



The Canadian Cochrane Network/Centre

A Primer on Evidence-Based Clinical Practice

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Purposes of the Presentation

1. To help readers learn about core issues of evidence-based decision making within the context of clinical practice
2. To provide information on key concepts of evidence-base practice and systematic reviews

What is Evidence-Based Clinical Practice?

It is considered:

- Decision making and problem solving using a hierarchy of scientific evidence derived from clinical research
- Determining whether to apply interventions and which interventions to apply based on weighing benefits and risks, inconvenience, and costs within the context of patient values

One Definition of Evidence-Based Clinical Practice

“the integration of best research evidence with clinical expertise and patient values” (Sackett et al., 2000, p .1)

5-Step Process of Evidence-Based Clinical Practice

1. Pose an answerable question
2. Search for the evidence
3. Critically appraise the evidence for its validity and relevance
4. Make a decision by integrating the evidence with clinical experience and patient/client values
5. Evaluate performance after acting on the evidence

Pose an Answerable Question

- Formulating answerable questions is one of the most important aspects of the evidence-based practice process
- A focused, clearly worded question on a relevant issue helps guide the practitioner to the proper evidence

Search for the Evidence

- Not all evidence is equal
- There are hierarchical rankings of the weight of evidence to help answer an evidence-based practice question

One Hierarchy Describing Levels of Evidence*

<u>Classification</u>	<u>Description</u>	<u>Examples</u>
Experimental or Class I	<p>Random assignment to and evaluation of intervention and control groups/phases</p> <p>Evidence from prospective study in broad spectrum of persons with suspected condition</p> <p>“Gold” standard</p>	<p>Randomized Controlled Clinical Trial (RCT)</p> <p>Time series research (single-subject designs, <i>n</i> of 1 randomized controlled trials)</p> <p>Systematic reviews of randomized trials</p>

<u>Classification</u>	<u>Description</u>	<u>Examples</u>
Quasi-experimental or Class II	<p>Non-random assignment to and evaluation of intervention and control groups/phases</p> <p>Well designed study of a narrow spectrum of persons with suspected condition</p> <p>Well designed retrospective study of a broad spectrum of persons with established condition</p> <p>Comparisons with broad spectrum of controls</p>	<p>Case-controlled studies</p> <p>Systematic reviews of observational studies</p> <p>Cohort studies</p> <p>Program evaluations</p> <p>Quality improvement studies</p>

<u>Classification</u>	<u>Description</u>	<u>Examples</u>
Non-experimental or Class III	<p>No clear comparison groups, or non-randomized historical controls</p> <p>Evidence from retrospective study in which either persons with established condition or controls are of a narrow spectrum; blinded evaluation</p>	Registries and data bases
Class IV	Any design in which test is not applied in blinded evaluation or evidence provided by expert opinion alone or in descriptive case series	<p>Case studies or reports</p> <p>Group judgments or expert opinion</p>

* Adapted from Knopman et al. (May 8, 2001). *Neurology*, 56(9), 1143-1153.

Critically Appraise the Evidence for its Validity and Relevance

Some questions to consider:

- Do the studies address a sensible clinical question?
- Do the studies possess high quality designs and methods?
- Are the assessments of the highest caliber (e.g., standardized, blinded, reproducible, etc.)?
- Are the results from the studies similar or widely different?
- How do the results apply to the care of my clients/patients?
- Are the conclusions drawn consistent with the method employed?
- Are all relevant and important outcomes considered?

What are Systematic Reviews?

Systematic reviews are:

- Summaries of relevant literature that address a focused clinical question in which there are designs, methodologies and procedures that help reduce the likelihood of bias (Guyatt & Rennie, 2002)

Researchers who complete systematic reviews reduce bias by:

- ◆ Conducting a comprehensive search of relevant literature
- ◆ Using unambiguous inclusion and exclusion criteria for studies
- ◆ Summarizing findings using explicit statistical methodologies (Guyatt & Rennie, 2002)

Outcome Measurements in Evidence-Based Clinical Practice

Defined as the result of an intervention

- ◆ Multidimensional
- ◆ Clinically derived
- ◆ Functional
- ◆ Administrative
- ◆ Financial
- ◆ Social
- ◆ Client-defined
- ◆ Reliable
- ◆ Valid
- ◆ Clinically relevant
- ◆ Sensitive to important changes
- ◆ Gathered at important times

Common Terms used in Evidence-Based Clinical Practice Literature

1. Efficacy
2. Effectiveness
3. Efficiency

Efficacy

- Likelihood of beneficial outcome of a particular intervention under *optimal or ideal clinical-experimental* conditions
- Proven effects of an intervention or changes in performance (statistically significant)
- Efficacy based normally on results of an Randomized Controlled Trial (RCT)

“The extent to which a specific intervention, procedure, regimen or service produces a beneficial result under ideal conditions. Ideally the determination of efficacy is based on the results of a Randomized Control Trial” (Last, 1995, p. 52)

Effectiveness

- Likelihood of beneficial outcome of a particular intervention under usual and routine clinical-practice conditions
- Intervention effectiveness reflects real world changes in behaviour and performance
 - ◆ functional, meaningful, clinically significant

- Effectiveness trials generally lack criteria of a RCT but often provide evidence that the intervention has positive influence on daily-life performance

- Functional real-world effects observable and measurable in terms of *disability* or *activities/limitations* (i.e., functional) and *handicap* or *participation/restrictions* (i.e., social)

Efficiency

- A measure of the economy (i.e., time, \$, resources, etc.) with which an intervention of known efficacy and effectiveness is carried out
- For example:
 - ◆ which of two or more interventions works best?

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http://www.evidence-based-medicine.co.uk/what_is_series.html

<http://www.eboncall.co.uk/>