

Key Competency 6: Metastatic Spinal Cord Compressions (MSCC)

Through discussion, demonstration and observation, workbook completion and Q&A, the healthcare professional must demonstrate;

1.0 Knowledge and Understanding of the Anatomy and Physiology of the Spine

1.1 Demonstrate knowledge and understanding of the gross structure and function of the spinal column, including:

- 1.1.1 Anatomy, structure and function of the spinal column
- 1.1.2 Normal alignment and curvatures
- 1.1.3 Cervical Spine
- 1.1.4 Thoracic Spine
- 1.1.5 Lumbar Spine
- 1.1.6 Sacral Spine
- 1.1.7 Spinal cord
- 1.1.8 Spinal nerves
- 1.1.9 Vascular supply

1.2 Demonstrate knowledge and understanding of the gross structure and function of the central and peripheral nervous system, including:

- 1.2.1 Spinal plexuses (Brachial, Cervical, Lumbar, Sacral)
- 1.2.2 Spinal nerves and distribution
- 1.2.3 Cranial nerves
- 1.2.4 Afferent/sensory pathways
- 1.2.5 Efferent/motor pathways
- 1.2.6 Somatic nervous system
- 1.2.7 Autonomic nervous system
- 1.2.8 Reflex pathway/arc
- 1.2.9 Tone and clonus
- 1.2.10 Sympathetic division
- 1.2.11 Parasympathetic division

1.3 Describe and demonstrate the normal distribution of spinal dermatomes

- 1.3.1 Head and neck
- 1.3.2 Upper limbs
- 1.3.3 Trunk
- 1.3.4 Lower Limbs
- 1.3.5 Sacral region

1.4 Describe Spinal myotomes and demonstrate the innervation and actions of;

- 1.4.1 Upper limb myotomes C4, C5, C6, C7, C8, T1
- 1.4.2 Lower limb myotomes L2, L3, L4, L5, S1, S2, S3

2.0 Knowledge and Understanding of MSCC Pathology and Clinical Presentations

2.1 Demonstrate knowledge and understanding through discussion how MSCC effects the spine with reference to:

- 2.1.1 Spinal stability
- 2.1.2 The main cancers metastasizing to the spine
- 2.1.3 The pathophysiology of MSCC
- 2.1.4 The risk factors for MSCC
- 2.1.5 Complications of inappropriate care
- 2.1.6 Pain
- 2.1.7 Function

2.2 Describe and discuss the clinical signs and symptoms of MSCC and their clinical presentations with reference to;

- 2.2.1 MSCC Red flag signs and symptoms
 - Spinal pain/neck/back (pattern/multi-segmental/band like)
 - Radicular/referred pain
 - Escalating pain which is poorly responsive to treatment/medication
 - Different character or site to previous pain symptoms
 - Increase in back pain when lying flat
 - Sleep disturbance/pain worse at night
 - Altered sensations or heavy legs (multi-segmental)
 - Gait disturbance, unsteadiness/ reduced mobility
 - Neurological signs (muscle/limb weakness/altered reflexes/tone)
 - Bladder and bowel dysfunction
 - PMH/History of cancer/family history of cancer
 - Hypercalcemia
- 2.2.2 Clinical presentations
 - Complete SCI
 - Incomplete SCI (Anterior, posterior, brown Sequard, CES)
 - LBP with/without radiculopathy
- 2.2.3 Risk Factors
 - Neurological deterioration
 - DVT
 - Pressure ulcers
 - Chest infection
 - Psychological factors
 - Autonomic dysfunction (bladder, bowel, dysreflexia)
 - Neurological deficits

2.3 Demonstrate knowledge and understanding of the impact MSCC can have on peripheral neurology with reference to;

- 2.3.1 The effects of spinal cord injury or nerve damage on the peripheral neurological system.
- 2.3.2 Reduced power at/below level of injury
- 2.3.3 Reduced sensation at/below level of injury
- 2.3.4 Upper motor neurone lesions and signs (tone, power, reflexes, coordination)
- 2.3.5 Lower motor neurone lesions and signs (tone, power, reflexes, coordination)
- 2.3.6 Specific reference to diaphragmatic innervation
- 2.3.7 Specific reference to enteric (bladder and bowel) innervation
- 2.3.8 The potential effects of cord oedema on the peripheral neurological system
- 2.3.9 Timescale of usual oedema formation, and resolution (soft tissue injury cascade)
- 2.3.10 Evaluation the use of peripheral assessment in the diagnosis and conditions/injuries affecting the spine or nerve roots.

2.4 Demonstrate knowledge and understanding the impact MSCC can have on the bowel with reference to;

- 2.4.1 The mechanisms of normal bowel function (A&P)
- 2.4.2 Neurogenic bowel signs and symptoms
- 2.4.3 Complications of neurogenic bowel
- 2.4.4 Risk factors
- 2.4.5 Autonomic dysreflexia

2.5 Demonstrate knowledge and understanding of the impact MSCC can have on the bladder with reference to;

- 2.5.1 The mechanisms of normal bladder function (A&P)
- 2.5.2 Neurogenic bladder signs and symptoms
- 2.5.3 Complications of neurogenic bladder
- 2.5.4 Risk factor
- 2.5.5 Autonomic dysreflexia

3.0 Assessment and Management of the Spinal patient with MSCC

3.1 Demonstrate knowledge through discussion and EBP the assessment process and rationale of a patient with suspected or confirmed MSCC.

3.1.1 Consent procedures

- Informed consent/ appropriate/alternative types of consent
- Mental capacity
- Documentation

3.2.1 Assessment of patients with suspected or confirmed MSCC with/without SCI including;

- Signs and symptoms
- Clinical presentation/observations
- Respiratory function
- Dermatome assessment
- Myotome assessment
- Reflex testing
- Bladder function/testing
- Bowel function/testing
- Co-ordination/proprioception tests
- Mobilisation/gait analysis
- Functional status
- Pain
- Pressure ulcer risk and skin integrity
- Autonomic dysreflexia
- SINS
- Blood tests
- Radiological images

To be used with EMSN peripheral neurology/neurogenic bladder/neurogenic bowel competencies and the EMSN neurogenic bowel and AD care pathways

3.2.2 Recognition of increased risks of MSCC complications

- Neurological deficits/deterioration
- Bowel dysfunction
- Bladder dysfunction
- AD
- Paralysis (Reduced functional ability/mobility)
- QOL
- Psychological status

3.2.3 Management of a spinal patient with a suspected/confirmed MSCC with or without SCI including;

- Spinal precautions
- Manual handling
- Spinal protection/bracing
- Respiratory care
- Monitoring of neurology
- Pain control
- Positioning
- Pressure ulcer prevention and skin care
- DVT
- MDT discussion
- Pain behaviours/pain management
- Referral processes (follow up//charities/specialist services/oncology)
- Recognition of contraindications/cautions of assessments and procedures
- Recognition of complications of inappropriate care
- Escalation process
- Treatment plans (surgical/conservative/ oncology/haematology)

To be used with EMSN peripheral neurology/neurogenic bladder/neurogenic bowel competencies and the EMSN neurogenic bowel/AD/collar care pathways

- Physiotherapy bed exercises
- Self-care/health and hygiene
- Nutrition and hydration
- MDT interaction and implementation
- Best supported care
- Rehabilitation/ integrated care services/hospice

4.0 Safe Spinal Management of the MSCC patient


4.1 Undertake the following procedures safely and in a professional manner through observation and its application into clinical practice;

- 4.1.1 Consent procedures
- 4.1.2 Explanation of assessment procedures to the patient
- 4.1.3 Risk assessments
- 4.1.4 Preparation of required materials/equipment/environment for assessment and management procedures
- 4.1.5 Maintenance of dignity and privacy (including use of chaperone if required)
- 4.1.6 Appropriate communication methods
- 4.1.7 Note baseline observations/assessment findings prior to procedures (i.e. BP, bladder scan)
- 4.1.8 Taking and Interpretation of baseline observations/assessments
- 4.1.9 Taking and interpretation of post procedural observations/assessments
- 4.1.10 Good hand hygiene and correct PPE
- 4.1.11 Correct patient positioning for procedures
- 4.1.12 Performance of systemic examination
- 4.1.13 Spinal precautions
- 4.1.14 Spinal Immobilisation
- 4.1.15 Manual handling procedures
- 4.1.16 Cervical collar management (as per EMSN Collar Care pathway & competency document)
- 4.1.17 Spinal orthotic devices/OT splints
- 4.1.18 Peripheral neurology assessment (as per EMSN Peripheral Neurology competency Document)
- 4.1.19 Bladder assessment and management (as per EMSN Neurogenic Bladder competency document)
- 4.1.20 Bowel assessment and management (as per EMSN Neurogenic Bowel care pathway & competency document)
- 4.1.21 Respiratory care
- 4.1.22 Pain assessment and management
- 4.1.23 Positioning/pressure ulcer prevention and skin care
- 4.1.24 Nutrition and hydration
- 4.1.25 Physiotherapy exercises
- 4.1.26 Function/transfers
- 4.1.27 Graduated sitting and controlled mobilisation

- 4.1.28 Rehabilitation

4.2 Undertake the following procedures safely and in a professional manner through observation and its application into clinical practice;

- 4.2.1 Best supportive care.
- 4.2.2 Care plans and documentation
- 4.2.3 Escalation process
- 4.2.4 Appropriate onward referrals
- 4.2.5 Transfer, documentation and repatriation
- 4.2.6 Palliative care/EOL
- 4.2.7 Signposting for support/Charities
- 4.2.8 Co-ordination and implementation of treatment strategies
- 4.2.9 Co-ordination and implementation with other professionals
- 4.2.10 Awareness and implementation of NICE Guidelines for MSCC
- 4.2.11 Psychological support
- 4.2.12 Discharge planning



In line with local
policies and
procedures

Appendix 1. Recommended Reading

1. National Institute for Health and Care Excellence: Metastatic Cord Compression in Adults: Risk assessment, diagnosis and management. Clinical guideline 2008.
www.nice.org.uk/guidance/cg75
2. National Institute for Health and Care Excellence: Metastatic Cord Compression in Adults. Quality Standard 56, 2014.
<https://www.nice.org.uk/guidance/qs56/resources/metastatic-spinal-cord-compression-in-adults-pdf-2098730535109>
3. MASCIIP guidelines on manual handling of suspected or actual spinal injured patients
<https://mascip.co.uk/wp-content/uploads/2015/02/MASCIIP-SIA-Guidelines-forMHTrainers.pdf>
4. The Christie Foundation: MSCC guidelines for professionals
<https://www.christie.nhs.uk/patients-and-visitors/services/metastatic-spinal-cord-compression-mscc/information-about-mscc-for-healthcare-professionals/mscc-guidelines-for-professionals>
5. National Cancer Institute: Metastatic cancer
<https://www.cancer.gov/types/metastatic-cancer#:~:text=In%20metastasis%2C%20cancer%20cells%20break%20away%20from%20where,same%20type%20of%20cancer%20as%20the%20primary%20tumor.>
6. West of Scotland guidelines for MSCC 2013
<https://www.woscan.scot.nhs.uk/wp-content/uploads/2013/08/Final-Published-WoS-Guidelines-for-Malignant-Spinal-Cord-Compression-v2.0.pdf>
7. Guidelines and Audit Implementation Network (GAIN). Guidelines for the rehabilitation of patients with MSCC. Assessment and care provision by Occupational Therapists and Physiotherapists in the acute care sector, 2014.
<https://www.rqia.org.uk/RQIA/files/cb/cba33182-deab-46ae-acd1-d27279d9847c.pdf>
8. Macmillan Cancer Support. MSCC resources
<https://be.macmillan.org.uk>
9. Turnpenney J, Greenhalgh S, Richards L, Crabtree A, Selfe J. Developing an early alert system for metastatic spinal cord compression (MSCC): Red Flag credit cards. Prim Health Care Res Dev. 2015 Jan;16(1):14-20. doi: 10.1017/S1463423613000376. Epub 2013 Sep 5. PMID: 24008125.
<https://pubmed.ncbi.nlm.nih.gov/24008125/>