Pocket Guide for Operationalizing Evidence Based Practice

1. Define problem
2. Formulate question
3. Gather best evidence
4. Evaluate evidence
5. Integrate evidence with family values and expertise
6. Make decision
7. Re-evaluate

Evidence Based Practice
Define the Problem
When a service provider is attempting to understand a new problem, often their questions are broad making it difficult to gather information to inform decisions. Narrowing the problem to certain element gives the best starting point in a search for evidence.

Formulate the Question
A well constructed question makes the search for evidence easier and more efficient. A good question should contain the specific group or population, the intervention or issue being addressed/ compared and the desired outcome.

Gathering the Best Evidence
Many sources of evidence come together to inform decisions made about practice. It is important to have the skills and strategies to make timely and effective decisions. Sources of best evidence include

- Information sources: publications, databases, web sites, laws and policies
- Service provider experience and expertise
- Family values, beliefs, priorities and concerns

Information Sources:

1. Publications
There are a wide range of publications available with information about practice across disciplines in early childhood. Scholarly publications are the most likely to yield accurate information needed to make decisions. These sources include:
   - Peer-reviewed journals
   - Research articles
   - Guidelines and recommended practices
   - Systematic reviews and Meta-analysis
   - Books
   - Reports
   - Magazines, non-peer reviewed journals

1a. Peer Reviewed Information
Information from peer-reviewed or refereed publications is considered high quality because the process to publish requires the scrutiny of experts in the field as well as scientific methods.

To determine if a publication is peer reviewed or refereed, review the beginning of the publication for statements about the process of publication, editorial statements, or instructions to authors about publication.

More information on peer-review:
http://www.umsl.edu/services/scampus/PeerReview.html
1b. Non-peer reviewed information
Books, magazines, and some reports often do not go through the above peer reviewed process. However, these sources of information are important and can be of high quality. To determine the quality of a non-peer reviewed publication, the date of publication, the expertise of the editors and authors, and the citations used can give the reader clues to the quality of information.

2. Databases
There are various repositories of large amounts of literature to assist a service provider in searching for scientifically based, peer reviewed research, systematic reviews, expert opinion and other sources of information. Some of these databases can be accessed via the internet or through libraries in colleges and universities.

Steps in conducting an effective literature search with databases (http://jeffline.tju.edu/cfsrp/ebp/EBPModule_11_01_04.pdf)

- Determine the key words or phrases that are important to your question
- Use as fewer terms when you begin the search
- Combine terms with “and” or “or”
- Limit the year of publication to approximately the last 5 years
- Use the “find related articles” feature to extend your search

3. Websites
The internet allows quick access to information about many topics. It is important to distinguish reliable sources of information. Websites from professional organizations, government agencies, family support, disability specific, or advocacy organizations generally provide a reliable starting point for information searches.

Quick considerations of the reliability of a website:
- Is the information relevant to your question?
- Does the information apply the group or age range you are interested in?
- Is the information current (clear date of last revision visible)?
- Who or what organization is the author of the website?
- Are they selling something?

4. Laws and policies
Laws and policies shape practice and also change in response to evidence. The laws, regulations or policies often contain sections that explain the reason for mandating a practice and the source of the evidence. Good sources for finding laws, regulations and policy information include government websites, organizations (professional and topic specific), family support, disability or advocacy organizations.
Information Gathering strategies

Patient/Problem, Intervention, Comparison, Outcome (PICO)
PICO is a medical based model that provides a systematic way to identify key components of a practice question to inform the evidence-based practice process. The acronym, PICO, serves a reminder of the steps of formulating a question, gathering and assessing evidence and making decisions.

Critically Appraised Topics (CAT)
A CAT is a standardized format for summarizing and sharing information about evidence on a specific question or topic. CATs can be produced by an individual or small group. It provides a systematic way to find and critically analyze evidence around a clinical question.

The CAT is used most often in rehabilitation and medical fields and often the appraisals are shared through professional publications. It is also used as tool to teach evidence based practice to students in rehabilitation professions. The PICO process is sometimes used to gather the evidence to complete a CAT.

Systematic Reviews and Meta Analyses
Systematic reviews are a particular kind of literature review for critically reviewing and summarizing existing sources of literature on a particular topic. A specified process for review and determination of the quality of research and information about a topic is used.

A meta analysis is a type of review that statistically combines the results of several similarly designed, high quality studies to examine a question, determine effectiveness of an intervention, or look at relationships between variables. A meta analysis may also include a systematic review, but not always.

Evaluating the Evidence
Research articles may appear in a peer-reviewed publication, but the rigor of the study must still be considered as it applies to your question. Not all studies are of equal quality and a provider must consider the design, population (type and size), the analysis of findings, and the conclusions drawn from the study by the authors.

Systems of hierarchies of levels of evidence and or rating scales have been developed to help educators and service providers determine what evidence should be considered stronger than other evidence.

Levels of Evidence

Hierarchies of evidence assist practitioners in understanding the strength of the evidence provided in an article, monograph, or any other publication. The levels that follow (see next page) are common and listed in terms of most to least rigorous (adapted from Greenhalgh, 1997; Law & MacDermid 2008).
<table>
<thead>
<tr>
<th>Rigor</th>
<th>Type of Research</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 High</td>
<td>Systematic review and meta-analyses</td>
<td>The results of several studies are analyzed in standardized or statistical process and conclusions from the total are drawn</td>
</tr>
<tr>
<td>2</td>
<td>Randomized Control Trials</td>
<td>Randomly assignment or groups of participants or individuals into an intervention or non-intervention condition</td>
</tr>
<tr>
<td>3</td>
<td>Cohort studies (also called prospective studies)</td>
<td>Non-random assignment or naturally occurring groups that are followed over time. One group is exposed to the intervention, the other was not</td>
</tr>
<tr>
<td>4</td>
<td>Single subject studies</td>
<td>Measurements are taken of an individual during a baseline period followed by an intervention period. Can also include measurement in a period after cessation of the intervention</td>
</tr>
<tr>
<td>5</td>
<td>Case studies</td>
<td>Detailed, in-depth and longitudinal investigation of an individual, small group or event where data is collected and analyzed</td>
</tr>
<tr>
<td>6</td>
<td>Cross-sectional surveys</td>
<td>Survey of a population or large group at one point in time</td>
</tr>
<tr>
<td>7 Low</td>
<td>Case report</td>
<td>Description of an intervention used with an individual</td>
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Some critical questions to ask when reading papers that assist in determining if a research article can answer your question:

1. What question do I hope this article will answer?
2. What was the purpose of the study and what question were the authors addressing?
3. Was the design appropriate to answer the question?
   a. Was the design sensible?
   b. Was bias minimized?
4. What did the authors conclude?
5. Are the conclusions related to the design and original purpose of the study?
6. Does this article help to answer my question?
7. How does this article relate to the other articles I have read?
8. Are there other articles cited that I should read to answer my question?
Integrate the Evidence and Decision-Making
Decisions are made by the integration of the best available research evidence, expertise and experience of service providers; family values, beliefs, priorities, concerns, and expected outcomes.

**Best Available Research Evidence**
The process outlined above allows a provider to search for and use research evidence as a piece of the information need for decisions about practice. This information has to be integrated with the family and child characteristics and values, expectations, and the expertise of the team.

**Values**
The values, experience, and knowledge of the family, child, and the service provider are also sources of evidence that factor into decisions about early intervention practices.

**Experience and Knowledge**
Providers must still rely on their experience and knowledge in their areas of expertise to put the research evidence into context. They have knowledge of development and body systems. They may have used the intervention in the past and have ideas about how it worked with specific children in specific circumstances.

Example

![Diagram](image)

Best available evidence:
- Values and Characteristics
- Experience and knowledge
Re-Evaluate
The evaluation of the intervention or program approach is an important part of the evidence based process. Understanding how the intervention or approach worked for specific child, group or program adds to the evidence base and allows new information to be integrated into the decision making process.

Summary
The practice of early intervention is always evolving and many factors go into making decisions about what interventions are most appropriate for individual children and families. Evidence based practice gives early intervention program decision makers and services providers tools to use to find and make decisions about individual service delivery and interventions.

Resources on Evidence Based Practice in Early Intervention

Research Designs and Methods see the toolkit at http://www.teachingei.org

Research Design Tutorials

Database Tutorials:
University of California, San Francisco http://missinglink.ucsf.edu/lm/EBM_litsearch/

Resources on assessing websites:
http://www.library.cornell.edu/olinuris/ref/webcrit.html
http://mason.gmu.edu/~montecin/webcritique.htm
http://www.library.jhu.edu/researchhelp/general/evaluating

Examples of Sources of Information on Laws, Regulations, and Policies
American Bar Association, Commission on Mental and Physical Disabilities http://new.abanet.org/disability/Pages/default.aspx
wrightslaw http://www.wrightslaw.com/

Information gathering strategy resources
Patient/Problem, Intervention, Comparison, Outcome
University of Minnesota Libraries PICO Tutorial http://www.biomed.lib.umn.edu/learn/ebp/
Sample PICO worksheet, University of Southern California http://www.usc.edu/hsc/ebnet/ebframe/PICO%20Worksheet%20SS.pdf
Critically Appraised Topics (CAT)
Resources for How to Read Research Publications


Levels of Evidence Resources


Centre for Evidence-Based Medicine (CEBM) Levels of Evidence


Evidence Based Practices in Health Sciences http://ebp.lib.uic.edu/