HEAD AND NECK GUIDELINE

HEAD AND NECK EXPERT PANEL MEMBERS

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Canadian Association of Radiologists
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Contents

ABBREVIATIONS

ACR	American College of Radiology
AGREE-II	Appraisal of Guidelines for Research & Evaluation Instrument
AI	Artificial Intelligence
CAR	Canadian Association of Radiologists
CT	Computed Tomography
CTA	Computed Tomography Angiography
EP	Expert Panel
EtD	Evidence to Decision
GRADE	Grading of Recommendations Assessment, Development and Evaluation
MRA	Magnetic Resonance Angiography
MRI	Magnetic Resonance Imaging
NICE	National Institute for Health and Care Excellence
NM	Nuclear Medicine
RCR	Royal College of Radiologists
US	Ultrasound
XR	Radiograph

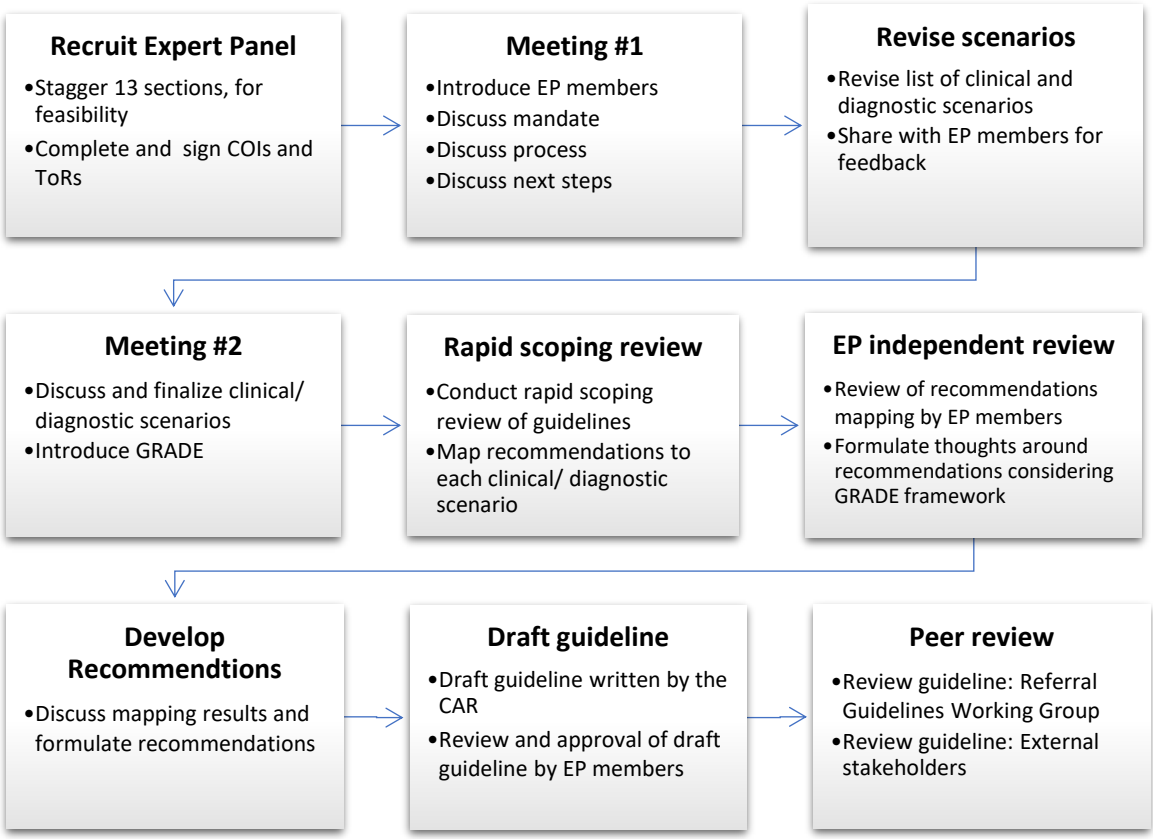
INTRODUCTION

The diagnostic imaging referral recommendations from the Canadian Association of Radiologists (CAR) were published in 2012 (https://car.ca/patient-care/referral-guidelines/) and are considered out of date. These recommendations were made up of 13 sections, of which one was Head & Neck. In 2020, the CAR, funded by the Canadian Medical Association (CMA), developed a plan to update the CAR diagnostic imaging referral recommendations. The project mandate is to develop a comprehensive set of evidenced-based diagnostic imaging referral guidelines suited for integration into CDS systems.

An Expert Panel (EP) made up head and neck radiologists, referring clinicians, a patient representative, and an evidence review/ guideline methodologist from across Canada met over a series of three meetings from May 2022 to November 2022.

The 15 clinical/diagnostic scenarios in the 2012 CAR recommendations were used as the starting point for discussions. After a review and update of these scenarios, an updated list of 15 clinical/diagnostic scenarios was created, which informed the systematic search strategy and rapid scoping review.

The general process of the guideline development is presented in **Figure 1**.



Abbreviations: CAR = Canadian Association of Radiologists; **COI** = Conflict of Interest; **EP** = Expert Panel; **GRADE** = Grading of Recommendations Assessment, Development and Evaluation; **ToR** = Terms of Reference

Figure 1 - Guideline Development Process

WHO ARE THESE RECOMMENDATIONS FOR?

These recommendations are primarily for referring clinicians (e.g., physicians, nurse practitioners); however, they may also be used by radiologists, patients, and/or patient representatives.

The primary objective of the recommendations is to promote the most appropriate diagnostic imaging procedure(s), so that patients receive these procedure(s) at the right time, resulting in better health outcomes.

Scope

The guideline recommendations are to assist the choice of imaging modality in situations where it is felt clinically necessary to obtain imaging. Imaging should not delay definitive management. We did not cover serial imaging, and time intervals for follow-up of known disease and/or treatment monitoring.

DISCLAIMER

These recommendations are not intended to stand alone. Medical care should be based on evidence, a clinician's expert judgment, the patient's circumstances, values, and preferences, and resource availability.

We recognize that not all imaging modalities are available in all locations, particularly in rural or remote areas of Canada. Decisions about whether to recommend that a patient travel for recommended imaging or perform alternate imaging locally can be difficult, and should consider the expected benefits of recommended imaging, risks of travel, patient preference, and other factors. This guideline is based on evidence related to diagnostic imaging tests only, not the clinical management of a patient.

METHODS OF THE RAPID SCOPING REVIEW

The conduct of the systematic rapid scoping review was guided by empirical review guidance: the Joanna Briggs Institute scoping review guidance [1], the Cochrane Handbook [2], and the rapid review interim guidance from the Cochrane Rapid Review Methods Group [3].

Inclusion Criteria

Publications were included if they met the following criteria:

Guidelines: Providing diagnostic imaging recommendations for one or more of the clinical/diagnostic scenarios identified by the Head & Neck Expert Panel.

Study design: Guidelines that were produced using three criteria in the AGREE-II assessment tool [4]:

(1) Systematic methods were used to search for evidence: Searched and named at least 1 electronic database using an electronic search strategy (e.g., Medline, Embase, PubMed, CENTRAL);
(2) The criteria for selecting the evidence are clearly described: Described a formal process for study selection; AND reported the inclusion and exclusion criteria; OR if it is based on a systematic review even if it does not provide explicit methods; and
(3) The strengths and limitations of the body of evidence are clearly described: Performed critical appraisal on the included studies (e.g., risk of bias, describe study limitations); OR if it is based on a systematic review and GRADE is performed.

Interventions: Any diagnostic imaging modality (e.g., radiograph [XR], magnetic resonance imaging [MRI], computed tomography [CT], ultrasound [US], nuclear medicine [NM]) were included.

Date of publication: To identify the most recent guidelines, which would contain the most recently published primary studies, and for feasibility, we included guidelines that were published or updated in 2016 onward.

Language of publication: English, for feasibility.

Search

A systematic search strategy was developed by an experienced information specialist (**Appendix 1**) using the list of clinical/diagnostic scenarios identified by the Head & Neck Expert Panel members. The search was run in Medline and Embase on July 4, 2022. The search was limited to publications from 2016 onward to capture the most recent guidelines, and for feasibility. There was no language restriction in the search. Supplemental searching included searching the following national radiology and/or guideline groups: the American College of Radiology (ACR), the National Institute for Health and Care Excellence (NICE), and the Royal College of Radiologists (RCR) 8th Edition (2017).

Title/abstract screening

Using a standardized form in DistillerSR, an online systematic review software [5], one reviewer screened the records in prioritized order, using the artificial intelligence (AI) re-ranking tool in DistillerSR. A stop-screening approach was implemented once 95% of the predicted included studies were identified [6,7]. The AI reviewer tool in DistillerSR excluded the remaining records. The AI audit tool was run to identify any records that were excluded that had high score for inclusion (i.e., a prediction score of 0.85 and above). These records were rescreened to ensure that they should have been excluded. A second reviewer verified a random sample of 10% of the included records and 20% of the excluded records, without knowledge of the inclusion or exclusion decision by the first reviewer. Any disagreements were resolved through discussion. The AI audit tool was rerun, and any records with a prediction score of ≥0.85 were rescreened.

Full text screening

Using a standardized form in DistillerSR, one reviewer evaluated the full texts of the guidelines against the eligibility criteria described above in the Inclusion Criteria.

Mapping

Recommendations were extracted from all included guidelines by one reviewer and presented in tabular form for each clinical/ diagnostic scenario. A synopsis (i.e., a condensed version of the evidence table) for each clinical/ diagnostic scenario was created based on the information in the evidence tables. These synopses highlighted the main recommendations across guidelines, with a focus on guidelines that used GRADE, and highlighted any discordant recommendations. These synopses were produced by the guideline methodologist and distributed to the EP members to help guide discussion when formulating the recommendations.

Critical appraisal

Each guideline was assessed for the level of quality using the AGREE-II instrument [4]. This was performed by one reviewer with a quality control check on a random sample of 10% of the guidelines.

FORMULATING RECOMMENDATIONS

A one-day in-person meeting was held on November 22, 2022, in Toronto, Ontario, Canada. Those who could not attend in-person joined virtually. The Expert Panel members discussed each of the clinical scenarios using the information in the synopses as a guide. When required, the full evidence tables (**Appendix 2**) were consulted for additional information. During these discussions, there were

modifications to the list of clinical/diagnostic scenarios by merging one with another. This resulted in a final list of 11 clinical/diagnostic scenarios.

NOTE: Details have been removed from Appendix 2 to comply with copyright protection. For additional information on these recommendations, please access the full publications.

The focus of these recommendations was to provide the recommendation for the initial imaging modality, and in some cases the next imaging modality or an alternative to the initial modality, in situations where the initial modality is negative, indeterminate, may not be available, or if additional imaging is required.

Specifying contrast protocols

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

Grading of Recommendations Assessment, Development and Evaluation

The Grading of Recommendations Assessment, Development and Evaluation (GRADE) for Guidelines framework [8,9] was used as a guide to determine the strength (i.e., strong, conditional) and direction (i.e., for, against) of the recommendation. As the GRADE methodology requires an Evidence to Decision (EtD) framework for each recommendation, this would not have been feasible as:

(i) We used recommendations from existing guidelines as our evidence base, thereby not allowing for full assessment of each outcome within the primary studies, including the five GRADE domains to evaluate the certainty of the evidence: risk of bias, indirectness, imprecision, inconsistency, and publication bias [10]. Therefore, this information was inferred by the level and strength of the evidence provided in the included guidelines.

(ii) We covered 11 clinical/diagnostic scenarios in the Head and Neck section, which could have included several diagnostic imaging modality comparisons. This would have resulted in a minimum of 11 EtD frameworks, but realistically many more, as we would have had to create an EtD for each comparison (e.g., MRI vs CT, US vs CT, CT vs NM) within each clinical/diagnostic scenario.

Therefore, in addition to the diagnostic imaging recommendations presented by each included guideline, and the clinical expertise of the EP members, additional criteria were considered specific to the Canadian healthcare context:

- Certainty of the evidence (as presented in the included guidelines)
- Consideration of benefits and harms (e.g., ionizing radiation exposure)
- Values and preferences
- Equity, accessibility, and feasibility
- Resource use and costs

The strength and direction of the recommendations are represented by arrow directions and colours. Using GRADE as a guide [8], these can be interpreted as:

- **Strong recommendation ("recommend"), for (↑↑)**: All or almost all informed people would want/recommend this intervention and only a small proportion would not. If this intervention is not offered, the patient or patient representative should request a discussion.
- **Conditional recommendation ("suggest"), for (↑)**: Most informed people would choose/recommend this intervention, 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.

- **Conditional recommendation ("suggest"), against (↓)**: Most informed people would not choose/recommend this intervention, 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.
- **Strong recommendation ("recommend"), against (↓↓)**: All or almost all informed people would not want/recommend this intervention, but a small proportion would.

When there were no guidelines to support recommendations, the EP formulated recommendations based on their clinical expertise while considering values and preferences, resources, cost, equity, and accessibility. These recommendations are denoted with (EP consensus).

The recommendations for each clinical/ diagnostic scenario are presented below, with reference to the guidelines that were included for that scenario. Recommendations are also summarized in tabular form in **Appendix 3**.

INCLUDED GUIDELINES

A total of 5214 records were identified through the electronic database. After reviewing 1249 records, the AI reviewer excluded the remaining records (n=3965), as 95% of the predicted included records had been identified and the likelihood for inclusion of the remaining records was low (highest remaining prediction score of 3.5%). A second reviewer screened a set of randomly selected records (n=1008) for verification (~10% of included and 20% of excluded records). Among these, there were three conflicts. These conflicts were resolved through discussion. An additional six records were added from the supplemental searching. The full text for five records was not retrievable, and six records were non-English publications (**Appendix 4**). Among the remaining 70 full texts that were screened for eligibility, 14 were not guidelines providing recommendations for head and neck imaging, five were not covered by the current guideline, 13 did not use systematic methods or sufficiently describe the methods used in the formulation of the guideline, and four were excluded for 'other' reasons. A list of excluded records with reasons is available upon request. Recommendations from 17 guidelines were included (Error! Reference source not f ound. **– PRISMA flow diagram**).

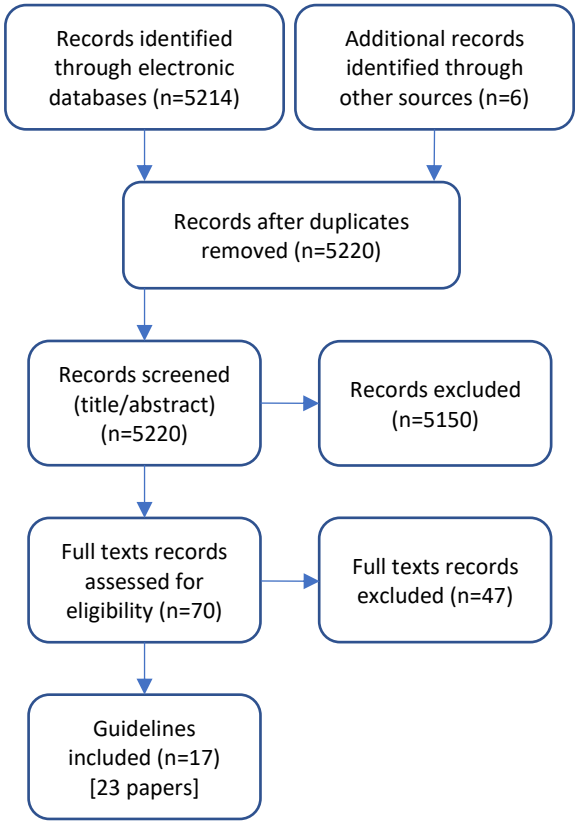


Figure 2 - PRISMA flow diagram

The number of guidelines included per clinical/diagnostic scenario ranged from one to seven. Where available, the certainty of the evidence and/or strength of the recommendations are highlighted to provide a

sense of the certainty of the evidence of the included primary studies (**Appendix 2**).

Most guidelines were rated as moderate or high quality, using the AGREE-II tool (**Appendix 5**). Often, reasons for rating an item down were due to a lack of reporting.

LIMITATIONS OF THE RAPID SCOPING REVIEW

As the unit of inclusion for the rapid scoping review was guidelines, the recommendations were extracted as presented in the guidelines. We also extracted the level/certainty of the evidence based on the criteria presented in the completed guidelines. There were several tools/methods used to assess the level/certainty of the evidence, for example GRADE [10], the Oxford Centre for Evidence-based Medicine 2009 and 2011 [11,12], Level of Appropriateness (American College of Radiologists), consensus, or an adaptation/ modification of one or more methods. For feasibility, primary studies were not reviewed, and the level/certainty of the evidence was taken at face value from the guideline.

IONIZING RADIATION EXPOSURE

We have elected to not include any effective dose values (mSv), related metrics, or qualitative descriptors of radiation risk (e.g., symbol, risk level, approximate equivalent background radiation, lifetime additional risk of cancer induction/exam) for several reasons:

1) The Expert Panel members have considered the risks of ionizing radiation (i.e., GRADE for Guidelines benefits and harms) when formulating the recommendations.

2) The levels of ionizing radiation in modern medical imaging equipment should not unduly influence patient decision-making. The anticipated benefits of imaging to the patient, if a test is clinically indicated are likely to outweigh any potential small risks [13].

3) Per the following points, effective dose values and related metrics such as equivalent background radiation have very large uncertainties, and their utility is thus limited:

   - There is uncertainty in the relative values of the effective dose for a reference patient with variation in the standard error [14];
   - Effective doses are measured using reference phantoms with population, age and sex-averaged tissue weighting factors [14], therefore these should not be considered as the doses received by specific individuals;
   - The publications providing data used to estimate the effective dose per scan (e.g., International Commission on Radiological Protection (ICRP) 1990 [15], 2007 [16]) are occasionally updated and may impact the effective dose values;
   - There is variation in the average dose from natural background radiation by geographic location. For example, in Canada, the average is 1.8 mSv/year, which ranges from 1.3 mSv/year in Vancouver to 4.1 mSv/year in Winnipeg [17]; and
   - There are variables around the equipment (e.g., age) and facility (e.g., protocol) that may impact the actual amount of ionizing radiation exposure used for any particular exam.

EXTERNAL REVIEW

This guideline and its recommendations have been externally reviewed by members of the

CAR Diagnostic Imaging Referral Guidelines Working Group (**Box 1**) and Steve Burrell (Radiology and Nuclear Medicine Section Head, Dalhousie University, NS).

FUTURE RESEARCH IN THIS AREA

This guideline will be updated upon the emergence of new evidence that may change the validity of the recommendations.

We plan on developing Patient Friendly Summaries for some of the clinical/diagnostic scenarios covered in this guideline. The selection of scenarios will be dependent on a prioritization exercise, as well as funding. These summaries will be made available on the CAR website (www.car.ca).

Box 1. CAR Diagnostic Imaging Referral Guideline Working Group Members

Ryan Margau (co-chair), North York General Hospital, ON
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Other members listed alphabetically:
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Kaitlin Zaki-Metias, Trinity Health Oakland Hospital, USA

Italicized name is a WG member who was also a member of the Head and Neck Expert Panel.

HEAD & NECK CLINICAL/DIAGNOSTIC SCENARIOS

RECOMMENDATIONS

The guideline recommendations are to assist the choice of imaging modality in situations where it is felt clinically necessary to obtain imaging. Imaging should not delay definitive management. Whether or not imaging is indicated is outside the scope of this guideline. Additionally, we did not cover serial imaging, and time intervals for follow-up of known disease and/or treatment monitoring.

These recommendations are not intended to stand alone. Medical care should be based on evidence, a clinician's expert judgment, the patient's circumstances, values, and preferences, and resource availability.

We recognize that not all imaging modalities are available in all locations, particularly in rural or remote areas of Canada. Decisions about whether to recommend that a patient travel for recommended imaging or perform alternate imaging locally can be difficult, and should consider the expected benefits of recommended imaging, risks of travel, patient preference, and other factors. This guideline is based on evidence related to diagnostic imaging tests only, not the clinical management of a patient.

H01. Sinus disease

H01A. Acute and chronic sinusitis

Recommendations

1. In adults with sinus disease, we recommend against **XR** (↓↓).
2. In adults with uncomplicated acute sinusitis (≤4 weeks), 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 (e.g., Canadian Consensus Guidelines) of chronic sinusitis OR for recurrent acute sinusitis, we suggest **CT** as the initial imaging modality (↑).

Recommendations from four guidelines were used during the discussions and formulation of these recommendations: the 2012 CAR recommendations [18], the ACR Appropriateness Criteria® 2021 guideline on Sinonasal disease [19], the 2021 International consensus statement on rhinosinusitis [20], and the 2017 RCR iRefer guideline [21] (**Appendix 2: Table H01A**).

Canadian Consensus Guidelines [22]

"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."

***CPODS symptoms: 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

Recommendations

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 (↑↑).

Recommendations from one guideline was used during the discussions and formulation of these recommendations: the ACR Appropriateness Criteria® 2021 guideline on Sinonasal disease [19] (**Appendix 2: Table H01B**).

H02. Tinnitus

H02A. Pulsatile tinnitus

Recommendations

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.

Recommendations from two guidelines were used during the discussions and formulation of these recommendations: the ACR Appropriateness Criteria® 2017 guideline on Tinnitus [23], and the 2020 NICE guideline on Tinnitus [24,25] (**Appendix 2: Table H02A**).

H02B. Non-pulsatile tinnitus

Recommendations

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 (e.g., asymmetrical hearing loss), head and neck signs and symptoms*

For hearing loss, see CNS guideline

Recommendations from two guidelines were used during the discussions and formulation of these recommendations: the ACR Appropriateness Criteria® 2017 guideline on Tinnitus [23], and the 2020 NICE guideline on Tinnitus [24,25] (**Appendix 2: Table H02B**).

H03. Thyroid and parathyroid disease

H03A. Palpable nodule, including goiter

Recommendations

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 (↑↑).

Recommendations from seven guidelines were used during the discussions and formulation of these recommendations: the 2012 CAR recommendations [18], the ACR Appropriateness Criteria® 2019 guideline on Thyroid Disease [26,27], the 2016 American Thyroid Association guideline [28], the 2021 Korean Society of Thyroid Radiology guideline [29], the 2018 Korean Society of Radiology and National Evidence-Based Healthcare Collaborating Agency [30], the 2022 NICE guideline on Thyroid Disease [31–33], and the 2017 RCR iRefer guideline [21] (**Appendix 2: Table H03A**).

H03B. Thyrotoxicosis and hyperthyroidism

Recommendations

1. In adults with biochemical confirmation of thyrotoxicosis or hyperthyroidism (i.e., supressed 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.

Recommendations from five guidelines were used during the discussions and formulation of these recommendations: the 2012 CAR recommendations [18], the ACR Appropriateness Criteria® 2019 guideline on Thyroid Disease [26,27], the 2018 European Thyroid Association guideline [34], the 2022 NICE guideline on Thyroid Disease [31–33], and the 2017 RCR iRefer guideline [21] (**Appendix 2: Table H03B**).

H03C. Primary hyperparathyroidism

Recommendations

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 (↑).

Recommendations from five guidelines were used during the discussions and formulation of these recommendations: the 2012 CAR recommendations [18], the ACR Appropriateness Criteria® 2021 guideline on Parathyroid adenoma [35], the 2021 German Association of Endocrine Surgeons guideline [36], the 2019 NICE guideline on Hyperparathyroidism (primary) [37], and the 2017 RCR iRefer guideline [21] (**Appendix 2: Table H03C**).

H04. Neck mass of unknown origin, including salivary gland mass

Recommendations

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 (↑↑).

     In characterizing salivary gland masses, MRI may provide additional diagnostic information over CT.

Recommendations from four guidelines were used during the discussions and formulation of these recommendations: the 2012 CAR recommendations [18], the ACR Appropriateness Criteria® 2019 guideline on Neck mass-adenopathy [38], the 2017 American

Academy of Otolaryngology-Head and Neck Surgery Foundation guideline [39–41], and the 2017 RCR iRefer guideline [21] (**Appendix 2: Table H04**).

H05. Acute sialadenitis

Recommendations

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).

Recommendations from two guidelines were used during the discussions and formulation of these recommendations: the 2012 CAR recommendations [18], and the 2017 RCR iRefer guideline [21] (**Appendix 2: Table H05**).

H06. Chronic salivary conditions

Recommendations

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 (↑).

Recommendations from two guidelines were used during the discussions and formulation of these recommendations: the 2012 CAR recommendations [18], and the 2017 RCR iRefer guideline [21] (**Appendix 2: Table H06**).

H07. Temporomandibular joint dysfunction

Recommendations

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** (↑↑).

Recommendations from two guidelines were used during the discussions and formulation of these recommendations: the 2012 CAR recommendations [18], and the 2017 RCR iRefer guideline [21] (**Appendix 2: Table H07**).

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APPENDIX 1. SEARCH STRATEGIES

Head and Neck – Imaging
2022 Jul 4
Ovid Multifile

Database: Embase Classic+Embase <1947 to 2022 July 01>, Ovid MEDLINE(R) ALL <1946 to July 01, 2022>
Search Strategy:
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1 exp Nose/ (187375)
2 (nose or noses or nasal*).ti,kw,kf. (151641)
3 Paranasal Sinus Diseases/ (8400)
4 exp Sinusitis/ (75508)
5 (sinus or sinuses).ti,kw,kf. (131069)
6 sinusit*.tw,kw,kf. (44809)
7 (sinusit* or pansinusit* or pan-sinusit* or parasinusit* or para-sinusit*).tw,kw,kf. (45390)
8 ((paranasal or para-nasal) adj sinus* adj3 (atypical* or defect* or disease* or disorder* or dysfunction* or irregular* or lesion* or obstruct* or problem*)).tw,kw,kf. (2545)
9 (orbit or orbita or orbital).ti,kw,kf. (73190)
10 exp Head/ (782475)
11 exp Skull/ (492039)
12 (head or heads or skull or skulls or calvaria* or calvarium* or cranial or cranium* or cribriform plate? or ethmoid* or eye socket? or face or faces or facial or lacrimal* or nasolacrimal* or naso-lacrimal* or occipital or basilar or parietal or pterygopalatine fossa or pterygo-palatine fossa or sphenoid* or sella turcica* or maxilla* or stylomastoid foramen or stylo-mastoid foramen or temporal bone? or mastoid or petrous or zygoma* or (cheek adj2 bone?) or (jugal adj2 bone?) or (malar adj2 bone?)).ti,ab,kw. (2449389)
13 exp Orbital Diseases/ (86744)
14 ((orbit or orbita or orbital) adj3 (atypical* or defect* or disease* or disorder* or dysfunction* or irregular* or lesion* or obstruct* or problem*)).tw,kw,kf. (10720)
15 ((frontal* or cribriform plate? or ethmoid* or lacrimal* or nasolacrimal* or naso-lacrimal* or sphenoid* or sella turcica* or maxilla* or zygoma* or (cheek adj2 bone?) or (jugal adj2 bone?) or (malar adj2 bone?)) adj3 (atypical* or defect* or disease* or disorder* or dysfunction* or irregular* or lesion* or obstruct* or problem*)).tw,kw,kf. (31949)
16 ((blow out or blowout) adj1 fracture?).tw,kw,kf. (2661)
17 (eye socket? adj3 (atypical* or defect* or disease* or disorder* or dysfunction* or irregular* or lesion* or obstruct* or problem*)).tw,kw,kf. (24)
18 (enophthalmos* or (recess* adj (eye or eyes or eyeball?))).tw,kw,kf. (3604)
19 (exophthalmos* or exophthalmia* or exorbitism* or ophthalmocele* or proptos#s* or ((protrud* or bulg* or expuls*) adj (eye or eyes or eyeball?))).tw,kw,kf. (24640)
20 ((orbit or orbita or orbital) adj3 (pseudotumo?r* or pseudo-tumo?r* or pseudomeningoc?ele* or pseudo-meningoc?ele* or granuloma*)).tw,kw,kf. (2617)
21 pott* puffy tumo?r*.tw,kw,kf. (554)
22 exp Thyroid Diseases/ (456469)
23 (thyr?oid* adj3 (agenes#s or atypical* or defect* or disease* or disorder* or dysfunction* or dysgenes#s or ectopi* or ectopy or enlarg* or hypoplas* or hypo-plas* or hyperfunction* or hyper-function* or hyperplas* or hyper-plas* or hypertroph* or hyper-troph* or irregular* or lesion* or lingual* or nodule? or obstruct* or problem* or tongue?)).tw,kw,kf. (120479)
24 Parathyroid Diseases/ (3668)
25 Hyperparathyroidism/ (36200)
26 ((parathyr?oid* or para-thyr?oid*) adj3 (agenes#s or atypical* or defect* or disease* or disorder* or dysfunction* or dysgenes#s or ectopi* or ectopy or enlarg* or hypoplas* or hypo-plas* or hyperfunction* or hyper-function* or hyperplas* or hyper-plas* or hypertroph* or hyper-troph* or irregular* or lesion* or lingual* or nodule? or obstruct* or problem* or tongue?)).tw,kw,kf. (15378)
27 (hyperparath?roid* or hyperparath?roid*).tw,kw,kf. (63363)
28 goiter*.tw,kw,kf. (39176)
29 (thyrotoxicos#s or thyro-toxicos#s or hyperthyr?o* or hyper-thyr?o* or (thyroid* adj2 hyperfunction*) or (thyroid* adj2 hyper-function*)).tw,kw,kf. (85598)
30 (hyperthyroxin?emi* or hyper-thyroxin?emi*).tw,kw,kf. (1001)
31 thyr?oidit#s.tw,kw,kf. (39890)
32 exp Carotid Arteries/ (174078)
33 (carotid* adj3 (arter* or sinus*)).tw,kw,kf. (215755)
34 (carotid* adj3 (bruit or constrict* or narrowing or obliterat* or occlu* or plaque* or stenos#s or thrombos#s or thrombi or thrombus or ulcer*)).tw,kw,kf. (73551)
35 exp Neck/ (134662)
36 (neck or necks or oropharynx* or oro-pharynx* or pharyngeal or pharyngomaxillar* or pharyngo-maxillar* or poststyloid* or post-styloid* or prestyloid* or pre-styloid* or platysma muscle? or musculo-aponeurotic system? or SMAS).ti,kw,kf. (244677)
37 ((neck or necks) adj3 (atypical* or defect* or disease* or disorder* or dysfunction* or irregular* or lesion* or mass$2 or obstruct* or problem*)).tw,kw,kf. (29843)
38 exp Salivary Glands/ (102785)
39 (saliva* gland? or saliva* duct? or parotid gland? or sublingual gland? or sub-lingual gland? or submandibular gland? or sub-mandibular gland? or submaxillary gland? or sub-maxillary gland? or von ebner* gland?).ti,ab,kw. (132326)
40 exp Salivary Gland Diseases/ (101137)
41 (saliva* adj3 (calculi or calculus or calculusin)).tw,kw,kf. (1073)
42 (saliva* adj3 (atypical* or defect* or disease* or disorder* or dysfunction* or irregular* or lesion* or mass$2 or obstruct* or problem*)).tw,kw,kf. (10533)
43 ((submandibular gland? or sub-mandibular gland?) adj3 (atypical* or defect* or disease* or disorder* or dysfunction* or fractur* or irregular* or lesion* or mass$2 or obstruct* or problem*)).tw,kw,kf. (562)
44 sialometaplasia*.tw,kw,kf. (602)
45 ((dry* adj2 mouth*) or oral dry* or xerostom* or zerostomias*).tw,kw,kf. (28118)
46 exp Connective Tissue Diseases/ and exp Mouth/ (12555)
47 exp Connective Tissue Diseases/ and (mouth? or tongue? or lingual* or oral).ti,kw,kf. (7108)
48 exp Temporomandibular Joint/ (29975)
49 exp Temporomandibular Joint Disorders/ (33824)
50 (temporomandibular joint? or temporo-mandibular joint? or TMJ).tw,kw,kf. (43718)
51 costen* syndrome?.tw,kw,kf. (218)
52 ((craniomandibular* or cranio-mandibular*) adj3 (atypical* or defect* or derang* or disease* or disorder* or displac* or

dysfunction* or irregular* or lesion* or obstruct* or problem*)).tw,kw,kf. (1421)
53 Tinnitus/ (33803)
54 tinnitus.tw,kw,kf. (31515)
55 (ear? adj5 buzz*).tw,kw,kf. (194)
56 or/1-55 [HEAD & NECK REGION] (4467020)
57 Diagnostic Imaging/ (274749)
58 dg.fs. [diagnostic imaging] (1379606)
59 (diagnos* adj3 (image? or imaging)).tw,kf. (127974)
60 (x-ray* or xray*).tw,kf. (930181)
61 Image Interpretation, Computer-Assisted/ (90616)
62 exp Imaging, Three-Dimensional/ (206180)
63 ((3D or 3-D or 3-dimension* or three dimension*) adj (image? or imaging)).tw,kf. (45828)
64 exp Ultrasonography/ (1398387)
65 (ultrasound* or ultrasonograph* or ultra-sonograph* or ultrasonic* or ultra-sonic*).tw,kf. (1073283)
66 (echograph* or echo-graph* or echotomograph* or echo-tomograph* or echosonograph* or echo sonograph*).tw,kf. (25880)
67 exp Radiography/ (2582891)
68 (radiograph* or radiographic imag* or roentgenograph* or roentgeno-graph*).tw,kf. (610629)
69 (fluoroscop* or fluoro-scop*).tw,kf. (86629)
70 exp Radionuclide Imaging/ (438853)
71 ((radionuclide* adj2 imag*) or (radio-nuclide* adj2 imag*) or (radionuclide* adj2 scan*) or (radio-nuclide* adj2 scan*) or (radioisotope* adj2 imag*) or (radio-isotope* adj2 imag*) or (radioisotope* adj2 scan*) or (radio-isotope* adj2 scan*) or scintigraph* or scinti-graph* or scintiphotograph* or scinti-photograph*).tw,kf. (138048)
72 exp Tomography/ (3211644)
73 (tomograph* or tomo-graph*).tw,kf. (1128548)
74 (CAT scan* or CT scan* or PET scan* or PET imag* or PT scan* or PT imag*).tw,kf. (383166)
75 (SPECTCT or SPECT CT or "SPECT/CT").tw,kf. (16660)
76 (magnetic resonance imag* or MRI or MRIs or fMRI or fMRIs or NMR imag* or chemical shift imag* or magneti#ation transfer contrast imag* or spin echo imag* or zeugmatograph* or zeugmato-graph*).tw,kf. (1216415)
77 (cineradiograph* or cine-radiograph* or cinefluorograph* or cine-fluorograph* or radiocinematograph* or radio-cinematograph*).tw,kf. (4227)
78 Nuclear Medicine/ (44059)
79 ((nuclear or atomic) adj1 medicine?).tw,kf. (45882)
80 (nuclear adj1 radiolog*).tw,kf. (1180)
81 (sialogra* or salivogra* or sialoscintigra* or sialo-scintigra*).tw,kf. (3320)
82 or/57-81 [IMAGING] (7962242)
83 56 and 82 [HEAD AND NECK REGION - DIAGNOSTIC IMAGING] (1146965)
84 exp Animals/ not Humans/ (17896418)
85 83 not 84 [ANIMAL-ONLY REMOVED] (894265)
86 (case reports or case series or address or autobiography or bibliography or biography or comment or dictionary or directory or editorial or "expression of concern" or festschrift or historical article or interactive tutorial or lecture or legal case or legislation or news or newspaper article or patient education handout or personal narrative or portrait or video-audio media or webcast or (letter not (letter and randomized controlled trial))).pt. (6720277)
87 85 not 86 [OPINION PIECES REMOVED] (748362)
88 exp Guidelines as Topic/ (822178)
89 exp Clinical Protocols/ (298303)
90 Guideline.pt. (16522)
91 Practice Guideline.pt. (29911)
92 standards.fs. (766493)
93 Consensus Development Conference.pt. (12313)
94 Consensus Development Conference, NIH.pt. (801)
95 (consensus or guideline* or guidance? or standards or recommendation*).ti,kw,kf. (516501)
96 (expert consensus or consensus statement* or consensus conference* or clinical guideline? or practice guideline? or treatment guideline? or practice parameter* or position statement* or policy statement* or CPG or CPGs).tw,kw,kf. (290649)
97 or/88-96 [GUIDELINE FILTER] (2172376)
98 87 and 97 [HEAD AND NECK REGION - DIAGNOSTIC IMAGING - GUIDELINES] (17319)
99 limit 98 to yr="2016-current" (8243)
100 99 use medall [MEDLINE RECORDS] (3013)
101 exp nose/ (187375)
102 (nose or noses or nasal*).ti,kw,kf. (151641)
103 paranasal sinus disease/ (9701)
104 exp sinusitis/ (75508)
105 (sinus or sinuses).ti,kw,kf. (131069)
106 sinusit*.tw,kw,kf. (44809)
107 (sinusit* or pansinusit* or pan-sinusit* or parasinusit* or para-sinusit*).tw,kw,kf. (45390)
108 ((paranasal or para-nasal) adj sinus* adj3 (atypical* or defect* or disease* or disorder* or dysfunction* or irregular* or lesion* or obstruct* or problem*)).tw,kw,kf. (2545)
109 (orbit or orbita or orbital).ti,kw,kf. (73190)
110 exp head/ (782475)
111 exp skull/ (492039)
112 (head or heads or skull or skulls or calvaria* or calvarium* or cranial or cranium* or cribriform plate? or ethmoid* or eye socket? or face or faces or facial or lacrimal* or nasolacrimal* or naso-lacrimal* or occipital or basilar or parietal or pterygopalatine fossa or pterygo-palatine fossa or sphenoid* or sella turcica* or maxilla* or stylomastoid foramen or stylo-mastoid foramen or temporal bone? or mastoid or petrous or zygoma* or (cheek adj2 bone?) or (jugal adj2 bone?) or (malar adj2 bone?)).ti,ab,kw. (2449389)
113 exp orbit disease/ (47728)
114 ((orbit or orbita or orbital) adj3 (atypical* or defect* or disease* or disorder* or dysfunction* or irregular* or lesion* or obstruct* or problem*)).tw,kw,kf. (10720)
115 ((frontal* or cribriform plate? or ethmoid* or lacrimal* or nasolacrimal* or naso-lacrimal* or sphenoid* or sella turcica* or maxilla* or zygoma* or (cheek adj2 bone?) or (jugal adj2 bone?) or (malar adj2 bone?)) adj3 (atypical* or defect* or disease* or disorder* or dysfunction* or irregular* or lesion* or obstruct* or problem*)).tw,kw,kf. (31949)
116 ((blow out or blowout) adj1 fracture?).tw,kw,kf. (2661)
117 (eye socket? adj3 (atypical* or defect* or disease* or disorder* or dysfunction* or irregular* or lesion* or obstruct* or problem*)).tw,kw,kf. (24)
118 (enophthalmos* or (recess* adj (eye or eyes or eyeball?))).tw,kw,kf. (3604)
119 (exophthalmos* or exophthalmia* or exorbitism* or ophthalmocele* or proptos#s* or ((protrud* or bulg* or expuls*) adj (eye or eyes or eyeball?))).tw,kw,kf. (24640)
120 ((orbit or orbita or orbital) adj3 (pseudotumo?r* or pseudo-tumo?r* or pseudomeningoc?ele* or pseudo-meningoc?ele* or granuloma*)).tw,kw,kf. (2617)

121 pott* puffy tumo?r*.tw,kw,kf. (554)
122 thyroid disease/ (54372)
123 (thyr?oid* adj3 (agenes#s or atypical* or defect* or disease* or disorder* or dysfunction* or dysgenes#s or ectopi* or ectopy or enlarg* or hypoplas* or hypo-plas* or hyperfunction* or hyper-function* or hyperplas* or hyper-plas* or hypertroph* or hyper-troph* or irregular* or lesion* or lingual* or nodule? or obstruct* or problem* or tongue?)).tw,kw,kf. (120479)
124 parathyroid disease/ (4285)
125 exp hyperparathyroidism/ (65788)
126 ((parathyr?oid* or para-thyr?oid*) adj3 (agenes#s or atypical* or defect* or disease* or disorder* or dysfunction* or dysgenes#s or ectopi* or ectopy or enlarg* or hypoplas* or hypo-plas* or hyperfunction* or hyper-function* or hyperplas* or hyper-plas* or hypertroph* or hyper-troph* or irregular* or lesion* or lingual* or nodule? or obstruct* or problem* or tongue?)).tw,kw,kf. (15378)
127 (hyperparath?roid* or hyperparath?roid*).tw,kw,kf. (63363)
128 goiter*.tw,kw,kf. (39176)
129 (thyrotoxicos#s or thyro-toxicos#s or hyperthyr?o* or hyper-thyr?o* or (thyroid* adj2 hyperfunction*) or (thyroid* adj2 hyper-function*)).tw,kw,kf. (85598)
130 (hyperthyroxin?emi* or hyper-thyroxin?emi*).tw,kw,kf. (1001)
131 thyr?oidit#s.tw,kw,kf. (39890)
132 exp carotid artery/ (174078)
133 (carotid* adj3 (arter* or sinus*)).tw,kw,kf. (215755)
134 (carotid* adj3 (bruit or constrict* or narrowing or obliterat* or occlu* or plaque* or stenos#s or thrombos#s or thrombi or thrombus or ulcer*)).tw,kw,kf. (73551)
135 exp neck/ (134662)
136 (neck or necks or oropharynx* or oro-pharynx* or pharyngeal or pharyngomaxillar* or pharyngo-maxillar* or poststyloid* or post-styloid* or prestyloid* or pre-styloid* or platysma muscle? or musculo-aponeurotic system? or SMAS).ti,kw,kf. (244677)
137 ((neck or necks) adj3 (atypical* or defect* or disease* or disorder* or dysfunction* or irregular* or lesion* or mass$2 or obstruct* or problem*)).tw,kw,kf. (29843)
138 exp salivary gland/ (102785)
139 (saliva* gland? or saliva* duct? or parotid gland? or sublingual gland? or sub-lingual gland? or submandibular gland? or sub-mandibular gland? or submaxillary gland? or sub-maxillary gland? or von ebner* gland?).ti,ab,kw. (132326)
140 exp salivary gland disease/ (101137)
141 (saliva* adj3 (calculi or calculus or calculusin)).tw,kw,kf. (1073)
142 (saliva* adj3 (atypical* or defect* or disease* or disorder* or dysfunction* or irregular* or lesion* or mass$2 or obstruct* or problem*)).tw,kw,kf. (10533)
143 ((submandibular gland? or sub-mandibular gland?) adj3 (atypical* or defect* or disease* or disorder* or dysfunction* or fractur* or irregular* or lesion* or mass$2 or obstruct* or problem*)).tw,kw,kf. (562)
144 sialometaplasia*.tw,kw,kf. (602)
145 ((dry* adj2 mouth*) or oral dry* or xerostom* or zerostomias*).tw,kw,kf. (28118)
146 connective tissue disease/ and exp mouth/ (314)
147 connective tissue disease/ and (mouth? or tongue? or lingual* or oral).ti,kw,kf. (233)
148 exp temporomandibular joint/ (29975)
149 temporomandibular joint disorder/ (29487)
150 (temporomandibular joint? or temporo-mandibular joint? or TMJ).tw,kw,kf. (43718)
151 costen* syndrome?.tw,kw,kf. (218)
152 ((craniomandibular* or cranio-mandibular*) adj3 (atypical* or defect* or derang* or disease* or disorder* or displac* or dysfunction* or irregular* or lesion* or obstruct* or problem*)).tw,kw,kf. (1421)
153 tinnitus/ (33803)
154 tinnitus.tw,kw,kf. (31515)
155 (ear? adj5 buzz*).tw,kw,kf. (194)
156 or/101-155 [HEAD & NECK REGION] (4249202)
157 diagnostic imaging/ (274749)
158 (diagnos* adj3 (image? or imaging)).tw,kw,kf. (129522)
159 (x-ray* or xray*).tw,kw,kf. (930181)
160 computer assisted tomography/ (829981)
161 computer assisted diagnosis/ (66865)
162 exp three-dimensional imaging/ (206180)
163 ((3D or 3-D or 3-dimension* or three dimension*) adj (image? or imaging)).tw,kw,kf. (46417)
164 exp echography/ (1398387)
165 (ultrasound* or ultrasonograph* or ultra-sonograph* or ultrasonic* or ultra-sonic*).tw,kw,kf. (1073283)
166 (echograph* or echo-graph* or echotomograph* or echo-tomograph* or echosonograph* or echo sonograph*).tw,kw,kf. (25880)
167 exp radiography/ (2582891)
168 (radiograph* or radiographic imag* or roentgenograph* or roentgeno-graph*).tw,kw,kf. (610629)
169 (fluoroscop* or fluoro-scop*).tw,kw,kf. (86629)
170 exp scintiscanning/ (208465)
171 ((radionuclide* adj2 imag*) or (radio-nuclide* adj2 imag*) or (radionuclide* adj2 scan*) or (radio-nuclide* adj2 scan*) or (radioisotope* adj2 imag*) or (radio-isotope* adj2 imag*) or (radioisotope* adj2 scan*) or (radio-isotope* adj2 scan*) or scintigra* or scinti-gra* or scintiphotograph* or scinti-photograph*).tw,kw,kf. (143330)
172 exp tomography/ (3211644)
173 (tomograph* or tomo-graph*).tw,kw,kf. (1128548)
174 (CAT scan* or CT scan* or PET scan* or PET imag* or PT scan* or PT imag*).tw,kw,kf. (383166)
175 (SPECTCT or SPECT CT or "SPECT/CT").tw,kw,kf. (16660)
176 (magnetic resonance imag* or MRI or MRIs or fMRI or fMRIs or NMR imag* or chemical shift imag* or magneti#ation transfer contrast imag* or spin echo imag* or zeugmatograph* or zeugmato-graph*).tw,kw,kf. (1216415)
177 (cineradiograph* or cine-radiograph* or cinefluorograph* or cine-fluorograph* or radiocinematograph* or radio-cinematograph*).tw,kw,kf. (4227)
178 nuclear medicine/ (44059)
179 ((nuclear or atomic) adj1 medicine?).tw,kw,kf. (45883)
180 (nuclear adj1 radiolog*).tw,kw,kf. (1214)
181 (sialogra* or salivogra* or sialoscintigra* or sialo-scintigra*).tw,kw,kf. (3320)
182 (enteroclys* or enterogra*).tw,kw,kf. (6010)
183 (esophagra* or oesophagra* or esophagogra* or oesophagogra*).tw,kw,kf. (6980)
184 ((CT or virtual) adj (colonograph* or colonoscop*)).tw,kw,kf. (5223)
185 (contrast adj (study or studies or medium)).tw,kw,kf. (46417)
186 or/157-185 [IMAGING FILTER] (7852387)

187 156 and 186 [HEAD AND NECK REGION - IMAGING] (1093445)
188 (exp animal/ or exp animal experimentation/ or exp animal model/ or exp animal experiment/ or nonhuman/ or exp vertebrate/) not (exp human/ or exp human experimentation/ or exp human experiment/) (12771215)
189 187 not 188 [ANIMAL-ONLY REMOVED] (1040224)
190 (editorial or letter).pt. or directory/ (3769340)
191 case report/ or exp case study/ (5211823)
192 189 not (190 or 191) [OPINION PIECES, CASE STUDIES REMOVED] (702450)
193 conference abstract.pt. (4439990)
194 192 not 193 [CONFERENCE ABSTRACTS REMOVED] (611218)
195 exp practice guideline/ (679571)
196 (consensus or guideline* or guidance? or standards or recommendation*).ti,kw,kf. (516501)
197 (expert consensus or consensus statement* or consensus conference* or clinical guideline? or practice guideline? or treatment guideline? or practice parameter* or position statement* or policy statement* or CPG or CPGs).tw,kw,kf. (290649)
198 or/195-197 [GUIDELINE FILTER] (1222538)
199 194 and 198 [GUIDELINES] (10601)
200 limit 199 to yr="2016-current" (4630)
201 200 use emczd [EMBASE RECORDS] (3400)
202 100 or 201 [BOTH DATABASES] (6413)
203 limit 202 to yr="2020-current" (2727)
204 remove duplicates from 203 (2225)
205 202 not 203 (3686)
206 remove duplicates from 205 (2989)
207 204 or 206 [TOTAL UNIQUE RECORDS] (5214)
208 207 use medall [MEDINE UNIQUE RECORDS] (3008)
209 207 use emczd [EMBASE UNIQUE RECORDS] (2206)

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APPENDIX 2. EVIDENCE TABLES

H01. Sinus disease

Table H01A. Acute and chronic sinusitis

Guideline Group AGREE-II Assessment	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered (Note: Recommendations are not included, except for the 2012 CAR guideline)
CT: computed tomography; MRI: magnetic resonance imaging; XR: radiography	
CAR 2012 [18]	**B01. Sinus disease** - CT sinus: Indicated only in specific circumstances [B]: Acute sinusitis can be diagnosed clinically. If the symptoms persist for more than 10 days on appropriate treatment, low dose CT of the sinuses may be required. CT is also indicated if there are orbital signs or symptoms or if the patient is immunocompromised. - XR sinus: Indicated only in specific circumstances [B]: Low dose CT is the examination of choice in acute sinusitis, but XR is a reasonable option if CT is unavailable.
ACR 2021: Sinonasal disease [19] Moderate quality	▪ Variant 1. Acute (less than 4 weeks) uncomplicated rhinosinusitis. Initial imaging. ▪ Variant 2. Acute rhinosinusitis with suspected orbital or intracranial complication. Initial imaging. ▪ Variant 4. Acute sinusitis with rapid progression or suspected invasive fungal sinusitis. Initial imaging.
International consensus statement on rhinosinusitis 2021 [20] Moderate quality	- Acute rhinosinusitis - Recurrent acute rhinosinusitis - Chronic rhinosinusitis
RCR 2017 [21] High quality	**E03. Sinus disease** - CT sinus [B] - MRI [B] - XR sinus [C]

Abbreviations: ACR: American College of Radiology; CAR: Canadian Association of Radiologists; RCR: Royal College of Radiologists

Table H02B. Sinonasal tumours

Guideline Group AGREE-II Assessment	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered (Note: Recommendations are not included)
CAR 2012 [18]	This scenario was not addressed in the 2012 CAR guidelines.
ACR 2021: Sinonasal disease [19] Moderate quality	▪ Variant 5. Suspected sinonasal mass. Initial imaging.

Abbreviations: ACR: American College of Radiology; CAR: Canadian Association of Radiologists

H02. Tinnitus

Table H02A. Pulsatile tinnitus

Guideline Group AGREE-II Assessment	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered (Note: Recommendations are not included)
CAR 2012 [18]	This scenario was not addressed in the 2012 CAR guidelines.
ACR 2017: Tinnitus [23] Moderate quality	▪ Variant 1. Subjective or objective pulsatile tinnitus (no myoclonus or Eustachian tube dysfunction).

NICE 2020: Tinnitus
[24,25]
High quality
	- Recommendation 1.4.9
	  - For people with synchronous pulsatile tinnitus
	  - For people with non-synchronous pulsatile tinnitus (for example, caused by palatal myoclonus)

Abbreviations: ACR: American College of Radiology; CAR: Canadian Association of Radiologists; NICE: National Institute for Health and Care Excellence

Table H02B. Non-pulsatile tinnitus

Guideline Group AGREE-II Assessment	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered (Note: Recommendations are not included)
CAR 2012 [18]	This scenario was not addressed in the 2012 CAR guidelines.
ACR 2017: Tinnitus [23] Moderate quality	▪ Variant 2. Asymmetric or unilateral, subjective, nonpulsatile tinnitus (no otoscopic finding; no asymmetric hearing loss, neurologic deficit, or trauma). ▪ Variant 3. Symmetric or bilateral, subjective, nonpulsatile tinnitus (no hearing loss, neurologic deficit, or trauma).
NICE 2020: Tinnitus [24,25] High quality	- Recommendation 1.4.6: People with non-pulsatile tinnitus - Recommendation 1.4.7: People with unilateral or asymmetrical non-pulsatile tinnitus who have no associated neurological, audiological, otological or head and neck signs and symptoms - Recommendation 1.4.8: People with symmetrical non-pulsatile tinnitus with no associated neurological, audiological, otological or head and neck signs and symptoms

Abbreviations: ACR: American College of Radiology; CAR: Canadian Association of Radiologists; NICE: National Institute for Health and Care Excellence

H03. Thyroid and parathyroid disease

Table H03A. Palpable nodule, including goiter

Guideline Group AGREE-II Assessment	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered (Note: Recommendations are not included, except for the 2012 CAR guideline)
CT: computed tomography; FNAC: fine-needle aspiration cytology; MRI: magnetic resonance imaging; NM: nuclear medicine; US: ultrasound	
CAR 2012 [18]	**B05. Thyroid nodules** - US: Indicated only in specific circumstances [B]: In patients with a palpable thyroid nodule and a normal or high serum TSH US should be performed to confirm the presence of a nodule and to determine if there are multiple nodules. - NM: Indicated only in specific circumstances [C]: Thyroid scanning is indicated in patients with a palpable nodule and a low serum TSH. Cold nodules should be assessed with US. - US-guided fine needle aspiration: Indicated [B]: Indicated in all nodules >1-1.5 cm. following US assessment, unless they have a typically benign appearance.
ACR 2019: Thyroid disease [26,27] Moderate quality	▪ Variant 1. Palpable thyroid nodule. Not goiter. Euthyroid. Initial imaging. ▪ Variant 2. Suspected goiter. Initial imaging.

American Thyroid Association 2016 [28]
High quality
	- Recommendation 2:
	  ○ (B) If the serum TSH is subnormal (Strong recommendation, Moderate-quality evidence)
	  ○ (C) If the serum TSH is normal or elevated (Strong recommendation, Moderate-quality evidence)
	- Recommendation 5:
	  ○ (A) (Strong recommendation, Moderate-quality evidence)
	  ○ (B) (Strong recommendation, Moderate-quality evidence)
	- Recommendation 6: Patients with known or suspected thyroid nodules (Strong recommendation, High-quality evidence)
	- Recommendation 7: (Strong recommendation, High-quality evidence)
	
	Recommendation 8 covers when thyroid nodule diagnostic FNA is recommended, considered, and not recommended.

Korean Society of Thyroid Radiology 2021 [29] Moderate quality	1. Neck US 2. Neck US with US-guided biopsy 3. Neck CT or MRI with or without intravenous contrast; Neck CT or MRI with IV contrast
KSR and NEBHCA 2018 [30] Moderate quality	▪ Neck US (recommendation grade A, evidence level II)
NICE 2022: Thyroid disease: assessment and management (NG145) [31–33]	**Investigation thyroid enlargement** - Recommendation 1.9.1: Adults, children and young people with normal thyroid function if malignancy is suspected - Recommendation 1.9.2: If clinical factors suggest malignancy as a possibility

Guideline Group AGREE-II Assessment	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered (Note: Recommendations are not included, except for the 2012 CAR guideline)
CT: computed tomography; FNAC: fine-needle aspiration cytology; MRI: magnetic resonance imaging; NM: nuclear medicine; US: ultrasound	
High quality	
RCR 2017 [21] High quality	**E04. Thyroid nodules** - US [B] - US-guided FNAC/FNAC [B] - NM (pertechnetate/123-1) [B]

Abbreviations: ACR: American College of Radiology; CAR: Canadian Association of Radiologists; KSR: Korean Society of Radiology; NEBHCA: National Evidence-Based Healthcare Collaborating Agency; NICE: National Institute for Health and Care Excellence; RCR: Royal College of Radiologists

Table H03B. Thyrotoxicosis and hyperthyroidism

Guideline Group AGREE-II Assessment	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered (Note: Recommendations are not included, except for the 2012 CAR guideline)
MRI: magnetic resonance imaging; NM: nuclear medicine; US: ultrasound	
CAR 2012 [18]	**B06. Thyrotoxicosis** - NM: Indicated [B]: A thyroid uptake and scan is often required to determine the underlying cause of hyperthyroidism and to guide treatment decisions.
ACR 2019: Thyroid disease [26,27] Moderate quality	▪ Variant 3. Thyrotoxicosis. Initial imaging.
European Thyroid Association 2018 [34] Moderate quality	- Recommendation 3: US examination (Strong recommendation, ØØØØ [high quality]) - Recommendation 4: Scintigraphy (Weak recommendation, ØØØ [moderate quality]).
NICE 2022: Thyroid disease: assessment and management (NG145) [31–33] High quality	**Tests for people with confirmed thyrotoxicosis** ▪ Recommendation 1.6.1 ▪ Recommendation 1.6.2
RCR 2017 [21] High quality	**E05. Thyrotoxicosis** - US [B] - NM (pertechnetate/123-i) [B]

Abbreviations: ACR: American College of Radiology; CAR: Canadian Association of Radiologists; NICE: National Institute for Health and Care Excellence; RCR: Royal College of Radiologists

Table H03C. Primary hyperparathyroidism

Guideline Group AGREE-II Assessment	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered (Note: Recommendations are not included, except for the 2012 CAR guideline)
CECT: contrast-enhanced computed tomography; CT: computed tomography; MRA: magnetic resonance angiography; MRI: magnetic resonance imaging; NM: nuclear medicine; US: ultrasound	
CAR 2012 [18]	**B08. Hyperparathyroidism** - US: Specialized investigation [C]: The imaging modality used is dependent on local experience and expertise. - NM: Specialized investigation [C]: A parathyroid scan can help distinguish between parathyroid adenoma and hyperplasia in patients with a high clinical suspicion of hyperfunctioning parathyroid tissue. - CT: Specialized investigation [C]: CT may be useful where the parathyroid scan is negative and to improve localization of parathyroid adenoma. - MRI: Specialized investigation [C]: MR may be useful where the parathyroid scan is negative and to improve localization of parathyroid adenoma.
ACR 2021: Parathyroid adenoma [35] Moderate quality	▪ Variant 1. Adult or child. Primary hyperparathyroidism. Initial imaging.
German Association of Endocrine Surgeons 2021 [36] Moderate quality	- R4. Dual-energy X-ray absorptiometry (DXA) (high consensus +++).
NICE 2019: Hyperparathyroidism (primary): diagnosis, assessment and initial management [37] High quality	Imaging recommendations in this guideline are around assessment after diagnosis and surgical management (preoperative imaging). ▪ Recommendation 1.2.3: For people with a confirmed diagnosis of primary hyperparathyroidism ▪ Recommendation 1.4.1: Preoperative imaging ▪ Recommendation 1.4.2: Second preoperative imaging modality ▪ Recommendation 1.4.3: More preoperative imaging
RCR 2017 [21] High quality	**E06. Primary hyperparathyroidism** - US/NM (sestamibi) [B] - CT (including multiphase CECT) [B] - MRI (including dynamic MRA) [B] - Selective venous sampling [B]

Abbreviations: ACR: American College of Radiology; CAR: Canadian Association of Radiologists; NICE: National Institute for Health and Care Excellence; RCR: Royal College of Radiologists

Table H04. Neck mass of unknown origin, including salivary gland mass

Guideline Group AGREE-II Assessment	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered (Note: Recommendations are not included, except for the 2012 CAR guideline)
CT: computed tomography; FNAC: fine needle aspiration cytology; MRI: magnetic resonance imaging; PET: positron emission tomography; US: ultrasound	
CAR 2012 [18]	**B11. Neck mass of unknown origin** - US: Indicated [C]: US is the best initial imaging modality for assessing a neck mass. It can be combined with FNAC. - CT: Indicated only in specific circumstances [C]: CT could be used to determine the full extent of large lesions not fully visualized by US. - MRI: Indicated only in specific circumstances [C]: MRI could be to determine the full extent of large lesions is not fully visualized by US. **B13. Salivary mass** - US: Indicated [B]: US is the best initial imaging modality for a suspected salivary mass; it can be combined with FNAC, if necessary. - MRI/CT: Specialized investigation [B]: If extension into deep spaces of the neck is suspected, MRI or CT should be carried out.
ACR 2019: Neck Mass-Adenopathy [38] Moderate quality	▪ Variant 1. Non-pulsatile neck mass(es). Not parotid region or thyroid. Initial imaging. ▪ Variant 2. Pulsatile neck mass(es). Not parotid or thyroid. Initial imaging. ▪ Variant 3. Parotid region mass(es). Initial imaging.
AAO—Head and Neck Surgery Foundation 2017 [39–41] High quality	**Patients with a neck mass** - CT (or MRI) with contrast (strong recommendation)
RCR 2017 [21] High quality	**E07. Neck mass of unknown aetiology** - US (including US-FNAC) [B] - MRI/CT [C] - PET-CT [B] **E09. Salivary mass** - US [B] - MRI/CT [B]

Abbreviations: AAO: American Academy of Otolaryngology; ACR: American College of Radiology; CAR: Canadian Association of Radiologists; RCR: Royal College of Radiologists

Table H05. Acute sialadenitis

Guideline Group AGREE-II Assessment	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered (Note: Recommendations are not included, except for the 2012 CAR guideline)
CT: computed tomography; MR: magnetic resonance; US: ultrasound; XR: radiography	
CAR 2012 [18]	**B12. Salivary obstruction** - US/Sialogram/MRI: Indicated [C]: Imaging is indicated to assess possible salivary obstruction in patients with intermittent, food-related swelling. The choice of imaging depends on local experience and expertise. - XR: Indicated only in specific circumstances [C]: XR can be used to rule out a salivary duct calculusin the floor of the mouth.
RCR 2017 [21] High quality	**E08. Salivary obstruction** - US [C] - XR [C] - MR/Fluoroscopic/CT (including cone beam CT sialography) [B]

Abbreviations: CAR: Canadian Association of Radiologists; RCR: Royal College of Radiologists

Table H06. Chronic salivary conditions

Guideline Group AGREE-II Assessment	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered (Note: Recommendations are not included, except for the 2012 CAR guideline)
MRI: magnetic resonance imaging; NM: nuclear medicine; US: ultrasound	
CAR 2012 [18]	**B14. Dry mouth: connective tissue disease** - NM: Specialized investigation [C]: Radionuclide sialoscintigraphy is a useful test to document the function of the major salivary glands.
RCR 2017 [21] High quality	**E10. Dry mouth: connective tissue disease** - US [B] - MRI/Fluoroscopic sialography/MRI [B]

Abbreviations: CAR: Canadian Association of Radiologists; RCR: Royal College of Radiologists

Table H07. Temporomandibular joint dysfunction

Guideline Group AGREE-II Assessment	Imaging modality addressed in guideline recommendations and/or clinical scenarios covered (Note: Recommendations are not included, except for the 2012 CAR guideline)
CT: computed tomography; MRI: magnetic resonance imaging; XR: radiography	
CAR 2012 [18]	**B15. Temporomandibular joint dysfunction** - MRI: Specialized investigation [B]: MRI is the best imaging modality to show internal derangement of the temporomandibular joint, but it should only be ordered by a specialist or after consultation with a radiologist. - XR: Not indicated: XR is not usually helpful because it shows only late bony changes not the internal derangement which causes the symptoms.
RCR 2017 [21] High quality	**E11. Temporomandibular joint dysfunction** - MRI [B] - CT [B]

Abbreviations: CAR: Canadian Association of Radiologists; RCR: Royal College of Radiologists

APPENDIX 3A. SUMMARY OF RECOMMENDATIONS (ENGLISH)

Clinical/ Diagnostic Scenario	Recommendations	Strength of Rec.
CT: computed tomography; **MRI**: magnetic resonance imaging; **NM**: nuclear medicine; **US**: ultrasound; **XR**: radiography **Strength of Recommendation:** ↑↑: strong for; ↑: conditional for; ↓↓: strong against; ↓: conditional against; **EPc**: Expert Panel consensus		
H01. SINUS DISEASE		
H01A. Acute and chronic sinusitis	**1.** In adults with sinus disease, we recommend against **XR**.	↓↓
	2. In adults with uncomplicated acute sinusitis (≤4 weeks), 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 (e.g., Canadian Consensus Guidelines) of chronic sinusitis OR for recurrent acute sinusitis, we suggest **CT** as the initial imaging modality (↑).	
H01B. Sinonasal tumours	**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	**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 *For hearing loss, see CNS guideline*	**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 (e.g., asymmetrical hearing loss), head and neck signs and symptoms*	
H03. THYROID AND PARATHYTOID DISEASE		
H03A. Palpable nodule, including goiter	**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	**1.** In adults with biochemical confirmation of thyrotoxicosis or hyperthyroidism (i.e., supressed 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	

The guideline recommendations are to assist the choice of imaging modality in situations where it is felt clinically necessary to obtain imaging. Imaging should not delay definitive management. Whether or not imaging is indicated is outside the scope of this guideline. Additionally, we did not cover serial imaging, and time intervals for follow-up of known disease and/or treatment monitoring. These recommendations are not intended to stand alone. Medical care should be based on evidence, a clinician's expert judgment, the patient's circumstances, values, and preferences, and resource availability. We recognize that not all imaging modalities are available in all locations, particularly in rural or remote areas of Canada. Decisions about whether to recommend that a patient travel for recommended imaging or perform alternate imaging locally can be difficult, and should consider the expected benefits of recommended imaging, risks of travel, patient preference, and other factors. This guideline is based on evidence related to diagnostic imaging tests only, not the clinical management of a patient.

Clinical/ Diagnostic Scenario	Recommendations	Strength of Rec.
CT: computed tomography; **MRI**: magnetic resonance imaging; **NM**: nuclear medicine; **US**: ultrasound; **XR**: radiography **Strength of Recommendation:** ↑↑: strong for; ↑: conditional for; ↓↓: strong against; ↓: conditional against; **EPc**: Expert Panel consensus		
	previously biopsied benign nodules seen at US), as this is already established in published guidelines.	
H03C. Primary hyperparathyroidism	**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		
	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. *In characterizing salivary gland masses, MRI may provide additional diagnostic information over CT.*	↑↑
H05. ACUTE SIALADENITIS		
	1. In adults with suspected acute sialadenitis with or without stone, we recommend **CT** as the initial imaging modality.	EPc
	↳ **1.1** If CT is unavailable, we recommend **US** as the initial imaging modality.	EPc
H06. CHRONIC SALIVARY CONDITIONS		
	1. In adults with xerostomia, suspected chronic sialadenitis, or suspected autoimmune/connective tissue disease, we recommend **US or CT** as the initial imaging modality.	↑↑ or EPc
	↳ **1.1** If further investigation is required, we suggest **MRI/MR sialography** as the next imaging modality.	↑
H07. TEMPOROMANDIBULAR JOINT DYSFUNCTION		
	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**.	↑↑

The guideline recommendations are to assist the choice of imaging modality in situations where it is felt clinically necessary to obtain imaging. Imaging should not delay definitive management. Whether or not imaging is indicated is outside the scope of this guideline. Additionally, we did not cover serial imaging, and time intervals for follow-up of known disease and/or treatment monitoring. These recommendations are not intended to stand alone. Medical care should be based on evidence, a clinician's expert judgment, the patient's circumstances, values, and preferences, and resource availability. We recognize that not all imaging modalities are available in all locations, particularly in rural or remote areas of Canada. Decisions about whether to recommend that a patient travel for recommended imaging or perform alternate imaging locally can be difficult, and should consider the expected benefits of recommended imaging, risks of travel, patient preference, and other factors. This guideline is based on evidence related to diagnostic imaging tests only, not the clinical management of a patient.

APPENDIX 3B. SUMMARY OF RECOMMENDATIONS (FRENCH)

Scénario clinique/diagnostique	Recommandations	Force
TDM : tomodensitométrie; **IRM** : imagerie par résonance magnétique **NM** : médecine nucléaire; **ÉCHO** : échographie; **RX** : radiographie **Force de la recommandation:** ↑↑: fortement en faveur; ↑: en faveur sous certaines conditions; ↓: contre sous certaines conditions; ↓↓: fortement contre; **EPc**: Consensus d'un panel d'experts		
H01. MALADIES DES SINUS		
H01A. Sinusite aiguë et chronique	**1.** Chez des adultes présentant une maladie des sinus, nous déconseillons une **RX**.	↓↓
	2. Chez des adultes présentant une sinusite aiguë compliquée (≤ 4 semaines), nous déconseillons le recours à l'imagerie.	↓↓
	3. Pour des adultes atteints de sinusite aiguë chez qui l'on soupçonne des complications, nous recommandons la **TDM** comme modalité d'imagerie initiale.	↑↑
	↳ **3.1** Pour les adultes chez qui une complication intraorbitale ou intracrânienne est source de préoccupation clinique, nous suggérons une **IRM** comme modalité d'imagerie subséquente.	↑
	4. Chez des adultes répondant à la définition (par exemple, lignes directrices du consensus canadien) de sinusite chronique OU de sinusite aiguë récidivante, nous suggérons la **TDM** comme modalité d'imagerie initiale.	
H01B. Tumeurs naso-sinusales	**1.** Pour les adultes chez qui l'on soupçonne une tumeur naso-sinusale, nous recommandons la **TDM** comme modalité d'imagerie initiale.	↑↑
	↳ **1.1** Pour les adultes chez qui l'on soupçonne une tumeur naso-sinusale à la TDM, nous recommandons une **IRM** comme modalité d'imagerie subséquente.	↑↑
H02. ACOUPHÈNES		
H02A. Acouphènes pulsatiles	**1.** Chez des adultes présentant des acouphènes pulsatiles, nous suggérons une **TDM/angio-TDM ou une IRM/angio-IRM** comme modalité d'imagerie initiale. *Le choix de la modalité d'imagerie peut être guidé par des préférences de pratiques régionales, les préférences du clinicien référent, du radiologiste et du patient, et sur la disponibilité des ressources.*	↑
H02B. Acouphènes non pulsatiles *Dans les cas de perte de l'audition, voir les lignes directrices sur le SNC*	**1.** Chez les adultes présentant des acouphènes symétriques, non pulsatiles et non liés à un traumatisme, qui ne présentent pas de signes et symptômes neurologiques associés✧, nous **déconseillons le recours à l'imagerie**.	↓↓
	2. Chez des adultes présentant des signes et symptômes neurologiques associés✧ OU des acouphènes non pulsatiles, asymétriques et non liés à un traumatisme, nous recommandons une **IRM des conduits auditifs internes** comme modalité d'imagerie initiale.	↑↑
	↳ **2.1** Si l'IRM des conduits auditifs internes n'est pas réalisable ou est contre-indiquée, nous recommandons une **TDM**.	↑↑
	✧*Par exemple, anomalies neurologiques focales, otologiques (perte auditive asymétrique), signes et symptômes de la tête et du cou*	

Ces recommandations ne sont pas conçues pour être utilisées seules. Les soins médicaux doivent reposer sur des données probantes, le jugement expert d'un clinicien, la situation, les valeurs et les préférences d'un patient, ainsi que sur la disponibilité des ressources. Nous sommes conscients que certaines modalités d'imagerie ne sont pas disponibles partout, en particulier dans les zones rurales et isolées du Canada. Il peut être difficile de décider s'il vaut mieux recommander à un patient de se déplacer pour obtenir l'imagerie recommandée ou d'effectuer localement un autre type d'imagerie; à cet égard, il faut tenir compte des avantages attendus de l'imagerie recommandée, des risques liés au déplacement, des préférences du patient et d'autres facteurs. La présente ligne directrice repose sur des données probantes liées uniquement aux tests d'imagerie diagnostique et non à la gestion clinique du patient.

Appendix 3B. Summary of recommendations (French)

Scénario clinique/diagnostique	Recommandations	Force
TDM : tomodensitométrie; **IRM** : imagerie par résonance magnétique **NM** : médecine nucléaire; **ÉCHO** : échographie; **RX** : radiographie **Force de la recommandation:** ↑↑: fortement en faveur; ↑: en faveur sous certaines conditions; ↓: contre sous certaines conditions; ↓↓: fortement contre; **EPc**: Consensus d'un panel d'experts		
H03. MALADIES DE LA THYROÏDE ET DES PARATHYROÏDES		
H03A. Nodule palpable, y compris un goitre	**1.** Chez des adultes présentant un nodule thyroïdien palpable ou un goitre, nous recommandons l'**échographie** comme modalité d'imagerie initiale.	↑↑
	↳ **1.1** Si des examens supplémentaires sont nécessaires pour l'évaluation d'indications, comme le soupçon d'un cancer invasif de la thyroïde, une extension rétrosternale et profonde, ou une compression trachéale, nous recommandons la **TDM** comme modalité d'imagerie subséquente.	↑↑
H03B. Thyrotoxicose et hyperthyroïdie	**1.** Chez des adultes présentant une confirmation biochimique de thyréotoxicose ou d'hyperthyroïdie (c'est-à-dire, une suppression de la TSH), nous recommandons une **échographie** comme modalité d'imagerie initiale.	↑↑
	↳ **1.1** Si une anomalie focale est détectée à l'échographie, nous suggérons la **MN**.	↑
	Remarque : Nous n'avons pas couvert la gestion des nodules thyroïdiens détectés à l'échographie (ou la prise en charge et le suivi de nodules bénins ayant déjà fait l'objet d'une biopsie et observé à l'écho), car ce sujet a déjà été abordé dans les lignes directrices publiées.	
H03C. Hyperparathyroïdie primitive	**1.** Chez des adultes présentant une hyperparathyroïdie primitive confirmée par analyses biochimiques, nous recommandons l'**échographie et la MN** comme modalité d'imagerie initiale en vue d'une intervention chirurgicale.	↑↑
	↳ **1.1** Si l'échographie et la MN ne permettent pas un diagnostic ou fournissent des résultats non concordants, nous suggérons une **TDM** comme modalité d'imagerie subséquente, à la discrétion du médecin.	↑
H04. MASSE AU NIVEAU DU COU D'ORIGINE INCONNUE, Y COMPRIS MASSE DES GLANDES SALIVAIRES		
	1. Chez des adultes présentant une masse d'origine inconnue au niveau du cou, dont la malignité constitue une préoccupation clinique, nous recommandons une **TDM** comme modalité d'imagerie initiale.	↑↑
	2. Chez des adultes présentant une masse d'origine inconnue au niveau du cou, dont la malignité constitue une légère préoccupation clinique, nous recommandons une **échographie** comme modalité d'imagerie initiale.	↑↑
	↳ **2.1** Si des investigations supplémentaires sont nécessaires pour déterminer la nature de la masse, nous recommandons une **TDM ou une IRM** comme modalité d'imagerie subséquente en fonction des constatations de l'échographie. *Dans le cadre de la caractérisation d'une masse des glandes salivaires, une IRM pourrait fournir plus d'informations diagnostiques par rapport à une TDM.*	↑↑
H05. SIALADÉNITE AIGUË		
	1. Pour les adultes chez qui l'on soupçonne une sialadénite aiguë avec ou sans calcul, nous recommandons une **TDM** comme modalité d'imagerie initiale.	EPc
	↳ **1.1** Si la TDM n'est pas réalisable, nous recommandons une **échographie** comme modalité d'imagerie initiale.	EPc

Ces recommandations ne sont pas conçues pour être utilisées seules. Les soins médicaux doivent reposer sur des données probantes, le jugement expert d'un clinicien, la situation, les valeurs et les préférences d'un patient, ainsi que sur la disponibilité des ressources. Nous sommes conscients que certaines modalités d'imagerie ne sont pas disponibles partout, en particulier dans les zones rurales et isolées du Canada. Il peut être difficile de décider s'il vaut mieux recommander à un patient de se déplacer pour obtenir l'imagerie recommandée ou d'effectuer localement un autre type d'imagerie; à cet égard, il faut tenir compte des avantages attendus de l'imagerie recommandée, des risques liés au déplacement, des préférences du patient et d'autres facteurs. La présente ligne directrice repose sur des données probantes liées uniquement aux tests d'imagerie diagnostique et non à la gestion clinique du patient.

Appendix 3B. Summary of recommendations (French)

Scénario clinique/diagnostique	Recommandations	Force
TDM : tomodensitométrie; **IRM** : imagerie par résonance magnétique **NM** : médecine nucléaire; **ÉCHO** : échographie; **RX** : radiographie **Force de la recommandation:** ↑↑: fortement en faveur; ↑: en faveur sous certaines conditions; ↓: contre sous certaines conditions; ↓↓: fortement contre; **EPc**: Consensus d'un panel d'experts		
H06. AFFECTIONS CHRONIQUES DES GLANDES SALIVAIRES		
	1. Pour les adultes chez qui l'on suspecte une xérostomie, une sialadénite chronique, une maladie auto-immunitaire ou une maladie du tissu conjonctif, nous recommandons une **échographie ou une TDM** comme modalité d'imagerie initiale.	↑↑ ou EPc
	↳ **1.1** Si des examens supplémentaires sont nécessaires, nous suggérons une **Isialographie ou une sialo-IRM** comme modalité d'imagerie subséquente.	↑
H07. DYSFONCTIONNEMENT DE L'ARTICULATION TEMPORO-MANDIBULAIRE		
	1. Chez des adultes présentant un dysfonctionnement de l'articulation temporo-mandibulaire, nous **déconseillons le recours à l'imagerie**, sauf si une intervention chirurgicale est envisagée.	↓
	↳ **1.1** Chez les adultes présentant des symptômes mécaniques d'importance clinique suggérant un dysfonctionnement de l'articulation temporo-mandibulaire, si une intervention chirurgicale est envisagée après l'échec d'une gestion conservatrice, nous recommandons l'**IRM**.	↑↑

APPENDIX 4. POTENTIALLY RELEVANT NON-ENGLISH GUIDELINES

1. Fu KY, Hu M, Yu Q, Yang C, Cheng Y, Long X, Zhang ZG, Liu HC. [Experts consensus on cone-beam CT examination specification and diagnostic criteria of temporomandibular disorders]. *Chung-Hua Kou Chiang i Hsueh Tsa Chih Chinese Journal of Stomatology* 2020; 55:613-616.
2. Fu KY, Hu M, Yu Q, Yang C, Cheng Y, Long X, Zhang ZG, Liu HC. [Experts consensus on MRI examination specification and diagnostic criteria of temporomandibular joint disc displacement]. *Chung-Hua Kou Chiang i Hsueh Tsa Chih Chinese Journal of Stomatology* 2020; 55:608-612.
3. Tala H, Diaz RE, Dominguez Ruiz-Tagle JM, Sapunar Zenteno J, Pineda P, Arroyo Albala P, Barberan M, Cabane P, Cruz Olivos F, Gac EP, Glasinovic Pizarro A, Gonzalez HE, Grob F, Hidalgo Valle MS, Jaimovich R, Lanas A, Liberman C, Lobo Guinez M, Madrid A. [Study and management of thyroid nodes by non specialist physicians: SOCHED consensus]. *Revista Medica de Chile* 2017; 145:1028-1037.
4. Xian J. Expert consensus on the focus of diagnosis and management in chronic rhinosinusitis and evaluation and structured reporting of paranasal sinus CT. [Chinese]. *Chinese Journal of Radiology* 2021; 55(3):222-230.
5. Expert consensus of nasal CT and MRI examination and diagnosis. [Chinese]. *Chinese Journal of Radiology* 2017; 51(9):660-664.
6. Imaging flow consensus of thyroid nodules. [Chinese]. *Chinese Journal of Radiology* 2016; 50(12): 911-915.

APPENDIX 5. AGREE-II ASSESSMENTS

Guideline	Domain 1				Domain 2				Domain 3									Domain 4				Domain 5					Domain 6			Overall quality
	1	2	3	Score (%)	4	5	6	Score (%)	7	8	9	10	11	12	13	14	Score (%)	15	16	17	Score (%)	18	19	20	21	Score (%)	22	23	Score (%)	
ACR 2021: Sinonasal Disease [19]	2	2	2	6 (67)	3	2	3	8 (89)	3	2	2	3	3	3	1	3	20 (83)	3	3	3	9 (100)	2	2	1	1	6 (50)	2	3	5 (83)	Moderate
Intl Consensus: Rhinosinusitis 2021 [20]	3	3	3	9 (100)	3	2	2	7 (78)	3	2	3	3	3	3	3	1	21 (88)	3	3	3	9 (100)	3	2	2	1	8 (67)	2	2	4 (67)	Moderate
RCR 2017 [21]	3	3	3	9 (100)	3	2	3	8 (89)	3	3	3	3	3	1	3	1	20 (83)	3	3	3	9 (100)	3	2	3	1	9 (75)	2	2	4 (67)	High
ACR 2017: Tinnitus [23]	2	2	2	6 (67)	3	2	3	8 (89)	3	2	2	3	3	3	1	3	20 (83)	3	3	3	9 (100)	2	2	1	1	6 (50)	2	3	5 (83)	Moderate
NICE 2020: Tinnitus [24,25]	3	3	3	9 (100)	3	3	3	9 (100)	3	3	3	3	3	3	3	3	24 (100)	3	3	3	9 (100)	3	3	3	3	12 (100)	3	3	6 (100)	High
ACR 2019: Thyroid Disease [26,27]	3	2	2	7 (78)	3	2	2	7 (78)	3	2	2	3	3	3	1	3	20 (83)	3	3	3	9 (100)	2	2	1	1	6 (50)	2	3	5 (83)	Moderate
American Thyroid Association 2016 [28]	3	3	3	9 (100)	3	3	3	9 (100)	2	3	2	3	3	3	3	1	20 (83)	3	3	3	9 (100)	3	3	3	1	10 (83)	2	2	4 (67)	High
KSTR 2020 [29]	3	3	3	9 (100)	2	1	2	5 (56)	3	2	3	3	3	3	1	1	19 (79)	3	3	3	9 (100)	2	2	3	1	8 (67)	2	2	4 (67)	Moderate
KSR/NEBHCA 2018 (1809) [30]	3	3	2	8 (89)	2	1	2	5 (56)	3	2	3	3	3	3	3	3	23 (96)	3	3	3	9 (100)	2	2	3	1	8 (67)	1	1	2 (33)	Moderate
NICE 2019: Thyroid disease [31–33]	3	3	3	9 (100)	3	3	3	9 (100)	3	3	3	3	3	3	3	3	24 (100)	3	3	3	9 (100)	3	3	3	3	12 (100)	3	3	6 (100)	High
European Thyroid Association 2018 [34]	2	2	3	7 (78)	2	1	2	5 (56)	2	2	3	3	3	3	2	1	19 (79)	3	3	3	9 (100)	3	2	3	1	9 (75)	2	3	5 (83)	Moderate
ACR 2021: Parathyroid Adenoma [35]	2	2	2	6 (67)	3	2	3	8 (89)	3	2	2	3	3	3	1	3	20 (83)	3	3	3	9 (100)	2	2	1	1	6 (50)	2	3	5 (83)	Moderate
CAEK 2021 [36]	2	2	2	6 (67)	3	2	2	7 (78)	3	2	1	3	2	3	2	1	17 (71)	3	3	3	9 (100)	1	1	1	1	3 (33)	1	3	4 (67)	Moderate
NICE 2019: Hyper-parathyroidism [37]	3	3	3	9 (100)	3	3	3	9 (100)	3	3	3	3	3	3	3	3	24 (100)	3	3	3	9 (100)	3	3	3	3	12 (100)	3	3	6 (100)	High
ACR 2019: Neck Mass-Adenopathy [38]	2	2	2	6 (67)	3	2	2	7 (78)	3	2	2	3	3	3	1	3	20 (83)	3	3	3	9 (100)	2	2	1	1	6 (50)	2	3	5 (83)	Moderate
Neck mass guideline 2017 [39–41]	3	3	3	9 (100)	3	3	3	9 (100)	3	2	2	3	3	3	3	1	20 (83)	3	3	3	9 (100)	3	3	3	1	10 (83)	2	2	4 (67)	High

Abbreviations: ACR: American College of Radiology; CAEK: German Association of Endocrine Surgeons; Intl: International; KSR: Korean Society of Radiology; KSTR: Korean Society of Thyroid Radiology; NEBHCA: National Evidence-Based Healthcare Collaborating Agency; NICE: National Institute for Health and Care Excellence; RCR: Royal College of Radiologists