part(s) rigid in flexion or extension</td>
</tr>
</tbody>
</table>

### Bladder and Bowel Dysfunction

- Retention of urine, incontinence, or constipation
- Check anal tone either present or absent

### Respiratory Function

- MSCC above T6: increased risk of chest complications due to respiratory muscle paralysis and immobility

#### Effects of MSCC on Respiration

- Reduced lung volumes and vital capacity and atelectasis
- Increased work of breathing
- Poor cough and ineffective clearance of secretions causing retention of
secretions and risk of infection

- Accessory muscles (C1-C8): role in respiration
- Diaphragm (C3,C4,C5): major inspiratory muscle
- Intercostals (T1-T11): role in inspiration and expiration
- Abdominals (T6-L1): involved in forced expiration and cough

Assess lung volumes e.g. vital capacity (VC) or FEV1 99. VC is considered the simplest and most appropriate measure of ventilatory status after spinal cord injury

**Autonomic Dysreflexia**

- Autonomic response to painful stimuli below the level of the lesion - especially lesions above T6
- Unresolved can cause fatal cerebral haemorrhage
- This reflex response is usually suppressed during spinal shock initially; is a potential complication for patients with established spinal cord injury (SCI) who are readmitted to acute care environments

The most common presenting symptoms:

- **Severe hypertension** systolic blood pressure can easily exceed 200 mm/Hg
- **Bradycardia**
- **"Pounding" headache**
- **Flushed or blotchy skin** above the level of lesion
- **Profuse sweating** above the level of lesion
- **Pallor below** the level of lesion
- **Nasal congestion**
- **Non-drainage of urine** (urinary obstruction being the most common cause).

This is a medical emergency and requires immediate medical input

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**Section 7: Analgesia**

**Recommendation:** Offer conventional analgesia including NSAIDs, non-opiate and opiate medication as required in escalating doses as described. Consider referral for specialist pain care including invasive procedures (such as epidural or intrathecal analgesia) and neurosurgical interventions for patients with intractable pain from spinal metastases.
Patient in pain?

YES

On opioids
MST, Fentanyl, Oxycodone MR

Slow release dose
Combine all opioid intake for last 24hr (MR + prn doses)
Increase MR dose accordingly

On weak opioids
Cocodamol, Tramadol

Add prn Morphine
Prescribe Morphine 5mg hrly prn – increase to 10mg after 3 doses in short succession

Pain controlled, convert to MST
Cocodamol 30/500 qds
  = MST 15mg bd
Tramadol 100mg qds
  = MST 20mg bd

Do NOT convert to MST if eGFR < 50

Add prn dose
Breakthrough dose at 1/6 of 24hr MR dose
Increase laxatives According to need

On regular analgesia

YES

Prescribe regular analgesia
Cocodamol 30/500
  2 tabs 6hrly+
Oral Morphine

Prescribe prn analgesia
Cocodamol 30/500
  1-2 tabs 6hrly prn

Add laxatives
See section x bowel management

NO

On weak opioids
Cocodamol, Tramadol

Add prn dose
Breakthrough dose at 1/6 of 24hr MR dose
Increase laxatives According to need

If pain not controlled in 24hrs:
Urgent referral to Specialist Palliative Care

NO
## Section 8: Imaging

**Recommendations:** MRI whole spine within 24 hours if pain is suggestive of spinal instability or neurological symptoms are present.
(Cancer patients who develop clinical feature of spinal metastasis (pain) should have an MRI whole spine within a week).
Patients with MSCC should have CT staging completed to aid management decision making.

**** If MRI request is urgent the referrer should discuss in person with radiologist to ensure timely reporting*****

### Urgent Whole Spine MRI (T1 and T2 sequences with T2 axials of any region of interest)

- **Check MRI compatibility criteria before ordering:** DO NOT WASTE FINITE RESOURCES BY BOOKING MRI WITHOUT CHECKING IF THERE ARE ANY CONTRA-INDICATIONS

MRI exclusion criteria may vary depending on department specific MRI

**Absolute:**
- Cardiac pacemaker
- Cochlear implant
- Clipping cerebral aneurysm
- Metal fragments in eyes
- Recent metal implants (< 6 week)

**Possible:**
- Metal fragments anywhere in body
- Metal prosthesis < 6 weeks ago
- Harrington rods
- Cardiac valve or annuloplasty rings

**CT spine with contrast:** if unable to have MRI
- Check eGFR and known allergies

- Ensure referral via CRIS system includes:
  - patient demographics
  - hospital number
  - where the patient is
  - referrer
  - Consultant
  - clinical rationale for imaging

**** If urgent you should discuss in person with radiologist to ensure timely reporting*****

### Urgent CT

- CT thorax, abdo, pelvis with contrast required within last 8 weeks
RADIOLOGICAL SCORING SYSTEMS

The agreed system for C&M radiologists to classify MSCC on MRI whole spine:

**The Cheshire & Merseyside MSCC Radiology Classification**

Grade 0 and 1a:  No cord compression  
Grade 1b and 1c: Impending cord compression  
Grade 2 and 3: Metastatic spinal cord compression

The below descriptions should be used when reporting a study in which malignant thecal sac or cord compression is present for each anatomical level involved:

a. The degree of thecal sac compression is given: mild/moderate/severe  
b. The degree of direct cord compression is indicated: none/mild/moderate/severe

**Radiological Spinal Stability**

This scoring system is used by radiology, oncology and surgical teams to aid decision making regarding spinal stability

<table>
<thead>
<tr>
<th>SINS Component</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location</strong></td>
<td></td>
</tr>
<tr>
<td>Junctional: occiput-C2, C7-T2, T11-L1, L5-S1</td>
<td>3</td>
</tr>
<tr>
<td>Mobile spine: C3-C6, L2-L4</td>
<td>2</td>
</tr>
<tr>
<td>Semirigid: T3-T10</td>
<td>1</td>
</tr>
<tr>
<td>Rigid: S2-S5</td>
<td>0</td>
</tr>
<tr>
<td><strong>Pain</strong></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>3</td>
</tr>
<tr>
<td>Occasional, not mechanical</td>
<td>1</td>
</tr>
<tr>
<td>Pain free lesion</td>
<td>0</td>
</tr>
<tr>
<td><strong>Bone lesion</strong></td>
<td></td>
</tr>
<tr>
<td>Lytic</td>
<td>2</td>
</tr>
<tr>
<td>Mixed</td>
<td>1</td>
</tr>
<tr>
<td>Sclerotic</td>
<td>0</td>
</tr>
<tr>
<td><strong>Radiographic spinal alignment</strong></td>
<td></td>
</tr>
<tr>
<td>Subluxation/ translation present</td>
<td>4</td>
</tr>
<tr>
<td>De novo deformity (kyphosis/ scoliosis)</td>
<td>2</td>
</tr>
<tr>
<td>Normal alignment</td>
<td>0</td>
</tr>
<tr>
<td><strong>Vertebral body collapse</strong></td>
<td></td>
</tr>
<tr>
<td>&gt; 50% collapse</td>
<td>3</td>
</tr>
<tr>
<td>&lt;50% collapse</td>
<td>2</td>
</tr>
<tr>
<td>No collapse with &gt;50% body involved</td>
<td>1</td>
</tr>
<tr>
<td>None of the above</td>
<td>0</td>
</tr>
<tr>
<td><strong>Posteriolateral involvement of spinal elements</strong></td>
<td></td>
</tr>
<tr>
<td>Bilateral</td>
<td>3</td>
</tr>
<tr>
<td>Unilateral</td>
<td>1</td>
</tr>
<tr>
<td>None of the above</td>
<td>0</td>
</tr>
<tr>
<td><strong>Interpretation</strong></td>
<td></td>
</tr>
<tr>
<td>0-6 stable</td>
<td></td>
</tr>
<tr>
<td>7-12 indeterminate (possibly impending) instability</td>
<td></td>
</tr>
<tr>
<td>13-18 instability</td>
<td></td>
</tr>
<tr>
<td>7-18 warrant surgical consultation</td>
<td></td>
</tr>
</tbody>
</table>
Responsibility
- It is the referrers responsibility to access the radiology report and refer into the MSCC pathway – **do not rely on alert system or automatic referral**

Section 9: Steroids

**Recommendation:** Corticosteroids reduce tumour bulk and spinal cord swelling-relieving pressure. They can improve symptoms and treatment outcomes. Dose reduction is vital as high-dose, long-duration can be debilitating.

<table>
<thead>
<tr>
<th>Suspected MSCC, Confirmed MSCC or IMSCC with neurological deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td>- <strong>Commence Dexamethasone:</strong> Unless contraindicated (including a significant suspicion of lymphoma as steroids impair the histological diagnosis of lymphoma)</td>
</tr>
<tr>
<td>- Dexamethasone 16mg stat</td>
</tr>
<tr>
<td>- Continue 16mg O.D. (morning) or 8mg B.D. (morning and lunch time) until 1st intervention</td>
</tr>
<tr>
<td>- After surgery or start of radiotherapy- dose gradually reduce and stopped over 7 days (see table below)</td>
</tr>
<tr>
<td>- If neurological function deteriorates at any time the dose should be increased temporarily and reassessed</td>
</tr>
<tr>
<td>- If management decision is no surgery or radiotherapy, see table weaning regime</td>
</tr>
<tr>
<td>- <strong>Commence PPI for gastric protection</strong></td>
</tr>
<tr>
<td>- Lansoprazole 30mg daily, Omeprazole 40mg daily or Esomeprazole 40mg daily</td>
</tr>
<tr>
<td>- <strong>Stop NSAIDs including Aspirin</strong></td>
</tr>
<tr>
<td>- Concurrent NSAID and Dexamethasone increases risk of gastric ulceration</td>
</tr>
<tr>
<td>- <strong>Monitor for hyperglycaemia</strong></td>
</tr>
<tr>
<td>- NIDDM – monitor with daily peripheral glucose estimation</td>
</tr>
<tr>
<td>- IDDM – may require insulin dose increase or sliding scale insulin</td>
</tr>
<tr>
<td>- Contact local Diabetic Nurse if any concerns</td>
</tr>
<tr>
<td>- <strong>Review Daily</strong></td>
</tr>
<tr>
<td>- Monitor for side effects of steroids: hyperglycaemia, candidiasis (thrush) and severe mood swings- treat accordingly</td>
</tr>
</tbody>
</table>

**No MSCC**
- If no MSCC on MRI scan, **stop Dexamethasone immediately if steroids commenced within last 3 days.** If >3 days, see table weaning regime

**IMSCC- No Neurological Deficit**
- If patient has IMSCC, **stop Dexamethasone immediately if steroids commenced within last 3 days.** If >3 days, see table weaning regime

**Dexamethasone Reduction Following Radiotherapy or Surgery**
- Follow weaning regime from table below. Observe for worsening pain or neurological status – return to dose that previously maintained clinical situation.

<table>
<thead>
<tr>
<th>For all Radiotherapy regimes &amp; surgery- dose reduce regime is the same (16mg until 1st intervention)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day</td>
</tr>
<tr>
<td>Week</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>1 - 2</td>
</tr>
<tr>
<td>3 - 4</td>
</tr>
<tr>
<td>5 - 6</td>
</tr>
<tr>
<td>7 - 8</td>
</tr>
</tbody>
</table>

- Aim to discontinue within a week post treatment, unless the patient previously taking long term steroids. Dexamethasone 2mg = Prednisolone 15 mg.

**Other Considerations**

- The dose of dexamethasone may have to be higher in patients receiving phenytoin or carbamazepine (see Guidelines on Antiepileptics and Corticosteroids)

**Patient Information**

- Ensure dose reduction card given to patient

**Section 10: Thrombo-prophylaxis**

**Recommendations:** For patients with MSCC, individually assess the duration of thrombo-prophylactic treatment, based on ongoing risk factors, overall clinical condition and return to mobility.

**Prior Considerations**

- **Risk of bleeding:**
  - Medications
  - Thrombocytopenia
  - Clotting disorders
  - Patient already on Warfarin or NOACs (novel oral anticoagulants)

- **Potential surgical candidate:** not to commence thrombo-prophylaxis until definitive management plan excludes surgery/ surgical procedure

**VTE**

- **Complete VTE assessment:** be guided by advice

**Enoxaparin dosage**

<table>
<thead>
<tr>
<th>EGFR</th>
<th>Weight</th>
<th>Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;30</td>
<td>50-100kg</td>
<td>40mg od</td>
</tr>
<tr>
<td>10-30</td>
<td>50-100kg</td>
<td>20mg od</td>
</tr>
<tr>
<td>&gt;30</td>
<td>100-150kg</td>
<td>40mg bd</td>
</tr>
<tr>
<td>10-30</td>
<td>100-150kg</td>
<td>40mg od</td>
</tr>
<tr>
<td>Any</td>
<td>Extremes (&lt;50 or &gt;150kg)</td>
<td>Discuss with senior clinician</td>
</tr>
<tr>
<td>&lt;10</td>
<td>Any</td>
<td>Discuss with senior clinician</td>
</tr>
</tbody>
</table>
VTE and bleeding risks should be reassessed

**Enoxaparin Contraindications**
- Acute bacterial endocarditis
- Active major bleeding
- Conditions with a high risk of uncontrolled haemorrhage (including recent haemorrhagic stroke)
- Thrombocytopenia in patients with a positive in-vitro aggregation test in the presence of Enoxaparin
- Active gastric or duodenal ulceration
- Hypersensitivity to either Enoxaparin sodium, heparin or its derivatives including other low molecular weight heparins

**Period of Immobilization**
- Offer all patients who are on bed rest with suspected/ MSCC thigh-length graduated compression/anti-embolism stockings unless contraindicated, and/or intermittent pneumatic compression or foot impulse devices
- Low Molecular Weight Heparin (LMWH) until mobile

**Patient Information**
- Ensure patient information leaflet given if available or print off NHS information [https://www.nhs.uk/conditions/anticoagulants/](https://www.nhs.uk/conditions/anticoagulants/)

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**Section 11: Pressure Ulcer Prevention and Management**

**Recommendations:** Due to impaired mobility, sensation and compromised bladder and bowel function - very high risk of developing pressure ulcers. Pressure ulcers may affect quality of life and rehabilitation outcomes.

- Undertake and document a risk assessment for pressure ulcers daily [https://www.nice.org.uk/guidance/cg7](https://www.nice.org.uk/guidance/cg7)
- Do not use pressure relieving mattress before definitive treatment
- Bed rest - turn every 2-3 hours
- Not on bed rest - mobilise every few hours

**Section 12: Bladder & Bowel Management**

**Recommendations:** The management of bladder and bowel disturbance and paraplegia may differ depending on the level of neurological disability. Health professionals' assessment of constipation often differs from that of the patient, therefore when reaching a diagnosis of constipation, the views of the patient should be sought and whether they believe themselves to be constipated.

Offer a bladder & bowel management programme

**Assess & Document**
- Assess bladder and bowel function at presentation and start a care plan
- Monitor and document daily
Bladder
- If at any stage the patient has a palpable bladder / not passed urine > 4 hrs – bladder scan
- Manage bladder dysfunction by a urinary catheter on free drainage
- If long-term catheterisation is required, consider intermittent catheterisation or suprapubic catheters

Bowel
- Laxative choice for opioid induced and non-opioid induced constipation

- **Lactulose** OR **Senna**
  - Titrate dose

- **Lactulose** AND **Senna**
  - Titrate dose

- **Opioid Induced Constipation**
  - **Naloxegol**
    - (or methylnaltrexone if not able to take orally)
    - Titrate dose

- **Non-Opioid Induced Constipation**
  - Consider alternative laxative e.g. Macrogol, Co-Danthramer or Magnesium Hydroxide based on local prescribing practices and in discussion with the patient. Seek expert advice if unsure.
  - Titrate dose

Rectal Interventions
- The choice of rectal intervention should be based on the results of a digital rectal examination

Rectal Interventions
(According to rectal examination)
A rectal intervention should be given on alternate days combined with an alternate day stimulant or oral laxative i.e. senna

**Patient information**
- Patients should be offered (verbal or written) information about constipation, or the risk of developing constipation when medications which increase this risk (in particularly, opioids) are commenced

**Section 13: Circulatory & Respiratory Function**

**Recommendations:** Alterations of sympathetic vascular tone, relative parasympathetic over-activity, and respiratory muscle paralysis may cause complex and sometimes life-threatening vascular and cardio-respiratory changes in people with MSIC.

These include hypoventilation, hypotension, bradycardia, and autonomic dysreflexia especially in the acute phase of paralysis or with high spinal cord lesions.

- Ensure a set of routine observations are measured at baseline to monitor change
- Avoid over-hydration which can provoke pulmonary oedema

**Section 14: Bloods & Screening**

**Recommendation:** Ensure full diagnostic work up at the earliest opportunity to aid management decision.

- **FBC, INR, LFTs, U&Es** - normal eGFR for CT?
- **Bone profile** - hypercalcaemia?
- **Glucose** - Dexamethasone can precipitate hyperglycaemia
- **Consider LDH** - high with poor prognosis
- **Unknown primary** – Myeloma screen
- **Protein electrophoresis, Immunoglobulins, Bence Jones protein, PSA**
## Decision Making and Referral Phase

### Section 15: Estimating Prognosis

**Recommendations:** Scoring systems using a combination of prognostic factors have been devised and have been correlated with the clinical outcome to predict survival.

**WHO / ECOG Performance Status** - record status prior to and at presentation

### ECOG KARNOFSKY

<table>
<thead>
<tr>
<th>ECOG</th>
<th>Description</th>
<th>0</th>
<th>100</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Fully active, able to carry on all pre-disease performance without restriction</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Able to carry on normal activity; minor signs or symptoms of disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature, e.g., light house work, office work</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Normal activity with effort; some signs or symptoms of disease</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Ambulatory and capable of all selfcare but unable to carry out any work activities; up and about more than 50% of waking hours</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Requires occasional assistance but is able to care for most of personal needs</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Capable of only limited selfcare; confined to bed or chair more than 50% of waking hours</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Requires considerable assistance and frequent medical care</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Completely disabled; cannot carry on any selfcare; totally confined to bed or chair</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Very ill; hospitalization and active supportive care necessary</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Dead</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

### Tokuhashi score

FOR REFERENCE ONLY – not expected to calculate, this will be done at the management decision MDT. Used to assess suitability for surgery - recent CT Thorax, Abdo, Pelvis required

<table>
<thead>
<tr>
<th>Tokuhashi score</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>General condition</td>
<td>Poor (PS 10-40%)</td>
<td>Moderate (PS 50-70%)</td>
<td>Good (PS 80-100%)</td>
<td></td>
</tr>
<tr>
<td>Number of extra-spinal bone mets</td>
<td>&gt;3</td>
<td>1-2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>No vertebral mets</td>
<td>&gt;3</td>
<td>1-2</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Mets to major internal organs</td>
<td>Irremovable/untreatable</td>
<td>Removable/treatable</td>
<td>No mets</td>
<td></td>
</tr>
<tr>
<td>Spinal cord palsy</td>
<td>Complete</td>
<td>Incomplete</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>
| Primary cancer site | - 0 points: lung, osteosarcoma, stomach, bladder, oesophagus, pancreas  
| | - 1 point: liver, gallbladder, cancer unknown primary  
| | - 2 points: others  
| | - 3 points: kidney, uterus  
| | - 4 points: rectum  
| | - 5 points: thyroid, breast, prostate, carcinoid tumour  
| Survival prognosis | Score 0 - 8: 85% live < 6 months = consider radiotherapy or palliative surgery  
| | Score 9 - 11: 73% live > 6 months (and 30% > 1 year) = palliative surgery or (exceptionally) excisional surgery. Also consider Radiotherapy  
| | Score 12 - 15: 95% live > 1 year = excisional surgery + post-op radiotherapy  
| Surgical aims | Score > 9 = Excisional operation  
| | Score < 5 = Palliative care  
| Radiotherapy aims | Score < 9 and prognosis less than 6 months = possible radiotherapy only  
| | Score < 6 weeks or permanent cord damaged = best supportive care  

### Section 16: MS McC-C Referral & Decision Making

**Recommendation:** Once MS CC referral proforma is complete contact MS CC-C/CCC triage team on **0800 1695555**

Advice can be requested at any point during the pathway, not just at the point of referral and is a 24hr service.

#### Referral Proforma/ Decision Making Tools

| - | Referral proforma will be completed by referrer (excluding greyed out sections for education & information only) |
| - | Contact MS CC-C/ triage team on 24 hr accessible hotline **0800 169 5555** |
| - | Completed proforma will be discussed by MS CC-C with on-call registrar and COW to determine management plan |

#### Multi-Agency Decision Making

- A regional specialist rota will be used to determine at any one time who are the relevant Consultant professionals to discuss the management plan with (spinal surgery, oncology, palliative care, radiology)
- Consultant to Consultant MDT will take place prior to the definitive management plan- co-ordinated by MS CC-C
- Decision will be communicated to referrer by MS CC-C/ Triage team

#### Multi-profession Referral (made by MS CC-C)

At the point of decision making, MS CC-C/ Triage team will make several multi-professional referrals to aid efficient access to the appropriate services

- **Acute Oncology Nurse Practitioner (AONP) of referral organization:** to ensure patient is referred to appropriate MDT
- **GP**
- **Palliative care team:** for patients having a single treatment as an out-patient- (8gy/1#) this will be community team and local hospice if coming from home or referring organization team if returning there, CCC in-patients will be seen by hospital team- including Holistic Needs Assessment (HNA) completion
- **Physio team:** for patients having a single treatment as an out-patient- (8gy/1#) this will be community team if coming from home or referring organization if returning there, in-patients will be seen within **24 hours** of diagnosis at CCC
- **O.T. team:** for patients having a single treatment as an out-patient- (8gy/1#) this will be community team if coming from home or referring organization if returning there, in-patients will be seen within **48 hours** of diagnosis
- **Social worker:** to facilitate discharge planning
- **Patient information centre:** to provide individual patient information prescription

#### Audit

- **Surgical provision:** MS CC teams at WCNN and RLBUHT to maintain audit data on surgical patients (to measure outcomes/ cross check against main audit at CCC)

  ![Surgical Monthly Audit Template.xlsx](Surgical Monthly Audit Template.xlsx)

- **CCC:** as the central point of access, all audit data will be captured through CCC Triage referral proforma/ IT systems
- **COSD data:** to be uploaded by CET at CCC
Management and Treatment Phase

Section 17: Treatment Options

**Recommendations:** Following triage through the single point of access at CCC, oncology Consultant of the Week (COW) will make the overall management decision. Where appropriate Consultant to Consultant MDT will take place with Radiologist, spinal surgeon, and Consultant in palliative medicine.

### Analgesia
- Refer to section 7
- **Surgical intervention:** rarely, and for those with intractable pain, invasive treatments may be used including epidural or intrathecal analgesia or neurolysis, open or percutaneous cordotomy, intraventricular or intracisternal opioids, or other interventional pain procedures

### Bisphosphonates
- If conventional analgesia fails, bisphosphonates can be used to treat spinal pain in patients with vertebral involvement from myeloma, breast cancer or prostate cancer (not for preventing MSCC)
  - Myeloma/ breast ca to reduce pain/ risk of fracture or collapse, prostate to reduce pain

### Surgery
Surgery may provide the best clinical outcome and is treatment of choice for bony instability and/or neurological disability.
- **Spinal instability:** patients with spinal metastases and imaging evidence of structural spinal failure with spinal instability should be considered for surgery to stabilise the spine and prevent MSCC.
- **Mechanical pain and paralysis:** consider patients with spinal metastases and mechanical pain resistant to conventional analgesia for spinal stabilisation surgery even if completely paralysed. Surgery will not reverse paralysis
- **External spinal support:** patients with MSCC who have severe mechanical pain and/or imaging evidence of spinal instability, but who are unsuitable for surgery, should be given external spinal support (for example, a halo vest or cervico-thoraco-lumbar orthosis)

### Radiotherapy (R/T)
External beam radiotherapy may be effective in treating pain for up to 12 months.
Radiotherapy helps control pain if there is vertebral involvement but does not reduce mechanical pain which may progress to bony instability, vertebral collapse and MSCC.
- **Paralysis and pain:** If paralysis >24hrs- unlikely to recover neurological function but 8gy/1# can still be used to reduce pain
- **Tokuhashi and SINS:** will be used to aid decision making regarding surgery or radiotherapy
- All surgical patients should have a R/T follow up to consider consolidation R/T
- **Palliative R/T regimes:** 8gy/1#, 20gy/5# (or 30gy/10# in some cases)
- **High-dose R/T:** SABR for consideration in patients with good prognostic
indicators and a single met
- **SCORAD**: R/T reports that single fraction provides equally effective pain relief as fractionated regimes
- Radiotherapy is occasionally used in patients with spinal metastases without pain with the aim of preventing MSCC but it is unclear whether this is effective.

### Best Supportive Care
- Suspected MSCC with paralysis >24hrs- discuss with MSCC-C before imaging or hospital transfer.
- Patients who are too frail or unfit for specialist treatment for MSCC should not be transferred unnecessarily.
- MSCC-C will give guidance on Hospice, community and hospital team referral

- **If the patient has an unstable spine and not fit for surgery or R/T:**
  - discuss mobilization risks
  - help patient position themselves and mobilise as symptoms permit
  - consider appliances and orthotics advice

### Systemic Anti-Cancer Therapy (SACT)
- Limited to those who have tumours that are sensitive to systemic medication
- Treatment of choice for non-Hodgkin’s lymphoma of the spine or germ cell tumours
- MDT to include haematology team/ Medical oncology COW

### Psychological Care
- **Cognitive Behavioural Therapy**: can include cognitive restructuring, increasing the person’s access and willingness to engage in rewarding activities, various forms of relaxation training, problem solving strategies, as well as assertiveness and coping skills training, is moderately effective in improving symptoms of depression, coping and adjustment

### Section 18: Appliances- Collars & Bracing

**Recommendation**: Mechanical vertebral pain may be due to weakening of the bone and is aggravated by spinal movement, lifting light weights, and even by standing.

Cervical spine collars and spinal bracing significantly reduce spinal motion, stabilise the spine, protect spinal cord and may reduce spinal pain.

**Fitting and Prescription**
- To be completed by specialist orthotics trained staff, Physio, MSCC spinal nurses, MSCC CNS
- Prescription to be completed from referral proforma at decision making stage
<table>
<thead>
<tr>
<th><strong>Mobilisation</strong></th>
<th>Yes</th>
<th>No</th>
<th>Comment and further Instruction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient requires check neck x-ray before mobilising</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient can mobilise before or without check x-ray</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Type of appliance required** | | | |
| Rigid cervical collar | | | |
| Soft cervical collar | | | |
| Cervical thoracic orthosis (CTO) | | | |
| Lumbar sacral orthosis (LSO) | | | |
| Thoracic/lumbar sacral orthosis (TSLO) | | | |
| Individual jacket (made by physio) | | | |
| Other please specify | | | |

| **Duration to be worn** | | | |
| Must wear 24hours/ day, at all times | | | |
| Wear during day remove at night when in bed | | | |
| Wear during day change to soft collar at night | | | |
| Must wear at all times when elevated above 35 degrees | | | |
| Wear only when out of bed (can sit up in bed without) | | | |
| Other please specify | | | |

| **Appliance must be worn a minimum period of [ ] weeks** | | | |
| Appliance can be removed after this period | | | |
| Patient must be assessed by specialist team before appliance instructions can be altered | | | |

**Unstable Spine**
- Appliances, collars and bracing maybe suitable for the following:
  - Suspected unstable MSCC
  - Patients awaiting surgery
  - Patients whereby surgery is not suitable
  - For C-spine: rigid collar fitted on bed rest by specialist staff in organisation eg orthotists, physio, MSCC CNS

**Stable Spine**
- To reduce mechanical pain
- Post surgery

**Skin Care**
- Areas at risk include points of contact e.g. shoulders, occiput, chin and back, extra care should be taken with skin care in these areas
Section 19: Transfer for Intervention

**Recommendations**: Effective communication and efficient transfer of patients from referrer to first intervention must be within 24 hours and can have a detrimental effect on outcome and quality of life for the patient.

### Transport Booking Responsibility for Radiotherapy

<table>
<thead>
<tr>
<th>Treatment Regime</th>
<th>To Treatment</th>
<th>Return from Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single- hospital/hospice</td>
<td>CCC Booking Desk</td>
<td>CCC Booking desk</td>
</tr>
<tr>
<td>Single- home</td>
<td>CCC Booking Desk</td>
<td>CCC Booking desk</td>
</tr>
<tr>
<td>&gt;1# from hospital/hospice</td>
<td>Referrer</td>
<td>Ward staff</td>
</tr>
<tr>
<td>&gt;1# from home</td>
<td>Referrer</td>
<td>Ward staff</td>
</tr>
</tbody>
</table>

### Transport Booking for surgery at WC or RLBUHT

- Referrer books transport into hospital
- Hospital ward books transfer out to home/ rehabilitation organisation

### Ambulance Booking Instructions

- Ringing an ambulance from home - referrer needs to inform ambulance control that this is a “clinical emergency to arrive within 1 hour”
- Return bookings can be within 4hrs to organisation or home

### Ambulance staff instructions for transfer

- **Clinical handover**: obtained from nurse attending with patient to CCC/WC/RLBUHT including relevant medical information and spinal stability status
- **Spinal stability status**: if there is spinal instability (severe mechanical pain) or neurological symptoms present - protect spinal alignment and maintain cord perfusion. Log roll.
- **Lay flat and keep on bed rest**: as flat as possible with neutral spinal alignment (pain, respiratory and cardiac symptoms permitting)

### Transfer to CCC for single fraction of Radiotherapy as an Out-patient

- Liaise with MSCC-C to organise appointment time
- **Transport**: 2 way journey to be booked by CCC booking desk
- **Clinical handover**: of patient given to MSCC-C to give to ward at CCC
- **Transfer checklist**: to be completed by MSCC-C
- Patient Handover Information From Ext
- Inform referring ward of confirmed transfer details
- Alert Senior Nurse on duty of need for nurse escort – patient must not go for radiotherapy alone, Health Care Worker (HCW) escort is only suitable if drugs do not need to be administered
- **Notes, drug chart and DNAR** to be copied and accompany patient
- **Analgesia** to be administered before transfer
- **Patient and family** to be informed of urgent transfer
- **Cleaning /continence materials** - ensure patient has emptied bladder before journey, is clean and has sufficient clothing. Take cleaning /continence materials with you if patient incontinent

## Transfer to Radiotherapy Escort Information Sheet

<table>
<thead>
<tr>
<th>Transfer to CCC for &gt;1# Radiotherapy or to WC/RLBUHT for Surgery-Treatment as an In-patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>- <strong>Liaise</strong> with MSCC-C to organize appointment time</td>
</tr>
<tr>
<td>- <strong>Transport</strong> 1 way journey to be booked by referring organisation</td>
</tr>
<tr>
<td>- <strong>Clinical handover</strong> of patient given to MSCC-C to give to ward at CCC</td>
</tr>
<tr>
<td>- <strong>Inform referring ward</strong> of confirmed transfer details</td>
</tr>
<tr>
<td>- <strong>No nurse chaperone</strong> needed as patient being transferred by paramedic ambulance</td>
</tr>
<tr>
<td>- <strong>Notes, drug chart and DNAR</strong> to be copied and accompany patient</td>
</tr>
<tr>
<td>- <strong>Analgesia</strong> to be administered before transfer</td>
</tr>
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<td>- <strong>Patient and family</strong> to be informed of urgent transfer</td>
</tr>
<tr>
<td>- <strong>Cleaning /continence materials</strong> - ensure patient has emptied bladder/has continence materials before journey, is clean and has sufficient belongings</td>
</tr>
</tbody>
</table>

### Section 20: Mobilisation & Rehabilitation

**Recommendations:** Mobilisation and care of the threatened spinal cord requires close monitoring and interval assessment regardless of management plan.

The impaired spinal cord is vulnerable to changes in vascular perfusion pressure; sitting prematurely may provoke hypotension, loss of cord perfusion, and irretrievably...
permanent loss of neurological function.

**Referral to Physiotherapy < 24 hrs, Occupational Therapy < 48 hrs of diagnosis**

The aim of rehabilitation is:
- to improve quality of life
- maintain or increase functional independence
- prolong life by preventing complications

Focus should be on holistic, client centred rehabilitation and care through well organised, multi-professional team working.

In reference to patient needs the rehabilitative approach the therapist may take will be aiming to maximise the patients functional potential in one or a combination of 4 ways

**Preventative:** maintaining normal activity/ function and preventing/ signposting for potential symptoms (health and wellbeing services)

**Restorative:** returning to as normal activities/ function pre MSCC

**Supportive/Compensatory:** use of rehabilitation strategies and equipment to adapt to changed levels of mobility/ function

**Palliative:** the use of rehabilitation strategies/ interventions to support patients and carers/ adapting to a deteriorating level of mobility/ function through best supportive strategies

The therapist will need to balance their chosen rehabilitation approaches to best meet the patients’ needs in relation to their disease, prognosis, wishes/ expectations and quality of life and should work with the patients and family/ carers to achieve this.

**Day 0: Definitive Diagnosis of MSCC- Confirmed by MRI and Clinical Examination**
Nursing/medical

- Spinal Shock: continue to monitor BP 4 hourly for signs spinal shock due to cord injury:
  - Loss of deep tendon reflexes - Hypotension + bradycardia

Physiotherapy

It will not be possible to complete a full assessment when the MSCC is managed as unstable. Once deemed stable then this can take place

If the patient is in severe pain, medically unstable, fatigued, distressed or at a terminal stage of care the therapist should consider and document the outcome of the decision regarding the appropriateness of completing assessments

Assessments should include:

<table>
<thead>
<tr>
<th>Pain</th>
<th>Formalised assessment tool- See gain document</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subjective assessment</td>
<td>History of present condition, results of investigations, past medical history, pre-admission mobility/function, social and drug history</td>
</tr>
<tr>
<td>Neurology</td>
<td>Including sensation, proprioception, motor function, muscle tone</td>
</tr>
<tr>
<td>Clinical observations</td>
<td>HR, BP, RR, SPO2 and TEMP</td>
</tr>
<tr>
<td>Respiratory function</td>
<td>Including auscultation, palpation, cough</td>
</tr>
<tr>
<td>Mobility</td>
<td>Joint range of movement</td>
</tr>
</tbody>
</table>

Occupational therapy

Day 0
Referral to OT to be completed as soon as possible. For OT initial assessment within 48 hours of diagnosis

Day 0 – 2
Once referral received, OT to read medical, nursing and other health professional notes to date. To understand the level/s of compression and potential implications

If the patient is medically unstable, distressed, symptomatic e.g. high levels of pain or fatigue or receiving end of life care, it may not be appropriate to complete OT assessments

Initial assessments should include:

| OT initial interview | Verbal information gathering: Usual Activities of Daily Living (ADL), usual social and living circumstances including housing, roles and occupations. Cognitive ability, support networks and other relevant details of the |
patient’s usual occupational level. Finding out about patients understanding of their condition. Asking about goals and wishes (ongoing through assessment and treatment process).

<table>
<thead>
<tr>
<th>Assessments (if patient on bed rest)</th>
<th>Including: <strong>Assessment of feeding</strong> on ward and provision of hospital feeding aids if available e.g. non slip mat and plate guard and one handed / large handled feeding aids (depending on position of patient and any weakness e.g. flat in bed or hand weakness). Advise if assistance is required or food choices that could be made to enhance independence. Quality of life and leisure activities e.g. access to TV, technology, reading, phone. Use of environmental controls / assistive technology options. Cognition and psychological care.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development of treatment plan</td>
<td>Gather information from MDT assessments including up to date information about patient’s progress with physiotherapy following verticalisation. Use information about the patients current physical motor function, spinal stability, sensory function, bowel and bladder function, pain, cognition, prognosis and current medical and physio plans to inform further OT assessment and treatment planned at this point.</td>
</tr>
</tbody>
</table>

**Physiotherapy and Occupational Therapy**

Treatments may include:
1. Positioning/ bed rest
2. Moving/ handling
3. Bracing
4. Physiotherapy bed exercises
5. Pain control
6. Respiratory care
7. Prevention of contractures and/ or spasticity control
8. Swelling management/ prevention
9. Pressure ulcer prevention & skin care
10. Self care in bed
11. Communication assistance
12. Cognitive care
13. Psychological care
14. Controlled/ gradual mobilisation (commencing with sitting up)
15. Verticalisation
16. Seating assessment
17. Retraining function
18. Wheelchair use and mobility
19. Activities of daily living
20. Physiotherapy exercises
<p>| | |</p>
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<tr>
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<tbody>
<tr>
<td>21.</td>
<td>Fatigue management/ increase exercise tolerance</td>
</tr>
<tr>
<td>22.</td>
<td>Sensory/ proprioceptive re-education</td>
</tr>
<tr>
<td>23.</td>
<td>Adjustment to disability</td>
</tr>
<tr>
<td>24.</td>
<td>Involvement and education of patient/ family/ carer</td>
</tr>
<tr>
<td>25.</td>
<td>Discharge planning &amp; onward referral</td>
</tr>
</tbody>
</table>

There is more detail added in each section and is based on GAIN guidance. Please note some sections will apply across the treatment pathway (for example psychological care)

1. **Positioning / bed rest**

**Patients should be nursed in flat supine with neutral spine alignment** and patients with **suspected or unstable cervical spine MSCC patients should be fitted in an appropriately sized rigid collar** (e.g. Aspen / Miami J)

If problems exist with collar fit and comfort, orthotics should be contacted for specialist assessment and collar. Sandbags may be used in addition to collars to increase immobilisation and should be placed either side of the neck.

One or no pillows should be used with suspected or unstable cervical spine MSCC patients.

Foot drop and tendo achilles shortening should be prevented by propping up the feet to at least 90° with pillows or using soft supportive foot splint boots.

Consider: self-care in bed including wash / dressing and feeding, Quality of life and leisure activities e.g. access to TV, technology, reading, and phone. Cognition, psychological care. Use of environmental controls / assistive technology.

2. **Moving and handling**

**Nursing/ Physiotherapy/ OT**

**Severe mechanical pain** suggestive of spinal instability, or any neurological symptoms or signs suggestive of spinal shock.

Nursed flat with neutral spine alignment until definitive management plan given.

Log roll.

Slipper pan for toilet.

Continue until bony and neurological stability are ensured and cautious remobilisation may begin.

**Unstable spine- Cervical and Above T6**: log roll with manual stabilisation of the cervical spine with 5 staff (5th member of staff is needed when patients require e.g. a collar change, repositioning and skin checks, upper limb support, positioning of pillows or positioning for radiotherapy treatment / investigations).
Unstable Spine below T6: Log roll with 4 staff (no need for stabilisation of C spine)

### 3. Bracing

Please see Section 18: Appliances- Collars & Bracing

### 4. Physiotherapy bed exercises

Physiotherapy exercises are advocated for the suspected or unstable MSCC patient on bed rest to:

- stretch muscles and joints
- maintain ROM
- strengthen muscle
- promote circulation
- improve psychological well-being and QOL

Exercises may be performed on the hips, knees, ankles and toes, shoulders, elbows, forearms, wrists and fingers

Exercises may include static, passive, active assisted or active rhythmic, controlled movements and stretching techniques, depending on the patient’s muscle activity, spinal stability and pain

Physiotherapy bed exercises should be performed at least 1-2 daily within strict pain limits and with monitoring of pain, power and sensation, considering precautions and any other contraindicating pathology. Movement worsening pain or neurology should be stopped and medical advice sought

<table>
<thead>
<tr>
<th>Key safety precautions on exercise / movement for suspected or unstable MSCC:</th>
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<tr>
<td><strong>Thoracolumbar MSCC patients</strong></td>
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<tr>
<td><strong>Cervical MSCC patients</strong></td>
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tenodesis grip
No neck exercises / movements

5. Pain control

Patients who experience and / or anticipate pain on movement, administration of pain relief prior to movement should be considered and break through analgesia provided as appropriate

A range of non-pharmacological interventions can be useful in managing pain:

- Positioning
- Massage
- Collars/ bracing
- Relaxation
- Transcutaneous electrical nerve stimulation (TENS)
- Acupuncture
- Heat (contraindicated over the site of cancer and pressure ulcers)
- Cognitive Behavioural Therapy (CBT) aimed at modifying dysfunctional pain cognitions and coping abilities
- Motivational interviewing
- Liaise with medical and palliative care services

6. Respiratory care

- Breathing exercises
- Forced expiratory techniques and coughing
- Expiratory flow resistive devices
- Positioning
  - The recommendations for supine positioning may need to be medically reviewed considering the degree of spinal instability and risk of neurological damage, breathlessness, pain, pressure, shear and if relevant, the patient’s end of life goals.
- Use of oxygen
- Inhalers / nebulisers
- Non-invasive positive pressure ventilation (NIPPV)
- Invasive positive pressure ventilation (IPPV)

7. Prevention of contractures and/or spasticity control

Prevention of contractures and/or spasticity control may include:

- Corrective positioning and splinting
- Physiotherapy stretching and exercises
- Muscle relaxants

8. Swelling/DVT management and prevention

- Use of prophylactic graduated compression stockings
- Active Exercises
- Passive Exercises
Positioning
- Elevation

9. Pressure ulcer prevention & skin care
To be considered during all therapeutic activities

Day 1:

10. Self-care in bed
Continued nursing support for personal care, arrangement of bed area and feeding
See in OT initial assessment (day 0) about support and exploring patients function level while on bed rest
Consider referral to Dietitian/ SALT as appropriate

11. Communication assistance
Ensure access to call bell at all times
Patients who have difficulties with communication including loss of voice, or difficulty using phone or technology to communicate may need assessment or assistance including positioning of equipment e.g. phone stands, book stands, referral for environmental controls, use of assistive technology
Consider referral to SALT as appropriate

12. Cognitive care
Assessment of acute confusion as may impact on function- consider use of screening tools
Patients with acute confusion or longer term cognitive impairment may struggle to remember and follow advice about bed rest. This will need to be considered as part of the medical and nursing care plan with regards to the risks associated with this and how it will be managed at ward level e.g. use of falls alarms / bed pressure pads or 1:1 nursing care
OT assessment of cognitive impairment and the impact on function and usual occupational performance
Consider:
- Reinforcing previously learned patterns of behaviour. Establishing new patterns of cognitive activity if possible. Establishing new patterns of activity through external compensatory mechanisms such as environmental structuring and support
- Enabling persons, families and carers to adapt to their cognitive disability, even though it may not be possible to directly modify or compensate for
cognitive impairment, in order to improve their overall level of functioning and QOL

- Consider risks and safety associated with discharge from hospital

### 13. Psychological care

Understanding the potential impact of the diagnosis of MSCC on patients, families and carers
Providing opportunities to explore and discuss emotions, issues, mood, worries and help patients, families and carers adjust to changed levels of ability and health

Consider use of tools to explore patients psychological need e.g. holistic needs assessment

Consider onward referral to specialists on psychological care as appropriate

### 14. Gradual/ controlled mobilisation

Continue as day 0 until clinical decision made regarding spinal shock and spinal stability prior to verticalisation

If patients spine unstable a decision regarding bracing to be made (please see separate section on bracing)

**Bracing**

Indications:

- Patients with unstable MSCC but not suitable for surgery (see bracing section)
- Patients with unstable MSCC but not suitable for surgery but with significant preservation of power and sensation (to protect neurological status)
- Patients with significant mechanical pain
- Post-operatively as per consultant recommendation

### 15. Verticalisation

BP should be checked prior to mobilising to assess for postural hypotension

If blood pressure remains stable and no significant increase in pain or neurological symptoms occurs patient can begin verticalisation or graduated sitting to 60 degrees over a period of 3-4 hours
Day 1-2 and onwards

Physiotherapy

When the patient can sit upright in bed comfortably with no increase in pain or changes in neurological symptoms then remobilisation can commence as follows

1. Sit patient to 15°
2. Reassess pain, neurology and sensation in this position
3. Any increase in pain, changes to neurology and/or sensation?
   - 4a. Yes
   - 4b. No
   5. Lie down to previous position and ask for medical review
   6. Continue to sit up through to 30°, 45° and 60° going back to question 2 at each stage
Red Flag symptoms: if a significant increase in pain or neurological symptoms occurs with any mobilisation, return to a position where these changes reverse and reassess the stability of their spine. Consider increasing Dexamethasone, consider bracing for pain relief, consider re-scanning if potential further MSCC.

If no changes in management and clinical decision to continue remobilisation, then the medical team will need to clearly document and the consequences discussed with the patient and family/carer

16. Seating assessment

Physiotherapy/OT

- ROM for hip flexion, abduction and adduction and knee flexion/extension should be obtained when in supine.

- On initial sitting up over the edge of bed, pain, balance, tonal changes, weight distribution, preferred sitting posture, spinal alignment, pelvic position, limitations in ROM, requirement for bracing, fatigue, tolerance for sitting, ability to maintain posture and reposition and respiratory function should be assessed.

- Body measurements to guide the prescription of seating should be carried out.

- The patient’s skin integrity and pressure ulcer risk will also influence the selection of seating and pressure-redistributing seat cushion.

- Other factors that should be considered during the seating assessment
include transfer ability and technique, level of function and independence, continence, overall comfort and cognition, potential for improvement.

- Consider implications for discharge planning

**Sitting time**

Patients should be closely monitored for pain, changes in neurology, ability to maintain posture and skin integrity on initial sitting out.

Consider restricting sitting out for < 2 hours initially with gradual progression

**Repositioning**

Repositioning should be considered for all those deemed at risk of pressure ulcers

- Those who can safely walk should be encouraged to so every few hours
- Those who can reposition themselves in sitting should be encouraged to do so every 15-30 minutes.

When a manual weight shift cannot be performed the use of a mechanical reclining or powered tilt chair/ wheelchair should be considered

17. **Retraining Function and Movement- stable MSCC**

Degree of functional independence achievable is dependent on the level and completeness of the spinal cord compression and resulting motor weakness, sensory dysfunction and pain.

**Physiotherapy and OT**

**Bed Mobility**
To maximise independence with monitoring of pain and neurology there is a need to assess an individual’s ability to:
- rolling in bed
- moving up, down & across bed
- getting in and out of bed
- lying to sitting to lying
- getting into and out of bed

**Functional Transfers on ward (e.g. beds to chairs)**
Moving and handling:
- assistance required
- transfer technique
- devices required
- weight
- size
- mobility
- space
- pressure relief & skin care
- Sitting balance
- cognitive status
- fatigue

Therapy handling:
- 180° transfers
- Chair to floor transfers
- Height difference transfers
- Car transfers

**Balance, gait and mobility re-education**
Re-education should be commenced to restore more independent mobility, whether by ambulation or wheelchair mobility

**18. Wheelchair use and mobility**

**OT/ Physiotherapy**
- Sensitive introduction of wheelchair use
- Inpatient wheelchair assessment or referral to wheelchair services for assessment.
- Check with the patients’ medical team regarding patient ability to self-propel considering mechanical stress.
- Assessment of suitable size and type of wheelchair e.g. self-propel wheelchair, tilt in space wheelchair for those patients with reduced sitting balance
- Assessment of pressure care needs for the wheelchair.
- Training in use of wheelchair of patients unable to walk
- Consider provision of wheelchair for discharge from hospital

**19. Rehabilitation of activities of daily living**

Understanding patients goals, wishes and usual occupations and relate rehab sessions and goals accordingly

Treatment sessions including use of meaningful occupation to improve function and activity tolerance

Upper limb and hand function
Transfers including toilet, bed, chair and bath/shower
Personal ADL including wash / dress, toileting, feeding
Domestic ADL including cooking, housekeeping, laundry, use of transport, managing money and managing medication
Usual occupations and roles
Leisure activities

Patients with braces and collars: clarify in what position the brace is to be put on, need for log rolling, is assistance required to put on / take off brace in lying position or in the position recommended by the patients’ Medical team
Impact the immobilisation of spine / part of spine has on function / ADLS. Assessment for discharge. Potential need for additional support for discharge from hospital

Patients remaining on bed rest: The patient may remain cared for in bed in flat, spine straight position. Consider: moving and handling, positioning and pressure care, log rolling, self care in bed including wash / dressing and feeding. Quality of life and leisure activities e.g. access to TV, technology, reading, phone. Cognition, psychological care. Use of environmental controls / assistive technology. Discharge planning for a patient on bed rest

Consider the use of compensatory strategies:

Equipment including:
- Moving and handling equipment
- Equipment to assist transfers at home inc toilet, chair, bed, bath/shower
- Daily living equipment
- Advice re: smaller equipment for ADLs including feeding and dressing aids
- Assistive technology and environmental control systems

Wheelchair
Seating

Environmental needs including potential need for home or environmental assessment pre-discharge
Pressure care and positioning needs
Cognitive needs
Additional assistance required to manage ADL.
Consideration of further inpatient / intermediate care rehabilitation

Discharge planning to a home environment may be simple or complex depending on the patient's circumstances and / or level of disability

Consider onward referral for patients to have OT for rehab, further assessment, equipment or adaptations at home (usually via social services OT, community health service OT or OT services in community palliative care teams or hospices)

20. Physiotherapy exercises

Exercises may include:

- static
- passive
- active assisted
- active and resisted exercises
- stretching techniques
- balance exercises
- use of Bobath techniques in various positions depending on the patient's muscle activity, spinal stability and pain
- Written instructions issued to patients and carers
- FES of the muscles may be a useful adjunct to exercise and movement
### 21. Fatigue Management and increasing exercise tolerance

Assessment of fatigue and exercise tolerance should be assessed

- Education offered including:
  - understanding nature of cancer related fatigue
  - pacing
  - planning
  - balancing
  - prioritising activities
  - energy conservation techniques
- Patients should be encouraged self-monitor fatigue levels
- Graduated exercises taught to reduce fatigue and increase exercise tolerance
- Relaxation techniques taught
- use of adaptive equipment and additional support to manage with increased levels of fatigue

### 22. Sensory and Proprioceptive Re-education

Use and exercise of the affected limb(s)
Compensatory techniques and environmental modifications may be needed
Education on increased safety awareness

### 23. Adjustment to disability

Patients with MSCC have to live with the psychological, physical and emotional effects of advanced cancer as well as the consequences of a disability and the impact this has on their day to day lives

In the early stages, patients may be uncertain and unrealistic of their abilities and the potential impact their disability has on their lives

An opportunity should be given to explore and set goals. Realistic goal setting as part of the rehabilitation process to maximise independence and control should be negotiated and implement

While patients may describe goals and plans that seem overly optimistic and impracticable, other goals may be feasible and grounded

Rather than directly contradict unrealistic goals, reasonable and achievable goals should be encouraged and agreed

### 24. Involvement and education – patient, family, carer

Patients, families and carers should be educated early from admission about the rehabilitation process

They should be encouraged to participate in discharge planning discussions from admission

Patient, family and caregiver education should be provided as appropriate in
the following areas:
- Skin care and pressure ulcer prevention
- Respiratory care
- Stretches and exercises
- Handling and transfer methods
- Walking and walking aids
- Fitting and use of any orthosis and bracing with advice on hygiene / changing of liners and skin checks
- Stair techniques
- Personal care activities
- Safe use of prescribed equipment
- Relaxation techniques
- Fatigue management
- Reporting of increased or recurrence of signs and symptoms e.g. pain or neurological symptoms or worsening mobility

Section 22: Discharge Planning

Recommendations: Multidisciplinary discharge planning should start from the admission involving the patient, their family and carers

MDT Health professionals
- Consultant oncologist/ haematologist
- Consultant surgeon
- Consultant in Palliative medicine
- Hospital Physio/ O.T.
- Social Worker
- MSCC-C
- Ward medics
- Ward nurses
- GP
- Community palliative care team
- Hospice
- Community Physio and O.T. teams (home assessment)
- Rehabilitation services
- Moving and handling team

Discharge Plan Inclusion
- Residence following discharge
- Expected functional outcomes
- Care needs
- Follow up information and appointments
- Equipment needs and recommended changes to residents

Discharge Summary
- Appendix
- Spinal stability/ appliance prescription

Onward referral for rehabilitation
- Survival following MSCC may be short but this varies greatly between different diagnostic groups
- Rehabilitation teams must balance the goals and prognosis with an appropriate period of rehabilitation
- Specialised rehabilitation services—specialist palliative care rehabilitation teams, hospice rehabilitation and day therapy, primary care rehabilitation teams, spinal cord injury unit rehabilitation home from hospital schemes, step down beds and community rehabilitation may be considered
Discharge Planning Pathway

Admission - Discharge planning begins
- MSCC-C referral to social worker at diagnosis
- Mental capacity assessed and documented if concerns (Appendix x)

Ascertain Functional Ability During & Post Treatment
- Physio/O.T assessment

Discharge Discussion
- MDT/ patient/ Family

Social Worker Assessment & Referral
- Appendix x (assessment of SC need/ Section 2 delayed discharge act 2003)
- Appendix X( Continuing Healthcare checklist)
- Discharge summary (Appendi X form)

Social Care needed - YES

Social Care needed- NO

Social services
- >3 months prognosis

Continued Health Care
- Checklist triggered
- Complex needs

Fast track
- <3 – 6 months

DGH
- Complex medical

Home

Hospice

Specialist Rehabilitation Services Directory
- Local specialist palliative care rehabilitation teams
- Hospice rehabilitation and day therapy
- Primary care rehabilitation teams
- Spinal cord injury unit rehabilitation
- Home from hospital schemes
- Step down beds and
- Community rehabilitation
Section 23: Patient Information & Red Flag Cards for Health Professionals

**Recommendations:** All patients should have equitable access to information regarding their cancer, its management and other related information. Information should be in an appropriate language and format that also explains how to access psychological and/or spiritual support services when needed.

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<thead>
<tr>
<th>MSCC Patient Information Leaflet</th>
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<tr>
<td>![PDF](MSCC patient information leaflet.pdf)</td>
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<th>MSCC Alert Card</th>
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<td>![PDF](MSCC alert card.pdf)</td>
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<tr>
<th>Individual Information Prescriptions</th>
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<tbody>
<tr>
<td>All Patients should be offered and provided with an individual patient pack that contains information appropriate to their needs</td>
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<tr>
<td><a href="https://www.macmillan.org.uk/">https://www.macmillan.org.uk/</a></td>
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<tr>
<th>Bereavement Support</th>
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<tbody>
<tr>
<td>Offer families and carers support links regarding bereavement services if appropriate to their needs</td>
</tr>
<tr>
<td><a href="https://www.macmillan.org.uk/search/search.html?query=bereavement+">https://www.macmillan.org.uk/search/search.html?query=bereavement+</a></td>
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<th>Red Flag Cards for Health Professionals</th>
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**Early Warning Signs of MSCC**
- Referred back pain is multi-segmental or band-like
- Escalating pain which is poorly responsive to treatment (incl medication)
- Different character or site to previous symptoms
- Funny feelings, odd sensations or heavy legs (multi-segmental)
- Lying flat increases back pain
- Agonising pain causing anguish and despair
- Gait disturbance, unsteadiness, especially on stairs (not just a limp)
- Sleep grossly disturbed due to pain being worse at night

**NB:** Established motor / sensory / bladder / bowel disturbances → late signs

**Metastatic Spinal Cord Compression (MSCC)**
Key Red Flags
- Past medical history of cancer (but note 25% of patients do not have a diagnosed primary)
- Early diagnosis is essential as the prognosis is severely impaired once paralysis occurs
- A combination of Red Flags increases suspicion (the more red flags the higher the risk and the greater the urgency)

To access the Greater Manchester and Cheshire MSCC guidelines go to: [www.christie.nhs.uk](https://www.christie.nhs.uk) (search “spinal cord compression”)
Service Configuration and Key Priorities

1. **MSCC Service provision**: ensure there is a C & M network service commissioned that has a clear pathway for diagnosis, treatment, and rehabilitation that is monitored and audited.

2. **MSCC site specific steering group**: includes representatives from primary, secondary and tertiary care with strong links to primary tumour site specific groups.

3. **MSCC lead is responsible for**:
   - advising the network, commissioners and providers about the provision and organisation of relevant clinical services
   - ensuring pathway for diagnosis and management are documented, agreed and consistent across the network
   - ensuring telephone contact for the role of an MSCC coordinator and senior clinical advisers
   - maintaining a network-wide audit of the incidence, timeliness of management, and outcomes of patients with MSCC using nationally agreed measures
   - arranging and chairing twice-yearly meetings of the network site specific group for MSCC, at which patient outcomes will be reported and the local care pathway reviewed and amended if necessary.

4. **Patient information & health professional red flag cards**: educate health care professionals and provide them with red flag alert cards so they can inform patients at high risk of developing bone metastases, patients with diagnosed bone metastases, or patients with cancer who present with spinal pain about the symptoms of MSCC.

5. **Contact the MSCC coordinator urgently (within 24 hours)**: to discuss the care of patients with cancer and any of the following symptoms suggestive of spinal metastases:

**Pain**

- pain in the middle (thoracic) or upper (cervical) spine
- progressive lower (lumbar) spinal pain
- severe unremitting lower spinal pain
- spinal pain aggravated by straining (for example, at stool, or when coughing or sneezing)
- localised spinal tenderness
- nocturnal spinal pain preventing sleep.
Neurology

- neurological symptoms including radicular pain
- limb weakness
- difficulty in walking
- sensory loss
- bladder or bowel dysfunction
- neurological signs of spinal cord or cauda equina compression

6. **MRI whole spine**: within 24 hours if pain is suggestive of spinal instability or neurological symptoms are present.

7. **Lay flat with neutral spine alignment**: if mechanical pain suggestive of spinal instability or signs of MSCC

8. **Definitive treatment within 24 hours of diagnosis**: to maximise outcome

9. **Discharge planning and rehabilitation**: to start at diagnosis

Epidemiology

- MSCC is a well-recognised complication of cancer and is usually an oncological emergency.

- Metastases to the spinal column occur in 3–5% of all patients with cancer, most commonly those with breast cancer, prostate cancer and lung cancer, in whom the incidence may be as high as 19%.

- Patients with breast, lung and prostate cancer account for more than 50% of MSCC cases.

- MSCC occurs when there is pathological vertebral body collapse or direct tumour growth causing compression of the spinal cord or cauda equina which results in irreversible neurological damage and possible paraplegia.

- The ability to walk at the time of diagnosis is a statistically significant predictor of outcome in terms of survival. Once paraplegia develops it is usually irreversible.

Incidence

- Due to the lack of a recognised coding system for the diagnosis of MSCC in the UK, it's estimated it affects 5–10% of patients with advanced cancer.
• It is likely that the incidence of MSCC will increase in the future with improving cancer treatments resulting in better survival and outcomes.

• The median age at time of MSCC diagnosis is 65 years.

• 24% presented with MSCC as the first presentation of malignancy.

**Aetiology and Pathophysiology**

• In 7% of patients the site of primary tumour may remain unidentified

• Three mechanisms are responsible for MSCC:
  
  - haematogenous spread to the vertebral spine causing collapse and compression, accounting for over 85% of cases
  
  - Less commonly it occurs secondary to direct tumour extension into the vertebral column
  
  - or by direct deposition of tumour cells.

• Direct compression results in oedema, venous congestion and demyelination.

• **Gradual and of recent onset with some preservation of neurological function:** the effects are often reversible.

• **Prolonged compression:** vascular injury ensues causing infarction of the spinal cord, recovery is unlikely.

• **Slow onset compression with an accompanying gradual neurological deficit:** often there is a degree of cord adaptation and usually predicts a better outcome than sudden onset compression and neurological loss.

**Clinical Signs & Symptoms**

• **Back pain in 95%:** most common localised spinal pain or neurogenic radicular pain.

• **Weakness of the limbs 85%:** is the second most common symptom.

• **Sensory symptoms 52%:** include paraesthesia, decreased sensation and numbness of toes and fingers which may extend to the level of cord compression.
• **Autonomic dysfunction:** such as impotence or bladder and bowel
dysfunction presenting as urinary retention, incontinence or constipation
(Constipation was the commonest bowel symptom and occurred in 67% of
patients).

• Over two thirds of cases of MSCC occur in the thoracic spine and between 4
and 7% occur in the cervical cord.

• 17% of patients have two or more levels of cord compression.

**Survival/ Mortality**

• Median survival after diagnosis is 2-3 months

• Primary tumour site and ability to walk at diagnosis of MSCC as independent
predictors of survival.

• The histology of the primary tumour is probably the best predictor of survival.

• Patients with MSCC can be divided into three groups:
  - those with myeloma (especially solitary plasmacytoma), lymphoma, breast
    or thyroid cancer: survival 18 months or more.
  - those with renal or prostate cancer, or metastatic sarcoma: survival 12 to 18
    months.
  - those with melanoma, lung or gastro-intestinal cancer, or unknown primary
tumours: survival less than 12 months.

• Longest survival in patients with haematological malignancies
(lymphoma,leukaemia and multiple myeloma 66% at 3 months) and prostate
cancer.

• Lung cancer patients had the shortest survival 22% at 3 months.

• Surgically treated patients had significantly better survival at one year (57.4%
vs 13.3%).
References


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Record of a Mental Capacity Assessment