Hacking, Philippa C., Yeowell, Gillian and Greenhalgh, Susan (2025) What do we know about safety-netting patients at risk of metastatic spinal cord compression? A scoping review. Musculoskeletal Science and Practice, 80. 103397 ISSN 2468-8630

DOI: https://doi.org/10.1016/j.msksp.2025.103397

Publisher: Elsevier

Version: Accepted Version

What do we know about safety-netting patients at risk of metastatic spinal cord compression? A scoping review.

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ABSTRACT

Background

Metastatic spinal cord compression is a potentially devastating consequence of cancer. This oncological emergency requires early recognition and treatment to prevent irreversible spinal cord injury and paralysis. Provision of information to at risk patients has been recommended in the 2024 NICE guidelines. However, it is unclear when, how and what information should be provided.

Aim

To investigate how healthcare professionals provide safety netting information to patients at risk of metastatic spinal cord compression. .

Methods

This scoping review utilised the Arksey and O'Malley Framework and the recommendations by the Joanna Briggs Institute. Relevant literature was identified following a systematic search of three databases, with grey literature accessed through a targeted search of relevant websites. Following data charting, thematic analysis was used to identify salient themes across the dataset.

Results

A total of N=197 records were identified. Following removal of duplicates, title and abstract screening, N=24 records were screened and N=9 were included for full analysis. Three key themes were identified: information format and dissemination, health education and raising awareness, and timeliness of safety-netting.

Implications

All patients with or at risk of developing bony metastases should be provided with safety netting information about metastatic spinal cord compression. Generalist clinicians should be prepared to share this information to empower patients to present early with symptoms. Further research is needed to explore the information needs and perspectives of patients with or at risk of metastatic spinal cord compression.

Keywords

Metastatic spinal cord compression

Safety-netting

Serious spinal pathology

1. Introduction

Cancer incidence is expected to increase exponentially with 29.4 million new cases in 2040 (World Health Organisation, 2020). All cancers can metastasise to bone, with bony spinal metastases affecting approximately 16% of cancer patients in the UK (NICE, 2023). As patients are living for longer with cancer, the incidence of bony metastatic disease is expected to rise, with half of patients with a first recurrence of cancer presenting to primary care (Hamilton *et al.*, 2015).

Spinal metastases can cause localised back pain, progressive symptoms, night pain and loss of function (Downie *et al.*, 2021). A concerning complication is metastatic spinal cord compression (MSCC) due to bony vertebral collapse or tumour extension into the epidural space (Needham and Marshall, 2023). MSCC is an oncological emergency requiring urgent referral for imaging and treatment to prevent irreversible neurological damage (Macdonald *et al.*, 2019). Breast, lung, and prostate cancers account for 60% of MSCC cases (Boussios *et al.*, 2018), with MSCC being the first indication of malignancy in approximately 23% of patients (Macdonald *et al.*, 2019).

In a National Audit, seminal research found that 82% of patients were unable to walk at the time of MSCC diagnosis (Levack *et al.*, 2001, 2002). Once mobility is lost, there may be irreversible paralysis, bladder and bowel incontinence, with life expectancy as little as 30 days (Lacey, 2024). Early treatment optimises the chance of functional recovery and quality of life, hence early diagnosis is of paramount importance. Key reforms within the 2008 National Institute for Health and Care Excellence (NICE) Guidelines concerning the management of MSCC included the development of specialist MSCC co-ordinators and the provision of safety netting information about the condition to patients with suspected or confirmed bony metastases (NICE, 2008; 2023).

Despite these changes, spinal metastases and MSCC remain challenging to diagnose early (BMJ Best Practice, 2024). Reasons for this are multifactorial, including late presentation due to the impact of social distancing and shielding during the COVID-19 pandemic (Ambler and Lowes, 2022). Health inequalities also contribute to late presentation due to limited access to screening, delayed health-seeking and a lack of awareness of symptoms amongst certain groups including males, the elderly and those from socially deprived backgrounds (Greenhalgh *et al.*, 2020). Furthermore, astute clinical diagnosis may be challenged by patients' complex pre-existing medical histories and an absence of progressive, developing symptoms at an early stage.

Safety netting in health care refers to the practice of providing patients with clear instructions of what to do if a condition worsens (Greenhalgh *et al.*, 2020). Safety netting has been recommended within an International Framework to support the early detection of serious spinal conditions (Finucane *et al.*, 2020), and is considered best practice when faced with uncertainty in any clinical setting (Greenhalgh *et al.*, 2020). Safety netting practice should include working collaboratively with patients to empower their understanding of specific clinical features (red flag) symptoms and how to seek timely and appropriate help should these develop (Mendonca *et al.*, 2016). Despite safety netting being recommended within the 2023 NICE guidelines, there is a lack of patient-centred information to guide best practice; as such safety netting for MSCC remains unclear. NHS England's CORE20PLUS5 (2021) highlights early cancer diagnosis as a clinical area of focus. Given the established link between early detection and improved outcomes (Van den Brande, 2022), this scoping review explores how MSCC safety-netting advice is used in clinical practice and its perceived value from the patient perspective.

2. Method

Design

A scoping review was used to address the research question. Scoping reviews are used to identify gaps in a research area, explore implications for decision-making and to make recommendations for future research (Peters *et al.*, 2015). They are of particular use when a body of literature exhibits a large, complex or heterogenous nature which may be poorly indexed and distributed across published and grey literature (Taylor and Pagliari, 2018), as in this study. The five key stages, outlined in The Arksey and O'Malley Framework (2005) for conducting scoping reviews and the recommendations by the Joanna Briggs Institute (JBI) manual for evidence synthesis (JBI, 2012) were used to guide this study. These are: (Stage 1) identifying the research question; (Stage 2) identifying the relevant literature; (Stage 3) selecting the studies; (Stage 4) charting the data and (Stage 5) collating, summarising and reporting the results (Arksey and O'Malley, 2005). These stages are now presented.

This scoping review is reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Scoping Reviews (PRISMA-ScR) extension guideline (Tricco *et al.*, 2018) and is registered with OSF registries (DOI: https://doi.org/10.17605/OSF.IO/UGC3K).

Stage 1: Identifying the Research Question

The research question was developed using an iterative process, through consultations with the research team, as recommended by Arksey and O'Malley (2005). Key stakeholders were consulted to refine the research question and to provide a deeper understanding of the research topic. The stakeholders included three MSCC co-ordinators from a specialist cancer centre in Northwest England and a healthcare librarian at an NHS hospital in North West England. From this the following research question was developed:

How is safety-netting information provided by healthcare professionals to patients with or at risk of MSCC, and what are the information needs of these patients?

Stage 2: Identifying Relevant Literature

Search strategy for databases

The Sample, Phenomenon of Interest, Design, Evaluation and Research Type (SPIDER) tool was used to guide the search strategy and eligibility criteria (Tricco *et al.*, 2018) (Table 1). The search strategies were drafted by the lead researcher (PH) and refined further by an experienced NHS librarian. To identify potentially relevant literature, the following bibliographic databases were searched from 2002 to November 2024: OVID(MEDLINE), The Cumulative Index to Nursing and Allied Health Literature (CINAHL) and The Excerpta Medica Database (EMBASE). The search dates were limited to the last 22 years to ensure that the literature reviewed was contemporaneous and reflected current guidelines. To supplement the literature search and ensure no relevant articles were missed, the reference lists of pertinent studies were hand searched by the lead researcher (PH). The final search results were exported into RefWorks reference management software. This helped to manage the records received from the searches, and enabled duplicates to be removed.

Table 1. SPIDER Framework and eligibility criteria

Spider	**Key words**	**Inclusion Criteria**	**Exclusion Criteria**
Sample	MSCC or Metastatic spinal cord compression or malignant spinal cord compression or Epidural spinal cord compression or ESCC or cancer	Patients with or at risk of MSCC Patients with high risk cancers (breast, prostate, lung or myeloma) or those with bony spinal metastases	Patients with other cancers who are not at high risk of MSCC
Phenomenon of interest	Safety Netting or Information provision or Advice or Prophylactic information	Information provision/ advice relates to safety netting	Information is not related to safety netting
Design	Qualitative interviews Focus Groups Surveys	Qualitative interviews Surveys Focus groups Involves human participants	Quantitative studies Does not involve human participants
Evaluatio	Experiences of patients/ health care professionals regarding safety netting advice/ information provision relating to safety netting	Related to the experiences / perceptions/ views of patients/ health care professionals on information relating to safety netting	Unrelated to patients/ healthcare professionals' experiences/ perceptions/ views on information provision relating to safety netting
Research Type	Qualitative	Qualitative	Quantitative Not in English

Search strategy for grey literature and websites

Grey literature typically refers to literature that is not retrievable or published through large databases. The inclusion of grey literature in a scoping review reduces publication bias and presents a more balanced picture of available evidence (Paez, 2017). Information provided on relevant websites could add to the holistic understanding of the phenomenon of interest, thus the following search term was entered into the Google search engine on the 31st October 2024: 'top 10 NHS specialist cancer hospitals England.'

This term identified key NHS organisations who are involved in the care or treatment of people with MSCC, from which the top 3 were selected. The top three specialist centres were The Christie Hospital, The Clatterbridge Cancer Centre and The Royal Marsden Hospital. Their websites were then searched using the following terms: metastatic spinal cord compression/

MSCC; safety netting; and information provision. Consultation with the key stakeholders verified the findings of the grey literature sources.

Stage 3: Study Selection

Study selection for databases

Stage 1

Title and abstract screening were evaluated independently by one reviewer (PH). A second reviewer (GY) repeated the process on 25% of the records retrieved. In the event of uncertainty regarding the eligibility of a study it was included for full text review.

Stage 2

The studies included for full text review were read in full by two reviewers (PH, GY). A word document was developed with colour coding to show how, following assessment of the full text, the studies met/ failed to meet the eligibility criteria. The researchers met throughout this process to discuss any uncertainty and to refine the search strategy where needed. In cases where the reviewers did not reach full agreement, which happened across two studies, a third reviewer (SG) was consulted. Ultimately, both studies were included in the final review.

Study selection for grey literature and websites

The same eligibility criteria were applied as for the databases. The titles and descriptive information of website results, or article abstracts, were assessed for eligibility by one reviewer (PH). In the event of uncertainty over a particular record, it was included for full text review.

Stage 4: Charting the Data

Data charting for databases

Data from the studies were entered onto a data charting form, developed by the research team. The following information was recorded about each study: title; author(s); year of publication; name of journal; study population; study setting; methodology; key findings.

This form was developed and piloted at the protocol stage and was used for ease of reference and tracking of records. Following study selection, the form was updated to include additional details about the studies included in the final review. The lead researcher (PH) inputted data from the records using this data charting form and a second researcher (GY) checked 100% of the data extracted for accuracy.

Following screening, the data from the grey literature was also inputted into a data charting form, where the following information was recorded: title of report; website domain; year of content creation; most recent update; target audience; key findings.

Stage 5: Results

Descriptive analysis:

Databases

The search from the databases identified n= 186 records after duplicates were removed. Following title and abstract screening n=162 were excluded. Twenty-four records were read in full and screened against the eligibility criteria, following which a further n=15 were excluded, leaving a total of n=9 records from the database search (Figure 1).

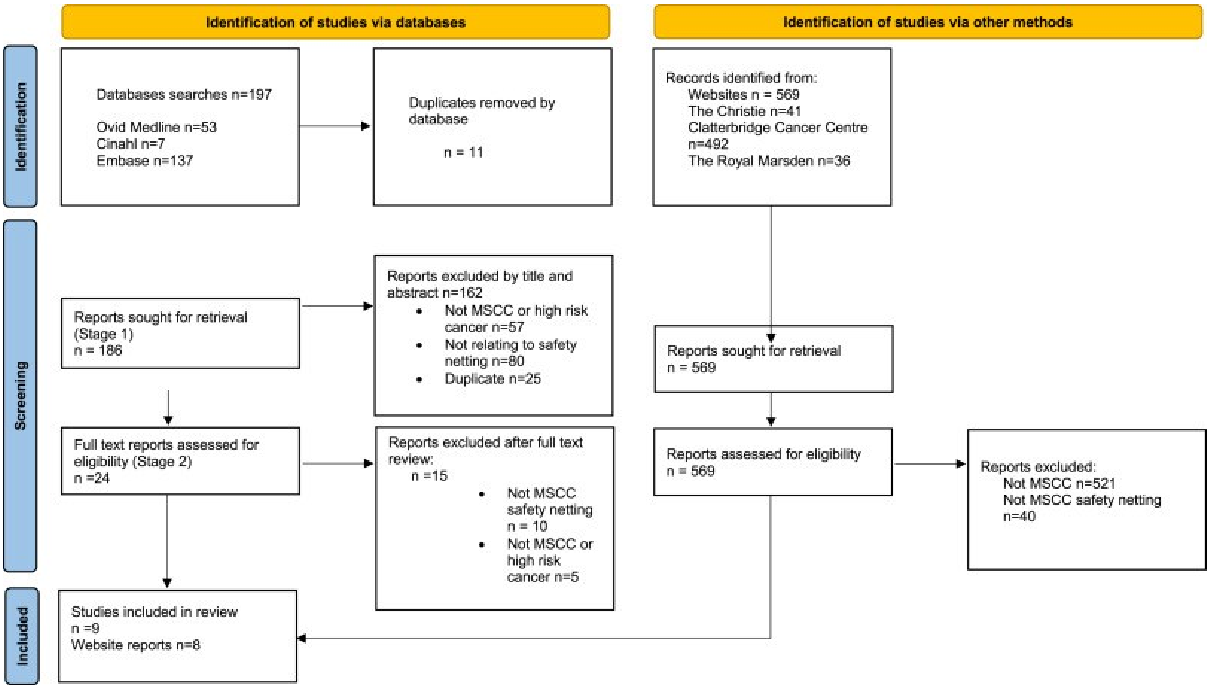

Figure 1. Results of the search and number of records found.

Source: Page MJ, et al. BMJ 2021;372:n71. https://doi.org/10.1136/bmj.n71.

Websites

A total of N=569 records were identified from websites. Following screening against the eligibility criteria, a total of n=8 records were included for analysis (Figure 1).

A total of 17 records have been included in the review.

The included nine academic papers were all conducted in the UK. Their date of publication ranged from 2012 to 2023 (Table 2).

Table 2. Data charting form databases

Title of study	**Author(s)**	**Year of Publication**	**journal**	**Study population**	**Study Setting**	**Methodology**	**Key findings**
How does safety netting for lung cancer symptoms help patients to reconsult appropriately? a	Black at al.	2022	BMC Primary Care	20 patients with symptoms of lung cancer	Primary Care in England	Qualitative Face to face and telephone interviews	Patients preferred active safety netting strategies that included advice and actions

Title of study	Author(s)	Year of Publication	journal	Study population	Study Setting	Methodology	Key findings
qualitative study							that actively prompted re-consultation. Patients considered 'passive' safety netting dismissive (verbal advice/ telephone consultation).
Provision of information about malignant spinal cord compression: perceptions of patients and staff Malignant spinal cord compression	Hutchison et al. Macdonald et al.	2012 2019	International Journal of Palliative Nursing Journal of the Royal College of Physicians Edinburgh	56 patients with MSCC 50 staff Cancer patients receiving treatment at NHS hospital	Regional cancer centre in Scotland Aberdeen Royal Infirmary	Qualitative interviews Service Evaluation	86% of patients wanted information about MSCC. 54% of staff gave prophylactic information. 4% of staff provided written information. The most popular request for format of information was written and verbal. IP to patients

Title of study	Author(s)	Year of Publication	journal	Study population	Study Setting	Methodology	Key findings
							and carers was a priority. Discussion about providing patients without bony metastases but at risk of MSCC the MacMillan MSCC leaflet. Development of MSCC co-ordinator role.
IMPROVED PROVISION OF WRITTEN INFORMATION ON METASTATIC SPINAL CORD COMPRESSION TO AT-RISK CANCER PATIENTS AT A TERTIARY REFERRAL CENTRE (Abstract only)	Mahaligam et al.	2017	Annals of Oncology	29 Oncology doctors and Specialist Nurses	The Royal Free Hospital	Online survey followed by educational intervention. Re audit of practice after 3 months.	There was a significant increase in the provision of written information to highest risk patients group (with bony metastases) from 19 to 61% after the training. Training resulted in increased knowledge of MSCC

Title of study	Author(s)	Year of Publication	journal	Study population	Study Setting	Methodology	Key findings
							guidelines at 3 months.
how not to miss metastatic spinal cord compression	Nair et al.	2014	British Journal of General Practice	NA	NA	Educational Report	Emphasis placed on patient education with appropriate MSCC safety netting card.
Metastatic spinal cord compression: a poster and mnemonic supporting acute hospital staff to deliver optimal patient care	Needham and Marshall	2023	Cancer Nursing Practice	Staff at an NHS Hospital in England	All acute wards and areas within a hospital in North West England	Development of an educational resource (poster and mnemonic) to help staff deliver optimal care to patients with suspected or confirmed MSCC. Audit of patient care before and after dissemination of the resource benchmarked against NICE guidelines (2008).	Early recognition, prompt investigation and urgent referral are recognised challenges in MSCC management. The authors emphasize the importance of written information about the condition and ongoing training to staff.
Referring patients with suspected lung cancer:	Saab et al.	2022	Health Promotion	36 GPs, community pharmacists, practice	Primary Care in Ireland	Qualitative Focus groups and individual semi-	Strategies to promote early referral

Title of study	Author(s)	Year of Publication	journal	Study population	Study Setting	Methodology	Key findings
a qualitative study with primary healthcare professionals in ireland			International	nurses and public health nurses		structured interviews Inductive thematic analysis	among primary HCPs: Education delivery by specialists. Checklists for early detection. Embedding lung cancer symptoms into pre-existing conditions. Using patient stories to educate healthcare professionals. Adopting an interdisciplinary approach to education.
nursing considerations for supporting cancer patients with metastatic spinal cord compression: a literature review	Troke and Andrews	2019	British Journal of Nursing	NA	NA	Literature Review	The findings reinforce nurses' role in health education, to raise awareness of MSCC and promote early diagnosis. Nurses

Title of study	Author(s)	Year of Publication	journal	Study population	Study Setting	Methodology	Key findings
							need to be equipped with communication skills to initiate and engage in sensitive and difficult conversations with patients and families. Highlights the question of when to provide education about MSCC.
Developing an early alert system for metastatic spinal cord compression (MSCC): Red Flag credit cards	Turnpenny et al.	2015	Primary Health Care Research and Development	NA	NA	Production of a guideline helping clinicians to identify the early signs and symptoms of MSCC	The cards generated a high national level of interest. Cost effective safety-netting tool for staff in multiple healthcare locations: primary care/ A and E, out of hours services.

Three of the nine papers were qualitative studies (Hutchison *et al.*, 2012, Saab *et al.*, 2022, Black *et al.*, 2022)- all explored clinical perspectives, with two considering patient perspectives. These studies used various qualitative methods for data collection (focus groups, questionnaires, semi-structured face to face and telephone interviews) and analysis (inductive thematic analysis). Sample sizes ranged from n=20 (Black *et al.*, 2022) to n=56 (Hutchison *et al.*, 2012).

Three of the papers included in the review focused on service improvement relating to identifying and managing MSCC (Mahaligam *et al.*, 2017, Macdonald *et al.*, 2019, Needham and Marshall, 2023). The final three papers included the development of an alert tool (Turnpenny *et al.*, 2015), an educational report (Nair *et al.*, 2014) and a literature review investigating the impact and management of MSCC in patients with cancer (Troke and Andrews, 2022).

Data from the website records was equally distributed to a target audience of clinicians and patients (Table 3). Although three websites were searched, eligible records were found on just two of these; www.christie.nhs.uk and www.clatterbridgecc.nhs.uk. All records had been updated within the previous 24 months.

Table 3. Data charting form websites

Title of report	**Website domain**	**Year of content creation**	**date of most recent update**	**target audience ie. patients, clinicians**	**Key findings**
What is mscc	https://www.christie.nhs.uk/	unknown	July 2023	Clinicians and patients	Summary of incidence of MSCC and risk factors. Links to signs and symptoms to look out for and how to contact the MSCC co-ordinator service
Information for mscc patients signs and symptoms of mscc	https://www.christie.nhs.uk/ https://www.christie.nhs.uk/	unknown unknown	July 2023 July 2023	Patients Patients	5 information boxes: (1) signs and symptoms of MSCC, (2) Diagnosed with MSCC? (3) Support and advice,

Title of report	**Website domain**	**Year of content creation**	**date of most recent update**	**target audience ie. patients, clinicians**	**Key findings**
					(4) Spinal cord compression: what it means and how it can be treated, (5) Spinal cord compression: What to look out for. Bullet points of signs and symptoms of MSCC Advice on what to do if a patient develops any of these signs Christie contact number Link to MACP safety netting animated video 'when to seek urgent help for your back pain'.
information about mscc for healthcare professionals	https://www.christie.nhs.uk/	unknown	March 2023	Clinicians	4 information boxes: (1)Identifying patients with suspected MSCC, (2) Network flowcharts and pathways, (3) Management and Treatment

Title of report	Website domain	Year of content creation	date of most recent update	target audience ie. patients, clinicians	Key findings
					of MSCC, (4) MSCC guidelines for professionals.
identifying patients with suspected mscc	https://www.christie.nhs.uk/	unknown	July 2024	Clinicians	Clear advice to contact MSCC co-ordinators if clinician is concerned about a patient with link to contact details. Bullet points of symptoms of MSCC. Emphasis on fast action- admit/ steroids/ bed rest/ log roll/ imaging. Links to pathway flowchart and management guidance documents.
mscc resources	https://www.christie.nhs.uk/	unknown	September 2024	Clinicians	Links to patients information leaflets about MSCC. Links to ‘Red Flag’ alert cards Links to national

Title of report	Website domain	Year of content creation	date of most recent update	target audience ie. patients, clinicians	Key findings
					MSCC Guidelines
Metastatic spinal cord compression (MSCC) guidance	www.clatterbridgecc.nhs.uk	unknown	12th July 2024	Clinicians	Interactive PDF for managing patients with suspected spinal metastases or MSCC. Video of training presentation for HCPS on the 2023 NICE guidelines. Links to poster presentations.
metastatic spinal cord compression (mscc)	www.clatterbridgecc.nhs.uk	unknown	27th September 2024	Patients	Alert box on ‘when to seek help’ listing symptoms of MSCC (with downloadable pocket sized version). Link to video of BBC news coverage about the MSCC service (2023). Information boxes: Diagnosis, treatment decisions, supporting

Title of report	Website domain	Year of content creation	date of most recent update	target audience ie. patients, clinicians	Key findings
					you, Radiotherapy, chemotherapy and other cancer drugs, acute oncology team, enhanced supportive care (ESC). Information about MSCC team roles. Links to external sites that offer extra support and information about MSCC.

Thematic analysis of the extracted data from the databases and websites have been presented as a narrative synthesis, with three key themes identified.

Theme 1: Information format and dissemination

This theme relates to how safety netting information about MSCC may be conveyed to HCPs and patients.

Six studies explored how MSCC safety netting information may be disseminated. One found that including written information about MSCC in a training package for staff at a specialist oncology hospital significantly increased the provision of this information to the highest risk patient group, from 19% to 61% (Mahaligam *et al.*, 2017). Needham and Marshall (2023) developed a poster and mnemonic to support the recognition and management of MSCC amongst acute hospital staff. A subsequent audit following implementation of the resource found improved patient care and staff adherence to NICE guidelines. One study developed an early alert system for the identification of MSCC through a Red Flag mnemonic and a credit card to assist staff (Turnpenny *et al.*, 2015). These cards were distributed nationally with low cost implications and are freely available online. The grey literature across the websites offers a plethora of MSCC information resources for patients and HCPs in a variety of formats, all of which are freely available(Table 3).

The distribution of written MSCC leaflets to patients at risk of the condition was proposed in two papers as a means to facilitate early detection (Macdonald *et al.*, 2019; Nair *et al.*, 2014). In their qualitative study, Hutchinson *et al.*, (2012) found that 77% of patients interviewed with a diagnosis of MSCC wanted information; the preferred format being both verbal and written. Hutchison *et al.* (2012) also found inconsistencies between the proportion of patients who reported receiving verbal information and the proportion of staff who reported providing it (45% vs 78%).

Theme 2: Timeliness of information

This theme relates to when patients with a cancer diagnosis should be provided with safety netting information about MSCC. Across the dataset there was a general consensus that patients with bone metastases should be safety netted for MSCC, but several studies also advocate the provision of prophylactic information to patients with a high risk cancer, for example breast, lung, prostate or myeloma (Hutchison *et al.*, 2012; Nair *et al.*, 2014; MacDonald *et al.*, 2019; Troke and Andrews, 2019).

Macdonald *et al.*, (2019) describe how an NHS pathway had been streamlined to improve recognition and management of MSCC. This included ensuring that all patients with bone metastases were provided with the Macmillian MSCC leaflet, with local contact details for their MSCC coordinator and details of what to do in the event of developing early symptoms. At the same time, a standard letter was sent to the general practitioner detailing the same information received by the patient, with a request for this to be added to the patient's Key Information Summary, thus raising awareness of the potential for MSCC.

In their literature review, Troke and Andrews (2019) suggested that another opportunity to educate patients about spinal pain linked to MSCC was the point of discharge from services, at about 10 years following a cancer diagnosis. From here, the onus would be on the patient to reconsult with concerning symptoms. The findings of Saab *et al.*, (2022) and Black *et al.*, (2022) suggest that timely provision of safety netting advice would facilitate earlier re-consultation amongst patients with symptoms of lung cancer (Table 2).

A tab titled 'Spinal cord compression: what to look out for', included in The Christie's information resources, highlights the importance of individuals diagnosed with secondary bone cancer recognising the signs and symptoms of MSCC and knowing the appropriate steps to seek help.

Theme 3: Health education and raising awareness

This theme relates to the opportunities for health education about MSCC to HCPs and patients. Across the dataset, raising awareness of the signs of MSCC through health education was a key theme. The website data offers educational resources for patients and HCPs, developed by oncology specialists, including videos of patient stories and local MSCC services (Table 3).

The findings from Saab *et al.*, (2002), Mahaligam *et al.*, (2017), Turnpenny *et al.*, (2015) and Needham and Marshall (2023) highlight opportunities to raise awareness and facilitate early referral through the use of specialist training, diagnostic screening tools/ checklists, patients stories, and informative posters (Table 2). When clinical practice was re-audited following educational intervention, standards of care in MSCC had improved (Table 2).

Hutchison *et al.*, (2012) found that 86% of 56 patients with MSCC interviewed would have wanted prophylactic information. They also found that patients relied on the information provided by HCPs and did not generally seek additional information about MSCC (Table 2).

Discussion

This review found a lack of consensus around how safety netting information is currently disseminated to patients with or at risk of MSCC. This aligns with findings from qualitative studies exploring how patients are safety netted for potential cancer presentations in primary care (Evans *at al.,* 2017; Heyhoe *et al.*, 2019). Safety netting information about MSCC for patients and clinicians is available, and much has been done by specialist oncology hospitals to provide free online resources in the form of videos, pathways and red flag alert cards. However, much of this information is hosted on specialist oncology websites, that without clear signposting, generalist clinicians and patients may not be aware of.

Delayed diagnosis of MSCC and the subsequent poor prognosis are well documented (Levack *et al.*, 2001; Patchell *et al.*, 2005). Previous research has cited anger, frustration and concern amongst patients who have experienced delays in MSCC diagnosis (Warnock and Todd, 2014). It has been suggested that 70% of cancer recurrence is detected by patients themselves (Schapira and Urban, 1991), hence the timeliness of safety-netting information is crucial. Patients diagnosed with a high risk cancer for secondary bone disease, or bone metastases, should be made aware of the importance of the early signs and symptoms of MSCC. Without such information, they cannot know how to re-consult appropriately (Troke and Andrews, 2019).

The literature supports raising awareness of MSCC through the sharing of safety-netting information to achieve earlier diagnoses and improved outcomes. However, there is a paucity of research concerning the information needs of patients with or at risk of MSCC, with only two studies exploring patients' perspectives of safety netting (Hutchison *et al.*, 2012; Black *et al.*, 2022). Hutchison *et al.*, (2012) highlighted a mismatch between the information that HCPs provide and what patients want, with only 4% of staff interviewed reporting giving patients written information about MSCC, and 77% of patients saying they wanted it. In their qualitative study, Black *et al.*, (2022) found that patients with symptoms of lung cancer had a need for information and a preference for safety netting strategies that prompted re-consultation. Although the evidence suggests a need for information amongst many patients, it should be acknowledged that some may prefer not to receive it. Safety netting must therefore be done collaboratively with patients using a personalised approach, considering their individual preferences (NHS England, 2019).

Despite an apparent desire for information from patients, studies have found barriers to HCPs sharing safety-netting information, including concerns around raising patient anxiety, a reluctance to engage in difficult conversations around secondary cancer, and feelings that it was someone else's responsibility (Hutchison *et al.*, 2012; Troke and Andrews, 2019). It is suggested that HCPs who receive training specific to MSCC are more likely to share relevant safety netting resources with patients at risk of developing the condition (Needham and Marshall, 2023; Mahaligam *et al.,* 2022).

Patients with early signs of MSCC may present with local spinal pain, several years after an initial cancer diagnosis, usually to a generalist healthcare setting. For nearly a quarter of patients, an MSCC diagnosis is the first indication of malignancy (BMJ Best Practice, 2024).

Distinguishing between serious spinal pathology and non-specific back pain can be challenging, especially in patients with other co-morbidities, and the elderly (Greenhalgh *et al.*, 2024). Generalist HCPs need to be aware of the risk factors for MSCC so that they can safety net patients accordingly and enhance the opportunity for at risk patients to present early. Sharing safety netting information about MSCC more widely in the generalist and patients arena is fundamental in the early detection of this potentially devastating consequence of cancer.

Strengths and Limitations

This is the first scoping review investigating safety netting information for MSCC. It has identified gaps within the literature regarding the patients' perspective and the potential barriers to HCPs sharing safety-netting resources with patients.

As is a recognised characteristic of scoping reviews, where the aim is to provide an overview of the evidence regardless of methodological quality (Tricco *et al.* 2018), this study did not include a full critical appraisal of the quality of each included paper, or an assessment of bias.

Implications for clinical practice and research

As more than 50% of patients with cancer survive their disease for at least ten years (Office for National Statistics, 2022) and the worldwide demographic of people living with cancer continues to increase, so will the demand for enhanced supportive cancer care, which includes the prevention of secondary cancer (Multinational Association of Supportive Care in Cancer, 2015). A recent systematic review has suggested that almost one in ten patients with spinal metastases will develop MSCC (Van den Brande, 2022). Embedding safety netting information about MSCC within supportive cancer care should raise awareness of the condition amongst at risk patients, and empower them to seek help early should they develop symptoms.

HCPs rely on national guidelines, including NICE, to inform best practice and assist with decision making. The 2023 Spinal metastases and MSCC NICE guidelines state that patients with a history of cancer who present with low back pain should be provided with advice about what to do in the event of changes to their symptoms. Whilst this is recommended practice for at risk patients, greater detail within these guidelines about what to look out for, when to act, and who to go to, would enhance effectiveness. These safety netting processes should help clinicians to implement best practice, working collaboratively with patients in reaching decisions about timely further management (Greenhalgh *et al.*, 2020).

Further qualitative research should explore the views of patients with a current or previous diagnosis of cancer regarding their information needs around secondary disease and complications of cancer. Research with HCPs should explore the barriers to providing safety-netting advice to at risk patients. Assessment of the impact of MSCC staff training packages on sharing information with patients should also be explored.

Conclusions

Despite advances in the care of patients diagnosed with MSCC, there remains substantial challenges in the early detection of the condition, especially within generalist healthcare services. Raising awareness about MSCC amongst generalist HCPs should facilitate safety netting information sharing, earlier re-consultation and diagnosis. Staff training may be delivered by MSCC specialists, patient stories and collaborative working between different healthcare disciplines. MSCC alert cards and algorithms should be simple and visually appealing, either developed to be used as standalone tools or embedded into existing pathways/ guidelines.

CRediT authorship contribution statement

Philippa Hacking: Writing – original draft. **Susan Greenhalgh:** Writing – review & editing. **Gillian Yeowell:** Writing – review & editing

Declaration of competing interest

None declared.

Funding

This work was supported by funding from North West Research and Development.

Declaration of Competing Interest

The authors declare that they have no competing interests.

Acknowledgements

We would like to thank Sarah Jackson, NHS Librarian, Wrightington and Leigh Teaching Hospitals NHS Foundation Trust, for her assistance with the search strategy.

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