

Neurology

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Shaping the Future of Epilepsy Care—Clinical Dialogues between Emerging Leaders to Established Experts: Key Learnings from the Journal Club in Epilepsy

The Journal Club Model: Interactive Learning in Clinical Practice

Focal epilepsy is the most common form of epilepsy in adults, defined by seizures originating within a single cerebral hemisphere.¹ Its clinical heterogeneity reflects diverse underlying causes, including structural brain lesions, genetic mutations, and complex neural network dynamics. Recent advances in neuroimaging and molecular diagnostics have enabled more precise classification and individualized therapeutic strategies.² Despite these developments, challenges remain in early diagnosis and effective management, as many patients experience refractory seizures and comorbidities that impact quality of life.³ Optimal care requires a multidisciplinary approach, integrating medical and allied health professionals to address both neurological and psychosocial dimensions. Continuous education and collaboration among healthcare providers are essential for translating emerging evidence into clinical practice and improving patient outcomes.

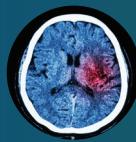
To support healthcare professionals (HCPs) in staying current with advances in focal epilepsy management and tailoring treatments to individual patient's needs, the Journal Club in Epilepsy series was launched in January 2025. This educational initiative brought together key opinion leaders (KOLs) and early career researchers (ECRs) to discuss recent advances in focal epilepsy management over eight on-demand webinars published monthly throughout the year. Each session focused on a specific topic relevant to focal epilepsy by presenting and critically discussing

two seminal manuscripts. All topics were then summarized into three infographics. As part of the marketing plan, we combined targeted email campaigns, paid social media, and search campaigns to consistently drive HCPs to the Brain Health Knowledge Hub throughout the year. Each new Journal Club discussion and infographic was promoted via email and digital ads, resulting in strong engagement with both live and on-demand content. Monthly reviews and audience targeting ensured the campaigns effectively reached neurology and epilepsy specialists in key European markets, maximizing

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site visits and participation in educational activities. This integrated approach proved highly effective in building awareness and fostering ongoing HCP engagement with the Hub's resources.

The series explored critical aspects of epilepsy care, from focal epilepsy mechanisms and diagnostics to emerging antiseizure medications and patient-centered treatment strategies. The program aimed to deepen clinicians' understanding of focal epilepsies, evaluate new therapies for safety and efficacy, and strengthen multidisciplinary care coordination through team-based management approaches that prioritize patients' quality of life and preferences. This approach supports the integration of evolving scientific evidence into clinical practice, ultimately optimizing outcomes and quality of life for individuals with focal epilepsy. Leveraging expert perspectives and published data within a digitally enabled format, the program functioned as a dynamic knowledge hub, facilitating timely synthesis of new findings and practical guidance for HCPs.

The specific learning outcomes of the Journal Club aimed at improving the knowledge and competence of the learners (Moore's levels 3 and 4). Specifically, we wanted the learners to demonstrate (a) an improved understanding of the pathophysiology, clinical presentations, and diagnostic strategies for focal epilepsy, including the ability to recognize psychiatric comorbidities and apply advanced neuroimaging and molecular diagnostic techniques in clinical scenarios, (b) an enhanced ability to critically evaluate and apply emerging therapies, including an ability to assess the safety, efficacy, and individualized application of new-generation antiseizure medications and minimally invasive surgical interventions by integrating

current evidence into therapeutic decision-making for diverse patient populations, and (c) an increased understanding of multidisciplinary approaches and shared decision-making principles to optimize epilepsy management by balancing seizure control with quality-of-life considerations and aligning clinical decisions with patient preferences and comorbidity management.

Learner Engagement and Clinical Priorities: Analysis of Viewership Trends

The KOLs and ECRs represented nine European countries, providing a comprehensive perspective on focal epilepsy management across diverse healthcare systems. Until the date of this publication, the eight Journal Clubs gathered 3,626 views, attracting 7,650 unique learners (i.e., the number of distinct individuals who have accessed the knowledge hub was counted only once regardless of how many times they visited) and 1,722 repeat visitors. The Journal Club series facilitated in-depth analysis of key topics in focal epilepsy, as reflected in the structured discussions of each session through peer-reviewed published articles:

1. The Critical Window: Early Treatment Interventions in Epilepsy^{4,5}

The first session examined how lesion connectivity and genetic factors influence seizure onset in focal epilepsy, alongside the emerging role of MRI-guided laser ablation for medically refractory cases. Discussions emphasized the need for personalized management strategies based on lesion characteristics and genetics, while recognizing laser ablation as a promising, minimally invasive option that expands treatment possibilities for patients previously considered unsuitable for surgery.

2. New Horizons in Epilepsy

Treatment: Achieving Seizure Freedom with New Generation Anti-Seizure Medications^{6,7}

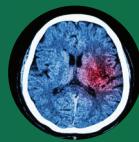
The second session explored genetic testing's role in paediatric epilepsy, debating universal testing cost-effectiveness and monocentric study applicability. Discussions highlighted precision medicine's promise while recognizing practical and financial barriers. Participants examined dose-dependent drug interactions, emphasizing administration timing and serum sampling effects, and called for prospective studies with standardized therapies to address data limitations and metabolic characterization challenges.

3. Depression and Epilepsy: Exploring Common Neurological Pathways^{8,9}

The third session examined cognitive and mood issues in epilepsy, noting these often precede medication or diagnosis, suggesting they are primary disease effects. Participants emphasized assessing patients' cognitive and psychological status before prescribing to avoid exacerbating symptoms, while raising concerns about methodological limitations including small sample sizes and varied assessment timing. The discussion addressed psychiatric comorbidities in drug-resistant cases and the difficulty in distinguishing medication side effects from intrinsic symptoms, underscoring the need for more precise assessment methods.

4. Epilepsy Treatment Updates: Clinical Advances and Future Directions^{10,11}

The fourth session examined rapid intravenous administration of anti-seizure medications, noting suboptimal emergency dosing and the need for updated guidelines and



prospective studies. Discussions revealed significant treatment delays—averaging eight years to surgical intervention—that impact neuropsychological outcomes. Participants addressed international disparities in accessing newer therapies due to cost and limited public healthcare adoption, alongside a persistent stigma against people with epilepsy, emphasizing the urgent need for education and coordinated global action plans.

5. Preventing the Unseen: SUDEP and Comorbidity Minimization Strategies^{12,13}

The fifth session examined SUDEP counselling practices, highlighting international differences shaped by advocacy groups, guidelines, and specialist nurse involvement. Participants debated the ethics and timing of communicating SUDEP risk, particularly to adolescents, while balancing duty of care against potential anxiety. Despite SUDEP receiving disproportionate attention compared to similar mortality risks such as suicide, evidence for behavioural modification through counselling remains limited. The discussion emphasized the crucial role of multidisciplinary teams in patient education, though access to these resources varies significantly across countries.

6. Understanding the Human Factor: Aligning Clinical Decisions with Patient Preferences^{14,15}

The sixth session explored medication selection priorities, with both patients and physicians emphasizing efficacy, seizure freedom, and tolerability. Discussions highlighted special considerations for female patients of childbearing age regarding teratogenicity and how the efficacy-tolerability balance shifts over treatment stages.

Participants examined strategies for communicating benefits of newer medications through infographics, rational polytherapy combining different mechanisms of action, and patient-centred approaches to managing complex regimens for drug-resistant cases while optimizing quality of life.

7. Balancing the Scales: Addressing Undertreatment and Overtreatment in Epilepsy^{16,17}

The seventh session examined balancing seizure control with medication side effects, recognizing that some patients prefer lower doses to minimize adverse effects and affirming their autonomy to decline treatment. Discussions addressed evolving definitions and strategies for drug-resistant epilepsy, the quality-of-life impact of polypharmacy, and challenges using structured assessment scales in practice. Participants explored the risks of overtreatment, with multiple drugs offering limited benefit, and undertreatment due to patient hesitancy, emphasizing the importance of referring refractory cases to specialized centres for access to newer medications and alternative therapies.

8. Comprehensive Epilepsy Care: A Multidisciplinary Approach^{18,19}

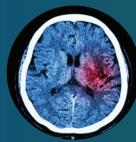
The eighth session explored strategies for managing comorbidities, including pre-visit questionnaires and balancing seizure control with other health issues despite time constraints. Discussions addressed cardiovascular risk screening, particularly post-stroke, and psychiatric comorbidities, emphasizing differentiation of functional and epileptic seizures and depression management. Participants highlighted integrated care challenges, advocating for streamlined screening to reduce patient burden

and combining medication with behavioural therapy. Building trust through regular follow-ups was deemed essential, with resource-limited settings requiring practical approaches such as screening questionnaires and specialist networking to deliver comprehensive care.

The Journal Club focusing on SUDEP emerged as the most viewed session, followed by the topics on early treatment interventions and depression in epilepsy. The popularity of discussions on depression and SUDEP underscores the significant learner interest in these areas, likely due to these comorbidities' profound impact on patients' quality of life and the practical role of HCPs in managing these conditions through targeted interventions and comprehensive care strategies.

SUDEP counselling resonated strongly with the audience due to its complex ethical and practical communication challenges. Discussions emphasized the delicate balance of informing patients, particularly adolescents, about SUDEP risks while minimizing anxiety. The debate questioned why SUDEP receives disproportionate attention compared to other epilepsy-related mortality risks with similar rates, highlighting the need for evidence-based counselling practices. These considerations are crucial for focal epilepsy management, underscoring the importance of comprehensive risk communication strategies and robust support through multidisciplinary teams and specialist nurses to ensure patients and caregivers receive adequate education and support, ultimately improving care outcomes.

Depression in epilepsy captured significant attention by revealing that cognitive and mood issues often precede diagnosis, suggesting these are intrinsic to the condition rather than treatment side effects.



This underscores the critical need to assess patients' psychological and cognitive status before prescribing anti-seizure medications to avoid exacerbating mental health challenges. Discussions emphasized differentiating between medication side effects and inherent psychiatric symptoms, advocating for holistic, multidisciplinary care that prioritizes mental health alongside seizure control. Integrating routine mental health assessments and addressing the limitations of self-reported data are essential for improving quality of life in people with epilepsy through comprehensive, patient-centred management.

Early treatment interventions resonated with learners, although extended promotions for the first published session likely contributed to higher viewership. The content itself addressed fundamental questions about focal epilepsy mechanisms, revealing how lesion size, genetic factors, and default mode network connectivity influence seizure onset

and progression. These insights advance personalized management by enabling risk stratification based on individual structural, genetic, and network profiles. The discussion of MRI-guided laser ablation as a minimally invasive alternative for drug-resistant cases, applicable even in complex bilateral lesions, further demonstrated a paradigm shift toward precision medicine. Together, these topics highlighted how understanding lesion connectivity and genetics can inform early interventions, while emerging surgical techniques expand treatment options for previously ineligible patients, ultimately transforming outcomes in medically refractory epilepsy.

Program Evaluation and Knowledge Outcomes

Learners completed pre- and post-webinar questionnaires to assess knowledge retention, with improvements ranging from 1%–35% across topics. Although certain

areas, such as understanding psychiatric comorbidities, showed significant gains, challenges remain in fully comprehending concepts related to emerging therapies and multidisciplinary care coordination. These results highlight where educational content may require enhancement to strengthen learning outcomes.

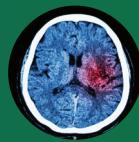
In addition, learners completed an evaluation questionnaire to assess the program's effectiveness. While the small sample size ($N = 54$) limits definitive conclusions about overall satisfaction (Table 1), initial results indicate the program enhanced learners' understanding of this complex therapeutic area. Feedback highlighted the program's content, delivery, and clinical impact, with positive responses identifying strengths and opportunities for future refinement.

Journal Club Impact and Future Educational Priorities

The Journal Club format has proven to be a highly effective tool for disseminating knowledge in epilepsy care because of its interactive structure that incorporates live webinars and infographics. This approach fostered real-time engagement and feedback, which participants found valuable for both exchanging ideas and developing practical skills beyond traditional learning environments. The overwhelmingly positive reception highlights the format's success in bridging the gap between research and clinical practice, ultimately advancing epilepsy care.

To further enhance educational impact, learners were invited to suggest topics for future continuing medical education (CME) programs. Their feedback revealed a strong interest in a wide range of subjects, including treatment strategies (e.g.,

| Evaluation Questions | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|--|----------------|-------|---------|----------|-------------------|
| This activity increased my competence (approach strategies) | 41% | 56% | 4% | 0% | 0% |
| This activity will improve my performance (occurs in practice) | 39% | 50% | 11% | 0% | 0% |
| This activity will likely improve my patient outcomes (impact on patient care) | 35% | 57% | 7% | 0% | 0% |
| The activity learning objectives were met | 46% | 48% | 6% | 0% | 0% |
| The activity learning format was effective | 46% | 52% | 2% | 0% | 0% |
| The activity faculty were knowledgeable, organized, and effective in conveying the content | 57% | 41% | 2% | 0% | 0% |
| The overall quality of the activity was satisfactory | 48% | 48% | 4% | 0% | 0% |
| The activity was fair, balanced, objective, and free from commercial bias | 48% | 48% | 4% | 0% | 0% |



therapy duration, drug combinations, and de-escalation), the use of new-generation antiseizure medications in various patient populations, management of drug-resistant epilepsies and special syndromes, non-pharmacological and lifestyle therapies, and the unique needs of special populations and comorbidities. Additional areas of interest included diagnostic challenges, mechanisms, and biomarkers, as well as practical questions about therapy selection and management in complex cases. This input underscores the ongoing need for dynamic, clinically relevant education that addresses both foundational and emerging topics in epilepsy care.

Lessons from the Journal Club Series

The Journal Club series on Comprehensive Epilepsy Care has proven to be an effective platform for enhancing understanding of focal epilepsy among HCPs. By facilitating in-depth discussions on emerging therapies, early treatment interventions, and the importance of multidisciplinary care, the Journal Clubs have successfully met their learning objectives. Participants reported significant improvements in their comprehension of psychiatric comorbidities and shared decision-making strategies, which are crucial for optimizing patient outcomes. The series' ability to integrate diverse perspectives from KOLs and ECRs across Europe further enriched the learning experience, allowing for a comprehensive exploration of focal epilepsy management.

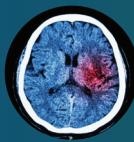
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