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Canadian Association of Radiologists Head and Neck Imaging Referral Guideline

Candyce Hamel[1], Barb Avard[2], Ross Campbell[3], Mario Kontolemos[3], and Amanda Murphy[2]

Abstract

The Canadian Association of Radiologists (CAR) Head and Neck Expert Panel consists of radiologists, a laryngologist and laryngeal surgeon, a patient advisor, and an epidemiologist/guideline methodologist. After developing a list of 11 clinical/diagnostic scenarios, a systematic rapid scoping review was undertaken to identify systematically produced referral guidelines that provide recommendations for one or more of these clinical/diagnostic scenarios. Recommendations from 17 guidelines and contextualization criteria in the Grading of Recommendations, Assessment, Development, and Evaluations (GRADE) for guidelines framework were used to develop 26 recommendation statements across the 11 scenarios. This guideline presents the methods of development and the referral recommendations for sinus disease, tinnitus, thyroid and parathyroid disease, neck mass of unknown origin, acute sialadenitis, chronic salivary conditions, and temporomandibular joint dysfunction.

Résumé

Le groupe d'experts de la tête et du cou de l'Association canadienne des radiologistes (CAR) est constitué de radiologistes, d'un laryngologiste et chirurgien du larynx, d'une représentante des patients et d'un épidémiologiste spécialiste en méthodologie des lignes directrices. Après avoir élaboré une liste de 11 scénarios cliniques/diagnostiques, une revue systématique rapide de délimitation du problème a été entreprise pour repérer les lignes directrices de référence produites systématiquement qui fournissent des recommandations pour un ou plusieurs de ces scénarios. Des recommandations de 17 lignes directrices et critères de contextualisation du cadre GRADE (notation des recommandations, analyses, développements et évaluations) pour la structure des lignes directrices ont été utilisés pour élaborer 26 énoncés de recommandations couvrant les 11 scénarios. Ces lignes directrices présentent les méthodes d'élaboration et les recommandations d'orientation pour les maladies des sinus, les acouphènes, les maladies de la thyroïde et des parathyroïdes, les masses cervicales d'origine inconnue, la sialadénite aiguë, les troubles chroniques des glandes salivaires et le dysfonctionnement de l'articulation temporo-mandibulaire.

Keywords

sinus disease, tinnitus, thyroid, salivary, diagnostic imaging, referrals

Introduction

Beginning in May 2022, an Expert Panel (EP) comprised of radiologists, a laryngologist and laryngeal surgeon, a patient advisor, and an epidemiologist/guideline methodologist met to develop a new set of recommendations specific to referral pathways for clinical scenarios related to the head and neck. Through discussion (via a virtual meeting) followed by offline communication, the EP developed a list of 11 clinical/diagnostic scenarios to be covered by this guideline. These recommendations are intended primarily for referring clinicians (eg, family physicians, specialty physicians, nurse practitioners); however, they may also be used by radiologists, individuals/patients, and patient representatives.

[1] Canadian Association of Radiologists, Ottawa, ON, Canada
[2] North York General Hospital, University of Toronto, Toronto, ON, Canada
[3] Ottawa Hospital, University of Ottawa, Ottawa, ON, Canada

Corresponding Author:
Amanda Murphy, North York General Hospital, University of Toronto, 4001 Leslie Street, Toronto, ON M2K 1E1, Canada.
Email: Amanda.Murphy@nygh.on.ca

Table 1. Recommendation Text, Symbol, and Interpretation.

Recommendation	AGAINST	FOR
STRONG	**Strong, against** "we recommend against" (↓↓) • All or almost all informed people would not recommend/choose the course of action and only a small proportion would.	**Strong, for** "we recommend" (↑↑) • All or almost all informed people would recommend/choose the course of action and only a small proportion would not. • Request discussion if the intervention is not offered.
CONDITIONAL	**Conditional, against** "we suggest against" (↓) • Most informed people would not recommend/choose the course of action, but a substantial number would. • This may be conditional upon patient values and preferences, the resources available or the setting in which the intervention will be implemented.	**Conditional, for** "we suggest" (↑) • Most informed people would recommend/choose the course of action, but a substantial number would not. • This may be conditional upon patient values and preferences, the resources available or the setting in which the intervention will be implemented.

Note. Down arrows are red and Up arrows are green when available in color. Created using the guidance provided in Andrews et al.[6]
Created using the guidance provided in Andrews et al.[6]

Our methods describing the guideline development process, including the rapid scoping review to identify the evidence base, has been published in *CMAJ Open*[1] and an editorial to this series of guideline publications is available in *CARJ*.[2] The application of well-established scoping review and rapid review guidance (JBI,[3] Cochrane Handbook,[4] Cochrane Rapid Review Methods Group[5]) and guideline methodology (ie, Grading of Recommendations Assessment, Development, and Evaluation or GRADE[6,7]) were used to identify the evidence-base and to guide the Expert Panel in determining the strength and direction of the recommendations for each clinical scenario (Table 1). The quality of conduct and reporting of the included guidelines identified in the scoping review were evaluated with the AGREE-II checklist,[8] using a modified scoring system. In instances where guidelines were lacking, expert consensus was used to develop the recommendation. Contextualization to the Canadian health care system was considered for each recommendation, with discussion around the factors found in the Evidence to Decision framework in GRADE for guidelines (eg, balance of desirable and undesirable outcomes, values and preferences, resources implications).[7]

A systematic search for guidelines (with an *a priori* defined inclusion criteria) was run in Medline and Embase on July 4, 2022. The search was limited to publications from 2016 onward (Supplemental Appendix 1). Supplemental searching included the following national radiology and/or guideline groups: the American College of Radiology, the National Institute for Health and Care Excellence, and the Royal College of Radiologists 8th Edition (2017). Recommendations for each clinical scenario were formulated during one in-person/virtual hybrid meeting in December 2022. External review and feedback were obtained from radiologists, a nuclear medicine radiologist, an emergency physician, a family physician, and a nurse practitioner. The full guideline can be found on the CAR website (www.car.ca).

Results

Systematic Scoping Review

A total of 5214 records were identified through the electronic database and 6 additional records were added from the supplemental search. Seventeen guidelines, plus 6 companion papers, were included (Figure 1). Potentially relevant guidelines published in languages other than English can be found in Supplemental Appendix 2. A list of excluded records including justifications for exclusion is available upon request. Most guidelines were rated as moderate or high quality, using the modified AGREE-II checklist[8] (Supplemental Appendix 3). The number of guidelines included per clinical/diagnostic scenario ranged from 1 to 7, with a median of 2 guidelines per clinical scenario.

Recommendations

Additional details of the included guidelines, including which imaging modalities (eg, computed tomography [CT], magnetic resonance angiography [MRA], magnetic resonance imaging [MRI], nuclear medicine [NM], radiograph [XR], ultrasound [US]) that were discussed can be found in Supplemental Appendix 4.

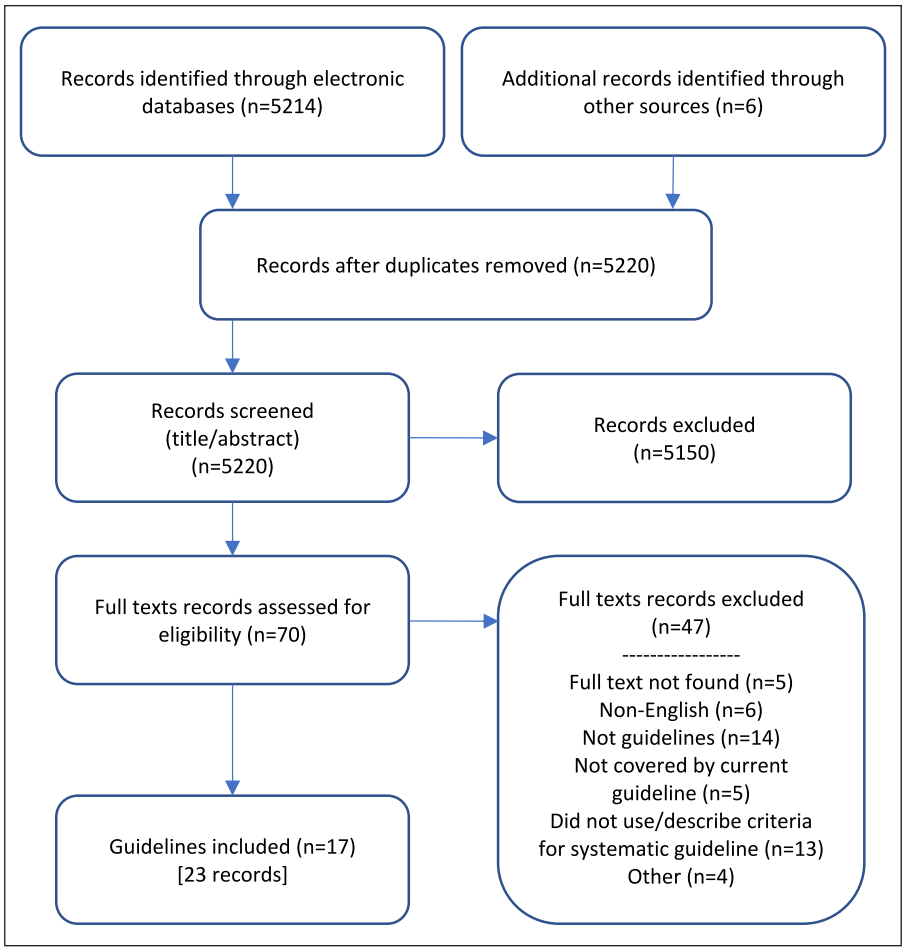

Figure 1. PRISMA flow diagram.

A guideline is intended to guide and not be an absolute rule. Medical care is complex and should be based on evidence, a clinician's expert judgment, the patient's circumstances, values, preferences, and resource availability. Not all imaging modalities are available in all clinical environments, particularly in rural or remote areas of Canada. Decisions about patient transfer, use of alternative imaging or serial clinical examination and observation can be difficult. Therefore, the expected benefits of recommended imaging, risks of travel, patient preference, and other factors must be considered. The guideline recommendations are to assist the choice of imaging modality in situations where it is deemed clinically necessary to obtain imaging.

Recommendations do not specify when contrast should or should not be used, as this may vary based on clinical presentation, regional practice preferences, preference of the referring clinician, radiologist and the patient, and resource availability.

We reviewed relevant recommendations related to the 11 clinical/diagnostic scenarios previously published by radiology and specialty societies, including: the Canadian Association of Radiologists,[9] the American College of Radiology,[10-15] the American Thyroid Association,[16] the European Thyroid Association,[17] the German Association of Endocrine Surgeons,[18] the International consensus statement on Allergy and Rhinology,[19] the Korean Society of Radiology/National Evidence-Based Healthcare Collaborating Agency,[20] the Korean Society of Thyroid Radiology,[21] the National Institute for Health and Care Excellence,[22-27] the Neck Mass Guideline Development Group,[28-30] and the Royal College of Radiologists.[31]

Recommendations are presented in 2 tables: Sinus disease and tinnitus (Table 2), Thyroid and parathyroid disease, neck mass of unknown origin, acute sialadenitis, chronic salivary conditions, and temporomandibular joint dysfunction (Table 3).

Table 2. Sinus Disease and Tinnitus Recommendations.

Clinical/diagnostic scenario and recommendations
H01. SINUS DISEASE
H01A. Acute and chronic sinusitis[9,10,19,31]
1. In adults with sinus disease, we recommend against **XR** (↓↓).
2. In adults with uncomplicated acute sinusitis (≤4 wk), we recommend against imaging (↓↓).
3. In adults with acute sinusitis with suspected complications, we recommend **CT** as the initial imaging modality (↑↑).
↳ **3.1** In adults where there is clinical or radiologic concern for intraorbital or intracranial complication, we suggest **MRI** as the next imaging modality (↑).
4. In adults who meet the definition (eg, Canadian Consensus Guidelines) of chronic sinusitis OR for recurrent acute sinusitis, we suggest **CT** as the initial imaging modality (↑).
Canadian Consensus Guidelines[32]: "A diagnosis of chronic rhinosinusitis (CRS) requires the presence of at least 2 of the CPODS symptoms* for 8-12 weeks, plus documented inflammation of the paranasal sinuses or nasal mucosa. The diagnosis of CRS is made on clinical grounds but must be confirmed by at least 1 objective finding on endoscopy or CT."
*__C__: Facial congestion or fullness; __P__: Facial pain, pressure or fullness; __O__: Nasal obstruction or blockage; __D__: Purulent anterior or posterior nasal drainage; __S__: Hyposmia or anosmia (smell)
H01B. Sinonasal tumours[10]
1. In adults with suspected sinonasal tumour, we recommend **CT** as the initial imaging modality (↑↑).
↳ **1.1** In adults with suspected sinonasal tumour on CT, we recommend **MRI** as the next imaging modality (↑↑).
H02. TINNITUS
H02A. Pulsatile tinnitus[11,22,23]
1. In adults with pulsatile tinnitus, we suggest **CT/CTA or MRI/MRA** as the initial imaging modality (↑).
The imaging modality selected may be based on regional practice preferences, preference of the referring clinician, radiologist and the patient, and resource availability.
H02B. Non-pulsatile tinnitus[11,22,23]
1. In adults with symmetrical atraumatic non-pulsatile tinnitus with no associated neurological signs and symptoms✧, we recommend **against imaging** (↓↓).
2. In adults with associated neurological signs and symptoms✧ OR with asymmetric atraumatic non-pulsatile tinnitus, we recommend **MRI of internal auditory canals** as the initial imaging modality (↑↑).
↳ **2.1** If MRI internal auditory canals is unavailable or contraindicated, we recommend **CT** (↑↑).
✧*For example, focal neurological abnormalities, otological (eg, asymmetrical hearing loss), head and neck signs and symptoms*
For hearing loss, see the CAR Central Nervous System Imaging Referral Guideline

Note. Strength of recommendation: ↑↑ = strong for; ↑ = conditional for; ↓ = conditional against; ↓↓ = strong against. CT = computed tomography; MRA = magnetic resonance angiography; MRI = magnetic resonance imaging; NM = nuclear medicine; US = ultrasound; XR = radiograph.

Table 3. Thyroid and Parathyroid Disease, Neck Mass of Unknown Origin, Acute Sialadenitis, Chronic Salivary Conditions, Temporomandibular Join Dysfunction Recommendations.

Clinical/diagnostic scenario and recommendations
H03. THYROID AND PARATHYROID DISEASE
H03A. Palpable nodule, including goiter[9,12,13,16,20,21,24-26,31]
1. In adults with palpable thyroid nodule or goiter, we recommend **US** as the initial imaging modality (↑↑).
↳ **1.1** If further investigation is required to evaluate for indications such as suspicion of invasive thyroid cancer, substernal and deep extension, tracheal compression, we recommend **CT** as the next imaging modality (↑↑).
H03B. Thyrotoxicosis and hyperthyroidism[9,12,13,17,24-26,31]
1. In adults with biochemical confirmation of thyrotoxicosis or hyperthyroidism (ie, suppressed TSH), we recommend **US** as the initial imaging modality (↑↑).
↳ **1.1** If focal abnormality is detected on US, we suggest **NM** (↑).
Note: We did not cover the management of thyroid nodules detected at US (or the management/ follow-up of previously biopsied benign nodules seen at US), as this is already established in published guidelines.

(continued)

Table 3. (continued)

Clinical/diagnostic scenario and recommendations
H03C. Primary hyperparathyroidism[9,14,18,27,31]
1. In adults with biochemically proven primary hyperparathyroidism, we recommend **US and NM** as the initial imaging modalities for operative consideration (↑↑).
↳ **1.1** If US and NM are nondiagnostic or discordant, we suggest **CT** as the next imaging modality at the physicians' discretion (↑).
H04. NECK MASS OF UNKNOWN ORIGIN, INCLUDING SALIVARY GLAND MASS[9,15,28-31]
1. In adults with neck mass of unknown origin with clinical concern for malignancy, we recommend **CT** as the initial imaging modality (↑↑).
2. In adults with neck mass of unknown origin with low clinical concern for malignancy, we recommend **US** as the initial imaging modality (↑↑).
↳ **2.1** If further investigation is required to characterize the mass, we recommend **CT or MRI** as the next imaging modality based on US findings (↑↑).
H05. ACUTE SIALADENITIS[9,31]
1. In adults with suspected acute sialadenitis with or without stone, we recommend **CT** as the initial imaging modality (EP consensus).
↳ **1.1** If CT is unavailable, we recommend **US** as the initial imaging modality (EP consensus).
H06. CHRONIC SALIVARY CONDITIONS[9,31]
1. In adults with xerostomia, suspected chronic sialadenitis, or suspected autoimmune/connective tissue disease, we recommend **US** (↑↑) **or CT** (EP consensus) as the initial imaging modality.
↳ **1.1** If further investigation is required, we suggest **MRI/MR sialography** as the next imaging modality (↑).
H07. TEMPOROMANDIBULAR JOINT DYSFUNCTION[9,31]
1. In adults with temporomandibular joint dysfunction, we suggest **against imaging** (↓), unless surgery is being considered.
↳ **1.1** In adults with clinically significant mechanical symptoms suggestive of temporomandibular joint dysfunction where surgery is being considered after failure of conservative management, we recommend **MRI** (↑↑).

Note. Strength of recommendation: ↑↑ = strong for; ↑ = conditional for; ↓ = conditional against; ↓↓ = strong against. CT = computed tomography; MRI = magnetic resonance imaging; NM = nuclear medicine; US = ultrasound.

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ORCID iD

Candyce Hamel https://orcid.org/0000-0002-5871-2137

Supplemental Material

Supplemental material for this article is available online.

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