Sources of Information about Evidence-Based Practices

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Abstract

This *CASEmaker* includes selected references and information on finding, evaluating, and using research-based evidence. These steps provide a foundation to ensure that interventions with children, parents, and other caregivers take into consideration current research results. The source material in this bibliography provides a foundation for early childhood intervention professionals to learn how to apply evidence-based practices (EBP) in their work with families and young children.

Introduction

The evidence-based medicine (EBM) movement began in the 1980s (Evidence-Based Medicine Working Group, 1992). EBM was defined as "the integration of best research evidence with clinical expertise and patient values" (p.1) (Sackett, Richardson, Rosenberg, & Haynes, 1997). This definition really described a decision-making process, whereby physicians systemically reviewed and considered evidence from research along with their own experience and their patients' cultural and personal preferences. The goal of this movement was to increase the use of research-based evidence in medical decisions for patients and thereby improve the quality of healthcare delivery (Rosenberg & Donald, 1995).

EBM spread through other healthcare fields, such as nursing (e.g., Hockenberry, Wilson, & Barrera, 2006; Melnyk & Fineout-Overholt, 2002) occupational therapy (e.g., Bennett & Bennett, 2000; Tickle-Degnen, 1999), physical therapy (e.g., Maher, Sherrington, Elkins, Herbert, & Moseley, 2004), and speech-language pathology (e.g., Johnson, 2006; Yorkston et al., 2001) where it became known as evidence-based practice (EBP). EBP, fueled by legislative requirements of increased accountability for all funded programs, is also gaining influence over early childhood intervention (Buysse & Wesley, 2006).

What is Evidence-Based Practice?

Buysse and Wesley (2006) defined EBP as "a decision-making process that integrates the best available evidence with family and professional wisdom and values" (p.12), using terms similar to the definition of EBM. Dunst, Trivette and Cutspec (2002), in contrast, defined evidence-based early childhood intervention as practices "informed by research, in which the characteristics and consequences of environmental variables are empirically established and the relationship directly informs what a practitioner can do to produce a desired outcome" (p.3). Both definitions have in common the identification and use of research-based evidence. Buysse and Wesley extended the EBM definition to early childhood intervention, and continue describing EBP as a decision-making process. Dunst et al. furthered the definition to include the practices early childhood practitioners ideally apply when working with families. In this definition the term "characteristics . . . of environmental variables" referred to an intervention, practice, or therapy experience. The term "consequences of environmental variables" referred to measured child or family outcomes that are directly related to the intervention. In addition to measuring consequences (outcomes) of intervention, Dunst, Trivette, and Cutspec called for specific description and measurement of the treatment, intervention, or practice to determine treatment fidelity. Further, they referred to evidence-based practices as those that establish a statistical or functional relationship between the characteristics and the consequences, and that rule out alternative explanations (Dunst, Trivette, & Cutspec, 2002). The characteristics of an intervention are particularly important when working with children in the context of their family and within natural environments, which are unique

to each child and family and cannot necessarily be replicated with large-scale studies such as those found in medicine and general education.

Based on the multiple definitions of evidence-based practice in the literature, early childhood practitioners, who are professionally trained in a variety of health and education backgrounds, may use the term evidence-based practice with different meanings. The following articles describe different conceptualizations of evidence-based practices and can help early childhood intervention practitioners expand their understanding of evidence-based practice.

Buysse, V., & Wesley, P. W. (2006). Evidence-based practice: How did it emerge and what does it really mean for the early childhood field? In V. Buysse & P. W. Wesley (Eds.), *Evidence-based practice in the early childhood field* (pp. 1-34). Washington, DC: Zero to Three.

Dunst, C. J., Trivette, C. M., & Cutspec, P. A. (2002). Toward an operational definition of evidence-based practices. *Centerscope, 1*(1), 1-10. Available at: http://www.researchtopractice.info/centerscopes/centerscope_vol1_no1.pdf

Strain, P. S., & Dunlap, G. (n.d.). Recommended practices: Being an evidence-based practitioner. Center for Evidence-Based Practice: Young Children with Challenging Behavior. Retrieved August 21, 2009, from the Technical Assistance Center for Social Emotional Intervention Web site: http://www.challengingbehavior.org/do/resources/documents/rph_practitioner.pdf

Trybus, M. (2007). Understanding scientifically based research: A mandate or decision-making tool? *Delta Kappa Gamma Bulletin,* 5-8.

U.S. Cochrane Center. (n.d.) Understanding evidence-based healthcare: A foundation for action. Available at: http://apps1.jhsph.edu/cochrane/CUEwebcourse.htm

Pre-Appraised Evidence

In order to become an evidence-based practitioner, however that is defined, early childhood practitioners need access to the latest available evidence. Practitioners can gain knowledge of the latest evidence as it applies in everyday situations through reviewing pre-appraised evidence and through reviewing research evidence directly. Healthcare systems, where EBM has been in place for some time, have established computerized decision-support systems (Haynes, 2001). Without such advanced systems, several strategies have been and are being developed in early childhood intervention to share pre-appraised evidence for specific interventions (Odom et al., 2005). One example is the *What Works Clearinghouse* website, funded by the U.S. Department of Education, which provides reports of the evidence for interventions and summaries of the research base for chosen topics (Viadero, 2004). As new research results constantly influence the evidence available, summaries of latest results and recommendations need to be frequently replaced. Articles that describe approaches to pre-appraised evidence, however, can assist early childhood practitioners in determining which resources to use. The following articles provide descriptions of two approaches.

Noyes-Grosser, D. M., Holland, J. P., Lyons, D., Holland, C. L., Romanczyk, R. G., & Gillis, J. M. (2005). Rationale and methodology for developing guidelines for early intervention services for young children with developmental disabilities. *Infants & Young Children, 18,* 119-135.

Rapport, M. J. K., McWilliam, R. A., & Smith, B. J. (2004). Practices across disciplines in early intervention. *Infants and Young Children, 17*, 32-44.

In addition to description of the approaches to pre-appraised information for practitioners, it is helpful to know about resources for finding research summaries and synopses. These resources are likely to expand as research continues in the early childhood field and efforts to support the transfer of research to practice expand. The National Early Childhood Technical Assistance Center (NECTAC) (http://www.nectac.org) is a source for finding websites that collect summaries of practices deemed to be evidence-based. At the time of this printing, the following websites contain summaries of early childhood intervention and practices that have been reviewed for their research-based evidence.

Bandolier: designed by healthcare providers; contains abstracted evidence on topics of diagnosis, epidemiology, and health economics. Contents include common child and adult health issues.
Address: http://www.medicine.ox.ac.uk/bandolier/knowledge.html

Center on the Social and Emotional Foundations for Early Learning (CSEFEL): research and evidence-based practices summaries for early childhood programs for children birth to five. Designed for caregivers and service providers; topics related to social-emotional learning and interventions.
Address: http://www.vanderbilt.edu/csefel/

Child Trends Research Briefs: publications section includes research summaries and family-friendly fact sheets.Topics include child poverty, early childhood development, education, fatherhood, health, positive development, and indicators of child well-being.
Address: http://www.childtrends.org/index.cfm

National Professional Center on Autism Spectrum Disorders: summaries of practices that meet the criteria for evidence-based practices for children and youth with autism spectrum disorders.
Address: http://www.fpg.unc.edu/~autismPDC/resources/resources_public_ebp.cfm

Promising Practices Network: descriptions of evaluated programs with positive outcomes available by age of child, type of outcomes studied, type of environment, and type of supports provided. Address: http://www.promisingpractices.net/default.asp

Research and Training Center on Early Childhood Development: includes information about effective early childhood intervention practices based on research. Articles published 2003-2006.
Address: http://www.researchtopractice.info/products.php

Trip Database - Clinical Search Engine: designed for health professionals to identify the highest quality clinical evidence for practice. This website includes a variety of health topics.
Address: http://www.tripdatabase.com/

University of Michigan evidence-based pediatrics critically appraised topics: Contains critically-appraised evidence on pediatric health topics, including health interventions for typically developing and preterm infants and children.
Address: http://www.med.umich.edu/pediatrics/ebm/topics/general.htm

Technical Assistance Center on Social Emotional Intervention for Young Children (TACSEI): designed for caregivers, service providers, and policymakers with evidence-based summaries of practices to improve the social-emotional outcomes for young children with, or at risk for, delays or disabilities.

What Works Clearinghouse: topic areas in early childhood include beginning reading, early childhood education, and English language learners.
Address: http://ies.ed.gov/ncee/wwc/

Zero to Three: includes "key topics" link for professionals summarizing evidence related to child development. Website also has parent-friendly handouts.
Address: http://www.zerotothree.org/

Strategies for Finding and Using Research-Based Evidence

Straus et al. (2005) recommended a five-step process for finding and using evidence-based information. Components of this process include: (1) developing answerable questions; (2) finding the best evidence to answer the question; (3) appraising the evidence; (4) integrating evidence, clinical experience, and family circumstances and values; and (5) evaluating the effectiveness of the process to repeat the cycle in the future. As EBP has spread through numerous fields represented in early childhood intervention, literature from medicine, allied health professions, and education, all provide information about the process of finding and applying research-based information. Many articles have been written for healthcare providers; fewer for pediatric-focused early childhood intervention providers. The following articles provide descriptions and examples of the steps involved in finding and applying evidence from different early childhood medical and educational perspectives.

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Buysse, V., Wesley, P. W., Snyder, P., & Winton, P. (2006). Evidence-based practice: What does it really mean for the early childhood field? *Young Exceptional Children, 9*(4), 2-11.

Johnson, C. J. (2006). Getting started in evidence-based practice for childhood speech-language disorders. *American Journal of Speech-Language Pathology, 15*, 20-35.

Law, M. (2000). Strategies for implementing evidence-based practice in early intervention. *Infants and Young Children, 13*(2), 32-40.

Melnyk, B. M., & Fineout-Overholt, E. (2002). Key steps in implementing evidence-based practice: Asking compelling, searchable questions and searching for the best evidence. *Pediatric Nursing, 22*, 262-266.

Developing Skills in Specific Steps of Finding and Using Research-Based Evidence

Practitioners new to finding and using research-based evidence or in the process of refining their skills may want more detailed information about the steps involved in finding and applying evidence. The following articles provide problem-solving techniques for each of the steps in the process of finding and applying evidence.

Developing Answerable Questions

Early childhood practitioners are familiar with hearing and even asking questions as often our work includes answering questions from parents or other caregivers. In the search for evidence-based practices, however, using a standardized format for asking questions has several advantages. Evidence-based medicine and nursing practitioners (Fineout-Overholt & Johnston, 2005; Straus, Richardson, Glasziou, & Haynes, 2005) advise that formulating questions in a standardized format can speed the search for answers, clarify the type of evidence that will answer the questions, and identify outcomes to measure if applying the evidence to an individual family or child situation. The following resources, from the allied health, medical, and nursing literature, describe in-depth how to develop a clear, answerable question.

Fineout-Overholt, E., & Johnston, L. (2005).Teaching EBP: Asking searchable, answerable clinical questions. *Worldviews on Evidence-Based Nursing, 2,* 157-160.

Flemming, K. (1998). Asking answerable questions. *Evidence-Based Nursing, 1*(2), 36-37.

Schlosser, R. W., Koul, R. , & Costello, J. (2007). Asking well-built questions for evidence-based practice in augmentative and alternative communication. *Journal of Communication Disorders, 40,* 225-238.

Straus, S. E., Richardson, W. S., Glasziou, P., & Haynes, R. B. (2005). Asking answerable clinical questions. In *Evidence-based medicine: How to practice and teach EBM* (3rd ed.) (pp. 13-30). Edinburgh: Elsevier.

Finding Research-Based Evidence

With a clear, concise question, early childhood practitioners can begin the process of searching for the best available evidence. Many resources exist for finding evidence to answer well-formed questions and some, such as websites with pre-appraised evidence, have been described previously. When answers cannot be found through these methods, searching primary research articles may yield research-based evidence for answering questions. Early childhood practitioners can improve efficiency and effectiveness in finding original research study results with practice and some techniques suggested in these articles:

Fineout-Overholt, E., Hofstetter, S., Shell, L., Johnston, L. (2005). Teaching EBP: Getting to the gold: How to search for the best evidence. W*orldviews on Evidence-Based Nursing*, 157-160.

Jewell, D. V. (2008). *Guide to evidence-based physical therapy practice* (pp. 45-75). Sudbury, MA: Jones & Bartlett Publishers, LCC.

Lou, J. Q., & Durando, P. (2008). Asking clinical questions and searching for the evidence. In M. Law & J. MacDermid (Eds.) *Evidence-based rehabilitation* (pp. 99-117). Thorofare, NJ: SLACK Incorporated.

Perhaps more current than articles, vendor-developed online tutorials for academic databases provide detailed instructions for using their features. These tutorials can help both new and experienced users to develop efficient search methods unique to each database. For example, EBSCO Publishing is a vendor that provides a portal, EBSCOHost, to many electronic databases, including these often used by early childhood practitioners: Academic Search Premier, CINAHL, ERIC, Health Source, and PSYCINFO. Tutorials for search strategies useful when using any of these databases through EBSCO can be found at: http://support.epnet.com/-help/?lang=en&int=ehost&TOC_ID=Always&BU=0&GU=0&SI=1&PS=0&dbs=&feature_id=none. As several possible interface options exist for access-

ing academic databases, readers are advised to check the help section(s) of currently used or available academic databases for more detailed tutorials.

Analyzing Findings

The third step in the EBP process is appraising the evidence found (Straus et al., 2005). Both pre-appraised evidence and primary research findings are of diverse quality. Further complicating the analysis of research-based evidence, researchers use many different research methodologies, and each of these methodologies has strengths and weaknesses for answering individual research questions. Early childhood interventionists must evaluate findings to determine whether they are valid and apply to the individual situation, and determine the strength of the evidence based not only on the number of studies but also their quality. Early childhood practitioners without much experience reading research may be hesitant about their ability to evaluate research reviews or original research effectively. Multiple methods already exist, however, to assist early childhood providers in assessing the quality of research evidence we find. These methods have been developed through multiple sources, including medicine, special education, and early childhood researchers. The following articles detail methods for analyzing research; some describe methods specific to research study designs. See specifically Odom, Brantlinger, Gersten et al. (2005) to learn more about research methodology.

Brantlinger, E., Jimenez, R., Klingner, J., Pugach, M., & Richardson, V. (2005). Qualitative studies in special education. *Exceptional Children, 71*, 195-207.

Dumholt, E. (2000). Questions for evaluating a research article. In *Physical therapy research: Principles and applications (2nd ed.)* pp. 455-458.W.B. Saunders; Philadelphia, PA.

Dunst, C. J., Trivette, C. M., & Cutspec, P. A. (2002). An evidence-based approach to documenting the characteristics and consequences of early intervention practices. *Centerscope, 1*(2), 1-6. Available at: http://www.researchtopractice.info/centerscopes/centerscope_vol1_no2.pdf

Gersten, R., Fuchs, L. S., Compton, D., Coyne, M., Greenwood, C., & Innocenti, M. S. (2005). Quality indicators for group experimental and quasi-experimental research in special education. *Exceptional Children, 71,* 149-164.

Harris, S. R. (1996). How should treatments be critiqued for scientific merit? *Physical Therapy, 76,* 175-181.

Henegan, C. & Badenoch, D. (2006). E*vidence-based medicine toolkit.* Malden, MA: Blackwell Publishing Ltd.

Horner, R. H., Carr, E. G., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to identify evidence-based practice in special education. *Exceptional Children, 71*, 165-179.

Odom, S. L., Brantlinger, E., Gersten, R., Horner, R. H., Thompson, B., & Harris, K. R. (2005). Research in special education: Scientific methods and evidence-based practices. *Exceptional Children, 71,* 137-148.

Tankersley, M., Cook, B. G., & Cook, L. (2008). A preliminary examination to identify the presence of quality indicators in single-subject research. *Education and Treatment of Children, 31,* 523-548.

Thompson, B. Diamond, K. E., McWilliam, R., Snyder, P., & Snyder, S. W. (2005). Evaluating the quality of evidence from correlational research for evidence-based practice. *Exceptional Children, 71*, 181-194.

Sharing Research Results with Families

In the EBP process, step 4 includes integrating evidence, clinical experience, and family circumstances and values (Straus et al., 2005). Family-centered practice is a central tenet of early childhood intervention and many early childhood practitioners are comfortable with the family's role as primary decision-maker for their child. When sharing evidence, however, practitioners may still need to learn skills regarding what, how, and when to share information. The following resources describe approaches to sharing information with families.

Bainbridge, L. A., Harris, S. R. (2005). Informed shared decision-making: A model for physical therapy education and practice. *Physiotherapy Canada, 58*, 74-81.

Nickel, R. E., & Gerlach, E. K. (2001). The use of complementary and alternative therapies by the families of children with chronic conditions and disabilities. *Infants and Young Children, 14*, 67-78.

O'Leary, K. & Scott, S. D. (2008). Supporting consumers' access to research: How nurses can help patients use evidence to make medical decisions. *Nursing for Women's Health, 12*, 476-479.

Tickle-Degnen, L. (2008). Communicating evidence to clients, managers, and funders. In M. Law & J. MacDermid (Ed.s) *Evidence-based rehabilitation (2nd ed.)* (pp. 263-285). Thorofare, NJ: SLACK, Inc.

Self-evaluation

While practitioners do need to evaluate any intervention or activities implemented as a result of this process, the original step 5 in the EBM process consisted

of evaluating the effectiveness of the process of finding and sharing evidence (Straus et al., 2005). Many of the articles above may be helpful to improve specific skills in finding and sharing evidence, but no published articles could be found to provide EBP self-reflection tools for early childhood practitioners. One chapter was found that directly addresses self-evaluation. While written for healthcare providers, early childhood interventionists may find some or all of these ideas helpful for self-evaluation:

Straus, S. E., Richardson, W. S., Glasziou, P., & Haynes, R. B. (2005). *Evidence-based medicine: How to practice and teach EBM (3rd ed.)* (pp. 247-261). Edinburgh, UK: Elsevier.

Conclusion

Evidence-based practices include both the process of finding and sharing evidence in early childhood intervention and the practice of applying evidence-based approaches when providing supports to children and families. This *CASEmaker* bibliography includes references related to conceptualization of evidence-based practice and operationalization of steps to find and use research-based evidence. The material included in the references provides a foun¬dation for understanding, finding, and implementing evidence-based practices.

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Dunst, C. J., Trivette, C. M., & Cutspec, P. A. (2002). Toward an operational definition of evidence-based practices. *Centerscope, 1*(1), 1-10. Available at http://www.researchtopractice.info/centerscopes/centerscope_vol1_no1.pdf

Evidence-Based Medicine Working Group. (1992). Evidence-based medicine: A new approach to teaching the practice of medicine. *Journal of the American Medical Association, 268,* 2420-2425.

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Haynes, R. B. (2001). Of studies, syntheses, synopses, and systems: The "4S" evolution of services for finding current best evidence. *ACP Journal Club*, A11-A13.

Hockenberry, M., Wilson, D., & Barrera, P. (2006). Implementing evidence-based nursing practice in pediatric hospital. *Pediatric Nursing, 32*(4), 371-377.

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Maher, C. G., Sherrington, C., Elkins, M., Herbert, R. D., & Moseley, A. M. (2004). Challenges for evidence-based physical therapy: Accessing and interpreting high-quality evidence on therapy. *Physical Therapy, 84,* 644-654.

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Odom, S. L., Brantlinger, E., Gersten, R., Horner, R. H., Thompson, B., & Harris, K. R. (2005). Research in special education: Scientific methods and evidence-based practices. *Exceptional Children, 71*, 137-148.

Rosenberg, W., & Donald, A. (1995). Evidence based medicine: An approach to clinical problem-solving. British Medical Journal, 310, 1122-1126. available from: http://www.bmj.com/cgi/content/full/310/6987/1122

Sackett, D. L., Richardson, W. S., Rosenberg, W., & Haynes, R. B. (1997). *Evidence-based medicine: How to practice and teach EBM*. Edinburgh, UK: Churchill Livingstone.

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Yorkston, K. M., Spencer, K., Duffy, J., Beukelman, D., Golper, L. A., Miller, R., Strand, E., & Sullivan, M. (2001). Evidence-based medicine and practice guidelines: Application to the field of speech-language pathology. *Journal of Medical Speech-Language Pathology, 9,* 243-256.

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