

Ablative Technologies for Thyroid Nodules

Recommendation

MONTH 2026

Draft Recommendation

Ontario Health, based on guidance from the Ontario Health Technology Advisory Committee, recommends publicly funding radiofrequency ablation for adults with symptomatic benign thyroid nodules, autonomously functioning thyroid nodules, and small, low-risk papillary thyroid cancer.

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.¹ The health technology assessment evaluated different types of ablative technologies but only radiofrequency ablation (RFA) is licensed by Health Canada and is being used in Ontario.

The committee members noted that RFA may be as effective as surgery for improving symptoms in patients with benign thyroid nodules or small, low-risk papillary thyroid cancer, while also offering advantages such as shorter procedure time, shorter hospital stay, less postprocedural pain, and better quality of life. In patients with autonomously functioning thyroid nodules (AFTNs), RFA may also reduce nodule volume, improve symptoms, and normalize thyroid-stimulating hormone levels. The committee noted that RFA is reasonably safe; compared with surgery, it may not result in hypothyroidism, and it may lead to fewer adverse events. Committee members specifically acknowledged that the minimally invasive nature of ablative technologies decreases the risk of recurrent laryngeal nerve palsy (damage to the nerves that control vocal cord muscles, which can result in permanent voice change), a serious adverse event.

The primary economic evaluation showed that RFA is more effective and less costly than surgery for symptomatic benign thyroid nodules, AFTNs, and small, low-risk papillary thyroid cancer. RFA is also cost-effective compared with active surveillance in adults with small, low-risk papillary thyroid cancer. Publicly funding RFA in Ontario would lead to cost savings and help alleviate pressure on the health care system.

Members of the committee also considered the lived experience of people with thyroid nodules, who expressed a preference for minimally invasive treatment options such as RFA. The benefits of RFA reported by the people we spoke to included shorter recovery time compared to traditional thyroidectomy and less reliance on lifelong medication because of preserved thyroid function.

In making their recommendation, the committee acknowledged that thermal or chemical focal tumour ablation for certain cancers of the liver, lung, or kidney is publicly funded in Ontario. Public funding of RFA for thyroid conditions could allow for capacity-building based on existing infrastructure in other clinical areas.

Decision Determinants for Ablative Technologies for Thyroid Nodules

Overall Clinical Benefit

Effectiveness

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

In patients with symptomatic benign thyroid nodules, RFA may be as effective as surgery in reducing nodule volume and improving symptoms, and it may result in better quality of life (Grading of Recommendations Assessment, Development, and Evaluation [GRADEs]: Low).

In patients with cystic thyroid nodules, RFA may be as effective as ethanol ablation in reducing nodule volume and improving symptoms (GRADEs: Low).

In patients with AFTNs, RFA may normalize thyroid-stimulating hormone levels (GRADE: Low).

In patients with small, low-risk papillary thyroid cancer, RFA may be as effective as surgery in terms of tumour disappearance, but it may also lead to a lower tumour recurrence rate, require less surgical time and a shorter length of hospital stay, and be associated with less postprocedural pain and better postprocedural quality of life (GRADEs: Low).

Safety

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

Compared with surgery, RFA may not result in hypothyroidism and may lead to fewer adverse events, but it is not risk-free (GRADE: Low). Compared with surgery, RFA may result in a lower rate of recurrent laryngeal nerve palsy or voice changes (GRADE: Low).

Chemical ablation is a safe procedure with minimal adverse events (GRADE: Low).

Burden of Illness

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

Thyroid nodules are common and occur in up to two-thirds of the general population.² Most detected nodules are benign, but thyroid cancer occurs in 7% to 15% of thyroid nodules.³ Benign nodules and small, low-risk papillary thyroid cancer do not need to be treated, except when nodules cause compressive symptoms or hyperthyroidism, or if there is risk of malignancy.

Need

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

RFA may be considered for patients in whom surgery or active surveillance are contraindicated. Eligibility is based on clinical factors and patient preferences.

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?

Patients with thyroid nodules expressed their preference for minimally invasive treatment options, highlighting the importance of expanding access to RFA.

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?

Patients who had experience with RFA valued the procedure because it was minimally invasive, largely pain-free, and quick to recover from, and it caused minimal scarring.

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?

Inequities in access to RFA for treatment of thyroid nodules are related to cost and geography.

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?

No specific challenges in the coordination of patient care are expected with RFA.

Cost-Effectiveness

Economic Evaluation

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

In adults with symptomatic benign thyroid nodules and AFTNs, RFA was dominant (i.e., less costly and more effective) compared with partial thyroidectomy. In adults with small, low-risk papillary thyroid cancer, RFA was dominant (i.e., less costly and more effective) compared with partial thyroidectomy; RFA was cost-effective at an incremental cost-effectiveness ratio of \$1,574 per quality-adjusted life-year gained compared with active surveillance.

Feasibility of Adoption Into the Health System

Economic Feasibility

How economically feasible is the health technology/intervention?

Publicly funding RFA in Ontario for the treatment of adults with symptomatic benign thyroid nodules, AFTNs, and small, low-risk papillary thyroid cancer would lead to cost savings of \$5.42 million, \$0.64 million, and \$4.03 million over the next 5 years. These savings represent a reduction in health care resource use rather than net savings to the Ministry of Health's overall budget.

Organizational Feasibility

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

The implementation of RFA province-wide would require up-front capital investment in specialized equipment and standard ultrasound machines. As well, the procedure to perform ultrasound-guided thermal ablation for thyroid conditions is not associated with a billing fee. If publicly funded, this procedure may be included in an existing insured service or may require its own fee code. Changes to the schedule of benefits are negotiated jointly between the Ministry of Health and the Ontario Medical Association. Finally, there may be additional upfront costs to consider that were not accounted for in our analyses. These may include the cost of physician training (to perform RFA), the cost of physician education for referring physicians, and the cost of developing a quality assurance program around this procedure.

References

- 1) TBD
- 2) Uppal N, Collins R, James B. Thyroid nodules: global, economic, and personal burdens. *Front Endocrinol (Lausanne)*. 2023;14:1113977.
- 3) Wong R, Farrell SG, Grossmann M. Thyroid nodules: diagnosis and management. *Med J Aust*. 2018;209(2):92-8.

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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
OntarioHealth.ca

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info@OntarioHealth.ca

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