

# How to use the Critical Appraisal of a Topic (CAT) in ANP curriculum

Workshop 392  
Schadee Zaal: Wed 9:30-10:30

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# AGENDA

- Introduction to Workshop 5 min
- History of Fontys EBP training 5 min
- Interactive Presentation CAT 30 min
- Sharing Best Practices 15 min
- Evaluation 5 min

# Program

Aim:

- enhancing further fine-tuning and tailoring of EBP skills to the needs of the ANP professionals

Objectives:

- to address implementation of the CAT format in MANP curricula
- to share experiences and inventorying best practices for EBP training

# History (1): 2nd year MANP students end EBP curriculum evaluation workshop (2016)

- Turning in a case that describes a high performance of EBP
- Turning in a case that describes a low performance of EBP
- Discussing these cases with fellow students in small groups
  - Positive, neutral or negative associations with:
    - Earning and retraining trust (of Patient and/or Physician)
    - Using protocols/standards
    - Individualising care practice and Shared Decision Making
- Ending with a Focus Group discussion
  - Topics mentioned above

# History (2): Results EBP curriculum evaluation workshop:

## cases

- 13 out of 19 students attended the workshop
- 9 students submitted EBP cases
  - Associations with:
    - Following guidelines key in 3 cases (2 High, 1 Low)
    - Shared decision making key in 4 cases (4 High, 2 Low)
  - No associations with:
    - Blending evidence key in non of the cases

# History (3): Results EBP curriculum evaluation workshop: small group discussions

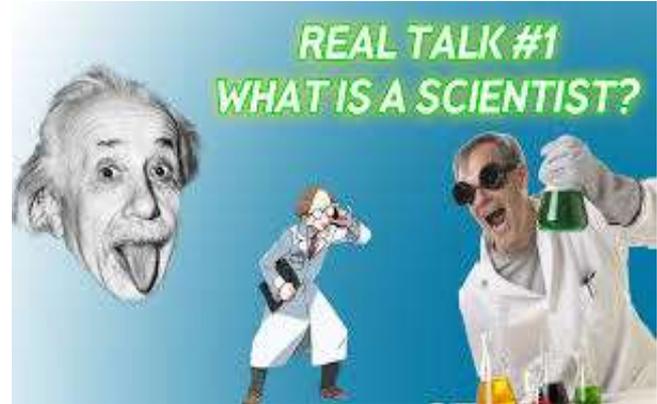
- EBP behaviour is related to building a **trustful relationship** with patient and physician
- Awareness that: coming up with a non EBP treatment is harmful to the relationship (trust) with patient and physician
- EBP behaviour induced by “**not knowing what to do**”(dilemma)
- Acting in an EBP way, **guidelines** are important to ANP students **to start** with
- Scientific research used to **tailor individual care** or when ever guidelines don't match the patient's needs (working beyond protocols)
- **Deliberately delaying decision making** to create time for a search for evidence
- Focus is on **all kinds of knowledge sources**
- **Involving the patient and the physician** in the decision making process
- Being a student demands **deliberation with supervisor** (physician or nurse) fostering awareness for the need of evidence

## History (4): Results EBP curriculum evaluation workshop: focus group discussion

- Feeling to be a **novice** when it comes to EBP
- EBP is mostly an **individually conducted activity**
- CAT whenever **common practice lacs substantiation** or standards/protocols might contradict each other
- Concerns about **how to continue EBP** behaviour after graduation
- Some MANP students **claim practice time** for EBP activities
- Open for **multidisciplinary decision making**
- Providing good quality information whenever the **patient ask for non evidence-based care**

# Overall aim of our educational efforts:

- Training of NP as critical consumer of evidence (tool: CAT)
- Guiding NP in becoming a skilled producer of evidence



# Development of Academic/Scholar competencies

## Critical consumer

Skills training:

- CAT step 1 - 7
- Diagnosis & Health measurement

Test: Individually performed CAT

## Skilled producer

Problem-based Learning:

- Experimental research
- Observational research
- Sources of evidence
- Diagnosis & Health Measurement
- Qualitative & Action Research

Test: Exam

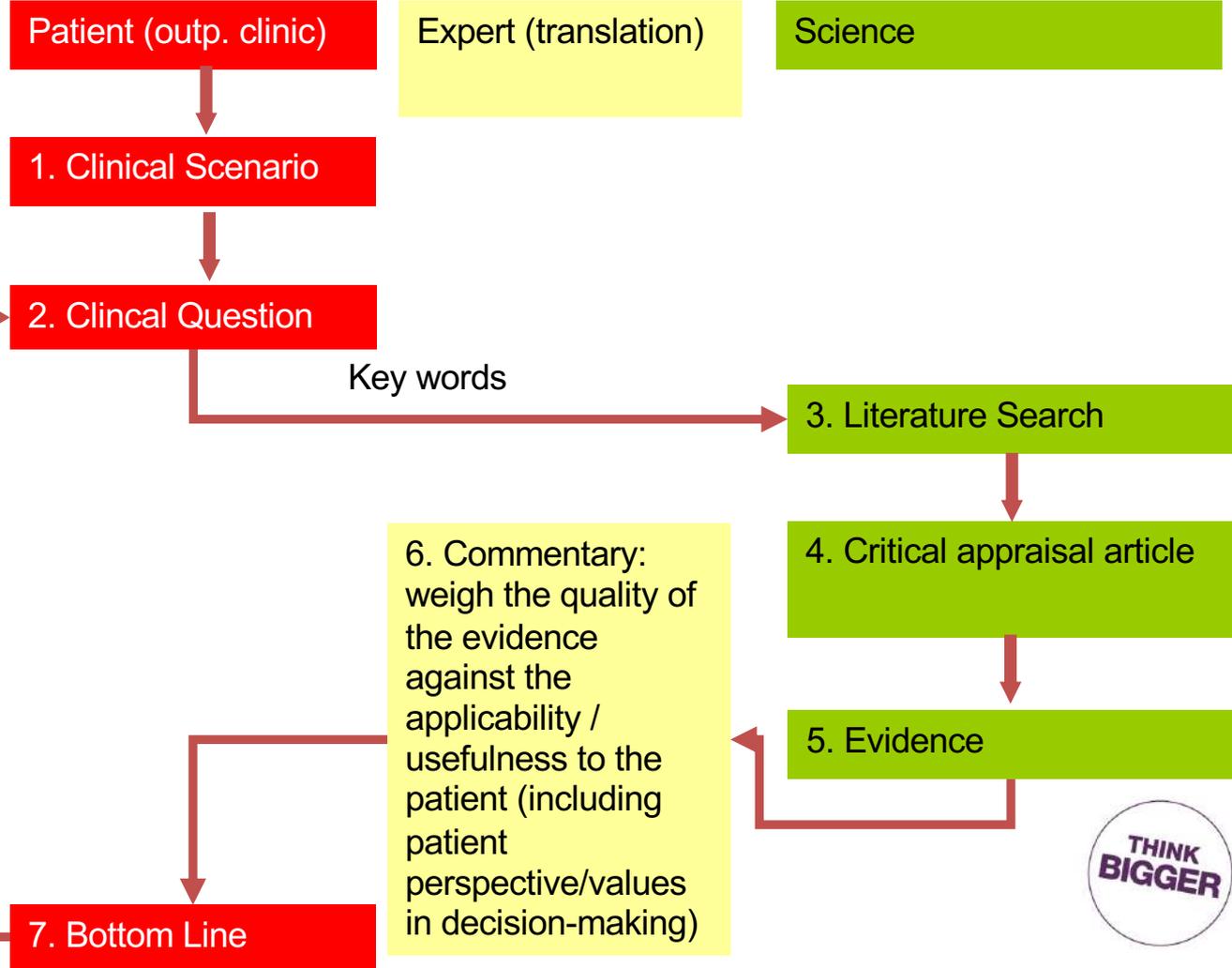
- Writing research proposal, conducting research in year 2

# Advantages of Critical Appraisal of a Topic

- Starts with a patient
- Linked with primary process of cure and care
- Working systematically from a clinical question towards an evidence based answer
- Enables Patient Centred Care
- “life-long learning” skill
- Professionalization NP, acknowledgment from other professionals
- Preparation for the role in conducting research (producer role)
- Finding evidence for complex clinical decisions

Patient  Science  Patient

# CAT Format



Brouwer de, Mommers, Gool van, Kant, Ferreira (2012).



# Step 1: Clinical scenario criteria

- Format of a patient presentation for a multi-disciplinary care team
- Clinically relevant
- Alternative courses of actions (dilemmas) for medical or nursing activities/treatments

Uncertainty regarding treatment  
e.g.:

- Effectivity
- Side effects / Adverse events
- Costs
- Ethical issues

# Step 1: Example of a clinical scenario

Three years old Elvina and her mother visited the general physician. Elvina's mother told the GP that Elvina suffers from **red and itchy progressive skin spots** in the facial area **since two weeks**. She mentioned that Elvina also suffered from this a year ago.

Physical examination revealed red and dry areas with small skin flaks coming off not only in the facial and neck area but also on the elbows. There were no visible lesions as result from **Elvina scratching her skin**. The allergy test showed that Elvina is allergic for house dust mites and cats.

Elvina was diagnosed having **constitutional/atopic eczema**. Elvina's mother and the physician agreed to cure Elvina as soon as possible reducing the eczema and stopping the itchy sensation. The physician offered to subscribe a hydrocortisone cream topical application. Last year the eczema was more extensive and was successfully treated with **hydrocortisone cream**. The downside though was that Elvina's skin became thin, dry and sensitive. Therefore Elvina's mother asked for an substitute. The physician things of an **emollient (non-steroid)**, although **doubting this to be as effective as hydrocortisone**.

# Step 1: Example of scenario related illustrations



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## Step 2: Clinical question criteria

- Answerable question (well operationalised)
- Direct importance to patient care
- Clinical domain determines elements of question
  - Aetiology: Patient, level of exposure, outcome, time
  - Diagnosis: Patient, Disease/Disorder, Index test, Reference test
  - Prognosis: Patient, Moment, Outcome, Time
  - **Therapy: Patient, Intervention, Control Intervention, Outcome, Time (PICOT)**

## Exercise Step 2

Formulate a clinical question based on the scenario, with the neighbour sitting next to you!

Use PICOT acronym:

Patient, Intervention, Control, Outcome, Time

# The clinical scenario

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## Step 2: Example PICOT

- P = Children <4 years with atopic/constitutional eczema
- I = Non-steroid emollient
- C = Corticosteroids (locally applied)
- O = Equally/better in reducing clinical symptoms
- T = 3 weeks

## Step 2: Example of a therapeutic clinical question

Is non-steroid emollient equally or more efficient in reducing severity of clinical symptoms compared to locally applied corticosteroids when treating constitutional/atopic eczema within 3 weeks for children up to 4 years?

# Step 3: Systematic Literature Search criteria

- Key words
  - MeSH / CINAHL Headings
  - Free tekst
- Use Top 5 relevant key words for specific methodological domain
  - Patient, Intervention, Methodological terms, Control treatment, Outcome

# Step 3: Systematic Literature Search Criteria

- 'Best Evidence' not 'Any Evidence'
- Scientific research of Good Quality
- Systematic search
- Match Patient with Study Population

## Exercise Step 3

Think of keywords for the systematic literature search, with the neighbour sitting next to you! Furthermore, think about relevant databases.

Use Top 5

# Top 5 for searching literature for therapeutic question

Top 5	MESH terms	Free text terms
Patient		
Intervention		
Methodological terms		
Control treatment		
Outcome		

# Literature search

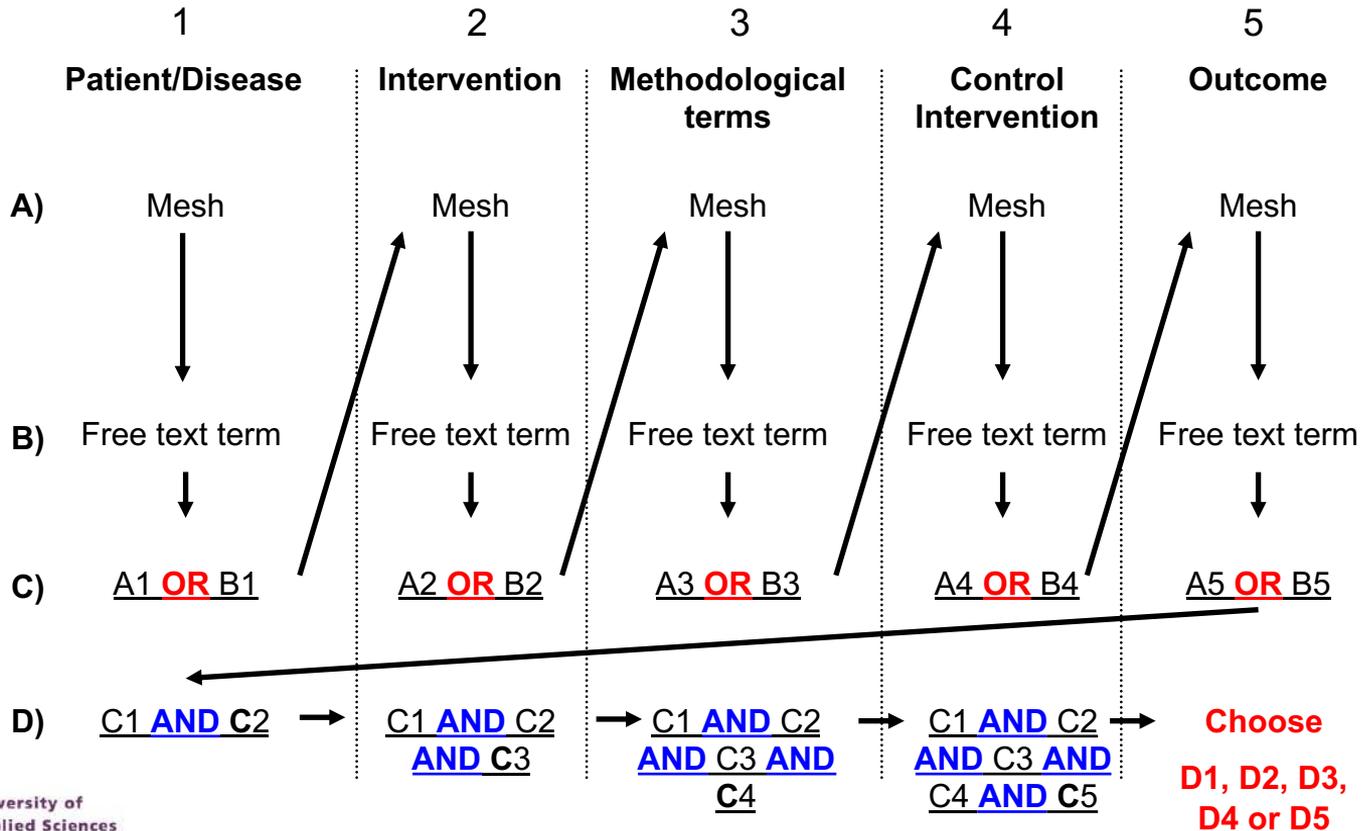
A  
N  
D

Top 5	MeSH terms	Free text terms
1. Disease	Eczema Dermatitis Dermatitis, atopic	atopic eczema atopic eczema children atopic dermatitis atopic dermatitis children treatment
2. Intervention	Emollients/emollient/ointment bases	emollient cream/topical emollient/ atopic dermatitis emollient/ointment bases
3. Methodological terms	Randomised Controlled Trial	Randomised Controlled Trial, RCT
4. Control intervention	Corticosteroid/11-beta-Hydroxysteroid Dehydrogenases/corticosteroid side-chain-isomerase/ Corticosteroid-Binding Globulin, Elevated/Corticosteroid-Binding Globulin Deficiency	topical corticosteroid/topical corticosteroids/corticosteroid/corticosteroids
5. Outcome	Skin care/treatment outcome/Comparative Effectiveness Research	effectiveness, treatment/skin care/ comparative effectiveness research/treatment outcome(s)

OR

THINK  
BIGGER

# Model of a search structure



## Step 3: Example of sources for a literature search

### Search in Scientific Sources:

- Pubmed / Medline+
- Embase
- CINAHL
- PsycARTICLES
- ERIC
- Nursing Reference Center

### Avoid GOOGLE:

- Search is not reproducible
- When combining the search term reduction of hits remain unclear
- Dependability on Google's algorithm

**Google is great for mining PDF's!**

# Example of a Search:

## Think first before entering the database

### PATIENT/DISEASE

#29 #21 OR #23 OR #25 OR #26 OR #27 OR #28	98592
#28 atopic dermatitis children treatment	3678
#27 atopic eczema children	8661
#26 atopic dermatitis	22308
#25 (Therapy/Broad[filter]) AND (atopic dermatitis) [Clinical Queries]	8283
#23 "Dermatitis, Atopic"[Mesh]	16359
#21 "Dermatitis"[Mesh] OR "Dermatitis,Atopic"[Mesh] OR "Eczema"[Mesh]	92557

# Natural peroxisome proliferator-activated receptor- $\alpha$ agonist cream demonstrates similar therapeutic response to topical steroids in atopic dermatitis (De Belilovsky, C. et al., 2011)

**Background:** Atopic dermatitis (AD) requires permanent skin care.

**Objective:** A cream containing 2% SO (sunflower oleodistillate), with peroxisome proliferator-activated receptor- $\alpha$  (PPAR- $\alpha$ ) agonist properties, has been compared to a topical steroid (hydrocortisone butyrate 1 mg/g).

**Methods:** An open, randomized study included two groups of 40 children (aged 3 months to 4 years). Group A applied the steroid and group B applied the 2% SO cream, twice a day. SCORAD (SCORing Atopic Dermatitis) was determined at D0, D7 and D21 and quality of life (QoL) at D0 and D21.

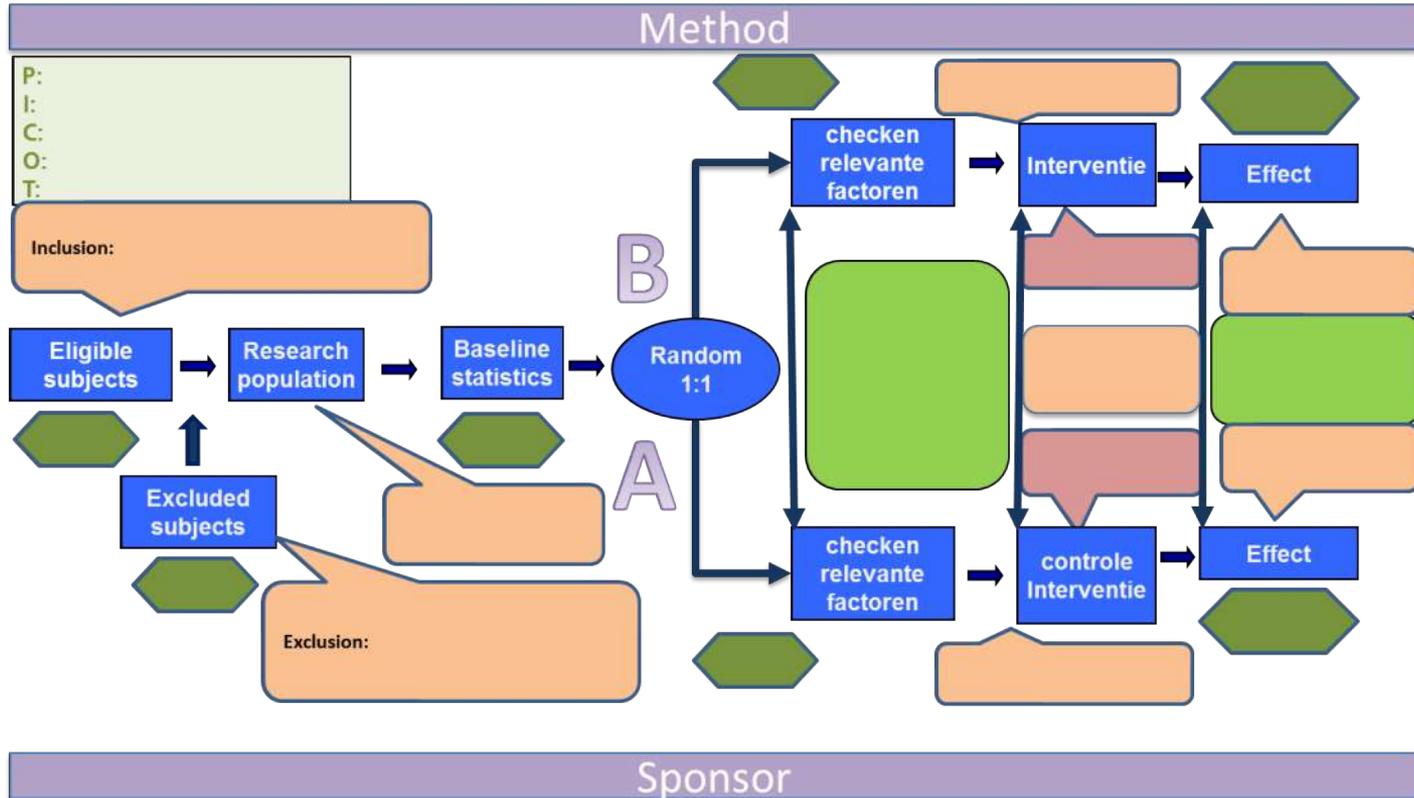
**Results:** SCORAD was similar at D0 (37.2 versus 36.9), D7 (18.9 versus 19.2) (–49% and –48%) and D21 (11 versus 9.4) (–70% and –75%) ( $p < 0.01$  versus D0). The Infant Dermatitis Quality of Life and Dermatitis Family Impact Questionnaire improved similarly by 65%/67% in group A and 72%/75% in group B at D21 ( $p < 0.01$  versus D0).

**Conclusion:** A 2% SO cream has demonstrated therapeutic properties, using clinical scores and QoL, comparable to those of a topical steroid.

# Step 4: Critical Appraisal, Criteria for appraising RCT's

1. In- and exclusion criteria; selection process?
2. Intervention and control treatments?
3. Valid randomisation method?
4. Detailed description of blinding process?
5. Control over confounders?
6. Level of compliance and contamination?
7. Co-interventions?
8. Study outcome valid and precise?
9. Extent and reason for loss to follow-up?
10. Intention to treat or Per Protocol?

# Visualisation sheet of the research method in use



# Example: Q8. Was/were the study outcome(s) valid and measured precisely?

## Primary outcome measure.

 To compare clinical performances of the **2% SO cream** with a **standard TS** on children with mild to moderate AD.

- SCORAD was determined on D0, D7 and D21 to evaluate clinical symptoms.

## Secondary outcome measures.

- Specific items of SCORAD: extent of AD lesions; erythema, oedema/ papulation, oozing/crusting, excoriation, lichenification, dry skin in healthy areas, pruritus and sleep loss
- IDQoF index and Dermatitis Family Index

**Conclusion:** All instruments validated for dermatitis. SCORAD best available measurement (Smith et al., 2013). Unclear who assesses these values. Unclear who assesses the QOL measures. Bias due to different treatment instructions? Study is underpowered, therefore no sign. differences?

## Step 4: Example of summary of critical appraisal

1. In- and exclusion criteria; selection process? ✓
2. Intervention and control treatments? ✓ ?
3. Valid randomisation method? ✓
4. Detailed description of blinding process? ✓
5. Control over confounders? ?
6. Level of compliance and contamination? ✓ ?
7. Co-interventions? ✓
8. Study outcome valid and precise? ✓ ?
9. Extent and reason for loss to follow-up? ✓
10. Intention to treat or Per Protocol? ?

## Step 5: Evidence criteria

- Provide insight into the size of ‘the effect’ estimate reported in the study
  - Diagnostic: sensitivity and specificity
  - Prognostic / Therapeutical: relative risk or hazard ratio (CI), mean (STD), frequency

## Exercise Step 5:

Think of what statistical techniques and methodological principles a nurse should master, with the neighbour sitting next to you!

## Step 5: Example of reporting overall evidence in words

- No differences between the groups during the measurement moments on the SCORAD, but SCORAD improved significantly in both groups.
- Extension of lesions significantly decreased to a greater extent and more quickly in the TS group than in the SO group.
- Xerosis of remote areas was naturally more improved by the SO group than in the TS group.

# Step 5: Example SCORAD: TS versus Em; D7 and D21 versus D0

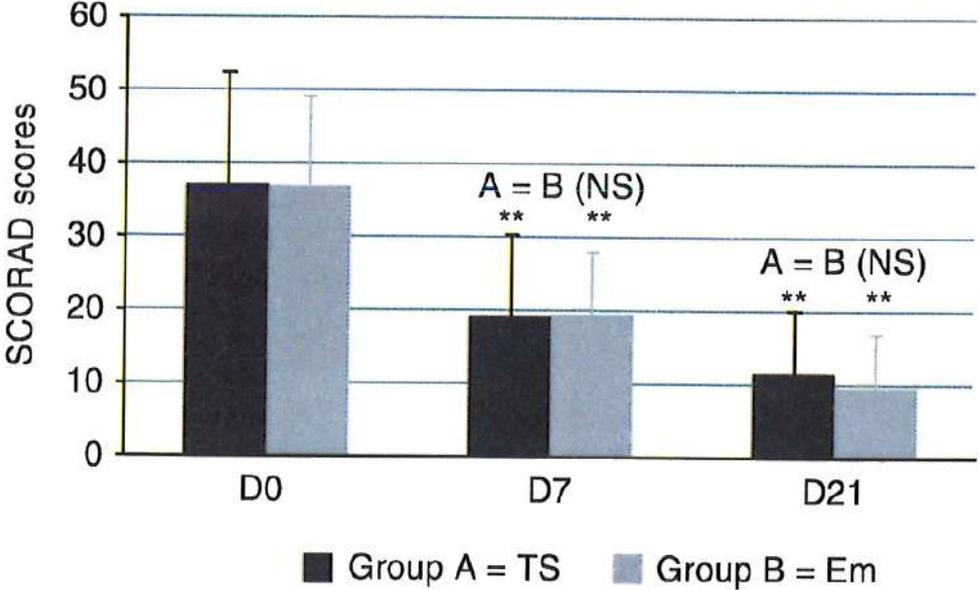


Figure 1. SCORAD scores. (TS = topical steroid; Em = 2% SO emollient; NS = A versus B: Mann-Whitney test; \*\* $p < 0.01$ : Wilcoxon test.)



## Step 6: Commentary criteria

- Weighing the methodological quality against the applicability and validity (legitimacy)
- Taking secondary outcomes into account
- Taking into account expert opinions, facilities and patient's preferences
- Taking the clinical relevance into account
- Skills: critical thinking; mix of methodological and clinical reasoning

## Exercise Step 6

Think about important subjects to address in the commentary, with the neighbour sitting next to you!

# Step 6: Example of a commentary (1)

## Overall methodological quality

- Shortcomings:
  - Selection of participants is not transparent
  - Insufficient blinding
  - Lack of information about adherence and risk of contamination
  - Significant outcome due to multiple testing (Type I)
- The patient in front of me:
  - Patient within study's inclusion criteria?
  - Spanish clinical setting similar to Dutch clinical setting?
  - Funding of the research?

## Step 6: Example of a commentary (2)

- Weighing treatments effects against harm and costs
  - SO treatment and TS treatment are equal in treatment effects.
  - No reported side effects during this study (3 weeks), but there can be negative long term side effects of corticosteroids (thin skin, altering skin barrier function).
  - Costs? This will be te same (more or less), depending on the restitution by the health assurance.
- Are all important outcome measures taking into account?
  - Both clinical outcome measures (SCORAD, IGA) as well as quality of life (IDQOL) and impact on family (DFI) improved over time in both groups, no significant between group differences.

## Step 7: Bottom Line criteria

- Brief answer to the clinical question
- Formulated to guide clinical decisions
- Conclusion formulated with respect to the individual patient
- Signal words stipulate the evidence power

## Exercise Step 7

Considering the appraisal and the evidence in combination with the weighing process in step 6 would it change your clinical decision?

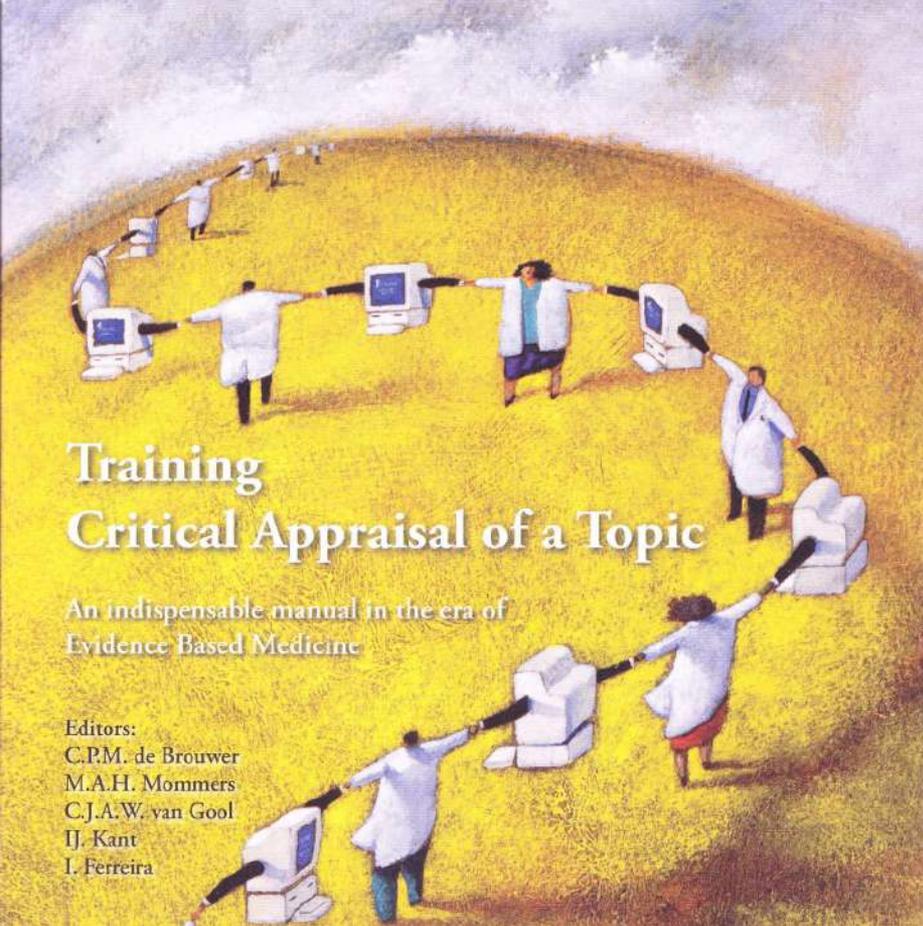
# Step 7: Example of a Bottom Line

Clinical question:

- Is non-steroid emollient equally or more efficient in reducing severity of clinical symptoms compared to locally applied corticosteroids when treating constitutional/atopic eczema within 3 weeks for children up to 4 years?

Bottom line:

- It is advisable to use a non-steroid emollient for toddlers suffering from constitutional/atopic eczema instead of corticosteroids, given the equivalent effect within three weeks and the absence of corticosteroid induced side effects.



[www.mediview.org](http://www.mediview.org)

The manual is suitable for those who want to qualify in:

- writing a clinical scenario;
- formulating clinical questions;
- searching systematically for scientific literature using a structured step-by-step plan;
- appraising the methodological quality of a scientific article;
- appraising the evidence and weighing the quality of the evidence for medical decision making;
- formulating an answer to a clinical question based on an EBM approach.

# Best Practices?