



# Evaluation of the American College of Surgeons thyroid and parathyroid ultrasound skills-oriented course: results of a web-based survey



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## Abstract

**BACKGROUND:** The objective of this study was to survey attendees of the American College of Surgeons (ACS) Thyroid and Parathyroid Ultrasound Skills Oriented Course (TPUSC) to evaluate the usefulness of the course, to track surgeon-performed head and neck ultrasound practice patterns, and to help identify potential roadblocks to incorporation of HNUS into a surgeon's practice.

**STUDY DESIGN:** Cross-sectional web-based survey.

**METHODS:** A web-based survey was sent to post-graduate surgeons who completed the TPUSC at the annual ACS Clinical Congress meeting or at an ACS sponsored exported venue between 2010 and 2014. Questions included surgeon specialty, practice type, HNUS practice patterns and familiarity with American Institute of Ultrasound in Medicine (AIUM) credentialing.

**RESULTS:** The response rate was 24% (210 of 861). The mean rating for course usefulness was 4.2 (1=not useful; 5=extremely valuable). 194 (92%) surgeons reported that their educational goals were met by the course and 162 (77%) surgeons reported performing HNUS in their practice. Of 48 surgeons who were not performing HNUS, 24 (50%) attributed insufficient time in their clinic schedule and 21 (44%) attributed high equipment costs. 37% of surgeons actively performing HNUS reported that they would not pursue AIUM accreditation.

**CONCLUSIONS:** The TPUSC is a valuable educational experience for surgeons seeking to gain proficiency in HNUS. Surgeon familiarity with AIUM accreditation remains low, and further information on HNUS credentialing is warranted for future TPUSC curricula.

## Introduction

Surgeon-performed head and neck ultrasonography (HNUS) has become increasingly popular as a supplement of the head and neck physical examination and as a guide for office-based procedures.<sup>1</sup> The advantages and efficacy of surgeon-performed HNUS for diagnostic and procedural applications are well documented.<sup>2-3</sup>

The ACS 'Thyroid and Parathyroid Ultrasound Skills-oriented Course' (TPUSC) was initiated in 2001 and is the only surgeon-taught HNUS course in the United States. The TPUSC is offered at the annual ACS Clinical Congress meeting and multiple NUF-sponsored exported sites nationwide.<sup>4</sup> Core curriculum components of the TPUSC include: principles of ultrasound physics; indications, advantages and limitations of HNUS; interpretation of HNUS examinations; hands-on practicum for diagnostic and procedural guidance HNUS applications. To date, long term follow-up with TPUSC attendees has not been performed.

Following completion of the TPUSC, surgeons may face a variety of challenges with incorporation of HNUS into their practice. These include, but are not limited to:

- Learning curve to acquire HNUS expertise.
- Time investment and its impact on clinical practice flow.
- Equipment costs.
- Coding or billing for HNUS procedures.
- Hospital privilege requirements.
- HNUS credentialing; lack of proper credentialing may prevent surgeons from obtaining reimbursement from insurance providers for HNUS procedures.

As of 2015, the American Institute of Ultrasound in Medicine (AIUM) offers HNUS accreditation for surgeons who meet standards of experience and competency with HNUS.<sup>5</sup> AIUM accreditation costs over \$1000 and must be renewed every 3 years.

A critical appraisal of the TPUSC is warranted to identify areas for improvement in HNUS education of surgeons. The objective of this study was to survey surgeons who completed the ACS TPUSC to gauge the effectiveness of the course, evaluate HNUS competency levels and practice patterns among course graduates, and to identify potential barriers to successful incorporation of HNUS into a clinical practice.

## Methods

The inclusion criteria included post-graduate surgeons who completed the TPUSC between 2010 and 2014. Surgery residents and fellows, and physicians of non-surgical specialties were excluded. A web-based survey (FluidSurveys.com) was e-mailed to 952 surgeons. Questions were structured to ascertain the surgeon's total years of clinical experience, current clinical practice setting, subjective evaluation of the TPUSC, competency with HNUS one year after completion of the course, current HNUS practice patterns (if applicable) and perceived barriers to incorporation of HNUS into clinical practice.

Differences in mean course ratings between respondents of different demographics were calculated using a t-test ( $\alpha=0.05$ ). Associations between respondent demographics and categorical data were calculated using Pearson chi-squared test ( $\alpha=0.05$ ).

## Results

The survey response rate was 24% (from 861 active e-mail addresses).

### Demographics:

- Gender: 162 male (77%), 48 female
- Median age group: 40-49 years; Mean clinical experience: 13.8 years
- Clinical specialty: Otolaryngology-HNS (73%), General Surgery (17%), Endocrine Surgery (10%)
- Clinical practice setting: Academic (41%), private (57%), combined (2%)
- Ambulatory practice type: Hospital-based clinic (46%), office setting (54%)

### Overall usefulness

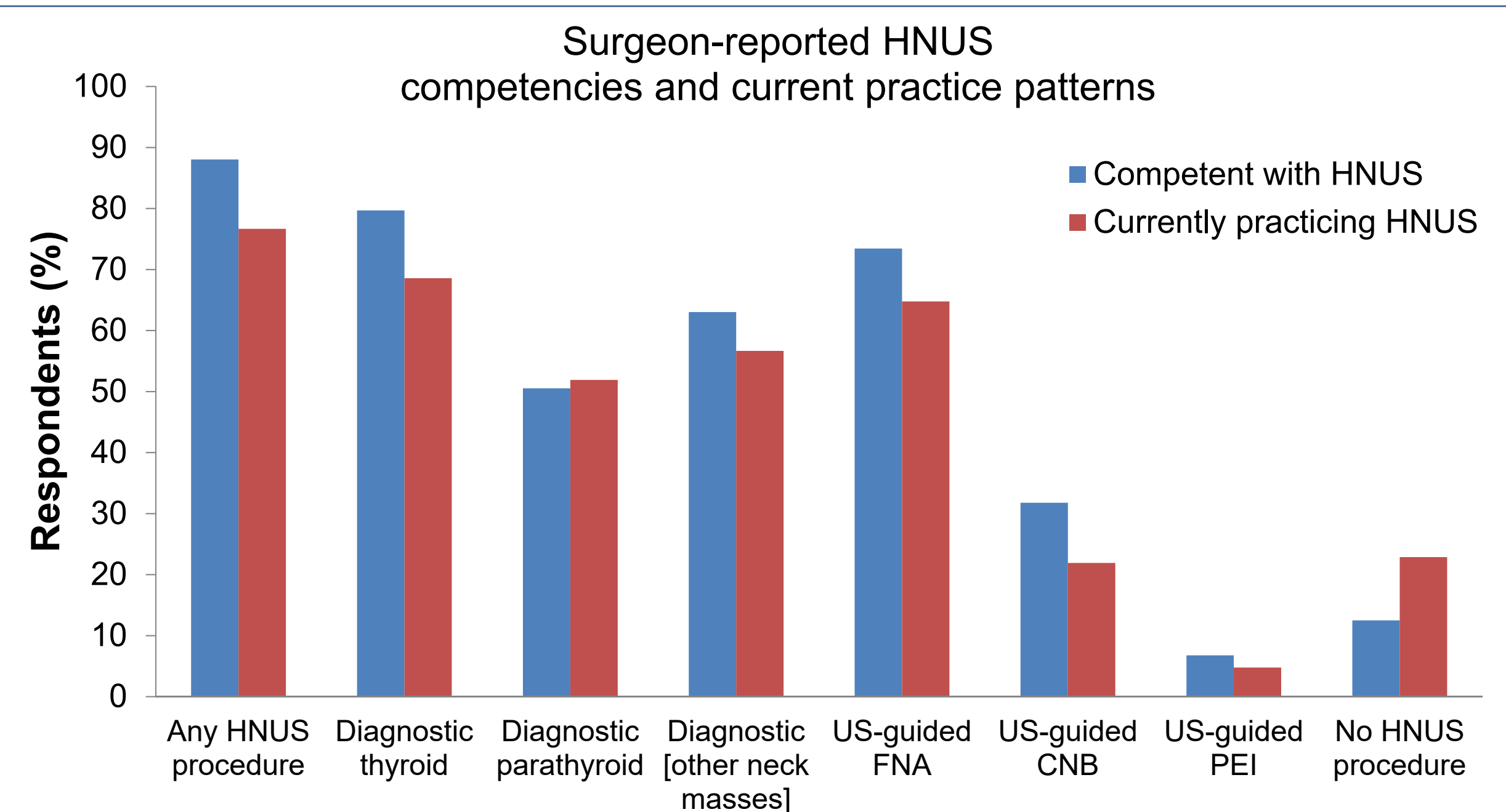
- Mean 4.2 out of 5 points (1=not useful; 5=extremely valuable).
- 193 (92%) respondents reported their pre-course goals were met by the TPUSC.

### Practice patterns

- 162 (77%) respondents reported currently performing HNUS.
- Respondents with greater post-TPUSC experience were performing a greater number of diagnostic HNUS procedures (chi-squared  $p=0.001$ ).

### Challenges with HNUS implementation

- Of 162 surgeons actively performing HNUS, 28 (17%) planned to pursue AIUM accreditation.
- Of 48 surgeons not performing HNUS, 24 (50%) reported insufficient time in clinic schedule, 21 (44%) reported high equipment costs, 13 (27%) reported need for supervision, 8 (17%) reported lack of HNUS credentialing and 6 (13%) cited low reimbursement.
- 37% of surgeons who reported performing HNUS did not plan to pursue AIUM accreditation due to either accreditation cost, the 3-year AIUM reaccreditation cycle or miscellaneous reasons (e.g. not actively billing for HNUS). Multiple respondents cited low clinical volume to meet requirements ( $\geq 50$  diagnostic procedures/year) for maintenance of AIUM certification.



### Head and neck ultrasound application

**Figure 1.** Surgeon-reported competencies for HNUS procedures after at least 12 months of clinical experience after completion of TPUSC (n=192; blue bar), compared to current HNUS practice frequencies for the study sample (n=210; red bar). Eighteen respondents had less than 12 months of post-TPUSC clinical experience. US = ultrasound; FNA = fine needle aspiration; CNB = core needle biopsy; PEI = percutaneous ethanol injection.

## Discussion

Graduates of the TPUSC rated the course very useful (4.2 out of 5 points) and had a high (92%) goal achievement rate. A large proportion (77%) of respondents reported performing HNUS in their clinical practice. No significant differences in course usefulness rating, goal achievement or current HNUS practice frequencies were noted between respondents of different clinical specialties, practice settings, years of post-TPUSC experience or total years in clinical practice. This underscores the wide applicability of the TPUSC for surgeons of different backgrounds and practice types.

Eighty percent of 2010-2013 TPUSC graduates and 66% of 2014 TPUSC graduates reported performing HNUS. This difference may suggest a HNUS learning curve of approximately one year before the surgeon feels comfortable with HNUS applications. While only 6% of total respondents and 27% of HNUS non-practitioners cited the need for additional training, a TPUSC refresher course may be helpful for surgeons to refine their skills and meet AIUM accreditation requirements. AIUM accreditation is increasingly being required by insurance providers for reimbursement. Accreditation, while costly, may benefit physicians in maintaining objective standards of HNUS expertise and help inform patients about their surgeon's credentials.

## Conclusions

The ACS TPUSC is effective in educating surgeons on the principles and techniques of HNUS. Increased discussion on the HNUS accreditation process, economic and practical challenges associated with performing HNUS, and strategies to counter these challenges may be warranted for future courses.

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### In Memoriam:

We express our deep gratitude to our late co-author and friend, **Dr. Robert A. Sofferman**, for his contributions as a surgeon, teacher and mentor. Dr. Sofferman was a long-standing advocate of education and accreditation measures for surgeon-performed head and neck ultrasound. His articles, textbooks and lectures will continue to guide future generations of surgeons and his vision will continue on through ultrasound educational courses.

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