

Robotic-Assisted Partial Nephrectomy for Kidney Cancer: Recommendation

Final Recommendation

Ontario Health, based on guidance from the Ontario Health Technology Advisory Committee, recommends publicly funding robotic-assisted partial nephrectomy for kidney cancer.

Rationale for the Recommendation

The Ontario Health Technology Advisory Committee has reviewed the findings of the health technology assessment.¹ The committee made the above recommendation after considering the clinical and economic evidence, as well as patient and provider preferences and values evidence.

The clinical evidence showed that compared with open partial nephrectomy (an invasive surgery to remove part of the kidney involving a large incision), robotic-assisted partial nephrectomy (a minimally invasive surgery using a smaller incision) is associated with less blood loss during surgery, a shorter length of hospital stay, and fewer postoperative complications. The cost-effectiveness of robotic-assisted partial nephrectomy is unknown. Publicly funding disposables for robotic-assisted partial nephrectomy for people with kidney cancer is estimated to increase costs to the province by about \$1.58 million over 5 years.

Committee members considered the lived experience of people with kidney cancer, who reported valuing the minimally invasive surgical option that robotic-assisted partial nephrectomy offered. Committee members also noted the advantages of robotic-assisted partial nephrectomy reported by the urologic surgeons interviewed for this health technology assessment. These advantages included enhanced visualization, dexterity, and precision, as well as improved ergonomics, mindset, and confidence. Committee members recognized that robotic-assisted partial nephrectomy is a minimally invasive surgical option for people who would otherwise be offered open partial nephrectomy or laparoscopic radical nephrectomy (in which the entire kidney is removed). The use of robotic-assisted partial nephrectomy thus represents a differential distribution of treatments and resources for people with kidney cancer that may more equitably improve health outcomes.

In keeping with the funding of other operating room technologies in Ontario, this funding recommendation does not include the capital costs of robotic systems (i.e., the purchase of new or replacement robotic systems).

Decision Determinants for Robotic-Assisted Partial Nephrectomy for Kidney Cancer

Overall Clinical Benefit

Effectiveness

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

Compared with open partial nephrectomy, robotic-assisted partial nephrectomy may result in less estimated blood loss (Grading of Recommendations, Assessment, Development and Evaluations [GRADE]: Low) and a shorter length of hospital stay (GRADE: Low). There were no differences in operative time, warm ischemia time, rate of positive surgical margins, or pre- or postoperative estimated glomerular filtration rate (All GRADEs: Low).

Safety

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

Compared with open partial nephrectomy, robotic-assisted partial nephrectomy may result in fewer postoperative complications (GRADE: Low). There was no difference in intraoperative complications (GRADE: Low).

Burden of Illness

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

According to Ontario Health (Cancer Care Ontario), 2,904 cases of kidney cancer were diagnosed in Ontario in 2020.² Minimally invasive robotic-assisted surgeries may improve patient outcomes and reduce complications compared with open surgery.

Need

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

Between fiscal years 2016 and 2021 (except for 2020 owing to COVID-19), the yearly volume of partial nephrectomies performed in Ontario (including open, laparoscopic, and robotic-assisted procedures) ranged from 600 to 700 (Discharge Abstract Database, Canadian Institute for Health Information, IntelliHealth Ontario, April 2023). Therefore, up to but not more than 700 people may need robotic-assisted nephrectomy, as open and laparoscopic procedures will continue to be performed.

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?

The participants interviewed for this health technology assessment reported valuing having access to minimally invasive surgical options that allow for a quicker recovery, a reduction in postoperative complications, and shorter hospital stay compared with an open procedure. Participants reported looking to their care team to guide their decision-making about the most appropriate surgical option. All participants viewed robotic-assisted nephrectomy positively and emphasized the importance of having minimally invasive surgical options made widely available. Those with direct experience of a robotic-assisted procedure reported positively on its value as a surgical option, particularly in terms of the ease of recovery.

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?

Participants reported valuing the autonomy to make well-informed health care decisions, as well as safety when undergoing a surgical procedure. The surgeons interviewed reflected on the ethical challenges of not being able to provide people with a safe, effective, minimally invasive surgical option when both the technology and expertise to provide that option are available but sufficient public funding is not.

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?

Referrals for minimally invasive procedures are often redirected to large urban centres, which can pose barriers to people unable to afford the out-of-pocket costs associated with travelling for treatment (e.g., hotels, parking). When robotic-assisted partial nephrectomy is not available, the only surgical options are open partial nephrectomy and laparoscopic radical nephrectomy.

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?

Robotic-assisted partial nephrectomy is a minimally invasive surgical option for people who would otherwise be offered open partial nephrectomy or laparoscopic radical nephrectomy. The use of robotic-assisted partial nephrectomy thus represents a differential distribution of treatments and resources distribution that may more equitably improve health outcomes.

Cost-Effectiveness**Economic Evaluation**

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

The cost-effectiveness of robotic-assisted partial nephrectomy is unknown. A primary economic evaluation was not conducted. Results from existing published economic studies were not applicable to the Ontario context.

Feasibility of Adoption Into Health System**Economic Feasibility**

How economically feasible is the health technology/intervention?

Assuming a moderate increase in the volume of robotic-assisted partial nephrectomy, we estimate that the 5-year budget impact of publicly funding the disposables required to perform robotic-assisted partial nephrectomy for people with kidney cancer would be \$1.58 million. Ontario Health confirmed funding, starting April 1, 2022, for robotic-assisted partial nephrectomy for kidney cancer, which will undergo evaluation.

Organizational Feasibility

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

Provincial structures are in place to support the expanded use of robotic-assisted partial nephrectomy. However, existing third-generation robotic surgical systems in use in Ontario will need to be replaced by fourth-generation systems within the next few years.

References

- (1) Ontario Health. Robotic-assisted partial nephrectomy for kidney cancer: a health technology assessment. *Ont Health Technol Assess Ser* [Internet]. 2023 Oct;23(7):1–77. Available from: <https://hqontario.ca/evidence-to-improve-care/health-technology-assessment/reviews-and-recommendations/robotic-assisted-partial-nephrectomy-for-kidney-cancer>
- (2) Ontario Health (Cancer Care Ontario). Kidney cancer: facts [Internet]. Toronto (ON): Ontario Health (Cancer Care Ontario); 2023 [cited 2023 Apr]. Available from: <https://www.cancercareontario.ca/en/types-of-cancer/kidney#:~:text=In%202020%2C%20%2C904%20cases%20of,leading%20cause%20of%20cancer%20death.%E2%80%8B%E2%80%8B%E2%80%8B>

[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
hqontario.ca

ISBN 978-1-4868-7374-6 (PDF)
© King's Printer for Ontario, 2023

Citation

Ontario Health. Robotic-assisted partial nephrectomy for kidney cancer: recommendation [Internet]. Toronto (ON): King's Printer for Ontario; 2023 Oct. 6 pp. Available from: hqontario.ca/evidence-to-improve-care/health-technology-assessment/reviews-and-recommendations/robotic-assisted-partial-nephrectomy-for-kidney-cancer