EVIDENCE-BASED PRACTICE TOOLS FOR PRACTICING CLINICIANS
National Center for Evidence-Based Practice in Communication Disorders (N-CEP)

FINANCIAL/NON-FINANCIAL DISCLOSURES

• Financial
  • Mariel Solomon is a clinical research associate with ASHA’s National Center for Evidence-Based Practice in Communication Disorders (N-CEP) and receive a salary from ASHA.

• Non-financial
  • Mariel Solomon is an ASHA member.
LEARNING OUTCOMES

• Define and identify components of evidence-based practice
• Describe the four steps of evidence-based practice
• Define and create a PICO question
• Identify factors that may influence study quality
• Use ASHA resources to enhance evidence-based practice

AGENDA

I. Definition and importance of evidence-based practice (EBP)
II. The Four Steps of EBP Process
III. Resources for EBP
   I. External EBP resources
   II. ASHA Resources
IV. Clinical Scenarios
WHAT IS EVIDENCE-BASED PRACTICE?

External Scientific Evidence

Clinical Expertise

Client Perspective

EXTERNAL SCIENTIFIC EVIDENCE
EXTERNAL SCIENTIFIC EVIDENCE: INDIVIDUAL STUDIES

Study designs

- **Experimental**: variable(s) altered by investigator and a controlled comparison between two or more groups
- **Quasi-experimental**: non-randomized, controlled comparison
- **Non-experimental or observational**: no altered variables and no controlled comparison
EXTERNAL SCIENTIFIC EVIDENCE: OBSERVATIONAL STUDIES

Identify studies → Appraise studies → Synthesize results

Outcomes

EXTERNAL SCIENTIFIC EVIDENCE: SYNTHESIZED EVIDENCE

Systematic Reviews

Meta-Analysis

Identify studies → Appraise studies → Synthesize results → Effect size and confidence interval

Effect Size (ES) - Statistical measure of the size of a relationship that is being investigated (e.g., Cohen’s d, likelihood ratio, odds ratio)
Confidence Interval (CI) - a range of values in which the true value lies with specified probability
# EXTERNAL SCIENTIFIC EVIDENCE: SYNTHESIZED EVIDENCE VS INDIVIDUAL STUDIES

## Synthesized Evidence

**Advantages**
- Compare outcomes of studies
- Transparency
- More precise estimate of the effect of an intervention

**Disadvantages**
- Relies on an already existing body of literature
- Heterogeneity across studies

## Individual Studies

**Advantages**
- More topics available

**Disadvantages**
- Small sample size
- Methodology (poorly-designed study)
- Bias

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# EXTERNAL SCIENTIFIC EVIDENCE: CLINICAL PRACTICE GUIDELINES

- Developed by group of experts regarding specific clinical topic or population
- Optimize delivery of services
- Evidence-based recommendations
  - Recommendations based on systematically searched and appraised research literature
Evidence internal to the clinical practice (Dollaghan, 2007)

- Theoretical knowledge, clinical training, expertise
  - ASHA's Practice Portal
  - ASHA's Practice Policy documents
  - Clinical practice guidelines can be consensus-only documents or contain consensus-based recommendations

CLIENT PERSPECTIVES

- What are the opinions of the client, family, or caregiver?
  - An intervention may be supported with high-quality external evidence and clinical expertise, but the intervention does not truly fit into the client’s preferences or culture
  - Interventions address outcomes that are important to or of interest to our clients or patients
External Scientific Evidence

EBP Clinical Decision

Clinical Expertise

Client Perspective

STEPS OF EBP

Framing the Clinical Question
Finding the Evidence
Assessing the Evidence
Making the Clinical Decision
STEP 1: FRAMING THE CLINICAL QUESTION

FRAMING THE QUESTION

Population
Intervention
Comparison
Outcome
FRAMING THE QUESTION

Population:
• military veterans with acquired brain injury
• individuals with speech and language impairment

Intervention:
• diet modifications
• hearing devices
• receptive-expressive language assessments

Comparison:
• no treatment
• sham or fake treatment
• treatment-as-usual

Outcome:
• vocabulary ability
• receptive language skills
• safe swallowing

FRAMING THE QUESTION: PICO EXAMPLE

In individuals with dementia what is the effect of spaced-retrieval memory training compared to no treatment on memory skills in activities of daily living?

Population: individuals with dementia
Intervention: spaced-retrieval memory training
Comparison: no treatment
Outcome: memory skills in activities of daily living
STEP 2: FINDING THE EVIDENCE

What is the most effective treatment to improve vertigo for individuals with lateral canal benign paroxysmal positional vertigo (BPPV)?

Search Keywords
- Lateral canal BPPV
- Interventions
- Maneuvers
- Vertigo
FINDING THE EVIDENCE

ONLINE DATABASES AND RESOURCES

- Cochrane Library
- Education Resources Information Center (ERIC)
- PubMed
- ASHAWire

FINDING THE EVIDENCE

Four peer-reviewed ASHA journals
- American Journal of Audiology
- American Journal of Speech-Language Pathology
- Journal of Speech, Language, and Hearing Research
- Language, Speech, and Hearing Services in Schools

ASHA members can access; various subscriptions available for purchase by non-members

http://pubs.asha.org
STEP 3: ASSESSING THE EVIDENCE

ASSESSING THE EVIDENCE:
- Were subjects randomly allocated to intervention or control group?
- Was there blinding of assessors and clinicians?
- Was there sufficient sampling during baseline & treatment phase?
- Was there selective reporting of outcomes?
- Did participants adhere to the intervention protocol?
ASSESSING THE EVIDENCE: APPRAISING SYNTHESIZED RESEARCH

- A priori design of question and inclusion/exclusion criteria
- Comprehensive literature search
- Assessment of quality of each study and extraction of participant characteristics

Critical Appraisal tools- Oxford Centre for Evidence-Based Medicine (CEBM)
- Provided inclusion or exclusion criteria
- Assessment of quality of each study
- Summary of results provided

National Institutes of Health (NIH)
- Predefined and specified eligibility criteria
- Quality of included study rated independently by two or more reviewers
- Characteristics and results of each study included

Critical Appraisal Skills Programme (CASP)
- Authors searched thoroughly for the relevant studies
- Authors thoroughly assessed the quality of included studies
- Authors clearly reviewed and provided overall results

ASSESSING THE EVIDENCE: APPRAISING PRACTICE GUIDELINES

Appraisal Guidelines for Research and Evaluation II (AGREE; AGREE Next Steps Consortium, 2009)

Six Domains
1. Scope and Practice
2. Stakeholder Involvement
3. Rigor of Development
4. Clarity of Presentation
5. Applicability
6. Editorial Independence
STEP 4: MAKING THE CLINICAL DECISION

Making the Clinical Decision

Available Evidence

Relevance

Similar Population

Your client
BARRIERS...

- Quality of evidence
- Availability of evidence
- Time
- Amount of existing research

ASHA RESOURCES FOR EBP
ASHA PRACTICE PORTAL

- Resource for a growing list of clinical topics and professional issues
- A guide for clinical decision-making
- Used in conjunction with other resources

www.asha.org/practice-portal

ASHA EVIDENCE MAPS

- Searchable online tool
- External Scientific Evidence
- Clinical Expertise
- Client/Patient Perspectives
- From systematic reviews, meta-analyses, and clinical practice guidelines

www.asha.org/evidence-maps
What is the effect of cognitive intervention on measures of activity limitations for individuals with dementia?

In individuals with dementia, what is the effect of spaced-retrieval memory training compared to no treatment on memory skills in activities of daily living?
Recommendations from This Guideline

Evidence Ratings for This Document

External Scientific Evidence

Individuals with a possible diagnosis of dementia should be offered a referral for a comprehensive memory assessment (Evidence-Based Recommendation, Low Evidence).

"The Rowland Universal Dementia Assessment Scale (RUDAS) should be considered for assessing cognition in [culturally and linguistically diverse] populations" (Evidence-Based Recommendation, Very Low Evidence, p. 11).

Clinical Expertise

"Clinical cognitive assessment in those with suspected dementia should include examination using an instrument with established reliability and validity" (Practice Point, p. 10). Other factors known to affect performance should also be considered such as:

See More

Conclusions from This Review

Client Perspectives

Themes that emerged from the reports of patients, caregivers, and the general public, in regards to factors relevant to accepting dementia screening, were as follows:

1. "Existing health state.

See More

Summary of the Clinical Practice Guideline

Article Citation

Clinical Practice Guidelines and Principles of Care for People with Dementia


Go to Article

Sponsoring Body

National Health and Medical Research Council (NHMRC) Partnership Centre for Dealing with Cognitive and Related Functional Decline in Older People.

Article Quality Ratings

Read about Our Rating Process

AGREE Rating

Recommended with Reservations.

Article Details

Description

This guideline provides recommendations for the care of individuals with dementia including ethical issues, barriers, early identification, diagnosis, assessment, specialist services, and carer support. The recommendations were adapted from the NICE Guideline developed by the National Collaborating Centre for Mental Health in the United Kingdom. This guideline is primarily intended for health and aged care staff working with individuals with dementia in the community in residential or hospital settings.

Evidence Ratings for This Document

Evidence ratings are assigned as evidence-based, consensus-based, or practice points as follows:

- Evidence-Based Recommendation: formulated after a systematic review of the evidence with supporting references provided.
- Consensus-Based Recommendation: formulated in the absence of quality evidence, when a systematic review of the evidence has failed to identify any quality studies meeting the inclusion criteria for that clinical question.
- Practice Point: A recommendation that is outside the scope of the search strategy for the systematic evidence review and is based on expert opinion.

Additionally, evidence is graded as high, moderate, low, or very low as follows:

- High: Further research is very unlikely to change our confidence in the estimate of effect.
- Moderate: Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.
- Low: Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
QUALITY INDICATORS: EVIDENCE MAPS

Article Quality Ratings

1. Read about Our Rating Process

AGREE Rating

Highly Recommended

Article Quality Ratings

1. Read about Our Rating Process

AGREE Rating

Recommended with Provisos
Summary of the Systematic Review

Article Citation
Evaluation and Management of Oropharyngeal Dysphagia in Different Types of Dementia: A Systematic Review
Archives of Gerontology and Geriatrics, 56(1), 1-6
Go to Article

Sponsoring Body
No funding received.

Article Quality Ratings
Read about Our Rating Process

Indicators of Review Quality

<table>
<thead>
<tr>
<th>YES</th>
<th>The review states a clearly focused question/aim.</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>Criteria for inclusion of studies are provided.</td>
</tr>
<tr>
<td>YES</td>
<td>Search strategy described in sufficient detail for replication.</td>
</tr>
<tr>
<td>NO</td>
<td>Excluded studies are assessed for study quality.</td>
</tr>
<tr>
<td>NO</td>
<td>Quality assessments are reproducible.</td>
</tr>
<tr>
<td>NO</td>
<td>Characteristics of the included studies are provided.</td>
</tr>
</tbody>
</table>

Article Details

SCHOOL-BASED SLP

Marcus, 5 years old, in Kindergarten

- Existing SLP services for language disorder
- Referred for multidisciplinary evaluation for concerns of a learning disability
Population: children with language disorder and learning disability

What is the best way to assess a five year-old student with a language disorder and a suspected learning disability?

Intervention: assessment protocol

SCHOOL-BASED SLP

SLP starts with ASHA Practice Portal to gain better understanding.

Spoken Language Disorders Portal
- Scope of page focuses on oral language
SCHOOL-BASED SLP

Written Language Disorders Practice Portal

• Scope of page focuses on information about reading and writing deficits.
• Contains important considerations and key components for evaluation and treatment.

Multiple links to the related Written Language Disorders Evidence Map
SCHOOL-BASED SLP

Filter by Practice Area

Use tabs to focus on specific EBP component

Summary of the Systematic Review

Article Citation
Developing Early Literacy: A Scientific Synthesis of Early Literacy Development and Implications for Intervention
National Early Literacy Panel (2000a)
National Early Literacy Panel (2000b)
Sponsoring Body
Department of Health and Human Services, National Institute for Literacy
Article Quality Ratings
Indicators of Review Quality
Article Details
Description
This is an example of a published, peer-reviewed experimental or quasi-experimental studies investigating programs and interventions to improve early literacy. Development of young children with and without disabilities.

Questions/Issues Addressed
The research addressed the following research questions:
1. What are the risks and benefits of using literacy instruction that involves literacy activities, including writing, in the early years of a child’s life?
2. What are the risks and benefits of using literacy instruction that involves literacy activities, including writing, in the early years of a child’s life?
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Population
Children from birth to five years of age
Intervention/Assessment
Various types of early intervention (e.g., early intervention, literacy intervention, parent and home programs, preschool and kindergarten programs, language enrichment)
Number of Studies Included
190
Results
14 studies, interventions, 190 studies
Years Included
1990-2010
Conclusions from This Systematic Review

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Conclusions from This Systematic Review
SCHOOL-BASED SLP

Client Perspective
Appropriate for Marcus’ needs
Addresses family’s concerns

Scientific Evidence
Systematic review of correlated factors that can predict later literacy outcomes

Clinical Expertise
ASHA Practice Portal
Own clinical experiences

ADULT HEALTHCARE SLP

• Working in a growing hospital
• Hospital administration is initiating development of clinical pathway for stroke
  • Must be based on clinical practice guidelines
• Provide consultation on protocol for swallowing and communication
Population: Individuals hospitalized after stroke

What are the effects of speech-language pathology management on swallowing and communication outcomes in individuals hospitalized after stroke?

Outcomes: Swallowing and communication function
Recommendations for SLP services in stroke
- Screening, assessment, treatment
- Aphasia, dysphagia and more
- Recommendations are graded by strength of supporting evidence

Catalan Agency for Health Technology Assessment and Research (2007). Stroke: Clinical Practice Guideline (2nd Edition). This guideline provides recommendations for the assessment, management, and rehabilitation of acute stroke in adults. The target audiences for this guideline include professionals, managers, and planners involved in the care of adults with acute stroke. Of particular interest to speech-language pathologists is the section on assessment and intervention for aphasia, dysarthria, cognitive disorders, and dysphagia.

National Clinical Guidelines for Stroke
This is the fourth edition of the UK National Clinical Guidelines for Stroke. This guideline is an update of the 2008 version providing recommendations for the management of stroke in adult populations. The audiences intended for this guideline include clinical staff, managers, commissioners involved in the purchasing of services, as well as patients with stroke and their caregivers. Of particular interest to speech-language pathologists is a section on the management of swallowing and communication disorders. Specific recommendations were made based on the nature and strength of the evidence, or by using a formal consensus approach by the guideline working group.

Management of Adult Stroke Rehabilitation Care: A Clinical Practice Guideline
This guideline provide recommendations regarding the management and rehabilitation of individuals diagnosed with stroke. The recommendations were developed from best available evidence and consensus-based opinion and are intended to guide healthcare professionals working with this population. Of particular interest to speech-language pathologists are recommendations pertaining to general rehabilitation management, cognition, communication, and swallowing.

Assessing the Evidence
- Dysphagia (Adults)
- Aphasia
- Augmentative and Alternative Communication (AAC)
- Assessment
- Treatment
- Service Delivery

### Stroke (Adults)

**Refine By:**
- Practice Area:
  - Assessment
  - Screening
  - Service Delivery
  - Treatment
- Considerations:
  - Bilingual Considerations
  - Documentation/Goal Setting
  - Education/Training
- Diagnosis:
  - Aphasia
  - Apraxia
  - Cognitive/Linguistic Deficits
  - Dysarthria
  - Dysphagia
  - Hearing Loss/Balance Disorders
  - Right Hemisphere Disorder
- Publication Date Range

#### All Articles (94)  |  External Scientific Evidence (87)  |  Clinical Expertise (13)  |  Client Perspectives (5)

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**Constraint and Multimodal Approaches to Therapy for Chronic Aphasia: A Systematic Review and Meta-Analysis**


**Description**

This is a systematic review of experimental studies on the effects of constraint or multimodal therapy on verbal output in adults with chronic aphasia after stroke.

**Conclusions from This Review**

**External Scientific Evidence**

Evidence found for constraint therapy and multimodal therapy superior in the treatment of chronic aphasia. There was variation and ambiguity in what constitutes ‘constraint’, and evidence was variable for different communication modalities. Results were encouraging.

[See More]

Read ASHA's Article Summary | Go to Article

**Constraint-induced Aphasia Therapy in Post-Stroke Aphasia Rehabilitation: A Systematic Review and Meta-Analysis of**

[Guideline]

[Systematic Review]
Summary of the Clinical Practice Guideline

Article Citation

Guidelines for Adult Stroke Rehabilitation and Recovery: A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association

Go to Article

Read about Our Rating Process
ADULT HEALTHCARE SLP

- Synthesize recommendations for best practice from multiple clinical practice guidelines
- Consider evidence, and hospital's unique needs
- Advocate for SLP services along the stroke clinical pathway

AUDIOLOGY ADVOCACY

- Proposed Early Intervention Legislation
  - Includes funding cuts
  - Decreases program services in your local community
- Need to advocate for best practice
- Search the evidence for outcomes
Population: Infants and toddlers

Intervention: Early hearing detection and intervention programs

Comparison: Children who receive early intervention and those who do not have access to services

Outcomes: Developmental measures for hearing and communication

What are the effects of early intervention services for hearing impairments on communication and education outcomes of children with hearing impairments?

THE SEARCH BEGINS

Google Scholar

outcomes of early intervention for hearing loss

Articles

Language of early-and later-identified children with hearing loss
C Yoshinaga-Itano, AL Sedey, DK Coulter, AL Menn - Pediatrics, 1998 - Am Acad Pediatrics

From screening to early identification and intervention: Discovering predictors to successful outcomes for children with significant hearing loss
C Yoshinaga-Itano - Journal of deaf studies and deaf education, 2003 - academic.oup.com

Early intervention and language development in children who are deaf and hard of hearing
HR Werker, AE Daley - 2003 - Journal of Deaf Studies and Deaf Education
Newborn Hearing Screening

Overview

The scope of this page is hearing screening for children ages 0-6 months of age. Newborn hearing screening is but one part of a comprehensive Early Hearing Detection and Intervention (EHDI) program of service.

See the screening section of the Hearing Loss (Newborn) Evidence Map for pertinent scientific evidence, expert opinion, and clinician perspective.

Newborn hearing screening is the standard of care in hospitals nationwide. The primary purpose of newborn hearing screening is to identify newborns who are likely to have hearing loss and who require further evaluation. A secondary objective is to identify newborns with medical conditions that can cause late-onset hearing loss and to establish a plan for continued monitoring of their hearing status (Joint Committee on Infant Hearing, 2007). The EHDI guidelines include hearing screening completion by 1 month of age, diagnosis of any hearing loss by 3 months of age, hearing aid selection and fitting within 1 month of confirmation of hearing loss if parents choose that option, and entry into early intervention (EI) services by 6 months of age.

In 2014, 96.1% of babies born in the United States had their hearing screened before 1 month of age (Centers for Disease Control and Prevention [CDC], 2016), and 6,163 infants were diagnosed with permanent hearing loss. Screening programs target permanent childhood hearing loss (PCHL) irrespective of type. However, some protocols are more effective at identifying types and degrees of hearing loss within different populations (i.e., well-baby nursery or neonatal intensive care unit [NICU]).
Summary of the Systematic Review

Article Citation

The Impact of Early Identification of Permanent Childhood Hearing Impairment on Speech and Language Outcomes
Go to Article

Sponsoring Body
Welcome Trust (United Kingdom)

Article Quality Ratings

- Read about Our Rating Process
- Indicators of Review Quality
  - YES The review states a clearly focused question/aim.
  - YES Criteria for inclusion of studies are provided.
  - NO Search strategy described in sufficient detail for replication.
  - YES Included studies are assessed for study quality.
  - YES Quality assessments are reproducible.
  - YES Characteristics of the included studies are provided.

Article Details

Description
This is a systematic review investigating the effects of early hearing detection and intervention on language outcomes in children with hearing impairment.

Questions/Aims Addressed
What is the effect of early identification of hearing impairment in children on later speech and language outcomes?

The authors concluded that universal newborn hearing screening and early identification of permanent childhood hearing loss were "associated with benefits to language development in deaf children, with more consistent evidence provided for links between early identification and positive language outcomes" (p. 651).

The following key interventions were frequently associated with improvements in language development for children with a hearing loss, however the relative degree of contribution of each construct to outcomes is unclear. The underlying quality of research supporting these constructs is poor.

- "Early detection of hearing loss"
- "Parental/family/caregiver involvement"
- Parent-centered services
- Continuity of care
- Clear input and monitor
- Individually based intervention
- Group-based intervention
- Training teachers in integrated classrooms
- Studies used cut-off points for early identification of 6 months and 9 months, suggesting a time at which the ability to maximally benefit from intervention following early identification that ends before the 1st year" (p. 651).
SUMMARY

EBP
• External Scientific Evidence
• Clinical Expertise
• Client perspective

Four Steps of EBP Process
• Frame the clinical/PICO question
• Find the evidence
• Assess the evidence
• Make the clinical decision

ASHA resources are here to help you
• Evidence Maps
• Practice Portals
• ASHAWire

FOR MORE ABOUT EBP

www.asha.org/research/ebp
Evidence-based Practice Tutorials and Resources

- General EBP Information
- Framing the Clinical Question
- Finding the Evidence
- Assessing the Evidence
- Making the Clinical Decision

www.asha.org/research/ebp

REFERENCES


