Acute Oncology Group
Hull University Teaching Hospitals NHS Trust
Queen's Centre

Malignant Spinal Cord Compression (MSCC) Rehabilitation Guidelines

Version Control

This is a controlled document please destroy all previous versions on receipt of a new version

Date Approved: March 2012 Review Date: May 2021

Version	Date Issued	Review Date	Brief Summary of Change	Owner's Name
1.0	December 2011	December 2013	First Draft / NEYHCA branding and formatting	MSCCG Group / AOCEG
1.0a	January 2014	March 2015	Reviewed, no changes made	MSCCG Group / AOCEG
2.0	January 2016	January 2018	Update to HEY pathway	MSCCG Group / AOG
3.0	May 2019	May 2021	Date Revised	AOG

Signature Sheet

Agreement of the NEYHCA (Cancer) MSCC Rehabilitation Guidelines 2012

These guidelines have been agreed by:		
Title	Name	Date Agreed
Chair of the MSCC Group	Dr Nabil El-Mahdawi	16.1.16
Chair of the MSCC Group	Dr Nabil El-Mahdawi	5.12.11
Chair of the Acute Oncology CEG	Dr Lorcan O Toole	5.12.11
The MSCC Group have agreed these guidelines		5.12.11

Contents

1. MSCC Rehabilitation

Commence when MSCC is suspected/diagnosed, encompass the skills of various professionals as appropriate, having timely access to support services for assessment, advice and rehabilitation.

1.1 Aim of rehabilitation

- To promote quality of life for the person and their family for the remaining time of their illness
- Maintain or increase functional independence
- Prolong life by preventing complications
- Return the patient to the community wherever possible and support the patient, family and other MDT members to enable the patient to remain at home for as long as possible

1.2 Referrals

Referrals should be made to:

- Physiotherapy within 24hrs of admission.
- Occupational Therapy within 24-48 hrs of admission.

1.3 Multi-professional staff

Referrals should be considered to the following Multi Professional Staff:

- Social Worker
- Specialist Palliative Care Team
- Dietician
- Speech and Language Therapist
- Clinical Psychologist
- Oncology Health Centre
- Hospital Chaplain

Family members / friends (with patients' permission) given opportunity to be involved in patient's care e.g. personal hygiene, feeding, scheduling of medication.

Rehabilitation should focus on the patient's goals and desired outcomes including functional independence, participation in normal activities of daily life and quality of life.

Goals should be short term and attainable to achieve the best quality of life possible.

To assist with goal setting it is important that the care team be honest with the patient from an early stage regarding the potential for improvement in mobility, whilst this may initially be distressing it encourages early adjustment and realistic rehabilitation expectations. A caution to this is if the patient is in denial about their primary cancer diagnosis.

Offer admission to a specialist rehabilitation unit to those patient's most likely to benefit, e.g. those with a good prognosis, a high activity tolerance and strong rehabilitation potential.

2. Discharge Planning

- Due to the potentially complex nature of the discharge, discharge planning should commence as soon as possible following admission and diagnosis confirmation.

- Discharge planning will begin as an outcome of the initial assessment once realistic expectations have been discussed, patient and family wishes have been taken into consideration and initial objectives have been set. This will enable early liaison with community-based services for necessary adaptations or equipment, if required.
- May include transfers between hospitals or hospices depending on the treatment pathway assessed for each individual patient.

- Requires a multidisciplinary approach and therefore good communication between team members is crucial to facilitate discharge.

- Effective communication strategies between healthcare settings must be ensured to facilitate a seamless process to ensure an efficient and coordinated discharge and follow up care.

- The MDT should assist with psychological adjustment and goal setting related to loss of functional independence, self esteem and quality of life.

Cancer related distress is defined as an unpleasant emotional experience of a psychological, social or spiritual nature that may interfere with a patient's ability to cope with cancer and its treatment.
Factors identified as increasing patient risk of severe distress include, previous history of psychological problems, poor support network and ineffective coping strategies, substance abuse, financial strain, non-adult children, poor prognosis and symptoms of pain/fatigue etc.

Patients and their families should be provided with the opportunity to express their emotions. It is important that all healthcare professionals are alert to the potential psychological support needed, consider referral to psychological support services including the specialist palliative care team, clinical psychologist, psychiatrist, oncology health centre and chaplain.

- A home visit or access visit may be required, facilitated by the Occupational Therapist.

- Clear pathways should be established between hospitals and community based health and social services teams to ensure equipment and support is arranged in an efficient and coordinated manner.

- Involve patients and their relatives/carers to ensure their wishes are respected and discharge planning goals are realistic and achievable. Adequate support and training should be offered, such as the use of complex equipment.

- Contact community staff already involved in the patient's care and update on the patient's status.

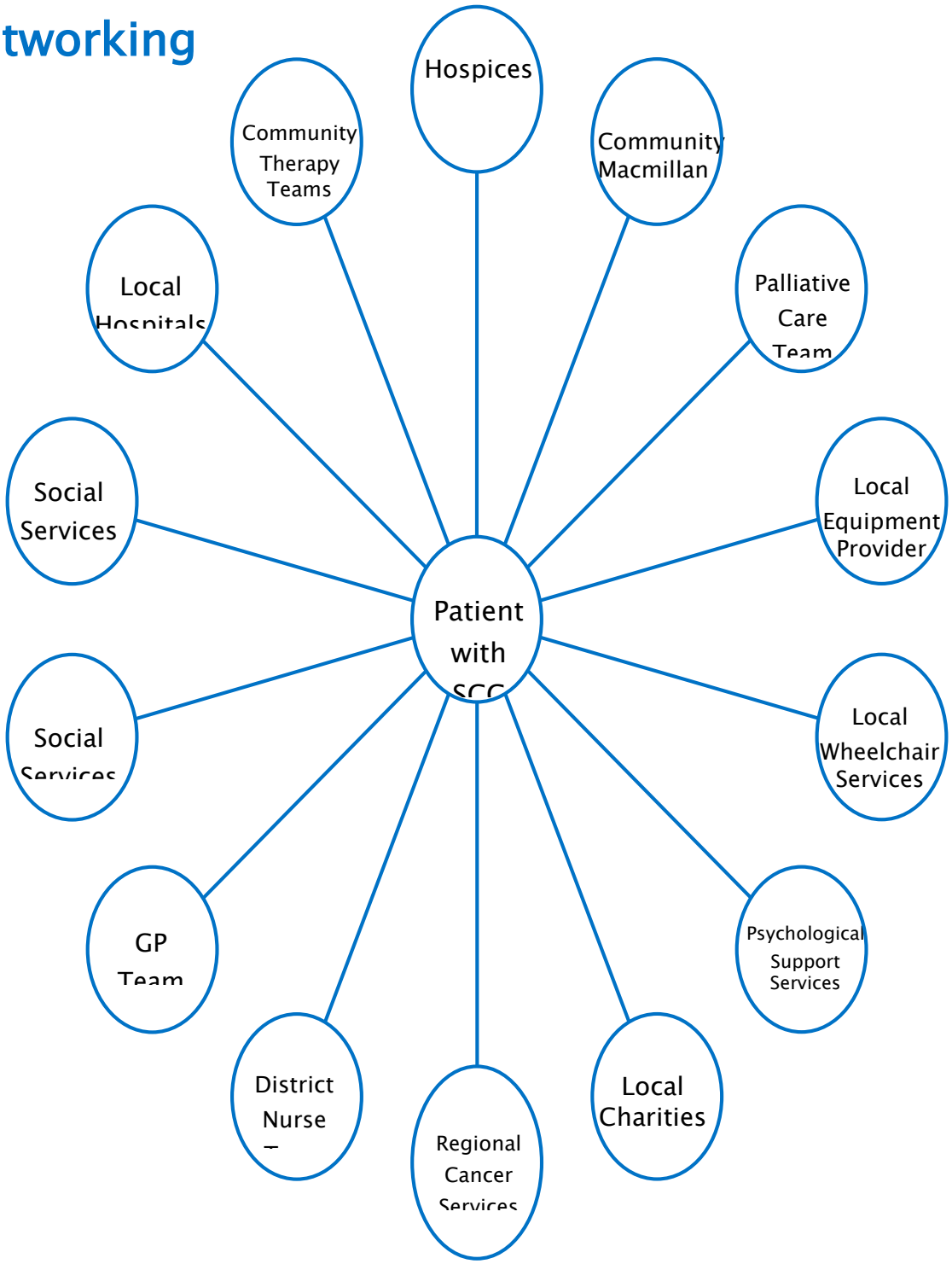
- Referral to the appropriate agency for timely equipment provision.

- Referral to community rehabilitation teams and support services to maximise patient's quality of life.

- Due to the likely increase in physical disability a full benefits assessment must be considered. Consider application for Disability Living Allowance, Attendance Allowance, DS1500, Macmillan Grant, Disabled Parking badge etc.

- Patients may be discharged to a number of different locations; home; acute trust hospital; district general hospital; community hospital; hospice or care home depending on their needs, the degree of support required and the support networks available within their local community.

3. Networking



4. Approaching End of Life

- Recognise when end of life approaching, explore needs and adjust interventions accordingly
- Inform relevant team members
- Refer to local end of life policy
- Consider preferred place of care, review if needed and help to facilitate preferred place of care
- Provide carer support
- Supply or arrange collection of equipment as appropriate
- Advise on positioning and pressure management

5. Physiotherapy and Occupational Therapy

- At its simplest, the key outcome of therapy intervention is quality of life. For many people with cancer helped by therapists, one of the most important means to achieving this will be independence. However, for people who are receiving palliative care, this may not always be the first priority.
- Quality of life may have more to do with affirming life – providing people with physical, social and emotional opportunity, and a sense of control in their own lives.
- The short duration of treatment does not always facilitate this process but it is vital to address perceived and actual needs.
- Referral to Physiotherapy within 24 hrs of admission and physiotherapy assessment within 24-48hrs, unless there is no routine physiotherapy input e.g. at a weekend or if the patient's condition makes it inappropriate.

- Referral to Occupational Therapy within 24-48 hours of admission to allow early screening for potential functional problems during admission and early investigation regarding discharge potential / needs.

- Access specialist therapist advice as appropriate.

- Provide patient / carer with information and reassurance.

- Introduction and explanation of the physiotherapy and occupational therapy role.

- Assume spine unstable until MDT decision made regarding stability. Advise flat bed rest with neutral spine alignment until confirmation of spinal stability. Stabilisation with a hard collar for patients with suspected cervical cord compression.

- Initial assessment following discussion with the senior medical team in relation to spinal stability. Spinal stability to be clearly documented in medical notes.

- The initial assessment is undertaken to establish details of current and previous level of functioning, home environment, life roles, life style, and the expectations and understanding of the person and their family as appropriate. It may be carried out over one or more sessions depending on the medical condition and tolerance of the patient.

- All patients to be re-assessed daily for any changes in their condition and treatment altered accordingly.

- Ensure adequate analgesia and explanation prior to assessment and treatment.

- Clearly explain any contraindications to the patient prior to movement / activity (increase in pain, altered sensation, increasing weakness) and the importance of returning to a position that does not exacerbate symptoms and spinal stability reassessed.
- Be aware of altered proprioception and how this may affect functional movement and positioning.

- Involvement in education of the patient / family / carers in relation to therapy management on discharge. This may involve moving and handling and positioning advice, guidance on use of aids and appliances, correct exercise and mobility / stairs technique, fatigue and pain management.

- Referral to the appropriate agency for equipment provision.

- Referral to local / community physiotherapy and occupational therapy services for ongoing therapy as indicated.

6. Assessment

6.1 Subjective assessment

Present Condition

Date of diagnosis, Stage of disease including location of any metastases

History of Present Condition

Include results of investigations

Past Medical History

Include treatment history of cancer including previous chemotherapy and radiotherapy

Drug History

Social History

Include outside support services (e.g. social services, district nurse, Macmillan nurse, Oncology Health), type of home, steps / stairs ,location of bedroom, bathroom, toilet, aids and alterations, functional ability, family / friend support

Patients' main problems

For each symptom, a symptom analysis should be carried out including: onset, duration, intensity, continuous or intermittent, precipitating or relieving factors, associated symptoms.

E.g. Pain: Use body chart, VAS (visual analogue score), easing and aggravating factors, behaviour / pattern.

SOB: At rest or on exertion, easing and aggravating factors, behaviour/pattern, how far can mobilise, able to use stairs, needing oxygen?

Secretions: Able / unable to clear and techniques used, how much and how often, colour and consistency, use of medication / inhalers / nebulisers.

6.2 Objective assessment

Observation

- General appearance, level of consciousness, colour, swelling, wasting , muscle bulk, scars
- Catheters, drips, drains, oxygen

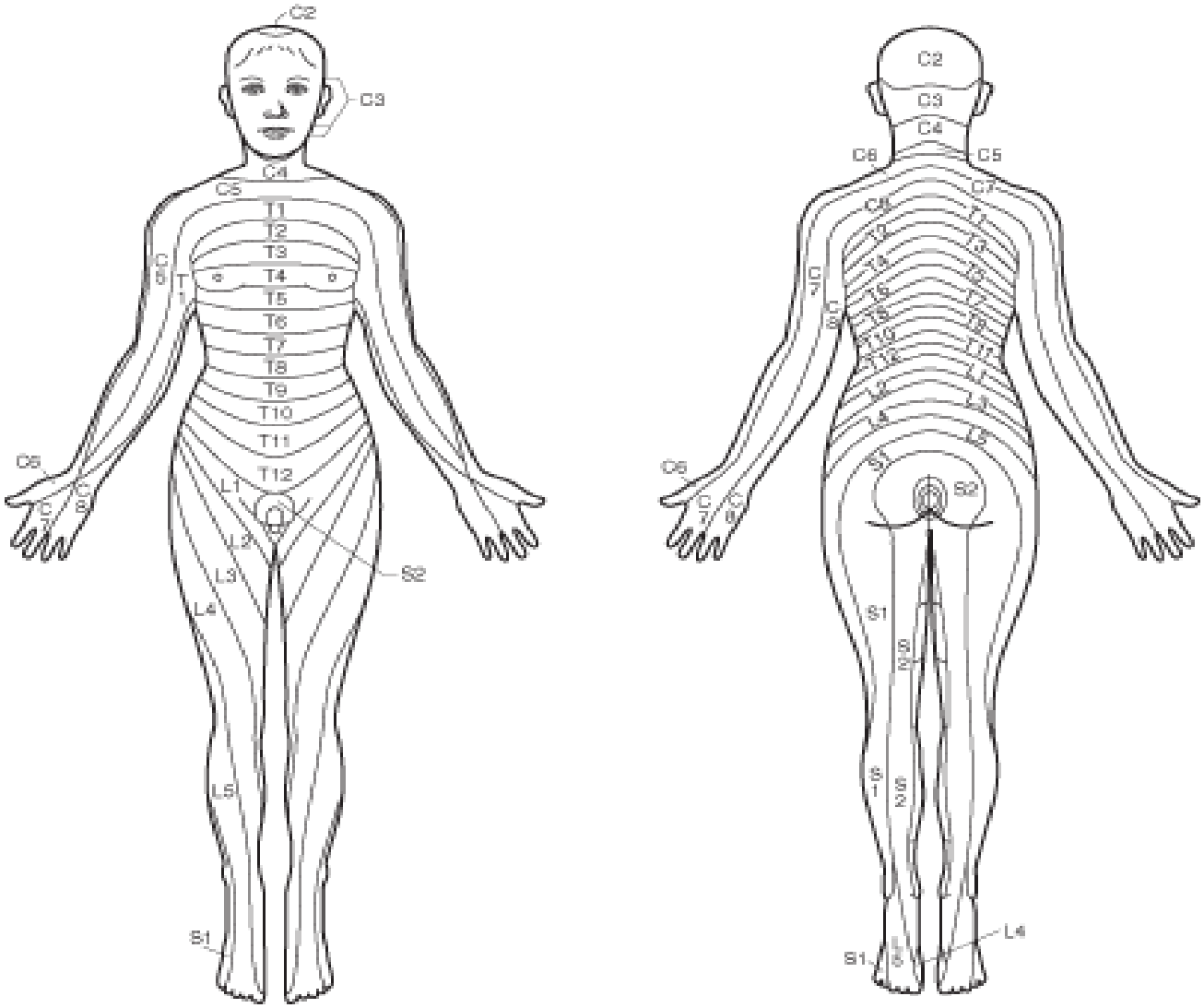
Pain Assessment use of body chart, type of pain (burning, stabbing etc), pain score (use of visual analogue scale)

- Localised pain: pain over the area of the tumour, usually constant and generally increases in supine position.

- Radicular pain: pain from nerve root compression, follows distribution of involved segmental dermatome. Discomfort from a thoracic lesion often radiates in a band around the chest/abdomen almost always bilaterally. Radicular pain often worsened by activities such as coughing, sneezing, straining, straight leg raise and neck flexion.
- Referred pain: pain felt at a site other than where the cause is situated, such as pain from metastatic involvement of L1 causing pain over the sacroiliac joint.

Sensation

- Light touch
- Joint position sense – e.g. finger up/down, limb bent/straight with eyes closed, finger to nose with eyes closed
- Dermatomes



Range of Movement (ROM)

- Active
- Passive

Muscle Power

- Assess skeletal muscles for size and strength

- Oxford Scale
  - 0= no movement
  - 1= flicker
  - 2= gravity eliminated
  - 3= against gravity
  - 4= against resistance
  - 5= normal

- Myotomes

Upper limb

C1 = occipital flexion	Rectus capitus anterior, longus capitus
C2 = occipital extension	Rectus capitus posterior
C3 = occipital side flexion	Scalenes
C4 = shoulder girdle elevation	Trapezius, levator scapulae
C5 = shoulder abduction	Deltoid
C6 = elbow flexion	Biceps
C7 = elbow extension	Triceps
C8 = thumb extension	Extensor pollicis longus
T1 = finger abduction/adduction	Intrinsics

Lower limb

L1 = hip flexion	Psoas and illiacus
L2 = hip flexion	Psoas and illiacus
L3 = knee extension	Quadriceps
L4 = ankle dorsiflexion	Tibialis anterior
L5 = 1st toe extension	Extensor hallucis longus
S1 = Ankle plantarflexion	Gastrocnemius, soleus
S2 = Knee flexion	Hamstrings

Tone

- Use body chart e.g. + Patient able to alter / low
  ++ Therapist able to alter / moderate
  +++ Unable to alter / high

Coordination

Upper limb

Rapid pronation / supination (dysdiadochokinesia)

Finger-nose (dysdiadochokinesia)

Arm bounce – downward pressure & sudden release of outstretched arm causes excessive swinging

Rebound – flex elbow against resistance, sudden release & hand strikes face as delay in triceps contraction

Lower limb

Heel–shin (ataxia)
Repeated foot tapping (dysdiadochokinesia)
Romberg's test
(sway when eyes open or closed = cerebellar deficit / cerebellar ataxia)
(sway only when eyes closed = proprioceptive deficit / sensory ataxia)

Reflexes

- Look for hyperactive deep tendon reflexes or absence of superficial reflexes

Upper limb

C5 / 6 Biceps
C6 Brachioradialis
C7 Triceps
Hoffmann's reflex (finger flexor reflex) tapping the nail or flicking the terminal phalanx of the middle or ring finger, positive response is flexion of the terminal phalanx of the thumb, indicates upper motor neurone lesion.

Lower limb

L3 Quadriceps
S1 Achilles tendon
Babinski test – upper motor neuron lesion if big toe extends

Palpation

Balance

Sitting and standing, static and dynamic

Mobility and function (Including gross and fine motor skills)

This will identify if the patient requires assistance with regards:

- Feeding, self care and toileting
- Bed mobility
- Transfers
- With/without aid/assistance
- Gait – step width/length, step to, reciprocal, wide based, scissoring, shuffling, antalgic, high stepping, associated postural movements etc.

Steps / stairs

With / without aid or assistance, use of rails, step to or reciprocal gait.

Bladder difficulties ask about urgency, initiating voiding, retention, overflow, incontinence.

Bowel difficulties ask about constipation, incontinence with loss of sphincter control, absence of sensation or numbness in the rectum.

Fatigue and Endurance

Cognitive Function the impact of metastases, medication, toxicity or infection may lead to temporary or long term cognitive impairment. If the patient has problems with memory, perception, planning or spatial awareness, this may impact on their ability to carry out any activity.

Psychological function includes emotions (state / feelings), coping techniques, self-identity, intra and inter-personal relationships and possible impact of these on the patient's performance.

Respiratory assessment

- Observation and palpation of chest – position, chest shape, chest expansion – paradoxical breathing , breathing pattern e.g. mouth breathing, chest movement e.g. accessory muscle use, cyanosis ,wearing oxygen (delivery device and amount of oxygen) etc.
- Auscultation, Respiratory rate, Temperature, Heart rate and BP
- Oxygen saturation, CXR, ABG, Cough – technique, weak / fair / strong
- Sputum production – technique, amount, colour, smell, consistency
- Inhaler technique

7. Spinal Stability and Timing of Mobilisation

NICE recommends that a decision about spinal stability has to be made by the MDT, ideally including surgeon, radiologist, oncologist and physiotherapist and documented in the medical record. Assume the spine is unstable until investigations prove otherwise and MDT decision made

Most reliable indicators of spinal instability are radiological findings (MRI) and clinical features such as mechanical pain and changing neurological features (escalation of pain, peripheral tingling or numbness, muscle weakness).

Instability is likely to be present if any of the following are present:

- Severe pain at site of lesion, increasing on movement

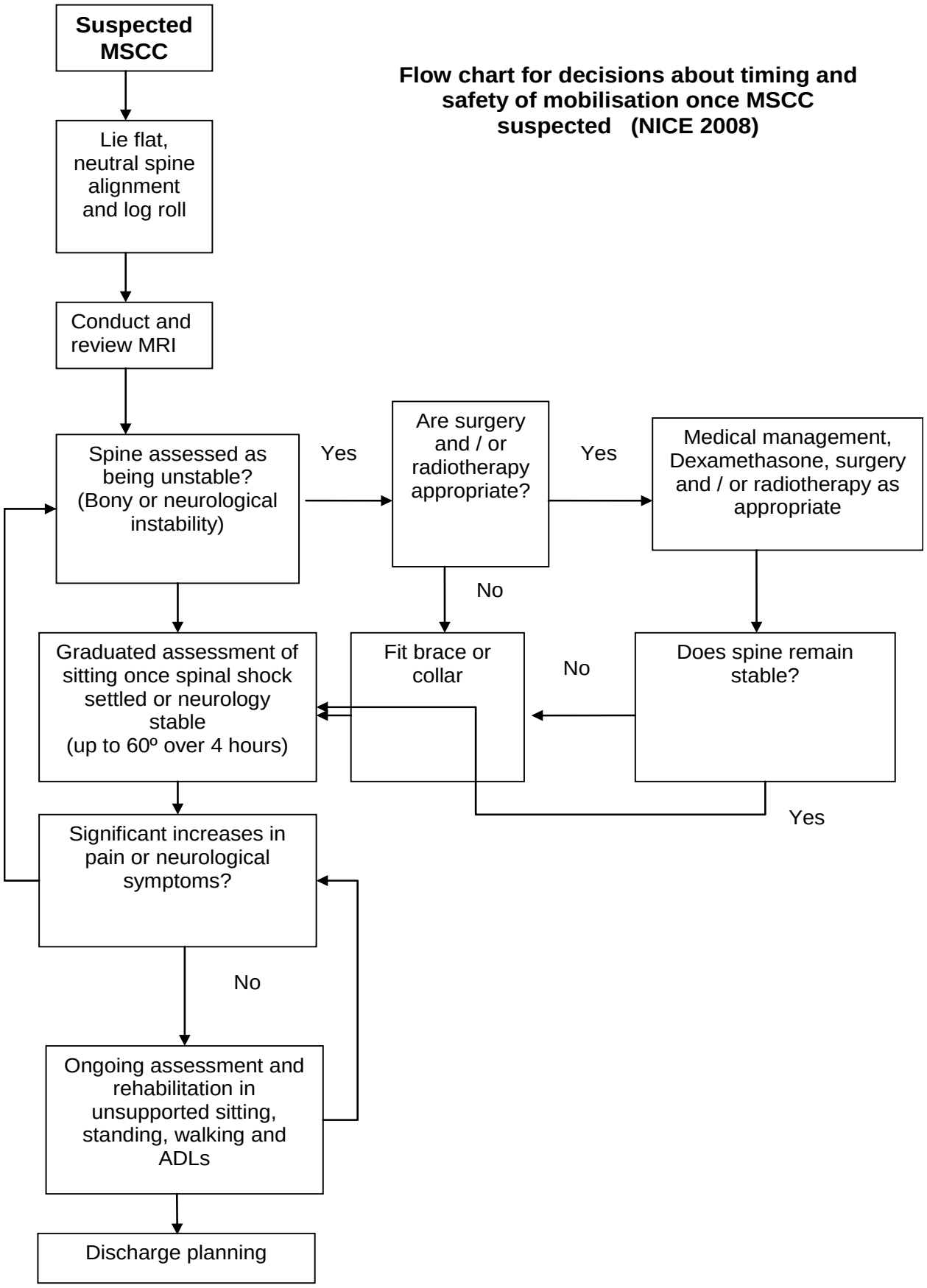
- The tumour involves two or more adjacent vertebral bodies
- Both anterior and posterior elements at the same level are involved
- Involved vertebral bodies have collapsed to less than 50% of their original height
- The odontoid process has been destroyed leading to possible atlanto-axial subluxation (WOSCAN, West Of Scotland Cancer Network Guidelines for malignant spinal cord compression, 2007)

Retrospective audit of clinical practice shows wide variation in the timing of, and methods used to mobilise patients diagnosed with MSCC during treatment. In the past mobilisation has usually only been started only after radiotherapy or spinal stabilisation, or following an arbitrary period of bed rest. However there is no research evidence to support any of these approaches.

Once the spine is confirmed as stable, gentle mobilisation should be commenced as soon as possible, bearing in mind that this may be before, during or after definitive treatment. When pain is well controlled, gradual sitting should begin, from supine to 45° initially and if tolerated, the patient should be encouraged to progress to 60° and 90° if able. Pain levels and neurological signs / symptoms must be monitored during this process. If there is a significant worsening of any of these, patients should be returned to a position where these changes reverse and the stability of the spine reassessed.

(NICE, MSCC Guidelines, 2008)

7.1 Flow Chart for Decisions about timing and safety of mobilisation once MSCC suspected (NICE 2008)



8. Respiratory care: Spinal cord compression

Above C3	Paralysis of diaphragm, intercostals and abdominals	Use sternocleidomastoid and trapezius Require mechanical assistance, likely to be ventilator dependent	Normal chest care for ventilator dependent patients Consider assisted cough
Cervical compression Below C4	Partial or total diaphragmatic action and accessory muscles, no intercostals or abdominal activity	Need external compression for effective cough to increase positive intrathoracic pressure. Low vital capacity due to oedema and low tone. Paradoxical breathing. Unable to produce forced expiration	Consider assisted cough Consider cough assist machine
Thoracic compression	Some preservation of intercostals but no abdominals	Impaired forced expiration	Consider use of abdominal binder Consider assisted cough Consider Cough assist machine
Below L1	Little effect on respiratory function		

8.1 Effect of Spinal Lesion on Respiratory Muscles

8.11 Abdominal muscles

When the abdominal muscles are paralysed the abdominal contents fall downwards and forwards, the diaphragm descends lower into the abdominal cavity. When the diaphragm contracts the lower ribs are pulled inwards reducing the lateral diameter of the lower chest. Vital capacity may fall by as much as 45% in standing.

8.12 Intercostal muscles

When impaired the amount of muscle available for inspiration and expiration is reduced. When under stress the muscles used for inspiration are alternated. Inspiration may initially be caused by contraction of the diaphragm and then when it becomes fatigued the intercostals take over, until the diaphragm has had time to recover. Paradoxical inward movement of the intercostals spaces may occur if the intercostals muscles are paralysed

8.13 The Diaphragm

If the diaphragm is paralysed or weak the negative intrathoracic pressure sucks the diaphragm up into the chest and the upper abdomen will move inwards during inspiration.

8.14 The Accessory muscles

In a complete lesion above C3 only the accessory muscles sternocleidomastoid and trapezius are available for inspiration. These muscles can sometimes produce a vital capacity of 700ml although they are usually incapable of providing long term ventilation.

(Webber and Pryor, 1994)

8.2 Respiratory Physiotherapy for Patients with Spinal Cord Compression

- Patients are taught breathing exercises and provided with an incentive spirometer.
- Positioning for treatment needs to be considered and a supine or 15º head down position may be required.
- Some patients will require an assisted cough, particularly with cervical and thoracic cord compression.
- The Cough Assist and IPPB (The Bird) can be very beneficial for these patients, but be aware that positive intrathoracic pressure reduces venous return to the heart and can reduce cardiac output, therefore use with care in patients with an unstable cardiovascular system.
- Anxiety can adversely affect respiratory function so consider use of breathing control, anxiety management, pacing and fan therapy/open window and most importantly reassurance.

8.3 Respiratory Techniques

8.31 Manual Assisted Cough

The patient with partial or complete paralysis of the abdominal muscles will be unable to produce a forced expiration (cough). As therapists we can attempt to replace the function of the paralysed muscles by creating increased pressure underneath the working diaphragm.

Method

This can be done by one of two methods:

1. Hands should be placed so that one rests on the nearside of the thorax and the other on the opposite side of the thorax, with the forearm resting across the lower ribs. As the patient attempts to cough push inwards and upwards with your forearm and stabilise the thorax with the other hand.

2. The hands are positioned bilaterally over the lower thorax and with the elbows extended the physiotherapist pushes inwards and upwards evenly through the arms.

8.32 Cautions / Contraindications

Manual techniques

- Contraindicated if patient has rib metastases due to fracture risk
- Consideration of hand placement (not over tumour site / painful area)
- Consider platelet levels
- May not be appropriate to use with a terminal patient in respiratory distress

Suction

- May not be appropriate in terminal care, as distressing
- Caution in head and neck cancers and upper airway tumours due to altered anatomy
- Consider platelet levels
- Awareness of infection risk

Positioning

- Awareness of tumour site and potential to compress/cause discomfort

Cough Assist / IPPB

- Caution in patients with bronchial tumour as potential for air trapping
- Consider platelet levels

8.33 Platelets

- Normal levels 150,000-400,000/microlitre reflects balance between production and destruction

- At 100,000/microlitre normal clotting still possible

- Patients need at least 50,000/microlitre for surgeons to perform procedures

- At 30,000-50,000/microlitre experience spontaneous bleeding after negligible trauma

- At 10,000-30,000/microlitre experience spontaneous bruising, menorrhagia, and prolonged bleeding with injury

- At <10,000/microlitre have mucosal bleeding (epistaxis, gastrointestinal, and genitourinary) and at risk for CNS bleeding.

Platelets below 50,000-60,000/microlitre suction with extra care to avoid trauma, use manual techniques cautiously, discuss with medical team and get their consent

Below 20,000/microlitre avoid suction, manual techniques and manual hyperinflation consider Cough Assist at low pressures.

Patients may require platelet infusion to optimise levels prior to treatment.

These above values are a guide only, in each individual case discuss with the registrar/consultant and get documented consent

(*Zavadsky, 2001)*

9. Points to consider

- When treating oncology and haematology patients you need to be aware of the potential infection risk, as patients can have low white cell counts – ensure good hand washing technique, use of gloves, apron and mask (if indicated) and sterile technique if suction is needed

- Patients fatigue easily and therefore may require shorter treatment sessions with rest periods, consider energy conservation and pacing advice

- Patients can often become anxious exacerbating symptoms of breathlessness, reassurance and exploring the impact and meaning of the disease and its symptoms

can be beneficial, consider breathing control and anxiety management, fan therapy and positioning to reduce breathlessness

- For patients who are entering the terminal phase positioning, breathing control, reassurance and optimising medication (midazolam for agitation, hyoscine for excessive secretions, appropriate oxygen delivery) should be the main focus. It is not always appropriate to use manual techniques and suctioning

10. References

NICE (2008) CG75: Metastatic Spinal Cord Compression: Diagnosis and Management of Patients at Risk of or with Metastatic Spinal Cord Compression

West of Scotland Malignant Spinal Cord Compression Guidelines (2007) Development Working Group on behalf of the West of Scotland Cancer Network

Webber and Pryor, Physiotherapy for Respiratory and Cardiac Problems. Edinburgh: Churchill livingstone, 1994.

A.J Zavadsky. 2001 Platelet disorders and their implication on physical therapy intervention. Rehabilitation Oncology

Appendix (i) MSCC Matrix of treatment / Rehabilitation

Professional Group	UNSTABLE SPINE PRIOR TO RADIOTHERAPY OR STABILISATION General information	STABLE SPINE PRIOR TO AND DURING RADIOTHERAPY General information	THERAPY POST RADIOTHERAPY +/- STABILISATION General information
	• Management pathway clearly documented and communicated • Patient nursed supine, one pillow, maintain neutral spine alignment, 'log roll', slipper pan and bottle/catheter, cot sides in place • Correct intervention for pressure relief • Above knee TEDS to prevent thrombosis • Immobilisation in hard collar if cervical lesion. Instruct patient, carers and nursing staff regarding fitting of collar, care and maintenance. • Spinal brace may be indicated for thoracic or lumbar lesions (liaise with consultant and neurosurgeons)	• Management pathway clearly documented and communicated • MDT decision that spine appears stable • Gentle mobilisation ASAP, to complications of prolonged bed rest thought to contribute to increased morbidity & early mortality, ensure well pain controlled • Recommended that early mobilisation carried out by appropriately skilled therapist (liaise with therapists in Neurosurgery and in Oncology / Haematology)	• Management pathway clearly documented and communicated • It must be acknowledged that completion of radiotherapy does not automatically indicate the spine is stable. The patient should be reviewed for signs of spinal instability, further scanning may be indicated and a decision made by the MDT regarding safety to mobilise.

Physiotherapy	Bed rest until stabilisation achieved (this may be achieved by surgery or bracing) or Radiotherapy completed (It must be acknowledged that completion of radiotherapy does not automatically indicate the spine is stable. The patient should be reviewed for signs of spinal instability, further scanning may be indicated and a decision made by the MDT regarding safety to mobilise.) Respiratory Function (see Respiratory section) • Breathing exercises to increase air entry • Use of incentive spirometer • Autogenic drainage and active cycle of breathing to aid clearance of secretions • Assisted coughing • Suction as indicated ROM Exercises & Positioning • Exercises twice daily, encourage patient and family/carers to be	• Patient elevated in bed to 45° initially, if tolerated progress to 60° over 3-4 hrs if BP and pain / neurology stable & then further elevation to 90° (If any significant deterioration in pain +/- neurological status to return to supine & re-evaluated by doctor) • Mobilise as condition allows in consultation with consultant. If any significant deterioration in pain +/- neurological status to return to supine and re-evaluated by medical team Respiratory Function Thoracic Expansion Exercises, use of incentive spirometer to increase air entry, Active Cycle of Breathing Technique, autogenic drainage to aid clearance of secretions, assisted coughing, suction as indicated ROM Exercises & Positioning Active / Active-Assisted / Passive exercises involving all muscle groups	Bed mobility assessment May require monkey pole or cot sides to facilitate this Sitting up in bed Gradually elevate to 45°, then 60° over 3-4 hrs if BP, pain and neurology stable increase to 90° Collar or brace? If pain limits patient's mobility, consider the use of a brace, liaise with consultant and neurosurgical team Respiratory function See previous table ROM Exercises & Positioning Sitting balance assessment and re-

	independently involved with exercises • Teach active/active assisted exercises, including static quadriceps and gluteal contractions and perform passive movements within pain limits of all joints • Cervical lesions avoid movements that cause pain at the site of fracture/compression and no resisted arm movements • Tendo Achilles stretches to prevent ankle contracture and hamstring stretches (consider frogging position) • Hip flexion: lesions T10 and below restrict to 30°, move within pain free range	depending on patient's ability to maintain ROM and muscle power	education Once able to sit upright in bed, modified log roll technique to move from supine to sitting Sit-Stand assessment and re-education If patient has independent sitting balance and grade 3 and above muscle power Standing balance assessment and re-education Patients with grade 3 and above lower limb strength Transfers • If no sitting balance use full hoist • If sitting balance but unable to stand consider sliding board use. Be aware of any sensory deficit and pressure areas. • If sitting balance and grade 3 or above lower limb strength consider facilitated transfer +/- aid Gait re-education Appropriate walking aids and stair mobility as appropriate

	Anxiety management Advice, education, relaxation techniques	Anxiety management Advice, education, relaxation techniques	Sitting out of bed • Assessment of suitable seating and pressure relief including frequent position change to reduce sores, initially to sit out for 1 hr closely monitoring BP and pain/neurological function, then increase as able/indicated • Liaison with OT for provision of wheelchair and pressure relieving cushion, Exercises / Positioning • Strengthen unaffected muscle groups, taking care not to increase spasticity or cause muscle imbalance • Exercises and functional activities to aid recovery in weak muscles, passive movements if unable to exercise actively • Control spasticity if present, positioning, splinting, muscle relaxants • Increase exercise tolerance and reduce fatigue, graded ex programme and pacing Anxiety management Advice, education, relaxation techniques

Occupational Therapy	• Introductions to patient and relatives , and commence initial interview • Assessment of cognitive functioning • Assessment of psychological functioning • Feeding & drinking whilst flat bed rest • Self care and leisure activities whilst on flat bed rest • Management of environment as independent as possible • Clarification of understanding of MSCC • Psychological support to enable adjustment to loss, encouraging realistic expectations and enabling early choices • Anxiety management • Advice and support to carers • Acquisition of specialist equipment – chair / wheelchair / hoist which may be needed for rehab phase • Discussions around goal setting with patient / carers • Possible initial access visit • Liaison with MDT re particular issues e.g. social worker and	As for unstable / stabilisation and … • Psychological support to enable adjustment to loss of function • Functional assessment • Assess for communication deficit • Assessment for wheelchair (intermediate) if sitting balance (as appropriate) • Assess transfer method (hoist / transfer boards etc.) • Pressure care assessment (liaison with staff nurse) • PADL or purposeful activity to increase ROM and active sitting balance/standing balance • Assessment for temporary wheelchair • Wheelchair practice (dependent on ability/site of SCC / known metastases) • Functional mobility within ADLs as able • Access visit as appropriate • Liaison with patient and carers, look at goal setting towards end of RT • Liaison with S/S OT teams / local rehab teams/OT teams • Liaison with D/N (specific issues)	As for unstable / stable and…. • Joint assessment with Physiotherapist • Assess trunk postural stability, level of mobility - walking aid - assisted transfer - wheelchair needs • Method of transfer - transfer board - standing hoist - full hoist • Wheelchair assessment and prescription (as appropriate) • Acquisition of specialist equipment related to discharge • Activity practice (PADL, purposeful activities, meal prep, home management, leisure and social – as appropriate) – techniques such as backward chaining can be useful to gain confidence • Compensatory approach to increase independence • Additional activity for fatigue / balance / confidence • Fatigue management including advice and education on energy conservation techniques • Progressively increase graded

	housing, palliative care team and pain • Encourage self care with pain and ROM precautions • Liaison with nursing team re moving and handling • Joint assessment with Physiotherapist • Liaison with S/S OT teams (as appropriate) • Goal setting with patient, small manageable goals to completion or as progressive to larger long term goal • Liaison with D/N (specific issues – as appropriate) • Liaison with community rehab palliative therapy services. • Liaison with next place of care if to be transferred	• Access visit as appropriate	activities. • Liaison with MDT - advice - benefits - symptom control • Liaison with carers • Achievable goals – plans to achieve goals with patient / carers / MDT • Domestic hoist assessment if to go directly home (as required) • Home visit / Access visits • Environmental adaptations – refer to appropriate resource • Assess with adaptations, referral to community teams, liaison with out of area OTs for access visits • Demo (& training) of equipment with carers • Re-housing reports • Advice to patient / carers re privately funded equipment • Referral to community agencies fro support • Facilitation of Stair lifts provision • Splinting as appropriate • Liaison with D/N (specific issues)