Journal Club Handbook

Library and Knowledge Services

Adapted, with kind permission, from journal club handbook produced by Cumbria, Northumberland, Tyne and Wear NHS Foundation Trust.

What is a Journal Club?

Journal clubs provide an opportunity for groups of clinicians to learn the principles of evidence-based practice through posing a clinical question, literature searching and critical appraisal. Additionally, it offers the opportunity to hone presentation skills and receive feedback within an informal forum.
The format of a journal club is group, problem-based learning, in which a presenter identifies a topic and delivers a structured presentation to an audience of fellow practitioners. The main content of the presentation is the critical appraisal of a research paper that addresses the chosen topic. The aim is to challenge current practice and determine whether the research evidence supports a change in practice.
Appraisal of the article is then continued by the group discussion which follows and may conclude by determining whether current practice should be altered in light of the presenter's findings.

Setting up a journal club

Practical arrangements to consider:

- Who will decide the topic/paper for discussion?
- How will you select the reading material?
- Will all group members be able to access the paper?
- How will the discussions be facilitated, and by whom?
- How much time do people need to read and prepare?
- Will the group meet for an hour? Online?
- Will the group meet regularly?

Guidance for Presenters

Presenters should start to prepare well in advance of their session, to ensure that all members of the group have time to read the chosen paper. Preparation should follow these five stages:

1. Identify a Knowledge Gap and Frame a Clinical Question

The first step is to define a structured clinical question, which should ideally arise from clinical practice.

It can be useful to use a framework to help you to focus your topic and translate it into a searchable question. Breaking your topic down into separate parts in this way also helps you to identify relevant search terms. Examples of two widely-used frameworks are shown below:

4 Ws

Who	Who is the person or population you are interested in? Think about age, gender, ethnicity, client group, condition.
What	What is happening to the population you have defined? e.g., diagnosis, assessment, treatment, environmental exposure, new healthcare service.
Why	Why are you looking for this information? What outcomes are you interested in?
Where	Where is the place or setting? e.g., community, inpatient, primary care.

PICO

P	Patient or population	How would I describe a group of patients similar to mine?
I	Intervention	Which main intervention, prognostic factor, or exposure am I considering?
C	Comparison	What is the main alternative to compare with the intervention? (if applicable)
O	Outcome	What can I hope to accomplish, measure, improve or affect?

In addition to the elements of your clinical question in the 4Ws or PICO frameworks, it is also useful at this stage to think about which type of study design (e.g., RCT, cohort study, etc) will provide the evidence to answer your clinical question.

The NICE website provides a glossary of study designs which describes the kind of evidence produced by different types of studies:

https://www.nice.org.uk/process/pmg4/chapter/appendix-d-glossary-of-study-designs

2. Conduct a literature search

The second stage of your preparation is a literature search to identify a study that will help answer your question.

When searching for evidence use terms identified in your 4Ws or PICO framework and consider whether you want to limit your search to studies with an appropriate research design.

Sources for your literature search could include:

Library Knowledge Hub: The knowledge hub acts as a starting point and central area of research, drawing results from multiple databases and journal sources. Instructions for using the Knowledge Hub can be found on our website here:

https://www.wuth.nhs.uk/choose-us/for-library-and-knowledge-services/help-and-support/online-tutorials-and-videos/library-knowledge-hub/

Healthcare Databases: for example - PsycInfo, EMBASE, CINAHL, Medline, for more in-depth precise searching.

How to Search for Literature Effectively

The library team provide training to assist you in developing literature searching skills, called 'Finding the Evidence' Training. This training covers:

- Introduction to searching
- Where Do I Start Searching?
- How Do I Start to Develop a Search Strategy?
- How to Narrow your Search
- How to Broaden your Search
- How to search Using the Knowledge Hub and other databases.

Contact a member of the team to setup this training either by email or phone-

Email: wuth.lks@nhs.net

Phone: 0151 604 7223

3. Select and Critically Appraise a Paper

Assessing the quality of journals

When selecting an article, it is also important to assess the quality of the journal itself.
• Does the journal have a robust peer review process?
• Does the editorial board include any well-known experts in the field it covers?
• Are you familiar with the title? Have you or your colleagues read articles from this journal before?

Another way of assessing the prestige of a journal is to look at **journal impact factors**:

Several different metrics have been developed which can indicate the relative prestige of individual journals. These can help you to identify the most important journals in your field. The following resources are free to use:

CiteScore Metrics
https://www.scopus.com/sources.uri

Elsevier provides free access to a range of metrics from its CiteScore package, ranking active journals, book series, trade journals and conference proceedings indexed in Scopus. As well as its own rankings, it includes scores for SCImago Journal Rank (SJR) and Source Normalised Impact per Paper (SNIP).

CWTS Journal Indicators
https://www.journalindicators.com/indicators

A series of indicators developed by the Centre for Science and Technology Studies at Leiden University. These include IPP (Impact per Publication) which is similar to a journal impact factor, and SNIP (Source Normalised Impact per Paper) which modifies the IPP score by correcting for differences in citation practices between subject areas.

SCImago Journal Rankings (SJR)
https://www.scimagojr.com/journalrank.php?order=sjr&ord=desc

The SCImago Journal & Country Rank is a publicly available portal which ranks journals contained in the Scopus database. Its main metric is the SJR indicator which shows the average number of weighted citations during the selected year to papers published in the last three years in a journal. The weighting takes account of both total citations and the prestige of the journal they are cited in, with some journals considered more influential than others. The SJR ranking is included in CiteScore but the SCImago portal allows you to look at additional data on numbers of articles published and also information on country of publication.

Eigenfactor Metrics
http://www.eigenfactor.org/projects/journalRank/journalsearch.php

Produced by the University of Washington, the Eigenfactor measure looks at citations from a journal over a period of five years, allowing for the fact that many articles are not frequently cited until several years after publication. Like the SJR and SNIP the scores are also weighted to allow for differences in citation patterns across subject areas. The Article Influence score measures the influence of individual articles over the first five years following publication.

Critical Appraisal

The next stage is to critically appraise the selected paper. Working through this process systematically allows you to evaluate the quality of the study, and to consider whether the methods used are appropriate and, whether the results reported are valid and clinically relevant.

There are many critical appraisal tools available to help you work through this process systematically. These are some of the most frequently used:

CASP (Critical Appraisal Skills Programme)
http://www.casp-uk.net/

CASP provides a list of approximately ten questions to help make sense of each type of research, including RCTs, systematic reviews, cohort studies, diagnostic studies, case control studies, qualitative studies, and economic evaluation studies.

Understanding Health research
http://www.understandinghealthresearch.org/

This tool will guide you through a series of questions to help you review health research.

Scottish Intercollegiate Guidelines Network (SIGN)
Healthcare Improvement Scotland
https://www.sign.ac.uk/what-we-do/methodology/checklists/

Critical appraisal notes and checklists for systematic reviews and meta-analysis, randomised controlled trials, cohort studies, case control studies, diagnostic studies, economic studies and considered judgement pro-forma.

Critical Appraisal Training

CNTW, TEWV and Cochrane Common Mental Disorders and University of York have a series of short online modules to develop understanding of how to critically appraise clinical research. Each module outlines one of six study types using the Critical Appraisal Skills Programme (CASP) checklists and examples of research from mental health and psychiatry.

A list of common research terms and their meaning is included at the end of this document.

4. Email the paper details to the group

At least **one week** before the group is scheduled to meet, send the chosen paper for distribution to the group. If there are specific questions to be discussed share these in advance so the group has time to consider them before you meet.

A note on copyright
All published materials (in print and online) are protected by the Copyright, Designs and Patents Act 1988. Organisations may pay for subscriptions to e-journals which enable their staff to access content using an authentication system such as OpenAthens. Contact your library service to find out how papers can be accessed/shared between staff from different organisations.

5. Prepare and present the findings at the journal club

Your presentation should last no more than 30 minutes, to allow sufficient time for discussion. As a rough guide, it should include:

- A brief introduction to your chosen topic and the clinical question you want to address
- A brief description of the study you have chosen.
- A critique of the research methods, identifying any strengths or weaknesses
- A summary of the main results, their clinical relevance, and what they add to current knowledge

Following your presentation ensure the whole group has time to discuss the findings of the paper and reflect on how these could be applied to their practice.

If the group feel that a change in practice might be appropriate, you may wish, as a next step, to ask Library and Knowledge Services to conduct a full review of the evidence.

You can request an evidence search here:

https://www.wuth.nhs.uk/choose-us/for-library-and-knowledge-services/literature-search/

Or contact us –

Email: wuth.lks@nhs.net

Phone: 0151 604 7223

Finally, ensure that your presentation slides are circulated to all journal club members, including those who are not able to attend on the day.

Common Research Terms Explained:

Absolute risk: measures the probability of an event or outcome occurring (e.g. an adverse reaction to the drug being tested) in the group under study.

Absolute risk reduction (ARR): the ARR is the difference in the risk of an event occurring between two groups, for example, if 6% of patients die after receiving a new experimental drug and 10% of patients die after having the existing drug treatment then the ARR is 10% - 6% = 4%. Therefore, by using the new drug 4% of patients can be prevented from dying.

Allocation concealment: to be effective, the process for randomisation must ensure that no one involved in the study can influence the group each patient is allocated to. Allocation concealment is best achieved by using a centralised computer allocation process.

Bias: influences on a study that can lead to invalid conclusions about a treatment, which can make that treatment appear better or worse than it is. Bias can occur by chance or as a result of a systematic error on the design and execution of a study. It can occur at different stages in the research process, for example, in the collection, analysis, interpretation or publication of research data.

Blinding: the practice of keeping the subjects and / or the investigators of a study ignorant of the group to which a subject has been assigned. For example, a trial in which both the patients and doctors are unaware of whether the patients are taking the experimental or control drugs. The purpose of blinding is to protect against bias. See also double blind, single blind and triple blind study.

Case control study: a study that starts with the identification of a group of individuals sharing the same characteristics (e.g. people with a particular disease) and a suitable comparison / control group) (e.g. people without the disease). All subjects are then assessed with respect to things that happened in the past that might be related to contracting the disease under. These studies are also called retrospective as they look back in time from the outcome to the possible causes.

Cohort study: an observational study that takes a group (cohort) of patients and follows their progress over time in order to measure outcomes such as disease or mortality rates and make comparisons according to the treatments that patients received. Cohorts can be assembled in the present and followed into the future (a concurrent or prospective cohort study) or identified from past records and followed forward from that time up to the present.

Confidence interval: a way of expressing certainty about the findings from a study using statistical measures. A confidence interval describes the range within which the true value of a measurement (e.g. effect of a treatment) is expected to lie within a given degree of certainty. It is usual to interpret a 95% confidence interval as the range of effects within which we are 95% confident that the true effect lies.

Confounding factor: a factor that influences a study that can contribute to misleading findings. For example: two groups of people, one exercising regularly the other not (the groups have a

significant age difference, but this is not reported), in relation to cardiovascular events the outcomes are influenced as much by age as exercising. Age is therefore the confounding factor.

Control group: a group of patients recruited to a study that receives no treatment, a treatment of known effect or a placebo - in order to provide a comparison for a group receiving an experimental treatment, such as a new drug.

Controlled clinical trial (CCT): a study testing a specific drug or other treatment involving two or more groups of patients with the same disease. One (the experimental group) receives the treatment that is being tested and the other (the comparison or control group) receives an alternative treatment, a placebo or no treatment. The two groups are followed to compare differences in outcomes to determine the effectiveness of the experimental treatment.

Cross sectional study: the observation of a defined set of people at a single point in time - a snapshot. This type of study contrasts with a longitudinal study which follows subjects over a period of time.

Double blind study: a study in which both the subject (patient) and the observer (investigator/clinician) is unaware of which treatment or intervention the patient is receiving. The purpose of this blinding is to protect against bias.

Event rate: the proportion of patients in a group where a specified health event or outcome is observed. For example, if in 100 patients the event is observed in 23, then event rate is 0.23. Control event rate (CER) and experimental event rate (EER) are the terms used in control and experimental groups of patients.

Heterogeneity: when the results or estimates of effects of treatment from separate studies appear to be different.

Homogeneity: when the results from separate studies are similar. Information bias: pertinent to all types of study and can be caused by poorly designed questionnaires, observer or interviewer bias, response and measurement error.

Intention to treat analysis: an analysis of a clinical trial where patients are analysed according to the group to which they were initially randomly allocated, regardless of whether or not they had dropped out, fully complied with the treatment or crossed over and received the alternative treatment. Intention to treat analysis are favoured in assessments of clinical effectiveness as they mirror the non-compliance and treatment changes that are likely to occur when the treatment is used in practice.

Meta-analysis: results from a collection of independent studies (investigating the same treatment) are pooled using statistical techniques to synthesise their findings into a single estimate of treatment effect.

Number needed to treat (NNT): this measures the impact of a treatment or intervention. It states how many patients need to be treated in order to prevent an event which would otherwise occur. For example, if the NNT = 3 then three patients would have to be treated to prevent one adverse outcome. The closer the NNT is to 1, the better the treatment is. The number needed to harm (NNH) is the number of patients that would need to receive a

treatment to cause one additional adverse event, for example, if the NNH = 4 then four patients would have to be treated for one bad outcome to occur.

Observational study: a research method that involves watching, listening and recording behaviours and actions.

Odds ratio (OR): odds are a way of representing probability that provides an estimate (usually with a confidence interval) for the effect of a treatment. Odds are used to convey the idea of risk and an odds ratio of 1 between two treatment groups implies that the risk of an adverse outcome is the same in each group.

P value: the P value is a measure of probability that a difference between groups happened by chance. It has a value ranging from zero to one. For example, P= 0.01 means that if there is a 1 in 100 chance that the result occurred by chance. The lower the P value, the more likely it is that the difference between groups was caused by treatment. P values tell us whether an effect can be regarded as statistically significant or not, it does not relate to how large the effect might be, for which we need the confidence interval. A P value of <0.05 indicates that a result is likely to be real (rather than happened by chance).

Performance bias: the systematic difference in care provided (apart for the intervention). For example carers treating patients differently according to which group they are in.

Prospective study: a study in which subjects are entered into research and then followed up over a period of time with future events recorded as they happen.

Publication bias: studies with statistically significant (or positive) results are more likely to be published than those with non-significant (or negative) results.

Qualitative research: research used to explore and understand people's beliefs, experiences, attitudes, behaviour and interactions.

Quantitative research: research that generates numerical data. Randomisation: a method that uses the play of chance to assign subjects to groups in a research study, for example, by using a random numbers table or a computer-generated random sequence.

Randomised controlled trial (RCT): a study to test a specific drug or other treatment in which subjects are randomly assigned to two or more groups: one (the experimental group) receiving the treatment that is being tested and the other (the comparison or control group) receiving an alternative treatment, a placebo or no treatment. The two groups are followed to compare differences in outcomes to determine the effectiveness of the experimental treatment.

Relative risk (RR): a summary measure that represents the ratio of the risk of a given event or outcome (e.g. an adverse reaction to the drug being tested) in one group of subjects compared with another. When the risk of events is the same in the two groups the relative risk is one. In a study comparing two treatments, a relative risk of two would indicate that patients receiving one of the treatments had twice the risk of an adverse outcome than those receiving the other treatment.

Relative risk reduction (RRR): tells us the reduction in the rate of the event in the treatment group relative to the rate in the control group. RRR is probably the most commonly reported measure of treatment effects.

Retrospective study: a study that deals with the present / past and does not involve studying future events.

Risk ratio: ratio of the risk of an undesirable event or outcome occurring in a group of patients receiving experimental treatment compared with a comparison (control) group.

Selection bias: selection bias occurs if the characteristics of the sample group differ from those of the wider population or when there are systematic differences between comparison groups of patients in a study in terms of prognosis or responsiveness to treatment.

Sensitivity: in diagnostic testing sensitivity refers to the chance of having a positive test result given that you have the disease. 100% sensitivity means that all those with the disease will test positive, but this is not the same the other way around. A patient could have a positive test result but not have the disease - this is called a false positive. The sensitivity of a test is also related to its negative predictive value (true negatives) - a test with a sensitivity of 100% means that all those who get a negative test result will not have the disease.

Single blind study: a study in which either the subject or the observer is not aware of which treatment or intervention the subject is receiving.

Specificity: in diagnostic testing specificity refers to the chance of having a negative test result given that you do not have the disease. 100% specificity means that all those without the disease will test negative, but this is not the same the other way around. A patient could have a negative test result but still have the disease - this is called a false negative. The specificity of a test is also related to its positive predictive value (true positives) - a test with a specificity of 100% means that all those having a positive test result definitely have the disease.

Systematic review: a review in which evidence from studies has been identified, appraised and synthesised in a methodical way according to a predetermined criterion.

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https://www.wuth.nhs.uk/choose-us/for-library-and-knowledge-services/

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