



Purpose: The American Association of Physicists in Medicine (AAPM) Working Group on Multi-Institutional Journal Clubs for Residency Programs (WGJCRP) launched the multi-institutional journal club (MIJC) in 2021. By 2022, participation had expanded to 40% of therapy residency programs. The initiative was designed to foster cross-institutional collaboration among medical physics residents and to enhance scientific communication and engagement. Despite its broad adoption, substantial variability exists in how MIJC experiences are implemented. Here we present the five-year educational experience from a single MIJC, including session formats, topics, and key outcomes. The findings may serve as a practical guide for residents, coordinators, and leaders of new and existing MIJCs.

Methods: Data from a four-institution journal club were collected over its first five years, including scheduling, topics, journal selection, session and speaker counts, and presentation formats (traditional and debate). Resident engagement was qualitatively assessed in relation to topic selection and presentation format.

Results: Traditional journal club presentations were conducted during the first two years, with a debate format introduced in the 2023–2024 academic year. Following this transition, debates accounted for approximately 33–60% of sessions annually over the subsequent three years. Overall, 17 of 42 presentations were based on AAPM publications. Resident engagement was highest when topics were directly relevant to current clinical practice. Analysis of presentation feedback demonstrated positive correlations between attendance and several measures of presentation quality, including audience engagement ($r = 0.23$), responsiveness to questions ($r = 0.65$), and clarity of presentation ($r = 0.63$).

Conclusions: Selecting relevant, cutting-edge topics, prioritizing protected meeting times, and incorporating a combination of traditional and debate-based formats were found to enhance participant engagement and educational value in MIJC sessions. Additionally, the continuity of the MIJC facilitated longitudinal faculty–resident relationships and enabled the implementation of collaborative quality improvement initiatives. Together, these elements represent critical components of an effective MIJC framework. These findings may serve as a guide for other groups aiming to optimize their MIJC experiences.

Nrusingh C. Biswal, PhD, DABR
Department of Radiation Oncology
University of Maryland School of Medicine
850 W. Baltimore St, Baltimore, MD 21201
Email: Nrusingh.Biswal@umm.edu
Tel: 410-369-5321

Nrusingh C. Biswal, PhD¹; Adam B. Paxton, PhD²; Joseph Harms, PhD³ ; Arun Gopal, PhD¹ Jay W. Burmeister, PhD⁴
¹ Department of Radiation Oncology, University of Maryland School of Medicine, Baltimore, MD; ² Department of Radiation Oncology, Huntsman Cancer Institute, University of Utah, Salt Lake City, UT; ³ Department of Radiation Oncology, WashU Medicine, St. Louis, MO; ⁴ Karmanos Cancer Center, Gershenson ROC, Wayne State University School of Medicine, Detroit, MI

The COVID-19 pandemic transformed academic culture by accelerating the adoption of virtual collaboration. Within medical physics, a multi-institutional journal club (MIJC) model was launched during the pandemic as a pilot involving nine imaging residency programs in the Midwestern United States. To support broader implementation, the AAPM established the Working Group on Multi-Institutional Journal Clubs for Residency Programs (WGJCRP) in 2021. The WGJCRP now encompasses a range of journal clubs, including those focused on therapeutic physics, imaging physics, as well as professionalism and ethics.

The MIJC initiative aims to connect residents across institutions while enhancing scientific communication and engagement, serving as a supplement to existing journal clubs. In 2021, therapy residency programs from the Karmanos Cancer Institute, the University of Maryland, and the University of Utah were assigned to a single MIJC and have, by request, remained together since inception. The University of Alabama joined the group during 2022 and 2023, following its selection by the WGJCRP. All four programs have residency durations of 2 years in length, and the total number of residents at any time in the MIJC over the time period 2021–2026 ranged from 8 to 13. This group has endeavored to use this journal club to enhance the training of our residents.

This presentation summarizes five years of educational experience from a multi-institutional journal club, including session formats, topics, and key outcomes. The findings may serve as a practical guide for residents, coordinators, and leaders of new and existing MJICs.

Data from a four-institution journal club were collected over the first five years following its inception. After the official group assignment by the WGJCRP, residents, coordinators, and program directors were contacted by the group leader. A tentative annual schedule of speakers and moderators was established after the initial kick-off meeting. The journal club has met monthly for one hour at a fixed time for five consecutive years. Sessions were conducted virtually, accommodating institutions across Eastern and Mountain time zones, and were attended by medical physics residents and faculty from participating programs.

Journal selection, speaker/moderator/mentor selection, and feedback collection

Topics were selected either by residents or proposed by journal club coordinators and residency program directors to ensure both learner-driven content and alignment with educational goals. For each session, one to two residents served as presenters, supported by a designated resident moderator. Each presenter was paired with at least one faculty mentor from their home institution, with occasional cross-institutional mentorship to promote broader collaboration and perspective. Moderators were responsible for introducing presenters, managing session timing, and facilitating audience discussion and questions. Attendance was systematically recorded for each session to monitor engagement and participation trends.

Presentation format

Sessions were conducted using both traditional solo presentations and debate formats. In traditional sessions, approximately two-thirds of the time was allocated to presentations and one-third to discussion. During these traditional presentations, residents were asked to provide some background information on the topic being presented to familiarize the audience and enhance the discussion of the paper being presented.

In debate sessions, two residents, typically from different participating institutions, were selected as presenters to encourage inter-institutional collaboration and diversity of perspectives. Residents were encouraged to seek input from faculty mentors during preparation, although the debates themselves were conducted as resident-versus-resident discussions. Each debate followed a structured format (Table 1), consisting of a moderator-led introduction, a pre-debate audience vote, prepared slide-based arguments from both the Proposition (arguing in favor) and Opposition (arguing against), followed by slide-free rebuttals, audience questions, and a post-debate vote to assess any change in perspectives. Slides were permitted during the main argument portion to support a clear presentation of evidence, while rebuttals were conducted without slides to promote spontaneous critical thinking, direct audience engagement, and the ability to think and respond in real time.

Each academic year began with an orientation session in which coordinators and club leaders welcomed club members and outlined session formats and expectations. As shown in Table 2, the traditional journal club presentations were conducted during the first two years, with a debate format introduced in the 2023–2024 academic year. Following this transition, debates accounted for approximately 33–60% of sessions annually over the subsequent three years, with the range reflecting year-to-year variation in the proportion of debate sessions.

Over the five years, 17 of the 42 presented articles were based on publications in AAPM journals, including *Medical Physics* and *Journal of Applied Clinical Medical Physics*. Most articles (36 of 42) were published within three years of presentation, with the remainder published within four to six years.

Attendance ranged from 13 to 30 participants (average: 21). Audience participation during debate sessions was perceived to be higher based on faculty and moderator observations, although this was not quantitatively measured. While we recorded attendance for each session, we did not quantify audience participation (e.g., number of questions asked), which we acknowledge as a limitation and will address in future sessions. Residents were consistently present throughout sessions, whereas faculty attendance varied. Increased participation during debate formats was observed among both groups, with residents being particularly more vocal during these sessions. Furthermore, the debate format led to increased resident investment in topics, broader audience participation, and more insightful discussion on clinical implementation. No significant differences in attendance were observed between traditional presentations and debates, nor was attendance correlated with overall feedback scores. Pearson correlation analysis was performed to evaluate relationships between session attendance and feedback scores across presentation quality metrics. Strong positive correlations were observed for responsiveness to questions ($r = 0.65$) and clarity of presentation ($r = 0.63$). Audience engagement and the ability to summarize study goals demonstrated weak positive correlations with attendance, with Pearson correlation coefficients of $r = 0.23$ and $r = 0.25$, respectively. Other evaluated domains, including identifying strengths and weaknesses ($r = -0.19$) and adhering to time limits ($r = 0.008$), showed no meaningful correlation with attendance. These findings suggest that interactive elements of presentations may be more closely associated with attendance than structural or descriptive components. These findings should be interpreted with caution, given the limited sample size and low response rates, which may affect the robustness of correlation estimates.

Table 1. Debate Format and Equal Time Allocation for Proposition and Opposition

Items	Time (min.)
Introduction	5
Opening logistics, pre-debate voting by the moderator	5
Opening arguments (with slides)	12 each
Rebuttal (no slides)	5 each
Audience questions	15
Voting and wrap up	5

Table 2. 5-year MIJC statistics from one group

Year	# Institutions	# Sessions	# Presenters	# Moderators	# solo presentations	# Debates
2021-2022	3	8	7	7	7	0
2022-2023	4	10	9	9	9	0
2023-2024	4	9	13	8	3	5
2024-2025	3	10	12	9	6	3
2025-2026	3	9	12	8	4	4

Maintaining a consistent group over five years was a key contributor to the club's engagement, facilitating coordination among organizers and increasing resident confidence in presentations. This continuity also enabled an increase in the number of annual sessions to 9–10 in later years, compared with eight sessions in the first year. While there is certainly value in collaborating with new programs each year, such as the acquisition of additional viewpoints and program ideas, we felt that the continuity and stability from maintaining a consistent group was more valuable and have thus chosen to stay together. Indeed, the operational success and quality improvement initiatives, such as the longitudinal residency satisfaction survey, would not have been achieved without this continuity.

Challenges were occasionally encountered. For example, selecting topics of mutual interest and preparing presentation content, particularly for debate sessions, was sometimes more time-consuming than anticipated. However, this often provided faculty with additional opportunities for guidance and mentorship. In addition, accommodating residents' clinical responsibilities occasionally necessitated short extensions or rescheduling. Sessions were postponed when presenters were unavailable due to unforeseen circumstances, sometimes resulting in reduced attendance. Session cancellations were rare, with only one cancellation occurring over the five years.

Although this study demonstrated favorable participant perceptions, it did not include objective measures of learning outcomes (e.g., pre- and post-session testing). Incorporating such tools in future implementations would allow for a more robust evaluation of the MIJC's impact on knowledge acquisition and competency development. In future iterations, we plan to incorporate quantitative measures of audience participation, such as tracking the number of questions asked, the duration of discussion, and participant contributions per session. This data will enable more objective comparisons between presentation formats and provide a clearer understanding of engagement dynamics. Additionally, we plan to introduce structured debate sessions involving residents and practicing medical physicists as opposing participants. This format is intended to more closely simulate board oral examination scenarios and further enhance critical thinking, communication skills, and clinical reasoning.

Key features of a feasible and well-received MIJC model included the use of clinically relevant, timely topics; protected meeting times; structured mentorship; longitudinal group continuity; and a combination of traditional and debate-based formats. Continuity within the MIJC supported sustained faculty–resident interaction and enabled implementation of programmatic quality improvement efforts, including an annual resident satisfaction and well-being assessment. The incorporation of debate-based sessions was associated with higher levels of reported engagement and favorable participant feedback. While debate is not intrinsic to routine medical physics practice, it may serve as an instructional approach to promote active participation, critical evaluation of evidence, and structured reasoning. However, this study did not directly assess its impact on knowledge acquisition, clinical decision-making, or competency development. These findings indicate that this MIJC structure is a practical approach to improving perceived engagement and program organization. Further work is needed to determine its effect on measurable educational and professional outcomes. This model may inform the design of similar initiatives in other training programs.

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