

The Prevalence in Usage of Standardized Reporting Systems for Sonographically Detected Thyroid Nodules

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Introduction

Ultrasound is an important first step in evaluating nodular thyroid disease and guides the use of further investigations.¹ Many stratification systems have been created to help assess the risk of malignancy, including the Thyroid Imaging Reporting and Data System by the American College of Radiology (ACR TI-RADS),² a validated reporting system that may decrease the detection of neoplasms without malignant potential and mitigate further invasive procedures.^{3,4}

However, there are barriers with adopting new reporting systems,⁵ which may impact utilization across healthcare systems and care providers. This study aims to describe the prevalence of usage of standardized reporting systems and the early implementation of ACR TI-RADS in community ultrasound centers within a large, provincial healthcare system in Canada.

Material and Methods

A cross-sectional study was completed to survey the use of standardized reporting for thyroid ultrasounds in community centers within Ontario.

Independent Health Facilities (IHF) are community-based facilities licensed to provide specified health services in the 14 Local Health Integration Networks (LHINs) of Ontario. A short survey was sent to IHFs providing “General Ultrasound”, which encompasses all non-hospital facilities which may perform thyroid ultrasounds. This survey inquired about the past and current use of standardized reporting, and the year of adoption. Electronic and mailed responses were included until February 4, 2020.

Results

Of 440 eligible IHFs, 67 contacts responded for 169 IHFs (38% participation). Forty-one responses pertained to individual ultrasound clinics, while the remaining 128 IHFs were described by 26 contacts who represented multiple facilities.

Of the participating IHFs, 127 (75%) were using a standardized reporting system (Table 1). Of these IHFs, 114 (90%) reported using ACR TI-RADS, while 10 (8%) used the 2015 American Thyroid Association (ATA) Guidelines⁶ and 3 (2%) followed the Cancer Care Ontario (CCO) Thyroid Diagnosis Pathway,⁷ which recommends the use of ACR TI-RADS. Adoption of ACR TI-RADS in the LHINs varied from 0% to 100% (Fig. 2). When asked about their use of standardized reporting prior to their current system, only users of ACR TI-RADS replied, and they reported the use of ATA Guidelines⁶ (22%), Kwak TI-RADS⁸ (26%), or no standardized reporting system (53%).

Fourteen respondents included comments regarding their impressions of ACR TI-RADS. Most (n=12) viewed this reporting system positively (“All imaging clinics should be advised to use [ACR] TI-RADS”). Two of these respondents indicated that “further information” or “large glossy posters” would promote implementation of ACR TI-RADS in the IHFs. The remaining two comments stated that TI-RADS was only used when “considering suggesting FNA” and that “not all radiologists like to use TI-RADS”.

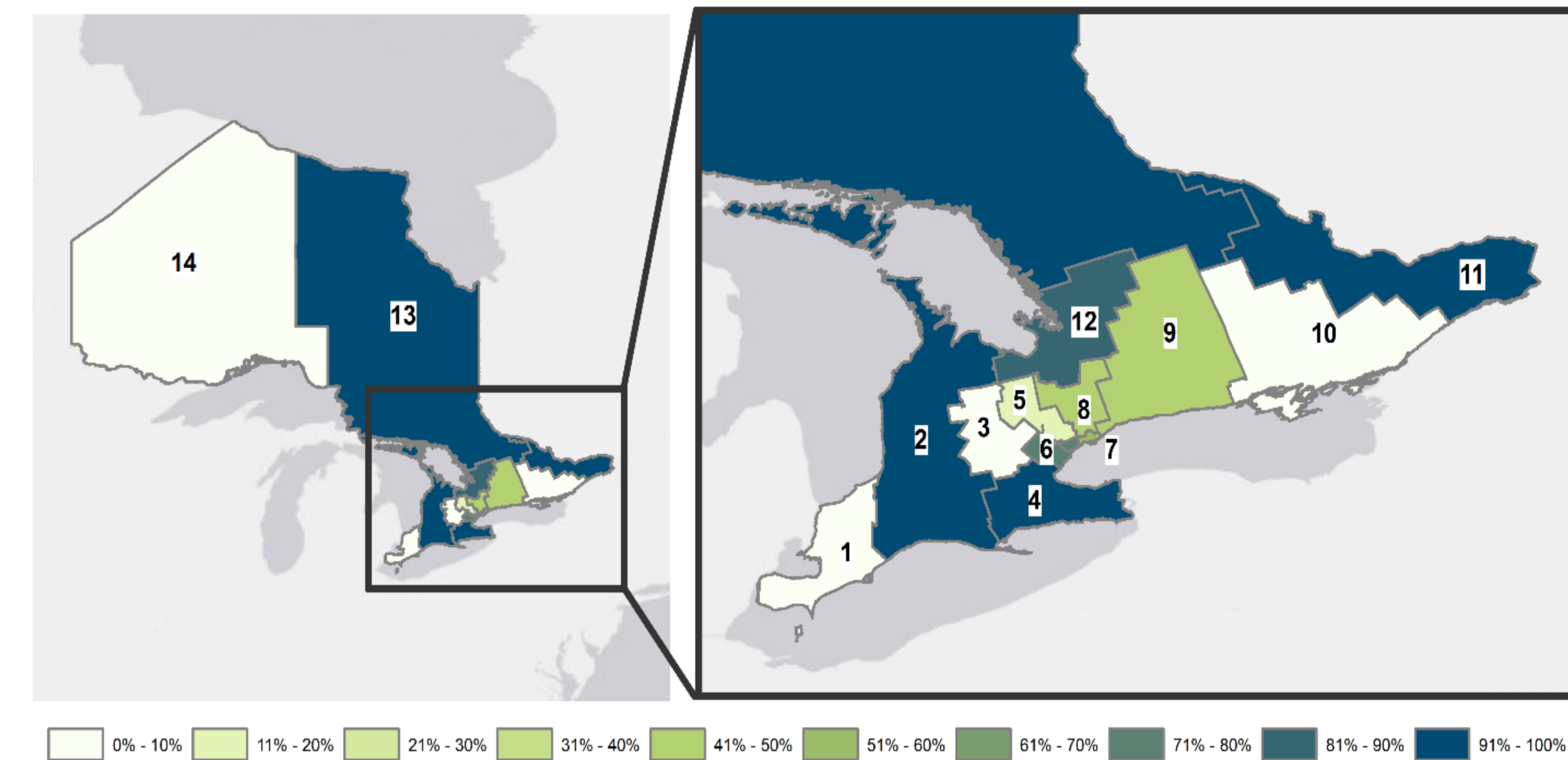


Fig. 1. Usage of ACR TI-RADS of IHFs by Local Health Integration Network

Table 1. Survey Responses

Responses	n (%)
Role of Respondent by IHF^a (n=169)	
President	38 (22%)
Quality Advisor	72 (43%)
Radiologist	68 (40%)
Other	52 (31%)
Currently Used Reporting System^b (n=127)	
ACR TI-RADS (2017) ²	114 (90%)
ATA Guidelines (2015) ⁶	10 (8%)
CCO Guidelines ⁷	3 (2%)
Reporting System Prior to Current One^c (n=78)	
ATA Guidelines (2015) ⁶	17 (22%)
Kwak TI-RADS ⁸	20 (26%)
None	41 (53%)
Year of Implementing ACR TI-RADS^d (n=113)	
2017	20 (18%)
2018	48 (42%)
2019	45 (40%)

Table 2. Demographics of Participating IHFs

LHIN Name	Number of Participants	Number of IHFs Available	LHIN Participation	Standardized Reporting	ACR TI-RADS Usage
1 - Erie St - Clair	5 (3%)	20	25%	0	0
2 - South West	7 (4%)	18	39%	7 (100%)	7 (100%)
3 - Waterloo Wellington	3 (2%)	20	15%	3 (100%)	0
4 - Hamilton Niagara Haldimand Brant (HNHB)	30 (18%)	45	67%	30 (100%)	30 (100%)
5 - Central West	6 (4%)	25	24%	2 (33%)	1 (17%)
6 - Mississauga Halton	14 (8%)	37	38%	10 (71%)	10 (71%)
7 - Toronto Central	15 (9%)	55	27%	10 (67%)	8 (53%)
8 - Central	22 (13%)	82	27%	15 (68%)	11 (50%)
9 - Central East	28 (17%)	77	36%	16 (57%)	13 (46%)
10 - South East	2 (1%)	8	25%	0	0
11 - Champlain	21 (12%)	30	70%	21 (100%)	21 (100%)
12 - North Simcoe Muskoka	6 (4%)	10	60%	5 (83%)	5 (83%)
13 - North-East	8 (5%)	10	80%	8 (100%)	8 (100%)
14 - North-West	2 (1%)	3	67%	0	0
Total	169	440	38%	127 (75%)	114 (67%)

Discussion

Most community ultrasound facilities were using standardized reporting for the description of thyroid nodules. ACR TI-RADS was the reporting system most used within the IHFs, which both previously did (47%) and did not (53%) use any form of standardized reporting.

However, adoption was not uniform and there was large regional variation between health regions. Suggested measures such as accompanying education or material may help to improve uptake of standardized reporting. Further studies in quality improvement initiatives for thyroid cancer care may help to minimize geographic variability.

References

- Nguyen QT, Lee EJ, Huang MG, Park YI, Khullar A, Plodkowski RA. Diagnosis and treatment of patients with thyroid cancer. *Am Health Drug Benefits*. 2015;8(1):30-40.
- Tessler FN, Middleton WD, Grant EG, Hoang JK, Berland LL, Teefey SA, et al. ACR Thyroid Imaging, Reporting and Data System (TI-RADS): White Paper of the ACR TI-RADS Committee. *J Am Coll Radiol*. 2017;14(5):587-95. doi: 10.1016/j.jacr.2017.01.046.
- Jabar ASS, Koteswara P, Andrade J. Diagnostic reliability of the Thyroid Imaging Reporting and Data System (TI-RADS) in routine practice. *Pol J Radiol*. 2019;84:e274-e80. doi: 10.5114/pjr.2019.86823.
- Wiseman SM, Baliski C, Irvine R, Anderson D, Wilkins G, Filipenko D, et al. Hemithyroidectomy: the optimal initial surgical approach for individuals undergoing surgery for a cytological diagnosis of follicular neoplasm. *Ann Surg Oncol*. 2006;13(3):425-32. doi: 10.1245/aso.2006.03.089.
- Yoon JH, Lee HS, Kim EK, Moon HJ, Park VY, Kwak JY. Pattern-based vs. score-based guidelines using ultrasound features have different strengths in risk stratification of thyroid nodules. *Eur Radiol*. 2020;30(7):3793-802. doi: 10.1007/s00330-020-06722-y.
- Haugen BR, Alexander EK, Bible KC, Doherty GM, Mandel SJ, Nikiforov YE, 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*. 2016;26(1):1-133. doi: 10.1089/thy.2015.0020.
- Cancer Care Ontario. Differentiated Thyroid Cancer Diagnosis Pathway Map. In: *Thyroid Cancer Pathway Map*. 2019. <https://www.cancercareontario.ca/sites/ccocancercare/files/assets/CCOthyroidDiagnosisPathway.pdf>. Accessed 23 Jul 2020.
- Kwak JY, Han KH, Yoon JH, Moon HJ, Son EJ, Park SH, et al. Thyroid imaging reporting and data system for US features of nodules: a step in establishing better stratification of cancer risk. *Radiology*. 2011;260(3):892-9. doi: 10.1148/radiol.11110206.