

REPORT DOCUMENTATION PAGE

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Show Me the Money: Institutional Experience with Molecular Testing of Thyroid Nodules

Introduction: Cytology from thyroid nodule biopsy often shows atypia of undetermined significance (AUS) leading to surgery for ultimately benign histology. Molecular testing, such as ThyGenX, can augment clinical decision making in thyroid nodule management. This project examined ThyGenX testing in the San Antonio Military Health System (SAMHS).

Methods: This was a non-industry cost analysis and review of patients in the SAMHS who had thyroid nodule cytology with ThyGenX testing over an 18 month period of time.

Results: Over 18 months, 24 patients had ThyGenX testing because cytology showed AUS on 2 or more biopsies. Molecular testing identified mutations in 5 patients. 3 patients with a mutation underwent total thyroidectomy. Of these, 2 had papillary thyroid carcinoma and 1 had benign histology. Molecular testing showed no mutations in 19 patients; of these, 2 underwent hemithyroidectomy and histology was benign for both. ThyGenX testing costs approximately \$2600 per sample in the SAMHS. Thyroidectomy with hospitalization costs about \$12,800. The costs of clinical follow up with surgery, primary care, TSH testing, and long term levothyroxine therapy is approximately \$15,000. ThyGenX testing cost approximately \$62,400 for these 24 patients who would have otherwise gone for surgery, which would have cost SAMHS about \$528,200. Thus, molecular testing spared 19 patients from surgery, saving approximately \$466,000.

Conclusions: Molecular testing for patients with indeterminate thyroid nodule cytology is a cost-effective tool in the SAMHS. No patients with negative molecular testing results had evidence of cancer on histology. This may help patients avoid unnecessary surgery and subsequent hypothyroidism. The cost of molecular testing is significant but far less than the cost of thyroidectomy with its associated care. Molecular testing to reduce unnecessary surgery represents a benefit to patients and a cost-savings to the SAMHS.

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