

Journal Club sessions in the intensive care unit: a conceptual framework

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Abstract

Journal Club sessions are regarded highly effective tools for continued medical education. They aim to keep participants up to date with the current available literature and may enhance one's critical reading, interpretation, and discussion skills. Thus, Journal Clubs should be implemented as part of educational curricula in intensive care medicine. Here, we provide a conceptual framework that may support medical educators and programme directors to successfully implement structured Journal Club sessions. Moreover, we discuss the technical aspects and future perspectives of respective educational formats.

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Sir William Osler recognized the importance of continued periodical reading as a method to appraise current medical research and organized "Journal Club" sessions at McGill University back in 1875. Since then, Journal Clubs are part of continued medical education programs [1]. However, the field of scientific publication has considerably changed since then with, nowadays, a vast amount of medical journals being launched and the "half-life" of scientific knowledge declining continuously. Three key objectives of the Journal Club have lasted over time: keeping up with the current literature, the teaching of interpretation skills, and the reviewing of manuscripts with a potential impact on daily clinical practice [1]. Other aspects include the improvement of knowledge on biostatistics, the understanding of trial and research design, and the promotion of evidence-based medicine [2–4]. The CANmeds competencies (i.e. communicator, collaborator, leader, scholar, professionalism, health advocate) of a medical expert are addressed and may be relevant in several ways in a Journal Club thus providing unique opportunities for interactive peer learning [5]. Moreover, an interest regarding scientific research can be established in younger colleagues, which may provide several general benefits for intensive care medicine. Critical

appraisal and substantiated discussions may also generate ideas for further research. Thus, the Journal Club may help to close a sometimes perceived gap between research and daily clinical practice.

For many fellows or trainees, presenting an article in a "journal club" can be challenging since undergraduate education does not prepare one for such analyses [6]. Moreover, critical discussion may be impeded by the fact that participants are often unfamiliar with the format, writing style, and have incomplete knowledge/skills on how to interpret an article's findings [7]. These factors should be considered when aiming to enhance the quality of a Journal Club within a broader educational approach in a daily ICU setting.

STRUCTURE OF AN EFFECTIVE JOURNAL CLUB

For successful implementation of a Journal Club in the daily ICU setting, it seems pivotal to conduct respective sessions on a regular basis (e.g. weekly or bi-weekly). Moreover, the Journal Club should be held at predictable, protected, and convenient times to ensure that timing is suitable for most ICU staff. A time span of 30–45 minutes may be appropriate to present respective articles. The presentation of an article (about 10–15 minutes) should be followed by

a lively and open discussion (about 20 minutes) with all participants [8]. The provision of food and/or drinks, as in a lunch-session format, could increase the overall attractiveness of the format. Regular attendance should be mandatory, as the Journal Club should be part of the intensive care medicine curriculum.

MODERATING AND CHOOSING ARTICLES FOR A JOURNAL CLUB

Journal Clubs appear more effective if they are led by an experienced scientist [4]. Effectiveness seems key and the moderators should be familiar with the respective research design and/or statistical methods. A statistician may be helpful in assisting the moderator in preparing for the session. The moderator, however, may change between sessions.

A Journal Club member/participant should be identified as a presenter and choose/ present the article. Alternatively, the Journal Club moderator could choose an article. Obviously, the chosen article should be highly relevant to the discipline and, in general, high impact-factor journals should be preferred to ensure adequate article quality (e.g. in the upper third of ranks of listed journals in critical and intensive care medicine). Otherwise, valued "broader" journals such as e.g. the *New England Journal of Medicine* or the *Journal of American Medical Association* (with an intensive care medicine topic) may be suitable sources for selecting articles. An adequate subscription-policy of the Department/ University thus seems required. However, presenters' personally favourite journals may also be appropriate with regard to selecting articles in the light of intrinsic motivation. Alternatively, a keyword (e.g. sepsis, acute respiratory distress syndrome acute kidney injury, or others) might be provided from the Journal Club leader/moderator. The Journal Club presenter should then search for articles along the provided key word as this may further enhance search skills. Potential articles should be screened by title or/and abstract. When a potential article is selected, the following aspects seem of key importance: high scientific value (as e.g. in a "landmark" article), presenting of potentially provocative findings, or the presentation of novel/unexpected results. Reviews or case reports may generally be regarded as unsuitable for an effective Journal Club. Furthermore, articles should have been published within the last 12 months to ensure timeliness. The presenter must make sure that he/she understands the topic and its respective content while additional reading of reviews or earlier discussion with the moderator/with mentors may be helpful. Importantly, the relevance and implications of this specific article on daily clinical practice should be considered and discussed adequately.

CRITICAL APPRAISAL OF THE ARTICLE

The *Journal of the American Medical Association (JAMA)*'s "User's Guides to the Medical Literature" seems

a useful tool for a more profound understanding of scientific articles and may help to focus on given research questions, especially with regard to statistical analysis [9–11]. Reviewer guidelines from other journals may provide additional tools for correct interpretation of the article's findings. The PICO-strategy (patients, intervention, comparison, and outcome) of evidenced-based medicine may be used to verify a research question [12]. Deficiencies in statistics and/or methodology should be addressed in detail in the Journal Club with an outlook on most suitable methods and/or statistical tests. Indeed, the discussion of statistical theory, applied statistical tests, and study design in the Journal Club may increase statistical knowledge among participants [13]. This may educate participants to conduct a more critical appraisal of statistics and may lead to better understanding of respective results and rating. Here, we propose a standardized worksheet/ questionnaire to support focused discussions in Journal Clubs (Table 1) [14–17]. The use of such worksheets may help one to prepare and moderate Journal Clubs and may help one to best address relevant issues.

PROVISION OF AN ARTICLE AND EFFECTIVE PRESENTATION

In an effort to achieve most effective and fruitful discussions, the pre-reading of articles seems essential. Thus, articles should be provided before respective sessions within a suitable period (e.g. 1–2 weeks prior to the Journal Club) [17]. In the session itself, however, a detailed description of the article is not necessarily needed as the audience has had access to and previously read the article. However, it may be necessary to explain special techniques, if applicable. A brief presentation of the key findings should be performed. As suggested, a structured worksheet for conducting of the Journal Club may help to ensure that all relevant topics of the article are covered (Table 1, developed by the authors). If a PowerPoint™-presentation format is used, the presenter could be supported by being provided with a prepared presentation matrix including relevant questions and topics. Obviously, effective presentation techniques may support in presenting the article [18]. At the end of the presentation, it may help to recall the initial research question and discuss whether the conclusions drawn by the authors are indeed based on the available data.

CONCLUSIONS

Journal Club sessions can be regarded highly effective tools for continued medical education. Conceptual ICU educational frameworks should embrace Journal Clubs as a valuable tool to keep participants up to date with current available literature. Moreover, this format may be highly useful in regard to the teaching of critical reading and the

Table 1. Suggested “Journal Club” worksheet

Introduction/Background
What is the precise objective of this article? Is the research question clearly outlined?
What was the initial research question? PICO (Patients, Intervention, Comparison and Outcomes) [12]
Methods
What is the specific design of the study (randomized controlled trial, case-control study, etc.)?
What are the inclusion/exclusion criteria of this study? Does this imply limitations?
Are the groups blinded?
How are subjects allocated to the study?
Can the study population be considered typical (with regard to disease studied)?
Is there any allocation-bias?
What follow-up is performed? Any patients in the dropout population? If so, how many?
At what time are patients included/studied (in relation to potential interventions)? Has the publication been delayed? If so, has clinical practice changed in the meantime? [15]
Statistical analysis
Has a power-analysis/ sample-size analysis been performed?
Are statistical methods used in the study?
Are the applied statistical methods sufficient/adequate with regard to this specific research question?
Results/outcome
What are the endpoint(s)? What is the respective clinical relevance of this endpoint?
Are multiple or combined endpoints assessed?
Are subgroup analyses performed? Pre-/post-hoc?
What are the overall findings?
Do the results answer pre-defined research questions (or do they deviate from initial questions?)?
Are the results assessed in a detailed fashion and are they presented adequately?
How about baseline group characteristics (comparable at baseline)?
Are control groups adequately portrayed?
Are the results statistically significant?
What complications or side effects are reported?
Discussion/conclusion
What was the initial research question? Does the article focus on this initial question?
What are the conclusions and are they supported by respective results?
Are the results clinically significant?
What are the strengths/limitations of this article? Are all limitations discussed accordingly?
Are there any flaws considered to be “fatal” (lack of scientific importance, originality, or validity)(15)
What is the outlook in this field of research, what could be the next steps?
Are there any implications regarding the research conducted in one’s own department?
Are the results relevant for daily clinical practice? Should the standard of care be changed?

interpretation/ discussion skills. Thus, Journal Clubs should be implemented as part of the educational curriculum in intensive care medicine. The implementation of a successful Journal Club requires a commitment by all participants and stakeholders and the chairperson’s and/or program director’s role should be emphasized in this regard [5]. Respective leaders must ensure that younger academics thrive in an open-minded academic environment along the idiom “you can borrow... a technique, but never a philosophy or culture”[19].

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