

# **Percutaneous Vertebroplasty and Balloon Kyphoplasty for Painful Osteoporotic Vertebral Compression Fractures**

---

## **Recommendation**

August 2025



**Ontario  
Health**

# Final Recommendation

---

Ontario Health, based on guidance from the Ontario Health Technology Advisory Committee, recommends that percutaneous vertebroplasty and percutaneous balloon kyphoplasty be publicly funded and made accessible for appropriately selected patients with painful osteoporotic vertebral compression fractures.

## Rationale for the Recommendation

---

The Ontario Health Technology Advisory Committee considered the clinical, economic, and patient preferences and values evidence reported in the health technology assessment.<sup>15</sup>

The committee members noted that percutaneous vertebroplasty (PVP) and balloon kyphoplasty (PBK) provided benefit for outcomes that are important to patients with painful osteoporotic vertebral compression fractures (OVCFs) and who are refractory to conservative (nonsurgical) treatment, including a meaningful short-term reduction in pain and improvement in physical function. The committee also acknowledged the uncertainty related to the clinical evidence, such as variability in the reported duration of OVCF pain experienced by people prior to undergoing PVP or PBK, differences in the lengths of follow-up after PVP or PBK, and the risk of bias.

The primary economic evaluation showed that PVP and PBK were each more costly and more effective than conservative treatment. Although the time horizon of the analysis was relatively short (3 years), the committee members noted that under differing assumptions about impact on health-related quality of life, PVP and PBK remained more costly and more effective than conservative treatment. The committee highlighted that the budget impact underscored current under-utilization of the procedures for people with painful osteoporotic compression fractures refractory to conservative treatment and emphasized the need to facilitate availability and access to the procedures in addition to funding.

The committee members carefully considered the lived experiences of patients with OVCF, who shared how the condition negatively affected their daily activities, social lives, work, mental health, and overall quality of life. They also took into account the positive effects of PVP and PVK in alleviating pain and improving patients' quality of life.

# Decision Determinants for Percutaneous Vertebroplasty and Balloon Kyphoplasty for Painful Osteoporotic Vertebral Compression Fractures

---

## Overall Clinical Benefit

### Effectiveness

*How effective is the health technology/intervention likely to be (taking into account any variability)?*

Compared with conservative treatment in patients with painful OVCFs, PVP may:

- Demonstrate clinically and statistically significant improvements in pain in the short-term (Grading of Recommendations, Assessment, Development and Evaluations [GRADE]: Low)
- Demonstrate clinically and statistically significant improvements in physical function in the short term, but the evidence is very uncertain (GRADE: Very low)
- Improve quality of life, but the evidence is very uncertain (GRADE: Very low)
- Have little to no effect on use of analgesics (GRADE: Very low)

Compared with sham in patients with painful OVCFs, PVP may:

- Reduce pain slightly (GRADE: Low)
- Have little to no effect on the use of analgesics, but the evidence is very uncertain (GRADE: Very low)
- Result in little to no difference in physical function, quality of life (GRADE: Low)

Compared with conservative treatment in patients with painful OVCFs, PBK may:

- Improve physical function and quality of life (GRADE: Low)
- Demonstrate clinically and statistically significant improvements in pain in the short term, but the evidence is very uncertain (GRADE: Very low)
- Have little to no effect on use of analgesics, but the evidence is very uncertain (GRADE: Very low)

Compared with PBK in patients with painful OVCFs, PVP may:

- Have little to no effect on pain, use of analgesics, physical function, or quality of life but the evidence is very uncertain (GRADE: Very low)

## Safety

*How safe is the health technology/intervention likely to be?*

Compared with conservative treatment in patients with painful OVCFs, PVP may:

- Have little to no effect on mortality, adverse events, or new fractures (GRADE: Very low)

Compared with sham in patients with painful OVCFs, PVP may:

- Increase adverse events (GRADE: Low)
- Result in little to no difference in mortality or new fractures (GRADE: Low)

Compared with conservative treatment in patients with painful OVCFs, PBK may:

- Result in little to no difference in mortality, adverse events, or new fractures (GRADE: Low)

Compared with PBK in patients with painful OVCFs, PVP may:

- Increase cement leakage, but the evidence is very uncertain (GRADE: Very low)
- Have little to no effect on mortality, adverse events, or new fractures, but the evidence is very uncertain (GRADE: Very low)
- Likely reduce radiation exposure to the provider/operator slightly (GRADE: Low)

## Burden of Illness

*What is the likely size of the burden of illness pertaining to this health technology/intervention?*

We estimate that approximately 2,200 patients per year (who have painful OVCFs not responsive to conservative treatment) in Ontario may be candidates for PVP or PBK.

## Need

*How large is the need for this health technology/intervention?*

Patients with OVCFs not responsive to conservative treatment do not have an alternative option if PVP and PBK are not available. Open surgery is reserved for the treatment of patients with very severe OVCFs with kyphosis (severe rounding of the spine) and neurological deficits. PVP and PBK usually neither correct severe deformity nor restore the stability of the fractured segment.

# Patient Preferences and Privacy

## Patient Preferences and Values

*Do patients have specific preferences, values, or needs related to the health condition, health technology/intervention, or life impact that are relevant to this assessment?*

Living with OVCF negatively impacted patients' day-to-day lives, mental health, social and family relationships, and work. People who had undergone vertebroplasty or kyphoplasty spoke about the positive impact of the procedures, including pain relief and improved quality of life.

## Autonomy, Privacy, Confidentiality, and/or Other Relevant Ethical Principles as Applicable

*Are there concerns regarding accepted ethical or legal standards related to patient autonomy, privacy, confidentiality, or other ethical principles that are relevant to this assessment?*

PVP and PBK relieved pain symptoms in patients, enabling them to regain their independence and perform daily activities.

# Equity and Patient Care

## Equity of Access or Outcomes

*Are there disadvantaged populations or populations in need whose access to care or health outcomes might be improved or worsened that are relevant to this assessment?*

Patients with cancer and painful vertebral compression fractures are generally better triaged than patients without cancer and better aligned with spinal surgeons at cancer centres; this leaves noncancer patients with similar pain at a disadvantage. Ontarians in rural or northern communities may have limited access to PVP and PBK for treatment of OVCFs. Patients with a lower socioeconomic status and patients without access to a primary provider are more likely to have difficulty accessing PVP or PBK.

Some, but not all, Ontario hospitals choose to fund PVP and PBK for OVCFs from their hospital global budgets.

## Patient Care

*Are there challenges in the coordination of care for patients or other system-level aspects of patient care (e.g., timeliness of care, care setting) that might be improved or worsened that are relevant to this assessment?*

Patients may experience long wait times to receive PVP or PBK for painful OVCFs refractory to conservative treatment because of an approximate 6-month-long waitlist to receive magnetic resonance imaging (MRI). There are also long wait times to see a specialist (orthopedic or spinal surgeon or interventional radiologist).

Patients with painful OVCFs refractory to conservative treatment who present to the emergency department and are admitted typically receive PVP or PBK in a more timely manner.

## Cost-Effectiveness

### Economic Evaluation

*How efficient is the health technology/intervention likely to be?*

Percutaneous vertebroplasty compared with conservative treatment (CT) was more costly by \$11,399 and more effective by 0.263 quality-adjusted life years (QALYs) over a 3-year time horizon, resulting in an incremental cost-effectiveness ratio (ICER) of \$43,324 per QALY gained. Percutaneous balloon kyphoplasty compared with CT resulted in additional costs of \$15,574 and 0.236 additional QALYs over a 3-year time horizon. The ICER comparing PBK with CT was \$65,921 per QALY gained. PVP was less costly and more effective than PBK, but results were uncertain.

## Feasibility of Adoption Into Health System

### Economic Feasibility

*How economically feasible is the health technology/intervention?*

We estimated that publicly funding PVP and PBK for painful OVCF refractory to CT would cost an additional \$28 million over the next 5 years.

### Organizational Feasibility

*How organizationally feasible is it to implement the health technology/intervention?*

Percutaneous vertebroplasty and PBK can be done as inpatient or outpatient procedures in interventional radiology suites or operating rooms, with physician reimbursement based on existing OHIP schedule fee codes. Procedures may be done by interventional radiologists, neurosurgeons, or orthopedic surgeons with appropriate training. From 2020 to 2023, 30 sites performed these procedures. Currently, procedures are funded through hospital global budgets, and it is up to each hospital to decide how many, if any, procedures to fund. Imaging is required to confirm eligibility for PVP or PBK and imaging wait times delay access to care.

# References

- 1) Ontario Health. Percutaneous vertebroplasty and balloon kyphoplasty for painful osteoporotic vertebral compression fractures: a health technology assessment. Ont Health Technol Assess Ser [Internet]. 2025 Aug;25(4):1–253. Available from: [hqontario.ca/evidence-to-improve-care/health-technology-assessment/reviews-and-recommendations/percutaneous-vertebroplasty-and-balloon-kyphoplasty-for-painful-osteoporotic-vertebral-compression-fractures](https://hqontario.ca/evidence-to-improve-care/health-technology-assessment/reviews-and-recommendations/percutaneous-vertebroplasty-and-balloon-kyphoplasty-for-painful-osteoporotic-vertebral-compression-fractures)

[About Ontario Health](#)

[About the Ontario Health Technology Advisory Committee](#)

[How to Obtain Recommendation Reports](#)

[Disclaimer](#)

Ontario Health  
500–525 University Avenue  
Toronto, Ontario  
M5G 2L3  
Toll Free: 1-877-280-8538  
TTY: 1-800-855-0511  
Email: [OH-HQO\\_HTA@OntarioHealth.ca](mailto:OH-HQO_HTA@OntarioHealth.ca)  
[hqontario.ca](https://hqontario.ca)

ISBN 978-1-4868-9132-0 (PDF)

© King's Printer for Ontario, 2025

## Citation

Ontario Health. Percutaneous vertebroplasty and balloon kyphoplasty for painful osteoporotic vertebral compression fractures: recommendation [Internet]. Toronto (ON): King's Printer for Ontario; 2025 August. 7 pp. Available from: [hqontario.ca/evidence-to-improve-care/health-technology-assessment/reviews-and-recommendations/percutaneous-vertebroplasty-and-balloon-kyphoplasty-for-painful-osteoporotic-vertebral-compression-fractures](https://hqontario.ca/evidence-to-improve-care/health-technology-assessment/reviews-and-recommendations/percutaneous-vertebroplasty-and-balloon-kyphoplasty-for-painful-osteoporotic-vertebral-compression-fractures)

Need this information in an accessible format? 1-877-280-8538, TTY 1-800-855-0511, [info@OntarioHealth.ca](mailto:info@OntarioHealth.ca)

Document disponible en français en contactant [info@OntarioHealth.ca](mailto:info@OntarioHealth.ca)