



# GUIDANCE FOR KYPHOPLASTY AND VERTEBROPLASTY FOR CANCER PATIENTS IN ONTARIO:

Recommendations Report 2017

Kyphoplasty and Vertebroplasty Working Group

Interventional Oncology Steering Committee

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### *Document Revision History*

<b>Document Date</b>	<b>Revision Description</b>
<b>August 28, 2017</b>	Original document
<b>October 5, 2018</b>	Inclusion of recommendations for email communication for multidisciplinary consultation, when necessary. Clarification that procedures are location agnostic and includes those performed in interventional radiology suites and operating rooms. Inclusion of Malignant Potential Diagnosis Codes (Appendix B). Inclusion of Kyphoplasty and Vertebroplasty for Cancer Patients Referral Checklist (Appendix C).

## Background

Vertebral compression fractures (VCFs) are a serious problem for cancer patients with multiple myeloma and spinal metastases from multiple soft tissue primary cancers, including breast, prostate, and lung cancers. In addition to VCFs caused by cancer and metastases, VCFs may also result from bone loss caused by specific chemotherapy and radiation treatment protocols. Fractures in cancer patients may occur at multiple vertebral levels and cause pain, comorbidities, spinal deformities and compromised lung function. The fractures can cause mass effects on the spinal cord and nerves. Left untreated, the patient may suffer nerve compression which may result in lack of sensation, paralysis, reduced mobility, reduced sensation, balance problems, and gastrointestinal and urinary incontinence.

In 2016, Health Quality Ontario (HQP) conducted a health technology assessment to assess the safety and effectiveness of vertebroplasty or kyphoplasty as a treatment option for cancer patients with VCFs. This resulted in recommendations from the Ontario Health Technology Advisory Committee (OHTAC) [Vertebral Augmentation Involving Vertebroplasty or Kyphoplasty for Cancer-Related Vertebral Compression Fractures](#) (1). Two main recommendations were made:

- Vertebral augmentation (either kyphoplasty or vertebroplasty) be publicly funded and made accessible for appropriately selected cancer patients with vertebral compression fractures; and
- Cancer Care Ontario provide provincial oversight for the vertebral augmentation services for cancer patients and work with clinical experts to determine the criteria needed for patient selection for kyphoplasty or vertebroplasty.

In vertebroplasty, bone cement is injected through the hollow needle into the fractured bone. In kyphoplasty, a cavity is first created by inserting and inflating a balloon through the needle to compact the fractured bone prior to cement injection for improved control in cement deposition with the additional benefit of variable height restoration to the collapsed vertebra.

Although both kyphoplasty and vertebroplasty are performed outside of oncology (e.g., osteoporotic patient populations), the scope of this recommendations report is limited to cancer patients.

## Value for Money

As more patients are able to access these therapies, long term opioid use, emergency room utilization and the use of diagnostic imaging services for pain in this patient population are expected to decrease, resulting in value to the system.

This report also supports optimization of health care resources with the recommendation that most cases can receive the less costly vertebroplasty procedure, with the more expensive kyphoplasty procedure used in defined clinical scenarios only. Based on an economic analysis performed by Health Quality Ontario, the cost of kyphoplasty is approximately 170% greater than that of vertebroplasty (2). In order to ensure access to quality care and improved value for money is supported across Ontario's health system, Cancer Care Ontario will fund incremental volumes for vertebral augmentation services for cancer patients in Ontario in accordance with this recommendations report. In an ongoing effort to ensure value for money, Cancer Care Ontario will monitor shifts in kyphoplasty and vertebroplasty volumes going forward.

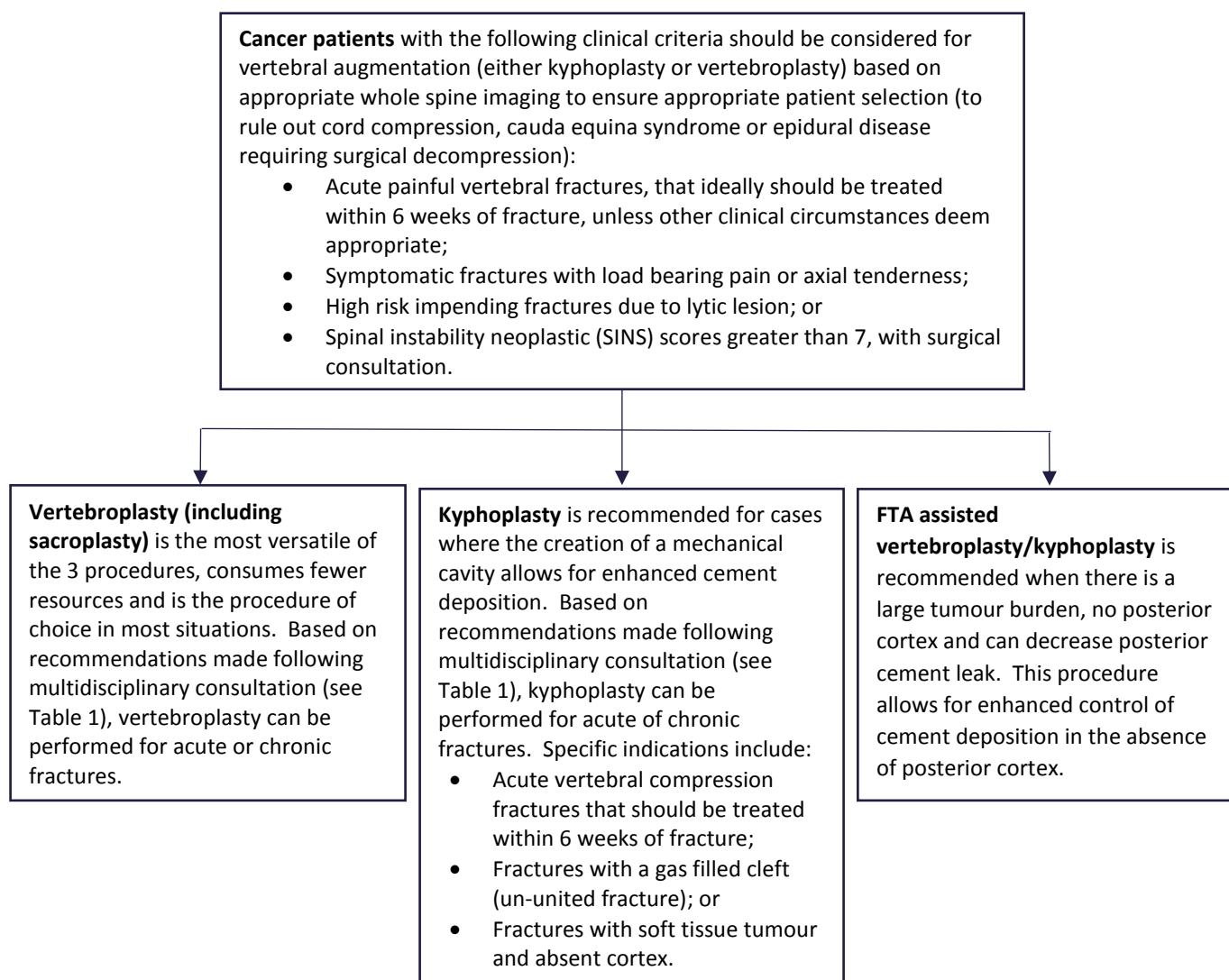
## Recommendations for Vertebral Augmentation involving Kyphoplasty or Vertebroplasty for Cancer-Related Vertebral Compression Fractures

The following recommendations leverage a systematic review (3) conducted by HQO in May 2016 and are derived from a limited evidentiary base comparing kyphoplasty and vertebroplasty (4, 5). These recommendations are also informed by consensus expert opinion of the Kyphoplasty and Vertebroplasty Working Group (membership included in Appendix A) and the Interventional Oncology Steering Committee at Cancer Care Ontario.

### Clinical Criteria

The following figure describes the clinical criteria for when vertebroplasty, focal tumour ablation (FTA) assisted vertebroplasty/kyphoplasty and kyphoplasty should be performed for cancer patients.

**FIGURE 1: CLINICAL CRITERIA FOR WHEN VERTEBROPLASTY, KYPHOPLASTY OR FOCAL TUMOUR ABLATION (FTA) ASSISTED VERTEBROPLASTY/KYPHOPLASTY SHOULD BE PERFORMED FOR CANCER-RELATED VERTEBRAL COMPRESSION FRACTURES.**



## Rationale

The decision to perform either kyphoplasty or vertebroplasty depends on the ability to control cement deposition through cavity creation by balloon or FTA, and prevent posterior cement extravasation that potentially may cause cord compression. Currently, there is insufficient evidence to determine which procedure is superior in performance for acute or chronic fractures. These recommendations are consensus driven and will be updated as additional evidence becomes available. Multidisciplinary cancer conference (MCC) review should determine the choice in different, difficult or complex settings (see Multidisciplinary Care section).

## Role of Radiation Treatment

Radiation therapy is the standard of care for palliative pain relief for cancer patients and may be delivered before or after treatment along with kyphoplasty or vertebroplasty. Radiation treatment should be offered to patients with painful vertebral metastases or symptomatic vertebral fractures. Radiation treatment may be complimented by a referral to interventional radiology/surgery for kyphoplasty or vertebroplasty, as appropriate.

Patients with radiation induced fractures (e.g., from stereotactic body radiation therapy (SBRT)) may benefit from kyphoplasty or vertebroplasty (6).

## Absolute Contraindications

Absolute contraindications (7) for kyphoplasty and vertebroplasty are as follows:

- Presence of cord compression
- Spinal instability
- Presence of septicemia/sepsis
- Ongoing bacteremia
- Sclerotic bone metastases (for kyphoplasty)

## Service Provider Requirements

### Multidisciplinary Care

Patients being considered for treatment with kyphoplasty or vertebroplasty must receive care under the oversight of a multidisciplinary care team. Procedures may be performed in Interventional Radiology Suites by interventional radiologists or interventional neuroradiologists, and in the Operating Room by neurosurgeons or orthopaedic surgeons. The following table and flow diagram describes the differentiation between when multidisciplinary consultation and review at MCCs are recommended.

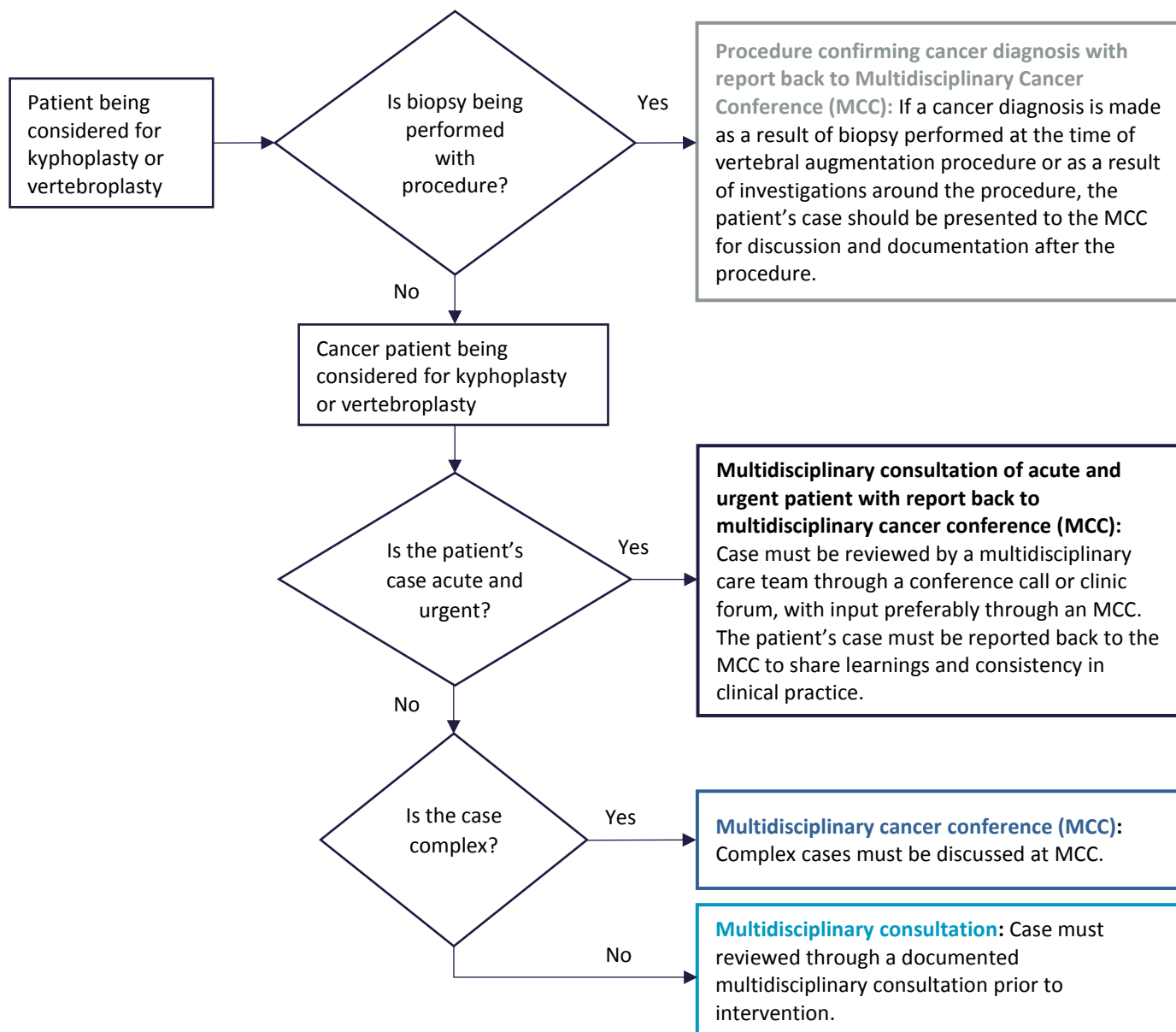
**TABLE 1:** RECOMMENDED TYPES OF MULTIDISCIPLINARY CARE SCENARIOS FOR PATIENTS BEING CONSIDERED FOR TREATMENT WITH KYPHOPLASTY OR VERTEBROPLASTY.

Multidisciplinary care scenario	Recommendation
Procedure confirming cancer diagnosis with report back to MCC	If a cancer diagnosis is made as a result of biopsy performed at the time of vertebral augmentation procedure or as a result of investigations around the procedure, the patient's case should be presented to the MCC for discussion and documented after the procedure.

Multidisciplinary care scenario	Recommendation
<p><b>Multidisciplinary consultation of acute and urgent patient with report back to MCC</b></p>	<p>In clinical circumstances where the case should be discussed at a multidisciplinary cancer conference, but is <u>acute and urgent</u>, the patient’s case must at least be reviewed by a multidisciplinary care team involving a spine surgeon, radiation oncologist, radiologist, and interventional radiologist, as relevant to the case through a conference call or clinic forum, with input preferably through a formal MCC where possible. The patient’s case must be reported back to the MCC to share learnings and consistency in clinical practice.</p> <p>An example of an acute and urgent case is a patient with mechanical destruction due to spinal metastases (e.g., patients with acute fractures with severe pain crisis) that may benefit from having kyphoplasty or vertebroplasty prior to radiation treatment. In this scenario, a multidisciplinary consultation, including consultation with a spine surgeon, must be performed to determine the most appropriate intervention.</p>
<p><b>Multidisciplinary cancer conference (MCC)</b></p>	<p>The following complex cases <u>must</u> be discussed at MCC (on-site or off-site) prior to intervention:</p> <ul style="list-style-type: none"> <li>• Spine Instability Neoplastic Score (SINS) greater than 7</li> <li>• Prophylactic referrals for cases with bone metastases (e.g., in thoracic spine)</li> <li>• Patients with impending at risk fracture</li> <li>• Patients with fractures between C7 and T4 that are being considered for kyphoplasty or vertebroplasty (i.e., above T5)</li> <li>• Patients requiring multi-modal treatments (e.g., recurrent, radiated, post-SBRT, post-RFA)</li> <li>• Patients which require decompression of cord</li> <li>• Patients with vertebral collapse and tissue in the spinal canal (procedures performed on these patients should have surgeons and radiologists on stand-by)</li> </ul> <p>MCCs are regularly scheduled meetings where healthcare providers discuss the diagnosis and treatment of individual cancer patients. There is increasing evidence that clinical evaluation and patient selection by a multidisciplinary care team contribute to improved patient outcomes (8). Cancer Care Ontario has developed standards, tools and a performance measurement strategy to support the broad implementation of <a href="#">MCCs</a> (9). This includes disease-site specific criteria for organization, attendees and types of cases to be brought forward.</p> <p>For kyphoplasty or vertebroplasty, it is recommended that MCC participants involved in the discussion of complex patient cases listed above, include a spine surgeon, radiation oncologist, radiologist, and interventional radiologist, as relevant to the case.</p>

Multidisciplinary care scenario	Recommendation
<p><b>Multidisciplinary consultation</b></p>	<p>Patients being considered for treatment with kyphoplasty or vertebroplasty must receive care under the oversight of a multidisciplinary care team and have their case reviewed through a documented multidisciplinary consultation prior to intervention. This multidisciplinary consultation can take place outside of a formal MCC setting, through a conference call or clinic forum. Documentation of this consultation must be recorded in the patient chart. Multidisciplinary consultation through a conference call or clinic forum is preferable. In some cases due to the need for facilitating patient care and in order to receive the appropriate clinical input email communication for multidisciplinary consultation may be necessary. In those situations the email communication must be encrypted, secure and privacy protected. Following email communication, the interventional radiologist or surgeon (i.e., the physician performing the kyphoplasty or vertebroplasty procedure for the patient) must accept the responsibility of documenting this discussion, treatment decisions and who was involved in the consultation, in the patient chart, prior to intervention.</p> <p>For kyphoplasty or vertebroplasty, it is recommended that this multidisciplinary consultation include a surgeon, radiation oncologist, radiologist, and interventional radiologist, as relevant to the case.</p>

FIGURE 2: FLOW DIAGRAM OF RECOMMENDED TYPES OF MULTIDISCIPLINARY CARE SCENARIOS FOR PATIENTS BEING CONSIDERED FOR TREATMENT WITH KYPHOPLASTY OR VERTEBROPLASTY.



While outside the scope of this document, appropriate pain management should be provided. Cancer Care Ontario's 'Symptom Management Guides-to-Practice: Pain' is a valuable resource and should be considered along with these recommendations. These guides are developed to help healthcare professionals assess and appropriately manage a patient's cancer-related symptoms, available here: <https://www.cancercareontario.ca/symptom-management>.

#### Volume Recommendations

While evidence to support a minimal service volume remains lacking, the Working Group and Steering Committee recommends that each physician performs 36 kyphoplasty or vertebroplasty procedures over a three-year period



in order to maintain competence and optimize patient outcomes. These procedures can be a combination of osteoporotic and cancer cases.

The Steering Committee will guide the development of a process to monitor volumes and patient outcomes in alignment with the Interventional Radiology Program at Cancer Care Ontario. These volume recommendations will undergo periodic review and will be adjusted as relevant information becomes available.

#### Training Recommendations

In addition to performing sufficient volumes to maintain expertise, physicians performing kyphoplasty and vertebroplasty procedures in Ontario must demonstrate that they have satisfactory training and/or experience in performing these procedures, consistent with those in the Provincial Plan for FTA Services (9). Providers should comply with the following training requirements:

1. Documentation of training;

**OR**

2. Experience performing kyphoplasty and vertebroplasty procedures with cancer patients.

As additional guidance and training become available in this evolving area of practice, they will be incorporated into these recommendations.

#### Quality Assurance

A measurement framework will be put into place to ensure Ontario cancer patients have access to the highest quality interventional oncology services. Relevant indicators to measure access to services, patient outcomes and system performance will be developed for kyphoplasty and vertebroplasty services.

#### Conclusions

Kyphoplasty and vertebroplasty can be an appropriate treatment option for select cancer patients. These recommendations provide the basis for delivering vertebral augmentation in Ontario for cancer patients to ensure timely access to high quality, effective and sustainable care.

## References

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9. Cancer Care Ontario Multidisciplinary Cancer Conference Tools. Available at <https://www.cancercare.on.ca/cms/One.aspx?portalId=1377&pageId=63470>.
10. Interventional Oncology Steering Committee. Provincial Plan for Focal Tumour Ablation Services. Toronto, Cancer Care Ontario; 2017. Available at: [www.cancercare.on.ca/fta](http://www.cancercare.on.ca/fta).

## Appendices

### Appendix A: Kyphoplasty and Vertebroplasty Working Group Members

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### Appendix B: Malignant Potential Diagnosis Codes

As recommended by the Interventional Oncology Steering Committee, the following list of significant malignant potential diagnosis codes as defined for the Systemic Treatment Quality Based Procedure (ST-QBP), will be considered in-scope for these recommendations.

ICD 10 CA International Classification of Diseases and Related Problems (Canadian Version 10)	
Diagnosis Code	Description

C00* - C97	Range of Malignant ICD 10 codes
D37* - D49	Range of Malignant ICD 10 codes
<b>Below is a list of ICD-10 codes which have been identified by the Benign Haematology subgroup as having a significant malignant potential and therefore would be considered malignant</b>	
D050	Lobular carcinoma in situ of breast
D051	Intraductal carcinoma in situ of breast
D057	Other carcinoma in situ of breast
D059	Carcinoma in situ of breast unspecified
D45	Polycythaemia vera
D460	Refract anaemia wo ring siderob so state
D461	Refractory anaemia w ring sideroblasts
D462	Refractory anaemia with excess of blasts
D463	RAEB with transformation
D464	Refractory anaemia unspecified
D465	Refractory anaemia multi-lineage dysplas
D466	Myelodyspl syndr w isolate del5q chrom
D467	Other myelodysplastic syndromes
D469	Myelodysplastic syndrome unspecified
D471	Chronic myeloproliferative disease
D472	Monoclonal gammopathy undet signif
D473	Essential thrombocythaemia
D474	Osteomyelofibrosis
D590	Drug-induced autoimm haemolytc anaemia
D591	Other autoimmune haemolytic anaemias
D592	Drug-ind non-autoimm haemolytc anaemia
D595	Paroxysmal nocturnal haemoglobinuria
D600	Chronic acquired pure red cell aplasia
D609	Acquired pure red cell aplasia unspec
D610	Constitutional aplastic anaemia
D611	Drug-induced aplastic anaemia
D613	Idiopathic aplastic anaemia
D618	Other specified aplastic anaemias
D619	Aplastic anaemia unspecified
D643	Other sideroblastic anaemias
D649	Anaemia unspecified
D684	Acquired coagulation factor deficiency
D6930	Evans' syndrome
D6938	Oth idiopathic thrombocytopenic purpura
D694	Other primary thrombocytopenia
D700	Neutropenia
D721	Eosinophilia
D729	Disorder of white blood cells NOS
D758	Oth spec dis blood & blood-forming organ
D759	Dis blood & blood-forming organs NOS
D760	Langerhans cell histiocytosis NEC
D761	Haemophagocytic lymphohistiocytosis
D763	Other histiocytosis syndromes
E853	Secondary systemic amyloidosis
E854	Organ-limited amyloidosis
E858	Other amyloidosis
E859	Amyloidosis unspecified
L412	Lymphomatoid papulosis
L982	Febrile neutrophilic dermatosis [Sweet]
L990	Amyloidosis of skin
M050	Felty's syndrome
Q822	Mastocytosis
R590	Localized enlarged lymph nodes
R591	Generalized enlarged lymph nodes

R599	Enlarged lymph nodes unspecified
R72	Abnormality of white blood cells NEC
Z529	Donor of unspecified organ or tissue
Z523	Bone marrow donor
D073	Ca in situ oth/unspec female gen org
D475	Chronic eosinophilic leukaemia
O010	Classical hydatidiform mole
O011	Incomplete and partial hydatidiform mole

ICD-03 International classification of Diseases for Oncology(ver 3.0)		
Topography code	Morphology Code	Behaviour
C00* - C80*	*3	Malignant, Primary
C00* - C80*	*6	Malignant, Secondary
C00* - C80*	*9	Malignant, uncertain whether primary or secondary

Below is a list of ICD-03 codes reported in FY 13/14 which have a behaviour code of 0, 1 and 2 and have been identified as either malignant or have a significant malignant potential.		
Topography Code	Morphology Code	Topography and Morphology Description
C421	97651	Bone marrow Monoclonal gammopathy of undetermined significance
C420	97651	Blood Monoclonal gammopathy of undetermined significance
C424	97651	Hematopoietic system NOS Monoclonal gammopathy of undetermined significance
C509	85002	Breast NOS Intraductal carcinoma, noninfiltrating, NOS
C423	97691	Reticuloendothelial system NOS Immunoglobulin deposition disease
C504	85002	Upper-outer quadrant of breast Intraductal carcinoma, noninfiltrating, NOS
C589	91001	Placenta Invasive hydatidiform mole
C421	99701	Bone marrow Lymphoproliferative disorder, NOS
C169	89361	Stomach NOS Gastrointestinal stromal tumor, NOS
C508	85002	Overlapping lesion of breast Intraductal carcinoma, noninfiltrating, NOS
C509	85202	Breast NOS Lobular carcinoma in situ, NOS
C421	99751	Bone marrow Myeloproliferative disease, NOS
C499	88211	Other soft tissues Aggressive fibromatosis
C569	86201	Ovary Granulosa cell tumor, adult type
C809	97651	Unknown primary site Monoclonal gammopathy of undetermined significance
C421	97691	Bone marrow Immunoglobulin deposition disease
C505	85002	Lower-outer quadrant of breast Intraductal carcinoma, noninfiltrating, NOS
C719	95391	Brain NOS Atypical meningioma
C179	89361	Small intestine Gastrointestinal stromal tumor, NOS
C379	85801	Thymus Thymoma, NOS
C379	85831	Thymus Thymoma, type B1, NOS
C379	85841	Thymus Thymoma, type B2, NOS
C383	88221	Mediastinum NOS Abdominal fibromatosis
C420	97691	Blood Immunoglobulin deposition disease
C421	97511	Bone marrow Langerhans cell histiocytosis, NOS
C424	97401	Hematopoietic system NOS Mastocytoma, NOS
C449	97401	Skin NOS Mastocytoma, NOS
C494	88211	Soft tissues of abdomen Aggressive fibromatosis
C502	85002	Upper-inner quadrant of breast Intraductal carcinoma, noninfiltrating, NOS
C502	85072	Upper-inner quadrant of breast Intraductal micropapillary carcinoma
C503	85002	Lower-inner quadrant of breast Intraductal carcinoma, noninfiltrating, NOS
C504	85072	Upper-outer quadrant of breast Intraductal micropapillary carcinoma
C508	85072	Overlapping lesion of breast Intraductal micropapillary carcinoma
C508	85202	Overlapping lesion of breast Lobular carcinoma in situ, NOS
C509	97691	Breast NOS Immunoglobulin deposition disease
C569	84621	Ovary Serous papillary cystic tumor of borderline malignancy

C569	84631	Ovary Serous surface papillary tumor of borderline malignancy
C569	85901	Ovary Sex cord-gonadal stromal tumor, NOS
C570	80102	Fallopian tube Carcinoma in situ, NOS
C709	95391	Meninges NOS Atypical meningioma
C710	91611	Cerebrum Hemangioblastoma
C710	95391	Cerebrum Atypical meningioma
C729	91611	Nervous system NOS Hemangioblastoma
C771	99701	Intrathoracic lymph nodes Lymphoproliferative disorder, NOS
C502	85222	Upper-inner quadrant of breast Intraductal carcinoma and lobular carcinoma in situ
C570	80102	Fallopian tube Carcinoma in situ, NOS
C421	99643	Bone marrow Hypereosinophilic syndrome
C589	91000	Placenta Hydatidiform mole, NOS
C181	82401	Appendix Carcinoid tumor of uncertain malignant potential

## Appendix C: Kyphoplasty and Vertebroplasty for Cancer Patients Referral Checklist

This Checklist was developed by the Kyphoplasty and Vertebroplasty Working Group and Interventional Oncology Steering Committee as a provincial resource and may be helpful to assist with capturing and documenting key pieces of information regarding the vertebral augmentation procedure for cancer patients. Service provider sites may adopt or adapt select sections of the document or the document its entirety, as required. The use of this checklist is not mandatory. The sections of this document outlines information that is recommended for referral, consultation, procedure and post-procedure outcomes of a cancer patient being considered for and receiving a kyphoplasty or vertebroplasty procedure.

### Vertebroplasty and Kyphoplasty for Cancer Patients Checklist

**INSTRUCTIONS FOR USE OF FORM:** This form is to be completed by the referring physician and physician performing the procedure. This information allows physicians to contact the patient and to make necessary arrangements for consultation and capture data, some of which is required for Cancer Care Ontario.

This checklist is being provided as a provincial resource. **Service Provider Sites may adopt or adapt this form, in its entirety or appropriate sections, as required.** The various sections of this document outlines information that is recommended for referral, consultation, procedure and post-procedure outcomes of a cancer patient being considered for and receiving a kyphoplasty or vertebroplasty procedure.

#### Patient Information

<b>SURNAME</b>		<b>FIRST NAME</b>		<b>MIDDLE NAME</b>	
<b>DOB (YYYY/MM/DD)</b>		<b>EMAIL</b>		<b>GENDER</b>	<b>WEIGHT (kg)</b>
<b>ADDRESS</b>					
<b>TELEPHONE</b>		<b>MOBILE</b>			
<b>HEALTH CARD NUMBER</b>		<b>VERSION CODE</b>		<b>MEDICAL RECORD NUMBER</b>	

#### Referring Physician Information

<b>DATE OF RECEIPT OF REFERRAL</b> <a href="#">Click here to enter a date.</a>		
<b>PHYSICIAN NAME</b>	<b>TELEPHONE</b>	<b>FAX</b>
<b>SPECIALTY</b>		
<b>HOSPITAL NAME</b>		
<b>ADDRESS</b>		
<b>SIGNATURE</b>	<b>CPSO #</b>	

**Section A: Vertebral Compression Fracture Information for Referral**

<b>CONFIRMED CANCER CASE?</b> Yes <input type="checkbox"/> No <input type="checkbox"/>	<b>IF YES, MALIGNANT DISEASE TYPE/SOLID TUMOUR ETIOLOGY</b> (Include ICD 03 or 10 code):
Vertebral Compression Fracture(s) Level(s)  <div style="border: 1px solid black; padding: 2px; display: inline-block;"> <input type="checkbox"/> C <input type="checkbox"/> T1 <input type="checkbox"/> T2 <input type="checkbox"/> T3 <input type="checkbox"/> T4 <input type="checkbox"/> T5 <input type="checkbox"/> T6 <input type="checkbox"/> T7 <input type="checkbox"/> T8 <input type="checkbox"/> T9 <input type="checkbox"/> T10 <input type="checkbox"/> T11 <input type="checkbox"/> T12 <input type="checkbox"/> L1 <input type="checkbox"/> L2 <input type="checkbox"/> L3 <input type="checkbox"/> L4 <input type="checkbox"/> L5 <input type="checkbox"/> S <input type="checkbox"/> </div> <b>MCC Review Required*</b>	
<b>COMPRESSION(S) VISIBLE ON CT and/or MRI?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> Not performed <input type="checkbox"/>	<b>NEUROLOGIC DEFICIT?</b> Yes <input type="checkbox"/> No <input type="checkbox"/> If Yes, Numbness <input type="checkbox"/> Muscular Weakness <input type="checkbox"/>
<b>PROBABLE AGE OF FRACTURE</b> <1 week <input type="checkbox"/> 1 week to <1 month <input type="checkbox"/> 1-2 months <input type="checkbox"/> 3-6 months <input type="checkbox"/> >6 months <input type="checkbox"/>	Date, if known:
<b>PATIENT'S PAIN STATE</b> Acute Pain <input type="checkbox"/> Chronic Pain <input type="checkbox"/> Acute on Chronic <input type="checkbox"/> Unknown <input type="checkbox"/>	<b>Level of Pain</b> (10 = worst pain possible) 0** <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input type="checkbox"/> ** No pain or if 'impending fracture' is an indication
<b>AVAILABLE IMAGING</b> <input type="checkbox"/> X-Ray, Date <a href="#">Click here to enter a date.</a> : <input type="checkbox"/> CT-Scan, Date: <a href="#">Click here to enter a date.</a> <input type="checkbox"/> MRI ( <input type="checkbox"/> STIR), Date: <a href="#">Click here to enter a date.</a> <input type="checkbox"/> Bone Scan, Date: <a href="#">Click here to enter a date.</a> <input type="checkbox"/> None	<b>OTHER INFORMATION:</b> Use check boxes as much as possible.
<b>Spine Instability Neoplastic Score (SINS):</b>	<b>Epidural disease:</b> Yes <input type="checkbox"/> No <input type="checkbox"/>

**Section B: Consultation Service Information (to be completed by consulting physician)**

**Date of Consultation (First date on which a patient sees the specialist for consultation regarding this specific service/procedure):** [Click here to enter a date.](#)

**Does the fracture being considered have any of the following features?**

Spine Instability Neoplastic Score (SINS) greater than 7

- Prophylactic referrals for cases with bone metastases (e.g., in thoracic spine)
- Patients with impending at risk fracture
- \*Patients with fractures between C7 and T4 (i.e., above T5)
- Patients requiring multi-modal treatments (e.g., recurrent, radiated, post-SBRT, post-RFA)
- Patients which require decompression of cord
- Patients with vertebral collapse and [soft] tissue in the spinal canal (procedures performed on these patients should have surgeons and radiologists on stand-by)

**If any features above are checked, the case must be discussed at MCC. All other cases must be reviewed through a documented multidisciplinary consultation prior to intervention:**

**Method of multidisciplinary consultation:** Conference Call  Clinic  MCC

**The following specialties were consulted for the vertebral augmentation case, as relevant:**

Surgeon  Radiation Oncologist  Radiologist  Interventional Radiologist  If MCC, Spine Surgeon

**Date multidisciplinary consultation or MCC was completed where vertebral augmentation was discussed (latest date by which all specialties have provided input):** [Click here to enter a date.](#)

**Type of VCF Procedure recommended:**

Vertebroplasty  FTA-Assisted Vertebroplasty  Kyphoplasty  FTA-Assisted Kyphoplasty

**Describe management plan following multidisciplinary consultation/MCC:**

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### Section C: Procedure Information

**Date of procedure:** [Click here to enter a date.](#)

**Dates affecting readiness to treat (DARTs), if applicable for patient case:**

DART #	The beginning date of time when the patient is unavailable for the procedure due to patient-related reasons	The end date of time when the patient is unavailable for the procedure due to patient-related reasons	The reason the patient is unavailable for the procedure for DART	The reason for the timed event
1	<a href="#">Click here to enter a date.</a>	<a href="#">Click here to enter a date.</a>	<input type="checkbox"/> Inability to Contact the Patient <input type="checkbox"/> Change in Medical Status <input type="checkbox"/> Missed Procedure/No Show <input type="checkbox"/> Pre-Procedure Instructions Not Followed <input type="checkbox"/> Patient treatment related timed event, please specify → <input type="checkbox"/> Patient Chooses to Defer	<input type="checkbox"/> Neo-adjuvant chemotherapy <input type="checkbox"/> Neo-adjuvant radiation therapy <input type="checkbox"/> Tumour Ablation <input type="checkbox"/> Other, please specify: <hr/>
2	<a href="#">Click here to enter a date.</a>	<a href="#">Click here to enter a date.</a>	<input type="checkbox"/> Inability to Contact the Patient <input type="checkbox"/> Change in Medical Status <input type="checkbox"/> Missed Procedure/No Show <input type="checkbox"/> Pre-Procedure Instructions Not Followed	<input type="checkbox"/> Neo-adjuvant chemotherapy <input type="checkbox"/> Neo-adjuvant radiation therapy <input type="checkbox"/> Tumour Ablation



			<input type="checkbox"/> Patient treatment related timed event, please specify → <input type="checkbox"/> Patient Chooses to Defer	<input type="checkbox"/> Other, please specify: _____
3	Click here to enter a date.	Click here to enter a date.	<input type="checkbox"/> Inability to Contact the Patient <input type="checkbox"/> Change in Medical Status <input type="checkbox"/> Missed Procedure/No Show <input type="checkbox"/> Pre-Procedure Instructions Not Followed <input type="checkbox"/> Patient treatment related timed event, please specify → <input type="checkbox"/> Patient Chooses to Defer	<input type="checkbox"/> Neo-adjuvant chemotherapy <input type="checkbox"/> Neo-adjuvant radiation therapy <input type="checkbox"/> Tumour Ablation <input type="checkbox"/> Other, please specify: _____

**Number of vertebra levels treated in procedure:** \_\_\_\_\_

**Procedure Approach:**  Unipedicular, number of levels: \_\_\_\_\_  Bipedicular, number of levels: \_\_\_\_\_

**Patient Stay Modality Prior to Procedure:** Inpatient  Outpatient

**Sedation level:** General anesthetic  Conscious sedation  Local anesthetic  Other, \_\_\_\_\_

### Section D: Post-Procedure Outcomes

**Please describe any complications (specifying minor or major as per SIR classification):**

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**If the patient stay modality prior to the procedure was 'Outpatient', was the patient admitted post procedure?**

No  Yes, date of admission: Click here to enter a date. Date of discharge: Click here to enter a date.