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## INTRODUCTION

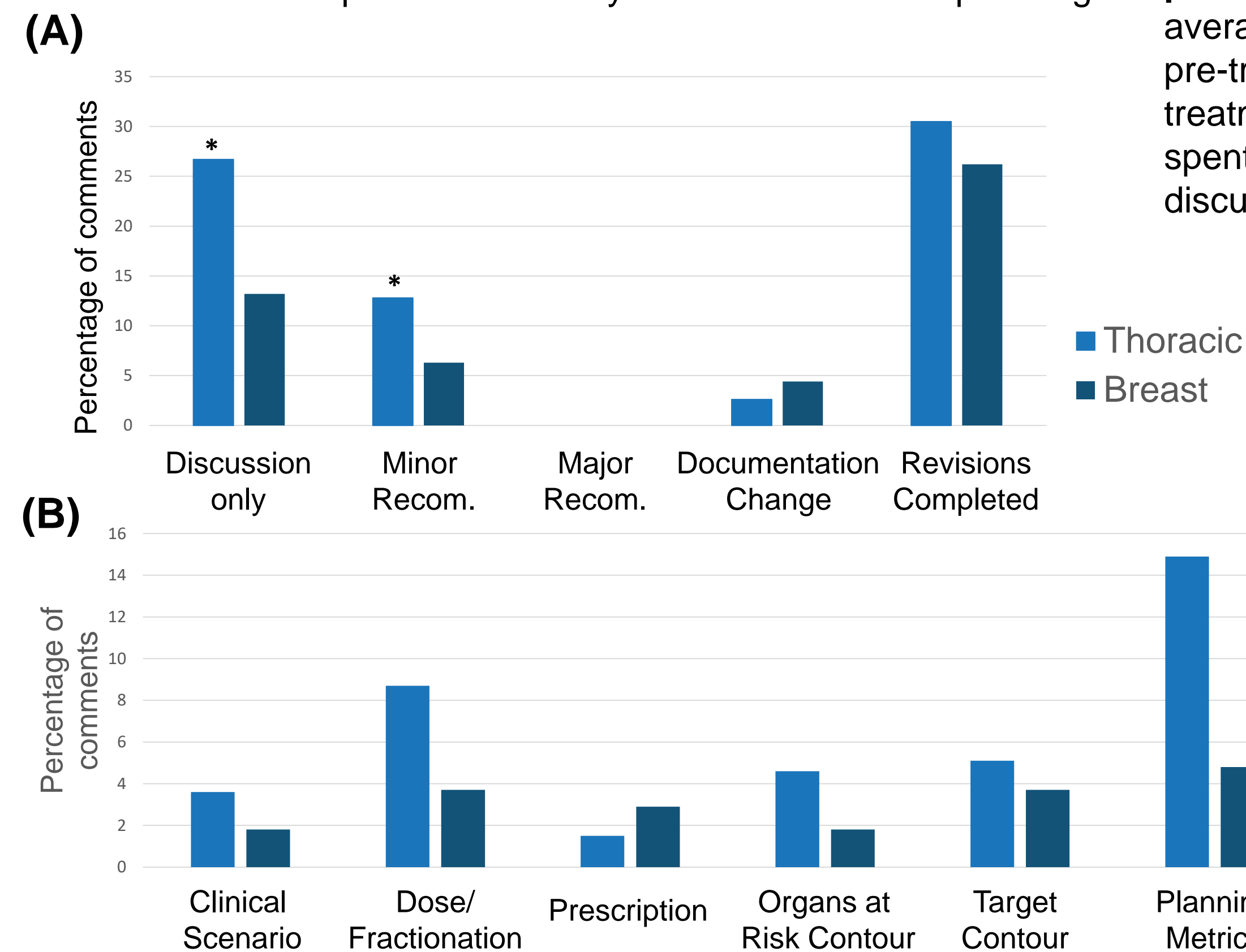
- Peer review is an important quality assurance mechanism strongly endorsed by ASTRO and other industry organizations to ensure detection and correction of errors that can cause injury to patients
- However, the greatest impact of peer review on treatment planning and plan modification is unknown.
- Here we report our pilot experience implementing a peer review checklist to describe peer review recommendations, timing and frequency of plan changes.

## METHODS

- We implemented a pilot iterative checklist tool to document recommendations in breast and thoracic disease-site specific peer review groups
- Plan review included discussion of the clinical scenario, dose/fractionation, prescription, planning volumes, planning metrics including dose volume histogram and patient setup.
- Pre-treatment peer review of volumes and plans occurred prior to treatment start for definitive plans of ≤five fractions or using proton planning
- Grading of reviews: discussion of alternative approach (no required changes), minor recommendations (changes at attending discretion) and major recommendations (changes required).

## RESULTS

- From 09/2022-12/2022, 723 peer reviews were completed (275 thoracic and 448 breast disease site specific reviews were identified)
- When comparing pre-Tx review timing and changes recommended; pre-Tx review doubled the amount of time spent per case and resulted in significantly more discussion and changes recommended.
- Disease sites had different types of recommendations with planning metrics most commonly discussed in thoracic planning vs setup imaging including PORT films and electron setup most commonly discussed in breast planning



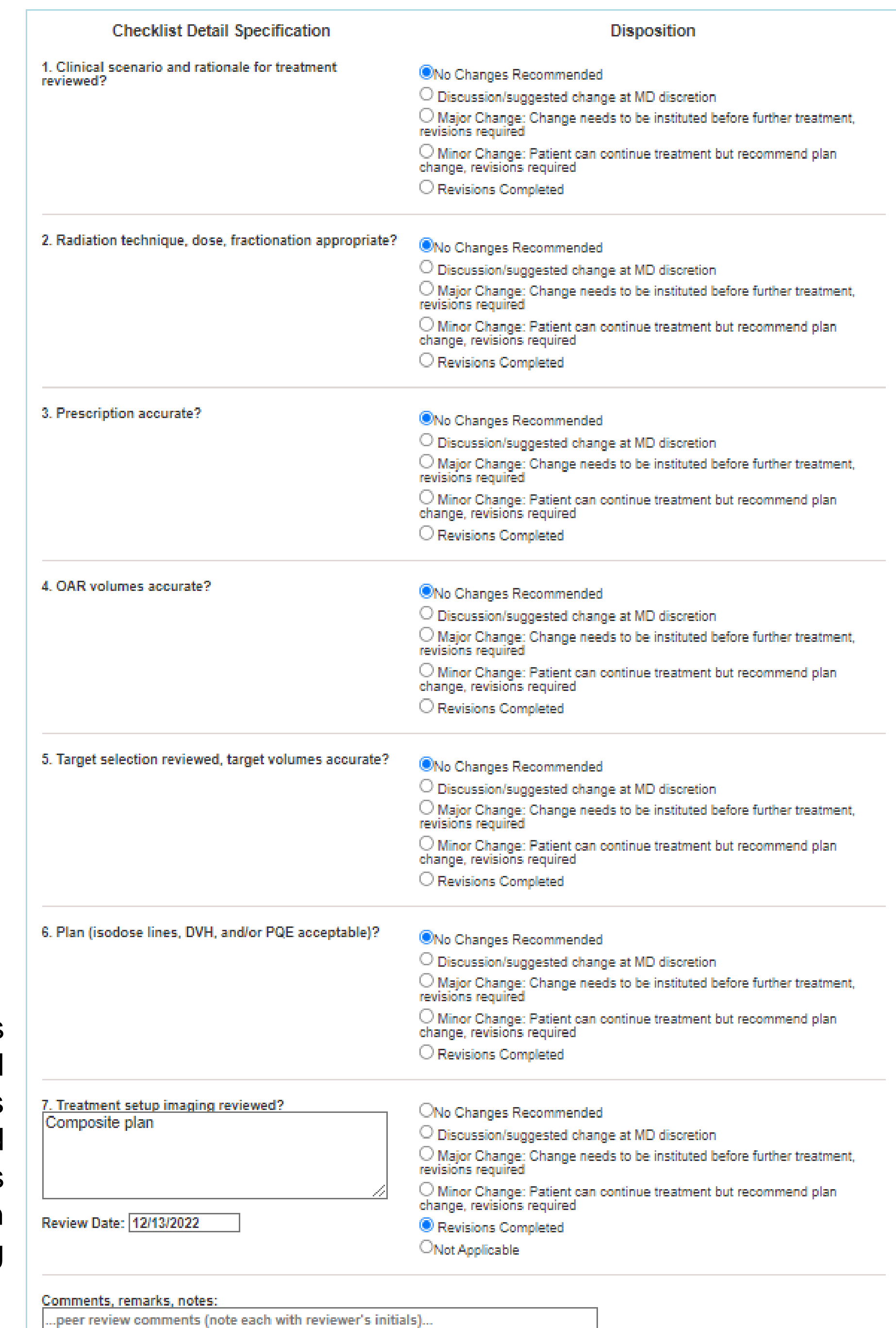
	Pre-treatment Review	Regular Review	P-value
Average time per case	4:47 min	2:03 min	p<0.01
Discussion only	29.3%	9.3%	p<0.01
Minor Changes	12.3%	4.8%	p<0.01
Plan Revisions	19.2%	2.4%	p<0.01

**Table 1. Comparison of pre-treatment vs regular peer review metrics (above).** We evaluated the average time and percentage of recommendations in pre-treatment vs regular peer review. On average, pre-treatment review resulted in significantly more time spent per case and resulted in significantly more discussion and plan review.

Patient:  
MRN#-ID:  
Birth Date:  
Location: Breast  
Due Date: 11/08/2022  
Actual Date: 11/08/2022  
QCL Review Status: Complete  
Review Histories 3

11/08/2022 08:47:19.350(21363)
12/13/2022 08:46:34.423(21723)
12/06/2022 08:42:07.580(21594)

**Figure 1 (left).** Peer Review Checklist tool



**Checklist Detail Specification**

- Clinical scenario and rationale for treatment reviewed?
  - No Changes Recommended
  - Discussion/suggested change at MD discretion
  - Major Change: Change needs to be instituted before further treatment, revisions required
  - Minor Change: Patient can continue treatment but recommend plan change, revisions required
  - Revisions Completed
- Radiation technique, dose, fractionation appropriate?
  - No Changes Recommended
  - Discussion/suggested change at MD discretion
  - Major Change: Change needs to be instituted before further treatment, revisions required
  - Minor Change: Patient can continue treatment but recommend plan change, revisions required
  - Revisions Completed
- Prescription accurate?
  - No Changes Recommended
  - Discussion/suggested change at MD discretion
  - Major Change: Change needs to be instituted before further treatment, revisions required
  - Minor Change: Patient can continue treatment but recommend plan change, revisions required
  - Revisions Completed
- OAR volumes accurate?
  - No Changes Recommended
  - Discussion/suggested change at MD discretion
  - Major Change: Change needs to be instituted before further treatment, revisions required
  - Minor Change: Patient can continue treatment but recommend plan change, revisions required
  - Revisions Completed
- Target selection reviewed, target volumes accurate?
  - No Changes Recommended
  - Discussion/suggested change at MD discretion
  - Major Change: Change needs to be instituted before further treatment, revisions required
  - Minor Change: Patient can continue treatment but recommend plan change, revisions required
  - Revisions Completed
- Plan (isodose lines, DVH, and/or PQE acceptable)?
  - No Changes Recommended
  - Discussion/suggested change at MD discretion
  - Major Change: Change needs to be instituted before further treatment, revisions required
  - Minor Change: Patient can continue treatment but recommend plan change, revisions required
  - Revisions Completed
- Treatment setup imaging reviewed? Composite plan
  - No Changes Recommended
  - Discussion/suggested change at MD discretion
  - Major Change: Change needs to be instituted before further treatment, revisions required
  - Minor Change: Patient can continue treatment but recommend plan change, revisions required
  - Revisions Completed
  - Not Applicable

Review Date: 12/13/2022

Comments, remarks, notes:  
...peer review comments (note each with reviewer's initials)...

**Figure 2. Peer Review Discussion (left).** These graphs demonstrates the percentage of discussion and recommendations made during peer review and revisions completed during the implementation period in thoracic and breast disease site groups. **(A)** Percentage of comments among plan review categories **(B)** Percentage of discussion and recommended revisions and completed revision during assessment period; Recom: Recommendations. \*P<0.05

## CONCLUSIONS

- We successfully implemented a peer review checklist to document plan recommendations in the context of disease site-specific peer review meetings.
- Peer review is frequently an iterative processes,

particularly for patients with adaptive or boost treatment planning

- Disease sites have differences in peer review needs and may require different resources/focus with thoracic cases requiring longer review time and had more frequent plan change recommendations

- Setup imaging, particularly for 3D or electron-based breast treatment, more frequently warranted discussion and should be considered in the peer review paradigm
- Pre-treatment peer review improves not only plan revision but also increases thorough plan review, discussion and education

## CONTACT

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