



Research Centre
for Palliative Care
Death & Dying

Report on the Development of Two Search Filters for Retrieving the Sarcoma Literature

A white paper published by the Flinders Research Centre for Palliative Care, Death and Dying

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CRICOS No. 0014A

How to Cite This Paper

Lawrence, M, Tieman, J, Report on the Development of Two Search Filters for Retrieving the Sarcoma Literature. RePaDD White Paper. Adelaide, South Australia: Flinders University Research Centre for Palliative Care, Death and Dying: 2015. Available at: flinders.edu.au. DOI: <https://doi.org/10.25957/k0b6-s829>

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Acknowledgements

The authors would like to acknowledge the contribution of Flinders Filters, in particular Raechel Damarell. This project was supported by Cancer Council Australia and the Flinders University School of Health Sciences.

About this White Paper

This publication is a RePaDD White Paper and Research Report.

The RePaDD White Paper and Research Report Series provides researchers and policy makers with evidence-based data and recommendations. By organising, summarising, and disseminating previous and current studies, the series aims to inform ongoing and future research in palliative care, death, and dying.

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Acknowledgement of Country

Flinders University was established on the lands of the Kurna nation, with the first University campus, Bedford Park, located on the ancestral body of Ngannu near Warriparinga.

Warriparinga is a significant site in the complex and multi-layered Dreaming of the Kurna ancestor, Tjilbruke. For the Kurna nation, Tjilbruke was a keeper of the fire and a peace maker/law maker. Tjilbruke is part of the living culture and traditions of the Kurna people. His spirit lives in the Land and Waters, in the Kurna people and in the glossy ibis (known as Tjilbruke for the Kurna). Through Tjilbruke, the Kurna people continue their creative relationship with their Country, its spirituality, and its stories.

Flinders University acknowledges the Traditional Owners and Custodians, both past and present, of the various locations the University operates on, and recognises their continued relationship and responsibility to these Lands and waters.

About the RePaDD

Death and dying will affect all of us. The Research Centre for Palliative Care, Death, and Dying or RePaDD works to make a difference to the care of persons at the end of life.

We examine the universal experience of dying and create innovative solutions for people living with a life-limiting illness, their carers, and the clinicians caring for them. Our members lead major national palliative care projects in Australia. Our team of multidisciplinary researchers and experts work collaboratively with various organisations and funding agencies to deliver impact. We also strengthen research capacity by offering evidence-based resources, researcher education, and training and scholarships.

Our research

We focus on the following research areas:

Palliative care across the health system: We conduct clinical and service studies and develop online palliative care resources and applications. Our work in this area contributes towards ensuring that quality palliative care can be delivered in all healthcare settings - whether in hospitals, aged care, homes, hospices, clinics, or the community.

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Executive Summary

The literature related to sarcoma is published in a diffuse range of specialist journals and is growing steadily. To expedite access to high-quality information and evidence on sarcoma, Flinders Filters partnered with Cancer Council Australia (CCA) to create a high-quality search filter that provides clinicians and others with quick and easy access to the existing sarcoma research evidence base.

This White Paper describes the development of two Filters: a Specific Sarcoma Search Filter and a Sensitive Sarcoma Search Filter. Using a pre-selected set of references from the CCA's Sarcoma Guidelines, a gold standard set of citations was constructed. Medical Subject Headings (MeSH) and textwords used to describe the sarcoma literature were identified, and term identification, filter development and validation processes were used to develop the Filters. The Filters were also tested for generalisability, and translated for PubMed to identify newly and yet to be published literature.

Both of the Sarcoma Search Filters that were developed achieved a high recall of the gold standard set, with 94.6% for the Specific Filter, and 99.8% for the Sensitive Filter.

The Filters permit clinicians, researchers and others to perform a standardised, systematic search of the sarcoma literature with a known level of performance, enabling them to locate and use the best available evidence quickly and easily.

Ultimately, it is hoped that the search filter described in this White Paper will help clinicians and others treat those with sarcoma more effectively by enabling access to high level, focused evidence simply by clicking a link.

Introduction

In 2011 CareSearch developed a Lung Cancer Search Filter in partnership with Cancer Council Australia. At this time a Sarcoma Search Filter was agreed to as part of an ongoing relationship with Cancer Council Australia. The scheduling of the Sarcoma Search Filter was for after the completion of the Cancer Council Australia's Sarcoma Guidelines (CCA Sarcoma Guidelines). Flinders Filters undertook the development of the Sarcoma Search Filter. Flinders Filters is a research team that was created from CareSearch's work developing search filters.

The literature for sarcoma is published in a diffuse range of specialist journals and is growing steadily. As part of the agreement Cancer Council Australia provided the cited references from the CCA Sarcoma Guidelines for the gold standard set on which the Sarcoma Search Filters would be built. Using a pre-selected gold standard set is a change from Flinders Filters usual process of building search filters. The resulting Sarcoma Search Filters are designed to provide a 'best fit' search for the needs of the Cancer Council Australia's Sarcoma Guidelines Working Party.

In addition to the development of the Sarcoma Search Filters the project investigated the current searches published on Cancer Council Australia's Sarcoma Guidelines Wiki for retrieval performance of the cited

references in each question.

Suggested improvements were provided for the three components that comprised each search including: sarcoma, topic and study design.

Two search filters were developed as they were found to have high recall of the gold standard set. This report describes the processes and outcomes in developing the resulting two Sarcoma Search Filters:

- Construction of a gold standard set of citations based on the cited references of the Cancer Council Australia's Sarcoma Guidelines.
- Identifying the MeSH (Medical Subject Headings) and textwords used to describe the sarcoma literature.
- Development of the Sarcoma Search Filters using three processes: term identification, filter development and validation.
- Two Sarcoma Search Filters were developed and both achieved a high recall of the gold standard set with 94.6% for the Specific Sarcoma Search Filter and 99.8% for the Sensitive Sarcoma Search Filter.
- Testing of the Sarcoma Search Filters in an external reference set using the National Comprehensive Cancer Network's (NCCN) guidelines for Soft Tissue Sarcoma and Bone Cancer.

- Translation of the Sarcoma Search Filters for PubMed including a textword string to identify the newly and yet to be published literature.
- Recommendations for improving the searches for the individual Cancer Council Australia's Sarcoma Guideline questions.

1. Development of the Sarcoma Search Filters

Development of the Sarcoma Search Filters was informed using previously published methodologies by CareSearch and Flinders Filters of Flinders University.¹⁻² Two search filters were developed: a Specific Sarcoma Search Filter and a Sensitive Sarcoma Search Filter.

The development of the draft Sarcoma Search Filters involved the following steps. Scoping of the sarcoma subject was undertaken throughout the project from advice provided by the Expert Advisory Group. Search filter development firstly involved construction of a gold standard set based on the included references of the Cancer Council Australia's Sarcoma Guidelines; hereafter referred to as the CCA Sarcoma Guidelines.³ The gold standard set was divided into three: to identify MeSH and textword terms for sarcoma, to build and then test the search filter. The draft Sarcoma Search Filters were tested for generalisability in an external set of references.

1.1 The Expert Advisory Group

The Expert Advisory Group comprised the Cancer Council Australia Sarcoma Guidelines Working Party and the Project Officer for the CCA Sarcoma Guidelines. Their role in the project was to provide advice on the scope of

the sarcoma subject, and to undertake relevance screening.

1.2 The gold standard set of citations

Cancer Council Australia provided 624 references based on the included studies in the CCA Sarcoma Guidelines. The references were provided in two separate sets with the second set arriving after the review of two final questions had been completed. SET1 comprised 538 references and SET2 86.

1.3 Construction of the gold standard set

The references from SET1 AND SET2 were combined totalling 624 references. The references were searched individually in OVIDSP Medline where a total of 608 references were found. Thirteen duplicates were removed leaving 595 references. The references were screened by the Project Officer from Cancer Council Australia for their direct relevance to sarcoma. A total of 23 references were removed from the gold standard set as they were either not relevant or of uncertain relevance. The final gold standard set contained 572 references and were added to an Endnote Library.

Gold standard characteristics

span of publication years and journal titles in which they were published. The publication year span was inclusive of 1990 to 2013 as shown in Figure 1 below. A span of publication years allows the development of the search filter to include potential changes in natural or subject language over time. The 572 references were published in 121 unique journal titles showing the literature for sarcoma is diffuse and published across a range of specialist medical journals. The most frequently occurring journal title in the gold standard set was the International Journal of Radiation Oncology, Biology, Physics with 56 occurrences. The top 10 journal titles with 16 or more occurrences in the gold standard set are shown in Table 1.

The gold standard set comprises 572 references and was analysed for the

Division of the gold standard set

The gold standard set was divided using random sampling into three sets using Research Randomizer.⁴ The three sets were called the Term Identification Set, Filter Development Set and Filter Validation Set. The Term Identification Set comprised 190 citations with the Filter Development Set and Filter Validation Set containing 191 citations each. In order to reduce bias in the search filter a new set of citations is used for each of the three stages of development. The process of developing and dividing the gold standard set is shown in Figure 2.

Figure 1. Span of publication years for the gold standard set

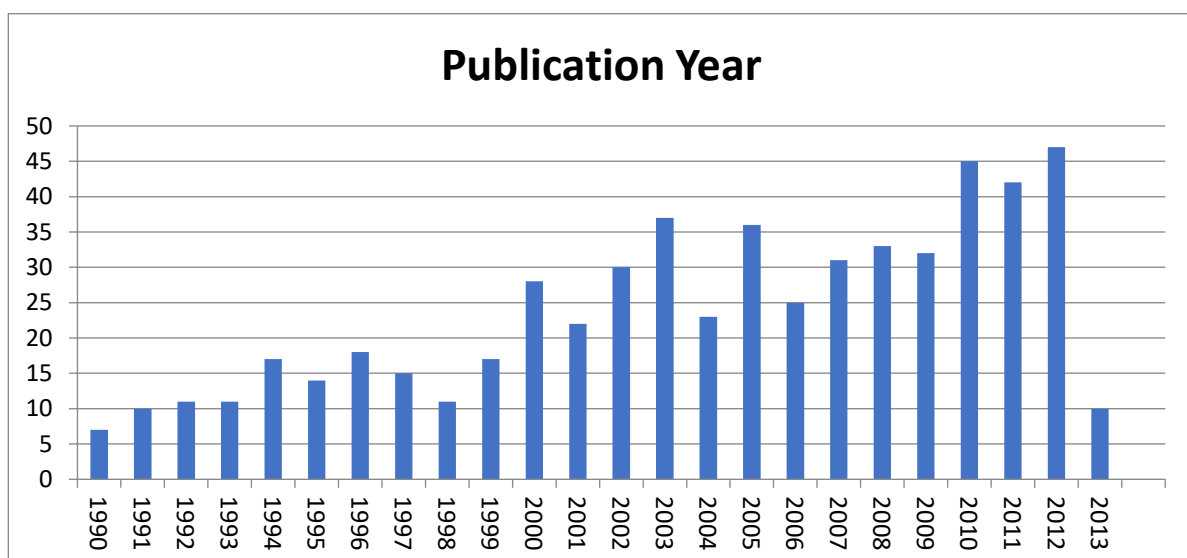
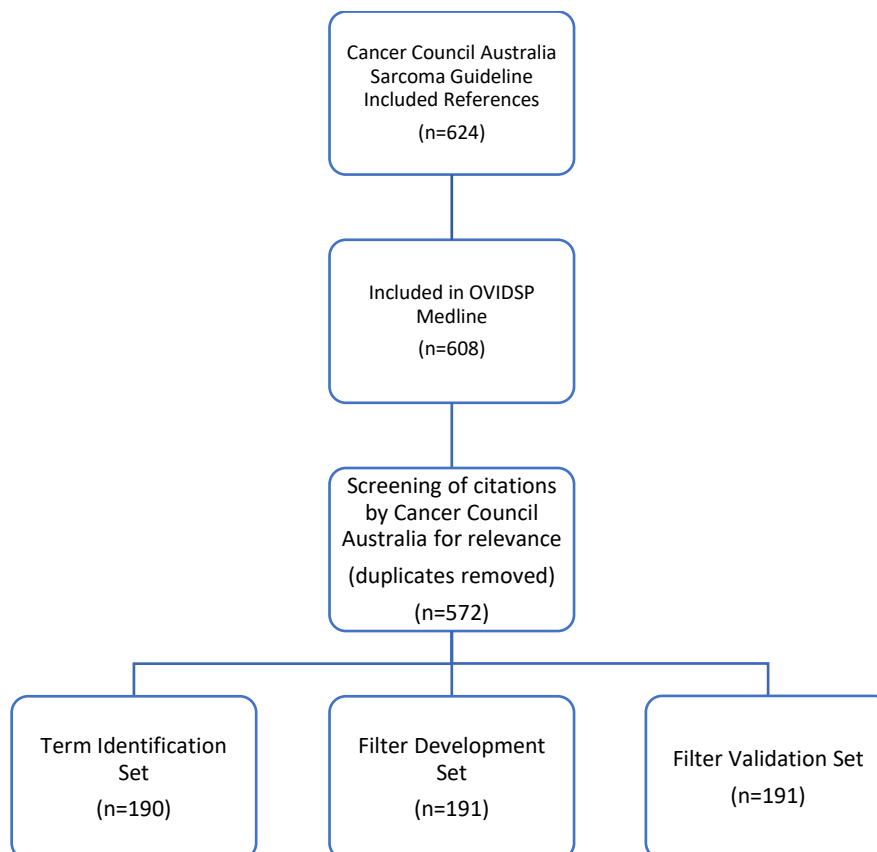


Table 1. Top 10 titles with 16 or more occurrences in the gold standard set

International Journal of Radiation Oncology, Biology, Physics	56
Cancer	50
Journal of Clinical Oncology	47
Annals of Surgical Oncology	43
Clinical Orthopaedics & Related Research	38
European Journal of Cancer	22
Journal of Surgical Oncology	22
European Journal of Surgical Oncology	22
Annals of Oncology	16
Journal of Bone & Joint Surgery - British Volume	16

Figure 2. Development of the gold standard set



1.4 Sarcoma term identification

To identify candidate terms for the search filter a three step process was undertaken. Firstly, frequency analysis of the Term Identification Set was performed for the MeSH and textwords

separately. The candidate terms and their recall in the Term Identification Set are presented in Table 2 below.

Table 2. MeSH and textwords in the Term Identification Set

Terms	TIS Recall (n=190)	TIS Recall (%)
MeSH		
Exp Sarcoma	168	88.4
Sarcoma	126	66.3
Soft tissue neoplasms	67	35.3
Bone neoplasms	53	27.9
Osteosarcoma	24	12.6
Sarcoma, Ewing	15	7.9
Textwords		
Sarcoma	130	68.4
Sarcomas	88	46.3
Osteosarcoma	19	10
Leiomyosarcoma	8	4.2
Malignant fibrous histiocytoma	7	3.7
Liposarcoma	6	3.2
Chondrosarcoma	4	2.1
Osteosarcomas	4	2.1
Chondrosarcomas	3	1.6
Dermatosarcoma	2	1.1
Rhabdomyosarcoma	1	0.5
Synovialosarcoma	1	0.5
Fibrosarcoma	1	0.5
Mixed mesodermal tumors	1	0.5

Secondly, the MeSH and textwords from the PubMed searches of the CCA Sarcoma Guidelines wiki were collated

and de-duplicated. The results are in Table 3 below.

Table 3. MeSH and textwords used in the CCA Sarcoma Guideline searches

MeSH	Textwords [tiab]	Textwords [tw]
bone neoplasm[majr] bone Neoplasms/diagnosis[majr:noexp] neoplasm, bone tissue[majr] neoplasms, bone tissue[mh] neuroectodermal tumors, primitive[mh] osteosarcoma[mh] Retroperitoneal liposarcoma[Supplementary Concept] Retroperitoneal Neoplasms[mh] rhabdomyosarcoma[mh] sarcoma, ewing[mh] Sarcoma[majr] Sarcoma[mh] soft tissue neoplasm/diagnosis[majr:noexp] soft tissue neoplasm[majr] soft tissue neoplasm[mh]	angiosarcoma*[tiab] arm[tiab] bone cancer*[tiab] bone lesion*[tiab] bone neoplasm*[tiab] bone tumor*[tiab] bone tumour*[tiab] chondrosarcoma*[tiab] ewing*[tiab] extremity*[tiab] feet[tiab] fibrosarcoma*[tiab] finger*[tiab] foot[tiab] gastrointestinal stromal tumor*[tiab] gastrointestinal stromal tumour*[tiab] GIST[tiab] hand[tiab] Hemangioendothelioma, Epithelioid*[tiab] Hemangiopericytoma*[tiab] Kaposi*[tiab] leg[tiab] legs[tiab] leiomyosarcoma*[tiab] limb*[tiab] liposarcoma*[tiab] Malignant fibrous histiocytoomas[tiab] musculoskeletal cancer*[tiab] musculoskeletal lesion*[tiab] musculoskeletal neoplasm*[tiab] musculoskeletal tumor*[tiab] musculoskeletal tumour*[tiab] myxofibrosarcoma*[tiab] neurofibrosarcoma*[tiab] osteosarcoma*[tiab] osteosarcoma[tiab] PEComa*[tiab] PNET[tiab] primitive neuroectodermal[tiab]	primitive neuroectodermal[tw]

	Retroperitoneal leiomyosarcomas[tiab] Retroperitoneal liposarcomas[tiab] retroperitoneal sarcoma[tiab] retroperitoneal[tiab] rhabdomyosarcoma*[tiab] rhabdomyosarcoma[tiab] sarcoma*[tiab] sarcoma[tiab] soft tissue cancer*[tiab] soft tissue lesion*[tiab] soft tissue neoplasm*[tiab] soft tissue tumor*[tiab] soft tissue tumour*[tiab] Solitary Fibrous Tumors*[tiab] toe*[tiab] trunc*[tiab] trunk*[tiab]	
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Thirdly, the MeSH tree in PubMed, NCCN soft tissue sarcoma guidelines, NCCN bone cancer guidelines and the Cancer Council Australia Sarcoma Guideline wiki were consulted to investigate the classification and MeSH terms for sarcoma.^{3, 5-7} Lists of

MeSH identified from these sources were collated and circulated to the Cancer Council Australia Sarcoma Guidelines Working Party for relevance assessment. The results are in Table 4.

Table 4. MeSH relevance assessment by the Cancer Council Australia Sarcoma Guidelines Working Party

Relevant MeSH	Irrelevant MeSH	Excluded MeSH Based on Current CCA Sarcoma Guidelines
Bone Neoplasms Neoplasms, Adipose Tissue Neoplasms, Bone Tissue Neoplasms, Connective and Soft Tissue Neoplasms, Connective Tissue Neoplasms, Fibrous Tissue Neoplasms, Muscle Tissue Neuroectodermal Tumors, Primitive, Peripheral Neuroectodermal Tumors, Primitive	Angiolipoma Avian Sarcoma Viruses Dendritic Cell Sarcoma, Follicular Dendritic Cell Sarcoma, Interdigitating Gastrointestinal Stromal Tumors Gliosarcoma Histiocytic Disorders, Malignant Histiocytic Sarcoma Langerhans Cell Sarcoma Mast-Cell Sarcoma Mastocytosis	Fibromatosis, Abdominal Fibromatosis, Aggressive Gastrointestinal Stromal Tumors Sarcoma, Kaposi

Perivascular Epithelioid Cell Neoplasms Sarcoma Soft Tissue Neoplasms	Sarcoma Virus, Woolly Monkey Sarcoma Viruses, Feline Sarcoma Viruses, Murine	
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To understand the unique value of MeSH terms to sarcoma they were assessed for relevance using the 100 Test. The 100 test included downloading the first 100 results from OVIDSP Medline for the MeSH term to

an Endnote library. The titles and abstracts of each reference were reviewed to determine the relevance of the record to sarcoma. The results of the 100 test are shown in Table 5 below.

Table 5. 100 test for relevance, MeSH

Search	Relevant	Not Relevant	Uncertain	Total Records Reviewed
(Bone neoplasms[mh:noexp] not (exp sarcoma/ or sarcoma.ti,ab.))	4	92	4	100
(Soft tissue neoplasms[mh:noexp] not (exp sarcoma/ or sarcoma.ti,ab.))	49	45	6	100
(Neoplasms, Muscle tissue[mh:noexp] not (exp sarcoma/ or sarcoma.ti,ab.))	8	76	16	100
(Perivascular Epithelioid Cell Neoplasms[mh:noexp] not (exp sarcoma/ or sarcoma.ti,ab.))	38	10	52	100
(Primitive neuroectodermal tumor, peripheral[mh:noexp] not (exp sarcoma/ or sarcoma.ti,ab.))	22	5	16	43

The 100 test was extended to combinations of MeSH and textwords or textwords only and shown in Table 6 and 7 below. The nature of the information gained from undertaking

the 100 test informed the later development of the Sarcoma Search Filters as well as providing deeper knowledge of the sarcoma literature.

Table 6. 100 test for relevance, MeSH and textword combinations

Search	Relevant	Not Relevant	Uncertain	Total Records Reviewed
((Bone neoplasms[mh:noexp] and malignant.ti,ab. and English.lg.) not (exp sarcoma/ or sarcoma.ti,ab.))	18	58	24	100
((Bone neoplasms/ and malignant.ti. and English.lg.) not (exp sarcoma/ or sarcoma.ti,ab.))	22	53	25	100
((Soft tissue neoplasms[mh:noexp] and malignant.ti,ab. and English.lg.) not (exp sarcoma/ or sarcoma.ti,ab.))	34	39	27	100
((Soft tissue neoplasms/ and malignant.ti. and English.lg.) not (exp sarcoma/ or sarcoma.ti,ab.))	40	26	34	100

Table 7. 100 test for relevance, textwords

Search	Relevant	Not Relevant	Uncertain	Total Citations Reviewed
Bone tumors.ti,ab. not exp sarcoma/	56	33	11	100
Soft tissue lesions.ti,ab. not exp sarcoma/	16	76	8	100
Sarcoma\$ not exp sarcoma/	1	92	7	100
Sarcoma.ti. not exp sarcoma/	4	96	-	100
Sarcoma.ab. not exp sarcoma/	30	70	-	100

1.5 Sarcoma Search Filters development

The candidate search terms identified in the Term Identification Set were tested for their recall in the Filter

Development Set. The individual term that recalled the most number of citations in the Filter Development Set

became the first term of the draft Sarcoma Search Filter. The remaining terms were tested in combination with the first term with the next highest ranking in combination with the first term becoming the second term in the draft Sarcoma Search Filter. This process was repeated until no further citations were recalled from the Filter Development Set.

Two search filters were developed due to their capability of recalling a high percentage of the Filter Development Set. A draft Specific Sarcoma Search Filter achieved a recall of 95.3% in the Filter Development Set and is shown in Table 8 below. Achieving a recall of 100% of the Filter Development Set, a draft Sensitive Sarcoma Search Filter is shown in Table 9 below

Table 8. Cumulative recall of the core sarcoma terms in the Filter Development Set for the draft Specific Sarcoma Search Filter

SET1	Terms included	Recall in FDS (n=)	Recall in FDS (%)
Single term	Exp sarcoma/	178	93.2
Two term	Exp sarcoma/ or sarcoma.ti,ab.	180	94.2
Three term	Exp sarcoma/ or sarcoma.ti,ab. or sarcomas.ti,ab.	182	95.3

Table 9. Cumulative recall of the core sarcoma terms in the Filter Development Set for the draft Sensitive Sarcoma Search Filter

SET1	Terms included	Recall in FDS (n=)	Recall in FDS (%)
Single term	Exp sarcoma/	178	93.2
Two term	Exp sarcoma/ or bone neoplasms/	188	98.4
Three term	Exp sarcoma/ or bone neoplasms/ or soft tissue neoplasms/	190	99.5
Four term	Exp sarcoma/ or bone neoplasms/ or soft	191	100

	tissue neoplasms/ or sarcoma.ti,ab.		
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1.6 Sarcoma Search Filters testing

To confirm the recall of the draft search filters in a previously unused set of citations they were tested in the Filter Validation Set. The draft Specific Sarcoma Search Filter achieved a recall of 95.3% in the Filter Validation Set. An overall recall of 94.6% was achieved by the draft Specific Sarcoma Search Filter in the full gold standard set as presented in Table 10 below.

The ‘Humans’ MeSH term is often used to limit searches to human studies in PubMed and the effect of this term as a limiter was trialed with the draft Specific Sarcoma Search Filter. Using the ‘Humans’ MeSH can mean losing more from the search results than anticipated.⁸ The effect of

using ‘humans’ with the draft Specific Sarcoma Search Filter on the recall of the Filter Development Set is the loss of 1 record as shown in Table 10 below. This loss of one record is seen in the full gold standard set as shown in Table 10 below. It is an assumption that all records in PubMed are indexed with either ‘Animals’ or ‘Humans’ but this is not the case.⁸ Reasons why humans may not be present include: out of scope Medline records in PubMed are not assigned MeSH, the newly added references to PubMed will not contain MeSH and the indexer may not have assigned ‘Humans’ to a study based on internal practices. It is therefore not recommended to use the humans limit with the Sarcoma Search Filters.

Table 10. Draft Specific Sarcoma Search Filter recall in the gold standard set

Testing set	No. citations retrieved from set	Recall (%)
(Exp sarcoma/ or sarcoma.ti,ab. or sarcomas.ti,ab.)		
Filter Validation Set	182/191	95.3
Full Gold Standard Set	541/572	94.6
((Exp sarcoma/ or sarcoma.ti,ab. or sarcomas.ti,ab.) and humans/)		
Filter Validation Set	181/191	94.8
Full Gold Standard Set	540/572	94.4

The draft Sensitive Sarcoma Search Filter recalled 99.5% of the Filter Validation Set and had a recall of 99.8% in the full gold standard set.

The recall of the draft Sensitive Sarcoma Search Filter is shown in Table 11.

Table 11. Draft Sensitive Sarcoma Search Filter recall in the gold standard set

Testing set	No. citations retrieved from set	(%)
(Exp sarcoma/ or bone neoplasms/ or soft tissue neoplasms/ or sarcoma.ti,ab.)		
Filter Validation Set	190/191	99.5
Full Gold Standard Set	571/572	99.8

During the sarcoma term identification process the Cancer Council Australia Sarcoma Guidelines Working Party identified some relevant MeSH to sarcoma. These additional MeSH terms were added to the draft Sensitive Sarcoma Search Filter to become a draft Broad Sarcoma Search Filter. The recall achieved by the draft Broad Sarcoma Search Filter achieved 100% in the Filter

Development Set and 99.8% in the full gold standard set. The details of the recall of the draft Broad Sarcoma Search Filter are in Table 12 below. The draft Broad Sarcoma Search Filter did not recall any more references in the gold standard set when compared to the draft Sensitive Sarcoma Search Filter. Therefore, it was decided not to proceed with the development of the draft Broad Sarcoma Search Filter.

Table 12. Draft Broad Sarcoma Search Filter recall in the gold standard set

Testing set	No. citations retrieved from set	Recall (%)
(Exp sarcoma/ or bone neoplasms/ or soft tissue neoplasms/ or sarcoma.ti,ab. or Neoplasms, Muscle Tissue/ OR Neoplasms, Connective and Soft Tissue/ OR Neoplasms, Adipose Tissue/ OR Neoplasms, Connective Tissue/ OR Neoplasms, Bone Tissue/ OR Neoplasms, Fibrous Tissue/ OR Perivascular Epithelioid Cell Neoplasms/ OR Neuroectodermal Tumors, Primitive, Peripheral/ OR Neuroectodermal Tumors, Primitive/)		
Filter Validation Set	191/191	100.0
Full Gold Standard Set	571/572	99.8

The current CCA Sarcoma Guidelines are based on adult sarcoma and the Sarcoma Search Filters were built using the references from the current guidelines. Childhood sarcomas and some sarcoma subtype such as uterine sarcomas were not included in the current CCA Sarcoma Guidelines. This may have had some affect on the MeSh and textwords identified from the gold standard set. It is a limitation of the current study that the scope of the gold standard set does not comprehensively include all sarcomas. Further to this the following MeSH were discovered in the final stages of the project which include: Neurilemmoma; Hemangioendothelioma, Epithelioid; and Hemangiopericytoma. Cancer Council Australia may wish to explore the MeSH from the draft Broad Sarcoma Search Filter and the MeSH above for existing and future guideline searches.

1.7 Generalisability of the draft Sarcoma Search Filters

Two external validation sets were created to test the draft Sarcoma

Search Filters for generalisability. The SETA external validation set comprised of the references from the NCCN guidelines for Soft Tissue Sarcoma and SETB contained the references from the NCCN guidelines for Bone Cancer⁷⁻⁸. The references from each of the guidelines were downloaded from OVIDSP Medline into two separate Endnote libraries. SETA contained 385 references and SETB 366.

The results of the recall of the external validation sets by the Sarcoma Search Filters are presented in Table 13 below. The best recall for both of the external validation sets was the draft Broad Sarcoma Search Filter but there will be no further development of this search filter in this study. This was because of the already high recall of the CCA Sarcoma Guideline gold standard set by the draft Sensitive and Specific Sarcoma Search Filters. The next best recall of SETA was the draft Specific Sarcoma Search Filter. For SETB the subsequent best recall was achieved by the draft Sensitive Sarcoma Search Filter.

Table 13. Sarcoma Search Filters performance in two external reference sets

External Validation Set	Draft Specific Sarcoma Search Filter	Draft Sensitive Sarcoma Search Filter	Draft Broad Sarcoma Search Filter
SETA – Soft Tissue Sarcoma Number recalled	245/385	243/385	253/385

SETA – Soft Tissue Sarcoma Percentage recalled (%)	63.6	63.1	65.7
SETB – Bone Cancer Number recalled	249/366	312/366	313/366
SETB – Bone Cancer Percentage recalled (%)	68.0	85.2	85.5

An analysis of the MeSH not retrieved in SETA and SETB by the draft Sensitive Sarcoma Search Filter was undertaken. The results of the MeSH not retrieved in SETA by the draft Sensitive Search Filter are in Table 14 below. In SETA the highest frequency MeSH that was not recalled was 'gastrointestinal stromal tumors', this concept was excluded from the CCA

Sarcoma Guidelines and considered irrelevant by the Cancer Council Australia Sarcoma Guidelines Working Party. Similarly, the three MeSH terms that were greater than 5% of the set including: Fibromatosis, Aggressive; Gastrointestinal Neoplasms; and Fibromatosis, Abdominal were also related to sarcomas not included in the CCA Sarcoma Guidelines.

Table 14. MeSH not retrieved by the draft Sensitive Sarcoma Search Filter external reference SETA

SETA	Count	Percentage Not Recalled
Gastrointestinal Stromal Tumors	175/385	45.5
Fibromatosis, Aggressive	80/385	20.8
Gastrointestinal Neoplasms	45/385	11.7
Fibromatosis, Abdominal	26/385	6.8
Neoplasms	11/385	2.9
Abdominal Neoplasms	11/385	2.9
Stomach Neoplasms	7/385	1.8

Breast Neoplasms	6/385	1.6
Perivascular Epithelioid Cell Neoplasms	5/385	1.3
Lung Neoplasms	4/385	1.0
Intestinal Neoplasms	4/385	1.0
Adenocarcinoma	3/385	0.8
Carcinoma, Renal Cell	3/385	0.8
Esophageal Neoplasms	3/385	0.8
Ileal Neoplasms	3/385	0.8
Jejunal Neoplasms	3/385	0.8
Kidney Neoplasms	3/385	0.8
Mesenchymoma	3/385	0.8
Solitary Fibrous Tumors	2/385	0.5
Thoracic Neoplasms	2/385	0.5
Giant Cell Tumors	2/385	0.5
Head and Neck Neoplasms	2/385	0.5
Liver Neoplasms	2/385	0.5
Neoplasms, Muscle Tissue	1/385	0.3
Peritoneal Neoplasms	1/385	0.3
Digestive System Neoplasms	1/385	0.3
Retroperitoneal Neoplasms	1/385	0.3

The MeSH not retrieved by combining the draft Sensitive Search Filter to SETB are in Table 15 below. In SETB the highest frequency MeSH not retrieved was 'chordoma'. The Cancer

Council Australia Sarcoma Guidelines Working Party advised to leave chordoma out of the search filter. Spinal Neoplasms and Skull Base Neoplasms were the other MeSH

greater than 5% frequency in the set. These two MeSH sit under Bone Neoplasms in the MeSH hierarchy and are not specific to sarcoma. They

would need further testing for their relevance to sarcoma and this is beyond the scope of the present study.

Table 15. MeSH not retrieved by draft Sensitive Search Filter external reference SETB

SETB	Count	Percentage Not Recalled
Chordoma	106/366	29.0
Spinal Neoplasms	62/366	16.9
Skull Base Neoplasms	38/366	10.4
Giant Cell Tumor of Bone	15/366	4.1
Skull Neoplasms	8/366	2.2
Brain Neoplasms	6/366	1.6
Neoplasms	4/366	1.1
Giant Cell Tumors	3/366	0.8
Mandibular Neoplasms	3/366	0.8
Maxillary Neoplasms	3/366	0.8
Spinal Cord Neoplasms	2/366	0.5
Muscle Neoplasms	1/366	0.3
Neuroblastoma	1/366	0.3

2. Translating the OVIDSP Medline Sarcoma Search Filters for PubMed

To ensure the Sarcoma Search Filters are equivalent in the PubMed environment a translation of the OVIDSP Medline version of the search filters is necessary. The first step in this process is to translate the OVIDSP Medline version of the search filter into the syntax for PubMed and ensure the retrievals of the search filter in the two databases is equivalent. This process is applied to the subset of PubMed that includes MeSH. The second part of the translation process is to develop a textword string that searches in the titles and abstracts of the newly published PubMed references that are yet to be indexed and do not contain MeSH.

2.1 Translation of the OVIDSP Medline component of the Sarcoma Search Filters

A translation of the OVIDSP Medline component of the Specific Sarcoma Search Filter was necessary to ensure an equivalent search filter was developed for the PubMed environment. The full gold standard set was created in PubMed using the unique identifiers of each reference that had been found in OVIDSP Medline. A comparison was made in PubMed with the retrievals of the Specific Sarcoma Search Filter in OVIDSP Medline. The translated PubMed Specific Sarcoma Search Filter was combined with the gold standard unique identifier search string

and found to retrieve 541/857 references or 94.6% recall of the gold standard set. In OVIDSP Medline the unique identifiers of the 541/857 retrievals by the equivalent Specific Sarcoma Search Filter was made into a search string for PubMed. The two sets of retrievals from PubMed and OVIDSP Medline were combined using the Boolean operator AND which resulted in 541/857 references retrieved or 94.6%. This indicated the translation from OVIDSP Medline to PubMed was the same.

The PubMed translation of the Specific Sarcoma Search Filter for retrieving references in the indexed subset of PubMed is:

```
((Sarcoma[mh] OR sarcoma[tiab] OR sarcomas[tiab]) AND medline[sb])
```

The same process was undertaken with the Sensitive Sarcoma Search Filter. It recalled 571/572 or 99.8% of the records in the gold standard set in PubMed that were the same records when compared with retrievals from the OVIDSP Medline version. The result confirmed the PubMed translation was equivalent to the OVIDSP Medline Sensitive Sarcoma Search Filter.

The PubMed translation of the Sensitive Sarcoma Search Filter for

retrieving references in the indexed subset of PubMed is:

```
((sarcoma[mh] OR bone neoplasms[mh:noexp] OR  
soft tissue neoplasms[mh:noexp] OR  
sarcoma[tiab]) AND medline[sb])
```

2.2 Textword translation of the Sarcoma Search Filters for PubMed

PubMed has two subsets of records. The first subset has completed processing including rigorous quality checking and indexing with MeSH. The second subset does not contain MeSH because processing is not complete or the references are out of scope for Medline. To ensure the subset that does not contain MeSH are retrieved textword strings were developed for the Specific and Sensitive Sarcoma Search Filters.

Textword translation of the Specific Sarcoma Search Filter for PubMed

A natural language string designed to retrieve textwords from the titles and abstracts was developed for the Specific Sarcoma Search Filter. This part of the search filter is designed to retrieve the newly published references that have been added to PubMed that are yet to be processed and have not had MeSH assigned.

The process to develop the textword search string comprised the following steps:

1. A set of records was retrieved in PubMed resulting in 5286

references. It was created using the MeSH component of the Specific Search Filter comprising the following search:

```
sarcoma[mh] AND eng[la] AND  
hasabstract AND medline[sb] AND  
2012[dp]:2013[dp]
```

2. MeSH terms from the Specific Sarcoma Search Filter were altered to [tiab] to search only titles and abstracts. As the MeSH term, sarcoma, in the search filter is automatically exploded all terms relating to sarcoma in humans from the MeSH hierarchy were included in the search. In converting the MeSH to textwords recall of the references in step 1 was 4208/5286 or 79.6%. The search used was:

```
(Sarcoma[tiab] OR  
Adenosarcoma[tiab] OR  
Carcinosarcoma[tiab] OR  
Chondrosarcoma[tiab] OR  
Desmoplastic Small Round Cell  
Tumor[tiab] OR Endometrial  
Stromal Tumors[tiab] OR  
Fibrosarcoma[tiab] OR  
Dermatofibrosarcoma[tiab] OR  
Neurofibrosarcoma[tiab] OR  
Hemangiosarcoma[tiab] OR  
Malignant Fibrous histiocytoma[tiab]  
OR Leiomyosarcoma[tiab] OR  
Liposarcoma[tiab] OR  
Lymphangiosarcoma[tiab] OR  
mesodermal Mixed Tumor[tiab] OR  
Myosarcoma[tiab] OR  
Rhabdomyosarcoma[tiab] OR  
Myxosarcoma[tiab] OR  
Osteosarcoma[tiab] OR Phyllodes  
Tumor[tiab]) AND eng[la] AND  
hasabstract AND medline[sb] AND  
2012[dp]:2013[dp]
```

3. The plural forms and alternate spellings of the terms were then added to the search resulting in 4497/5286 retrievals or 85.1% of step 1 being recalled. The search used was:

(Sarcoma[tiab] OR sarcomas[tiab] OR Adenosarcoma[tiab] OR adenosarcomas[tiab] OR Carcinosarcoma[tiab] OR Carcinosarcomas[tiab] OR Chondrosarcoma[tiab] OR Chondrosarcomas[tiab] OR Desmoplastic Small Round Cell Tumor*[tiab] OR desmoplastic small round cell tumour*[tiab] OR Endometrial Stromal Tumor*[tiab] OR Endometrial Stromal Tumour*[tiab] OR Fibrosarcoma[tiab] OR Fibrosarcomas[tiab] OR Dermatofibrosarcoma[tiab] OR Dermatofibrosarcomas[tiab] OR Neurofibrosarcoma[tiab] OR Neurofibrosarcomas[tiab] OR Hemangiosarcoma[tiab] OR Hemangiosarcomas[tiab] OR Malignant Fibrous histiocytoma[tiab] OR Malignant Fibrous histiocytomas[tiab] OR Leiomyosarcoma[tiab] OR Leiomyosarcomas[tiab] OR Liposarcoma[tiab] OR Liposarcomas[tiab] OR Lymphangiosarcoma[tiab] OR Lymphangiosarcomas[tiab] OR mesodermal Mixed Tumor*[tiab] OR

mesodermal mixed tumour*[tiab] OR Myosarcoma[tiab] OR Myosarcomas[tiab] OR Rhabdomyosarcoma[tiab] OR Rhabdomyosarcomas[tiab] OR Myxosarcoma[tiab] OR Myxosarcomas[tiab] OR Osteosarcoma[tiab] OR Osteosarcomas[tiab] OR Phyllodes Tumor*[tiab] OR phyllodes tumour*[tiab]) AND medline[*sb*] AND hasabstract AND eng[*la*] AND 2012[*dp*]:2013[*dp*]

4. The 'lost set', that is, citations that could not be recovered by converting the MeSH to textwords, was then calculated (step 1 search NOT step 3 search) resulting in 789/5286 or 14.9% of references not recalled.
5. Frequency analysis was performed on the titles and abstracts to identify textwords and phrase synonyms for sarcoma. These terms and phrases combined with the search in step 3 resulted in a recall of 4656/5286 or 88.1% or 634/5286 or 12.0% lost references. This reduced the 'lost set' from 14.9% to 12.0%.

When the two components are put together, designed for retrieval from both the MeSH indexed and non-MeSH indexed subsets of PubMed, the Specific Sarcoma Search Filter becomes:

(((sarcoma[mh] OR sarcoma[tiab] OR sarcomas[tiab]) AND medline[*sb*]) OR ((Sarcoma[tiab] OR sarcomas[tiab] OR Adenosarcoma[tiab] OR adenosarcomas[tiab] OR Carcinosarcoma[tiab] OR Carcinosarcomas[tiab] OR Chondrosarcoma[tiab] OR Chondrosarcomas[tiab] OR Desmoplastic Small Round Cell Tumor*[tiab] OR desmoplastic small round cell tumour*[tiab] OR Endometrial Stromal Tumor*[tiab] OR Endometrial Stromal

Tumour*[tiab] OR Fibrosarcoma[tiab] OR Fibrosarcomas[tiab] OR Dermatofibrosarcoma[tiab] OR Dermatofibrosarcomas[tiab] OR Neurofibrosarcoma[tiab] OR Neurofibrosarcomas[tiab] OR Hemangiosarcoma[tiab] OR Hemangiosarcomas[tiab] OR Malignant Fibrous histiocyoma[tiab] OR Malignant Fibrous histiocyomas[tiab] OR Leiomyosarcoma[tiab] OR Leiomyosarcomas[tiab] OR Liposarcoma[tiab] OR Liposarcomas[tiab] OR Lymphangiosarcoma[tiab] OR Lymphangiosarcomas[tiab] OR mesodermal Mixed Tumor*[tiab] OR mesodermal mixed tumour*[tiab] OR Myosarcoma[tiab] OR Myosarcomas[tiab] OR Rhabdomyosarcoma[tiab] OR Rhabdomyosarcomas[tiab] OR Myxosarcoma[tiab] OR Myxosarcomas[tiab] OR Osteosarcoma[tiab] OR Osteosarcomas[tiab] OR Phyllodes Tumor*[tiab] OR phyllodes tumour*[tiab] OR Phyllode tumour*[tiab] OR phyllode tumor*[tiab] OR angiosarcoma[tiab] OR angiosarcomas[tiab] OR Desmoplastic Small-Cell Tumor*[tiab] OR Desmoplastic Small-Cell Tumour*[tiab] OR ((ewing[tiab] OR ewings[tiab] OR ewing's[tiab]) AND (tumor[tiab] OR tumors[tiab] OR tumour*[tiab])) NOT medline[sb]) AND eng[la]

Note: the MeSH indexed component is in normal type and the textword section is shown in bold and italics.

Textword translation of the Sensitive Sarcoma Search Filter for PubMed

The textword translation process from step 2.2.1 was conducted for the Sensitive Sarcoma Search Filter. It is necessary to develop a textword string for the newly added references to PubMed that have not been processed and assigned MeSH.

The process to develop the textword search string comprised the following steps:

1. A set of records was retrieved in PubMed resulting in 7582 references. It was created using the MeSH component of the Sensitive Search Filter comprising the following search:
(sarcoma[mh] OR bone neoplasms[mh:noexp] OR soft tissue neoplasms[mh:noexp]) AND eng[la] AND hasabstract AND medline[sb] AND 2012[dp]:2013[dp]

2. MeSH terms from the Specific Sarcoma Search Filter were changed to [tiab] to search only titles and abstracts. As the MeSH term, sarcoma, in the search filter is automatically exploded all terms related to sarcoma in humans from the sarcoma MeSH hierarchy were included in the search. By converting the MeSH to textwords recall of the references in step 1 was 4322/7582 or 57%. The search was:

(Sarcoma[tiab] OR Adenosarcoma[tiab] OR Carcinosarcoma[tiab] OR Chondrosarcoma[tiab] OR Desmoplastic Small Round Cell Tumor[tiab] OR Endometrial Stromal Tumors[tiab] OR Fibrosarcoma[tiab] OR Dermatofibrosarcoma[tiab] OR Neurofibrosarcoma[tiab] OR Hemangiosarcoma[tiab] OR Malignant Fibrous histiocyoma[tiab])

OR Leiomyosarcoma[tiab] OR
 Liposarcoma[tiab] OR
 Lymphangiosarcoma[tiab] OR
 mesodermal Mixed Tumor[tiab] OR
 Myosarcoma[tiab] OR
 Rhabdomyosarcoma[tiab] OR
 Myxosarcoma[tiab] OR
 Osteosarcoma[tiab] OR Phyllodes
 Tumor[tiab] OR bone
 neoplasms[tiab] OR soft tissue
 neoplasms[tiab]) AND eng[la] AND
 hasabstract AND medline[sb] AND
 2012[dp]:2013[dp]

3. The plural forms and alternate spellings of the terms were then added to the search, which resulted in 4641/7582 retrievals, or 61.2% of step 1 being recalled.

The search was:

(Sarcoma[tiab] OR
 sarcomas[tiab] OR
 Adenosarcoma[tiab] OR
 adenosarcomas[tiab] OR
 Carcinosarcoma[tiab] OR
 Carcinosarcomas[tiab] OR
 Chondrosarcoma[tiab] OR
 Chondrosarcomas[tiab] OR
 Desmoplastic Small Round Cell
 Tumor*[tiab] OR desmoplastic
 small round cell tumour*[tiab] OR
 Endometrial Stromal Tumor*[tiab]
 OR Endometrial Stromal
 Tumour*[tiab] OR
 Fibrosarcoma[tiab] OR
 Fibrosarcomas[tiab] OR
 Dermatofibrosarcoma[tiab] OR
 Dermatofibrosarcomas[tiab] OR
 Neurofibrosarcoma[tiab] OR
 Neurofibrosarcomas[tiab] OR
 Hemangiosarcoma[tiab] OR
 Hemangiosarcomas[tiab] OR
 Malignant Fibrous
 histiocytoma[tiab] OR Malignant

Fibrous histiocytomas[tiab] OR
 Leiomyosarcoma[tiab] OR
 Leiomyosarcomas[tiab] OR
 Liposarcoma[tiab] OR
 Liposarcomas[tiab] OR
 Lymphangiosarcoma[tiab] OR
 Lymphangiosarcomas[tiab] OR
 mesodermal Mixed Tumor*[tiab]
 OR mesodermal mixed
 tumour*[tiab] OR
 Myosarcoma[tiab] OR
 Myosarcomas[tiab] OR
 Rhabdomyosarcoma[tiab] OR
 Rhabdomyosarcomas[tiab] OR
 Myxosarcoma[tiab] OR
 Myxosarcomas[tiab] OR
 Osteosarcoma[tiab] OR
 Osteosarcomas[tiab] OR
 Phyllodes Tumor*[tiab] OR
 phyllodes tumour*[tiab] OR bone
 neoplasm*[tiab] OR soft tissue
 neoplasm*[tiab]) AND
 medline[sb] AND hasabstract
 AND eng[la] AND
 2012[dp]:2013[dp]

4. The 'lost set', that is, references that could not be recovered by converting the MeSH to textwords, was then calculated (step 1 search NOT step 3 search) resulting in 2941/7582 or 38.7% of references not recalled.

5. Frequency analysis was performed on the titles and abstracts of the 'lost set' to determine further terms to be added to the search filter. This resulted in a recall of 5332/7582 or 70.3% producing a "lost set" of 2260/7582 or 29.8% which reduced the 'lost set' from 38.7% to 29.9%.

When the two components are put together, designed for retrieval from both the MeSH indexed and non-MeSH indexed subsets of PubMed,

the Sensitive Sarcoma Search Filter becomes:

```
(((sarcoma[mh] OR bone neoplasms[mh:noexp] OR soft tissue neoplasms[mh:noexp] OR sarcoma[tiab]) AND medline[sb]) OR ((Sarcoma[tiab] OR sarcomas[tiab] OR Adenosarcoma[tiab] OR adenosarcomas[tiab] OR Carcinosarcoma[tiab] OR Carcinosarcomas[tiab] OR Chondrosarcoma[tiab] OR Chondrosarcomas[tiab] OR Desmoplastic Small Round Cell Tumor*[tiab] OR desmoplastic small round cell tumour*[tiab] OR Endometrial Stromal Tumor*[tiab] OR Endometrial Stromal Tumour*[tiab] OR Fibrosarcoma[tiab] OR Fibrosarcomas[tiab] OR Dermatofibrosarcoma[tiab] OR Dermatofibrosarcomas[tiab] OR Neurofibrosarcoma[tiab] OR Neurofibrosarcomas[tiab] OR Hemangiosarcoma[tiab] OR Hemangiosarcomas[tiab] OR Malignant Fibrous histiocytoma[tiab] OR Malignant Fibrous histiocytomas[tiab] OR Leiomyosarcoma[tiab] OR Leiomyosarcomas[tiab] OR Liposarcoma[tiab] OR Liposarcomas[tiab] OR Lymphangiosarcoma[tiab] OR Lymphangiosarcomas[tiab] OR mesodermal Mixed Tumor*[tiab] OR mesodermal mixed tumour*[tiab] OR Myosarcoma[tiab] OR Myosarcomas[tiab] OR Rhabdomyosarcoma[tiab] OR Rhabdomyosarcomas[tiab] OR Myxosarcoma[tiab] OR Myxosarcomas[tiab] OR Osteosarcoma[tiab] OR Osteosarcomas[tiab] OR Phyllodes Tumor*[tiab] OR phyllodes tumour*[tiab] OR Phyllode tumour*[tiab] OR phyllode tumor*[tiab] OR angiosarcoma[tiab] OR angiosarcomas[tiab] OR Desmoplastic Small-Cell Tumor*[tiab] OR Desmoplastic Small-Cell Tumour*[tiab] OR ((ewing[tiab] OR ewings[tiab] OR ewing's[tiab]) AND (tumor[tiab] OR tumors[tiab] OR tumour*[tiab])) OR bone neoplasm*[tiab] OR soft tissue neoplasm*[tiab] OR bone tumor[tiab] OR bone tumors[tiab] OR bone tumour*[tiab] OR angiosarcoma[tiab] OR angiosarcomas[tiab] OR bone lesion*[tiab] OR soft tissue tumor*[tiab] OR soft tissue tumour*[tiab] OR bone cancer*[tiab] OR soft tissue mass[tiab] OR soft tissue masses[tiab] OR soft tissue lesion*[tiab] OR musculoskeletal tumor*[tiab] OR musculoskeletal tumour*[tiab] OR musculoskeletal lesion*[tiab]) NOT medline[sb])) AND eng[la])
```

Note: the MeSH indexed component is in normal type and the textword section is shown in bold and italics.

3. Sarcoma Guideline Questions

The search components from the CCA Sarcoma Guidelines were tested for retrieval against each question's cited references. The search components investigated included: the sarcoma concept, the topics relating to the question and the study design type. Suggestions are made for the searches based on improved recall.

3.1 Sarcoma searches

The CCA searches for sarcoma and the Specific and Sensitive Sarcoma Search Filters were compared for their retrieval of the cited references against each guideline question. The unique identifiers of each cited reference for the guideline question was developed into a search string for PubMed. The sarcoma search concept was then combined with the unique identifier search string and the recall rate of the cited references was recorded.

This process was then repeated using the Specific and Sensitive Sarcoma Search Filters.

Equal retrievals were obtained between the 3 searches in eleven of the CCA Sarcoma Guideline questions including 4, 5, 9-14, 16, 17, 19. The CCA searches for the sarcoma concept retrieved the most references for two questions, that is, 1 and 8. The CCA searches and Sensitive Sarcoma Search Filter retrieved the same number of references for four questions 3, 6, 15 and 18. The Sensitive Sarcoma Search Filter retrieved the most references for question 2. The Specific and Sensitive Sarcoma Search Filter retrieved the same number of recalls for question 7. The results of recall for the three searches are in Table 16 below; the green coloured font indicates highest retrieval for each question.

Table 16. Recall of references by CCA Sarcoma Guideline question

CCA Sarcoma Guideline Question Number	CCA Search Recall	Specific Sarcoma Search Filter Recall	Sensitive Sarcoma Search Filter Recall
1	45/45	19/45	43/45
2	18/20	18/20	20/20
3	13/13	11/13	13/13
4	58/59	58/59	58/59
5	6/6	6/6	6/6
6	28/28	27/28	28/28
7	5/9	9/9	9/9
8	22/27	20/27	20/27
9	12/12	12/12	12/12
10	6/6	6/6	6/6
11	4/4	4/4	4/4
12	6/6	6/6	6/6
13	31/31	31/31	31/31
14	50/50	50/50	50/50
15	53/54	49/54	53/54
16	3/3	2/3	3/3
17	7/7	7/7	7/7
18	28/29	27/29	28/29
19	11/11	11/11	11/11
Overall count	17	11	17

To compare the sensitivity and the specificity of the CCA sarcoma searches and Specific and Sensitive Sarcoma Search Filters, they were run in PubMed. The total number of references retrieved by each search was recorded. The CCA searches are different for each CCA Sarcoma Guideline question and the retrievals in PubMed range from 264, 460 for question 8 to 26, 628 for question 12. The Specific Sarcoma Search Filter retrieval in PubMed is 120, 778 and for the Sensitive Sarcoma Search Filter it is 148, 459. In 12 of the guideline questions the retrieval using the CCA searches is greater than both the Specific and Sensitive Sarcoma Search Filters. Therefore, the majority of the CCA searches are more sensitive than the Sarcoma Search Filters. The increased sensitivity for the CCA searches is due to the textwords searching in both the indexed and non-indexed subsets of PubMed. The results of the retrieval in PubMed of the sarcoma searches are in Appendix 1.

An increase in sensitivity in a search means there is the potential to not miss relevant studies but the number needed to read to capture relevant studies is increased. Increasing the specificity in relation to searching means there is the potential to miss relevant studies but the number needed to read is reduced. Optimal searching is a balance between specificity and sensitivity and the needs of the user including time constraints.

It is recommended that Cancer Council Australia tests the Specific and Sensitive Sarcoma Search Filters to determine their effectiveness by comparing them with the current CCA Sarcoma searches. Testing is recommended for the CCA Sarcoma Guideline questions where recall by the Sarcoma Search Filters is the same or better. This would include the following CCA Guideline questions for the Specific Sarcoma Search Filter: 4-5, 7, 9-14, 17 and 19. The test using the Sensitive Sarcoma Search Filter is recommended for questions 2-7, 9-19.

3.2 Topic searches

The topic search component was taken from each individual CCA Sarcoma Guideline search and tested for recall against the cited references for that question. The references for each question were individually searched in PubMed and saved to an endnote library. A search string based on the unique identifier of each reference was created for retrieval in PubMed. The individual components of the searches for each question were tested for recall of the cited references in PubMed and recorded.

Recommendations are provided for changes to the searches for 14 of the guideline questions. The recommendations are based on recall or finding other MeSH and textwords that have not been used in the CCA search that are relevant. The results and recommendations for each question are provided in the tables below. Not applicable in the tables below has been used because the

search is optimal or no new terms could be suggested for the search.

Question 1: What are the relative rates of efficacy and accuracy of various biopsy modalities in bone and soft tissue tumours?

CCA Search	Recall	Suggested changes	Now recalls
1 (biopsy[majr] OR biops*[ti])	45/45	N/A (not applicable)	N/A
2 (diagnostic errors[mh] OR accura*[tiab] OR sensitivity and specificity[mh] OR reproducibility of results[mh] OR efficacy[tiab] OR error[tiab] OR value[tiab] OR safety[tiab] OR safe[tiab])	44/45	N/A	N/A
3 (specialist[tiab] OR office-based[tiab] OR open[tiab] OR fine needle[tiab] OR FNA[tiab] OR core needle[tiab] OR CNB[tiab] OR excision*[tiab] OR excise[tiab] OR tissue banks[mh] OR tissue bank*[tiab] OR tumor bank*[tiab] OR tumour bank*[tiab] OR molecular diagnostic techniques[mh] OR molecular test*[tiab] OR frozen section[mh] OR frozen[tiab] OR tissue fixation[mh] OR fixed tissue[tiab] OR fixative[tiab] OR fresh tissue[tiab] OR image guided[tiab] OR image guidance[tiab] OR blind[tiab])	43/45		

Note: In the CCA search (2 OR 3) retrieves 45/45

Question 2: What are the most appropriate imaging modalities for diagnosis and staging of bone and soft tissue tumours?

CCA Search	Recall	Suggested changes	Now recalls
1 (Sarcoma[mh] OR sarcoma*[tiab] OR angiosarcoma*[tiab] OR chondrosarcoma*[tiab] OR ewing*[tiab] OR fibrosarcoma*[tiab] OR gastrointestinal stromal tumor*[tiab] OR gastrointestinal stromal tumour*[tiab] OR GIST[tiab] OR leiomyosarcoma*[tiab] OR liposarcoma*[tiab] OR myxofibrosarcoma*[tiab] OR neurofibrosarcoma*[tiab] OR osteosarcoma*[tiab] OR PEComa*[tiab] OR rhabdomyosarcoma*[tiab])	18/20	(1 OR 2) retrieves 18/20 Consider deleting search 2 as it does not contribute to retrieval when combined with search 1.	N/A
2 ((Sarcoma[majr] OR sarcoma*[tiab]) AND (bone Neoplasms/diagnosis[majr:noexp] OR bone tumor*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR bone lesion*[tiab] OR musculoskeletal neoplasm*[tiab] OR musculoskeletal tumor*[tiab] OR musculoskeletal tumour*[tiab] OR musculoskeletal lesion*[tiab] OR musculoskeletal cancer*[tiab] OR soft tissue neoplasm/diagnosis[majr:noexp] OR soft tissue tumor*[tiab] OR soft tissue tumour*[tiab] OR soft tissue lesion*[tiab] OR soft tissue cancer*[tiab]))	7/20		
3 (neoplasm staging/methods[majr] OR stage[ti] OR staging[tiab] OR diagnosis[ti] OR diagnostic[ti] OR grade[ti] OR grading[ti])	16/20	(neoplasm staging/methods[majr] OR neoplasm grading/methods[majr] OR stage[ti] OR staging[tiab] OR diagnosis[ti] OR diagnostic*[ti] OR grade[ti] OR grading[ti])	17/20

4 (tomography[majr] OR radiography[majr] OR image interpretation, computer-assisted[majr] OR x-ray[tiab] OR xray[tiab] OR magnetic resonance imaging[tw] OR MRI[tiab] OR computer assisted tomography[tiab] OR CT scan[tiab] OR CAT scan[tiab] OR positron emission tomography[tiab] OR PET scan[tiab] OR Thallium[tiab] OR RECIST[tiab])	19/20	(tomography[majr] OR radiography[majr] OR image interpretation, computer-assisted[majr] OR "Response Evaluation Criteria in Solid Tumors"[mh] OR x-ray[tiab] OR xray[tiab] OR magnetic resonance imaging[tw] OR MRI[tiab] OR tomography[ti] OR CT scan[tiab] OR CAT scan[tiab] OR PET scan[tiab] OR Thallium[tiab] OR RECIST[tiab])	20/20
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Question 3: What is the impact of delay in referral to a specialist centre in bone and soft tissue tumours?

CCA Search	Recall	Suggested changes	Now recalls
1 ("referral and consultation"[mh] OR refer[tiab] OR referral[tiab])	9/13	("referral and consultation"[mh] OR refer[tiab] OR referr*[tiab] OR nonreferr*[tiab] OR non-referr*[tiab])	10/13
2 (time factors[mh] OR delayed diagnosis[tw] OR delay*[tiab] OR timely[tiab] OR specialization[mh] OR specialist[tiab] OR outpatient clinics, hospital[mh] OR surgicenters[mh] OR ambulatory care[mh])	10/13	(time factors[mh] OR delayed diagnosis[tw] OR delay*[tiab] OR timely[tiab] OR specialization[mh] OR specialist[tiab] OR outpatient clinics, hospital[mh] OR surgicenters[mh] OR ambulatory care[mh] OR Diagnostic errors[mh:noexp] OR diagnostic error*[tiab] OR misdiagnos*[tiab] OR Cancer Care Facilities[mh] OR cancer care facilit*[tiab] OR cancer hospital*[tiab] OR Tertiary care)	12/13

		centers[mh] OR tertiary care[tiab] OR tertiary referral[tiab] OR tertiary hospital*[tiab] OR specialist[tiab] OR outpatient clinic*[tiab] OR ambulatory care[tiab] OR surgicenter*[tiab] OR sarcoma center*[tiab] OR sarcoma centre*[tiab])	
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Question 4: What is the role of prognostic factors in management of BSTTs?

CCA Search	Recall	Suggested changes	Now recalls
(algorithms[majr] OR prognostic model[tiab] OR prognostic algorithm[tiab] OR prediction[ti] OR risk factors[ti] OR prognostic factors[ti] OR predictive factors[ti] OR decision support techniques[majr:noexp] OR models, theoretical[majr:noexp] OR models, biological[majr:noexp] OR models, statistical[majr:noexp] OR nomogram*[tw] OR nomograph[tw] OR survival analysis[majr] OR regression analysis[majr:noexp] OR proportional hazards model[majr:noexp] OR quality-adjusted life years[majr] OR QALY[tiab] OR disability adjusted life years[tiab] OR DALY[tiab])	54/59	N/A	N/A

Question 5: What is the outcome of a second opinion in BSTT pathology?

CCA Search	Recall	Suggested changes	Now recalls
(referral and consultation[majr] OR second opinion*[tiab] OR histopathology discrep*[ti] OR histopathological discrep*[ti] OR expert opinion*[tiab] OR quality assurance, health care[majr:noexp] OR medical audit[majr:noexp])	5/6	(referral and consultation[majr] OR second opinion*[tiab] OR histopathology discrep*[ti] OR histopathological discrep*[ti] OR expert opinion*[tiab] OR quality assurance, health care[majr:noexp] OR medical audit[majr:noexp] OR Peer review[mh] OR peer review*[tiab] OR second review[tiab])	5/6

Question 6: Does referral to a specialist centre improve outcomes in BSTTs?

CCA Search	Recall	Suggested changes	Now recalls
(referral and consultation[mh] OR specialization[majr] OR nonrefer*[tiab] OR non-refer*[tiab] OR refer[ti] OR referral[ti] OR specialist care[tiab] OR specialist centre[tiab] OR specialist center[tiab] OR tertiary care[tiab])	17/28	(referral and consultation[mh] OR specialization[majr] OR nonreferr*[tiab] OR non-referr*[tiab] OR refer[ti] OR referr*[ti] OR specialist care[tiab] OR specialist centre[tiab] OR specialist center[tiab] OR tertiary care[tiab] OR Cancer Care Facilities[mh] OR cancer care facilit*[tiab] OR cancer hospital*[tiab] OR Tertiary care centers[mh] OR tertiary care[tiab] OR tertiary referral[tiab] OR tertiary hospital*[tiab] OR specialist[tiab] OR outpatient clinic*[tiab] OR ambulatory care[tiab] OR surgicenter*[tiab] OR sarcoma center*[tiab])	24/28

		OR sarcoma centre*[tiab])	
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Question 7: What is the role for adjuvant systemic therapy for adults with BSTT?

CCA Search	Recall	Suggested changes	Now recalls
1 (adjuvant[tw] OR neo-adjuvant[tw] OR neoadjuvant[tw] OR adjunct[tiab] OR pre-operative[tiab] OR preoperative[tiab] OR post-operative[tiab] OR postoperative[tiab])	6/9	N/A	N/A
2 (drug therapy[mh] OR chemotherap*[tiab] OR systemic therap*[tiab] OR drug therap*[tiab] OR targeted therap*[tiab] OR combined modality therapy[majr])	9/9	N/A	N/A

Question 8: What is the role for systemic therapy in advanced soft-tissue sarcoma?

CCA Search	Recall	Suggested changes	Now recalls
1 (advanced[tiab] OR recurrent[tiab] OR metastat*[tiab] OR metastas*[tiab] OR incurable[tiab])	22/27	(advanced[tiab] OR recurren*[tw] OR metastat*[tiab] OR metastas*[tw] OR incurable[tiab] OR Aggressive[tiab] OR unresectable[tiab])	27/27
2 (drug therapy[majr] OR chemotherap*[tiab] OR systemic therap*[tiab] OR drug therap*[tiab] OR targeted therap*[tiab])	22/27	(Antineoplastic[tw] OR drug therapy[majr] OR chemotherap*[tiab] OR systemic therap*[tiab] OR drug therap*[tiab] OR targeted therap*[tiab])	26/27

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Question 9: What is the evidence for radiotherapy in limb and extremity soft tissue sarcoma in terms of local recurrence, survival and limb salvage?

CCA Search	Recall	Suggested changes	Now recalls
1 (limb*[tiab] OR arm[tiab] OR leg[tiab] OR arms[tiab] OR legs[tiab])	9/12	Consider combining searches 1 and 2 together with OR (Extremities[mh] OR limb*[tiab] OR arm[tiab] OR leg[tiab] OR arms[tiab] OR legs[tiab] OR extremit*[tiab] OR hand[tiab] OR hands[tiab] OR feet[tiab] OR foot[tiab] OR finger*[tiab] OR toe*[tiab])	12/12
2 (extremit*[tiab] OR hand[tiab] OR hands[tiab] OR feet[tiab] OR foot[tiab] OR finger*[tiab] OR toe*[tiab])	9/12		
3 (radiotherapy[mh] OR radiotherapy[sh] OR radiotherapy[tiab] OR radiotherap*[tiab] OR radiation[tiab] OR irradiat*[tiab] OR 3DCRT[tiab] OR 3D CRT[tiab] OR XRT[tiab])	12/12	N/A	N/A

Question 10: What is the evidence that pre-operative radiotherapy is superior to post-operative radiotherapy in limb and extremity soft tissue sarcoma in terms of local recurrence, survival and limb salvage and morbidity?

CCA Search	Recall	Suggested changes	Now recalls
1 (limb*[tiab] OR arm[tiab] OR leg[tiab] OR arms[tiab] OR legs[tiab])	3/6	Consider combining searches 1 and 2 together with OR (Extremities[mh] OR limb*[tiab] OR arm[tiab] OR leg[tiab] OR arms[tiab] OR legs[tiab] OR extremit*[tiab] OR hand[tiab] OR hands[tiab] OR feet[tiab] OR foot[tiab])	4/6
2 (extremit*[tiab] OR hand[tiab] OR hands[tiab] OR feet[tiab] OR foot[tiab])	3/6		

OR finger*[tiab] OR toe*[tiab]))		OR finger*[tiab] OR toe*[tiab])	
3 (radiotherapy[mh] OR radiotherapy[sh] OR radiotherap*[tiab] OR radiation[tiab] OR irradiat*[tiab] OR 3DCRT[tiab] OR 3D CRT[tiab] OR XRT[tiab])	6/6	N/A	N/A
4 (preoperative period[mh] OR pre-operat*[tiab] OR preoperat*[tiab] OR pre-surg*[tiab] OR presurg*[tiab] OR pre-op[tiab] OR preop[tiab] OR neo-adjuvant[tiab] OR neoadjuvant[tiab] OR neo adjuvant[tiab] OR postoperative period[mh] OR post-operat*[tiab] OR postoperat*[tiab] OR post-surg*[tiab] OR postsurg*[tiab] OR post-op[tiab] OR postop[tiab] OR adjuvant[tiab])	6/6	N/A	N/A

Note: This question compares the intervention undertaken preoperatively vs postoperatively. However, the search strategy in this question combined these two concepts with the Boolean operator OR. It is recommended to combine the two concepts with AND to reduce the number of irrelevant retrievals. When the preoperative and postoperative concepts are combined with the Boolean operator AND retrieval of the Sarcoma Guideline references is 5/6. The recommendation is:

((preoperative period[mh] OR pre-operat*[tiab] OR preoperat*[tiab] OR pre-surg*[tiab] OR presurg*[tiab] OR pre-op[tiab] OR preop[tiab] OR neo-adjuvant[tiab] OR neoadjuvant[tiab] OR neo adjuvant[tiab]) AND (postoperative period[mh] OR post-operat*[tiab] OR postoperat*[tiab] OR post-surg*[tiab] OR postsurg*[tiab] OR post-op[tiab] OR postop[tiab] OR adjuvant[tiab]))

Question 11: What is the evidence that radiotherapy, either pre-operative or post-operative, decreases local recurrence or improves survival in truncal sarcomas?

CCA Search	Recall	Suggested changes	Now recalls
1 (trunc*[tiab] OR trunk*[tiab])	3/4	(thorax[mh] OR trunc*[tiab] OR trunk*[tiab] OR chest wall[tiab])	4/4
2 (radiotherapy[mh] OR radiotherapy[sh] OR radiotherap*[tiab] OR radiation[tiab] OR irradiat*[tiab] OR 3DCRT[tiab] OR 3D CRT[tiab] OR XRT[tiab])	3/4	N/A	N/A

Question 12: What is the evidence that radiotherapy, either pre-operative or post-operative, decreases local recurrence or improves survival in retroperitoneal sarcomas?

CCA Search	Recall	Suggested changes	Now recalls
(radiotherapy[mh] OR radiotherapy[sh] OR radiotherapy[tiab] OR radiotherap*[tiab] OR radiation[tiab] OR irradiat*[tiab] OR 3DCRT[tiab] OR 3D CRT[tiab] OR XRT[tiab])	6/6	N/A	N/A

Question 13: What are the indications for IMRT, brachytherapy, intraoperative radiotherapy (IORT), extra-corporeal radiotherapy and particle therapy in the management of BSTTs?

CCA Search	Recall	Suggested changes	Now recalls
(radiotherapy, Intensity-Modulated[mh] OR IMRT[tiab] Intensity modulated radiation therapy[tiab] OR intensity modulated radiotherapy[tiab] OR	22/31	(radiotherapy, Intensity-Modulated[mh] OR IMRT[tiab] OR Intensity modulated radiation therap*[tiab] OR intensity modulated 43adidosurgery*[tiab] OR	31/31

<p>intraoperative radiotherapy[tiab] OR intraoperative radiation therapy[tiab] OR IORT[tiab] OR radiotherapy, image guided[mh] OR image guided radiotherapy[tiab] OR image guided radiation therapy[tiab] OR IGRT[tiab] OR radiosurgery[mh] OR stereotactic body radiotherapy[tiab] OR stereotactic body radiation therapy[tiab] OR SBRT[tiab] OR brachytherapy[mh] OR brachytherapy[tiab] OR extracorporeal radiotherapy[tiab] OR extracorporeal irradiation[tiab] OR extracorporeal radiation therapy[tiab] OR tomotherapy[tiab] OR proton therapy[tiab] OR carbon ion therapy[tiab])</p>		<p>intraoperative 44adidosurgery*[tiab] OR intraoperative radiation therap*[tiab] OR IORT[tiab] OR radiotherapy, image guided[mh] OR image guided 44adidosurgery*[tiab] OR image guided radiation therap*[tiab] OR IGRT[tiab] OR radiosurgery[mh] OR stereotactic body 44adidosurgery*[tiab] OR stereotactic body radiation therap*[tiab] OR SBRT[tiab] OR 44adidosurgery*[tiab] OR brachytherapy[mh] OR brachytherapy*[tiab] OR extracorporeal radiotherapy*[tiab] OR extra corporeal irradiation[tiab] OR extracorporeal irradiation[tiab] OR extracorporeal radiation therap*[tiab] OR tomotherap*[tiab] OR proton therap*[tiab] OR proton radiation therap*[tiab] OR proton radiotherapy*[tiab] OR carbon ion therap*[tiab] OR carbon ion radiotherapy*[tiab])</p>	
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Question 14: What are the factors influencing the extent of surgery in BSTTs?

CCA Search	Recall	Suggested changes	Now recalls
<p>1 (surgical procedures, operative[mh:noexp] OR surgery[mh:noexp] OR surgery[ti] OR surgical[ti] OR excision[ti])</p>	<p>33/50</p>	<p>(surgical procedures, operative[mh:noexp] OR surgery[mh:noexp] OR surg*[tiab] OR excision*[tiab] OR resection[tiab] OR reexcision[tiab] OR surgery[sh])</p>	<p>49/50</p>

<p>2 (treatment outcome[majr] OR limb salvage[majr] OR limb sparing[tiab] OR lymph node excision[tw] OR lymph node dissection[tw] OR nodal excision[tiab] OR nodal dissection[tiab] OR lymphadenectomy[tiab] OR palliative care[mh] OR palliative[tiab] OR palliation[tiab] OR reconstructive surgical procedures[mh] OR reconstruct*[tiab] OR functional outcome[tiab] OR limb function[tiab] OR limb function*[tiab] OR neurovascula*[tiab] OR indications[tiab] OR limits[ti] OR limitations[ti] OR margin*[tiab] OR 'extent of surgery'[tiab] OR amputation[tiab])</p>	<p>39/50</p>	<p>(treatment outcome[majr] OR reconstructive surgical procedures[mh] OR limb sparing[tiab] OR lymph node excision[tw] OR lymph node dissection[tw] OR nodal excision[tiab] OR nodal dissection[tiab] OR lymphadenectomy[tiab] OR palliative care[mh] OR palliat*[tiab] OR reconstruct*[tiab] OR functional outcome[tiab] OR limb function[tiab] OR limb function*[tiab] OR neurovascula*[tiab] OR indications[tiab] OR limits[ti] OR limitations[ti] OR margin*[tiab] OR "extent of surgery"[tiab] OR amputation[tiab] OR amputation[mh:noexp])</p>	<p>39/50</p>
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Question 15: What are the factors that impact on the choice of reconstructive options in BSTTs?

CCA Search	Recall	Suggested changes	Now recalls
<p>1 (reconstructive surgical procedures[majr] OR reconstruction[ti] OR reconstructive[ti] OR surgery, plastic[majr] OR plastic surgery[tiab] OR limb salvage[majr] OR limb sparing[tiab] OR limb salvage[tiab]) OR Skin Transplantation[tiab])</p>	<p>52/54</p>	<p>N/A</p>	<p>N/A</p>
<p>2 (Quality of Life[tiab] OR life quality[tiab] OR</p>	<p>41/54</p>	<p>("Quality of Life"[mh] OR "Quality of Life"[tiab] OR life qualit*[tiab] OR</p>	<p>43/54</p>

Survival[tiab] OR Extremities/adverse effects[mh] OR Extremities/physiology[mh])		Survival[tiab] OR Extremities/adverse effects[mh] OR Extremities/physiology[mh] OR adverse effect*[tiab] OR health status[mh:noexp] OR health status[tiab])	
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Question 16: What preoperative optimisation strategies improve outcomes in BSTTs?

CCA Search	Recall	Suggested changes	Now recalls
1 ("Anesthesia"[tiab] OR "Physical Therapy Modalities"[tiab] OR "Physiotherapy"[tiab] OR "Recovery of Function"[tiab])	0/3	N/A	N/A
2 (preoperative period[majr] OR pre-operative[ti] OR preoperative[ti] OR "before surgery"[ti])	1/3	(preoperative period[majr] OR pre- operative*[ti] OR preoperative*[ti] OR "before surgery"[ti] OR preoperative care[mh] OR Neoadjuvant therapy[mh] OR neoadjuvant[ti] OR neo- adjuvant[ti])	1/3
3 (hemostatic techniques[mh] OR embolization[tiab] OR embolisation[tiab] OR nutrition therapy[majr] OR nutrition[tiab] OR diet[tiab] OR diagnosis[mh] OR diagnos*[tiab])	3/3	(hemostatic techniques[mh] OR embolization[tiab] OR embolisation[tiab] OR nutrition therapy[mh] OR nutrition[tiab] OR diet[tiab] OR diagnosis[mh] OR diagnos*[tiab] OR diet therapy[sh] OR imatinib[nm] OR imatinib[ti] OR Glivec[ti] OR Gleevec[ti] OR STI571[ti])	3/3

Question 17: What is the role of regional chemotherapy in BSTTs?

CCA Search	Recall	Suggested changes	Now recalls
(chemotherapy, cancer, regional perfusion[mh] OR regional chemotherapy[tiab] OR regional therapy[tiab] OR limb perfusion[tiab] OR ILP[tiab] OR limb infusion[tiab] OR ILI[tiab])	7/7	N/A	N/A

Question 18: What are the measures to assess treatment response in BSSTs?

CCA Search	Recall	Suggested changes	Now recalls
("pathological response"[tiab] OR "histopathological response"[tiab] OR "histological response"[tiab] OR "tumor necrosis"[ti] OR "tumour necrosis"[ti] OR "tumor regression"[tiab] OR "tumour regression" OR "tumor response"[ti] OR "tumour response"[ti] OR "clinical response"[ti] OR "response evaluation"[tiab] OR "measure treatment"[tiab] OR RECIST[tiab])	12/29	("Response Evaluation Criteria in Solid Tumors"[mh] OR pathological response[tiab] OR histopathologic response[tiab] OR histopathological response[tiab] OR histological response[tiab] OR histologic response[tiab] OR necrosis[tw] OR tumor regression[tiab] OR tumour regression[tiab] OR tumor response[ti] OR tumour response[ti] OR clinical response[ti] OR response evaluation[tiab] OR measure treatment[tiab] OR RECIST[tiab])	24/29

Question 19: What is the ideal duration, frequency and modality of follow-up for BSTTs?

CCA Search	Recall	Suggested changes	Now recalls
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(follow-up[tiab] OR follow up[ti] OR followup[ti])	7/11	(population surveillance[mh:noexp] OR follow-up[tiab] OR follow up[tiab] OR followup[tiab] OR monitoring[ti] OR followed up[tiab] OR followed[ti] OR surveillance[ti])	10/11
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3.3 Study design Searches

The CCA study design searches were tested for recall against the cited references for each CCA Sarcoma Guideline question. The unique identifiers for each reference from the guideline question were created as a search string in PubMed. The study design search component was then combined with the unique identifier search string to determine the recall of cited references.

There was no CCA study design search used in questions 3, 5 and 6 and therefore not tested. Questions 7, 9, 10 and 19 had a recall of 100%

using the CCA design searches. Question 7 had a mistake in the search strategy using the Boolean AND instead of a Boolean OR. When the mistake was corrected the CCA study design search retrieved 100% of the question’s references. The remaining guideline questions had varying recall rates using the CCA study design searches ranging from 28.6% to 91.1%. The results of references retrieved by the CCA study design searches are listed in Table 17. Not applicable in the tables below has been used because the search is optimal or no new terms could be suggested for the search.

Table 17. Recall of CCA Sarcoma Guideline references by study design searches

CCA Sarcoma Guideline Question Number	CCA Study Design Search	CCA Study Design Recall	Modified Study Design Search Recall
1	((systematic*[tiab] AND review*[tiab]) OR meta-analysis[pt] OR meta-analysis as topic[mh] OR meta-analys*[tiab] OR metaanalys*[tiab] OR evidence-based medicine[mh] OR case-control	41/45 (91.1%)	42/45 (74.7%)

	studies[mh] OR case control[tiab] OR case controlled[tiab] OR prospective studies[tw] OR prospective study[tiab] OR retrospective studies[tw] OR retrospective study[tiab] OR cohort[tw] OR reference standard*[tw] OR diagnostic yield[tiab] OR diagnostic accuracy[tiab] OR clinical guideline*[tiab] OR comparative study[pt] OR comparative study[tiab])		
2	((systematic*[tiab] AND review*[tiab]) OR meta-analysis[pt] OR meta-analysis as topic[mh] OR meta-analys*[tiab] OR metaanalys*[tiab] OR case-control studies[mh] OR case control[tiab] OR case controlled[tiab] OR cohort study[tiab] OR diagnostic accuracy[tiab] OR clinical guideline*[tiab])	12/20 (60%)	16/20 (80%)
3	A study design search was not used	N/A	N/A
4	((systematic*[tiab] AND review*[tiab]) OR meta-analysis[pt] OR meta-analysis as topic[mh] OR meta-analys*[tiab] OR metaanalys*[tiab] OR prognostic study[tiab] OR clinical trial[tw] OR	52/59 (81.1%)	56/59 (94.9%)

	prospective studies[tw] OR prospective study[tiab] OR retrospective studies[tw] OR retrospective study[tiab] OR cohort[tw] OR clinical guideline*[tiab] OR case control[tw] OR comparative study[pt] OR comparative study[tiab] OR case series[tw])		
5	A study design search was not used	N/A	N/A
6	A study design search was not used	N/A	N/A
7	((systematic*[tiab] AND review*[tiab]) OR meta-analysis[tw] OR meta-analysis as topic[mh] OR multicenter study[pt] OR randomized controlled trial[mh] OR clinical trial[tw] OR randomised[tiab] OR randomized[tiab] AND cohort studies[mh] OR cohort study[tiab] OR clinical guideline*[tiab])	3/9 (33.3%) Recall when incorrect AND replaced with OR 9/9 (100%)	
8	((systematic*[tiab] AND review*[tiab]) OR meta-analysis[tw] OR meta-analysis as topic[mh] OR multicenter study[pt] OR randomized controlled trial[mh] OR clinical trial[tiab] OR randomised[tiab] OR randomized[tiab])	18/27 (66.7%)	26/27 (96.3%)

	OR clinical guideline*[tiab])		
9	(meta-analysis[pt] OR meta-analys*[tiab] OR review literature as topic[mh] OR systematic review*[tiab] OR randomized controlled trial[pt] OR random allocation[mh] OR clinical trial*[tw] OR clinical trial as topic[mh] OR controlled trial[tiab] OR phase 1[tiab] OR phase 2[tiab] OR phase 3[tiab] OR phase 4[tiab] OR phase I[tiab] OR phase II[tiab] OR phase III[tiab] OR phase IV[tiab] OR guideline[mh] OR clinical practice guideline*[tiab] OR comparative study[pt] OR cohort[tiab] OR prospective study[tw] OR retrospective study[tw] OR multicenter study[pt])	12/12 (100%)	N/A
10	(meta-analysis[pt] OR meta-analys*[tiab] OR review literature as topic[mh] OR systematic review*[tiab] OR randomized controlled trial[pt] OR random allocation[mh] OR clinical trial*[tw] OR clinical trial as topic[mh] OR controlled trial[tiab] OR phase 1[tiab] OR	6/6 (100%)	N/A

	phase 2[tiab] OR phase 3[tiab] OR phase 4[tiab] OR phase I[tiab] OR phase II[tiab] OR phase III[tiab] OR phase IV[tiab] OR guideline[mh] OR clinical practice guideline*[tiab] OR comparative study[pt] OR cohort[tiab] OR prospective study[tw] OR retrospective study[tw] OR multicenter study[pt])		
11	(meta-analysis[pt] OR meta-analys*[tiab] OR review literature as topic[mh] OR systematic review*[tiab] OR randomized controlled trial[pt] OR random allocation[mh] OR clinical trial*[tw] OR clinical trial as topic[mh] OR controlled trial[tiab] OR phase 1[tiab] OR phase 2[tiab] OR phase 3[tiab] OR phase 4[tiab] OR phase I[tiab] OR phase II[tiab] OR phase III[tiab] OR phase IV[tiab] OR guideline[mh] OR clinical practice guideline*[tiab] OR comparative study[pt] OR cohort[tiab] OR prospective study[tw] OR retrospective study[tw] OR multicenter study[pt])	2/4 (50%)	3/4 (75%)
12	(meta-analysis[pt] OR meta-analys*[tiab] OR	4/6 (66.7%)	6/6 (100%)

	<p>review literature as topic[mh] OR systematic review*[tiab] OR randomized controlled trial[pt] OR random allocation[mh] OR clinical trial*[tw] OR clinical trial as topic[mh] OR controlled trial[tiab] OR phase 1[tiab] OR phase 2[tiab] OR phase 3[tiab] OR phase 4[tiab] OR phase I[tiab] OR phase II[tiab] OR phase III[tiab] OR phase IV[tiab] OR guideline[mh] OR clinical practice guideline*[tiab] OR comparative study[pt] OR cohort[tiab] OR prospective study[tw] OR retrospective study[tw] OR multicenter study[pt])</p>		
13	<p>(meta-analysis[pt] OR meta-analys*[tiab] OR review literature as topic[mh] OR systematic review*[tiab] OR randomized controlled trial[pt] OR random allocation[mh] OR clinical trial*[tw] OR clinical trial as topic[mh] OR controlled trial[tiab] OR phase 1[tiab] OR phase 2[tiab] OR phase 3[tiab] OR phase 4[tiab] OR phase I[tiab] OR phase II[tiab] OR phase III[tiab] OR phase IV[tiab] OR</p>	18/31 (58.1%)	28/31 (90.3%)

	guideline[mh] OR clinical practice guideline*[tiab] OR comparative study[pt] OR cohort[tiab] OR prospective study[tw] OR retrospective study[tw])		
14	((systematic*[tiab] AND review*[tiab]) OR meta-analysis[pt] OR meta-analysis as topic[mh] OR meta- analys*[tiab] OR metaanalys*[tiab] OR evidence-based medicine[mh] OR case-control studies[mh] OR case control[tiab] OR case controlled[tiab] OR prospective studies[tw] OR prospective study[tiab] OR retrospective studies[tw] OR retrospective study[tiab] OR cohort[tw] OR clinical guideline*[tiab] OR comparative study[pt] OR comparative study[tiab])	33/50 (66%)	39/50 (78%)
15	(meta-analysis[pt] OR meta-analys*[tiab] OR review literature as topic[mh] OR systematic review*[tiab] OR clinical trial[pt] OR clinical trial*[tiab] OR guideline[mh] OR clinical practice guidelines*[tiab] OR (review[pt] AND systematic*[tiab]) OR cohort studies[mh] OR cohort study[tiab] OR cohort	48/54 (88.9%)	49/54 (90.7%)

	studies[tiab] OR case series[tiab] OR group study[tiab] OR retrospective study[tiab] OR prospective study[tiab] OR retrospective studies[tiab] OR prospective studies[tiab] NOT case report*)		
16	((systematic*[tiab] AND review*[tiab]) OR meta-analysis[pt] OR meta-analysis as topic[mh] OR meta-analys*[tiab] OR metaanalys*[tiab] OR clinical trial[tw] OR prospective studies[tw] OR prospective study[tiab] OR retrospective studies[tw] OR retrospective* [tiab] OR cohort[tw] OR clinical guideline*[tiab] OR comparative study[pt] OR comparative study[tiab])	1/3 (33.3%)	1/3 (33.3%)
17	((systematic*[tiab] AND review*[tiab]) OR meta-analysis[pt] OR meta-analysis as topic[mh] OR meta-analys*[tiab] OR metaanalys*[tiab] OR clinical trial[tw] OR prospective studies[tw] OR prospective study[tiab] OR retrospective studies[tw] OR retrospective* [tiab] OR cohort[tw] OR clinical	6/7 (28.6%)	7/7 (100%)

	guideline*[tiab] OR comparative study[pt] OR comparative study[tiab])		
18	((systematic*[tiab] AND review*[tiab]) OR meta-analysis[pt] OR meta-analysis as topic[mh] OR meta-analys*[tiab] OR metaanalys*[tiab] OR prospective studies[tw] OR prospective study[tiab] OR retrospective studies[tw] OR retrospective* [tiab] OR cohort[tw] OR clinical guideline*[tiab] OR comparative study[pt] OR comparative study[tiab])	19/29 (65.5%)	22/29 (75.9%)
19	((systematic*[tiab] AND review*[tiab]) OR meta-analysis[pt] OR meta-analysis as topic[mh] OR meta-analys*[tiab] OR metaanalys*[tiab] OR prospective studies[tw] OR prospective study[tiab] OR retrospective studies[tw] OR retrospective* [tiab] OR cohort[tw] OR clinical guideline*[tiab] OR comparative study[tw] OR follow-up studies[mh])	11/11 (100%)	N/A

The individual MeSH and textword terms used by the CCA study design searches were grouped and then de-duplicated. The full list of the terms

used in all of the CCA study design searches are listed in Table 18 below, the terms are arranged alphabetically

by publication type ([pt]), MeSH ([mh]) and textwords ([tw], [tiab]).

Table 18. Terms used in the CCA Sarcoma Guidelines study design searches

Publication Type [pt]	MeSH [mh]	Textwords [tw]	Textwords [tiab]
clinical trial[pt] comparative study[pt] meta-analysis[pt] meta-analysis[pt] multicenter study[pt] randomized controlled trial[pt] review[pt] AND systematic*[tiab]	case-control studies[mh] clinical trial as topic[mh] cohort studies[mh] evidence-based medicine[mh] follow-up studies[mh] guideline[mh] meta-analysis as topic[mh] random allocation[mh] randomized controlled trial[mh] review literature as topic[mh]	case control[tw] case series[tw] clinical trial*[tw] clinical trial[tw] cohort[tw] comparative study[tw] meta-analysis[tw] meta-analysis[tw] prospective studies[tw] prospective study[tw] reference standard*[tw] retrospective studies[tw] retrospective study[tw] NOT case report* NOT case report[tw]	case control[tiab] case controlled[tiab] case series[tiab] clinical guideline*[tiab] clinical practice guideline*[tiab] clinical practice guidelines*[tiab] clinical trial*[tiab] clinical trial[tiab] cohort studies[tiab] cohort study[tiab] cohort[tiab] comparative study[tiab] controlled trial[tiab] diagnostic accuracy[tiab] diagnostic yield[tiab] group study[tiab] metaanalys*[tiab] meta-analys*[tiab] phase 1[tiab] phase 2[tiab] phase 3[tiab] phase 4[tiab] phase I[tiab] phase II[tiab] phase III[tiab] phase IV[tiab] prognostic study[tiab] prospective studies[tiab] prospective study[tiab] randomised[tiab] randomized[tiab] retrospective studies[tiab]

			retrospective study[tiab] retrospective*[tiab] review[pt] AND systematic*[tiab] systematic review*[tiab] systematic*[tiab] AND review*[tiab]
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From the list in Table 18 above, two revised search strategies for study design were developed based on the publication type, MeSH and textwords from the CCA study design searches. The differences between the two

searches below is search one relates to question one of the CCA Sarcoma Guidelines. It includes the textwords diagnostic accuracy and diagnostic yield. All the other terms in the two searches are the same.

Modified study design search for CCA Sarcoma Guidelines question 1:

(case control*[tw] OR case series[tiab] OR clinical guideline*[tiab] OR clinical practice guideline*[tiab] OR clinical trial[pt] OR "clinical trials as topic"[mh] OR (clinical[tiab] AND trial[tiab]) OR cohort studies[mh:noexp] OR cohort[tiab] OR comparative stud*[tw] OR Consensus[ti] OR **diagnostic accuracy[tiab]** OR **diagnostic yield[tiab]** OR evidence-based medicine[mh] OR evidence-based[ti] OR followup stud*[tiab] OR follow-up stud*[tw] OR group study[tiab] OR Guideline*[ti] OR guideline[pt] OR "guidelines as topic"[mh] OR metaanalys*[tiab] OR meta-analys*[tw] OR phase 1[tiab] OR phase 2[tiab] OR phase 3[tiab] OR phase 4[tiab] OR phase I[tiab] OR phase II[tiab] OR phase III[tiab] OR phase IV[tiab] OR prospective stud*[tiab] OR prospective studies[mh] OR random allocation[mh] OR random*[tiab] OR reference standard*[tw] OR retrospective stud*[tw] OR review[pt] OR (systematic*[tiab] AND review*[tiab]))

Modified study design search for the remaining CCA Sarcoma Guideline questions:

(case control*[tw] OR case series[tiab] OR clinical guideline*[tiab] OR clinical practice guideline*[tiab] OR clinical trial[pt] OR "clinical trials as topic"[mh] OR (clinical[tiab] AND trial[tiab]) OR cohort studies[mh:noexp] OR cohort[tiab] OR comparative stud*[tw] OR Consensus[ti] OR evidence-based medicine[mh] OR evidence-based[ti] OR followup stud*[tiab] OR follow-up stud*[tw] OR group study[tiab] OR Guideline*[ti] OR guideline[pt] OR "guidelines as topic"[mh] OR metaanalys*[tiab] OR meta-analys*[tw] OR phase 1[tiab] OR phase 2[tiab] OR phase 3[tiab] OR phase 4[tiab] OR phase I[tiab] OR phase II[tiab] OR phase III[tiab] OR phase IV[tiab] OR prospective stud*[tiab] OR prospective studies[mh] OR random allocation[mh] OR random*[tiab] OR reference standard*[tw] OR retrospective stud*[tw] OR review[pt] OR (systematic*[tiab] AND review*[tiab]))

The modified searches were tested for recall against each CCA Sarcoma Guideline question with the results presented in Table 17 above. The recall of the Sarcoma Guideline references was improved for each question with recall ranging from 74.7% to 100%. There was one exception with recall of question 16 not improving, staying at 33.3%. The following study designs were not included in the study design searches but are present in the Sarcoma Guideline references:

- Evaluation studies[pt]
- Case reports[mh]
- Cross-sectional studies[mh]
- Validation studies[pt]
- Evaluation Studies as Topic[mh:noexp]
- Genome-Wide Association Study[mh]

It is recommended that Cancer Council Australia review them for relevance.

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Appendices

Appendix 1: Comparison of the retrieval rates for the sarcoma searches in PubMed

Guideline Question	CCA Sarcoma Search	CCA Sarcoma Search Number Retrieved in PubMed	Specific Sarcoma Search Filter Number Retrieved in PubMed	Sensitive Sarcoma Search Filter Number Retrieved in PubMed
1	Sarcoma[mh] OR sarcoma*[tiab] OR bone neoplasm[majr] OR bone neoplasm*[tiab] OR bone tumor*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR bone lesion*[tiab] OR musculoskeletal neoplasm*[tiab] OR musculoskeletal tumor*[tiab] OR musculoskeletal tumour*[tiab] OR musculoskeletal lesion*[tiab] OR musculoskeletal cancer*[tiab] OR soft tissue neoplasm[majr] OR soft tissue neoplasm*[tiab] OR soft tissue tumor*[tiab] OR soft tissue tumour*[tiab] OR soft tissue lesion*[tiab] OR soft tissue cancer*[tiab] OR angiosarcoma*[tiab] OR chondrosarcoma*[tiab] OR ewing*[tiab] OR fibrosarcoma*[tiab] OR gastrointestinal stromal tumor*[tiab] OR gastrointestinal stromal tumour*[tiab] OR GIST[tiab] OR leiomyosarcoma*[tiab] OR liposarcoma*[tiab] OR myxofibrosarcoma*[tiab] OR neurofibrosarcoma*[tiab] OR osteosarcoma*[tiab] OR PEComa*[tiab] OR rhabdomyosarcoma*[tiab] NOT Kaposi*[tiab])	232318	120778	148459
2	((Sarcoma[mh] OR sarcoma*[tiab] OR angiosarcoma*[tiab] OR	167433	120778	148459

	<p>chondrosarcoma*[tiab] OR ewing*[tiab] OR fibrosarcoma*[tiab] OR gastrointestinal stromal tumor*[tiab] OR gastrointestinal stromal tumour*[tiab] OR GIST[tiab] OR leiomyosarcoma*[tiab] OR liposarcoma*[tiab] OR myxofibrosarcoma*[tiab] OR neurofibrosarcoma*[tiab] OR osteosarcoma*[tiab] OR PEComa*[tiab] OR rhabdomyosarcoma*[tiab]) OR ((Sarcoma[majr] OR sarcoma*[tiab]) AND (bone Neoplasms/diagnosis[majr:noexp] OR bone tumor*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR bone lesion*[tiab] OR musculoskeletal neoplasm*[tiab] OR musculoskeletal tumor*[tiab] OR musculoskeletal tumour*[tiab] OR musculoskeletal lesion*[tiab] OR musculoskeletal cancer*[tiab] OR soft tissue neoplasm/diagnosis[majr:noexp] OR soft tissue tumor*[tiab] OR soft tissue tumour*[tiab] OR soft tissue lesion*[tiab] OR soft tissue cancer*[tiab]))))</p>			
3	<p>(Sarcoma[mh] OR sarcoma*[tiab] OR bone neoplasm[majr] OR bone neoplasm*[tiab] OR bone tumor*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR bone lesion*[tiab] OR musculoskeletal neoplasm*[tiab] OR musculoskeletal tumor*[tiab] OR musculoskeletal tumour*[tiab] OR musculoskeletal lesion*[tiab] OR musculoskeletal cancer*[tiab] OR soft tissue neoplasm[majr] OR soft tissue neoplasm*[tiab] OR soft tissue tumor*[tiab] OR soft tissue tumour*[tiab] OR soft tissue lesion*[tiab] OR soft tissue cancer*[tiab] OR angiosarcoma*[tiab] OR</p>	226452	120778	148459

	chondrosarcoma*[tiab] OR ewing*[tiab] OR fibrosarcoma*[tiab] OR leiomyosarcoma*[tiab] OR liposarcoma*[tiab] OR myxofibrosarcoma*[tiab] OR neurofibrosarcoma*[tiab] OR osteosarcoma*[tiab] OR PEComa*[tiab] OR rhabdomyosarcoma*[tiab] NOT Kaposi*[tiab])			
4	((Sarcoma[mh] OR sarcoma[tiab] OR neoplasms, bone tissue[majr] OR bone tumor*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR bone lesion*[tiab] OR soft tissue neoplasm[majr] OR soft tissue tumor*[tiab] OR soft tissue tumour*[tiab] OR soft tissue lesion*[tiab] OR soft tissue cancer*[tiab] OR PEComa*[tiab] OR primitive neuroectodermal[tw] OR PNET[tiab] NOT Kaposi*[tiab]))	160863	120778	148459
5	((Sarcoma[mh] OR sarcoma*[tiab] OR *sarcoma[tiab] OR bone neoplasm[majr] OR bone neoplasm*[tiab] OR bone tumor*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR bone lesion*[tiab] OR musculoskeletal neoplasm*[tiab] OR musculoskeletal tumor*[tiab] OR musculoskeletal tumour*[tiab] OR musculoskeletal lesion*[tiab] OR musculoskeletal cancer*[tiab] OR soft tissue neoplasm[majr] OR soft tissue neoplasm*[tiab] OR soft tissue tumor*[tiab] OR soft tissue tumour*[tiab] OR soft tissue lesion*[tiab] OR soft tissue cancer*[tiab] OR angiosarcoma*[tiab] OR chondrosarcoma*[tiab] OR ewing*[tiab] OR fibrosarcoma*[tiab] OR leiomyosarcoma*[tiab] OR liposarcoma*[tiab] OR	227236	120778	148459

	myxofibrosarcoma*[tiab] OR neurofibrosarcoma*[tiab] OR osteosarcoma*[tiab] OR PEComa*[tiab] OR rhabdomyosarcoma*[tiab] NOT Kaposi*[tiab]))			
6	((Sarcoma[mh] OR sarcoma*[tiab] OR *sarcoma[tiab] OR bone neoplasm[majr] OR bone neoplasm*[tiab] OR bone tumor*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR bone lesion*[tiab] OR musculoskeletal neoplasm*[tiab] OR musculoskeletal tumor*[tiab] OR musculoskeletal tumour*[tiab] OR musculoskeletal lesion*[tiab] OR musculoskeletal cancer*[tiab] OR soft tissue neoplasm[majr] OR soft tissue neoplasm*[tiab] OR soft tissue tumor*[tiab] OR soft tissue tumour*[tiab] OR soft tissue lesion*[tiab] OR soft tissue cancer*[tiab] OR angiosarcoma*[tiab] OR chondrosarcoma*[tiab] OR ewing*[tiab] OR fibrosarcoma*[tiab] OR leiomyosarcoma*[tiab] OR liposarcoma*[tiab] OR myxofibrosarcoma*[tiab] OR neurofibrosarcoma*[tiab] OR osteosarcoma*[tiab] OR PEComa*[tiab] OR rhabdomyosarcoma*[tiab] NOT Kaposi*[tiab]))	227236	120778	148459
7	((osteosarcoma[mh] OR osteosarcoma[tiab] OR rhabdomyosarcoma[mh] OR rhabdomyosarcoma[tiab] OR neuroectodermal tumors, primitive[mh] OR primitive neuroectodermal[tiab] OR PNET[tiab] OR sarcoma, ewing[mh] OR ewing*[tiab]))	72613	120778	148459
8	(Sarcoma[mh] OR sarcoma*[tiab] OR bone neoplasm[majr] OR bone neoplasm*[tiab] OR bone	264460	120778	148459

	tumor*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR bone lesion*[tiab] OR musculoskeletal neoplasm*[tiab] OR musculoskeletal tumor*[tiab] OR musculoskeletal tumour*[tiab] OR musculoskeletal lesion*[tiab] OR musculoskeletal cancer*[tiab] OR soft tissue neoplasm[majr] OR soft tissue neoplasm*[tiab] OR soft tissue tumor*[tiab] OR soft tissue tumour*[tiab] OR soft tissue lesion*[tiab] OR soft tissue cancer*[tiab] OR angiosarcoma*[tiab] OR chondrosarcoma*[tiab] OR ewing*[tiab] OR fibrosarcoma*[tiab] OR gastrointestinal stromal tumor*[tiab] OR gastrointestinal stromal tumour*[tiab] OR GIST[tiab] OR leiomyosarcoma*[tiab] OR liposarcoma*[tiab] OR myxofibrosarcoma*[tiab] OR neurofibrosarcoma*[tiab] OR osteosarcoma*[tiab] OR PEComa*[tiab] OR rhabdomyosarcoma*[tiab] OR neuroectodermal tumors, primitive[mh] OR primitive neuroectodermal[tiab] OR PNET[tiab] OR Solitary Fibrous Tumors*[tiab] OR Hemangiopericytoma*[tiab] OR Hemangioendothelioma, Epithelioid*[tiab] NOT Kaposi*[tiab])			
9	(((sarcoma*[tiab] OR sarcoma[mh])))	148049	120778	148459
10	(((sarcoma*[tiab] OR sarcoma[mh])))	148049	120778	148459
11	(((sarcoma*[tiab] OR sarcoma[mh])))	148049	120778	148459
12	(((retroperitoneal sarcoma[tiab] OR retroperitoneal[tiab] OR Retroperitoneal Neoplasms[mh]	26628	120778	148459

	OR Retroperitoneal liposarcoma [Supplementary Concept] OR Retroperitoneal liposarcomas[tiab] OR Retroperitoneal leiomyosarcomas[tiab] OR Malignant fibrous histiocytomas[tiab]))))			
13	(Sarcoma[mh] OR sarcoma[tiab] OR sarcomas[tiab] OR neoplasms, bone tissue[mh] OR bone neoplasm*[tiab] OR bone tumor*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR soft tissue neoplasm[mh] OR soft tissue neoplasm*[tiab] OR soft tissue tumor*[tiab] OR soft tissue tumour*[tiab] OR soft tissue cancer*[tiab] OR Ewing*[tiab] OR osteosarcoma[tiab] OR rhabdomyosarcoma[tiab] NOT Kaposi*[tiab])	164317	120778	148459
14	((Sarcoma[mh] OR sarcoma*[tiab] OR angiosarcoma*[tiab] OR chondrosarcoma*[tiab] OR ewing*[tiab] OR fibrosarcoma*[tiab] OR leiomyosarcoma*[tiab] OR liposarcoma*[tiab] OR myxofibrosarcoma*[tiab] OR neurofibrosarcoma*[tiab] OR osteosarcoma*[tiab] OR PEComa*[tiab] OR PNET[tiab] OR rhabdomyosarcoma*[tiab]) OR neoplasm, bone tissue[majr] OR ((Sarcoma[majr] OR sarcoma*[tiab]) AND (bone Neoplasms[majr] OR bone tumor*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR bone lesion*[tiab] OR musculoskeletal neoplasm*[tiab] OR musculoskeletal tumor*[tiab] OR musculoskeletal tumour*[tiab] OR musculoskeletal lesion*[tiab] OR musculoskeletal cancer*[tiab] OR soft tissue neoplasm[majr] OR soft tissue tumor*[tiab] OR soft	170145	120778	148459

	tissue tumour*[tiab] OR soft tissue lesion*[tiab] OR soft tissue cancer*[tiab]))))			
15	((Sarcoma[majr] OR sarcoma[tiab] OR sarcomas[tiab] OR neoplasms, bone tissue[majr] OR bone neoplasm*[tiab] OR bone tumor*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR soft tissue neoplasm[mh] OR soft tissue neoplasm*[tiab] OR soft tissue tumor*[tiab] OR soft tissue tumour*[tiab] OR soft tissue cancer*[tiab] OR Ewing*[tiab] OR osteosarcoma[tiab] OR rhabdomyosarcoma[tiab] NOT Kaposi*[tiab]))	144849	120778	148459
16	(Sarcoma[mh] OR sarcoma*[tiab] OR *sarcoma[tiab] OR bone neoplasm[majr] OR bone neoplasm*[tiab] OR bone tumor*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR bone lesion*[tiab] OR musculoskeletal neoplasm*[tiab] OR musculoskeletal tumor*[tiab] OR musculoskeletal tumour*[tiab] OR musculoskeletal lesion*[tiab] OR musculoskeletal cancer*[tiab] OR soft tissue neoplasm[majr] OR soft tissue neoplasm*[tiab] OR soft tissue tumor*[tiab] OR soft tissue tumour*[tiab] OR soft tissue lesion*[tiab] OR soft tissue cancer*[tiab] OR angiosarcoma*[tiab] OR chondrosarcoma*[tiab] OR ewing*[tiab] OR fibrosarcoma*[tiab] OR leiomyosarcoma*[tiab] OR liposarcoma*[tiab] OR myxofibrosarcoma*[tiab] OR neurofibrosarcoma*[tiab] OR osteosarcoma*[tiab] OR PEComa*[tiab] OR rhabdomyosarcoma*[tiab] NOT Kaposi*[tiab])	227236	120778	148459

17	((Sarcoma[mh] OR sarcoma*[tiab] OR *sarcoma[tiab] OR neoplasms, bone tissue[mh] OR bone neoplasm[majr] OR bone neoplasm*[tiab] OR bone tumor*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR bone lesion*[tiab] OR musculoskeletal neoplasm*[tiab] OR musculoskeletal tumor*[tiab] OR musculoskeletal tumour*[tiab] OR musculoskeletal lesion*[tiab] OR musculoskeletal cancer*[tiab] OR soft tissue neoplasm[majr] OR soft tissue neoplasm*[tiab] OR soft tissue tumor*[tiab] OR soft tissue tumour*[tiab] OR soft tissue lesion*[tiab] OR soft tissue cancer*[tiab] OR angiosarcoma*[tiab] OR chondrosarcoma*[tiab] OR ewing*[tiab] OR fibrosarcoma*[tiab] OR leiomyosarcoma*[tiab] OR liposarcoma*[tiab] OR myxofibrosarcoma*[tiab] OR neurofibrosarcoma*[tiab] OR osteosarcoma*[tiab] OR PEComa*[tiab] OR rhabdomyosarcoma*[tiab] NOT Kaposi*[tiab]))	230578	120778	148459
18	(Sarcoma[mh] OR sarcoma[tiab] OR sarcomas[tiab] OR neoplasms, bone tissue[mh] OR bone neoplasm*[tiab] OR bone tumor*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR soft tissue neoplasm[mh] OR soft tissue neoplasm*[tiab] OR soft tissue tumor*[tiab] OR soft tissue tumour*[tiab] OR soft tissue cancer*[tiab] OR Ewing*[tiab] OR PNET[tiab] OR osteosarcoma[tiab] OR rhabdomyosarcoma[tiab] NOT Kaposi*[tiab])	165444	120778	148459
19	(Sarcoma[majr] OR sarcoma[tiab] OR sarcomas[tiab] OR neoplasms, bone tissue[majr] OR bone tum	139103	120778	148459

	OR*[tiab] OR bone tumour*[tiab] OR bone cancer*[tiab] OR bone lesion*[tiab] OR soft tissue neoplasm[majr] OR soft tissue tum OR*[tiab] OR soft tissue tumour*[tiab] OR soft tissue lesion*[tiab] OR soft tissue cancer*[tiab] OR PEComa*[tiab] OR primitive neuroectodermal[tw] OR PNET[tiab] NOT Kaposi*[tiab])			
--	--	--	--	--