Evidence-Based Practice Has Evolved; Have you?

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Disclosures

- PTs have always used evidence, but not necessarily systematically.

- I receive an honorarium for this talk, but do not receive any financial benefits from any of the sources or EBP services I cite.

- I am biased! I believe that the use of large data analysis, patient effectiveness research, experimental studies and qualitative research on patient experiences are required for us to practice effectively.
How do you use evidence?

- Fill a gap in knowledge or look for new ideas.
- Confirm our intuition based on prior knowledge.
- Compare our clinical choices to results of studies.
- Benchmark our outcomes against
  - Prior service patterns
  - Other clinicians
  - Other practices
- Justify clinical decisions
- Advocate for service

What do you read and how often?
Big Picture Goals

Help you employ current strategies for:

- Identifying trustworthy evidence
- Integrating evidence into practice
  - So you are efficient
  - So it matters
- Modeling evidence integration for
  - Patients
  - Other professionals
  - Student affiliates
Case in Point

- N=274 pts from 4 Intermountain Health Care OP clinics
- All used the same data recording forms for initial & d/c status and interventions provided.
- 5 classes of neck pain were associated with best available evidence for interventions: Pain control, Exercise/conditioning, mobility, centralization, headache.

<table>
<thead>
<tr>
<th></th>
<th>Initial</th>
<th>Final</th>
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</thead>
<tbody>
<tr>
<td>NDI (initial)</td>
<td>37.8 (18.3)</td>
<td>34.4 (15.9)</td>
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<tr>
<td>Pain rating (initial)</td>
<td>5.2 (2.5)</td>
<td>5.2 (2.4)</td>
</tr>
<tr>
<td>NDI (final)</td>
<td>21.4 (16.4)(^b)</td>
<td>24.4 (16.6)(^b)</td>
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<tr>
<td>Pain rating (final)</td>
<td>2.8 (2.3)(^b)</td>
<td>3.6 (2.5)(^b)</td>
</tr>
<tr>
<td>Change in NDI(^c)</td>
<td>16.4 (15.3)(^b)</td>
<td>10.1 (12.2)(^b)</td>
</tr>
<tr>
<td>Change in pain rating(^c)</td>
<td>2.3 (2.6)(^b)</td>
<td>1.6 (2.4)(^b)</td>
</tr>
<tr>
<td>% of subjects achieving minimum detectable change in NDI</td>
<td>72.5(^b)</td>
<td>53.8(^b)</td>
</tr>
</tbody>
</table>
EBP: Session Objectives

- Contrast the 5 classic steps of EBP with a 7 step model.
- Describe components of a clinically relevant, answerable question.
- Contrast evidence hierarchies, recommendation grades, and the 6S pyramid for literature searching.
- Identify current strategies for literature searching to find the strongest evidence to support practice.
- Contrast the variety of synthesized evidence products.
- Contrast levels (strength) of evidence in articles vs outcomes of interest, using standardized critical appraisal processes.
EBP: Session Objectives

1. Describe options for organizing evidence collected over time.

2. Describe methods for evidence implementation and audit for in clinical practice.

3. Describe the roles of the clinician as a knowledge broker for implementing or promoting evidence based practices within a setting for peers, patients, families and students.

4. Use the AGREE II checklist to delve into CPGs.
Ultimate endpoint...

To reduce unwarranted practice variation, and support justified variation, to deliver the right treatment, with the optimal dosage, to the right person, at the right time.
Evidence-Based Practice is the integration of Clinical Expertise, Best Available Evidence, and Patient Values to answer a question about one patient’s plan of care in order to optimize outcomes.

Sackett et al. 2000
7 phases of the Knowledge to Action Model

Researchers start here.

Clinicians start here.


For more info: http://www.cihr-irsc.gc.ca/e/40618.html
How do we move knowledge into practice?

- **Create a culture of inquiry!**
- **Access** the evidence
  - Abstracts vs full text
  - Primary studies vs synthesized products
- **Value and make time** to read evidence
- **Develop critical appraisal skills** to examine evidence
- **Develop integration strategies** to make sense of multiple sources of evidence, especially when evidence sources conflict
- **Develop and use application tools** to help integrate best practice into workflow
- **Measure outcomes** to provide feedback; when we know something works better, we use it more often.
We will focus on Access and Skills

- Create a culture of inquiry!

- **Access to evidence**
  - Primary studies vs synthesized products
  - Abstracts vs full text
  - Repositories of synthesized evidence

- Value and make time to read evidence

- **Develop critical appraisal skills to examine evidence**

- **Develop integration strategies** to make sense of multiple sources of evidence, especially when evidence sources conflict

- Develop and use application tools help integrate best practice into workflow

- Measure outcomes to provide feedback; when we know something works better, we use it more often.
EBP: Why embrace EBP processes?

EBP:
- enhances accountability to a pt. issue
- demonstrates how we make clinical decisions
  - Systematic methodology
  - Varied sources of evidence
- allows us and others to study decision making.
- Tips the balance from intuition based decisions towards evidence-based decisions.
- Increases efficiency of literature digestion.
  - Question/client specific
  - High level evidence brings the critical eyes of others

After all, what does it take to keep up?........
How Much Can One Clinician Read?

General medicine: 19 articles per night, every night. (Davidoff et al. 1995.)

OR

2.5 days of ACP Course ≈ 600 references - 15% redundancy = 510 articles ≈ 1.4 articles every night just from one CEU course!
Reported barriers to EBP use.

- Limitations of
  - Time
  - Access to databases of literature
  - Knowledge about research structures
  - Knowledge about the EBP processes
  - Relevant body of work vs sheer volume (Schreiber et al., 2009)
  - Organizational support
  - Peer group barriers or local practice culture
  - Inter-professional communications (Grimshaw et al. 2012)

- Too much to read (≈ 30K journals/yr; 3.5% increase annually)
  [Link](http://casesblog.blogspot.com/2011/03/there-are-25400-scientific-journals-and.html)

- Autonomic reactions to the word ‘research’

  My goal is to address some of these...
EBP: Review of the 5 Step Cycle

- 5 Steps
  - Step 1: Develop an answerable question
  - Step 2: Find the best evidence
  - Step 3: Critically appraise the evidence
  - Step 4: Integrate appraisal, clinical expertise, and patient circumstances into patient plan of care
  - Step 5: Evaluate outcomes

(Straus, Richardson, Glasziou & Haynes, 2005)
7 Steps of EBP

- **Step 0** - Cultivate a spirit of inquiry by asking questions about patient management.
- **Step 1**: Ask question in PICOT format
- **Step 2**: Search for best evidence
- **Step 3**: Critically appraise evidence
- **Step 4**: Integrate evidence with clinical experience and pt values/preferences.
- **Step 5**: Evaluate outcomes of practice decisions
- **Step 6**: Disseminate EBP results

Cultivating a Spirit of Inquiry

- Create opportunities for clinical question development
- Rotate assignments for finding evidence to answer questions
- Subscribe to journals; find trustworthy guidelines.
- Conduct monthly journal clubs
- Review documentation practices to determine alignment with evidence
- Encourage PT students to conduct EBP case studies.
Ask Questions

2 types of questions.

• **Background or Open-ended Questions**
  - Seeking information to understand the situation
  - Components: the 5 ‘W’ s or PIO exploration

• **Foreground Questions**
  - Seeking specific information to make a clinical decision
  - Components: PICO/T for an Answerable Question
EBP: Step 1 - **Answerable Question Construction**

- **P** A specific **Patient** or patient sample
- **I** An **Intervention/measure**
- **C** A **Comparison** intervention/measure
  (C may be optional)
- **O** An expected patient **Outcome**
  (May have more than 1 ‘O’)
EBP: Step 1- Constructing the Answerable Question - Alternative

P  A specific Patient or patient sample
E  An Exposure
C  A Comparison intervention/measure
O  An expected patient Outcome
T  Time

EBP: Step 1- The Answerable Background Question
(Descriptive - casts a wide net for information)

Example 3:

P For a 6-year-old male client with a recent complete thoracic cord injury, whose family is considering a stander

I which type of stander might be beneficial for him?

O is there research describing the positive effects of standing on bone density in people with spinal cord injuries?

(Pediatric Listserv - #2008-46)
EBP: Step 1- The Answerable Foreground Question
(Comparative - to make a decision)

Example 1:

P For a 9 y.o. child with CP (spastic quadriplegia) with increasingly tight hamstrings

I will hamstring lengthening surgery

C versus botox injections and serial casting

O Improve standing balance tolerance

O Increase step length

O Increase gait speed

Note the multiple outcomes – this will inform the evidence search.
Example 2:

P  For a 7 y.o. child with Down Syndrome who does not flex at the knees when landing a jump

I  is kinesio-taping behind the knees

C  versus use of ski boots to require ankle dorsiflexion

C  versus cueing to land quietly on one’s toes

O  more efficient for teaching knee flexion during landing of repetitive jumps?

(compiled from Pediatric Listserv discussion- #2008-47)

This outcome is clearly measurable/observable.

Note multiple ‘C’ s when there are several viable interventions to compare.
Example of an Unformatted Question

Ours is a small SCN. Usually no more than 6-7 beds. We generally have children born at 32+ weeks, or reverse transfers back to our community as well as some occasional respiratory or other infection.

I would be interested in knowing how your SCN's identify children who are to receive any of the 3 therapies: PT, OT or Speech.

Do you wait for nursery staff to identify potential needs or do you have a policy or decision tree of sorts?

(Pediatric Listserv - #2009-46)
EBP: Step 1- The Answerable Question
(Descriptive or Background When You are Searching)

PIO Formatting

P  For a small special care nursery (6-7 beds) serving children 32
weeks and older,

I  who may need services

O  how are children identified to receive PT?
O  how are children identified to receive OT?
O  how are children identified to receive ST?

(Pediatric Listserve - #2009-46)

“Waiting for nursery staff to identify potential needs” and having a “policy or
decision tree” are possible answers that can influence the search terms.

Note the absence of a ‘C’
EBP: Step 1- The Answerable Question (Comparative When You have Narrowed the Options)

PICO Formatting

P  For a small special care nursery (6-7 beds) serving children 32 weeks and older,
I  who may need services, does
C  waiting for nursery staff referrals?
C  adopting a policy?
C  or adopting a decision tree?
O  Result in faster identification of PT, OT, ST needs?

(Pediatric Listserve - #2009-46)

Now the strategies are being compared to each other.

This is an important exercise for students and colleagues who are not familiar with EBP.
EBP: Integration of Answerable Questions with the Guide to Physical Therapist Practice

- **Examination**: Find/Compare measurement tools
- **Evaluation**: Find/Compare interpretation of test results
- **Diagnosis**: Find/Compare significance of signs and symptoms
- **Prognosis**: Find/Compare predictions
- **Intervention**: Find/Compare best practice
- **Outcome**: Find/Compare expected outcomes
EBP - Step 2: Finding Evidence

- Step 1: Develop an answerable question
- **Step 2: Find the best evidence**
- Step 3: Critically appraise the evidence
- Step 4: Integrate appraisal, clinical expertise, and patient circumstances into patient plan of care
- Step 5: Evaluate outcomes
Look Familiar?
Hierarchy for assigning levels of evidence.

http://www.cebma.org/frequently-asked-questions/what-are-the-levels-of-evidence/
6S hierarchy of pre-appraised evidence: Critical for searching for evidence.

EBP: Step 2- Finding Evidence
What are we looking for? Clinical Practice Guidelines (CPGs)

Institute of Medicine standards for trustworthy CPGs:

STANDARD 5 - Establishing evidence foundations for and rating strength of recommendations
For each recommendation, the following should be provided:

- An explanation of the reasoning underlying the recommendation, including:
- A clear description of potential benefits and harms.
- A summary of relevant available evidence (and evidentiary gaps), description of the quality (including applicability), quantity (including completeness), and consistency of the aggregate available evidence.
- An explanation of the part played by values, opinion, theory, and clinical experience in deriving the recommendation.
- A rating of the level of confidence in (certainty regarding) the evidence underpinning the recommendation.
- A rating of the strength of the recommendation in light of the preceding bullets.
- A description and explanation of any differences of opinion regarding the recommendation.

EBP: Step 2- Finding CPGs

STANDARD 6
Articulation of recommendations

• 6.1 Recommendations should be articulated in a standardized form detailing precisely what the recommended action is and under what circumstances it should be performed.

• 6.2 Strong recommendations should be worded so that compliance with the recommendation(s) can be evaluated.
  
  (This means, you should be able to observe compliance with the recommended action.)

• Wording implies levels of obligation
  
  • Strong evidence - Must do?
  • Moderate evidence - Should do?
  • Weak evidence - May do?
EBP: Step 2- Finding CPGs

- **Methods for development (IOM standards)**
  - Managing conflicts of interest by GDG group
  - Guideline Development Group composition, includes clinical experts, methodologists, and patients/consumers
  - Based on systematic reviews
  - External review by stakeholders and public, with a record of all comments and GDG responses.
  - Plan for updating
EBP: Step 2 - Finding Guidelines
Where to look.

- Scottish Intercollegiate Guidelines Network [http://www.sign.ac.uk/](http://www.sign.ac.uk/)
- Guidelines International Network [http://www.g-i-n.net/library](http://www.g-i-n.net/library)
- Canadian Medical Association [http://www.cma.ca/cpgs/](http://www.cma.ca/cpgs/)
- AAP [http://pediatrics.aappublications.org/site/aappolicy/index.xhtml](http://pediatrics.aappublications.org/site/aappolicy/index.xhtml)
- CDC [http://stacks.cdc.gov/cbrowse/?parentId=cdc%3a100&pid=cdc%3a100&type=1&facetRange=960](http://stacks.cdc.gov/cbrowse/?parentId=cdc%3a100&pid=cdc%3a100&type=1&facetRange=960)
- Orthopedic Section [http://www.orthopt.org/content/c/icf_project_published_guidelines](http://www.orthopt.org/content/c/icf_project_published_guidelines)
- PTNow – ptnow.org (still populating but off to a great start)
EBP: Step 2- Finding Evidence with the National Guideline Clearinghouse
EBP: Step 2- Finding Evidence with the National Guideline Clearinghouse

<table>
<thead>
<tr>
<th>Guideline Title</th>
<th>Date Released</th>
<th>Adaptation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practice parameter: diagnostic assessment of the child with cerebral palsy; report of the Quality Standards Subcommittee of the American Academy of Neurology and the Practice Committee of the Child Neurology Society.</td>
<td>2004 Mar 23 (reaffirmed 2007 Jul 21)</td>
<td>Not applicable: The guideline was not adapted from another source.</td>
</tr>
<tr>
<td>Best evidence statement (BEST). Strengthening (progressive resistive exercise) for individuals with cerebral palsy age 4-20 years who demonstrate muscle weakness.</td>
<td>2010 Jul 26</td>
<td>Not applicable: The guideline was not adapted from another source.</td>
</tr>
</tbody>
</table>
PTNow: ArticleSearch
Clinical Summaries

A MEMBER Benefit

- ProQuest
- CINAHL
- Cochrane
- Medline
- SportDiscus
- Select section journals
Physical Therapy Management of Congenital Muscular Torticollis: An Evidence-Based Clinical Practice Guideline

December 01, 2013
Author: Kaplan SL, Coulter C, Fetters L; Section on Pediatrics of the American Physical Therapy Association

This guideline provides recommendations for identification and referral, physical therapy examination, intervention, and discharge and follow-up for infants with congenital muscular torticollis.

Access the Clinical Practice Guideline

CPG+
Appraisal Rating

How was this rating made?

Highlights

- 15 Action statements — 14 supported by moderate to strong evidence that covers screening, referral, examination, prognosis, intervention, discharge, and follow-up [p 352-355]
- Flowchart for early identification and referral for infants at risk of congenital muscular torticollis (CMT) [Figure 1, p 353]
- Decision tree that maps best practice by patient age and grade of CMT severity [Figure 2, p 354]

Check Your Practice

What change can you make today based on this guideline?

- Include the 9 specific factors for patient histories in your examination [p 362]
- Screen for the 7 red flags requiring consultation with a physician [p 364]
In a scoping search for guidelines related to pediatrics....

109 Guidance Documents dated 1990-February 2013

106 (97%) are publicly available
72 (66%) meet EBP CPG criteria
71 (65%) are on guidelines.gov
22 of 72 EBP CPGs have explicit recommendations for PT

(Tunik B & Kaplan SL, 2013 in progress)
EBP: Step 2- Finding Evidence
What else are we looking for?

**Systematic Reviews** - reviews of literature that use explicit methods to find, appraise, weight and synthesize the results of evidence relative to a particular outcome or set of outcomes.


Evidence-based Medicine Reviews in Ovid

Cochrane Collaboration [www.cochrane.org](http://www.cochrane.org)

Prospero [http://144.32.150.25/PROSPERO/](http://144.32.150.25/PROSPERO/)

Core Info (Cardiff Child Protection SRs) [http://www.core-info.cardiff.ac.uk/](http://www.core-info.cardiff.ac.uk/)

Systematic Review Data Repository (AHRQ) [http://srdr.ahrq.gov/](http://srdr.ahrq.gov/) (growing)

EBP: Step 2- Finding Synthesized Evidence

Meta-Analyses (Quantitative Systematic Review)- a method of combining data from published studies into a single data set on which statistical analyses are performed.

Evidence Based Summaries

CATs-Critically Appraised Topics
http://www.med.unc.edu/medicine/edursrc/catlist.htm
http://www.med.umich.edu/pediatrics/ebm/cat.htm
http://bestbets.org/database/browse-critical-appraisals.php

BETs - Best Evidence Topics http://bestbets.org/database/browse-bets.php

TRIP Database http://www.tripdatabase.com/

EBHC EBHealthcare Wiki http://ebhc.wikispaces.com/Pre-appraised+evidence
EBP: Step 2- Finding Evidence
Last evidence to look for!

**Journal Articles** - original studies (in print or online)

- Articles from evidence based journals
- Recent review articles
- Individual studies
- Case reports

Most prevalent, but selective access increases bias and the volume available requires a lot of time to read.
EBP: Step 2- Finding Evidence
How is it found?

EBM Websites (e.g.)

CEBM  www.cebm.utoronto.ca/resources/websites.htm

PeDRO  www.pedro.fhs.usyd.edu.au/

SumSearch ([http://sumsearch.org//](http://sumsearch.org//)) selects primary sources, SRs, and CPGs from several databases.

Proprietary Sites


[http://www.library.nhs.uk/rss/default.aspx](http://www.library.nhs.uk/rss/default.aspx) - News & research headlines

PTNow and ArticleSearch (APTA benefits!)
EBP: Step 2- Finding Evidence
How are individual studies found?

Search Engines:

**PubMED** - National Library of Medicine  

**Ovid Technologies** ([www.ovid.com](http://www.ovid.com)) accesses many indices:  
Evidence-based Medicine Reviews (EBMR), The Cochrane Library (CL), Best Evidence, CINAHL, Healthstar, Cancerlit, AIDSline, MEDLINE, Bioethicsline, ERIC, Psych Abstracts……and more.

**National Library of Health (United Kingdom)**  

**Google and Google Scholar**

By topic (dx, function, symptom); specialty (pediatrics, developmental disability, PT or OT); organization (AACPDM, AAP, UCP); type of information (guidelines, CATs, systematic reviews, etc.)

When Searching Databases

- Key words derived from the PECOT question
- Use MeSH terms (Medical Subject Heading)
- Use Boolean connectors (AND/OR/NOT in CAPS!)
- Add ‘guideline’ or ‘SR’ or ‘systematic reviews’
- Use ‘Advanced Search’ function

Let’s explore:


Set up NCBI account to keep searches, set up collections.
EBP: Step 2- Finding Evidence with Pedro

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<thead>
<tr>
<th>Title</th>
<th>Method</th>
<th>Score (/10)</th>
<th>Select Record</th>
</tr>
</thead>
<tbody>
<tr>
<td>A systematic review of the effectiveness of strength-training programs for people with cerebral palsy</td>
<td>systematic review</td>
<td>N/A</td>
<td>Select</td>
</tr>
<tr>
<td>Review of the effects of progressive resisted muscle strengthening in children with cerebral palsy: a clinical consensus exercise.</td>
<td>systematic review</td>
<td>N/A</td>
<td>Select</td>
</tr>
<tr>
<td>The effect of quadriceps femoris muscle strengthening exercises on spasticity in children with cerebral palsy</td>
<td>clinical trial</td>
<td>5/10</td>
<td>Select</td>
</tr>
<tr>
<td>Effect of perceptual motor training on gross-motor skill and self-concept of young children.</td>
<td>clinical trial</td>
<td>4/10</td>
<td>Select</td>
</tr>
<tr>
<td>Selective dorsal rhizotomy: meta-analysis of three randomized controlled trials</td>
<td>clinical trial</td>
<td>/10</td>
<td>Select</td>
</tr>
</tbody>
</table>
News Feeds, Blogs, and Twitter

- Useful for getting info ‘pushed’ to your attention.

Welcome to the Clinical Evidence email alert - September 2012

Dear Dr Kaplan,

As I noted in a previous Clinical Evidence Alert, clinical practice is more influenced by evidence than ever before. However, the application of evidence is not straightforward. It presents a challenge both to those that produce such evidence, and to those who have to interpret the results clinically.

This month sees the update of the dementia systematic review in Clinical Evidence which illustrates some of those issues. Dementia is a very important condition, particularly in light of an increasingly ageing population. One challenge is how to measure improvement with any test drug. What validated measures can be used to measure changes in cognitive or behavioural and psychological symptoms? The results may vary depending on the exact outcome measure chosen. Another challenge is interpreting those results. For example, on a 100-point scale measuring cognitive symptoms, how many points improvement represents a clinically important change?

These are some of the complexities that are covered in our updated review - you can read it online now.

Kind regards,

Dr Rubin Minhas
Editor, Clinical Evidence
BMJ Evidence Centre

evidencecentre@emails.bmjgroup.com
EBP: Step 2- Finding Evidence
What if we don’t find any publications?

In addition to OR in the absence of all above,

- Individual client **data**
- Aggregate client **data**
- Expert opinion **in combo** with data. **Evidence**

Best
Available

Watch for APTA Data Registries [http://www.ptoutcomes.com/home.aspx](http://www.ptoutcomes.com/home.aspx)

Data, data, read, data, data, read, data, data,
EBP - Step 3 Critical Appraisal

Organize in 2 directions:
Research Designs & Levels of Evidence

By Purpose of the Study
- Diagnostic Tests
- Prognostic Indicators
- Interventions

In the end, you need to make sense of your piles.
Evidence Types/Research Designs

- **EBP Clinical Practice Guidelines** – synthesized literature with explicit action statements
- **Systematic Review**: review of literature using specific transparent methodologies.
- **Meta-analysis**: analysis of combined data from multiple published sources
- **RCT**: Randomized Controlled Clinical Trial: rigorous experimental design with control group
- **Outcome Study**: Non-randomized experimental study.
- **Cohort Study**: Longitudinal prospective or retrospective study of groups with different exposures.
- **Case Control**: matching design for specific factors, with and without symptom of interest
- **Case series**: group of case reports
Research Design Modifiers

- Sample size and relevance
- Attrition
- Blinding
- Follow up: amount, time and relevance to problem
- Choice of data analyses
- Agreement among studies
- Internal validity

All contribute to the assigned evidence level.
CEBM’s Original Levels of Evidence
CEBM’s 2011 Levels of Evidence


This newer version is on CEBM site
Definitions of Levels of Evidence Vary by Organization and Evolve Over Time

Translation of evidence levels

Prior to SIGN 54 evidence was appraised using a different grading system. How the previous grading system has been translated to SIGN’s current grading system is shown below.

<table>
<thead>
<tr>
<th>Previous grading system</th>
<th>Description</th>
<th>Current grading system</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ia</td>
<td>Evidence obtained from meta-analysis of RCTs</td>
<td>1++</td>
<td>High quality meta-analysis, systematic reviews, or RCTs with a very low risk of bias</td>
</tr>
<tr>
<td>Ib</td>
<td>Evidence obtained from at least one RCT</td>
<td>1+</td>
<td>Well conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias</td>
</tr>
<tr>
<td>Ia</td>
<td>Evidence obtained from at least one well designed controlled study without randomisation</td>
<td>2+</td>
<td>Well conducted case control or cohort studies with a low risk of confounding or</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CCHMC Grading Scale</th>
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<tbody>
<tr>
<td>M</td>
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<tr>
<td>A</td>
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<td>B</td>
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<td>C</td>
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<td>D</td>
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<td>H</td>
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<td>I</td>
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<td>J</td>
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</table>

CEBM, JOSPT, SIGN, Cincinnati Children’s HMC
Organizing your findings

Once you have your pile of articles
And you have assigned a level of evidence
to the outcomes of interest,
You need a way to organize the facts.
Sample grid of lit review.

Article explains use of Sackett/evidence ratings and Application of EBP to a clinical question.

(In the reference list)
### Question 12A. What is the evidence that dietary interventions in obese adults effect a change in abdominal fat?

<table>
<thead>
<tr>
<th>Reference</th>
<th>Diet Interventions</th>
<th>Overweight defined as:</th>
<th>Adjuvant therapy</th>
<th>Intervention</th>
<th>Drop-out total</th>
<th>Mean weight change (n) mean weight change (95% CI)</th>
<th>WHR</th>
<th>Waist circumference</th>
<th>Skinfolds</th>
<th>WH</th>
<th>Waist Skinfolds</th>
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<tr>
<td>Colman 415</td>
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<tr>
<td>Randomized: unclear Self-selected: unclear Included: includes non-overweight Mean age: 60.5 Mean weight: 90.4 Female/Total: 0/99</td>
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<td></td>
<td></td>
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<tr>
<td>includes non-overweight</td>
<td>Diet: yes AHA step I goal to lose 0.35-0.5 kg/wk Exercise: no Behavioral: yes format: group, weekly</td>
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</tr>
<tr>
<td>1. Control 2. Low-fat diet</td>
<td>1.11/26 (42%) 2. 38/73 (52%)</td>
<td>Weight in kg 1. (15) 1.0 2. (35) -9.0 2vss1 -10.0 (-14.7, -5.3)</td>
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<tr>
<td>Golay 70167</td>
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<tr>
<td>Randomized: unclear Self-selected: no Included: BMI &gt;30 kg/m² History of failure to lose weight Mean age: 43 Mean weight: 104.5 Female/Total: 34/43</td>
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<tr>
<td>BMI &gt;30 kg/m²</td>
<td>Exercise: yes aerobic 120 min daily Behavioral: yes behavioral modification weekly meeting</td>
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</tr>
<tr>
<td>1. Low calorie diet with low carbohydrate 2. Low calorie diet with high carbohydrate</td>
<td>1. (22) -8 (-18.05, 2.05) 2. (21) -7 (-14.93, 0.93) 2vss1 1.0 (-7.8, 9.8)</td>
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</tr>
<tr>
<td>Citation</td>
<td>Study Design</td>
<td>Level</td>
<td>Patients/Subjects</td>
<td>Interventions</td>
<td>Comparisons</td>
<td>Data Collected</td>
<td>Tool of PROM</td>
<td>Tool for Endurance</td>
<td>Outcomes</td>
<td>Evaluation (Strengths, Weaknesses, Relevance)</td>
<td></td>
</tr>
<tr>
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<td>--------------------------------------------</td>
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</tr>
<tr>
<td>Cheng, J. C., Wong, M. W., Tang, S.P., Chen, T. M., Shum, G. L., Wong, E. M. (2001). Clinical determinants of manual stretching in the treatment of congenital torticollis in infants. A prospective study. Journal of Bone and Joint Surgery, 83A(5), 679-687.</td>
<td>Randomized prospective study</td>
<td>Level 2</td>
<td>821 infants were selected who were less than 1 year old and who were seen in the author’s torticollis clinic between 1985-1992. This was the 9th of participants after excluding infants who had another type of torticollis besides CMT.</td>
<td>Manual stretching program</td>
<td>Within the study, the authors split the participants based on: type of CMT (3 groups: postural, muscular, osteosclerotic tumor), age of presentation, age at initial assessment (1 month, 1-3 months, 3-6 months, 6-12 months), side of involvement, and birth difficulty.</td>
<td>Gender, age at presentation, side of torticollis, birth history, obstetrical data, evidence of tumor and time of disappearance of the tumor, any complications such as ecchymosis or clavicular fracture.</td>
<td>For cervical rotation and lateral flexion: Adapted standard goniometer. Two carpenter levels were attached to the stationary arm of the goniometer in a perpendicular manner. Interobserver reliability for similar instrument in two other studies yielded correlations of 0.90 to 0.96 and 0.58 to 0.89 (references provided).</td>
<td>Treatment duration (time between initial assessment and the time that full passive rotation was regained, or no further improvement after 6 months of treatment), 2, overall score at final assessment calculated by rotation deficit, age at presentation and treatment duration, 3, necessity for surgery.</td>
<td>Results showed a significant difference in recovery rate and treatment duration among the 3 different clinical groups with torticollis. Authors did not publish their pilot study. For cervical rotation and lateral flexion: Adapting the standard goniometer. Two carpenter levels were attached to the stationary arm of the goniometer in a perpendicular manner. Interobserver reliability for similar instrument in two other studies yielded correlations of 0.90 to 0.96 and 0.58 to 0.89 (references provided).</td>
<td>Strengths: Large study, prospective, specific intervention with standard protocol performed by PTs. 96% follow-up rate - good accountability. Weaknesses: Unpublished data regarding interrater reliability. Also, the intrarater reliability is weaker (correlation coefficient = 0.71). No mention of who performed measurements nor if blinded. The article comments on typical PROM for cervical rotation in infants, but no source is given.</td>
<td></td>
</tr>
<tr>
<td>Emery, C. (1994). The determinants of treatment duration for congenital torticollis.</td>
<td></td>
<td></td>
<td>Initially 181 children in study: 58 excluded b/c they did not complete x-ray films. 1 child required surgery. Therefore, 100 children did with CMT and treated at British Columbia Children's Hospital between 1989-1992. Treatment initiated prior to age 2. Parents instructed in HEP. FU visits by author.</td>
<td>At initial visit, parents instructed in specific HEP to be performed 3x/day. It consisted of 2 stretches held for 2-3 seconds each x 5 reps. Parents also educated regarding positioning and handling, possible strength exercises, and (TOT) Tubular Orthosis for Torticollis if needed.</td>
<td>Author compared treatment duration between “osteosclerotic tumor mass group” and “no mass group.” Treatment duration was the time between initial assessment and the time of disappearance of the tumor mass.</td>
<td>Age at initial assessment, side of involvement, presence of palpable mass in SCM, neck PROM for both rotation and lateral flexion.</td>
<td>Treatment duration 4.7 months for both groups. Mean duration for “mass group” = 6.9 months, and mean duration for “no mass group” = 9.9 months. Children with masses were typically younger and had more recurrences.</td>
<td>Treatment duration measured solely by the achievement of full PROM.</td>
<td>Strengths: Prospective cohort study. Specific information provided regarding the intervention. Author performed all measurements. Weaknesses: High attrition rate in study with only 100 of 181 cases accounted for at FU. Treatment program performed by parents - difficult to standardize. One outcome measure – treatment duration. No blinding. No mention of parental compliance.</td>
<td>Relevance: Even though this study is weaker than the previous, I am still impressed by the results and would use it in my practice. I especially like that the parents performed the exercises and received similar results as above, even though this is seen as weakness for standardization. For both studies, though, treatment duration is measured solely by the achievement of full PROM.</td>
<td></td>
</tr>
</tbody>
</table>
Software Options for Organizing Literature

www.mendeley.com/

www.endnote.com/

www.zotero.org/
Qualitative Assessment of the Literature You Find

• Levels of evidence apply to single studies or outcomes.

• Grades of evidence apply to the collection of evidence on a topic or outcome.
The challenge is to apply levels of evidence to specific outcomes, rather than whole publications.
EBP: Step 3- Critical Appraisal

Levels of Evidence: Research Designs

- Grading your *collection* of evidence to support an action.
  - Grade A - At least one, preferably more, Level 1 studies.
  - Grade B - At least one Level 2 randomized trial
  - Grade C - Supported by Level 3,4 or 5 evidence.
  - Grade D - Expert opinion

  - Sackett (1989)

Excellent example:

EBP - Step 3 Critical Appraisal

Organize by:

1. Research Designs & Levels of Evidence

2. Purpose of Study
   - Diagnostic Tests
   - Prognostic Indicators
   - Interventions
CEBM’s Levels of Evidence
Purpose of an Individual Study

<table>
<thead>
<tr>
<th>Grade of Recommendation</th>
<th>Level of Evidence</th>
<th>Therapy/Prevention, Xaliology/Harm</th>
<th>Prognosis</th>
<th>Diagnosis</th>
<th>Economic Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>1a</td>
<td>SR (with homogeneity) of RCTs</td>
<td>SR (with homogeneity) of inception cohort study, or a CPG validated on clinical trial</td>
<td>SR (with homogeneity) of inception cohort study, or a CPG validated on clinical trial</td>
<td>SR (with homogeneity) of Level I economic studies</td>
</tr>
<tr>
<td>1B</td>
<td>1b</td>
<td>Individual RCT (with narrow confidence interval)</td>
<td>Independent blind comparison of an appropriate group of patients, all of whom have undergone both the diagnostic test and the reference standard</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All or none</td>
<td>All or none</td>
<td>Absolute &amp; SR &amp; SR/SSD</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
</tr>
<tr>
<td>2A</td>
<td>2a</td>
<td>SR (with homogeneity) of inception cohort study</td>
<td>SR (with homogeneity) of the largest inception cohort study or one that goes beyond the group of RCTs</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
</tr>
<tr>
<td>2B</td>
<td>2b</td>
<td>Individual cohort study (including low-quality RCT, e.g., &lt; 30% power)</td>
<td>Failure of a nested study or other controlled study (e.g., RCT, CPG) validated in a trial</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;Outcome&quot; Research</td>
<td>&quot;Outcome&quot; Research</td>
<td>&quot;Outcome&quot; Research</td>
<td>&quot;Outcome&quot; Research</td>
</tr>
<tr>
<td>3a</td>
<td>3a</td>
<td>SR (with homogeneity) of case-control studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
</tr>
<tr>
<td>3b</td>
<td>3b</td>
<td>Individual Case-Control Study</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
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<tr>
<td></td>
<td></td>
<td>Case-control (and poor quality) and case-control studies</td>
<td>Case-control (and poor quality) and case-control studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
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<tr>
<td>4a</td>
<td>4a</td>
<td>SR (with homogeneity) of case-control studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
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<td></td>
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<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
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<tr>
<td>5a</td>
<td>5a</td>
<td>SR (with homogeneity) of case-control studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
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<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
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<tr>
<td>6a</td>
<td>6a</td>
<td>SR (with homogeneity) of case-control studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
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<td></td>
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<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
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<tr>
<td>7a</td>
<td>7a</td>
<td>SR (with homogeneity) of case-control studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
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<td></td>
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<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
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<tr>
<td>8a</td>
<td>8a</td>
<td>SR (with homogeneity) of case-control studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
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<td></td>
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<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
</tr>
<tr>
<td>9a</td>
<td>9a</td>
<td>SR (with homogeneity) of case-control studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
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<td></td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
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<tr>
<td>10A</td>
<td>10a</td>
<td>SR (with homogeneity) of case-control studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
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<tr>
<td></td>
<td></td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of all cohort studies</td>
<td>SR (with homogeneity) of Level 2 diagnostic studies</td>
<td>SR (with homogeneity) of Level IV economic studies</td>
</tr>
</tbody>
</table>
EBP: Step 3- Critical Appraisal of Research on Diagnostic Tests

1. **Is the test valid?**
   - Independent, blind comparison with gold standard (if one exists).
   - Appropriate spectrum of patients including ones like yours.
   - Validation of results in an independent group.

2. **What is the impact of the test results?**

   **Sensitivity** - Proportion of people with the disorder, with a positive test. \( \text{SnNout} \)

   **Specificity** - Proportion of people without the disorder, with a negative test. \( \text{SpPIn} \)

   **Likelihood Ratio** - Likelihood that a given test result would be expected in a pt with the disorder compared to likelihood that same result would be expected in pt without the disorder.
EBP: Step 3- Critical Appraisal of Research on Diagnostic Tests

3. **Is this valid, important test applicable to my patient?**
   - Available, affordable, accurate and precise for the setting?
   - Can we generate an estimate of pre-test probability for our pt. based on clinical experience, our own datasets, prevalence data.

See attached handout
EBP: Step 3
Critical Appraisal of Research on Prognosis

- **Is the evidence about prognosis valid?**
  - A representative sample of patients?
  - Early and long enough patient follow-up?
    - Subject attrition accounted for?
  - Objective outcome criteria were applied ‘blind’?
  - If subgroups with different prognoses were found:
    - Adjustment for key prognostic factors/
    - Validation in an independent group of patients?
EBP: Step 3
Critical Appraisal of Research on Prognosis

- Is the valid evidence about prognosis important?
  - How likely are the outcomes?
  - How precise are they as estimates?

- Can we apply this valid important evidence to our patient?
  - Subjects similar to ours?
  - Will the evidence make a clinically important impact on our conclusions and what to offer/tell the patient.
EBP: Step 3-Critical Appraisal of Research Articles on Interventions

- What level design is used to study the problem?
- Is the sample equivalent to your patient?
- Was there follow-up?
- What was the effect size?
- What are the values and expectations of the subjects?

CASP site – download a checklist:

http://media.wix.com/ugd/dded87_40b9ff0bf53840478331915a8ed8b2fb.pdf

Stay tuned for APTA versions of Critical Appraisal Forms
EBP: Step 3- Critical Appraisal of Systematic Reviews on Interventions

- Are the results valid?
- Do the review methods include how studies were assessed?
- Are the samples equivalent to your patient?
- What are the effect sizes?
- What are the feasibility, risks/benefits, pt values?

http://media.wix.com/ugd/dded87_a02ff2e3445f4952992d5a96ca562576.pdf
EBP: Step 3- Critical Appraisal of Intervention Guidelines

- Guidelines: combines evidence and recommendations
  - Validity
    - Is the review of literature recent?
    - Are recommendations rated according to the levels of evidence they are based on?
  - Applicability
    - Is the guideline applicable to your patient, practice setting, or culture?
AGREE II

- Appraisal tool for assessing the quality of CPGs.
- Internationally accepted
- Provides score that reflects strength of agreement with guideline standards.
AGREE II – 6 Domains

- Scope & Purpose
- Stakeholder Involvement
- Rigour of Development
- Clarity of Presentation
- Applicability
- Editorial Independence
Evidence levels

Operational definitions of grading categories

Guideline Anatomy: SIGN

KEY TO EVIDENCE STATEMENTS AND GRADES OF RECOMMENDATIONS

The definitions of the types of evidence and the grading of recommendations used in this guideline originate from the US Agency for Health Care Policy and Research and are set out in the following tables.

STATEMENTS OF EVIDENCE

<table>
<thead>
<tr>
<th>Level</th>
<th>Evidence Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ia</td>
<td>Evidence obtained from meta-analysis of randomised controlled trials.</td>
</tr>
<tr>
<td>Ib</td>
<td>Evidence obtained from at least one randomised controlled trial.</td>
</tr>
<tr>
<td>IIA</td>
<td>Evidence obtained from at least one well-designed controlled study without randomisation.</td>
</tr>
<tr>
<td>IIB</td>
<td>Evidence obtained from at least one other type of well-designed quasi-experimental study.</td>
</tr>
<tr>
<td>III</td>
<td>Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies and case studies.</td>
</tr>
<tr>
<td>IV</td>
<td>Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities.</td>
</tr>
</tbody>
</table>

GRADES OF RECOMMENDATIONS

<table>
<thead>
<tr>
<th>Grade</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Requires at least one randomised controlled trial as part of a body of literature of overall good quality and consistency addressing the specific recommendation. (Evidence levels Ia, Ib)</td>
</tr>
<tr>
<td>B</td>
<td>Requires the availability of well conducted clinical studies but no randomised clinical trials on the topic of recommendation. (Evidence levels IIA, IIB, III)</td>
</tr>
<tr>
<td>C</td>
<td>Requires evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities. Indicates an absence of directly applicable clinical studies of good quality. (Evidence level IV)</td>
</tr>
</tbody>
</table>

GOOD PRACTICE POINTS

☑ Recommended best practice based on the clinical experience of the guideline development group.
3.3.2 OBSTETRIC AND PERINATAL HISTORY
Certain complications including pre-term delivery and maternal cigarette, drug and alcohol abuse are known to be associated with ADHD/HKD.\textsuperscript{38-42}

\begin{itemize}
\item B A history should be obtained of obstetric and perinatal complications.
\end{itemize}

3.3.3 DEVELOPMENTAL HISTORY
Details of the acquisition of developmental milestones and related information about ADHD/HKD and associated problems will allow the development of a chronological picture of a child or young person’s difficulties.\textsuperscript{38}

\begin{itemize}
\item B A developmental history should be obtained to show a chronological development of difficulties.
\end{itemize}

3.3.4 FAMILY HISTORY
Details of the child’s immediate and extended family should be obtained, including a history of ADHD/HKD and psychiatric illness of any kind. There is evidence from various lines of research, including twin and adoption studies, pedigree studies and molecular genetic studies, which clearly demonstrates the contribution of genetic factors to ADHD/HKD.\textsuperscript{32, 43-48}

In families with a history of thyroid dysfunction, generalised resistance to thyroid hormone (GRTH) may be present.\textsuperscript{49} GRTH is a rare cause of ADHD/HKD and screening need not be routine.

3.3.5 FAMILY FUNCTIONING

\begin{itemize}
\item ✔ An assessment of family functioning including relationships within the family, communication patterns, parental management styles and the presence of marital conflict or stress should be explored.\textsuperscript{50}
\end{itemize}
Evolution of PT CPGs – Heel Pain Examples


Heel Pain CPG 2014


Heel Pain 2008
Physical Therapy Management
Of Congenital Muscular Torticollis:
An Evidence-based Clinical Practice Guideline

Sandra L. Kaplan PT, DPT, PhD
Colleen Coulter PT, DPT, PhD, PCS
Linda Fetters PT, PhD, FAPTA

Pediatric Physical Therapy, Winter, 2013

National Guideline Clearinghouse listing, Aug, 2014


Let’s compare formats!
## Ped PT - CPG anatomy: Levels of Evidence

<table>
<thead>
<tr>
<th>Level</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Evidence obtained from high quality diagnostic studies, prognostic or prospective studies, cohort studies or randomized controlled trials, meta analyses or systematic reviews <em>(Critical appraisal score greater than 50% of criteria.)</em></td>
</tr>
<tr>
<td>II</td>
<td>Evidence obtained from lesser-quality diagnostic studies, prognostic or prospective studies, cohort studies or randomized controlled trials, meta analyses or systematic reviews <em>(e.g. weaker diagnostic criteria and reference standards, improper randomization, no blinding, &lt;80% follow-up)</em> <em>(Critical appraisal score less than 50% of criteria.)</em></td>
</tr>
<tr>
<td>III</td>
<td>Case controlled studies or retrospective studies</td>
</tr>
<tr>
<td>IV</td>
<td>Case studies and case series</td>
</tr>
<tr>
<td>V</td>
<td>Expert opinion</td>
</tr>
</tbody>
</table>

### Ped PT - CPG anatomy: Recommendation Grades

<table>
<thead>
<tr>
<th>Grade</th>
<th>Recommendation</th>
<th>Quality of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Strong</td>
<td>A preponderance of level I studies, but at least one level I study directly on the topic support the recommendation.</td>
</tr>
<tr>
<td>B</td>
<td>Moderate</td>
<td>A preponderance of level II studies but at least one level II study directly on topic support the recommendation.</td>
</tr>
<tr>
<td>C</td>
<td>Weak</td>
<td>A single level II study at less than 25% critical appraisal score or a preponderance of level III and IV studies, including consensus statements by content experts support the recommendation.</td>
</tr>
<tr>
<td>D</td>
<td>Theoretical/Foun-</td>
<td>A preponderance of evidence from animal or cadaver studies, from conceptual/theoretical models/principles, or from basic science/bench research, or published expert opinion in peer-reviewed journals supports the recommendation.</td>
</tr>
<tr>
<td></td>
<td>damental</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>Best Practice</td>
<td>Recommended practice based on current clinical practice norms, exceptional situations where validating studies have not or cannot be performed and there is a clear benefit, harm or cost, and/or the clinical experience of the guideline development group.</td>
</tr>
<tr>
<td>R</td>
<td>Research</td>
<td>There is an absence of research on the topic, or higher-quality studies conducted on the topic disagree with respect to their conclusions. The recommendation is based on these conflicting or absent studies.</td>
</tr>
</tbody>
</table>
B. Action Statement 3: DOCUMENT INFANT HISTORY. PTs should obtain a general medical and developmental history of the infant, including eight specific health history factors, prior to an initial screening. (Evidence Quality: II, Recommendation Strength: B-Moderate)

Action Statement Profile
- Aggregate Evidence Quality: II
- Benefits: A complete history of the pregnancy, delivery, known medical conditions, ..... 
- Risk, Harm, Cost: None
- Benefit-Harm Assessment: Preponderance of Benefit
- Value Judgments: None
- Intentional Vagueness: None
- Role of Patient/Parent Preferences: Parents/caregivers can provide much of the history through interview ....
- Exclusions: None
- Supporting Evidence and Clinical Interpretation: In addition to documenting the standard intake the PT should specifically document the following birth and health history factors....
Do’s & Don’ts for Recommendations

• Don’t want a summary of the literature
  • Specific repeated movements or procedures to promote centralization are not more beneficial in reducing disability when compared to other forms of intervention (Recommendation based on weak evidence). (Neck Disability Guidelines http://www.jospt.org/issues/type.3,status.execute/collections.asp)

• Don’t want verbs that can’t be implemented or observed
  • A: Clinicians should consider utilizing specific repeated movement, exercises, or procedures to promote centralization to reduce symptoms in patients with acute low back pain with related lower extremity pain. (Low back Guidelines http://www.jospt.org/issues/type.3,status.execute/collections.asp)

• Do want a recommendation format with observable actions
  • Clinicians should not obtain radiographic imaging for patients who meet diagnostic criteria for acute rhinosinusitis, unless a complication or alternative diagnosis is suspected. Recommendation against based on diagnostic studies with minor limitations and a preponderance of benefit over harm. (Acute Sinusitis Guidelines - www.mahealthcare.com/practice_guidelines/Sinusitis.pdf)
So you complete a search:
For this *Evaluation* Question:

**P:** For a 12 year old child with CP and complaints of knee pain,

**I:** does a 2 pt change in a 10 pt. VAS

**C:** compared to a 4 point change

**O:** correlate with changes in functional measures?

We hope to find EB guidelines, systematic reviews, RCTs or large cohort studies that answer this exactly!
A Diagram of Search Topics

Hoping the search hits the target in the center.
If you don’t find your target

- Review your search terms, use synonyms.
- Expand your data bases.
- Focus on your outcome, not your interventions.
- Extrapolate from related literature

Better to have some soap box than none at all.
Just a bit of ‘buyer beware’.


What is reported in the common press and abstract may not fully represent what is reported in the results, so read the whole article!

There is already publication bias toward articles that show results, versus those that show no difference.

https://explorable.com/publication-bias

Watch http://www.youtube.com/watch?v=RKmxL8VYy0M&t=34
Don’t have time to search?

- Consider PUSH services!

- Set up your search terms and you can receive automatic updates of literature that fits your topic.

Service options:
- Google Scholar (http://scholar.google.com/)
- EvidenceUpdates (http://plus.mcmaster.ca/EvidenceUpdates/)
- Trip Database (http://www.tripdatabase.com/)
Example of Push notification

EvidenceUpdates from BMJ

Dear Dr. Kaplan:

New articles: colleagues in your discipline have identified the following article(s) as being of interest:

<table>
<thead>
<tr>
<th>Article Title</th>
<th>Discipline</th>
<th>Relevance</th>
<th>Newsworthiness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Over ground walking and body weight supported walking improve mobility equally in cerebral palsy: A randomised controlled trial. Clin Rehabil</td>
<td>Physical Medicine and Rehabilitation</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

Just click on the title to review the abstract and/or PubMed record.

Best wishes from EvidenceUpdates

Follow our Hit Parade on twitter

* Note: if you are unable to access your alert by clicking on the article link, please login directly to EvidenceUpdates at [http://plus.mcmaster.ca/EvidenceUpdates/](http://plus.mcmaster.ca/EvidenceUpdates/) and access the article under 'My Alerts' which is listed in the top panel of the EvidenceUpdates system. If you continue to experience difficulties, please contact us for further assistance.

This email is being sent by the EvidenceUpdates system at your request. Click here if you wish to disable email alerts.
Integration for EBP

Patient Values

Functional Activities

Knee Pain

Pediatric CP

Gait Studies

VAS Scales with Adults

Adult outcomes

Psychometric Studies

Pain Scales

Best Available Evidence

Clinical Expertise
EBP: Step 4- Integration & Application

Finding evidence does not require its strict application.
Step 4- Integration and Application

1. Client management generates a question.
2. Search & synthesize literature to answer question
3. Apply knowledge (or not)
4. Compare your client’s outcomes to their prior data and to the literature outcomes.
5. Objectively record new data on client.
6. Collect outcome data on similar clients.
7. Outcome data generates new questions!
EBP: Step 5- Assess Client Management & Outcomes

What do we measure?

- Patient outcomes:
  - Is the child learning faster? Achieving the goal?
  - Has functional level changed significantly.

- PT outcomes regarding patient care
  - Was my baseline documentation enough for comparison?
  - Am I focusing on outcomes found in the literature?
  - Am I using measures that are valid & reliable?

- Service Outcomes
  - What are the results for groups of pts with the same dx?
  - What strategies are most effective for the lowest cost?
EBP: Step 5- Assess EBP Outcomes

- Has EBP influenced my clinical decision making or plans of care?
- Do I ask answerable questions?
- Can I search for and find evidence?
- How time efficient am I?
- Can I critically appraise the evidence? Or use available worksheets?
- Can I integrate evidence with my patient’s preferences?
Last step! Dissemination

- Consider presenting a poster at APTAnj meetings.
- Collaborate with a PhD trained faculty member of a PT program OR
  - Public health faculty
  - Health care or business management researcher
  - Statistics faculty
- Get help setting up
  - the question
  - Data collection processes
  - Data analysis
  - Manuscript writing
- Share your successes!
EBP - There is help out there!

http://www.cche.net/usersguides/main.asp
EBP - There is more help!

http://www.cebm.net/
Fetters and Tilson, 2012
FA Davis

Explains 5 steps.

Has critical appraisal check lists at the end.

Disclosure – I receive no benefit from this referral.

EBP: Some Realities

• The number of systematic reviews and CPGs focused on rehabilitation is growing.

• There are too many journals to keep up with, so ‘topical reading’ is no longer reasonable.

• EBP does not necessarily translate to reduced cost of care, but it can justify better or individualized care.
Implementation in the Clinic

Have student affiliates do EBP in-services on a child they treat. (Pediatric Compendium for Methods: Kaplan & Fay).

Introduce guidelines and SRs for discussions or journal clubs.

Seek to answer 1 clinically relevant question on a problem that many clinicians struggle with.

Seek collaboration with academic programs that you have clinical contracts with.

Find guidelines and try to apply recommendations.

Create documentation forms that integrate recommended actions.

Read, surf, discuss, read, surf, discuss, read, surf…
What is a Knowledge Brokering (KB)?

“Knowledge brokering is about bringing people together, to help them build relationships, uncover needs, and share ideas and evidence that will let them do their jobs better.

It is the human force that makes knowledge transfer (the movement of knowledge from one place or group of people to another) more effective.”

Knowledge Brokers

• Enthusiastic for the role; actively engage others
• Readily accessible
• Dedicated time for brokering
• Understanding of the clinical and organizational contexts

Knowledge Broker Roles

- Professional development- attending CEUs; reading CPGs, following EBP method updates
- Advocate for formal acknowledgement of the KB role by organization/ administration
  - Identify and advocate for the problem (needs assessment)
  - Identify metrics that may be used to measure the problem and the effects of the KB activities
  - Advocate for designated time to carry out KB role
Knowledge Brokering

- Presentation of large group formal in-services/workshops (active learning & engagement)
- Facilitation of small group (or 1:1) discussions or problem solving
- Facilitation journal club discussions that address pt issues.
- Knowledge and resource management
  - Resource binders/hard copies
  - Web based
  - Additional materials
Knowledge Brokering

- Liaison with other stakeholders
  - Administrators, parents, IT (EMR)
- Networking with other KBs (community of practice)
- Ongoing teaching/ instruction/ accessibility
  - Individual case scenarios; videotapes
- Ongoing evaluation (metrics) with dissemination
- Translation of professional literature for patient consumption
  - Fact sheets, explanations, FYI sheets.
EBP Summary

Systematic methods for

- Asking questions
- Finding evidence
- Appraising evidence
- Applying evidence based decision
- Measuring impact of the decision

That is client focused, integrates clinical experience with practicality, increases efficiency of developing answers, and improves accountability.

Methods continue to develop!

Synthesized products under development.
Must haves!

- Culture of inquiry
- Resident knowledge broker or champion
- Access to evidence
- Time to read and discuss
- Willingness to implement changes
- Willingness to change documentation forms to align with expected behaviors
- Interest in analyzing outcomes
So to sum up our goal with Evidence!

To reduce unwarranted variation,
and support justified variation,
to deliver the right treatment,
with the optimal dosage,
to the right person,
at the right time.
Go forth and USE evidence!

Questions?

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http://www.youtube.com/watch?v=QUW0Q8tXVUc&feature=youtu.be


References


