THE INTERNATIONAL SPINAL CORD SOCIETY ANNUAL SCIENTIFIC MEETING
ISCoS 2020: VIRTUAL

How to use the Cochrane Evidence in the field of Spinal Cord Injury: The Cochrane Rehabilitation strategy

Julia Patrick Engkasan

SPEAKER'S DISCLOSURE

I declare to have no interests in the below:

- The existence of any significant financial activity or other relationship
- Financial or material compensation in relation to research and publishing
- Financial or material compensation in relation to educational activities
- Ownerships and possessions in companies related to health care (includes service provides, IT)
- Compensation for expert functions in health care and consulting health care guidance processes

What is Cochrane Review & How to use it in Spinal Cord Injury Rehabilitation practice

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ISCoS 2020

Trusted evidence.
Informed decisions.
Better health.

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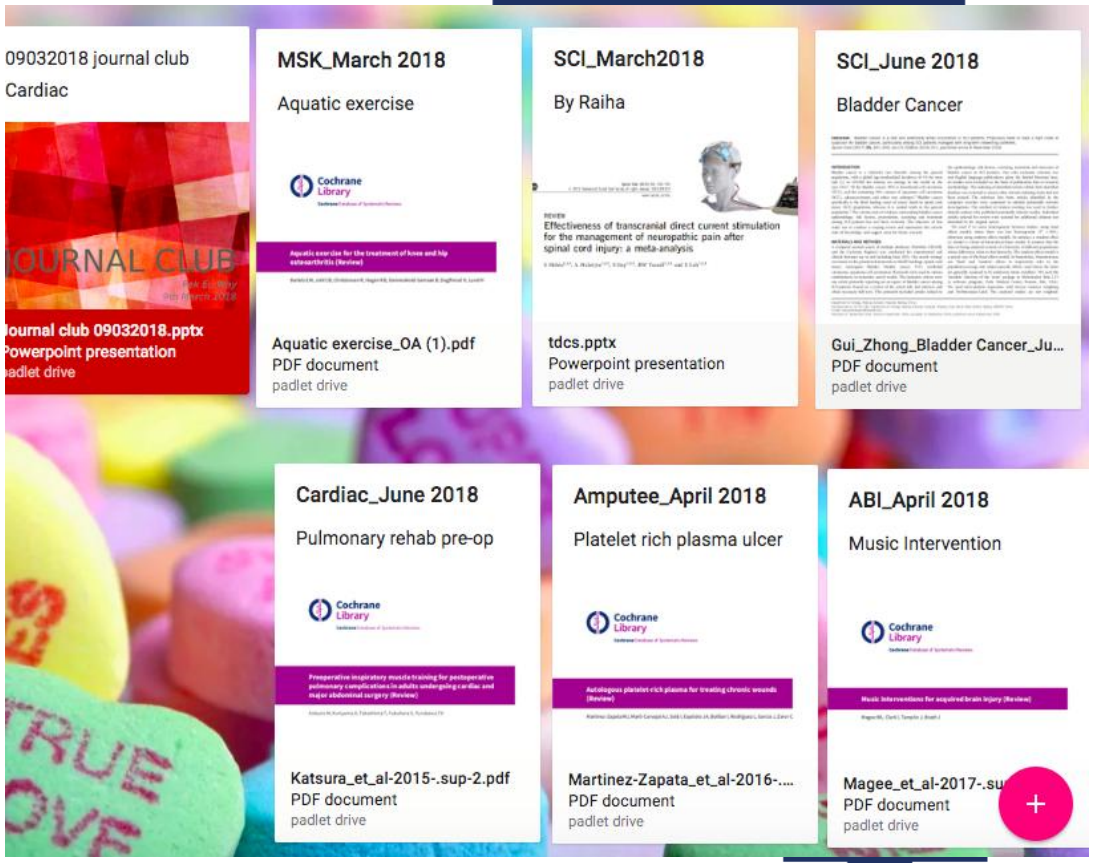
Journal Club



Trusted evidence.
Informed decisions.
Better health.

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Lecture Outline

- Cochrane reviews
- The five step EBM model
- Critical Appraisal
- Application in practice

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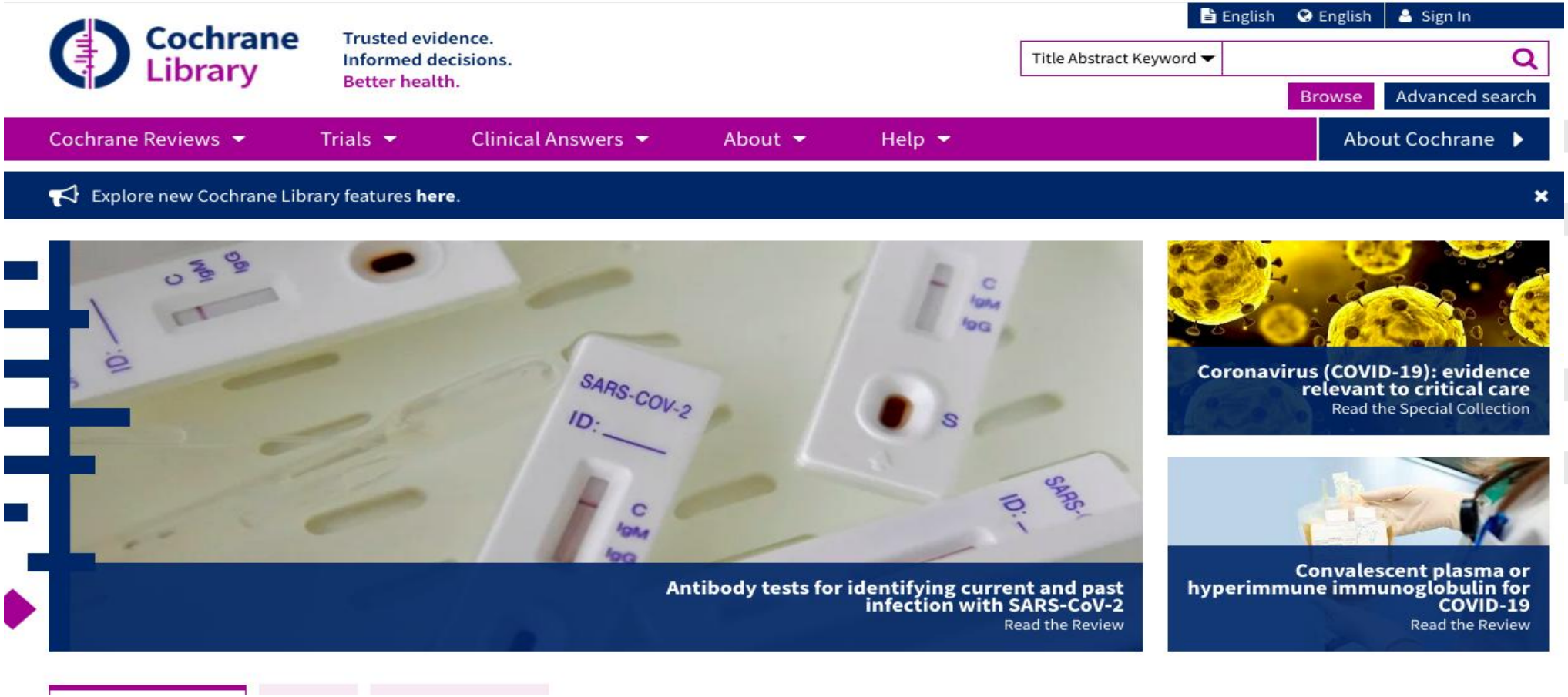
Cochrane Reviews



Total of 8345 reviews in the Cochrane Database of systematic reviews
23rd July 2020

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Cochrane reviews are conducted to the highest standard of methodological quality

Cochrane Handbook for Systematic Reviews of Interventions

Methodological Expectations of Cochrane Intervention Reviews

- **Access MECIR**
- **About MECIR**
- **Implementation of MECIR**
- **Other key resources**
- **Standards for the reporting of plain language summaries of new Reviews of Interventions**

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Audit of systematic reviews found Cochrane Reviews:

- Most comprehensive reporting
- More likely to use a pre-published protocol
- More likely to report risk of bias assessment and integrate it in analysis of results
- Most consist use of appropriate statistical methods
- Most likely to be updated over time

(Page et al., 2016, PLoS Medicine)

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Types of Cochrane Review

Intervention reviews assess the benefits and harms of interventions used in healthcare and health policy.

Diagnostic test accuracy reviews assess how well a diagnostic test performs in diagnosing and detecting a particular disease.

Methodology reviews address issues relevant to how systematic reviews and clinical trials are conducted and reported.

Qualitative reviews synthesize qualitative evidence to address questions on aspects of interventions other than effectiveness.

Prognosis reviews address the probable course or future outcome(s) of people with a health problem.

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Layout of Cochrane Reviews

- Abstract
- **Plain language abstract**
- **Summary of findings (SoF)**
- Background
- Methods
- Results
- Discussion
- Authors' conclusions
- Graphs / Figures
- Tables
- References

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PLAIN LANGUAGE SUMMARY

Treadmill training and body weight support for walking after stroke

Review question: We wanted to assess whether walking practice on a treadmill with the body being supported by a harness as the only form of training versus in combination with other kinds of training, could improve walking when compared with other training methods for walking or no treatment. This is an update of the Cochrane review first published in 2003 and updated in 2005 and 2014.

Background: About 60% of people who have had a stroke have difficulties with walking, and improving walking is one of the main goals of rehabilitation. Treadmill training, with or without body weight support, uses specialist equipment to assist walking practice.

Study characteristics: We identified 56 relevant trials, involving 3105 participants, up to March 2017. Twenty-six studies (1410 participants) compared treadmill training with body weight support to another physiotherapy treatment; 20 studies (889 participants) compared treadmill training without body weight support to other physiotherapy treatment, no treatment, or sham treatment; two studies (100 participants) compared treadmill training with body weight support to treadmill training without body weight support; and four studies (147 participants) did not state whether they used body weight support or not. The average age of the participants was 60 years, and the studies were carried out in both inpatient and outpatient settings.

Key results: The results of this review were partly inconclusive. People after stroke who receive treadmill training with or without body weight support are not more likely to improve their ability to walk independently. The quality of this evidence was low. However, treadmill training with or without body weight support may improve walking speed and walking capacity compared with people not receiving treadmill training. The quality of this evidence was moderate. More specifically, people after stroke who are able to walk at the start of therapy appear to benefit most from this type of intervention, but people who are not able to walk independently at therapy onset do not benefit. This review found that improvements in walking speed and endurance in people who can walk have no lasting positive effect. Unwanted events such as falls and dropouts were not more common in people receiving treadmill training.

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Self management compared with control for participants with chronic obstructive pulmonary disease

Patient or population: patients with chronic obstructive pulmo
Settings: community, primary care, hospital outpati
Intervention: self management
Comparison: control

This table includes data from RCTs only; data from CCTs are presented in the review.

Description of the question this table seeks to answer (PICO)

Outcomes	Illustrative comparative risks* (95% CI)		Relative effect (95% CI)	No. of participants (studies)	Quality of the evidence (GRADE)	Comments
	med risk / rol					
HRQoL: SGRQ total sc Scale ranges from ze 100. Lower score ind tes better HRQoL	Range of mean SGRQ to scores in the control group varied from 34.7 to 65.3 points	intervention gr ne lower (5.37 to 1.65 lo 3.51	**MD -3.51** (-5.37 to -1.65)	1413 (10 studies)	⊕⊕⊕⊖ **moderate**[1]	
Respiratory-related hospital admissions: number of participants with at least one respiratory-related hospital admission	293 per 1000	190 per 1000 (151 to 237)	**OR 0.57** (0.43 to 0.75)	1749 (9 studies)	⊕⊕⊕⊖ **moderate**[2]	

Each row presents the patient-important outcome.

Relative risk (effect estimate) Imported from Cochrane Review forest plots

Quality assessment per outcome

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THE FIVE STEP EBM MODEL
APPLICATION IN ACTUAL CLINICAL PRACTICE

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Lets start with a clinical problem..

Mr. MH is a 39 years old man who has complete paraplegia following a motor vehicle accident 3 years ago. Has has **severe neuropathic pain** at both lower limbs which he says is driving him crazy (VAS of 9). He is already on optimal dose of oral medications. He heard that TENS is very good for neuropathic pain and wants you to prescribe him such treatment. His insurance scheme does not cover physical modalities but he is willing to pay on his own. He wants to know what are the chances that TENS will cure his pain.

What are you going to tell him?
How are you going to make this decision?

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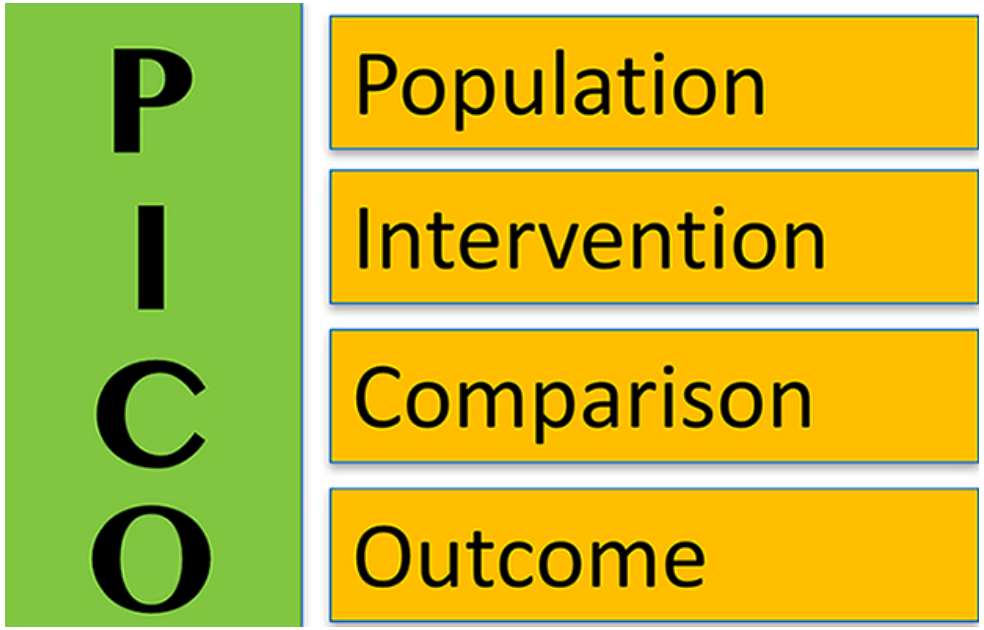
Step 1: formulating the question



Persons with neuropathic pain

TENS

Other intervention

Pain

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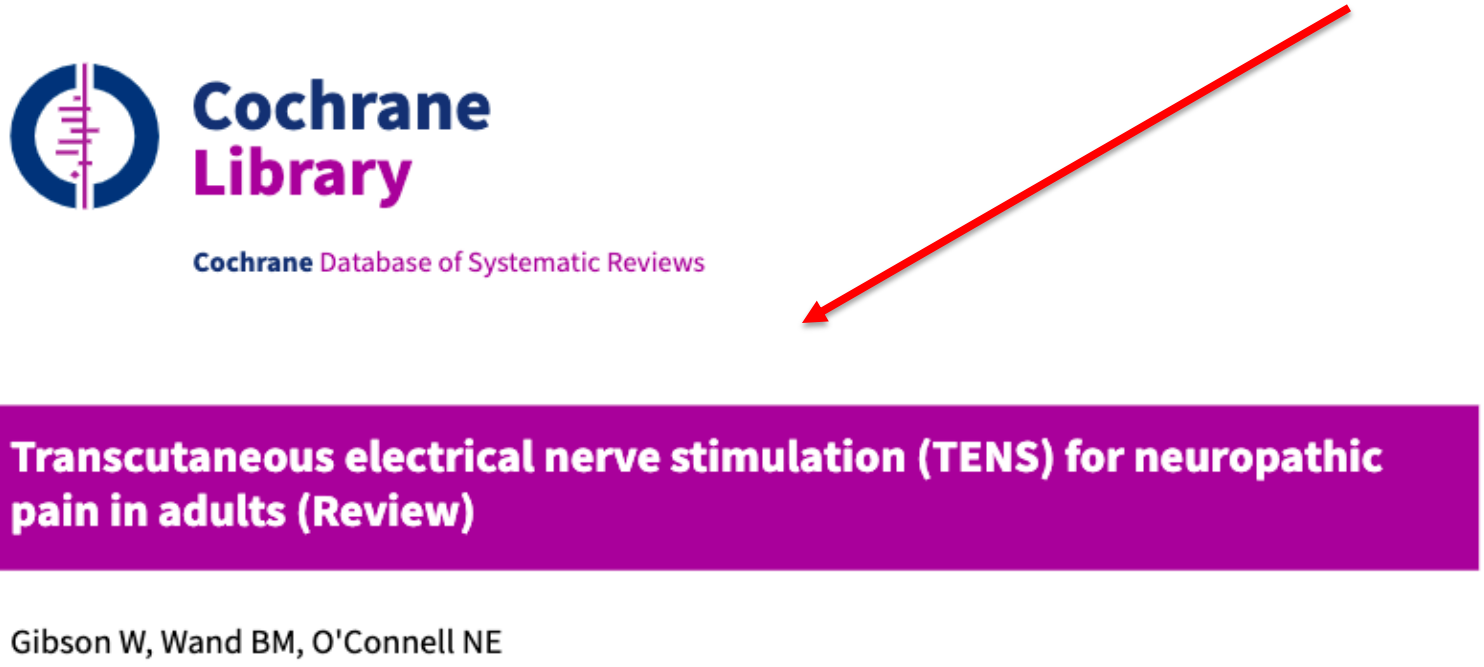
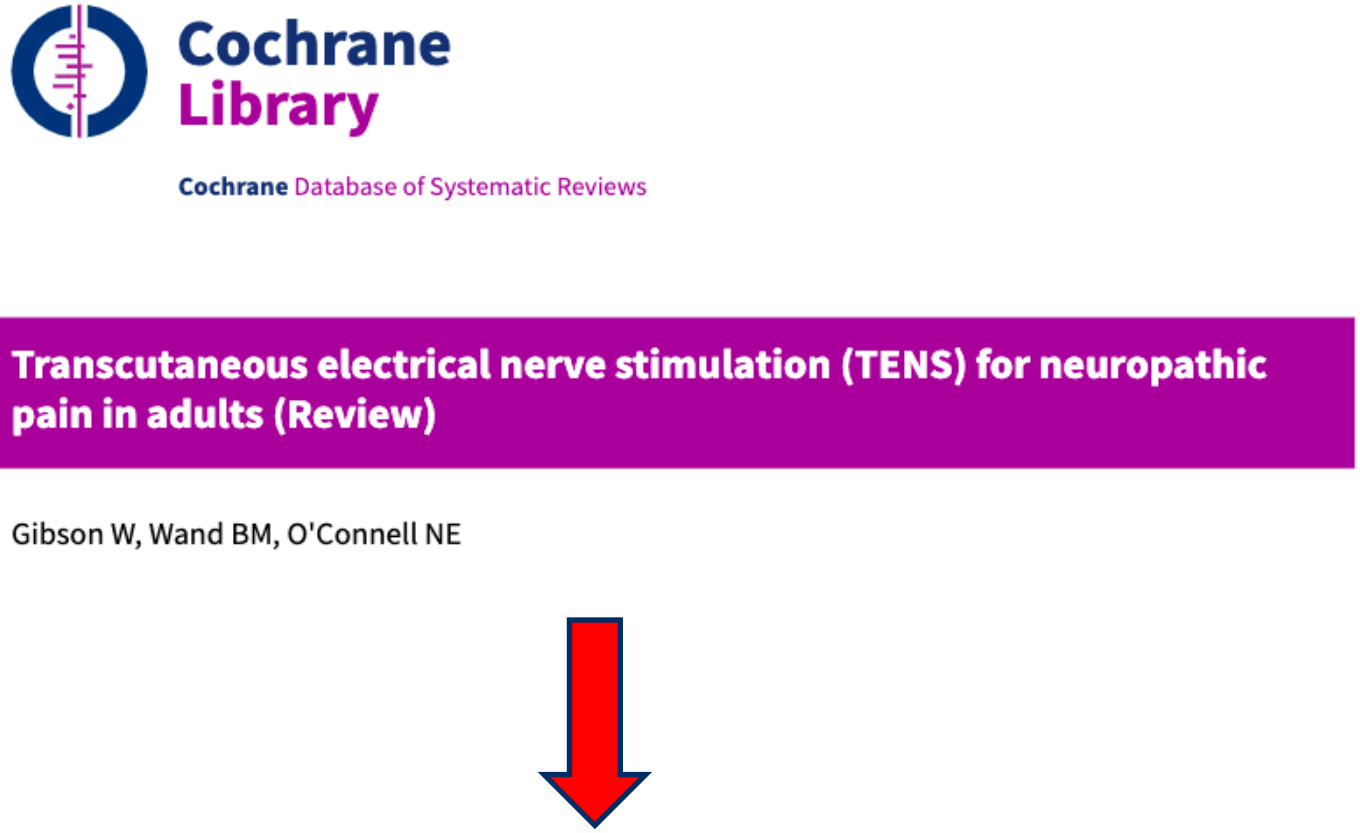
Step 2: Search for evidence



Step 3: Appraise the article

Critical appraisal is the process of carefully and systematically analyse research article
And judge its trustworthiness, its values and relevant in a particular context

Step 3: Appraise the article



- Will this review answer my question?
- Is the review well conducted?

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Will this review answer my question?

P	Population	Persons with neuropathic pain
I	Intervention	TENS
C	Comparison	Other intervention
O	Outcome	Pain

Information usually in the Methodology section

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Is this review well conducted?

Pay attention to the rigour of the methods
Always look at how the SR is conducted.

- Comprehensive search of literature
- Specification of trial selection: Inclusion and exclusion criteria
- How were the trials selected ?
- How was the data extracted?
- Was assessment of bias / quality of selected studies done?

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Comprehensive search of the literature

- Electronic databases
- Limitations by language, type of publication, date,
- Search for trials not yet published in clinicaltrials.gov, trial registries
- Results from published and unpublished trials

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Quality of study

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For this review

- Comprehensive search of literature
- Specification of trial selection: Inclusion and exclusion criteria
- How were the trials selected ?
- How was the data extraction process
- Assessment of bias / quality of selected studies

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THE RESULTS

- What are the results of the review?
- How do the results from this review apply to my patients?

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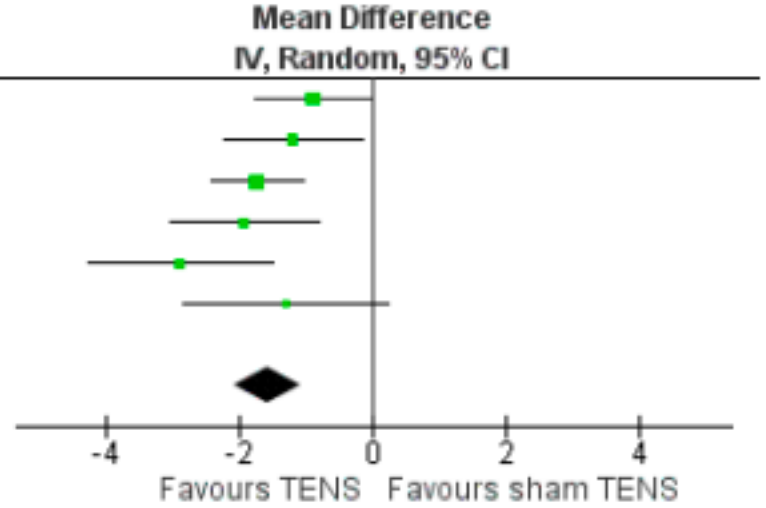
THE RESULTS

Figure 4. Forest plot of comparison: 1 TENS versus sham TENS, outcome: 1.1 Pain intensity.

Study or Subgroup	TENS Mean	TENS SD	TENS Total	Sham TENS Mean	Sham TENS SD	Sham TENS Total	Weight	Mean Difference IV, Random, 95% CI
Barbarisi 2010 (1)	2.3	0.78	7	3.2	0.81	6	21.0%	-0.90 [-1.77, -0.03]
Barbarisi 2010 (2)	2.5	0.97	9	3.7	1.19	8	16.5%	-1.20 [-2.24, -0.16]
Bi 2015	2.14	0.91	24	3.87	1.45	24	27.8%	-1.73 [-2.41, -1.05]
Buchmuller 2012	3.85	2.97	43	5.78	1.9	32	15.1%	-1.93 [-3.04, -0.82]
Celik 2013	3.88	2.5	17	6.77	1.42	16	10.7%	-2.89 [-4.27, -1.51]
Vitalii 2014	3.95	1.7	11	5.25	1.86	10	9.0%	-1.30 [-2.83, 0.23]
Total (95% CI)			**111**			**96**	**100.0%**	**-1.58 [-2.08, -1.09]**

Heterogeneity: Tau² = 0.11; Chi² = 7.04, df = 5 (P = 0.22); I² = 29%
Test for overall effect: Z = 6.23 (P < 0.00001)



Footnotes
(1) P600
(2) P300

For post-intervention pain intensity (expressed on a 0-10 scale) pooling of the studies using a random-effects model yielded a MD effect size favouring TENS of -1.58 (95% CI -2.08 to -1.09, P < 0.00001, n = 207, 6 comparisons from 5 studies; very low quality evidence).

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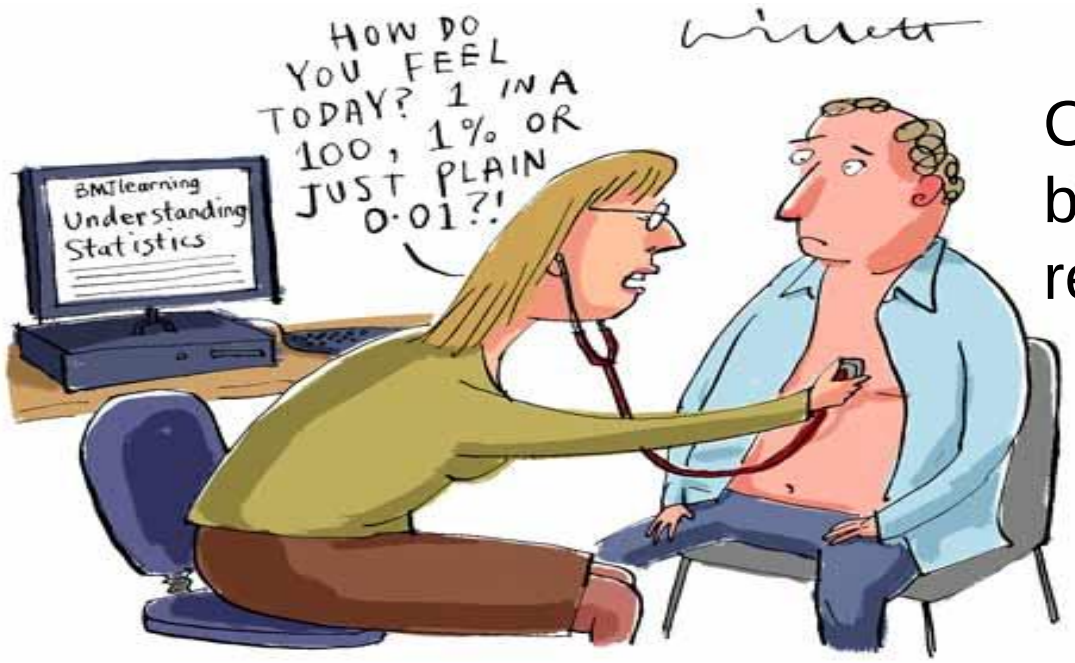
The clinical problem..

Mr. MH is a 39 years old man who has complete paraplegia following a motor vehicle accident 3 years ago. Has has **severe neuropathic pain** at both lower limbs which he says is driving him crazy (VAS of 9). He is already on optimal dose of oral medications. He heard that TENS is very good for neuropathic pain and wants you to prescribe him such treatment. His insurance scheme does not cover physical modalities but he is willing to pay on his own. He wants to know what are the chances that TENS will cure his pain.

What are you going to tell him?
How are you going to make this decision?

Step 4: Applying the results

TENS will reduce your pain



On average pain intensity will reduce by 1.58 with TENS but pain reduction can range from 2 to 1

VAS 9 -→ 7.5
But it can range from 7 to 8

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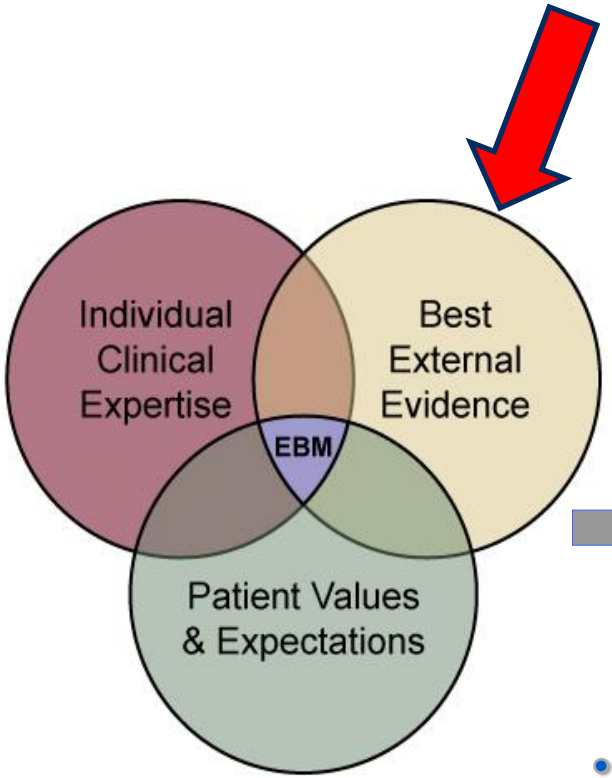
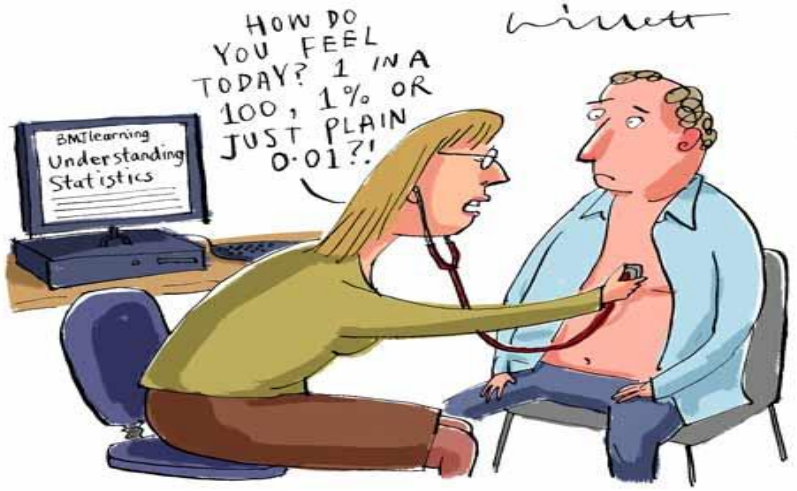
EBM in action





DIFFERENT TREATMENT DECISION

- Explore patient values
- Is the outcome meaningful to the patient?
- Will the treatment effect meet patient expectation?
- Is there any contraindication for TENS in this patient?

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"Evidence-based medicine in practice defines the likelihood of something happening. It is never 100%. It is not absolute truth. Evidence never tells you what to do. The same evidence applied in one case may not apply in another. The circumstances of the individual may be different, the circumstances may be the same but patients may refuse one treatment in favor of another. What evidence-based medicine does is inform one about what their best options are—but it doesn't make the decision."

Brian Haynes MD, McMaster University at the Canadian Medical Association September 30, 2003

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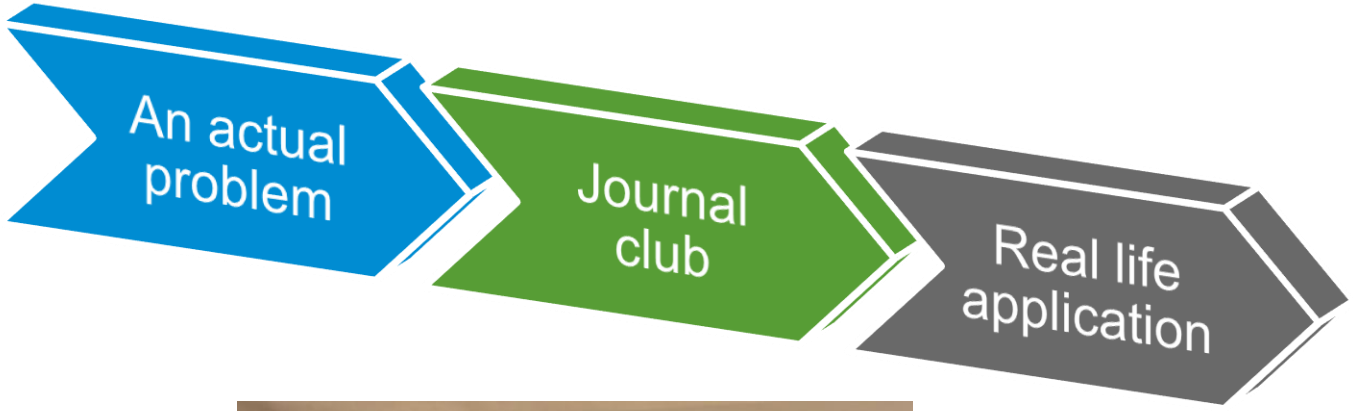
The practice of EBM encompasses more than the skills to appraise articles

OUR APPROACH



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Education committee of CR

- Organises appraisal workshop in conferences
- Four hour long workshop
- We hope to have one in ISCoS

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Thank You

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