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Title: A novel longitudinal curriculum in ultrasound imaging for endocrine fellows

Background: Point-of-care ultrasound (POCUS) imaging is being increasingly used in the management of endocrine conditions such as thyroid nodules. Graduating endocrine fellows must demonstrate competence in the performance of thyroid ultrasound imaging and biopsy as a part of ACGME requirement. Gaps have been identified in current fellowship ultrasound training (through procedure logs and surveys of graduating fellows).

Objective: To create a cohesive and comprehensive longitudinal curriculum for ultrasound imaging in endocrine fellowship at Wake Forest Baptist Medical Center. At the end of training, the graduating endocrine fellow will be able to demonstrate practical application of ultrasound technology in the management of common endocrine conditions.

Rationale: While there are thyroid ultrasound imaging courses offered by several national associations (American Thyroid Association, Endocrine Society, American Association of Clinical Endocrinologists), these are intensive 1 to 2-day didactic lecture series with minimal hands-on experience. A curriculum spanning the duration of 2 years of fellowship would allow a more cost-effective and richer, longitudinal learning experience to hone technical skills.

Methods:

With tools provided in the 2018-19 educator certificate program, I propose using several measures to implement the new curriculum:

- Develop clearly defined goals and learning objectives.
- Online modules for asynchronous learning opportunities.
- Simulated practice sessions using thyroid phantom model (both with guidance of faculty as well as self-paced).
- Performance of neck imaging and fine needle aspiration in biopsy clinics with faculty supervision.

Evaluation Plan:

- Annual Pre-and post-surveys will be used to observe study learner attitudes and subjective experiences
- Development of matrix for evaluation of Point-of-Care ultrasound imaging and biopsy techniques by supervising faculty
- Development of matrix for evaluation for Point-of-Care assessment of fine-needle aspirate smear adequacy with cytotechnologist
- Quarterly procedure log verification by supervising faculty (review volume, complexity and case-mix index, ultrasound report-writing)
- Quarterly Milestone assessment by Clinical Competence Committee
- Final Competency Assessment
- Annual Endocrine Certification in Neck Ultrasound (ECNU) certification rates

Conclusions: Learner competency at the end of the program as well as certification rates will be used to determine the success of the program. The program will be under reassessment on an annual basis with goal for improvement via feedback on surveys.

References:

Haugen, Alexander, et al., 2015 American Thyroid Association Management Guidelines for Adult Patients with Thyroid Nodules and Differentiated Thyroid Cancer: The American Thyroid Association Guidelines Task Force on Thyroid Nodules and Differentiated Thyroid Cancer Thyroid. Jan 2016, 26(1): 1-133.

Zavitz et al, Point of Care Ultrasound at Wake Forest Baptist Medical Center, Past, Present and Future, Wake Forest Journal of Science and Medicine, Vol 3.

3-5 critical questions, challenges, and obstacles to moving your project forward

Critical Questions:

1. My initial curricular goals and learning objectives were designed as a composite of both cognitive and skills domains (application of ultrasound skills towards interpretation of current guidelines in clinical management). To this effect, I had included the flipped classroom and Tumor Board discussions in the curriculum

design. Should I stick with the original design or narrow it down to purely skills domain?

2. How can I develop a suitable matrix for assessment?
3. Final Competency Assessment- is one needed given the longitudinal nature of program?

Challenges:

1. Availability of teaching faculty for supervision of biopsy clinics
2. Learner engagement
3. ECNU: double-edged sword?