Greater Manchester, Lancashire and South Cumbria
Strategic Clinical Networks

Guidelines for the Management

Of

Malignant Spinal Cord Compression

Final Guideline

V1.0 Interim Update February 2014
Review : April 2014

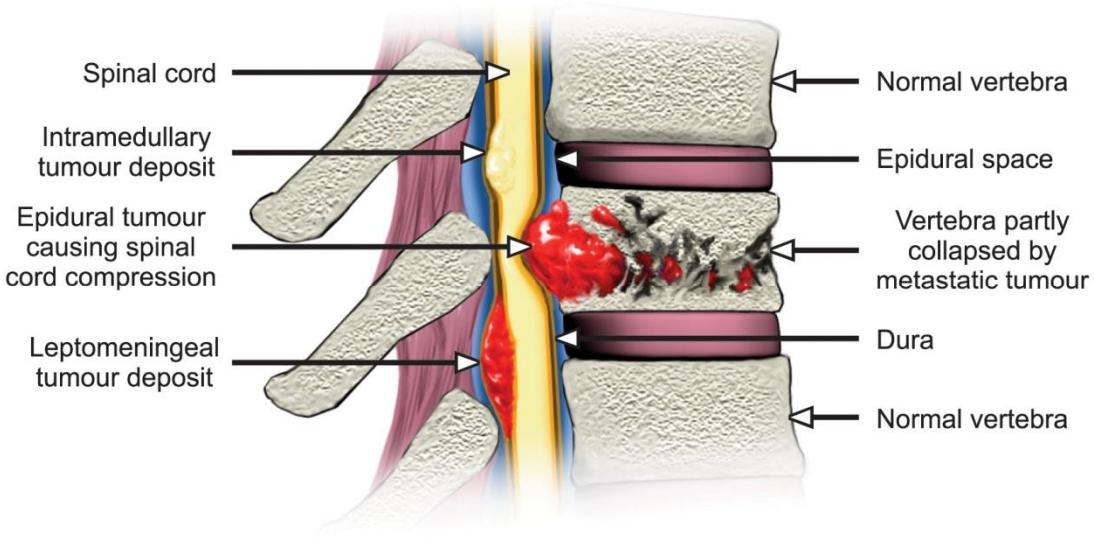
1 Introduction

Metastatic spinal cord compression (MSCC) is defined in this guideline as spinal cord or cauda equina compression by direct pressure and/or induction of vertebral collapse or instability by metastatic spread or direct extension of malignancy that threatens or causes neurological disability.

1.1 Aetiology of MSCC

The spinal column is the most common site of bony metastases with the thoracic spine being most frequently affected (70%), followed by lumbosacral (20%) and cervical (10%). Extradural compression of the spinal cord occurs due to tumour expansion into the epidural space, usually from dissemination of malignant cells to the vertebral bodies or surrounding tissues via the vascular circulation. Direct extension from an intra-abdominal or intra-thoracic primary adjacent to it or a primary malignancy arising in the vertebral body can also occur. Intradural spinal cord neoplasms (intramedullary and extramedullary) or metastases (intramedullary) can also present with symptoms of spinal cord compression but this guideline will focus on extradural MSCC. Figure 1 shows the different types of malignant invasion of the spinal cord.

Figure 1: Malignant Invasion of the Spinal Cord



MSCC can be the presenting manifestation of a cancer or can be the sole site of recurrence. It is however, more common for it to occur where there is widely disseminated disease. Spinal metastases may occur in all age groups, but the period of highest prevalence coincides with the relatively high cancer risk period of 40-65 years of age. Most patients will die as a result of their underlying cancer within a year of the diagnosis of spinal cord compression; however patients with more favourable prognostic factors can survive beyond two years.

1.2 Use of the guideline

This guideline offers best practice advice on the care of patients at risk of or with MSCC. Treatment and care should take into account patients' needs and preferences. People with

MSCC should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals.

Good communication between healthcare professionals and patients is essential. It should be supported by evidence-based written information tailored to the patient's needs. Treatment and care, and the information patients are given about it, should be culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English. If the patient agrees, families and carers should have the opportunity to be involved in decisions about treatment and care. Families and carers should also be given the information and support they need.

2 Summary of Pathway

2.1 Algorithms

Algorithms outlining the diagnostic and treatment pathways have been developed and agreed by the Lancashire and South Cumbria Cancer Network Metastatic Spinal Cord Compression Group.

The algorithms are shown in Appendix 1 (diagnostic algorithm) and Appendix 2 (treatment algorithm).

2.2 Role of the MSCC co-ordinator

The MSCC co-ordinator is based at the cancer centre (Preston Royal Hospital) and will be the first point of contact for clinicians who suspect that a patient may be developing spinal metastases or MSCC. The co-ordinator will undertake a telephone triage and assess the requirement for:

- Investigations
- Transfer to the centre
- Treatment.

In addition the co-ordinator will provide the referring clinician with advice on the immediate care of the spine and spinal cord as appropriate and seek further clinical advice as necessary.
The care of MSCC patients will be determined by senior clinicians (clinical oncologists, neuro/spinal surgeons, radiologists). Therefore the co-ordinator will need to gather baseline information to aid decision-making, identify the appropriate place for timely investigations and organise the meeting for clinicians to decide on treatment.
Finally the co-ordinator will liaise with the clinical teams to facilitate the patient's transport and admission.

3 Referral and Diagnosis

3.1 Key signs and symptoms

It is the non-specialist in primary, secondary or tertiary care that has to be alert to the possibility of MSCC in their own setting.

Pain

- Pain is usually the earliest presenting symptom and has often been present for a number of weeks before MSCC is diagnosed (median 6-8 weeks). It may be intermittent initially and exacerbated by an increase in intra-abdominal pressure such as coughing or sneezing.

- The onset of pain can be mild but often escalates and escapes pain control even with increases in opioids.
- Nerve root compression may present with radicular symptoms only, although it usually follows back pain. Radicular pain follows the distribution of the involved segmental dermatome. Compression by a thoracic lesion usually radiates in a band around the chest or upper abdomen often bilaterally and is frequently described as a tight band around the chest or abdomen that causes the patient to feel as if they are being squeezed. Radicular pain is exacerbated by activities involving the valsalva manoeuvre, such as: coughing, sneezing, straining, straight leg raising and neck flexion.

Motor deficits

- Specific muscle weakness may emerge initially in the legs regardless of the level of compression. Compression of the lower cervical and upper thoracic nerve roots can present with upper limb weakness.
- The patient may complain of “heavy” or “stiff” limbs causing, for example, difficulty climbing stairs.
- The developments of ataxia, loss of co-ordination or paralysis are usually late findings.

Sensory deficits

- Paraesthesia and loss of sensation may develop progressing upwards from the toes in a stocking-like fashion eventually reaching the level of the lesion but is poorly localised to the site of the lesion.
- The patient may experience altered sensation to touch, pain and temperature.

Autonomic dysfunction (usually late presenting symptoms)

- Sphincter disturbances can increase the tendency to constipation and/or urinary retention and this can progress to double incontinence.
- Male patients can experience decreased power of erection.

General

- Taking to bed or needing a catheter, even in the absence of pain, should raise the possibility of MSCC.

3.2 Investigation protocol for suspected MSCC

Physical Assessment

When a patient presents with signs or symptoms suggestive of MSCC, a comprehensive assessment of their immediate physical (including a full neurological assessment), psychosocial and emotional needs is required.

Radiological Investigation

MRI of the whole spine is the investigation of choice in suspected cord compression. If a patient has signs and symptoms suggestive of MSCC, this should be requested on an urgent basis. MRI should be undertaken within 24 hours at the local unit in the case of spinal pain suggestive of spinal metastases and neurological symptoms or signs suggestive of MSCC. In the acute situation, pursuing bone scans and plain X-rays only results in delay in diagnosis and localisation of pathology.

4 Treatment

4.1 Introduction

The primary objectives of treatment for MSCC are to restore spinal cord function and to relieve pain and distress. A comprehensive patient assessment and examination will

provide the evidence to make the necessary decisions about treatment. Primary diagnosis, functional ability and performance status (PS) are all important in treatment selection. Patients may receive one or a combination of treatments. These include; steroid administration, radiotherapy, chemotherapy and surgery. A brief description of each of these potential treatments will now be provided, followed by a brief section on general palliative care.

4.2 Steroid administration

They are administered in an attempt to prevent further neurological deterioration and for their analgesic effect. These effects are thought to be achieved by decreasing spinal cord oedema and a possible oncolytic effect on some tumours, in particular lymphoma and breast cancer.

See appendix 3 for the steroid regime.

4.3 Radiotherapy

Radiotherapy is the most common treatment in the management of patients with MSCC. The aims of radiotherapy are to reduce pressure on the spinal cord through tumour shrinkage and achieve local tumour control at the site of cord compression. This can lead to some or complete resolution of neurological symptoms and signs and to prevent further neurological deterioration. It may also help to relieve spinal and radicular pain (see appendix 4).

4.4 Chemotherapy

The role of chemotherapy in MSCC is limited to those patients who have chemo-sensitive tumours where treatment with appropriate cytotoxic drugs may be considered. It is the primary treatment of choice for localised non-Hodgkin's lymphoma of the spine and germ cell tumours. In instances where patients are already receiving chemotherapy for their primary cancer diagnosis, the oncologist will advise on whether this treatment should be continued/discontinued/delayed (see appendix 5).

4.5 Surgery

Advances in surgical techniques for tumour decompression and spine stabilisation, neurophysiologic monitoring and anaesthetic expertise, have allowed surgeons to perform more extensive procedures with improved patient outcomes and reduced morbidity. There is, however, very little reported good quality evidence on the most appropriate surgical interventions for patients with MSCC, although it is generally agreed that improved surgical outcomes are achieved when decompression is combined with internal fixation and fusion.

The results of a recent randomised, multi-institutional, non-blinded trial provide important evidence to suggest that decompressive surgery plus postoperative radiotherapy is superior to treatment with radiotherapy alone. This suggests a potential reversal in the current philosophy of radiotherapy as the primary treatment for patients with MSCC. Surgery that frees the spinal cord at the site of compression in addition to reconstructing and stabilising the spinal column was shown to be more effective at preserving and regaining neural function, notably ambulatory function and sphincter function, than conventional radiotherapy. It is also highly effective in relieving pain (see appendix 6).

5 Clinical Care

5.1 Rehabilitation and multi-professional referral

Referrals should be considered to the following multi-professional staff:

- Physiotherapist (within 24 hours of admission).
- Occupational Therapist (OT) (within 24/48 hours of admission).
- Social Worker.
- Specialist Palliative Care Team.
- Dietitian.
- Speech & Language Therapist.
- Clinical Psychologist or Counsellor.
- Hospital Chaplain.

6 Rehabilitation/Maximising Potential

The rehabilitation pathway outlining interventions required by allied health professional has been developed by the National Cancer Action Team and adopted by the Lancashire and South Cumbria Cancer Network. This is shown in appendix 7 and can be viewed online at http://www.cancer.nhs.uk/rehabilitation/rehab_pathways.html.

7 Patient Information and Education

7.1 Specific Recommendations

It is recommended that information is given to patients in two main groups:

Patients with a diagnosis of MSCC

The Lancashire and South Cumbria Cancer Network booklet **"Metastatic Spinal Cord Compression – Information for Patients"** should be given in addition to any relevant cancer site specific or treatment information.

Patients considered to be at risk of MSCC

- Diagnosis of breast, lung or prostate cancer with bone metastases.
- Any other patient considered to be at high risk by their clinician.

Since these patients are considered to be at high risk of developing MSCC, it is recommended that they are given written and verbal information prophylactically to enable them to identify early symptoms and contact an identified health care professional to initiate prompt treatment and optimise prognosis and treatment outcomes.

The LSCCN patient information booklet should be used as it includes the contact number for the Cancer Centre MSCC coordinator. This should be supplemented with the appropriate local contact number for the patient to phone, in the first instance, should MSCC symptoms develop.

The contact number given to patients should be directly to the Cancer Centre if the patient is receiving treatment there. For high risk patients being seen or treated in local Trust areas, the contact number should be for their own oncology team. Systems should be in place in both the Cancer Centre and the local hospitals for the identified health care professionals to follow, should the patient contact them to report symptoms.

8 Discharge Planning

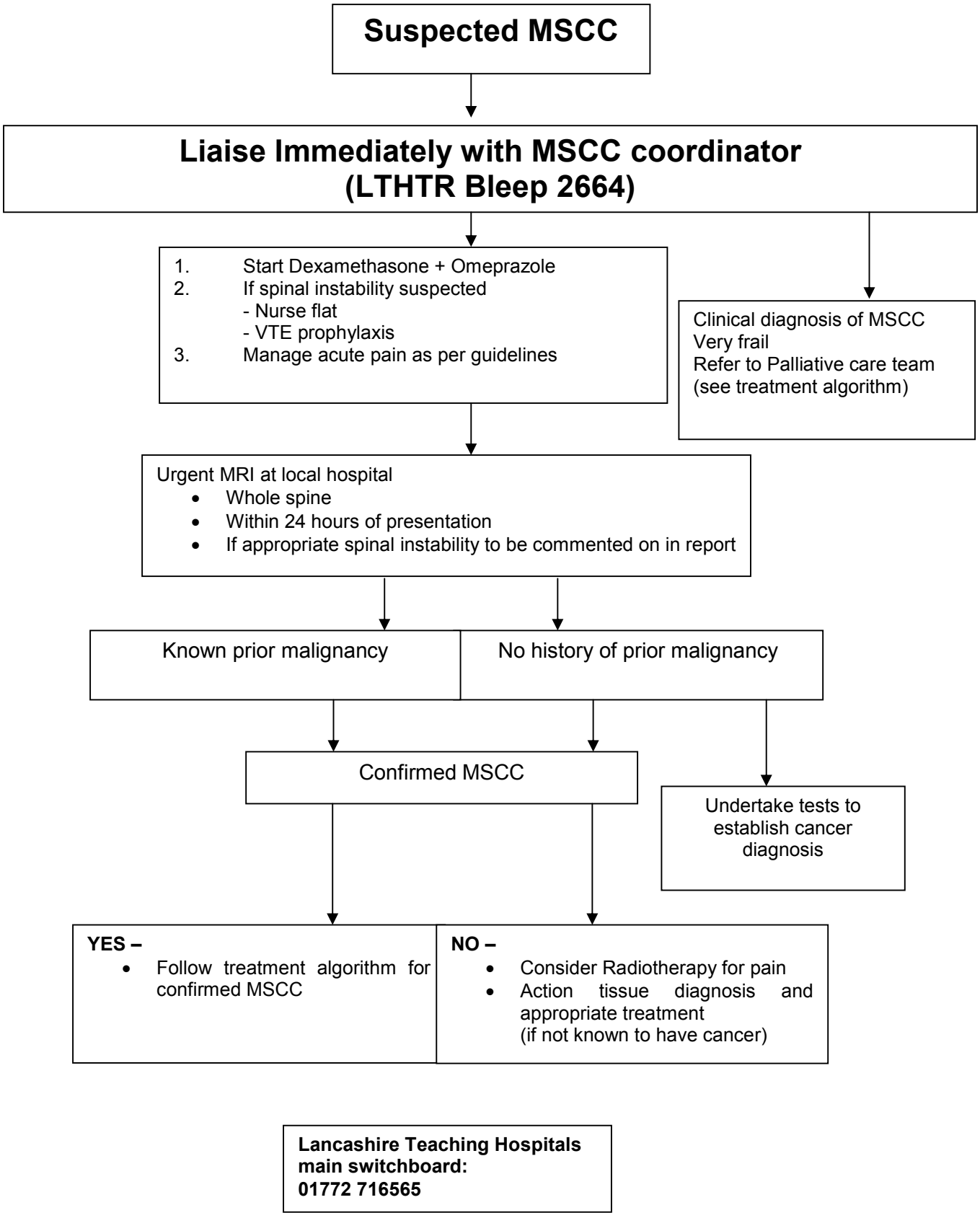
A nominated key worker should be identified as early in the patient's journey as possible to enable a co-ordinated and collaborative discharge plan whilst ensuring the input of all the relevant disciplines involved.

8.1 Post-discharge

A change of Key Worker may be appropriate post discharge as the initial person is likely to have been hospital-based. This is probably best to be the health professional who is going to be most involved with the patient, and has the added knowledge of MSCC. The key worker could be responsible for referring the patient for further support from e.g. the voluntary sector or other charitable organisations.

Appendix 1

Diagnostic Algorithm for Suspected Metastatic Spinal Cord Compression (MSCC)



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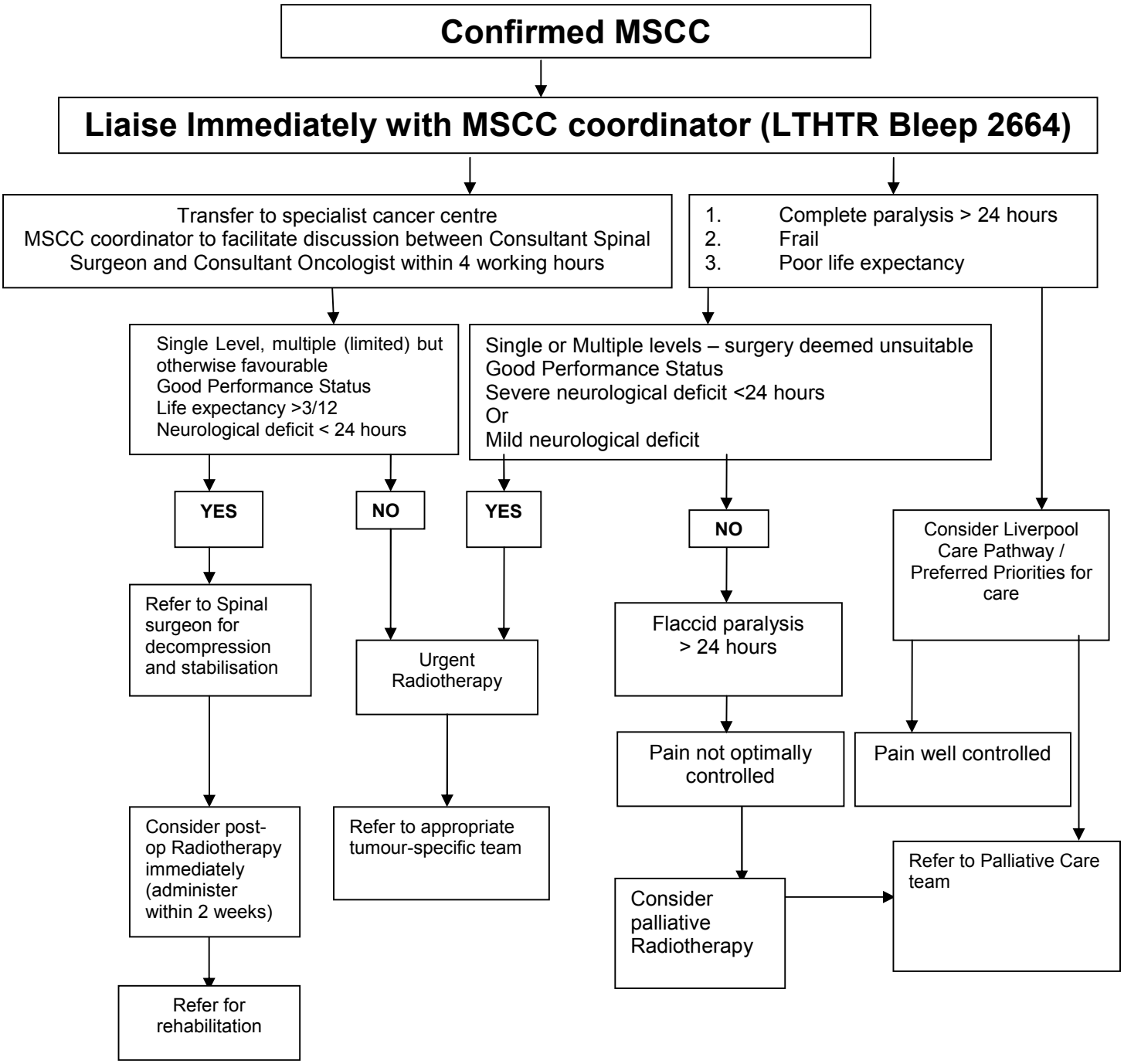
Appendix 2

Treatment Algorithm for Metastatic Spinal Cord Compression (MSCC)



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Appendix 3

Proposed regime for starting dexamethasone and then reducing the dose for metastatic spinal cord compression for patients receiving radiotherapy

Event	Diagnosis suspected	Decision for radiotherapy	Day 2 of radiotherapy regime	5 days after completion of radiotherapy	3-7 days later review steroid dose and reduce if possible	3-7 days later review steroid dose and reduce if possible	3-7 days later review steroid dose and reduce if possible	3-7 days later review steroid dose and reduce if possible
Dose and timing of steroid dose	Start Dexamethasone 8mg morning	Continue Dexamethasone 8mg morning	Continue Dexamethasone 8mg morning	Continue Dexamethasone 8mg morning	Dexamethasone 6mg depending on patient's condition	Dexamethasone 4mg depending on patient's condition	Dexamethasone 2mg depending on patient's condition	Stop dexamethasone depending on patient's condition
	Continue Dexamethasone 8mg lunchtime	Continue Dexamethasone 8mg lunchtime	Reduce Dexamethasone 4mg lunchtime	Stop lunchtime steroids				
Additional medication	Proton pump inhibitor	Continue proton pump inhibitor	Continue proton pump inhibitor	Continue proton pump inhibitor	Continue proton pump inhibitor	Continue proton pump inhibitor	Continue proton pump inhibitor	Stop proton pump inhibitor unless needed for other reasons
Notes	Monitor for Steroid-induced diabetes		REDUCE STEROIDS	REDUCE STEROIDS	REDUCE STEROIDS	REDUCE STEROIDS	REDUCE STEROIDS	

When the dexamethasone dose reaches 4mg the reduction may need to be slowed for some patients as they become steroid dependent, this needs to be managed on a patient by patient basis balancing the risks and benefits for each patient, which will be heavily influenced by likely prognosis.

Appendix 4

Radiotherapy

Prognostic factors may influence the need for treatment, type of treatment and treatment schedule. Potential prognostic factors that might help to determine a positive functional outcome after treatment include:

- Performance status (ECOG PS 0-2).
- More favourable histology (lymphoma, myeloma, seminoma, breast, prostate and gastrointestinal).
- Still ambulatory.
- More than two years since original diagnosis.
- Slow development of motor deficit.

Tokuhashi's 'Revised Evaluation System for the Prognosis of Metastatic Spine Tumours' may be a useful tool in evaluating a patient's suitability for this mode of treatment

Factors affecting outcome of care

Radio-sensitivity - motor function is more likely to improve if the tumour is radio-sensitive (lymphoma, breast) than radio-resistant (renal and melanoma).

Pre-treatment mobility - the majority of patients treated with radiotherapy for sub-clinical cord compression or who are ambulant on commencement of radiotherapy remain ambulatory. However if they are paraplegic less than 10% will regain the ability to walk. Motor function remains stable in about 60% of patients and about one-third experience an improvement.

Primary site of cancer and extent – this will hugely influence the progress/prognosis of the patient ultimately. Patients should be discussed with appropriate tumour specific (MDT) team for ongoing care/treatment and attempts should be made to obtain a histological cancer diagnosis (preferably before definitive therapy without delaying therapy for MSCC) as this is essential in subsequent care/treatment.

Indications for radiotherapy in MSCC:

- Cancer Diagnosis established
- MSCC confirmed by imaging

Relative Contraindications to radiotherapy:

- No histological diagnosis of cancer
- Radio resistant tumour (relatively) if surgery is an option (Renal cell carcinoma, Sarcoma, Melanoma etc)
- MSCC resulting in vertebral displacement/spinal instability
- Poor general condition (irreversible) due to co-morbidities
- Previous radiotherapy (to cord tolerance) to same spinal site: Discuss with oncologists regarding appropriateness of re-treatment in any particular patient.

Radiotherapy planning and delivery

Having diagnosed MSCC, radiotherapy should be initiated as soon as possible.

Patients should be given adequate analgesia for their pain before radiotherapy is planned. Care is given when mobilising patients for treatment planning and delivery as this can cause significant pain and may worsen neurology.

Radiotherapy planning is done either with conventional simulation or with v-sim. Treatment may be sometimes needed for more than one level of compression.

An MRI (or an equivalent imaging) of whole spine is necessary before planning process is commenced. Once the area of concern (site of compression) is located with either conventional simulation or v-sim a radiotherapy field is placed to adequately encompass the whole extent of tumour (cord compression) with a margin to allow for any patient movement/day to day variation in set up (reproducibility). This is usually in the form of extending the field beyond 1 or 2 vertebral bodies of the site of cord compression in the supero-inferior direction and laterally up to the tip of the transverse processes. However, these standard margins may need to be altered according to the information available from the diagnostic imaging and any anticipated toxicity form the treatment.

A preferred field arrangement would be direct posterior field with dose prescribed to depth of compression. The depth of the cord compression can be ascertained with sagittal imaging (Diagnostic MRI or CT or even at the time of planning with the V-sim). If dose is prescribed at d-max consideration should be given to the adequacy of total dose and fractionation accordingly. Some times an AP/PA field arrangement may be necessary due to patient's body habitus. Cervical spinal cord compressions may be treated with lateral beam arrangements. The posterior field edge should be up to the tip of the spinuos process or beyond where appropriate, the anterior edge should be at the anterior border of vertebral body. If shoulders are in the way of the radiation beam an adequate dose may not be delivered to the cord at the site of compression, in which case and AP/PA field may be necessary (accepting the risk of phrayngo-laryngeal mucositis).

A general guide is as follows: thoracic radiotherapy is usually delivered using a single posterior beam. Depending on the depth of the spine in the lumbar region, radiotherapy is delivered either through a direct posterior beam or an anterior-posterior parallel pair. Treatment is delivered with MV photons in a LINAC.

An optimal radiotherapy regime is not indicated within the literature; however, most patients receive 20 Gray (Gy) in 5 daily fractions. A trial (SCORAD) is being proposed in terms of the optimal dose (20 Gy in 5 vs 8 Gy single) for MSCC at the present time in the United Kingdom.

No treatment or an 8Gy single fraction should be considered for patients who have a short life expectancy, those who are paraplegic and in whom neurological improvement is unlikely. Single fraction or fractionated radiotherapy is recommended for patients with pain that is not adequately controlled.

Radiotherapy following surgery or chemotherapy

Radiotherapy can also be used as an adjuvant to both decompressive/stabilisation surgery and to chemotherapy, when either is the primary MSCC treatment. Following surgery, radiotherapy can be initiated once wound has healed at the site of the operation.

Curative radiotherapy

Although treatment is usually palliative, there are indications where radiation should be delivered with curative intent. These include solitary plasmacytoma, germ cell tumours and early stages of lymphoma which have caused extradural spinal cord compression. Radiotherapy could be either as a single modality treatment or in combination with either

surgery or chemotherapy. Not only is the radiotherapy dose likely to be higher but radiotherapy planning may include more specialised techniques such as conformal CT planning and stereotactic radiotherapy.

Primary spinal tumours can present as malignant spinal cord compression and if radiotherapy is required the patient should be treated by a Clinical Oncologist with a special interest in neuro-oncology.

Appendix 5

Chemotherapy

Chemotherapy is generally **not** indicated as the immediate treatment for malignant spinal cord compression. The main indication is following the initial treatment with decompressive spinal surgery, or sometimes following local radiotherapy, and then only in particularly chemo-sensitive diseases. In adults these include:

1. Testicular tumours ie Malignant Teratoma/ Seminoma
2. Ovarian Germ-cell tumours ie Dysgerminoma , Yolk-sac tumours or Choriocarcinoma
3. Maligant Molar pregnancies
4. **Lymphoma**
5. Leukaemia
6. **Small–cell Lung cancer**

In children and young adults, the additional malignancies to be included are:

1. Wilms Tumour
2. Ewing's Sarcoma

The commonest tumours are Lymphoma and Small-cell lung cancer, which are highlighted.

Treatment Philosophy

Patients who present with malignant spinal cord compression, without a previous known malignancy, generally require a tissue diagnosis, and in most cases immediate surgery to decompress the spinal cord before the diagnosis is made, so that a biopsy would be obtained as part of the procedure. Rarely, radiological appearances may strongly suggest Lymphoma, and needle biopsy, rather than immediate surgery is occasionally warranted, in which case immediate radiotherapy, rather than chemotherapy is given, as a provisional diagnosis can be obtained in an emergency within 24 hours, and the correct chemotherapy usually requires a more detailed pathological diagnosis, which takes longer.

Most chemo-sensitive tumours are also radio-sensitive, and it is often preferable to give local radiotherapy in such cases, to deal with the anatomical cause of the cord compression without having to consider the fitness of the patient for what may be life-threatening treatment with chemotherapy. In the UK radiotherapy is usually available in an emergency setting and for a variety of reasons can usually be initiated sooner than chemotherapy. Reasons for preferring chemotherapy before radiotherapy would include situations where curative radiotherapy is likely to be part of the treatment , but where a mass encompassing the spinal cord is too large, or too close to structures that need to be avoided, to be treated without elaborate treatment planning, which could be time-consuming. Alternatively, it could be better to shrink the tumour with chemotherapy first, to allow a more favourable radiotherapy plan.

Teratoma / yolk sac or choriocarcinoma or a malignant molar pregnancy, are the (rare) causes of spinal cord compression where chemotherapy is more effective than radiotherapy, and should be the treatment of choice following initial tissue diagnosis.

Appendix 6

Surgery

Collaboration and multi-professional assessment of patients with MSCC is essential in determining the patient's suitability for surgical intervention. Criteria for patient selection for surgery are outlined below.

Patients should:

- Have reasonable general medical health sufficient for surgical intervention.
- Be ambulant, or paraparetic, or have been paraplegic for less than 24 hours.
- Have cord compression restricted to a single area (this can include several contiguous spinal or vertebral segments).
- Have no pre-existing or concurrent neurological problems, other than those directly related to the MSCC.
- Have an expected survival of a minimum of six months due to the significant morbidity associated with surgery.

Bone biopsy

If there is the slightest doubt as to the underlying pathology, particularly where there is a solitary bony lesion, further investigations including percutaneous bone biopsy should be carried out before definitive surgery. Biopsies should normally be performed by trephine and usually require imaging control in the form of CT or bi-planar image intensifier. It is recommended that multiple samples are obtained particularly with blastic lesions. Most biopsies can be performed using local anaesthesia with mild sedation being given as required. The Spinal Surgeon (neurosurgical or orthopaedic) will often perform the biopsy or the Radiologist following discussion with the Surgeon.

Surgical technique

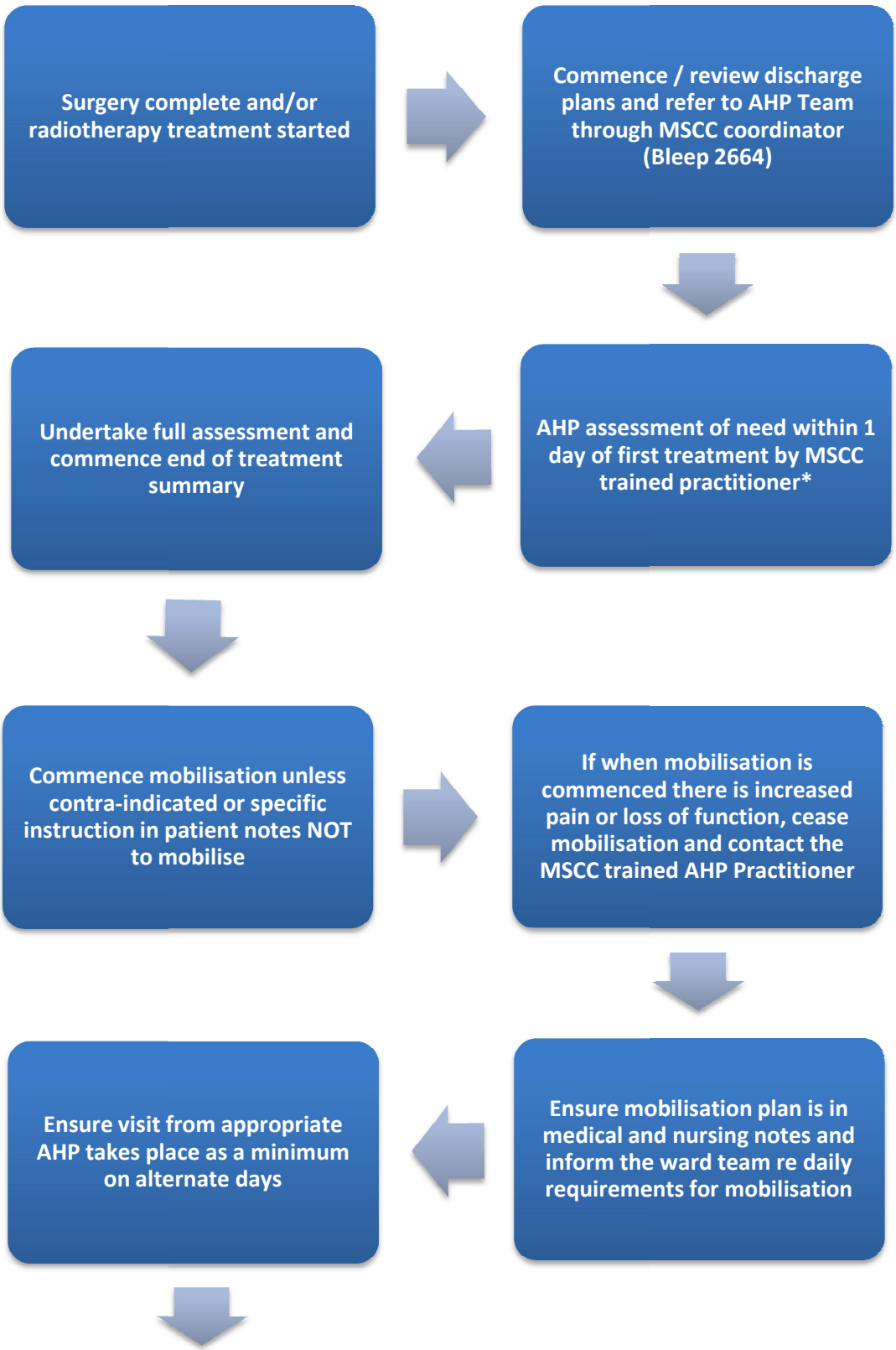
There are a number of factors which influence the surgical approach and technique used. These include:

- Extent of pathology,
- Location of tumour in relation to the spinal cord,
- Degree of instability,
- The access required to allow safe decompression and adequate instrumentation.

The surgical approach taken is tailored to the patients needs. The posterior approach is most common but other options are anterior, trans-thoracic and retroperitoneal. The aim of the surgery is to decompress neural elements and provide stability to the vertebral column.

Appendix 7

Rehabilitation Algorithm for Metastatic Spinal Cord Compression (MSCC) following surgical and/or radiotherapy treatment



FINAL Version SEPTEMBER 2012

NHS
National Cancer Action Team

Rehabilitation Care Pathway

Metastatic Spinal Cord Compression

At Risk

Intervention

- Reinforce patient information for people at risk of bone metastases i.e. breast, prostate & lung cancer

Undertake red flag assessment for people with & without a cancer diagnosis. Awareness of high risk cancers: breast, prostate & lung. Patients with cancer who describe one or more of the following need urgent assessment on the basis of their signs & symptoms:

Pain is usually the first presenting symptom and has often been present for a number of weeks before MSCC is diagnosed.

- Pain may be new, or may present as a significant change in the character of longstanding pain. It is often described as unremitting, and is associated with feelings of anguish and despair. These may be classed as early presentation triggers.
- Pain is usually in the back but can be radicular, often described as a tight band around the chest or abdomen.
- Later presenting symptoms are motor deficits (e.g. muscle weakness, loss of coordination, paralysis), sensory deficits (e.g. paraesthesia, loss of sensation) or autonomic dysfunction (bladder or bowel problems).

(NB 1:4 patients with MSCC do not have a diagnosed primary cancer)

Presentation of suspected spinal cord compression (no specified location)

Intervention

- Seek advice from MSCC network coordinator & if appropriate refer on to specialist for further investigations / assessment (see NICE Clinical Guidelines Metastatic Spinal Cord Compression 2008)
- Assume spinal cord compression & spine unstable until investigations prove otherwise
- Access specialist therapist advice as appropriate
- Advise flat bed rest with neutral spine alignment
- Provide patient/ carer with information & reassurance
- Ensure transfer to local imaging centre lying flat (as pain allows)

Presentation of confirmed Spinal Cord Compression (on admission)

Intervention

- Assume spine 'unstable' until MDT decision made regarding spinal stability
- For cervical lesions, ensure immobilisation with hard collar & instruct patient, carers & nursing staff regarding fitting of collar, care & maintenance
- Refer to physiotherapist within 24 hours of admission, occupational therapist within 24/ 48 hours of admission & to member of MDT as appropriate: social worker, specialist nurse, specialist palliative care team, clinical psychologist, dietitian, SALT, hospital chaplain etc
- Ensure flat bed rest with neutral spine alignment
- Provide information & reassurance to patient/ carers
- Carry out holistic assessment
- Undertake assessment for co-morbidities
- Introduce self & explain role of physiotherapist/ occupational therapist
- Carry out subjective assessment
- Undertake respiratory assessment & treat as appropriate
- Carry out neurological assessment
- Teach active, active/ assisted exercises; perform passive movements within pain limits as appropriate
- Refer to specialist physiotherapist & occupational therapist for advice or further management as appropriate
- Ensure good positioning
- Provide advise on pressure relief management

Unstable Spine – prior to treatment (surgery and/or radiotherapy)

NB. A clinical discussion about the need for bracing needs to take place prior to mobilisation. A decision about spinal stability has to be made by MDT & documented in the medical record. Once this has been done & the brace fitted by an orthotist (if indicated) then the spine should be treated as stable

Intervention

- Agree stability of spine with MDT, ideally including surgeon, radiologist, oncologist & physiotherapist. Document in notes
- Monitor & gather information

Surgery

- Ensure flat bed rest and spinal alignment during transfer to specialist neuro-surgical centre
- For cervical lesions, ensure immobilisation with hard collar. Instructions to patient, carers and nursing staff regarding fitting of collar, care and maintenance
- Liaise with specialist neuro-surgical physiotherapist
- Maintain respiratory function
- Teach active, active/assisted exercises, perform passive movements within strict pain limits as appropriate & ensure good positioning at all times
- Continue to provide patient/carer with information & reassurance

Radiotherapy (if surgery not appropriate)

- Ensure flat bed rest & spinal alignment during transfer
- For cervical lesions, ensure immobilisation with hard collar. Provide instructions to patient, carers and nursing staff regarding fitting of the collar, routine care and maintenance. Spinal bracing to be provided as appropriate if thoracic or lumbar lesion.
- Maintain respiratory function
- Teach active, active/ assisted exercises, perform passive movements within strict pain limits as appropriate & ensure good positioning at all times
- Continue to provide patient/ carer with information & reassurance

Stable spine – after treatment (surgery and/ or radiotherapy)

Intervention

- Stabilise spine as agreed by MDT, ideally including surgeon, radiologist, oncologist & physiotherapist then document in medical record
- Provide information & reassurance to patient & carers
- Assess emotional & psychological state
- Carry out neurological assessment
- Maintain respiratory function
- Teach active, active/ assisted exercises, perform passive movements within pain limits as appropriate & ensure good positioning at all times
- Commence gentle mobilisation as soon as possible & when pain well controlled
- Encourage gradual sitting from supine to 45 degrees initially. If tolerated progress to 60 & 90 degrees as able, usually the same day. Monitor neurology and pain during this process

Surgery

- Ensure flat bed rest and spinal alignment during transfer to specialist neuro-surgical centre
- For cervical lesions, ensure immobilisation with hard collar. Instructions to patient, carers and nursing staff regarding fitting of collar, care and maintenance
- Liaise with specialist neuro-surgical physiotherapist
- Maintain respiratory function
- Teach active, active/assisted exercises, perform passive movements within strict pain limits as appropriate & ensure good positioning at all times
- Continue to provide patient/carer with information & reassurance

Radiotherapy (if surgery not appropriate)

- Ensure flat bed rest & spinal alignment during transfer
- For cervical lesions, ensure immobilisation with hard collar. Provide instructions to patient, carers and nursing staff regarding fitting of the collar, routine care and maintenance. Spinal bracing to be provided as appropriate if thoracic or lumbar lesion.
- Maintain respiratory function
- Teach active, active/ assisted exercises, perform passive movements within strict pain limits as appropriate & ensure good positioning at all times
- Continue to provide patient/ carer with information & reassurance

Stable spine – after treatment (surgery and/ or radiotherapy)

Intervention

- Stabilise spine as agreed by MDT, ideally including surgeon, radiologist, oncologist & physiotherapist then document in medical record
- Provide information & reassurance to patient & carers
- Assess emotional & psychological state
- Carry out neurological assessment
- Maintain respiratory function
- Teach active, active/ assisted exercises, perform passive movements within pain limits as appropriate & ensure good positioning at all times
- Commence gentle mobilisation as soon as possible & when pain well controlled
- Encourage gradual sitting from supine to 45 degrees initially. If tolerated progress to 60 & 90 degrees as able, usually the same day. Monitor neurology and pain during this process

- Carry out manual handling risk assessment for pressure relief, mobility and transfers
- Undertake assessment of balance & sitting over edge of bed with or without support from therapist depending on level of spinal cord compression
- Carry out mobility assessment & gradually mobilise as patient's condition allows & as per agreed local protocol (NB. Return to bedrest on increased symptoms such as increased pain and/or neurological symptoms)
- Teach transfers as appropriate
- Complete assessment for mobility aids & gait re-education, stairs assessment & continue rehabilitation
- If patient has no sitting balance, transfer using hoist and continue rehabilitation as appropriate
- Refer to MDT member as appropriate: social worker, specialist nurse, specialist palliative care team, clinical psychologist or counsellor, dietician, SALT, hospital chaplain etc
- If pain limits patient's mobility, consider the use of a brace. Refer to Orthotist for assessment
- Carry out wheelchair assessment, pressure relieving cushion & provide advice on regular pressure relief
- Maximise functional potential and assist patients with activities to minimise physical dysfunction
- Provide advice & education on anxiety management/ relaxation techniques
- Assist with psychological adjustment & goal setting related to loss of functional independence, self esteem & quality of life
- Carry out transfers assessment – bed/ chair/ toilet/ car/ bath
- Suggest prescription of activities of daily living equipment & ordering
- Teach carers/ family on use of complex equipment (hoist/ wheelchair/ other aids)
- Complete seating & positioning assessment including wheelchair & pressure cushion prescription as indicated
- Assess functional roles including primary care/ leisure/ work/ family/ social
- Assess home environment

Discharge

Intervention

- Prepare patient & carers for discharge
- Work closely with MDT to facilitate discharge
- Ensure procedures completed for equipment delivery/ installation, transport & care arrangements
- Refer to specialist services for continued rehab/ support as appropriate (NB. Consider local referral criteria & engage MDT in decision making re: rehabilitation potential

Post Hospital Discharge

Intervention

- Provide carer with education on moving & handling & use of equipment
- Help patient optimise functional potential; set & review realistic rehabilitation goals for improving mobility & quality of life & continued involvement in valued activities (work, leisure, social)
- Facilitate adjustment to loss & disability
- Recognise & respond to highly complex physical, emotional & psychological needs & refer for specialist support as necessary
- Facilitate patient remaining at home where appropriate
- Provide carer education on moving & handling & use of equipment
- Facilitate adjustment to loss & functional impairment/ disability
- Undertake environmental assessment & reassessment & adaptation as appropriate – equipment prescription/ ordering as indicated
- Provide access to other professionals including social worker, SLT & Dietitian

Approaching End of Life

Intervention

- Recognise when end of life approaching, explore needs & adjust interventions accordingly
- Inform relevant MDT members
- Refer to local end of life policy
- Identify if preferred place of care has been addressed & decided on. Review if needed & help to facilitate preferred place of care
- Provide carer support
- Arrange collection of equipment as appropriate
- Advise on positioning & pressure management

The majority of these interventions will be carried out by physiotherapists and occupational therapists