

Putting Prevention into Practice

An Evidence-Based Approach

Screening for Thyroid Cancer

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Case Study

A 45-year-old Korean American woman comes to your office for a wellness visit. She has a history of allergic rhinitis, and her family history is significant for diabetes mellitus in her father. She describes her health as good and has no concerns. Her coworker was recently diagnosed with thyroid cancer, and she has heard that the disease is becoming more common. She asks if she should be screened for thyroid cancer.

Case Study Questions

1. Based on the U.S. Preventive Services Task Force (USPSTF) recommendation, which one of the following choices about thyroid cancer screening would you advise for this patient?

- A. She should be screened, because the benefit of improved survival outweighs the harms associated with treatment.
- B. She should consider screening only after shared decision making, because the benefits and harms are similar in magnitude.
- C. She should not be screened, because there are known harms from treatment and no evidence that screening will help her live a longer or healthier life.
- D. She should be screened, because ultrasonography of the neck is inexpensive and noninvasive.
- E. She should be screened, because the most common type of thyroid cancer (papillary thyroid cancer) has a poor survival rate.

2. Which of the following statements provide evidence that screening may lead to overdiagnosis of thyroid cancer?

- A. Thyroid cancer mortality and incidence are increasing at similar rates.
- B. Autopsy studies have found that approximately 10% of patients who die of other causes have papillary cancer in their thyroid glands.
- C. Thyroid cancer incidence is increasing at a much greater rate than thyroid cancer mortality.
- D. Thyroid cancer incidence remains stable, whereas thyroid cancer mortality is rising.

3. According to the USPSTF, which of the following are known risk factors for thyroid cancer?

- A. A first-degree relative with a history of thyroid cancer.
- B. A history of familial adenomatous polyposis.
- C. A first-degree relative with a history of a benign thyroid nodule.
- D. A history of radiation exposure to the head and neck as a child

Answers appear on the following page.

See related U.S. Preventive Services Task Force Recommendation Statement at <http://www.aafp.org/afp/2018/0315/od1.html>.

This PPIP quiz is based on the recommendations of the USPSTF. More information is available in the USPSTF Recommendation Statement and the supporting documents on the USPSTF website (<http://www.uspreventiveservicestaskforce.org>). The practice recommendations in this activity are available at <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/thyroid-cancer-screening1>.

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CME This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz Questions on page 370.

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Answers

1. The correct answer is C. The USPSTF recommends against screening for thyroid cancer in asymptomatic adults (D recommendation). The USPSTF found inadequate direct evidence on the benefits of screening but determined that the magnitude of the overall benefits of screening and treatment can be bounded as no greater than small, given the relative rarity of thyroid cancer, the apparent lack of difference in outcomes between treatment and surveillance (for the most common tumor types), and observational evidence showing no change in mortality over time after introduction of a mass screening program.¹ Similarly, the USPSTF found inadequate direct evidence on the harms of screening but determined that the magnitude of the overall harms of screening and treatment (i.e., permanent hypoparathyroidism, recurrent laryngeal nerve palsy, and subsequent vocal cord paralysis), can be bounded as at least moderate, given that overdiagnosis and overtreatment are likely to be substantial with population-based screening. Therefore, the USPSTF determined with moderate certainty that the net benefit of screening for thyroid cancer is negative. Most cases of thyroid cancer have a good prognosis.

2. The correct answers are B and C. Although no direct studies exist on whether screening causes overdiagnosis, ecological and cross-sectional data suggest that screening for thyroid cancer leads to an increase in incidence without any resulting change in mortality. The best ecological evidence on the overdiagnosis of thyroid cancer comes from South Korea, which has had an organized cancer screening program since 1999. Although the program did not officially include screening for thyroid cancer, clinicians frequently offered thyroid screening using ultrasonography. In 2011, the rate of thyroid cancer diagnosis was

15 times the diagnosis rate in 1993, whereas the rate of thyroid cancer mortality remained stable. Although the United States does not have an organized screening program, opportunistic screening and increased imaging of the head and chest appear to be leading to much more frequent identification of small papillary cancers. The incidence of thyroid cancer in the United States increased from 4.9 cases per 100,000 persons in 1975 to 14.3 cases per 100,000 persons in 2009, whereas the mortality rate remained around 0.5 deaths per 100,000 persons per year.² A summary of 15 autopsy studies found that 11.5% of thyroid glands incidentally obtained at autopsy were positive for papillary thyroid carcinoma, mostly tiny tumors (diameter less than 3 mm).

3. The correct answers are A, B, and D. Several factors substantially increase the risk of thyroid cancer, including a history of radiation exposure to the head and neck as a child, exposure to radioactive fallout, family history of thyroid cancer in a first-degree relative, having a diet low in iodine, certain genetic conditions, such as familial medullary thyroid cancer or multiple endocrine neoplasia syndrome (type 2A or 2B), and an inherited genetic syndrome associated with thyroid cancer (e.g., familial adenomatous polyposis). Having a first-degree relative with benign thyroid nodules does not increase the risk of thyroid cancer.

The views expressed in this work are those of the authors, and do not reflect the official policy or position of the Department of Health and Human Services or the U.S. government.

References

1. US Preventive Services Task Force. Screening for thyroid cancer: US Preventive Services Task Force recommendation statement. *JAMA*. 2017;317(18):1882-1887.
2. Lin JS, Bowles EJ, Williams SB, Morrison CC. Screening for thyroid cancer: updated evidence report and systematic review for the US Preventive Services Task Force. *JAMA*. 2017;317(18):1888-1903. ■