



Thyroid Nodule Surveillance as a Function of Clinical Guidelines and Patient Factors: A Survey Study



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Introduction

- The American College of Radiology (ACR) Thyroid Imaging, Reporting, and Data System (TI-RADS) was created to guide clinical decision making regarding the management and care of thyroid nodules [1]
- Reports have shown sub-optimal clinician adherence to the TI-RADS system [2]
- We aim to further uncover the factors that lead to unnecessary thyroid ultrasound imaging in patients who are being followed for thyroid nodules
- We hypothesized that there may be additional non-clinical factors that lead physicians to over or under-prescribe thyroid ultrasound imaging including gender, race, illness anxiety, and socioeconomic status

Survey

Consenting statement: An Albany Medical Center Multidisciplinary Endocrinology Group is conducting a survey-based study that seeks to capture trends in management preferences of thyroid nodules. The survey is completely anonymous and is offered to any board-certified/eligible physician managing thyroid nodules. Participation is voluntary. Please indicate if you consent to participate in this IRB exempt survey-based study.

Path A:

Q1A: A 40-year-old woman comes to your office after an incidentally detected solitary 1.8 cm TI-RADS 2 nodule in her right thyroid lobe (imaging below). She has a history of hypertension that is well controlled with diet and exercise. She has no complaints, and her nodule does not affect her daily life. What are your steps for management?

Q2A: A pleasant 52-year-old woman was referred to your office for a 1.3cm TI-RADS 3 nodule that was discovered incidentally (shown below). She has no major health issues and does not take any medications other than a daily multivitamin. She is a well-informed patient and has read about the management and care for thyroid nodules. What are your steps for management?

Q3A: A 46-year-old woman comes to your office today after being referred for a 2.3 cm TI-RADS 3 nodule. She takes no other medications and has no other concerns. She is accompanied by her partner and has two young kids at home and was able to hire child-care for the duration of her visit. What are your steps for management?

Q4A: A 42-year-old woman (Black patient photo) presents to your office with a 6mm TI-RADS 2 nodule that was found incidentally on exam. She is otherwise very healthy and has no daily medications. She is essentially asymptomatic and has not had any heat or cold intolerance or metabolic issues. What are your steps for management?

Q5A: A 41-year-old woman (white patient photo) presents to your office with a recent ultrasound showing a 1.4cm TI-RADS 4 nodule that was first noticed by her primary care physician 3 years ago, with no significant changes in size. Her past medical history is unremarkable except for well-controlled hypertension. She works as a nurse in a local hospital. What are your next steps for management?

Q6A: A 50-year-old woman (white patient photo) presents to your clinic with a 9mm TI-RADS 5 lesion that was diagnosed 7 years ago. The lesion was never sampled with fine-needle aspiration. Reviewing multiple ultrasounds over that time period you see that the nodule has not changed in size. What are your next steps for management?

Path B:

Q1B: A 40-year-old woman comes to your office after an incidentally detected solitary 1.8cm TI-RADS 2 nodule in her right thyroid lobe (imaging below). She expresses extensive concern about her thyroid, and has had trouble focusing at work due to stress. She has a history of hypertension that is well controlled with diet and exercise. What are your steps for management?

Q2B: A pleasant 52-year-old man was referred to your office for a 1.3cm TI-RADS 3 nodule that was discovered incidentally (shown below). He has no major health issues and does not take any medications other than a daily multivitamin. He is a well-informed patient and has read about the management and care for thyroid nodules. What are your steps for management?

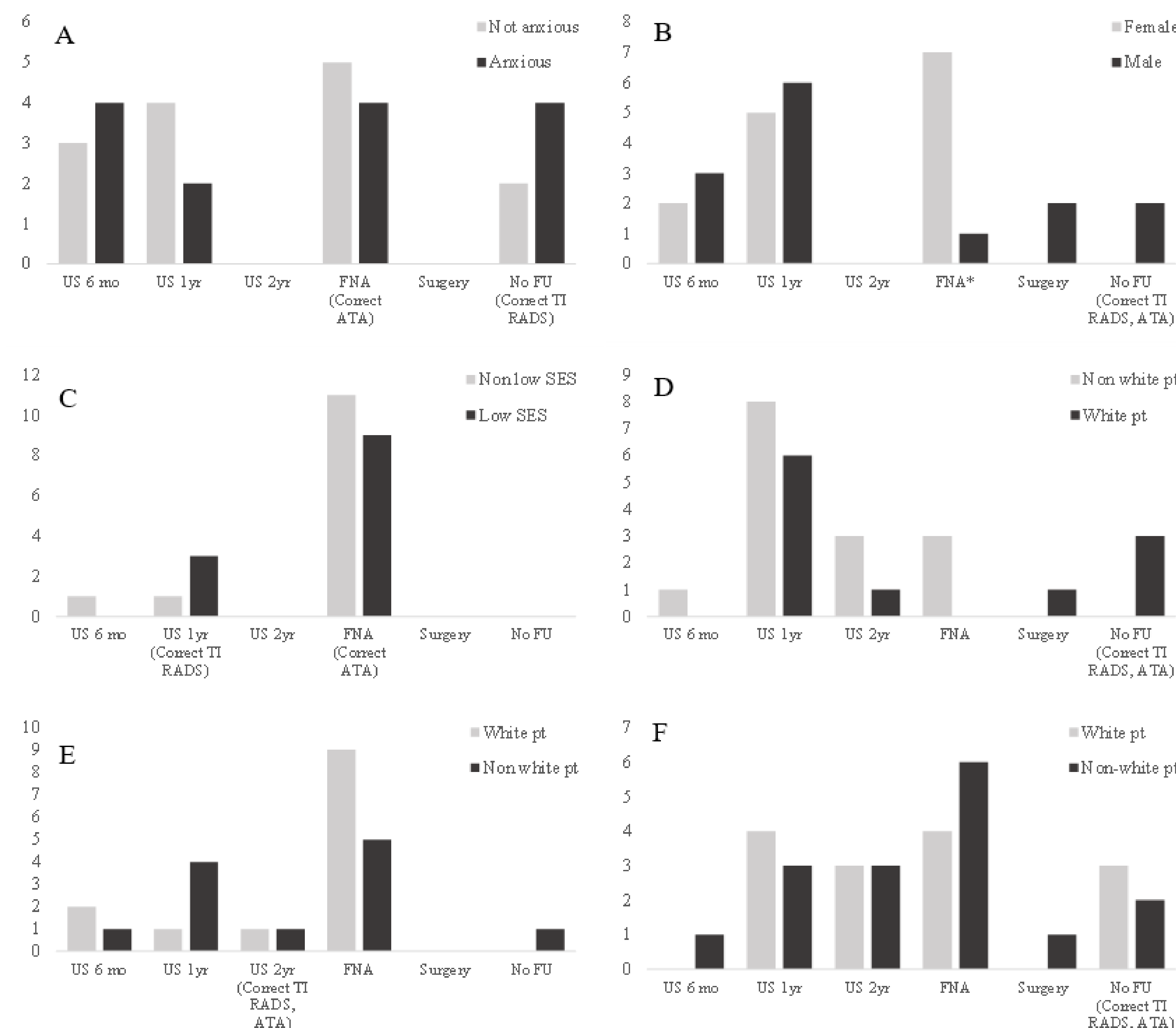
Q3B: A 46-year-old woman comes to your office today after being referred for a 2.3cm TI-RADS 3 nodule. She takes no other medications. She is a single mother accompanied by her two young children as she was not able to hire child-care for the duration of her visit. She expresses concern about coming to the doctor's office since she does not get paid-time-off from work. What are your steps for management?

Q4B: A 42-year-old woman (white patient photo) presents to your office with a 6mm TI-RADS 2 nodule that was found incidentally on exam. She is otherwise very healthy and has no daily medications. She is essentially asymptomatic and has not had any heat or cold intolerance or metabolic issues. What are your steps for management?

Q5B: A 41-year-old woman (Black patient photo) presents to your office with a recent ultrasound showing a 1.4cm TI-RADS 4 nodule that was first noticed by her primary care physician 3 years ago, with no significant changes in size. Her past medical history is unremarkable except for well-controlled hypertension. She works as a nurse in a local hospital. What are your next steps for management?

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Responses



Survey Results. (A) indicates effect of patient anxiety on provider responses. (B) indicates effect of patient gender on provider responses. (C) indicates effect of patient socioeconomic on provider responses. (D), (E), and (F) indicate effect of patient race on provider responses. Correct answers are indicated via (Correct TI RADS) and (Correct ATA). Statistical significance is denoted via (*) with significance defined as $p < 0.05$.

Variable	Question	% Expected response TI RADS	% Expected response ATA
Pt anxiety	Not anxious	14.3	35.7
	Anxious	28.6	28.6
Gender	Female	0.0	0.0
	Male	14.3	14.3
SES	Non-low SES	7.7	84.6
	Low SES	25.0	75.0
Race	Non-white pt	7.0	7.0
	White pt	18.4	18.4
Total		13.6	25.3

Methods

- Each participant was presented with four questions from the survey, out of a total of 12 questions.
- There were two versions of each question, one being the control with a non-descript patient vignette and the other adding a non-clinical factor, such as worriedness or race of the patient
- The control and experimental versions of the same question were never included together in the same survey
- Each question includes a brief case history, accurate TI-RADS score, patient photo, and US image
- Distributed to a variety of clinicians including attending and fellow thyroid surgeons, radiologists, internal medicine physicians, family medicine physicians, and endocrinologists

Results

- Our survey returned 50 physician responses for a total of 160 answers
- Among all question prompts, FNA was the most popular management choice at 39.5% (N=64).
- Responses were significantly more consistent with expected responses based off ATA guidelines (n=41, 25.3%) compared to TI RADS guidelines (n=22, 13.6%) ($\text{Chi}^2=7.1133$, $p=0.008$).
- 139 responses were considered over-management and one was considered under-management according to TI-RADS.
- 96 responses were considered over-management and 25 under-management according to ATA guidelines which is summarized in Table 1.
- Patient anxiety proved to have no effect on thyroid management
- FNA was offered as a diagnostic option significantly more in women (n=7) versus men (n=1) ($p=0.024$)
- No significant difference in how providers would manage patients based on our representation of a low versus non-low SES patient ($\text{Chi}^2=1.7514$, $p=0.6256$).

Conclusion

- While the incidence of thyroid cancer has been climbing, there has been virtually no change in mortality, suggesting this increase has led to over diagnosing and unnecessary treatment of benign thyroid nodules
- A significant strength of the ACR TI-RADS system is its emphasis on reducing over diagnoses and overtreatment of potentially benign thyroid nodules
- Several studies have demonstrated that ACR TI-RADS reduces the number of unnecessary biopsies compared to other risk stratification systems
- It is important that thyroid care teams, across specialties, follow a consistent risk stratification system.
- Our results indicating overall poor adherence to TI-RADS guidelines agrees with other studies, suggesting the need for improved provider education
- Recent studies, combined with our results suggest a strong need for improving provider education about how to classify thyroid nodules.
- The relationship between case volume and thyroid nodule risk stratification use needs further investigation
- Encouragingly, we did not find major differences in how providers would theoretically manage thyroid nodules based on race or socioeconomic status

References

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