Fluency for Imaging: Incidental Findings MACROS Management

Purpose

The purpose of this document is to provide guidelines for the development and management of incidental findings macros in Fluency for Imaging (FFI) for adults.

Site Applicability

This guideline is applicable to all Medical Imaging (MI) departments within Lower Mainland Medical Imaging (LMMI) across Vancouver Coastal Health (VCH), Providence Health Care (PHC), and Provincial Health Services Authority (PHSA), collectively known as VPP.

Practice Level

Profession	Basic Duties
Radiologist Lead	• Review incidental findings macros annually or sooner if required. • Coordinate review with stakeholders. • Notify informatics with incidental findings macros updates. • Ongoing monitoring of macros using Sunset reporting. • Bring forward any change requests to macros to the VPP FFI Governance Committee.
Radiologists & Physicians	Notify radiologist lead, if: • An incidental finding macro requires updating or removal from the system. • A new incidental finding macro requires development.
VPP Informatics	• Update FFI macros. • Ongoing maintenance of macros.

Exemptions

This guideline is not applicable to B.C. Children's Hospital or B.C. Women's in PHSA.

Requirements

It is a requirement of the radiologist lead to review and update incidental findings macros every three years or sooner if required.

Need to Know

The incidence of incidental findings varies with age, body region, body mass index (BMI) and imaging modality, and it increases with image quality. According to the 2010 Mayo Clinic Study, approximately 40% of radiology reports had incidental findings (Orme et al., 2010).

In 2018, the Shared Care Committee (a partnership between Doctors of BC and the BC Government) approved funding for a Regional Radiology project, to be managed by PHC. As part of this initiative, the Incidental Findings Working Group (IFWG) was formed in 2019 to support the creation of a sustainable process for identifying and following up with patients who have incidental findings.

The goal of the Radiology Report Task Group within the IFWG is to develop an approach for clearly and consistently identifying incidental findings and standardizing related management/follow-up recommendations for incidental findings in radiology reports. In efforts to address this, nine pilot macros were created by radiologists for common incidental findings.

When dictating reports using FFI, radiologists can use voice cues for the macros to quickly add evidence-based recommendations regarding incidental thyroid nodules, lung nodules, pancreatic cysts or adrenal nodules. The macros can be incorporated into the final report, in part or in full, or simply reviewed as a reference during reporting, as per the preference of the reporting radiologist. Radiologists from Lions Gate Hospital, Mount Saint Joseph Hospital and St. Paul's Hospital tested the macros from August to September 2021.

An evaluation of the pilot macros was conducted on user experience, including usability and usefulness. Information was gathered by interviews with 4 radiologists, interviews with 6 ordering physicians (family practitioners, emergency room doctors, and a general internist), an online survey, and an analysis of Sunset data. All radiologists reported routinely using macros and believed they add value to the reports by facilitating consistent reporting, creating efficiency, functioning as reminders, improving practice, and eliminating some necessary imaging. The ordering physicians also reported the macros were useful as they provided clear and concise guidelines.

Guideline

- Incidental findings macros should be reviewed by the radiologist lead annually or sooner if required. See Appendix A for an inventory of radiology report macros for incidental findings.
    - Base Macros
    - Thyroid: Thyroid nodules detected on CT or MRI
    - Chest: Fleischner solid lung nodules
    - Chest: Fleischner subsolid lung nodules
    - Abdomen: Pancreatic Cysts
    - Abdomen: Adrenal Nodules/Masses
    - Abdomen: Ovarian Cysts detected on US
    - Abdomen: Ovarian Cysts detected on CT or MRI
    - Abdomen: Gallbladder Polyps

- The radiologist lead may coordinate a radiologist working group to lead the review and updating of incidental findings macros.

- The radiologist lead should coordinate stakeholder review with MI physician champions for each health authority. Health Authority (HA) MI physician champions are listed below:

VCH/PHC	PHSA
VCH – VGH/UBCH: Dr. Savvas Nicolaou VCH - LGH/Coastal: Dr. Andrew Thompson VCH- RH: Dr. Ciaran Keogh PHC - MSJ: Dr. Jessica Farrell PHC - SPH: Dr. Michael Martin	BC Cancer: Dr. Monty Martin PHSA – BC Children's: *Not Applicable* PHSA – BC Women's: *Not Applicable*

- The HA MI physician champions to spread this quality improvement initiative in each health organization.
- Updates and revisions to incidental findings macros should be communicated to site medical leads in a timely manner.
- The radiologist lead should inform the director of quality and informatics and regional managers when updates are required to incidental findings macros in FFI.

Documentation

Review of incidental findings annually or sooner should be documented by reviewing this guideline and updating the revision record.

Evaluation

Quality assurance of incidental findings macros usage may be performed for the purposes of quality improvement.

Related Documents

Communication of Urgent or Significant Unexpected Findings

References

Canadian Association of Radiologists. CAR Standard for Communication of Diagnostic Imaging Findings (2010). Retrieved from: https://car.ca/wp-content/uploads/Communication-of-Diagnostic-Imaging-Findings.pdf

Orme, N. M., Fletcher, J. G., Siddiki, H. A., Harmsen, W. S., O'Byrne, M. M., Port, J. D., ... & Wolf, S. M. (2010). Incidental findings in imaging research: evaluating incidence, benefit, and burden. *Archives of internal medicine*, *170*(17), 1525-1532.

Definitions

Fluency for Imaging (FFI) is a speech recognition solution used by physicians to dictate diagnostic imaging reports.

Appendices

- Appendix A: Medical Imaging Report Macros for Incidental Findings

Appendix A: Medical Imaging Report Macros for Incidental Findings

BASE MACROS: To be included in Impression section, to flag to ordering MD whether further imaging of incidental findings is recommended or not	
No Incidental	
ACTIVE NAME IN FLUENCY	NO INCIDENTAL
Other findings as described. No further imaging evaluation of these findings is warranted based only on imaging appearances. Correlation, however, with clinical presentation is advised.	
Incidental	
ACTIVE NAME IN FLUENCY	INCIDENTAL
There are non-urgent but potentially significant incidental findings pertaining to the [relevant structures] - please refer to the body of the report.	

Thyroid Nodules Detected on CT or MRI	
ACTIVE NAME IN FLUENCY	THYROID INCIDENTAL

In absence of risk factors for thyroid cancer or suspicious imaging features, no further work up is recommended for incidentally detected thyroid nodules less than 1.5 cm in size (less than 1 cm in patients under 35 years of age). Regardless of size, no further work up is recommended in patients with significant comorbidities or limited life expectancy.

Reference:

Hoang JK, Langer JE, Middleton WD, et al. Managing Incidental Thyroid Nodules Detected on Imaging: White Paper of the ACR Incidental Thyroid Findings Committee. *Journal of the American College of Radiology.* 2015:12:143-150.

Note for annual review: Thyroid nodules detected on CT/MRI incidental finding macro was last reviewed by Dr. Emily Pang

Fleischner Solid - Lung Nodules (Chest)	
ACTIVE NAME IN FLUENCY	FLEISCHNER SOLID

Regarding incidental solid pulmonary nodules measuring:

<6 mm, whether single or multiple:

1. If the patient is low risk, no routine follow-up is required.
2. If the patient is high risk, optional follow-up CT at 12 months and if unchanged, no further follow-up.

6-8 mm:

1. If a single nodule, follow up CT at 6-12 months, then consider CT at 18-24 months.*

2. If multiple nodules, follow up CT at 3-6 months, then consider CT at 18-24 months.*

*18-24 month follow up recommended for high risk patients.

>8 mm:

1. If a single nodule, consider CT at 3 months, PET/CT, or tissue sampling in both low and high risk patients.*

2. If multiple nodules, follow up CT at 3-6 months, then consider CT at 18-24 months.*

*18-24 month follow up recommended for high risk patients.

Reference: MacMahon H, Naidich DP, Goo JM, Mayo JR et al. Guidelines for Management of Incidental Pulmonary Nodules Detected on CT Images: Fleischner Society 2017. *Radiology* 2017 284(1), 228-243.

Note for annual review: Fleischner solid lung nodule incidental finding macro was last reviewed by Dr. Jenn Ellis

Fleischner Subsolid - Lung Nodules (Chest)	
ACTIVE NAME IN FLUENCY	FLEISCHNER SUBSOLID

Regarding incidental subsolid pulmonary nodules measuring:

<6 mm:

1. If a single ground glass or part solid nodule, no routine follow up.
2. If multiple nodules, follow up CT at 3-6 months, then if stable, consider CT at 2 and 4 years.

6 mm or larger:

1. If a single ground glass nodule, follow up CT at 6-12 months to confirm persistence, then CT every 2 years until 5 years.
2. If a single part solid nodule, follow up CT at 3-6 months to confirm persistence. If unchanged and solid component remains <6 mm, annual CT should be performed for 5 years.
3. If multiple nodules, follow up CT at 3-6 months, then subsequent management based on the most suspicious nodule(s).

Reference: MacMahon H, Naidich DP, Goo JM, Mayo JR et al. Guidelines for Management of Incidental Pulmonary Nodules Detected on CT Images: Fleischner Society 2017. *Radiology* 2017 284(1), 228-243.

Note for annual review: Fleischner subsolid lung nodules incidental finding macro was last reviewed by Dr. Jenn Ellis

Pancreatic Cysts (Abdomen)	
ACTIVE NAME IN FLUENCY	PANCREAS CYST INCIDENTAL

- Cyst with concerning features (i.e. non-enhancing mural nodule(s), wall thickening, MPD dilatation 5-9mm, lymphadenopathy, abrupt change MPD calibre) require referral to gastroenterology for EUS +/- FNA
- Cyst with high risk features (enhancing solid component, MPD > or equal to10mm, obstructive jaundice) require surgical referral
- Patients age <40 require gastroenterology referral for risk assessment +/- EUS
- Patients age >75 with small, simple cystic lesions are unlikely to require follow-up (unless clinical or imaging risk factors)
- Suspected cystic lesions detected on US or CT should be assessed with non-urgent CE MR Pancreas and MRCP to confirm simple nature
- Simple cystic pancreatic lesions 5mm or less in longest maximum diameter (in any plane) *do not* require follow-up imaging (age 40-75)

Incidental Simple Pancreatic Cyst >0.5-2.4cm, age 50-75

Baseline CE MR Pancreas with MRCP follow-up in 1 year, then MRCP q2 years for total 5 years surveillance

Growth >/= 3mm or development of concerning features requires referral gastroenterology referral for EUS +/- FNA

Incidental Simple Pancreatic Cyst >0.5-2.4cm, age 40-49

Baseline CE MR Pancreas with MRCP follow-up in 1 year, then MRCP q2 years for total 10 years surveillance

Growth >2mm in 10years or development of concerning features requires gastroenterology referral for EUS +/- FNA

Simple Pancreatic Cysts > 2.4cm, any age

Referral to gastroenterology for consideration of EUS +/- FNA

Reference:

Fung CI, Bigam DL, Wong CKW, et al. Recommendations for the Management of Incidental Pancreatic Findings in Adults by the Canadian Association of Radiologists Incidental Findings Working Group. *Canadian Association of Radiologists Journal*. 2022;73(2):312-319. doi:10.1177/08465371211021079

Note for annual review: Pancreatic cysts incidental finding macro was last reviewed by Dr. Alison Harris.

Adrenal Nodules/Masses (Abdomen)	
ACTIVE NAME IN FLUENCY	ADRENAL MASS INCIDENTAL

Recommendations regarding incidental adrenal nodules with indeterminate imaging features:

If demonstrates benign features such as HU<10 on non-contrast CT or signal loss between in- and opposed-phase (lipid rich adenoma), macroscopic fat (myelolipoma), cyst or calcification, no follow up.

1. If <1cm or stable >1 year on past imaging, no follow up.

2. If 1-2cm in a patient with no cancer history, probably benign, consider 12 month follow up adrenal CT.

3. If cancer history or 2-4cm, adrenal CT.

4. If >4cm consider resection, or if cancer history, consider biopsy or PET-CT.

Please note: Imaging cannot determine functional status of the adrenal nodule.

Reference: Mayo-Smith WW, Song JH, Boland GL, et al. Management of Incidental Adrenal Masses: A White Paper of the ACR Incidental Findings Committee. *Journal of the American College of Radiology.* 2017(14):1038-1044. doi: 10.1016/j.jacr.2017.05.001

Note for annual review: Adrenal Nodule/Masses incidental finding macro was last reviewed by Dr.Gavin Sugrue.

Ovarian Cysts – Detected on Ultrasound (Abdomen)	
ACTIVE NAME IN FLUENCY	OVARIAN CYST INCIDENTAL US

The American College of Radiology Ovarian-Adnexal Reporting and Data System (O-RADS) v 2022 regarding ovarian lesions identified at ultrasound in a non pregnant average risk patient with no acute symptoms recommends the following.

Premenopausal woman do not require follow-up for the following cysts:

- Simple cyst < 5 cm
- Corpus luteum < 3 cm
- Unilocular cyst with a smooth inner margin +/- internal echoes +/- incomplete septations < 3 cm
- Typical hemorrhagic cyst < 5 cm
- Simple paraovarian cyst, any size

Postmenopausal women do not require follow-up for the following:

- Simple cyst < 3 cm

Any other incidental ovarian lesion may require imaging surveillance and/or clinical management. Consider assigning lesion category using ORADS lexicon.

References: Andreotti RH, Timmerman D, Strachowski LM, et al, O-RADS US Risk Stratification and Management System: A Consensus Guideline from the ACR Ovarian-Adnexal Reporting and Data System Committee. *Radiology* 2020 294(1), 168-185.

Link to assessment category algorithm (or download "ACR guidance" app from Apple store or Google play):

https://www.acr.org/-/media/ACR/Files/RADS/O-RADS/US-v2022/O-RADS-US-v2022-Assessment-Categories-Algorithm.pdf

Note for annual review: Ovarian cyst detected on US incidental finding macro was last reviewed by Dr. Sarah Barrett

Ovarian Cysts – Detected on CT or MRI (Abdomen)

ACTIVE NAME IN FLUENCY	OVARIAN CYST INCIDENTAL CT or MRI

The American College of Radiology Incidental Findings Committee make the following recommendations for managing adnexal cysts incidentally detected on CT / MRI in non pregnant, asymptomatic, average risk patients where the cyst is completely included in the field of view (2020 update):

Any age:

- Lesions < 1 cm: No follow-up
- Any lesion stable > 2 years: No follow-up
- Typical paraovarian cyst, peritoneal inclusion cyst, simple hydrosalpinx: Usually further imaging is unnecessary, although may require clinical management

Premenopausal woman or < 50 years if status unknown:

- Simple* on CT <5 cm: No follow-up
- Definitely simple on MRI <7cm : No follow-up
- Definitely simple on MRI >7 cm: Ultrasound 6-12 months
- Probably simple but incompletely characterized on MRI < 5 cm: no follow up
- Probably simple but incompletely characterized on MRI > 5 cm: ultrasound in 6-12 months
- Any cyst >10 cm: MRI evaluation

Postmenopausal woman or > 50 **years if status unknown:**

- Simple* on CT <3cm : No follow-up
- Definitely simple on MRI <5 cm: No follow-up
- Definitely simple on MRI >5 cm: Ultrasound in 6-12 months
- Probably simple but incompletely characterized on MRI <3 cm: no follow up
- Probably simple but incompletely characterized on MRI >3 cm: Ultrasound follow-up 6-12 months
- Any cyst > 10 cm: MRI evaluation

*Simple on CT = Homogenous fluid density: - 10 HU to + 20 HU

Reference: Patel MD, Ascher SM, Horrow MM, Pickhardt PJ, et al. Management of Incidental Adnexal Findings on CT and MRI: A White Paper of the ACR Incidental Findings Committee. *Journal of the American College of Radiology.* 2020 Feb;17(2):248-254.

Note for annual review: Ovarian cyst detected on CT or MRI incidental finding macro was last reviewed by Dr. Sarah Barrett.

Gallbladder Polyps (abdomen)	
ACTIVE NAME IN FLUENCY	GALLBLADDER POLYPS INCIDENTAL

Polyps ≤6 mm: Benign polyp. No further evaluation or follow up necessary.

Larger polyps: Benign polyp, adenoma vs small cancer.

- 7-9 mm: Follow yearly with ultrasound x 5 years. For patients at higher risk (>50 yo, sessile or single polyp, PSC, Indian ethnicity) initial follow up US at 6 months, 12 months, then yearly.
- ≥10 mm: Surgical consultation.

Reference: Bird JR, Brahm GL, Kirkpatrick IDC, et al. Recommendations for the Management of Incidental Hepatobiliary Findings in Adults by the Canadian Association of Radiologists Incidental Findings Working Group. *Canadian Association of Radiologists Journal*. 2020;71(4):437-447.

Note for annual review: Gallbladder polyps incidental finding macro was last reviewed by Dr. Silvia Chang

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