



REVIEWER REPORT

Manuscript Title:	From Image Acquisition to Algorithmic Accountability: Reframing Research Methodology in Radiologic Technology for the Age of Artificial Intelligence
Type of Article:	Original Article

FIRST ROUND

EDITOR

<u>Comments and Recommendations</u>
The reviewers note that the manuscript has merit but requires revisions to further strengthen its clarity, coherence, and academic quality. The authors are encouraged to carefully review and address all comments and recommendations provided by the reviewers in the revised manuscript.

REVIEWER 1

<u>General Comments and Recommendations</u>
The manuscript presents a timely and intellectually relevant review on the methodological implications of artificial intelligence for Radiologic Technology research. Its strongest contribution is the argument that radiologic technologists should not be treated as peripheral users of AI but as key actors in image production, protocol implementation, dose management, image quality assurance, and workflow accountability. The paper has clear potential to contribute to the literature, especially because many discussions of AI in medical imaging remain centered on algorithmic performance and radiologist interpretation. However, the manuscript would benefit from stronger conceptual boundaries, a clearer explanation of its review approach, and more explicit links between existing AI reporting standards and the practical realities of Radiologic Technology research. The proposed framework is promising, but it should be developed more operationally so that readers can see how it may guide thesis writing, journal manuscripts, institutional AI evaluation, and curriculum development.

<u>Specific Comments and Recommendations</u>
1. The manuscript should state more clearly whether it is a narrative review, conceptual review, methodological review, or position paper. Since the purpose appears to be conceptual synthesis and framework development rather than pooled evidence estimation, the review design should be explained early in the manuscript. 2. The paper should distinguish Radiologic Technology research from broader radiology AI research. A clearer scope statement would help prevent the manuscript from being read as another general review of AI applications in radiology.



3. The manuscript should emphasize that radiologic technologists influence the quality and meaning of imaging data before these data are processed by AI systems. Patient preparation, positioning, exposure selection, breathing instructions, protocol adherence, equipment use, and image rejection should be treated as methodological variables.
4. The discussion of CONSORT-AI, SPIRIT-AI, DECIDE-AI, TRIPOD+AI, STARD-AI, CLAIM, and FUTURE-AI should explain how these standards are relevant to RT research. The manuscript should also show where these standards may need adaptation for acquisition-related and workflow-related variables.
5. The paper correctly notes that AUC, sensitivity, specificity, and other model-performance indicators are insufficient. This point should be strengthened by identifying RT-relevant outcomes such as repeat rate, positioning adequacy, diagnostic acceptability, exposure index, dose-area product, CTDIvol, DLP, workflow time, alert burden, and user override behavior.
6. The section on image acquisition should include examples from projection radiography, CT, MRI, mammography, and portable imaging. This would make the central argument more concrete and demonstrate why AI validation cannot be separated from acquisition conditions.
7. Dose should not be treated only as a safety issue but as an outcome variable in AI-enabled RT research. The author should explain how AI studies may assess dose reduction, dose optimization, repeat exposure, and diagnostic acceptability together.
8. The manuscript should move beyond general statements about trust. It should discuss automation bias, algorithm aversion, alert fatigue, cognitive workload, confidence, explanation usefulness, and the conditions under which radiographers accept or override AI recommendations.
9. AI adoption involves feasibility, acceptability, adoption, fidelity, sustainability, cost, training, interoperability, and monitoring. These should be discussed as legitimate research outcomes for Radiologic Technology studies.
10. AI tools developed in high-resource settings may not transfer directly to institutions with different equipment, patient populations, staffing patterns, or workflow constraints. The manuscript should discuss local validation, multicenter datasets, and subgroup analysis as part of responsible RT research.
11. The RADIATE-AI framework is promising, but each component should be defined clearly and connected to specific methodological decisions. A table may help readers understand how the framework can be used when designing or reviewing RT-AI studies.
12. The paper would be more useful if it identified suitable designs for different RT-AI research questions. Possible designs include retrospective validation, prospective observational studies, simulation studies, human-AI interaction experiments, mixed-methods implementation studies, interrupted time-series studies, Delphi studies, and educational interventions.



13. The manuscript would benefit from tables that summarize methodological gaps, the proposed framework, possible study designs, and outcome measures. These tables should be concise and directly tied to the argument.

14. The conclusion should not merely repeat the introduction. It should clearly state what Radiologic Technology researchers can contribute to trustworthy AI: acquisition-aware validation, human-centered evaluation, implementation evidence, local generalizability, and accountability monitoring.

Please indicate your recommendation by checking the appropriate box below.

<u>Decision</u>	
☐	Accept the manuscript for publication.
☐	Reconsider the manuscript after the authors have satisfactorily addressed and complied with the reviewers' comments and recommendations.
☐	Reject the manuscript, as it is not suitable for publication.

REVIEWER 2

<u>General Comments and Recommendations</u>
This is a worthwhile paper, and the topic is important. The author is right to argue that Radiologic Technology research should not be stuck at the level of "Are radiographers ready for AI?" or "What is the model accuracy?" Those questions matter, but they are too limited for the direction of the field. The paper has a good central idea: AI affects not only interpretation but also acquisition, dose, image quality, workflow, education, and responsibility. That said, the manuscript needs to sound more firmly anchored in radiography practice. Some parts still read broadly, as if the paper is speaking to medical imaging AI in general. The best parts are those that talk about what radiographers actually do in the examination room and how those actions affect the data that AI systems use. The framework can be useful, but it needs more explanation and practical examples.

<u>Specific Comments and Recommendations</u>
a. The title is long, but I would keep the main idea. The phrase "from image acquisition to algorithmic accountability" is effective. It captures the movement of the paper. However, the rest of the title should be checked for length and readability.
b. The abstract should be sharper. The abstract should state the problem, the gap, the argument, and the framework more directly. It should avoid trying to include too many ideas in one paragraph.



- c. Please do not make this a generic AI-in-radiology paper. The author should keep the focus on Radiologic Technology. The paper should repeatedly return to positioning, exposure, dose, patient preparation, image quality, repeats, workflow, QA, and RT education.
- d. The manuscript should explain what it is not doing. It would help to state that the paper does not compare algorithms, discuss programming, rank commercial tools, or focus primarily on radiologist diagnosis. This will manage reader expectations.
- e. Perception studies should be discussed fairly. The paper should not sound as if perception or readiness studies are useless. They are useful, especially in early professional transition. The stronger point is that the field should move beyond them.
- f. The paper needs more examples from actual RT work. Examples would make the argument stronger. For instance: portable chest radiography, repeat analysis, CT dose monitoring, mammography positioning, MRI motion artifacts, protocol recommendation, and AI-based image-quality alerts.
- g. Acquisition should be treated as more than a background issue. This is the heart of the paper. The author should make it clear that an image is not just “data.” It is the result of patient cooperation, equipment, positioning, protocol choice, exposure, artifacts, and local technique.
- h. The discussion of dose needs to be more specific. The manuscript should name actual dose-related indicators. Readers in RT will expect terms such as exposure index, deviation index, dose-area product, CTDIvol, DLP, fluoroscopy time, and repeat exposure.
- i. The section on human-AI interaction should be expanded. It is not enough to say that radiographers should trust AI responsibly. The paper should discuss what happens when AI is wrong, when the radiographer disagrees, when alerts are too frequent, or when users become too dependent on the system.
- j. The “radiographer-in-the-loop” idea is worth developing. This could become one of the strongest parts of the paper. The author should explain where radiographers encounter AI: before acquisition, during acquisition, after acquisition, during image review, and during QA or escalation.
- k. Local relevance should be clearer. The paper would be stronger if it discussed settings such as the Philippines, ASEAN, and other resource-variable environments. Imported AI tools may not fit local equipment, protocols, staffing, or patient populations.
- l. The framework needs a table. The acronym is interesting, but readers need a clean table showing each component, its meaning, and its methodological focus. Without this, the framework may feel more like a slogan than a usable guide.
- m. The article should include a practical research-design section. Many readers will be educators, thesis advisers, or graduate students. A section on possible study designs would make the paper more useful.



n. Please include outcome measures beyond accuracy. A table of outcome measures would be helpful. Suggested domains include image quality, radiation safety, workflow, human factors, implementation, education, equity, and safety.

o. The ethics section should connect to RT responsibility. Ethics is not only about privacy and data. It also includes repeat exposure, patient communication, accountability for acting on AI advice, documentation of overrides, and departmental governance.

p. AI literacy should be linked to RT education. The paper should explain what RT students and professionals need to learn: basic AI concepts, validation, bias, metrics, dataset quality, human-AI interaction, ethics, and critical appraisal.

q. Some paragraphs are too dense. The writing is generally strong, but several paragraphs carry too many ideas. Breaking them up or using tables would improve readability.

r. The conclusion should be more forceful. The paper should end by saying clearly that Radiologic Technology must contribute its own evidence standards for AI in imaging, especially in acquisition, dose, workflow, implementation, and accountability.

Please indicate your recommendation by checking the appropriate box below.

<u>Decision</u>	
	Accept the manuscript for publication.
/	Reconsider the manuscript after the authors have satisfactorily addressed and complied with the reviewers' comments and recommendations.
	Reject the manuscript, as it is not suitable for publication.

SECOND ROUND

<u>Decision</u>	<u>Editor</u>	<u>Reviewer 1</u>	<u>Reviewer 2</u>
Accept the manuscript for publication.	/	/	/
Reconsider the manuscript after the authors have satisfactorily addressed and complied with the reviewers' comments and recommendations.			
Reject the manuscript, as it is not suitable for publication.			