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GUIDELINES

Spinal metastases and metastatic spinal cord compression: summary of updated NICE guidance

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What you need to know

- Immediately contact the MSCC coordinator if a person with a past or current diagnosis of cancer presents with the symptoms or signs of cord compression
- Start immobilisation without delay for suspected or confirmed MSCC and neurological symptoms or signs suggestive of spinal instability to minimise weight bearing by the spine, but also seek advice early (within 24 hours) from an expert clinician in order to minimise the duration of immobilisation
- Prescribe adequate pain relief promptly for people with suspected or confirmed spinal metastases or MSCC and carry out an individualised pain assessment

Metastatic spinal cord compression (MSCC) is a well recognised complication of the spread of cancer to the vertebral column. Metastases to the spinal column occur in 3-5% of all people with cancer[1] and can cause pain, vertebral collapse, and spinal cord compression. It is frequently an oncological or surgical emergency. Potential neurological damage can lead to irreversible loss of spinal cord function. Early diagnosis and intervention are necessary to reduce neurological consequences and can be achieved through early recognition and reporting of symptoms, effective referral pathways, urgent investigations, and prompt, appropriate treatment.

The 2008 NICE guideline on MSCC,[2] updated in 2012, changed the way services are delivered in the UK. However, stakeholders involved in the 2018 surveillance process highlighted changes in evidence and practice, and where implementation of recommendations had been low. In 2023, a full update of the guidance was therefore undertaken covering the care pathway from presentation to early rehabilitation.

Of particular relevance to healthcare professionals working in primary care, the updated guideline re-emphasise recommendations around coordinated MSCC centres (see box 1 for definition), reducing the amount of time people are unnecessarily immobile, and pain management. They also lower the threshold for seeking advice from an MSCC coordinator, arranging magnetic resonance imaging (MRI), and making an urgent oncological referral. This article summarises the most recent recommendations from the National Institute for Health and Care Excellence (NICE) https://www.nice.org.uk/guidance/ng234.[3]

Box 1: Definitions as used in the context of this guideline

Coordinated metastatic spinal cord compression (MSCC) centre—A designated local service with clear referral processes and pathways for all people with suspected or confirmed spinal metastases or MSCC. The coordinated MSCC service should ensure the first point of contact for healthcare professionals is an MSCC coordinator and that this is available 24 hours a day, 7 days a week.

MSCC coordinator—The coordinator should record key information about the person with suspected or confirmed spinal metastases or MSCC, provide initial advice (including about pain management and immobilisation), and be able to assist with arranging urgent (≤24 hours) magnetic resonance imaging.

Recommendations

NICE recommendations are based on systematic reviews of best available evidence and explicit consideration of cost effectiveness. When minimal evidence is available, recommendations are based on the guideline development group's experience and opinion of what constitutes good practice. Evidence levels for the recommendations are given in italic in square brackets. Definitions of evidence certainty are given in box 2.

Box 2: GRADE Working Group grades of evidence

- *High certainty*—We are very confident that the true effect lies close to that of the estimate of the effect
- *Moderate certainty*—We are moderately confident in the effect estimate: the true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
- *Low certainty*—Our confidence in the effect estimate is limited: the true effect may be substantially different from the estimate of the effect
- *Very low certainty*—We have very little confidence in the effect estimate: the true effect is likely to be substantially different from the estimate of effect

Recognising spinal metastases and metastatic spinal cord compression (MSCC)

Back pain is a common early symptom of spinal metastases and MSCC but is also a common presenting feature for less serious conditions, especially in general practice. Information on assessing low back pain, including risk assessment and the use of risk stratification tools is available in NICE's 2021 guideline on low back pain and sciatica,[4] and principles of referring people with suspected cancer should follow the 2021 NICE guideline on suspected cancer.[5]

We updated the features that indicate the possibility of spinal metastases that should prompt seeking advice from or making immediate contact with the local MSCC coordinator (figs 1 and 2). These will apply

to a greater number of people than for the 2008 guideline. Recommendations to "contact" or "seek advice through the MSCC coordinator (within 24 hours)," instead of referral to the MSCC service, were specified to make clear the role of the MSCC coordinator as a first point of contact. We also highlighted that the MSCC coordinator role should be covered at all times to empower clinicians in primary care to get general management and imaging advice.

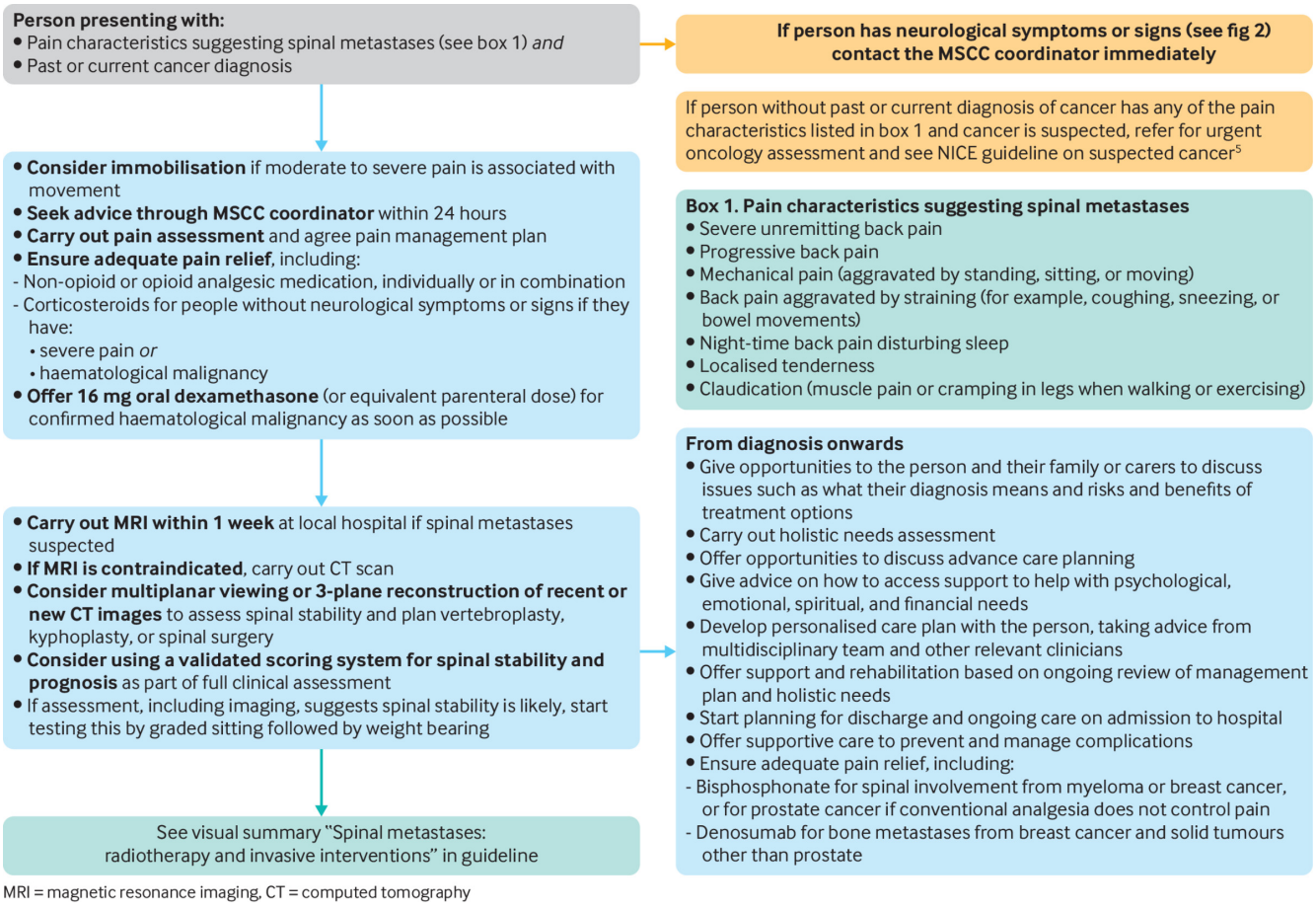

Fig 1 | Spinal metastases: initial assessment and management

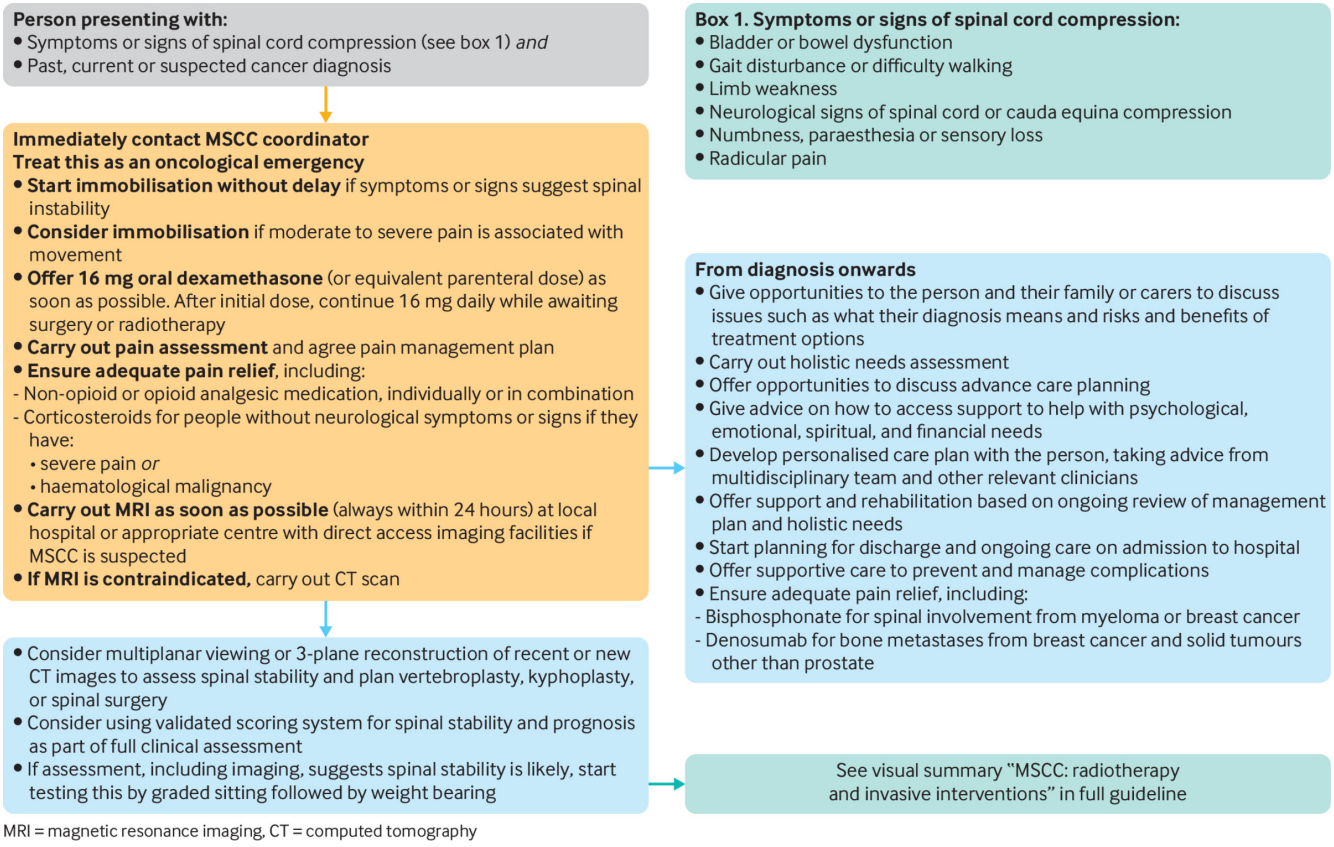

Fig 2 | Metastatic spinal cord compression: initial assessment and management

- Think about the possibility of spinal metastases or MSCC in people with any of the factors in box 3. See recommendations 1.3.2 to 1.3.6 (in the guideline) for people presenting with current, past, or suspected cancer and symptoms or signs of spinal metastases or cord compression.
- Immediately contact the MSCC coordinator if a person with a past or current diagnosis of cancer presents with the symptoms or signs of cord compression listed in box 3. Treat this as an oncological emergency.
- Seek advice through the MSCC coordinator (within 24 hours) if a person with a past or current diagnosis of cancer presents with pain with the characteristics suggesting spinal metastases listed in box 3.
- Discuss initial care with the MSCC coordinator, including the advice in recommendation 1.1.16. (in the guideline)
- If a person without a past or current diagnosis of cancer has any of the pain characteristics listed in box 3 and cancer is suspected, refer them for urgent oncology assessment (see also the NICE guideline on suspected cancer[5])
- For people with a past or current diagnosis of cancer with low back pain but no clinical evidence of spinal metastases or MSCC (for example, previous imaging investigations), explain:
  - What changes in their symptoms they should look out for (see box 3)
  - That they should contact their healthcare professional urgently if their symptoms change or worsen.

[*Low to high quality evidence based on 10 cohort studies and 1 cluster randomised controlled trial of predictive value of signs and symptoms and experience and opinion of the guideline committee*]

Box 3: Factors suggesting spinal metastases or metastatic spinal cord compression (MSCC)

Cancer

- Past or current diagnosis of cancer
- Suspected diagnosis of cancer (see also the NICE guideline on suspected cancer[5])

Pain characteristics suggesting spinal metastases

- Severe unremitting back pain
- Progressive back pain
- Mechanical pain (aggravated by standing, sitting, or moving)
- Back pain aggravated by straining (for example, coughing, sneezing, or bowel movements)
- Night-time back pain disturbing sleep
- Localised tenderness
- Claudication (muscle pain or cramping in the legs when walking or exercising)

Symptoms and signs suggesting cord compression

- Bladder or bowel dysfunction
- Gait disturbance or difficulty walking
- Limb weakness
- Neurological signs of spinal cord or cauda equina compression
- Numbness, paraesthesia, or sensory loss

- Radicular pain

- Offer a magnetic resonance imaging (MRI) scan to people with suspected MSCC (see recommendations on recognising MSCC) to be performed:
  - As soon as possible (always within 24 hours)
  - At the local hospital or appropriate centre with direct access imaging facilities
  - Transfer to a tertiary centre for MRI should be undertaken only if local MRI is not possible.

  [*Based on low to high quality evidence from randomised controlled trials*]

Providing a coordinated metastatic spinal cord compression (MSCC) service

The previous guideline recommended significant changes with respect to centralisation of services, paving the way for designated MSCC hubs and defining the role of the MSCC coordinator. However, stakeholders had identified that implementation of the MSCC coordinator-led model had been low. After implementation of a service based on the previous guideline, the guideline committee reviewed audit data from the Clatterbridge Cancer Centre (covering a population of 2.4 million people across Cheshire, Merseyside, and the surrounding areas). Between January 2018 and May 2022, 3174 people were suspected to have MSCC and were managed as per the pathway. The audit showed that a coordinated MSCC centre could improve both overall survival and quality of life for patients, as well as reduce costs, although these improvements were less in the most deprived socioeconomic groups (https://www.nice.org.uk/guidance/ng234/evidence/b-service-configuration-and-delivery-management-and-rehabilitation-pdf-13134698174#page=57). Although the guideline committee did not recommend any specific model or configuration, it used this evidence to reinforce the importance of having a coordinated MSCC service in place but also of being aware of potential inequalities.

- Ensure that there is a designated local MSCC service with clear processes and referral pathways so that all people with suspected or confirmed spinal metastases or MSCC are referred to an MSCC service with an appropriate level of urgency (see recommendations 1.3.2 and 1.3.3 in the guideline about when to contact the MSCC coordinator, and recommendations 1.5.2 and 1.5.3 about when to offer an MRI scan).
- MSCC services should ensure that the first point of contact for people referred to the service is the MSCC coordinator. When the MSCC coordinator is not working, the role should be carried out by a designated clinician with appropriate expertise (for example, an on-call oncology registrar).
- MSCC services should ensure that the role of MSCC coordinator is covered at all times (24 hours a day, 7 days a week) and is based in an oncology service.
- MSCC services should have arrangements in place to coordinate care between different specialties and services, for example by having:
  - Clear referral criteria and processes
  - Processes for information sharing
  - Effective channels for communication between specialties.
- MSCC services should operate through a multidisciplinary approach, with key members from relevant specialties, including:
  - Acute oncology
  - Haematology
  - Histopathology
  - Oncology
  - Palliative care
  - Physiotherapy
  - Radiology
  - Spinal surgery.
- Specialties providing treatment within the MSCC service (for example, spinal surgery and radiotherapy) should designate a single point of contact to liaise with other services, provide advice, and contribute to the coordination of care.
- MSCC services should establish links and communication pathways with primary and community care and other relevant services (for example, palliative care and social services) so that information about the person's care and support needs is shared effectively to ensure safe discharge from hospital, continuity of care and appropriate follow-up (see also the section on providing support and rehabilitation services).
- MSCC services should have systems and processes in place for recording data, audit evaluation, and investigating and reporting incidents.
- Be aware of the impact of health inequalities (for example, deprivation) on outcomes for people with spinal metastases or MSCC. Ensure that:
  - Information is collected and analysed by local services to identify any health inequalities
  - Education is provided within services on reducing local health inequalities
  - Reasonable adjustments are made by local services to address any health inequalities, in line with the Equality Act 2010.
- Hospital and community services should establish coordinated care pathways with each other, and with social services, to ensure that people with spinal metastases or MSCC:
  - Are discharged in a safe and timely manner *and*
  - Receive the support they need for themselves and their families and carers once home.

  [*Based on very low quality observational evidence from evidence review and primary analysis of real world evidence and economic evaluation*]

Immobilisation and mobilisation

Although immobilisation without delay can prevent further deterioration of the spine, some people are immobilised for longer than necessary due to their neurological symptoms and pain, often lying in a flat position. This can have a detrimental impact on their physical and mental wellbeing. A balance between care of the spine and the detriments of prolonged bed rest is therefore needed.

- Start immobilisation without delay (including for transfer to hospital) for people with:

- Suspected or confirmed MSCC *and*
- Neurological symptoms or signs suggesting spinal instability (see the recommendations on tools for assessing spinal stability in the guideline).

- Consider immobilisation for people with:
  - Suspected or confirmed spinal metastases or MSCC *and*
  - Moderate to severe pain associated with movement.
- Nurse people who are immobilised in a supine position to minimise weight bearing by the spine (lying flat or with partial elevation). If they cannot tolerate the supine position (for example, because of pain or breathlessness), try adjusting their position to reduce these symptoms.
- Seek early advice (within 24 hours) from an expert clinician (for example, a specialist physiotherapist, oncologist, or spinal surgeon) and start assessment of spinal stability to minimise the duration of immobilisation, if appropriate.

[*Based on the experience and opinion of the guideline committee*]

Pain management

Pain is often the reason people seek help before or after their diagnosis with spinal metastases or MSCC. Immediate action is needed to start investigations and treatment, but the person's pain should be managed appropriately and not overlooked. Controlled drugs should be used safely and appropriately.

Adequate pain relief should be provided promptly in line with the latest national guidelines,[6] including while the person is waiting for investigations or treatment. Clinicians should discuss the risks of adverse events when taking analgesic medication. People's responses to analgesia vary, and they should not be continued on a treatment that is deemed to be ineffective. To avoid inadequate pain relief, dose, titration, and tolerability should be discussed at each pain review.

- Carry out an individualised pain assessment for people presenting with pain related to suspected or confirmed spinal metastases or MSCC. This should include assessing:
  - The severity, location, and characteristics of the pain
  - The underlying cause of the pain and whether this has deteriorated
  - The impact of pain on lifestyle, daily activities (including sleep), and participation in work, education, training or recreation.
- Discuss and agree a pain management plan with the person based on their individualised pain assessment and taking into account any previous strategies tried, as well as their concerns and expectations. Discussions may include:
  - Why a particular management plan is being suggested
  - The psychological impact of pain, including the effect on emotional wellbeing
  - Pharmacological analgesic treatment options, with individualised information and advice, including possible risks and benefits, and dose titration
  - Individualised coping strategies for pain
  - Other treatment options, if suitable, for example:
    - Physical therapy
    - Immobilisation (for example, bracing)
    - Psychological therapies
    - Systemic anticancer treatments
    - Bisphosphonates (see the section on bisphosphonates in the guideline)
    - Denosumab (see the section on denosumab in the guideline)
    - Corticosteroids (see the section on corticosteroid therapy in the guideline)
    - Radiotherapy (see the section on radiotherapy in the guideline)
    - Surgery (see the section on invasive interventions in the guideline)
  - When and how to seek further advice if pain persists, progresses, or changes in character.

    (For more information about involving people in decisions and supporting adherence, see the NICE guidelines on shared decision making[7] and medicines adherence[8])
- After starting or changing a pain management plan, carry out a clinical review to assess the effectiveness of the chosen treatment.
- Consider referring the person to a specialist pain service (or, if appropriate, a palliative care service) if pain is difficult to manage at any stage, including at initial presentation, and if:
  - They have severe pain *or*
  - Their pain significantly limits their lifestyle, daily activities (including sleep) and participation in work, education, training, or recreation.

[*Based on low to high quality evidence from randomised controlled trials*]

Implementation

Setting up coordinated services will be costly because of recruiting members of panels, setting up computer systems for recording patient information, training staff, auditing outcomes, and for forming and disseminating pathways. This is likely to vary widely across centres with different levels of implementation of the previous guideline's recommendations around this. Commissioners of MSCC services should consider that cost will likely reduce (a reduction of £132 per person in the guideline economic model) and outcomes improve.

Lowering the threshold for seeking advice from an MSCC coordinator and arranging MRI imaging will divert personnel from other duties, particularly MSCC coordinators, needed to staff the centres at all times and may increase the number of oncological referrals. This was seen by the guideline committee as essential for maximising treatment options and ultimately improving clinical outcomes. Hospitals will have to ensure that there is access to MRI scans performed urgently for all people with suspected MSCC who have neurological signs and symptoms. This could be implemented, for example, by using protected, dedicated appointments or rescheduling elective scans.

Future research

The guideline committee made the following recommendations for future research based on gaps in the evidence they assessed:

- How effective is postoperative stereotactic ablative radiotherapy compared with postoperative standard radiotherapy in the treatment of metastatic spinal cord compression (MSCC)?
- What are the effective forms of immobilisation and remobilisation, including timing or angular steps of graded sitting to lying?
- What is the effectiveness of surgery in the prevention of MSCC for people with spinal metastases without pain or instability?

Guidelines into practice

- What features of back pain may be because of spinal metastases or metastatic spinal cord compression (MSCC), and who would be a candidate to discuss with the MSCC coordinator?
- How do you ensure that the right balance is achieved between taking care of the spine and preventing prolonged immobilisation?

What is not included in this summary

Please see the NICE guideline for recommendations on information and support, imaging investigations, tools for assessing spinal stability, and treatment of spinal metastases, including new recommendations supporting the use of stereotactic ablative body radiotherapy and single fraction radiotherapy.

How patients were involved in the creation of this article

Committee members involved in this guideline included three lay members with experience of spinal metastases and metastatic spinal cord compression who contributed to the formulation of the recommendations summarised here.

Further information on the guidance

This guidance was developed by the National Guideline Alliance (NGA), which was subsumed within the National Institute for Health and Care Excellence (NICE) from April 2022. The guideline was developed in accordance with NICE guideline methodology (https://www.nice.org.uk/process/pmg20/resources/developing-nice-guidelines-the-manual-pdf-72286708700869). A guideline committee (GC) was established which incorporated healthcare professionals and lay members.

The guideline is available at https://www.nice.org.uk/guidance/ng234.

The GC identified relevant review questions and collected and appraised clinical and cost effectiveness evidence. Quality ratings of the evidence were based on GRADE methodology (www.gradeworkinggroup.org). These relate to the quality of the available evidence for assessed outcomes or themes rather than the quality of the study. The GC agreed recommendations based on the available evidence or, when evidence was not found, based on their experience and opinion using informal consensus methods.

Stakeholder organisations were invited to comment on both the scope and draft guideline. All comments were considered before producing the final version of the guideline.

NICE will conduct regular reviews after publication of the guidance, to determine whether the evidence base has progressed significantly enough to potentially change the current guideline recommendations and require an update.

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