

## The Evolution of the Journal Club: From Osler to Twitter

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Journal clubs have typically been held within the walls of academic institutions and in medicine have served the dual purpose of fostering critical appraisal of literature and disseminating new findings. In the last decade and especially the last few years, online and virtual journal clubs have been started and are flourishing, especially those harnessing the advantages of social media tools and customs. This article reviews the history and recent innovations of journal clubs. In addition, the authors describe their experience developing and implementing NephJC, an online nephrology journal club conducted on Twitter.

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**INDEX WORDS:** Journal club; Twitter; medical education; social media; nephrology; continuing education; literature appraisal; postpublication peer review; microblogging; discussion forum; online tools; new media; professional development; nephrology training; NephJC.

Journal clubs are widely used as a versatile tool in medical education. They aid in teaching the systematic evaluation and interpretation of the published literature and serve as a means to share the latest advances in medical science. The journal club is approaching 200 years of age, but it continues to evolve to solve new problems and use new technologies.<sup>1-3</sup> The latest example of this is journal clubs using social media to discuss and debate the scholarly publications. Numerous journal clubs meet virtually to discuss new and high-impact articles with participants from around the world. One such online journal club, Nephrology Journal Club (NephJC), meets twice a month to discuss the contemporary nephrology literature. This article reviews the history and scholarly research performed on journal clubs, describes the characteristics of modern online journal clubs, and provides data from the NephJC experience.

### The History of Journal Clubs

The first use of the term “journal club” is in the memoirs and letters of James Paget. Dr Paget described a lounge outside St Bartholomew’s Hospital in London, where from 1835 to 1854, physicians socialized and read journals.<sup>1</sup> However, it is William Osler who is credited with creating the modern journal club while at McGill University in Montreal in 1875. Osler encouraged collective reading of subscription journals in order to spread the prohibitively high cost of print periodicals.<sup>1</sup> The McGill journal club model was widely imitated. Johns Hopkins held its first journal club in 1889, and by the first few decades of the 20th century, most departments in Johns Hopkins were hosting their own monthly

journal clubs. These specialty-specific journal clubs were typically held in the homes of participating physicians.<sup>4</sup> Tinsley Harrison (creator of *Harrison’s Principles of Internal Medicine*) used to host a journal club at his house twice a month at which one participant would present a paper and the assembled audience would critique.<sup>5</sup>

Mattingly<sup>6</sup> published the first peer-reviewed paper primarily about journal clubs in 1966. He described

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the popularity of journal clubs in the United States, characterizing them as “a regular and often compulsory feature of hospital life.”<sup>6,p120</sup> By the 1980s, a survey of internal medicine residency programs in New York demonstrated that 85% included a journal club.<sup>7</sup> Mattingly defined a journal club as “a group of doctors meeting regularly to discuss papers of interest in the current medical journals.”<sup>6,p120</sup> He added that although different members of the club have different goals, “The essential feature of any journal club, however, is that all the members should present papers at one time or another and take part in the subsequent discussions.”<sup>6,p120</sup> The key was an engaged rather than passive audience.<sup>6</sup> Mattingly thought that having an engaged interactive discussion put restrictions on the size of the journal club; too many people and not everyone can participate, too few and there is insufficient dialogue to generate fulfilling 2-way interactions. He thought that journal clubs should have no fewer than 6 participants and no more than 12.

A recurring theme in narrative descriptions of various journal clubs is practices that reduce formalities in order to make the environment more casual. These include hosting the event outside the hospital campus and adding food and drinks to the event.<sup>8,9</sup> Because journal clubs are one of the few examples in traditional medical education with peer-to-peer teaching, steps that enhance informality could potentially stimulate interaction. Leaving the hospital grounds may serve to de-emphasize the normal educational hierarchy. This characteristic was in play in the very first journal club, which was held outside St Bartholomew’s Hospital.<sup>1</sup> Recent work has suggested that this informality adds to the acceptance of the journal club itself.<sup>8</sup>

The journal club has evolved to serve various medical education needs. For example, the journal club has been adapted to teach the fundamentals of critically appraising the literature.<sup>10,11</sup> Riegelman encouraged the use of a structured format when presenting articles. This is described by the Method, Assignment, Assessment, Results, Interpretation, Extrapolation (MAARIE) framework.<sup>12</sup> Gehlbach et al<sup>13</sup> promoted the use of a formal 8-week evidence-based medicine curriculum conducted in parallel with a journal club. Linzer et al<sup>14</sup> tested the ability of a journal club to improve evidence-based medicine education in a randomized controlled trial and reported that a journal club–based curriculum was better than a weekly faculty-administered lecture at teaching the principles of evidence-based medicine. Deenadayalan et al<sup>15</sup> performed a systematic review of the literature on journal clubs and found 12 studies that objectively attempted to characterize and measure the effectiveness of journal clubs. They used these data to establish a set of best practices for journal clubs<sup>15</sup> (Box 1). Similarly, another systematic review

including 16 studies reported an improvement in reading habits and critical appraisal skills in the attendees.<sup>16</sup>

### From the Classroom to the Laptop

A number of factors contributed to the journal club transitioning from a face-to-face to an online interaction. First, the conversational nature of journal clubs fit well into emerging online platforms such as Twitter, which were designed to facilitate rapid real-time dialogue between learners. Second, online tools allowed for learners from different locations to join in a virtual round table discussion. This is important for physicians who have completed training and are no longer in academic medical centers. Third, online journal clubs allow a variety of physicians, ancillary providers, patient advocates, authors, and content experts to participate. Fourth, an online format provides greater flexibility in the scheduling of the event.

The online journal club has gone through a number of iterations. Early online journal clubs were lacking the important interactive quality and were simply journal articles that were available online. *Kidney International (KI)* was among the first to form an online journal club of this kind, and it is still in use today. It consists of a series of expert summaries of selected articles from other journals.<sup>17</sup> The summaries are written by experts in the field and contextualize the article by discussing prior research. The summary addresses controversies in the study design, and the article specifies what this study adds to the established literature. Though these essays are called journal clubs, they lack 2-way interactive discussion. A journal club dedicated to pediatric infectious disease followed a similar model, with consultants submitting a critical appraisal to the pediatric special interest group of the Australian Society of Infectious Diseases, which posted it on a dedicated website. This model was popular and the organizers found a 6-fold increase in web traffic with the journal club.<sup>18</sup> However, like *KI*, the lack of a 2-way information exchange makes this more of a literature appraisal and less an interactive journal club.

The *Clinical Journal of the American Society of Nephrology (CJASN)* started an online monthly journal club in September 2011 called the *CJASN eJournal Club (eJC)*.<sup>19</sup> The *CJASN eJC* model included an initial critical appraisal of a selected article in the form of a text summary or a slide presentation. This was prepared by a rotating group of individuals from various nephrology divisions. The actual discussion then occurred in a forum, with questions and replies threaded together. Authors were encouraged to participate and reply to questions. *CJASN* made the article and its associated editorial available to anyone with a free eJC account

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