### Contents

- **Introduction** .......................................................... 4
  - Definition ............................................................................. 4
  - Key points ........................................................................... 4
- **Summary Pathway** .......................................................... 6
- **Patient presentation** ........................................................ 7
  - Patient information ............................................................ 7
  - Symptoms ............................................................................ 7
- **Immediate management of suspected MSCC cases** .............. 8
  - Initiation of Steroids ............................................................. 8
  - Initiation of investigations for definitive diagnosis .................. 8
  - Referral to Acute Oncology Team & Local MSCC Coordinator .... 8
- **Definitive Diagnosis** .......................................................... 9
  - Radiology Services ............................................................. 9
  - Magnetic resonance imaging ............................................... 9
  - Other imaging options .......................................................... 9
- **Coordination** ................................................................... 10
  - The role of the local MSCC coordinator .................................. 10
- **Definitive Treatment** .......................................................... 11
  - Patient focussed care ........................................................... 11
  - Case Discussion Policy ........................................................ 11
  - Mobilisation ......................................................................... 12
  - Surgery for MSCC ............................................................... 13
    - Referral for case discussion and MSCC surgery ...................... 13
  - Timescales .......................................................................... 14
  - Type of surgery ..................................................................... 15
  - Role of the surgical MSCC coordinator ................................... 15
- **Radiotherapy** .................................................................... 16
- **Pathology** .......................................................................... 16
- **Repatriation** ...................................................................... 16
- **Rehabilitation and care at home** .......................................... 16
- **London Cancer MSCC services** .......................................... 17
  - MSCC and AOS in *London Cancer* ....................................... 17
  - Configuration of specialist services in *London Cancer* .......... 17
Introduction

Definition

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”. This is in line with NICE Guideline 75 (Metastatic Spinal Cord Compression; diagnosis and management of adults at risk of and with metastatic spinal cord compression) upon which this service guideline is based.

Aim of Guideline

The aims of these guidelines are:

- To detail optimum pathways and guidelines for diagnosis, treatment and ongoing care to patients at risk of or with MSCC, in line with best clinical evidence and the NICE guideline on MSCC (guideline 75).
- To provide a systematic and consistent expectation of the approach to the care of these patients across the London Cancer Integrated Cancer System.
- To outline current service provision and pathways.
- To agree required service and pathway improvements and outline timescales.

It should be noted that patients from outside the London Cancer area may be referred into London Cancer Trusts for some of their MSCC pathway (for example from the Mount Vernon Cancer Network or elsewhere in Essex). All patients regardless of their referral origin should be managed in line with these guidelines.

Key points

- Suspected MSCC is a medical emergency and should be investigated and managed as such.

- Responsibility for effective implementation and audit of the agreed MSCC pathway in local Trusts lies with the Trust’s Acute Oncology Service.

- The appropriate imaging and its report should be performed within 24 hours of presentation at the local hospital by a senior member of the radiology team. All hospitals must have arrangements for both normal working hours and out-of-hours (this may include a ‘first slot of the morning’ arrangement or in exceptional circumstances, transfer for imaging).

- All hospitals must ensure that the patient pathway is managed by a local MSCC coordinator. Responsibilities of the post should be locally defined, however these should be in line with the agreed London Cancer specification. The local MSCC coordinator should liaise with the surgical MSCC coordinator regarding referral for case discussion, and then transfer and ongoing management if this is appropriate.

- Consultant oncology opinion must be available in the first instance at local level to review the patient and then to discuss the case and management plan with a senior spinal surgeon. The
oncology input may be provided by the local Acute Oncology Service, and may include the use of the 24/7 consultant oncologist telephone service, especially out of hours.

- **All cases** should be discussed by consultant oncologist and consultant spinal surgeon except in exceptional circumstances, as detailed in this guideline.

- **Surgical opinion** will be provided by a consultant member of the spinal surgical team at any one of the designated spinal surgical centres within London Cancer.

- **Definitive treatment**, surgery or radiotherapy, if appropriate, should be provided within 24hrs of the confirmed diagnosis, unless there is a clinically important reason to delay treatment.

- Following surgical treatment, patients should be **repatriated** to their local oncology Trust for ongoing care.

- Appropriate **rehabilitation** should be offered as required.
Patient presents with ? MSCC
Alert Acute Oncology Team
Initiate steroid therapy* asap
Discuss/inform local MSCC coordinator

Urgent MRI & reporting by senior radiologist
Within 24hrs of presentation

Local MSCC coordinator may begin liaison with the MSCC surgical coordinator.

Submit electronic referral and imaging to MSCC spinal surgical centre

Consultant spinal surgeon to review imaging

Case discussion between oncology consultant and consultant surgeon, with radiology input if required

AOS/ Clinical Oncology consultant reviews patient with results

MRI negative for MSCC
Manage as appropriate

Case discussion between oncology consultant and consultant surgeon, with radiology input if required

AOS/ Clinical Oncology consultant reviews patient with results

Patient definitely not fit for any definitive treatment (as defined in case discussion policy)

Patient not for surgery

Radiotherapy not appropriate

Palliative care, as appropriate

*If suspicion of lymphoma or 1st presentation discuss with Clinical Oncology/Haematology consultant on-call prior to giving steroids

Patient fit for surgery

Radiotherapy appropriate. Urgent RT referral via local MSCC coordinator. RT within 24 hours of diagnosis

Specialist spinal surgery Within 24 hours of diagnosis

Post-op repatriation to oncology service asap via surgical/local MSCC coordinators

Oncology team follow up as appropriate

Surgical team follow up as appropriate

Surgical MSCC coordinator to organise transfer to surgical centre in liaison with local MSCC coordinator

Post-op rehabilitation via surgical/local MSCC coordinators

Submit electronic referral and imaging to MSCC spinal surgical centre

Consultant spinal surgeon to review imaging

Case discussion between oncology consultant and consultant surgeon, with radiology input if required

AOS/ Clinical Oncology consultant reviews patient with results

MRI negative for MSCC
Manage as appropriate

Case discussion between oncology consultant and consultant surgeon, with radiology input if required

AOS/ Clinical Oncology consultant reviews patient with results

Patient definitely not fit for any definitive treatment (as defined in case discussion policy)

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Patient fit for surgery

Radiotherapy appropriate. Urgent RT referral via local MSCC coordinator. RT within 24 hours of diagnosis

Specialist spinal surgery Within 24 hours of diagnosis

Post-op repatriation to oncology service asap via surgical/local MSCC coordinators

Oncology team follow up as appropriate

Surgical team follow up as appropriate

Surgical MSCC coordinator to organise transfer to surgical centre in liaison with local MSCC coordinator

Case discussion between oncology consultant and consultant surgeon, with radiology input if required

AOS/ Clinical Oncology consultant reviews patient with results
Patient presentation

Suspected MSCC is a medical emergency and patients should be investigated urgently

Patients with MSCC will present to GPs, A&E departments or directly to oncology departments. All relevant teams including GPs, A&E, Acute medical teams, and oncology departments should be aware of the London Cancer guidelines and management and referral pathways. The MSCC pathway should be activated irrespective of the location or time of suspected diagnosis of MSCC.

With regards to cancer patients, MSCC cases can be classified in two groups:
- Patients with known malignancies, who present with metastatic spread. In most of these cases the pathology will be known and they will already be under oncological care.
- Patients in whom MSCC is the first presentation of their malignancy.

Patient information

All patients at risk of developing MSCC as a complication of a known malignancy should be provided with information regarding the signs and symptoms to be aware of by their cancer team, and what to do should they suffer from any of these symptoms.

Each Trust in London Cancer should have a patient information leaflet for MSCC that has been agreed by the AOS ERG. This must be distributed to at risk patients with bone disease secondary to prostate, lung, breast, renal cancers and myeloma, to improve early diagnosis. The distribution of this information should be audited within each Trust.

Symptoms

There are different symptoms to be aware of and management of patients will be dependent on these:

**Symptoms of urgent cases: aim to manage within 1 week**
Contact local oncology team or the 24/7 consultant oncologist telephone service to discuss care of patients with cancer and any of the following symptoms suggestive of spinal metastases:
- Pain in the middle (thoracic) or upper cervical spine
- Progressive lower (lumber) spinal pain
- Severe unremitting lower spinal pain
- Spinal pain aggravated by straining ie coughing, sneezing
- Localised tenderness
- Nocturnal spinal pain preventing sleep

**Symptoms of emergency cases: to be treated within 24Hrs**
Contact local oncology team or the 24/7 consultant (clinical) oncologist telephone service immediately to discuss care of patients with cancer and known spinal deposits or symptoms suspicious of spinal metastases who also have any of the following neurological symptoms or signs suggestive of MSCC. They need to be treated as an oncological emergency:
- Neurological symptoms including radicular pain, any limb weakness, difficulty in walking, sensory loss or bladder or bowel dysfunction
- Neurological signs of spinal cord or cauda equina compression

**Immediate management of suspected MSCC cases**

Suspected MSCC patients should be treated as an emergency, with initiation of steroids unless contraindicated, urgent investigations and referral to acute oncology team and local MSCC coordinator

**Initiation of Steroids**

Unless contraindicated, as soon as possible after assessment and any suspicion of MSCC is raised, administer a loading dose of 16 mg stat of dexamethasone to patients with suspected MSCC. If there is significant suspicion of lymphoma, senior oncology/haematology advice is urgently required prior to steroid administration.

Follow with a short course of 8mg dexamethasone twice daily while treatment is being planned.

Monitor blood glucose levels in all patients receiving corticosteroids. Supplement the corticosteroid course with gastro-protection.

Further details about ongoing treatment with steroid therapy can be found in the Treatment section of this document.

**Initiation of investigations for definitive diagnosis**

MRI of the whole spine should be performed urgently in all patients with suspected MSCC, unless there is a specific contraindication. Include sagittal T1, short T1 inversion recovery and sagittal T2 weighted sequences. Perform supplementary axial imaging through any significant abnormality noted on the sagittal scan.

Full details of imaging and diagnostic requirements are found in the section on Definitive Diagnosis.

**Referral to Acute Oncology Team & Local MSCC Coordinator**

The local Acute Oncology Team and local MSCC coordinator should be alerted to the presentation of any patient with suspected MSCC at the earliest opportunity.

*Emergency management should not however be dependent on review by the oncology team and appropriate investigations and management should be initiated at the earliest possible opportunity following presentation.*

Please see later section on the specific role of the local MSCC Coordinator.
Definitive Diagnosis

Appropriate imaging and its report should be performed within 24 hours of presentation at the local hospital by a senior member of the radiology team.

Radiology Services

MRI of the whole spine should be performed in all patients with suspected MSCC, unless there is a specific contraindication. Within weekday working hours, MRI should be performed as emergency before 5.00pm, to allow timely assessment and referral to surgery.

For out of hours [5.00pm – 8.00am] admissions, where a 24-hour MRI service is provided, such practice should continue as it represents the optimal option for this group of patients. For the hospitals without a 24-hour MRI service the minimum acceptable alternative is a daily protected ‘MSCC first MRI slot of the day’. This will allow patients to be diagnosed and, if appropriate, referred and transferred to the spinal centre within 24 hours. During the weekends, a limited morning MRI list is adequate to cover the needs for this group of patients. MRI outside these arrangements should be available in emergency situations where immediate surgical treatment is considered imperative.

All hospitals should make plans to ensure that urgent MRI is available either in-house or by means of referral. Patient transfer purely for MRI should be in exceptional circumstances only. Where possible, it should be arranged with a local oncology centre to prevent unnecessary movement of patients. Trusts must ensure that lists could be configured to allow MRI at short notice.

In most cases, out-of-hours, if MSCC is suspected, an MRI scan during the night will not be required as long as the patient is clinically stable, has been administered steroids, and is nursed flat. An urgent MRI should however be performed the next morning using a protected ‘MSCC first slot of the day’ which should be specifically allocated for this purpose as described above. Out-of-hours MRI should be available in emergency situations if immediate treatment is planned.

24/7 input from a consultant radiologist should be available for discussion of suspected MSCC cases if required.

Magnetic resonance imaging

Magnetic resonance imaging (MRI) of the whole spine should be performed in all patients with suspected MSCC, unless contraindicated.

Include sagittal T1, short T1 inversion recovery and sagittal T2 weighted sequences. Perform supplementary axial imaging through any significant abnormality noted on the sagittal scan.

Other imaging options

If MRI is contraindicated, the best imaging option should be determined following discussion with the...
Consider targeted computerised tomography to assess spinal stability and plan vertebroplasty, kyphoplasty or surgery.

Consider myelography if other imaging options are contraindicated or inadequate. Undertake myelography only at a neuroscience or spinal surgery centre.

Do not use plain radiographs to diagnose or exclude spinal metastases or MSCC.

Do not routinely image the spine if patients with malignancy are asymptomatic.

Serial imaging of the spine in asymptomatic patients with cancer at high risk of developing spinal metastases should only be done as part of a randomised controlled trial.

A staging CT scan should also be considered at the same time as the MRI scan in ‘first presentation’ MSCC patients.

Coordination

All hospitals must ensure that the patient pathway is managed by a local MSCC coordinator.

The role of the local MSCC coordinator

In all Trusts a local MSCC coordinator must be designated to ensure that cases of suspected or confirmed MSCC are managed efficiently and in line with this guidelines. They will be the key point of contact and should be involved at the earliest possible stage is MSCC is suspected. Their role is to:

- Liaise with the oncologists & radiologists and other relevant clinicians involved in the management of a patient with MSCC or suspected MSCC
- Liaise with the surgical MSCC coordinator to ensure appropriate clinical and imaging information has been provided for case discussion between consultant oncologists and spinal surgeons.
- Ensure rapid implementation of agreed case discussion outcome for definitive treatment for the patient, to include ensuring clear communication with the patient.
  - Liaise with the relevant hospital providing radiotherapy treatment and coordinate transfer of patients where needed.
  - Organise the patient’s transfer to the surgical centre in collaboration with the surgical MSCC coordinator
  - Ensure any other agreed management is organised urgently, including referral to palliative care if appropriate
- Make provisional arrangements for repatriation following surgery
• Play a key role in *London Cancer* MSCC audit data collection for all suspected and diagnosed cases. The nature of this role will be defined locally.

• Escalate any pathway delays appropriately within the organisation

• Disseminate the pathway details and ensure that it is working and that local clinicians and medical staff are aware how to use the pathway

There should be cover for out-of-hours and weekends which may be by the on-call clinical oncology SpR.

Contact details for local MSCC coordinators can be found in Appendix 1.

**Definitive Treatment**

Consultant oncology opinion must be available in the first instance at local level to review the patient. All cases must be discussed by consultant oncologist and consultant spinal surgeon except in defined, exceptional circumstances. Definitive treatment, surgery or radiotherapy, if appropriate, should be provided within 24hrs of the confirmed diagnosis, unless there is a clinically important reason to delay treatment.

**Patient focussed care**

MSCC management 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. If patients do not have the capacity to make decisions, healthcare professionals should follow the Department of Health guidelines – ‘Reference guide to consent for examination or treatment’ (2001) (available from [www.dh.gov.uk](http://www.dh.gov.uk)). Healthcare professionals should also follow the code of practice that accompanies the Mental Capacity Act (summary available from [www.publicguardian.gov.uk](http://www.publicguardian.gov.uk)).

**Case Discussion Policy**

The care of patients with MSCC should be determined by senior clinical advisers (consultant oncologists, spinal neurosurgeons or radiologists with experience and expertise in treating patients with MSCC) in collaboration with primary tumour site clinicians as required, taking into account the patient’s preferences and condition.

When planning definitive treatment:

• If unknown, attempt to establish the primary histology of spinal metastases (by tumour biopsy if necessary), but not at the expense of compromising clinical outcome.

• Management of spinal cord compression MUST take precedence.

• Determine the number, anatomical sites, and extent of spinal and visceral metastases

• Take into account: patient preferences, neurological ability, functional status, general health and fitness, previous treatments
Confirmed cases of MSCC must be considered for surgery following senior oncology review at the point of referral. Review can be performed either by the local AOS consultant or Clinical Oncology consultant on-call who, upon diagnosis of MSCC, will operate in collaboration with the local MSCC coordinator who facilitates referrals and diagnostic investigations.

All patients with confirmed MSCC must be reviewed by a consultant oncologist (AOS or consultant on call) and subsequently case discussion with consultant spinal neurosurgeon should take place regarding the appropriateness of spinal surgical treatment.

In some cases, the Consultant Oncologist may make the assessment that the patient is not fit for any definitive treatment and therefore that case discussion is neither required nor appropriate. This is expected to be the exception and most cases should be discussed to ascertain if surgery would be beneficial. There are certain circumstances in which surgery is unlikely to be carried out, as follows:

- a prognosis of <3 months,
- uncontrolled visceral metastases,
- poor PS immediately prior to this presentation
- bone involvement in >2 vertebral bodies or involvement above and below compression
- multiple contiguous sites of metastatic disease within vertebrae

In addition the Spinal Instability Neoplastic Score (SINS) score may be taken into account – see Appendix 2.

Patients who meet two or more of these criteria are not required to be discussed for a surgical opinion.

Do not deny surgery or radiotherapy on the basis of age alone.

More details of how to refer patients for case discussion with the neurosurgical team (or ‘mini MDT’) are included in the section on Surgery for MSCC below.

**Mobilisation**

In cases of patients with severe mechanical pain suggestive of spinal instability or with neurological symptoms or signs indicative of MSCC, until spinal and neurological stability are ensured, nurse flat with spine in neutral alignment. Use log rolling techniques or turning beds and a slipper pan.

Once any spinal shock has settled and the spine and neurology are stable, monitor and assess during gradual sitting (to 60 degrees) over 3–4 hours.

If blood pressure is stable and there is no significant increase in pain or neurological symptoms, continue to unsupported sitting and mobilisation.

If pain or neurological symptoms worsen, return to a position where these changes reverse and reassess spinal stability.

If patients are not suitable for definitive treatment they should be helped to position themselves and mobilise as symptoms permit after a discussion of the risks. Provide orthoses or specialist seating if
appropriate.

**Corticosteroids**

Unless contraindicated, as soon as possible after assessment and any suspicion of MSCC is raised, a loading dose of 16 mg stat of dexamethasone to patients with suspected MSCC should be administered. If there is significant suspicion of lymphoma, senior oncology/haematology advice is urgently required prior to steroid administration.

Follow with a short course of 8mg dexamethasone twice daily while treatment is being planned. Continue with dexamethasone 8mg twice daily in patients awaiting surgery or radiotherapy for MSCC.

After surgery or the start of radiotherapy, gradually reduce the dose of dexamethasone over 5–7 days and stop. If neurological function deteriorates, increase the dose temporarily.

In patients with MSCC who do not proceed to surgery or radiotherapy after planning, gradually reduce the dose and stop dexamethasone. Reconsider the dose if neurological function deteriorates.

Monitor blood glucose levels in all patients receiving corticosteroids. Supplement the corticosteroid course with gastro-protection.

**Surgery for MSCC**

Confirmed cases of MSCC must be considered for surgery following senior oncology review at the point of referral. As specified above, only in very exceptional circumstances should an MSCC patient not be referred for a surgical opinion at case discussion.

Spinal surgical opinion and then subsequently, if appropriate, spinal surgery should be from one of the four designated MSCC spinal neurosurgery centres in *London Cancer*

- Queen’s Romford (BHRUT)
- Royal London Hospital (RLH)
- Royal National Orthopaedic Hospital at Stanmore (RNOH)
- The National Hospital for Neurology and Neurosurgery at Queens Square (NHNN (UCLH))

Any centre providing surgery for MSCC must have a rota of spinal surgeons able to provide consultant level input to case discussion as needed *at any time*, and be able to perform definitive spinal surgery within 24 hours of diagnosis.

**Referral for case discussion and MSCC surgery**

Local hospitals can refer to any of the four designated spinal surgical centres. Spinal Surgery for MSCC should not take place in any centre that has not been designated for this purpose.

The local MSCC coordinator should contact the surgical MSCC coordinator and refer the patient for this case discussion. The local MSCC coordinator will provide the patient’s details and make electronically available imaging and any other relevant information to the spinal surgeon on call.

Referral to each centre is currently using local systems, as follows:
- Queen’s Romford, telephone communication via the neurosurgical Specialist Registrar on call via switchboard [01708 435000 bleep 6177]
- RLH – Phone MSCC coordinator (07730192807)
- NHNN – complete the electronic referral form (NHNN-specific) online at http://referapatient.org and contact the MSCC Coordinator (phone 07903 531674), or out of office hours contact the neurosurgical registrar on-call (0845 155 5000 bleep 8100)

The oncology consultant will discuss the case directly with the on-call consultant spinal surgeon [and the relevant neuroradiologist, as and when appropriate] (‘mini-MDT’) and when the plan for surgery is confirmed, the local and surgical MSCC coordinators will coordinate transfer and make provisional repatriation plans.

Discussion with, and decision making by, registrar level doctors is not appropriate for MSCC, and access to consultant input is essential.

The ‘mini-MDT’ decision should be recorded by the surgical MSCC coordinator who should also submit it to be presented and ratified at the next MSCC MDM.

It is intended, as far as possible, that decisions should be made without the transfer of patients to minimise the unnecessary and potentially risky transfer between hospitals. It is accepted, however, that in some cases, full assessment of the patient by the spinal surgeon may be required.

**Timescales**

The definitive treatment decision (surgery or radiotherapy) should be made within 4 hours of radiological diagnosis to give time for treatment to be carried out within 24 hours of diagnosis, unless there is a clinically important reason to delay treatment.

As an agreed standard, surgery should begin within 24 hours of the diagnosis of MSCC, unless there is a clinically important reason to delay treatment. In some cases it is accepted that a delay before surgery may occur if it is in the patient’s interest, for example, if further investigations are required or if medical conditions require to be optimised. This should be decided at the time of discussion between the two senior clinicians. Balance of benefit/risk needs, however, to be established and, in principle, no patient should be allowed to deteriorate neurologically whilst awaiting surgery. Information on all cases should be collected for audit purposes to confirm that any delays are appropriate.

In general, out-of-hours operating should be discouraged unless clearly in the patient’s interest because of neurological deterioration, despite immobilisation and steroids.

Patients with a poor prognosis, in particular patients with a prognosis of fewer than three months, are unlikely to benefit from surgery, as are patients who are non-ambulant as a result of spinal cord compression. If paralysis has been present for longer than 24 hours, surgery is unlikely to return the patient to ambulation. A few patients, even if paraplegic, may benefit from spinal stabilisation for pain relief if instability pain is a major issue.
In some cases, the ‘mini MDT’ may make the decision that surgery is appropriate but due to bed or theatre capacity that surgical centre may not be able to accept the patient for surgery immediately, within 24 hours of diagnosis. Until such time as there may be a central coordinator in place (please see section on ‘The Future of MSCC in London Cancer’), it is the responsibility of the surgical centre to which the patient has been referred to find an alternative centre that can accept this patient immediately, to ensure that the patient is not disadvantaged by a delay. The surgical MSCC coordinator should liaise with other surgical centres to confirm bed and theatre availability, and the spinal surgeon should discuss and handover the case to a spinal surgeon at that site. The referring oncology team should be notified and transfer arranged.

In most cases, patients will be on strict flat bed rest while awaiting transfer. If not, they will be advised to do so pending transfer. Care will need to be taken when considering the use of thrombo-prophylaxis. If surgery is imminent, anticoagulation should be avoided unless specifically requested by the Surgical Team.

**Type of surgery**
The type of surgery should be in line with NICE Guidance 75. Most importantly, MSCC surgery should be carried out by a spinal surgeon with appropriate expertise to ensure that a second operation is not performed due to an insufficient initial operation.

**Role of the surgical MSCC coordinator**
Every surgical centre that treats patients with MSCC should identify or appoint individuals to the role of MSCC coordinator.

This is a key position that provides a single point of contact to access surgical opinion and coordinates the care pathway.

The surgical MSCC coordinator should have knowledge of the following:
- Neurosurgical on-call rota and
- On-call spinal surgeon’s contact details
- Surgical bed availability
- Theatre lists
- Contacts with MSCC coordinators in all hospitals providing services across London Cancer

The surgical MSCC coordinator’s role is to collaborate with the local MSCC coordinators and facilitate:
- Communication between the referring oncology consultant and the consultant spinal surgeon on-call
- Electronic transfer of patients’ imaging and clinical information to the neurosurgical centre
- Transfer of patients to the neurosurgical hospital
- Liaison with other surgical centres if their centre does not have capacity to accept a patient who has been agreed as needing urgent surgery
- Repatriation following neurosurgery
- Post-op rehabilitation.

The surgical MSCC coordinator will also collect information for the MSCC database for auditing purposes.
Radiotherapy

For patients not eligible for spinal surgery, radiotherapy to the spine can be an alternative option. This should also be provided as an emergency and within 24 hours from diagnosis. The local MSCC coordinator should be informed about the agreed plan for radiotherapy following case discussion, to enable them to arrange urgent treatment.

Following surgery, most patients with MSCC will require radiotherapy, and an appropriate referral will take place with further MDT discussion if necessary.

Radiotherapy is currently provided at UCLH, RFL, NMH, Barts Cancer Centre, Queen’s Romford. Trusts should refer for radiotherapy in line with current agreed pathways. Where a radiotherapy centre cannot provide radiotherapy treatment within 24 hours then discussions with an alternative centre should take place to ensure the patient is not disadvantaged by any delay.

Radiotherapy should be offered in line with NICE Guidance 75.

Pathology

Review of pathology slides and presentation of the case takes place, in the first instance, at the MSCC MDM. Subsequently, further arrangements need to take place if the samples need to be sent to the referring hospital or where the patient will receive further treatment.

Repatriation

Clearly defined pathways are required between the referring hospital and the neurosurgical centre. Arrangements should be made between the local and surgical MSCC coordinators upon initial referral prior to the patient’s transfer to the neurosurgical centre. This will allow time for organising repatriation as soon as it is appropriate for the patient avoiding lengthy stays at the neurosurgical centre.

Rehabilitation and care at home

Offer support services for assessment, advice and rehabilitation. All patients who are neurologically impaired should have spinal rehabilitation.

Discharge planning should start on admission. This should be led by a named healthcare professional, and involve the patient, their family and carers, their primary oncology site team, rehabilitation team and community support, including primary care and specialist palliative care as required.

Focus rehabilitation on the patient’s goals and desired outcomes, including functional independence, participation in normal activities of daily life and quality of life.

Offer admission to a specialist rehabilitation unit to people who are most likely to benefit. It is envisaged that a short rehabilitation course lasting a few weeks only will be required.
There are currently very limited specialist provisions for spinal rehabilitation for MSCC patients within London Cancer. The London Spinal Cord Injury Centre at The Royal National Orthopaedic Hospital at Stanmore can accept patients with MSCC requiring multidisciplinary specialist spinal rehabilitation. Suitable patients would follow designated MSCC/Spinal Tumour rehabilitation Integrated Care Pathway, but the centre has very limited bed availability which cannot cover the future needs of the entire London Cancer area. Stoke Mandeville Hospital are also able to take patients with MSCC. Formalisation of referral arrangements will be made for the provision of rehabilitation for these patients.

Ensure community-based rehabilitation and supportive care services are available to people with MSCC following their return home.

Ensure that care and equipment is provided in a timely fashion.

Offer families and carers support and training before the patient is discharged home.

**London Cancer MSCC services**

**MSCC and AOS in London Cancer**

Health Care Professionals including local GPs who need urgent advice when managing a patient who they suspect may have metastatic spinal cord compression can access oncology advice 24/7. In hours this will be via the local Acute Oncology Service, which exist in all Trusts in London Cancer. Out of hours this will be via the 24/7 consultant oncologist telephone advice lines across London Cancer. Please see the referral guide for acute oncology emergencies for contact details: [http://londoncancer.org/media/56848/london-cancer-acute-oncology-referral-guidelines-v1-0-240313.pdf](http://londoncancer.org/media/56848/london-cancer-acute-oncology-referral-guidelines-v1-0-240313.pdf)

Remember that suspected MSCC should be treated as a medical emergency.

**Configuration of specialist services in London Cancer**

**Surgical Sites**

There are four designated sites where surgery for MSCC is performed within London Cancer: Queen’s Romford (BHRUT), Royal London Hospital (RLH), Royal National Orthopaedic Hospital at Stanmore (RNOH) or The National Hospital for Neurology and Neurosurgery at Queens Square (NHNN (UCLH)).

Spinal Surgery for MSCC should not take place at any other centre in London Cancer.

**Radiotherapy Centres**

Radiotherapy is currently provided at UCLH, RFL, NMH, Barts Cancer Centre, Queen’s Romford and Mount Vernon (outside of London Cancer).

Contact details for the London Cancer centres are in Appendix 1.

**Referrals from outside London Cancer**

Patients from outside the London Cancer area may be referred into London Cancer Trusts for some of
their MSCC pathway (for example from the Mount Vernon Cancer Network or elsewhere in Essex). All patients treated in any *London Cancer Trust* - regardless of their referral origin - should be managed in line with these guidelines.

They should be repatriated to the care of local oncology teams following any specialist intervention where appropriate.

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**Training and Assessment for all MSCC coordinators**

Appropriate Training must be given to those involved in the coordination and management of suspected and confirmed MSCC patients as agreed by the AOS ERG with the MSCC senior clinical advisors. This training is additional to the induction training of acute oncology services. MSCC coordinators should then be assessed by an authorised assessor as competent to carry out this coordination role.

**Clinical Staff**

Training for MSCC should be an additional element to Acute Oncology induction and training, to ensure that any clinical staff who may manage these patients understand the symptoms to look for, the salient elements of the agreed management pathway and contact details for MSCC coordination support.

Clinical staff who carry out the MSCC coordination role should be trained and assessed as competent in their detailed knowledge and understanding of the MSCC pathway including the clinical management expectations within this pathway.

**Administrative Staff**

Administrative staff may carry out an MSCC Coordinator function provided they are trained and assessed as competent in their knowledge and understanding of the MSCC pathway. They must also have a defined relationship with the clinical team who will assess and clinically manage the patient, and clear instruction for action if they are concerned that the clinical team is not following the pathway as defined, including escalation if required.

**Network authorised assessors of competence for the training of MSCC coordinators**

Assessors should be authorised to assess competency for an MSCC Coordinator. Each Assessor must first be trained and assessed as competent by another authorised assessor or one of the MSCC clinical advisors. An assessor should be a senior oncologist or spinal surgeon caring for and treating patients with MSCC. Acceptance onto the *London Cancer* agreed list of assessors must finally be signed off by the co-chairs of the AOS ERG.
Audit

All Acute oncology and specialist spinal surgery services have agreed to collect the London Cancer MSCC dataset for suspected and confirmed MSCC cases. The dataset includes compulsory and optional data and details are in Appendix 3. This data should be submitted on a quarterly basis to the AOS ERG in line with requests from this group.

The audit will be used to identify cases where the agreed MSCC pathway was not followed to identify issues and areas for improvement. For example this would include cases where there has been no case discussion between consultant spinal surgeon and consultant oncologist, or where there has been a delay in diagnosis or treatment.

The Future of MSCC in London Cancer - Shaping the pathway by April 2014

All cases will be audited for compliance with the agreed pathway and service standards outlined in the previous sections of this document from January 2014 onwards. It is known that not all care is compliant with these standards in all cases and the AOS ERG will monitor this and work to facilitate improvements and compliance.

All Trusts may see patients with suspected MSCC and all must be able to respond appropriately to the emergency management of these patients. It is expected that Trusts will work to ensure compliance with these guidelines by April 2014.

Certain centres are designated to provide the specialist elements of the pathway (radiotherapy and spinal surgery). Where these specialist centres are unable to provide services in line with these guidelines by April 2014, the appropriateness of their designation to provide these services for MSCC patients will be reviewed by the AOS ERG and further recommendations made at that time.

In addition, it is recognised that further enhancements to the pathways and services outlined above may be needed to ensure a completely effective and efficient MSCC pathway in London Cancer. Some of these are outlined below. Further discussion of implementation of these will be undertaken through the forum of the AOS ERG.

Unified electronic referral system

In order to optimise the process of referral from local hospitals to surgical centres, a single common referral system is proposed. This will eliminate the current practice of using several ways of referring patients with MSCC according to surgical centre.

This is proposed in order to:
- Standardise quality amongst all London Cancer neurosurgical centres and ensure all appropriate information is provided for the case discussion process
- Facilitate referral from local hospitals and minimise delays
- Facilitate transfer of data between neurosurgical centres in cases where a lack of surgical or bed availability in one centre necessitates transfer of the case to another centre following case discussion.
- Record referrals easily for auditing purposes

24/7 spinal surgical rota
As outlined above, 24/7 access to consultant spinal surgical opinion is required to ensure timely case discussion and decision making and then definitive treatment within 24 hours of diagnosis. Any centre providing surgery for MSCC therefore needs a 24/7 rota of spinal surgeons. This is not currently the case in all designated centres and further work is needed to ensure that this is a reality. Where sites cannot achieve this alone then joint working with another centre to ensure a coordinated 24-hr rota of care is recommended.

Central Surgical MSCC Coordination
The numbers of MSCC patients each year across the whole London Cancer area is small, and only a few of these will be suitable for surgery. However, they need to be treated as emergency cases with definitive treatment within 24 hours. Capacity at an individual centre (beds, surgeons or theatres) must not be a reason for delay of treatment and centres need to work closely together to ensure patients can be treated without delay.

Central coordination could make this easier for the different neurosurgical centres to coordinate their workload in line with their capacity, and would also mean that referring oncology teams only had one point of access for surgical opinion.

Details of this central coordination need further discussion over the coming months.
Appendix 1 – Contact Details

- MSCC Coordinator details
- AOS Team details
- 24/7 oncology advice details

Local MSCC coordinators for healthcare professionals to refer or access clinical advice

<table>
<thead>
<tr>
<th>Trust</th>
<th>MSCC Coordinator Service Contact Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Barking Havering and Redbridge University Hospitals NHS Trusts</strong></td>
<td></td>
</tr>
<tr>
<td>▪ King George’s Hospital</td>
<td><strong>At all times:</strong> 01708 435 0000 ext 6177</td>
</tr>
<tr>
<td>▪ Queen’s Romford</td>
<td></td>
</tr>
<tr>
<td><strong>Barts Health NHS Trust</strong></td>
<td></td>
</tr>
<tr>
<td>▪ Barts Cancer Centre</td>
<td><strong>At all times:</strong> On Call Radiotherapy registrar at Barts Cancer Centre 07786 118 349, or bleep via switchboard 0207377 7000</td>
</tr>
<tr>
<td>▪ Royal London Hospital</td>
<td></td>
</tr>
<tr>
<td>▪ Newham University Hospital</td>
<td></td>
</tr>
<tr>
<td>▪ Whipps Cross</td>
<td><strong>At all times:</strong> On Call Radiotherapy registrar at Barts Cancer Centre 07786 118 349, or bleep via switchboard 0207377 7000</td>
</tr>
<tr>
<td><strong>Homerton University Hospital Foundation NHS Trust</strong></td>
<td></td>
</tr>
<tr>
<td><strong>At all times:</strong> On Call Radiotherapy registrar at Barts Cancer Centre 07786 118 349, or bleep via switchboard 0207377 7000</td>
<td></td>
</tr>
<tr>
<td><strong>Barnet and Chase Farm Hospitals NHS Trust</strong></td>
<td></td>
</tr>
</tbody>
</table>
| ▪ Barnet General Hospital | **Mon-Fri 9am-5pm:** Acute oncology CNS 07432 637 195  
 **Out of hours:** Mount Vernon Hospital Oncology SpR on call 01438 314333 |
| ▪ Chase Farm Hospital | **Mon-Fri 9am-5pm:** Acute oncology CNS 07432 637 195  
 **Out of hours:** North Middlesex Hospital Oncology SpR on call 0208 8872000 |
| **North Middlesex University Hospital NHS Trust** | **Mon-Fri 9am-5pm:** 07436 036 512  
 **Out of hours:** Oncology SpR on call via switchboard 0208 887 2000 |
| **Royal Free London NHS Foundation Trust** | **Mon-Fri 9am-5pm:** Acute oncology CNS 020 7794 0500 Blp 2237  
 **Out of hours:** clinical oncologist consultant on call via switchboard |
| **University College London Hospital NHS Foundation Trust** | **Mon-Fri 9am-5pm:** Acute Oncology Specialty Doctor on 0845 1555 000 Bleep 2070, or mobile 07789980371  
 **Out of hours:** On Call Clinical Oncology SpR via switchboard 0845 1555 000 |
| **Whittington Health** | **Mon-Fri 9am-5pm:** 020 7272 3070 blp 3392  
 **Out of hours:** Contact UCLH Consultant oncologist on call via switchboard  
 Tel: 0845 1555 000 or 020 3456 7890 |
| **Princess Alexandra Hospital** | **Mon-Fri 9am-7pm:** Dr Gordon Read 07969 762 597  
 **Out of hours:** Contact the North Middlesex Hospital Oncology SpR on call via 0208 887 2000 |
## Acute Oncology services and 24 hour advice services

<table>
<thead>
<tr>
<th>Trust</th>
<th>Acute Oncology Service</th>
<th>24 hour advice for healthcare professionals</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Barking Havering and Redbridge University Hospitals NHS Trusts</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ King George’s Hospital</td>
<td><strong>Mon-Fri 9am-5pm:</strong> 01708 435000 ext 6804</td>
<td>24/7 Oncology on call rota via switchboard Tel: 01708 435 000</td>
</tr>
<tr>
<td>▪ Queen’s Romford</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Barts Health NHS Trust</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Barts Cancer Centre</td>
<td><strong>At all times:</strong> Oncology on call rota Tel: 07917 093 738</td>
<td>24/7 Barts Cancer Centre Oncology on call rota Tel: 07917 093 738</td>
</tr>
<tr>
<td>▪ Royal London Hospital</td>
<td><strong>At all times:</strong> Barts Oncology on call rota Tel: 07917 093 738</td>
<td></td>
</tr>
<tr>
<td>▪ Newham University Hospital</td>
<td><strong>Mon-Fri 9am-5pm:</strong> AOS nurse contact 07956 358 077</td>
<td></td>
</tr>
<tr>
<td>▪ Whipps Cross</td>
<td><strong>Mon-Fri 8am-4pm:</strong> AOS nursing team via 020 8539 5522 bleep 476</td>
<td></td>
</tr>
<tr>
<td><strong>Homerton University Hospital Foundation NHS Trust</strong></td>
<td><strong>At all times:</strong> Oncology on call rota (Barts Health) Tel: 07917 093 738</td>
<td>24/7 Oncology on call rota (Barts Health) Tel: 07917 093 738</td>
</tr>
<tr>
<td><strong>Barnet and Chase Farm Hospitals NHS Trust</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Barnet General Hospital</td>
<td><strong>Mon-Fri 9am-5pm:</strong> 07852 428 667</td>
<td>Out of hours: UCLH Consultant oncologist on call via switchboard Tel: 0845 1555 000</td>
</tr>
<tr>
<td>▪ Chase Farm Hospital</td>
<td><strong>Mon-Fri 9am-5pm:</strong> 07852428667</td>
<td>Out of hours: NMH Consultant oncologist on call via switchboard Tel: 0208 887 2000</td>
</tr>
<tr>
<td><strong>North Middlesex University Hospital NHS Trust</strong></td>
<td><strong>Mon-Fri 9am-5pm:</strong> 07436 036 512</td>
<td>Out of hours: oncology consultant on call, via switchboard Tel: 0208 887 2000</td>
</tr>
<tr>
<td><strong>Royal Free London NHS Foundation Trust</strong></td>
<td><strong>Mon-Fri 9am-5pm:</strong> Acute Oncology CNS on 020 7794 0500 Bleep 2237</td>
<td>24/7 Clinical or Medical Oncology consultant on call via switchboard Tel: 020 7794 0500</td>
</tr>
<tr>
<td><strong>University College London Hospital NHS Foundation Trust</strong></td>
<td><strong>Mon-Fri 9am-5pm:</strong> Acute Oncology Specialty Doctor on 08451555 000 Bleep 2070, or mobile 07789980371</td>
<td>24/7 Consultant oncologist on call via switchboard Tel: 0845 1555 000 or 020 3456 7890 [Additional 24/7 advice available from * ONCOLOGY senior nurse: 07947 959 020 * HAEMATOLOGY senior nurse: 07852 220 900]</td>
</tr>
<tr>
<td><strong>Whittington Health</strong></td>
<td><strong>Mon-Fri 9am-5pm:</strong> 020 7272 3070 blp 3392</td>
<td>24/7 Consultant oncologist on call at UCLH via switchboard Tel: 0845 1555 000 or 020 3456 7890</td>
</tr>
<tr>
<td><strong>Princess Alexandra Hospital</strong></td>
<td><strong>Mon-Fri 9am-7pm:</strong> Dr Gordon Read 07969 762 597 or Dr Joud Abduljawad or Dr Maria Tenuta via switchboard</td>
<td>Out of hours: As for NMUH consultant oncologist on call via switchboard Tel: 0208 887 2000</td>
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</table>
### Appendix 2 – Spinal Instability Neoplastic Score (SINS)

<table>
<thead>
<tr>
<th>Component</th>
<th>Definition</th>
<th>Score</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Junctional (occiput to C2, C7-T2, T11-L1, L5-S1)</td>
<td>3</td>
<td>□</td>
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<tr>
<td></td>
<td>Mobile Spine C3-C6, L2-L4</td>
<td>2</td>
<td>□</td>
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<tr>
<td></td>
<td>Semi-Rigid T3-T10</td>
<td>1</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Rigid S2-S5</td>
<td>0</td>
<td>□</td>
</tr>
<tr>
<td>Pain</td>
<td>Yes (at rest +/- movement)</td>
<td>3</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Occasional but not mechanical</td>
<td>1</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>Pain Free</td>
<td>0</td>
<td>□</td>
</tr>
<tr>
<td>Lesion</td>
<td>Lytic</td>
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<tr>
<td></td>
<td>Mixed</td>
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<tr>
<td></td>
<td>Sclerotic</td>
<td>0</td>
<td>□</td>
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<tr>
<td>Spine Alignment</td>
<td>Subluxation / Translocation</td>
<td>4</td>
<td>□</td>
</tr>
<tr>
<td></td>
<td>New kyphosis/scoliosis</td>
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<td>□</td>
</tr>
<tr>
<td></td>
<td>Normal</td>
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</tr>
<tr>
<td>Vertebral collapse</td>
<td>&gt;50%</td>
<td>3</td>
<td>□</td>
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<tr>
<td></td>
<td>&lt;50%</td>
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<td>□</td>
</tr>
<tr>
<td></td>
<td>No collapse, &gt;50% vertebral involved</td>
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<tr>
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<td>None of the above</td>
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<td>Posterolateral involved</td>
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<tr>
<td></td>
<td>Unilateral</td>
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<td>□</td>
</tr>
<tr>
<td></td>
<td>None of the above</td>
<td>0</td>
<td>□</td>
</tr>
</tbody>
</table>

| Score                      | Stable                     | 0-6 | □      |
|                           | Potentially Unstable       | 7-12 | □      |
|                           | Unstable                   | 13-18 | □      |

| Spinal Surgery            | Indicated for diagnosis    | □    |
|                          | Indicated for decompression| □    |
|                          | Indicated for instability  | □    |
|                          | Not indicated              | □    |

| Radiotherapy              | Indicated for primary treatment, surgery not indicated                 | □    |
|                          | Indicated post-operatively | □    |
|                          | Indicated for pain relief   | □    |
|                          | Not indicated               | □    |
Appendix 3 MSCC audit

The audit follows the requirements as described in the peer review measures 11-1E-11y, 11-1E-12y, 11-1E-13y of the Acute Oncology - Including Spinal Cord compression measures.

The timeliness of the investigation of MSCC
The timeliness of the definitive treatment of MSCC
The outcome of the definitive treatment of MSCC

<table>
<thead>
<tr>
<th>Receiving Trust (to complete this dataset)</th>
<th>Compulsory item?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pt initials</td>
<td>Y</td>
</tr>
<tr>
<td>Hospital identifier</td>
<td>Y</td>
</tr>
<tr>
<td>NHS Number</td>
<td>Y</td>
</tr>
<tr>
<td>Sex</td>
<td>Y</td>
</tr>
<tr>
<td>DOB</td>
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<table>
<thead>
<tr>
<th>Demographics * All Fields Compulsory Please</th>
<th>Compulsory item?</th>
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<tbody>
<tr>
<td>Previous cancer</td>
<td>No</td>
</tr>
<tr>
<td>Primary Site</td>
<td>No</td>
</tr>
<tr>
<td>Referral to TRUST Source</td>
<td>No</td>
</tr>
<tr>
<td>Date of first presentation to other HCP if NOT receiving Trust</td>
<td>No</td>
</tr>
<tr>
<td>First presentation to Trust with suspicion of MSCC</td>
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</tr>
<tr>
<td>Date and Time</td>
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</table>

<table>
<thead>
<tr>
<th>Cancer Diagnosis</th>
<th>Compulsory item?</th>
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</thead>
<tbody>
<tr>
<td>Referral to AOS team Source</td>
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</tr>
<tr>
<td>Clinical Problem</td>
<td>No</td>
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<tr>
<td>Mobility</td>
<td>No</td>
</tr>
<tr>
<td>Incontinence</td>
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</tr>
<tr>
<td>Performance Status</td>
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</tr>
<tr>
<td>Suspicion of MSCC first documented</td>
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</tr>
<tr>
<td>Date and Time</td>
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<table>
<thead>
<tr>
<th>Referral</th>
<th>Compulsory item?</th>
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</thead>
<tbody>
<tr>
<td>Date and Time</td>
<td>No</td>
</tr>
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<td>Y</td>
<td>No</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Presentation</th>
<th>Compulsory item?</th>
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<tbody>
<tr>
<td>Date and Time</td>
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<td>Y</td>
<td>No</td>
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<table>
<thead>
<tr>
<th>Acute Oncology input</th>
<th>Compulsory item?</th>
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<tbody>
<tr>
<td>Yes/No</td>
<td>No</td>
</tr>
<tr>
<td>Date and Time</td>
<td>No</td>
</tr>
<tr>
<td>Y</td>
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<table>
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<tr>
<th>Initial action</th>
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<tbody>
<tr>
<td>Yes/No</td>
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<tr>
<td>Dose</td>
<td>No</td>
</tr>
<tr>
<td>If yes, date and time</td>
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</table>

<table>
<thead>
<tr>
<th>MRI</th>
<th>Compulsory item?</th>
</tr>
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<tbody>
<tr>
<td>MRI Y/N</td>
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<td>Location of MRI</td>
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<td>MRI requested</td>
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</tr>
<tr>
<td>MRI completed</td>
<td>No</td>
</tr>
<tr>
<td>MRI reported</td>
<td>No</td>
</tr>
<tr>
<td>Time (days) MRI Requested to completed</td>
<td>No</td>
</tr>
</tbody>
</table>
## Case Discussion for confirmed MSCC cases

- **Oncology and surgeon case discussion prior to treatment plan?**
- **Decision regarding definitive treatment plan made**
- **Case discussion outcome - treatment plan**
- **Time (days) between 1st pres and decision re DT**

## Definitive Treatment

- **Destination/ treating trust**
- **Treatment delivered**
- **Date and Time initial treatment delivered**
- **If radiotherapy delivered**
  - **Dose (Gy)**
  - **No of fractions**
- **Time (days) between decision re DT and DT**

## Diagnosis pathway analysis

- **Do you consider that this patient’s diagnosis was delayed?**
- **What was the principle reason for the delay in diagnosis?**
- **Were there any other factors which delayed diagnosis?**

## Definitive treatment pathway analysis

- **Do you consider that definitive treatment was delayed?**
- **What was the principle reason for the delay in treatment?**
- **Were there any other factors which delayed definitive treatment?**

## 30 day outcome

- **30 day mortality**

## Date of Death

- **Summary**
- **Mobility**
- **Incontinence**
- **Performance status**

## Any other comments