

# Cost-Effectiveness of Hemithyroidectomy Versus Total Thyroidectomy for Patients with Low Risk Differentiated Thyroid Cancer

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## BACKGROUND

The 2015 American Thyroid Association (ATA) guidelines recommended hemithyroidectomy as initial treatment for smaller (1-4 cm) primary thyroid carcinomas, particularly for papillary and follicular thyroid cancer. This research aims to examine whether hemithyroidectomy for patients with low risk differentiated thyroid cancer is cost-effective relative to total thyroidectomy from a modified societal perspective .

## METHODS

A semi-Markov decision model was used to perform the cost-effectiveness analysis for a hypothetical cohort that mirrored the population addressed in the 2015 ATA guidelines. The model was run with one-year cycles over a 30-year time horizon. Model assumptions and parameter values were drawn from the literature. Costs were estimated from a modified societal perspective and included costs to the Center for Medicare & Medicaid Services (CMS) plus patient productivity losses. Effectiveness was measured using quality adjusted life years (QALYs). The incremental cost-effectiveness ratio (ICER) was computed and discounted at 3% per year. Extensive sensitivity analyses were performed to examine parameter uncertainty, including deterministic one-way and two-way sensitivity analyses, as well as a probabilistic sensitivity analysis.

## RESULTS

In the base case, hemithyroidectomy had an expected cost of \$49,975, while total thyroidectomy had an expected cost of \$57,730. Furthermore, hemithyroidectomy yielded more QALYs (14.09 vs. 13.83, respectively). Hemithyroidectomy was the dominant strategy (i.e., less costly and more effective than total thyroidectomy) under most assumptions. However, sensitivity analyses suggested the optimal strategy was sensitive to the transition probability from disease free to distant metastases in patients undergoing hemithyroidectomy. In the probabilistic sensitivity analysis, hemithyroidectomy was cost-effective at a threshold of \$100,000 per QALY in 91.9% of simulations.

## CONCLUSION

Hemithyroidectomy dominates total thyroidectomy from modified societal perspective as a surgical treatment for patients with low risk differentiated thyroid cancer. Additional research is needed to understand the relatively slow update of hemithyroidectomy in this patient population.

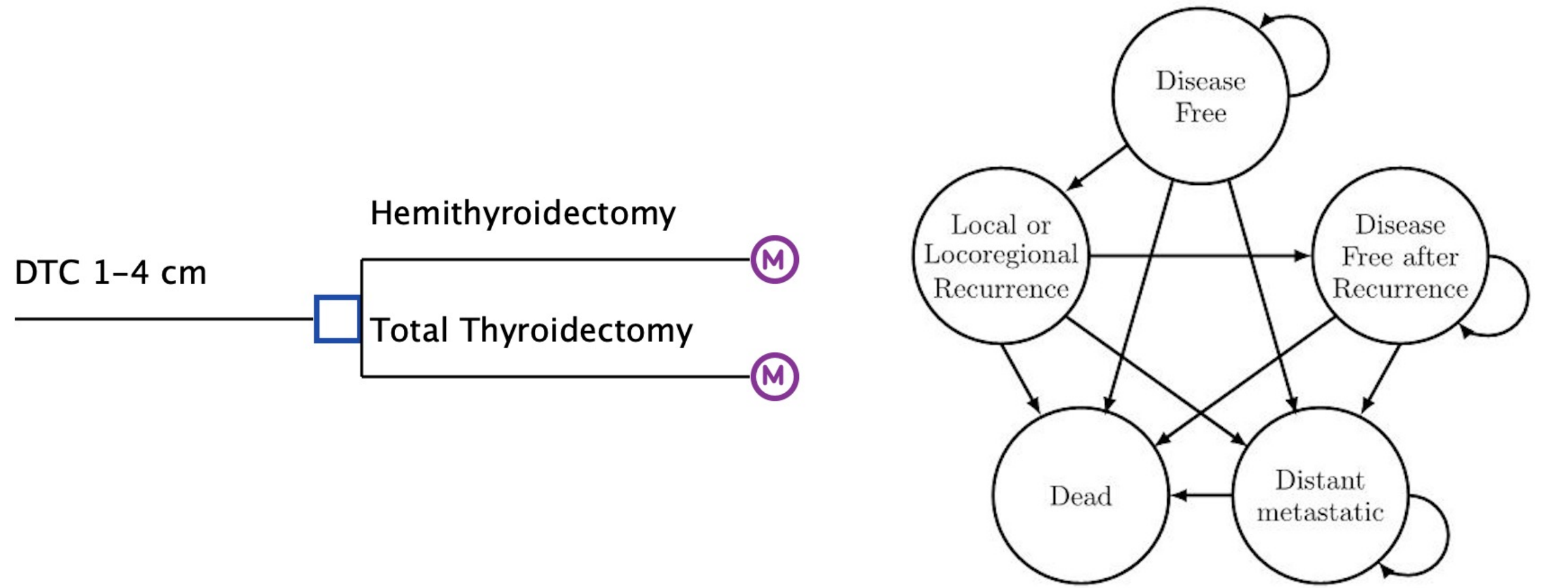


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Hemithyroidectomy dominates (less costly and more effective) total thyroidectomy from a modified societal perspective as a surgical treatment for patients with low risk differentiated thyroid cancer.



For more information,  
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Strategy	Expected Costs	Expected QALYs	ICER
Hemi	\$49,975	14.09	
Total	\$57,730	13.83	Dominant

