THYROID
Volume 27, Number 12, 2017

DOI: 10.1089/thy.2017.0387

Laboratory Services for Managing Thyroid Disease: Different and Common Viewpoints of American Thyroid Association Members and of Members of the Endocrine Division of the American Association for Clinical Chemistry

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Dear Editor:

Professional medical societies frequently use surveys to improve their decision making. When a survey impacts more than one society, cooperation between societies might facilitate identification of common or disparate priorities, needs, and perceptions, as well as implementation of identified action items. When we recently conducted a survey for the Laboratory Services Committee of the American Thyroid Association (ATA), which focused on laboratory services, we reached out to the Endocrine Division of the American Association for Clinical Chemistry (AACC-ENDO) to conduct the same survey among their members. AACC-ENDO represents those AACC members who have a practice focus, and special interest, in laboratory testing for endocrine diseases. While their opinions might not always be representative of the much larger group of AACC members with different practice foci, they are the key opinion leaders on endocrine laboratory testing within the AACC.

The surveys were open to all ATA and AACC-ENDO members. We asked one demographic question (primary practice setting; choices: academic, administration, corporate/industry, government/military, hospital, managed care, private practice, research, retired, other) and five topical questions (Table 1). Questions 1–3 were multilevel ranking questions, while questions 4 and 5 were binary questions.

The survey was performed via Survey Monkey and completed in March 2016. Data were analyzed with JMP and PEPI404. ANOVA and *post hoc t*-testing were used for questions 1–3. Ranking of mean scores within ATA and AACC-ENDO was done by connecting letters report (Table 2). Questions 4 and 5 and the demographic question were analyzed using chi-square testing (with Yates correction).

A total of 290 individuals (244 [16%] ATA members; 46 [25%] AACC-ENDO members) responded to the survey. All respondents completed the first four topical questions. Three ATA members skipped question 5. One ATA member and six AACC-ENDO members skipped the demographic question.

The primary practice setting in both groups was academic (54% ATA; 40% AACC-ENDO).

For the non-demographic questions, there was reasonable agreement between the two groups of survey responders, but a number of differences still emerged.

AACC-ENDO and ATA members ranked the same three options as their top choices for question 1 but in a different order; likewise for the top two question 2 choices. Only one option in the upper half of scores was common between the two groups for question 3 (Table 1).

Significant differences were observed in the ranking of options in question 1, with optimizing result reporting scoring higher for AACC-ENDO members and evaluation of optimal diagnostic and follow-up strategies scoring higher for ATA members. In question 2, reproducibility and accuracy of testing were scored higher by AACC-ENDO members. In question 3, there were higher scores for mass spectrometry by AACC-ENDO members, while ATA members scored multiplexed immunohistochemistry higher.

ATA members favored patient population-specific approaches (132 of 246), while 32 of 46 AACC-ENDO members preferred disease-specific algorithms (question 4; $p < 0.005$). AACC-ENDO members were more likely to have influence on the choice of laboratory testing than ATA members were (question 5; 39 of 46 vs 100 of 246; $p < 0.0001$).

Some of the differences observed between the two groups might have been expected (question 5, question 2 option b, and question 3 option c), while others were less predictable.

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Table 1. Survey Questions

Ranking questions: options (a, b, c, d…)	*Mean rank scores*	
	ATA	*AACC-ENDO*
1. Rank the importance of these priorities on a scale of 1 (least) to 6 (most)		
a. Education of physicians in basic principles of laboratory/pathology testing	3.533	3.391
b. Education of new testing technologies (e.g., mass spectrometry, array technology, deep sequencing)	3.053	2.891
c. Improving standardization/harmonization of laboratory tests (minimizing result differences between different assays for the same analyte)	3.537	4.022
d. Financial considerations of laboratory testing	3.169	2.630
e. Optimizing result reporting/interpretation of laboratory and pathology rest results including quality control parameters	3.594***	4.630***
f. Evaluation and selection of optimal diagnostic and follow-up strategies/ algorithms for thyroid diseases	4.115*	3.435*
2. Regarding the education of physicians, researchers, and healthcare specialists on basic principles of laboratory/pathology testing, rank in order of importance 1 (least) to 4 (most):		
a. Platform/technology differences incl. strength, weaknesses and interferences	2.156	2.130
b. Reproducibility and accuracy of testing and factors that influence it	2.570**	3.043**
c. Minimal significant chance between consecutives measurements	2.365	2.916
d. Clinical sensitivity/specificity and negative/positive predictive value of tests	2.910	2.630
3. Regarding the education of physicians, researchers, and healthcare specialists on new technologies, rank in order of importance 1 (least) to 4 (most)		
a. Mass spectrometry	2.168***	3.109***
b. Molecular testing, including next-generation sequencing and array technologies	2.693	2.717
c. Multiplexed immunohistochemistry testing	2.430***	1.522***
d. Point of care and point of patient testing	2.710	2.652
Binary questions	ATA (*n*) (A/B, Y/N)	AACC-ENDO (*n*) (A/B, Y/N)
4. Regarding selection of optimal diagnostic and follow-up testing strategies/ algorithms for thyroid diseases what is more important: disease-specific (A) or Patient population-specific (B)?	114/132**	32/14**
5. Do you have influence on choice of lab testing (Y/N)?	100/141#	39/7#

*$p < 0.016$; **$p < 0.005$; ***$p < 0.001$; #$p < 0.0001$.

Diagnostic strategies/algorithms (question 1, option f) are clearly in high demand by ATA and AACC-ENDO members. Yet, ATA members choose population-based strategies over disease-oriented approaches (question 4), while AACC-ENDO members show the opposite preference. Therefore, while both sides favor diagnostic algorithms, they might not be talking about the same thing.

Another interesting observation is the preference of AACC-ENDO members for optimizing result reporting (question 1, option e), which ATA members rank lower. This might reflect either diagnostic overconfidence of ATA members, or overestimation of the clinical relevance of improved reporting by AACC-ENDO members. It might be beneficial if ATA and AACC-ENDO collaborate to discuss this finding.

Table 2. Connecting Letters Report for Questions 1–3 of Table 1, Stratified by ATA and AACC-ENDO[a]

Question 1: Options (a, b, c, d, e, f)		*Question 2: Options (a, b, c, d)*		*Question 3: Options (a, b, c, d)*	
ATA	*AACC-ENDO*	*ATA*	*AACC-ENDO*	*ATA*	*AACC-ENDO*
f. A	e. A	d. A	b. A	d. A	a. A
e. B	c. A B	b. B	d. A B	b. A	b. A
c. B	f. B C	c. B C	c. B	c. B	d. A
a. B	a. B C	a. C	a. B	a. C	c. B
d. B C	b. C				
b. C	d. C				

[a]The connecting letters report shows significant differences between the option rankings within each group (ATA and AACC-ENDO, respectively). In a connecting letter report, levels are sorted by their means, from highest to lowest. Levels that are not connected by the same letter are significantly different from each other (multi-comparison corrected $p < 0.05$).

ATA, American Thyroid Association; AACC-ENDO, Endocrine Division of the American Association for Clinical Chemistry.

The low interest of ATA members in mass spectrometry is also remarkable. This technology is sweeping through the laboratory community. Yet, it seems to be regarded as being of minor importance by ATA members. ATA members appear to continue to underestimate the importance of the actual laboratory testing process, which is also reflected by their lesser interest in reproducibility and accuracy of test results. This is another area where coordinated educational efforts between the two groups might be beneficial.

Finally, both societies rank the financial impact of laboratory testing as a low priority. This warrants some discussion; current efforts at test utilization control might have to be rethought.

We conclude that this combined survey has provided insights that transcend what the same efforts might have provided if performed by each group alone. Even more accurate insights might have been achieved if response rates, a perennial problem with surveys, had been higher. Nonetheless, even with this limitation, we propose this collaborative model for consideration in future surveys that impact more than one constituency.

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