Critical Appraisal I:

How to read a RCT.

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How to ask a clinical question

How to search for a paper
. Ovid
. Pubmed

Tools for analysis.
Clinical Questions arise:

Seeing patients
Consultant ward rounds
Supervision.
Epidemiology -- prevalence, risk factors
Aetiology, mechanisms
Diagnosis
Disability, Recovery.
Treatment: efficacy, effectiveness.
PECOT

In this population:
Does this experimental condition
Compared to this control condition
Produce a better Outcome
Over this time period.
1. Systematic review of multiple meta analyses
2. Meta analysis of good quality RCTs
3. A large, high quality RCT
4. Systematic review of RCTs
5. High quality RCT(s)
6. Open label trials
7. Case reports
8. Scholarly reviews
10. Textbooks.
Traps for the unwary.

The reanalysis of a subset of data presented as a meta analysis

Combining data from multiple RCTs and stating one trial

Underpowering a trial and saying there is no significant difference ie equivalance.
Search engines.

Google scholar

Pubmed (Use clinical queries)
# PubMed Clinical Queries

Results of searches on this page are limited to specific clinical research areas. For comprehensive searches, use PubMed directly.

## Clinical Study Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Scope</th>
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<tbody>
<tr>
<td>Therapy</td>
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<tr>
<td>Broad</td>
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## Systematic Reviews

<table>
<thead>
<tr>
<th>Results: 5 of 750</th>
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### Results: 5 of 128


### Results: 5 of 49


Vulnerability to psychotogenic effects of ketamine is associated with elevated D2/D3 receptor availability. Verheul I, Kung M, Beletter D, Kipp W, Rogali A, Bobek F, Schalling MS, Curtin P, Oliker D.

### Results: 5 of 28


### Results: 5 of 20


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Ovid
1. Need to use library
2. Each part of PECOT is a search
3. Combine serially
4. If multiple, add in search strings for meta analysis and RCTs.
Cochrane

Look for RCTs and reviews by topic and intervention.

[Need to do in library]
How to approach.

Introduction.

Methods

Results

What now.
Introduction.

1. Is the discussion of the condition sensible?
2. Is there a clear clinical question?
3. Does it answer the question you are interested in?
4. Is the approach sensible and appropriate.

Consider the use of tools

EPIQ (Auckland) CAT
Oxford CASP
Evidence-Based Practice and Critical Appraisal (updated May 2013)

Presentations and papers
In this section we provide a series of downloadable presentations on the EPIQ approach to evidence-based practice and critical appraisal and a paper we have published on the GATE approach to critical appraisal:

- Presentation: An introduction to evidence-based practice by Rod Jackson (February 2013) (2.5MB PPT)
- Presentation: The GATE approach to critical appraisal and EBP by Rod Jackson (February 2013) (1.8MB PPT)
- Paper: The GATE approach to critical appraisal (published 2006) (1.7MB PDF)

Critically appraised topics (CATs) checklists for quantitative studies (updated February 2013):
In this section we provide updated (2013) versions of our CAT checklists. The old versions and a brief history of their development can be found on the next page.

The new GATE CAT forms are now presented as MS Word documents rather than MS Excel documents, however the original calculator in the Excel version has been retained as a 1-page GATE Calculator. Each GATE CAT (MS Word) has an accompanying GATE calculator (MS Excel).

We are also developing 1-page GATE CATs as writeable pdfs for rapid critical appraisal. To date we have completed one for RCTs/Cohort/Cross-sectional Studies and one for Diagnostic test Accuracy Studies.

GATE CATs and GATE calculators are designed to enable users to model the five steps of evidence-based practice and the electronic forms make it easy to keep a record of the process. Users fill in the yellow-coloured fields of the CATs. Most of yellow fields have prompt questions that should be deleted after addressing the questions. The format of each GATE CAT is as follows:

- Page 1 documents the clinical/practice scenario, the question asked (Step 1) and the search strategy and search results (Step 2).
- Page 2 documents the first part of critical appraisal (Step 3a) which involves hanging the study on the GATE frame. The accompanying GATE Calculations should be completed with Page 2 of the GATE CAT. If you key the main study numbers into the GATE calculator, it automatically calculates the relevant outputs including: risk, risk ratios, risk differences and NNTs, sensitivity, specificity as well as 95% confidence intervals for all estimates (note: the systematic review checklist does not include a calculator).
- Pages 3-5 document the second part of critical appraisal (Step 3b) which is to assess the quality of the study (internal & external validity, precision and power).
- Page 6 documents the integration and application of evidence (Step 4) and personal and clinical audit (Step 5).

1. Evidence about Interventions (from RCTs, Cohort & Cross-sectional Studies)

- GATE CAT for Intervention Studies: this MS Word form is designed for using evidence from RCTs and non-randomised cohort and
Population.
From where?
Inpatient, outpatient, community?
How diagnosed?
How severe?
Who is excluded?
Describe when & from where participants recruited

Define eligible population & inclusion and exclusion) criteria.

Describe recruitment process

What percentage of the invited eligibles participated?
What reasons were given for non-participation among those otherwise eligible?
Methods.

1. How robust is the randomization?
2. How is allocation concealed?
3. Are the two groups treated equivalently?
4. How reliable is the assessment? Training? Reliability measured?
5. Are the assessors blinded?
6. How is adherence measured (medications? Therapist (to manual?)
7. How are dropouts accounted for (ITT LOCF)
8. Is there a power calculation?
9. Does the statistical approach make sense?
We offer critical appraisal skills training, workshops and tools. These help you find and check research for trustworthiness, results & relevance.

**NEWS**

**CASP CHECKLISTS**

**WORKSHOPS**

CASP offers critical appraisal skills workshops. Training can be in-house, or on a scheduled course.

Sign up here to
This set of eight critical appraisal tools are designed to be used when reading research, these include tools for Systematic Reviews, Randomised Controlled Trials, Cohort Studies, Case Control Studies, Economic Evaluations, Diagnostic Studies, Qualitative studies and Clinical Prediction Rule.

These are free to download and can be used by anyone under the Creative Commons License.

CASP CHECKLISTS

CASP Checklists (click to download)

Randomised Controlled Trial  Diagnostic

Systematic Review  Cohort

Qualitative  Economic Evaluation
You will find several collections of documents available for download on this website, including translations of the CONSORT statement, extensions to CONSORT, and other publications, instruments, and resources. However, the key document that we have made available is the 2010 CONSORT statement checklist, which is available for download below in Microsoft Word and Adobe .pdf format. We have also made the CONSORT flow diagram and the CONSORT endorsement survey available to site visitors.

If you are looking for a particular document, and are not able to find it, please contact us, and we'll do our best to make it available.

Downloads

- CONSORT 2010 Checklist.doc (216 KB)
- CONSORT 2010 Checklist.pdf (50.21 KB)
- CONSORT 2010 Explanation and Elaboration (BMJ).pdf (636.65 KB)
- CONSORT 2010 Flow Diagram.doc (47.5 KB)
Results.
1. Are all outcomes reported?
2. Are all participants accounted for?
3. Are the results of clinical importance.
Measurements of effect.

**Effect size** = change in normalized mean [derived from formulae]
0.2 small, 0.5 moderate, 0.8 big.

**Mean difference** == Change mean diff
tx LESS Change mean diff control
Depends on scales.
Dichotomous variables

Risk ratio is the ratio recovered Tx DIVIDED by ratio recovered control

[Odds Ratios generally not used RCTs]

Risk difference is the ratio recovered Tx LESS ratio recovered control.

NNT = inverse risk difference.
If in doubt.
Use the EPIQ spreadsheet.
Or use Revman.