Reinterpretation of Hepatopancreaticobiliary Imaging Exams by Subspecialty Radiologists: Assessment of Clinical Impact, Radiologist Peer Learning, and Referring Physician Satisfaction

Gregory S. Photopoulos, Darcie S. Wilson, Sharon E. Clarke, Andreu F. Costa

Faculty of Medicine, Dalhousie University

Department of Diagnostic Radiology, Queen Elizabeth II Health Sciences Centre

Halifax, Nova Scotia, Canada

Abstract: M5B-QI-6

NOVEMBER 27, 2023 | CHICAGO, IL

RSNA® 2023

LEADING THROUGH CHANGE

DALHOUSIE UNIVERSITY

FACULTY OF MEDICINE

nova scotia health

FINANCIAL DISCLOSURES

Presenter: Gregory S. Photopoulos

No disclosures

Co-author: Darcie S. Wilson

No disclosures

Co-author: Dr. Sharon E. Clarke

GE Healthcare Canada: Research Grant; Limbus AI: Research Grant; Co-inventor & Patent for "Systems and methods for generating cancer prediction maps from multiparametric magnetic resonance images using deep learning" Publication date 2022/3/10; Patent office: US; Application number: 7416734

Co-author: Dr. Andreu F. Costa

Bayer Inc.: Financial Relationship

BACKGROUND

- Imaging of hepatopancreaticobiliary (HPB) diseases is often complex
- Referring physicians often request reinterpretations by subspecialty radiologists
- High discrepancy rates (19.9%-68.9%) for HPB imaging reinterpretations [1-4]
- HPB reinterpretations impact clinical management [1-3]
- Potential of reinterpretations for radiologist peer learning has not been evaluated

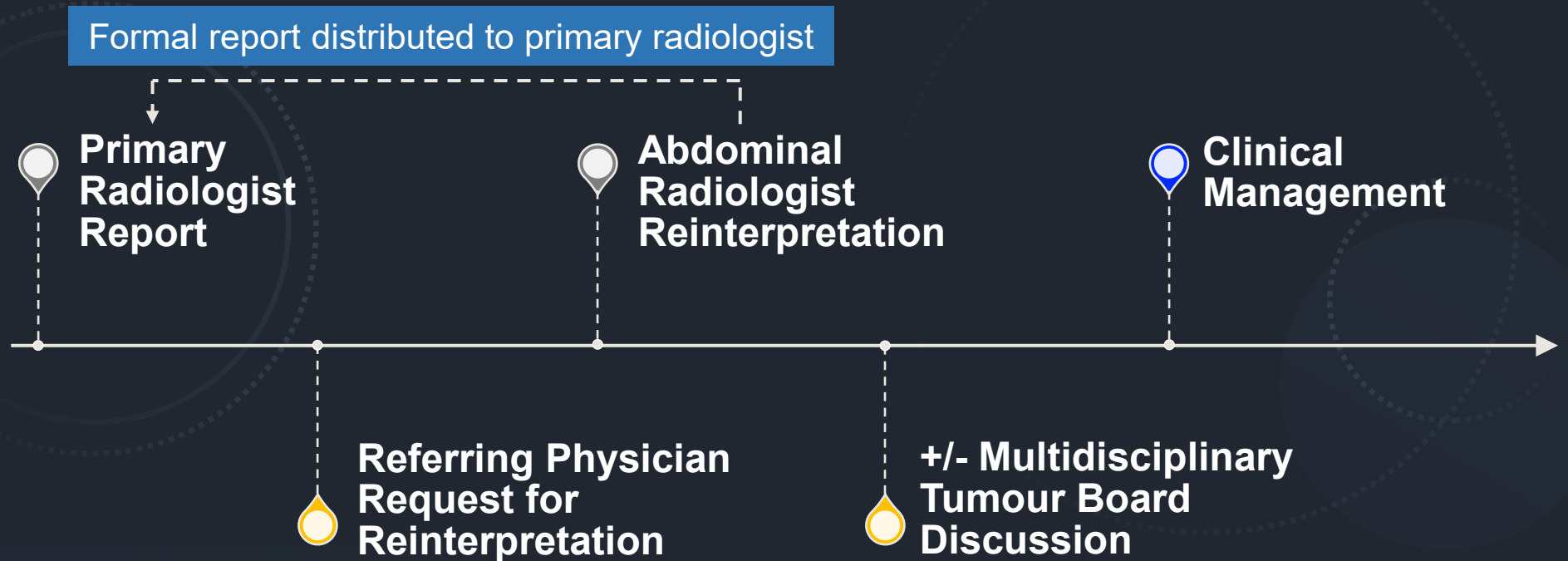

Fig. 1 Graphic displaying the flow of reinterpretation reports at the study centre

[1] Chingkoe 2018, *Abdom Radiol*
[2] Chung 2020, *Abdom Radiol*
[3] Shetty 2018, *AJR*
[4] Kostrubiak 2020, *AJR*

OBJECTIVES

- To determine the discrepancy rate of HPB reinterpretations and the impact of HPB reinterpretations on:
    1. Clinical management
    2. The potential for peer learning for radiologists that issued primary reports
    3. Referring physician satisfaction

STUDY DESIGN

- Quality Improvement Initiative approved by centre's Quality Improvement & Safety Council
    - Formal REB approval waived
    - Compliant with Personal Health Information Act
- Single academic centre
- Reinterpretation referrals from 3 provinces
- Retrospective, cross-sectional study

Fig. 2 Canadian Maritime provinces.
Peter Hermes Furian: Adobe Stock

METHODS

Imaging Reinterpretation:

- HPB reinterpretations issued by 2 abdominal subspecialty radiologists between March 2021 and August 2022
- Level of agreement with the primary report was graded according to the American College of Radiology (ACR) RADPEER® System (Fig. 3)
  - Used to determine discrepancy rate
  - RADPEER scores kept confidential and not used for peer learning

Score	Meaning
1	Concur with interpretation
2	Discrepancy in interpretation/ not ordinarily expected to be made (understandable miss)
3	Discrepancy in interpretation/ should be made most of the time

Fig. 3 ACR RADPEER System [5]

[5] Goldberg-Stein 2017, *JACR*

EMR & PACS Review:

- Patient demographics
  - Age
  - Sex
- Mean time elapsed between reports
- Change in clinical management
  - Yes / No / Unavailable

Survey Design:

- 5-point Likert scale & open-ended feedback questions
- Anonymous online completion, open for 2 weeks

1. Primary radiologists
   - Satisfaction with receiving reinterpretation reports
   - Potential value for peer learning & quality assurance
2. Referring physicians
   - Satisfaction with reinterpretation service
   - Utility of formal reinterpretation reports

RESULTS

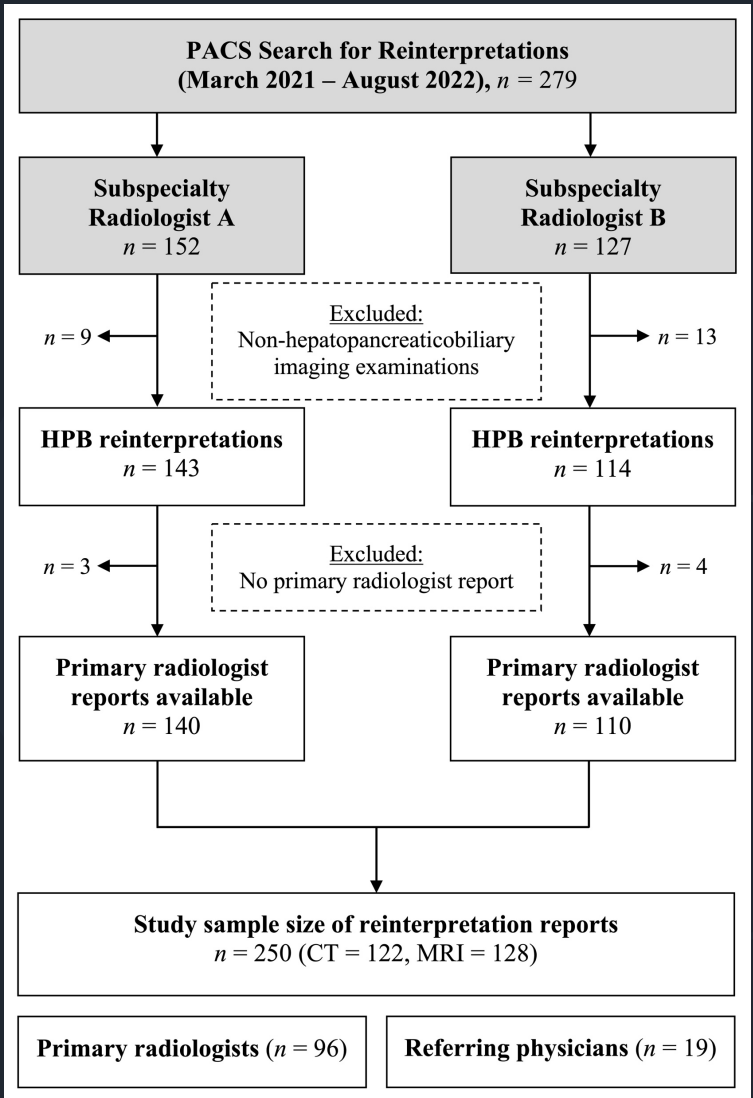

Fig. 4 Study flow diagram

Study Population

- Mean patient age: 63 ± 14 years
- Patient sex: 145/250 (58%) male
- Mean time elapsed between reports: 62 ± 120 days

	All Groups	RADPEER 1	RADPEER 2	RADPEER 3	Adequate Clinical Data
Total (*n*,%)	250 (100)	131 (52.4)	86 (34.4)	33 (13.2)	213 (85)
Change in management (*n*,%)					
Change	75 (30.0)	4 (3.1)	44 (51.2)	27 (81.8)	75 (35.2)
No change	138 (55.2)	102 (77.9)	35 (40.7)	1 (3.0)	138 (64.8)
Not available	37 (14.8)	25 (19.1)	7 (8.1)	5 (15.2)	--

Table 1. Distribution of RADPEER scores based on change in clinical management

Change in Management

- 213/250 (85%) reinterpretations with adequate clinical data for assessment of change in management
- 75/213 (35%) led to a change in management (95% RADPEER 2 or 3)

SURVEYS: QUANTITATIVE RESULTS

Primary Radiologists

- Response rate: 36/86 (42%)

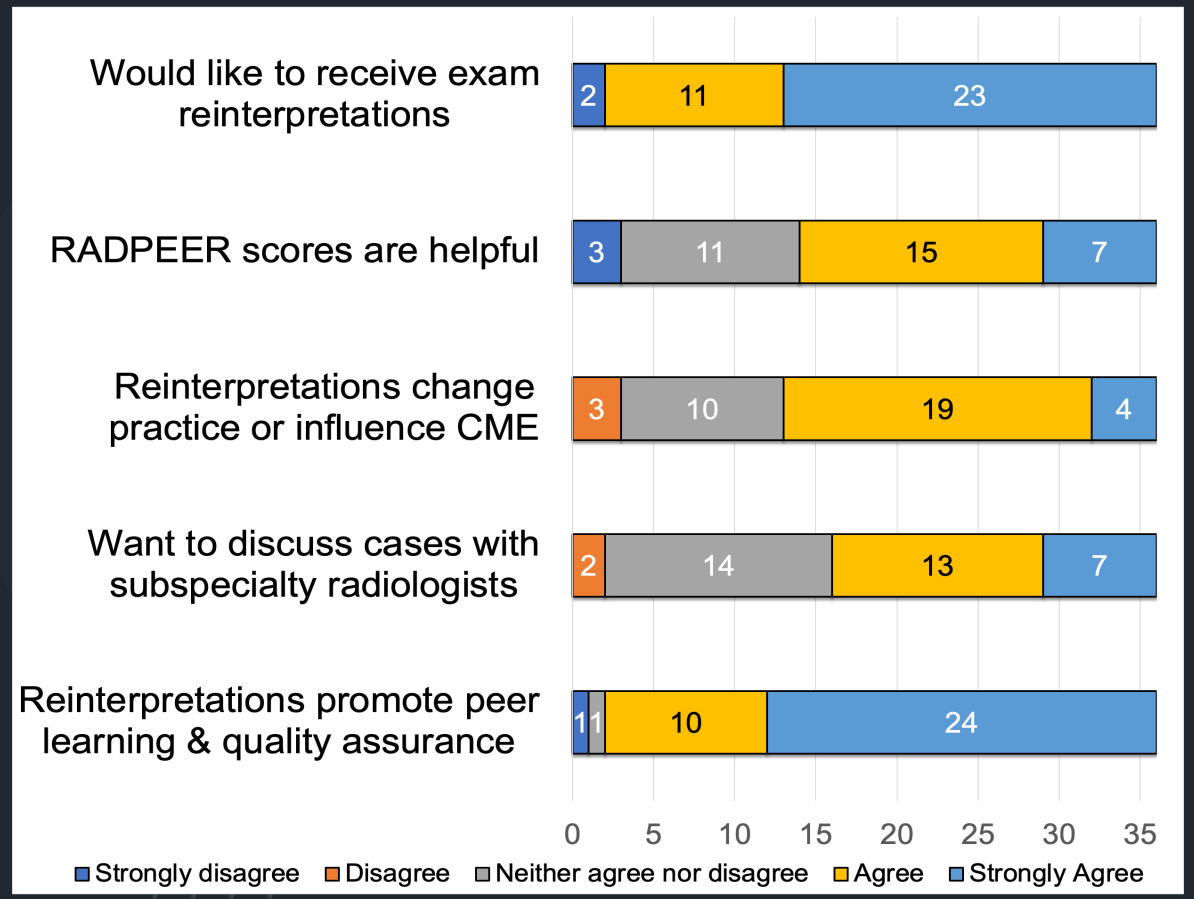

Fig. 5 Primary radiologist survey stacked bar chart

Referring Physicians

- Response rate: 7/18 (39%)

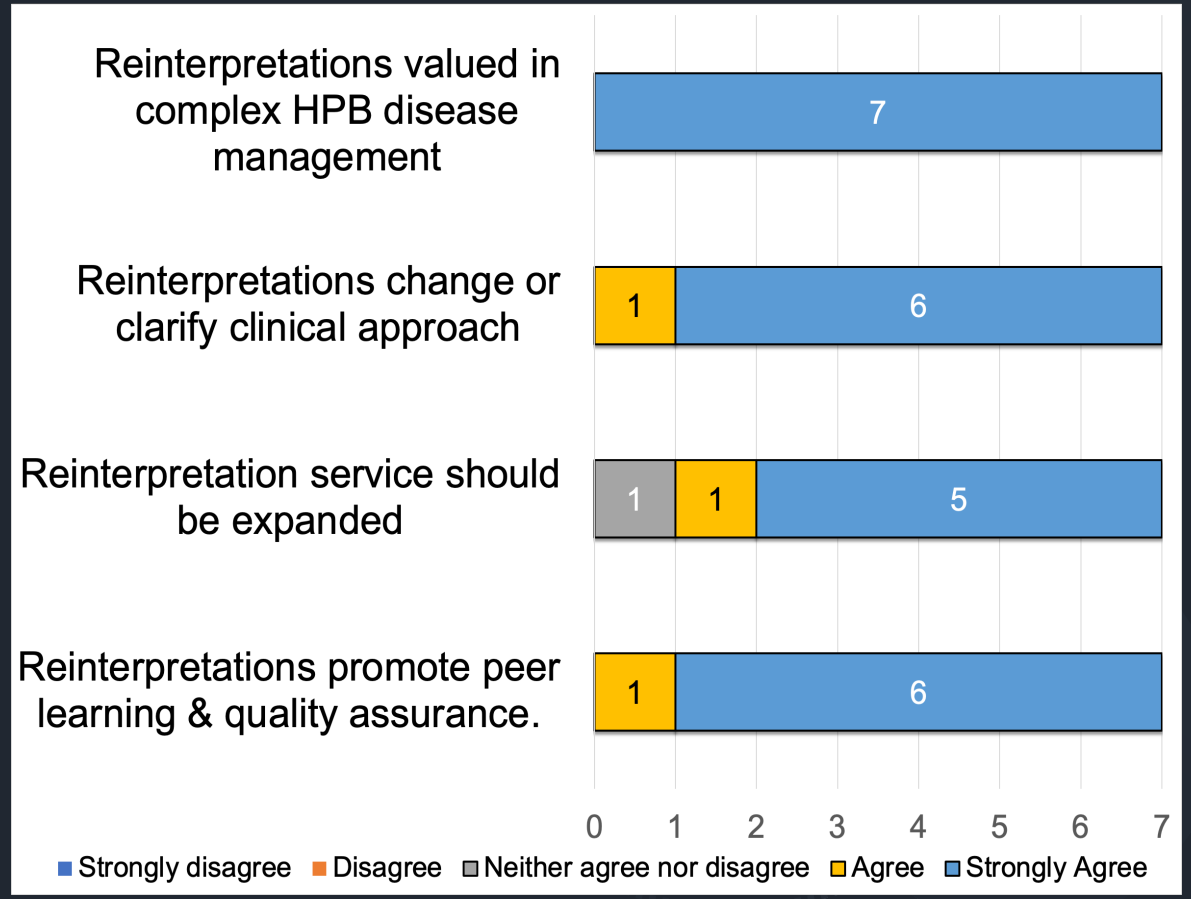

Fig. 6 Referring physician survey stacked bar chart

SURVEYS: QUALITATIVE RESULTS

Primary Radiologists

Positive Feedback

- "Feedback is very valuable."
- "Great program - should continue and expand"
- "Love receiving notification of the 2nd opinion, really appreciate it, please continue!"
- "Extremely valuable"

Constructive Feedback

- "Would appreciate getting the feedback sooner"
- "Is there a way to [...] give feedback the other way around?"

Referring Physicians

Positive Feedback

- "Very valuable"
- "Have changed management, avoided surgery, found metastatic disease and are invaluable"
- "Extremely informative and helpful in patient management"

Constructive Feedback

- "Current limits on radiology [...] to review cases limits the full value we could obtain from HPB MTB"
- "Why in pathology is there the culture of having a second opinion review for challenging situations, but it doesn't seem to be the case for radiology?"

DISCUSSION

- 119/250 (48%) HPB reinterpretations were associated with a discrepancy
- 75/213 (35%) were associated with a change in clinical management
- Reinterpretation reports are:
  - Overall, well received by radiologists and referring physicians
  - Perceived as valuable for peer learning
- Study limitations:
  - Retrospective design and single institution
  - Reinterpretations are subjective and at risk of bias
- In conclusion, HPB imaging reinterpretations help support peer learning for radiologists and patient management for referring physicians

THANK YOU! QUESTIONS?

Corresponding Authors:

Gregory Photopoulos (gp@dal.ca)

Dr. Andreu Costa (andreu.costa@nshealth.ca)

DALHOUSIE UNIVERSITY
FACULTY OF MEDICINE

nova scotia health

REFERENCES

[1] **Chingkoe et al. *Abdom Radiol* 2018; 43:2783-2789**. Subspecialized radiology review at multidisciplinary pancreas conference: impact on patient management.

[2] **Chung et al. *Abdom Radiol* 2020; 45:3800-3808**. Expert radiologist review at a hepatobiliary multidisciplinary tumor board: impact on patient management.

[3] **Shetty et al. *AJR* 2018; 211(6):1264-1272**. Hepatopancreaticobiliary Imaging Second-Opinion Consultations: Is There Value in the Second Reading?

[4] **Kostrubiak et al. *AJR* 2020; 215(6):1384-1388**. Body MRI Subspecialty Reinterpretations at a Tertiary Care Center: Discrepancy Rates and Error Types.

[5] **Goldberg-Stein et al. *JACR* 2017; 14:1080-1086**. ACR RADPEER Committee White Paper with 2016 Updates: Revised Scoring System, New Classifications, Self-Review, and Subspecialized Reports.