

Best of ASTRO Patient Takeaway

Across the world, radiation oncologists are actively researching safe and effective radiation treatments, including more personalized approaches and studies of lower doses for a variety of cancers. The following research studies were presented during the ASTRO Annual Meeting in October 2020. Annually, ASTRO hosts the largest gathering of radiation oncology professionals in the world to share the latest science and research, all designed to improve patient care, support clinical practice and advance science and research in the field of radiation oncology.

The information provided below highlights the research provided in the studies included in the Best of ASTRO onDemand course. This information is not intended as medical advice. It is important to review and discuss all treatment options, including radiation therapy with your primary care physician before determining which option or combination of options is best for you and your lifestyle.

Patient Safety

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Preventable errors are present throughout medicine and several investigators are using novel methods to identify and improve these gaps in care.

Miller et al: A Pilot Trial Using Telehealth in Radiation Oncology: The Future of Healthcare is Virtual

- Prior to the COVID-19 pandemic, telehealth has not had an established role in radiation oncology.
- Visits to hospitals, including emergency departments and cancer centers, decreased at the start of the pandemic, and in many areas have not returned to 2019 levels.
- Telehealth in radiation oncology has the potential to improve health care access, address social determinants of health and improve patient outcomes.
- Patients with telehealth visits as their first visit after completing radiotherapy enjoyed high overall satisfaction, good communication and high levels of trust.
- Providers were able to properly assess symptoms and patient toxicity, without needing to bring patients in for an in-person evaluation.
- In conclusion, telehealth was well received by patients and providers and provided high enough quality for safe and effective post radiation care.

Prasad et al: Cardiovascular Event Reporting in Clinical Trials Involving Chest Radiation Therapy

- Cardiovascular endpoints are major considerations for radiotherapy clinical trials.
- In a review of over 100 trials, over half reported no major adverse cardiac events and over one third reported no cardiovascular disease events.
- When compared to patients without cancer, the expected number of cardiovascular events during these trials is much higher than reported, suggesting these events are vastly underreported.
- Clinical trial designs should be improved to better identify cardiovascular events.

Mazur et al: Effect of Neurofeedback and Simulation-based Training Interventions on Radiation Therapists' (RTTs) Mental Workload, Situation Awareness and Performance

- Radiation therapists are often the last person available to identify an error before it gets propagated to the patient, therefore their ability to identify errors is critical.
- The addition of neurofeedback training to simulation-based training interventions significantly improves the error detection rate with minimal costs.
- Neurofeedback may improve the awareness of radiation therapists leading to a higher error detection rate.
- While unblended, the study showed encouraging results for simple, manageable and inexpensive and hold promise for wider adoption.

Shumway et al: Machine Learning to Improve the Prioritization and Effectiveness of Pre-Treatment Physics Chart Checks

- While quality check prior to treatment have been shown to be one of the most effective methods of catching errors, some charts have added complexity and require more attention to catch potential errors.
- Several attributes of patient charts that contribute to their difficulty, including clinical features, plan details, and quality assurance specifics, were reviewed and compared against the overall difficulty as assessed by physicists.
- The outcomes from computer algorithms correlated well with ratings assessed by physicists.
- The use of this screening tool can improve plan prioritization and allow physicist more time to review the more complex plans.
- These types of tools can be combined with the recently published AAPM Task Group 275, which has outlined strategies for effective plan and chart reviews.

Zhang et al: Categorizing Incident Learning Reports by Narrative Text Clustering to Improve Safety

- Incident learning systems (ILS) have been established to record incidents that happen within radiation clinics to inform future best practices.
- Current incident reports consist almost exclusively of text reports that require manual extraction of data to combine the data and make generalizations across separate experiences; this limitation makes the analysis of data impossible to accomplish on a large scale.
- A classification algorithm was used in an attempt to classify reports into 30 separate groups based on linguistic processing.
- The two markers that were used included term frequency (the number of times a specific word/term appears in a report) and inverse document frequency (the inverse of the number of times a word is present in a document).
- Clustering was able to identify several types of reports, including those related to external contours during radiation planning and patient face photos.
- This method is very attractive as it does not require any learning to separate cases.
- If it can be successfully expanded to independent datasets, it may be very helpful in processing larger, multi-institutional datasets.