

Maximizing Upper Extremity Function: Integrating Our Foundations, Patients' Goals, and Evidence

Nathalie Barr lecture delivered at the ASHT Annual Meeting, San Antonio, September 2005

Joy MacDermid, PhD, PT

St. Joseph's Health, Hand and Upper Limb Center Clinical Research Laboratory, London, Ontario, Canada

In reviewing past Nathalie Barr lectures, and presidential lectures, I was struck by how these reflect a strong core foundation that has served hand therapy well in the past and addresses key issues we face today. The need for our profession to meet challenges of the current health care climate is profound. I believe that the answers are in our foundations.

OUR CORE VALUES: THE FOUNDATIONS OF ASHT

Our profession and society are so fortunate that we have been able to grow on this strong foundation of core values established by the founders. We have grown in numbers, in knowledge, in influence, and most importantly we have increased the impact we have on our patients who are experiencing pain and disability because of disorders that impair the function of the upper extremity. I believe this foundation

will continue to serve us well in the future, but like all good foundations it requires some maintenance work and occasionally a little renovation or expansion to ensure that it continues to support a growing and thriving hand therapy profession.

What I would like to reflect on is how our earliest core values as a society have charted a successful course that must be sustained if we are to provide high-quality care in the health care environment of today. I am conscious that as a young profession, we are very fortunate to have

our founders and founding members continue as contributing members to our society and profession. I beg some indulgence for my view of ASHT's thoughts and activities. One of our founders, Evelyn Mackin has often repeated this quote, "we stand on the shoulders of giants." I often think about these words and we are all wise to remember them because in both science and in clinical practice everything we do is only possible because of the foundational work done by those who came before us. However, as we stand on the shoulder of others we must also ensure that we look to the horizon, view upcoming obstacles, and chart a clear path for those who will follow us.

So it was in 1977 that Dr. Robert McFarlane, who I have had the great pleasure of working with for many years, wrote these words in a letter providing the seed grant that started our society.



Joy MacDermid, PhD, PT

"On behalf of the membership of American Society for Surgery of the Hand, I would like to extend to you, your executives and to your new Society, our sincere best wishes for a successful venture."

• Robert McFarlane, ASSH President, 1977

Correspondence and reprint requests to Joy MacDermid, PhD, PT, St. Joseph's Health, Hand and Upper Limb Center Clinical Research Laboratory, 268 Grosvenor Street, London, Ontario, Canada N6A 4L6; e-mail: <jmacderm@uwo.ca>.
doi:10.1197/j.jht.2005.11.002

The support and linkages between surgeon and therapist were a strong feature of our clinical and society work at that time and continue to be important to this day. Our 2005 presidential lecture by Donna Breger-Stanton highlighted the evolution of this relationship.

It is my personal view that our society and profession were founded on these three core values.

1. Collaboration and knowledge sharing between professions
2. Commitment to evidence-based practice
3. Commitment to patient-centered, specialized care

1. COLLABORATION AND KNOWLEDGE SHARING BETWEEN PROFESSIONS

As a clinical researcher, I am always competing for grant money to complete the research we so desperately need. Grant agencies always want to know how you are being innovative? It is their belief that improvements to health can only be achieved through innovation. Terry Light recognized the importance of innovation in his ASSH Presidential Address at this meeting, which focused on the need for ongoing innovation in hand surgery. Well, what is innovation? It can be generating an entirely new idea. It can also be taking an idea, skill, or knowledge and adapting to a new purpose. The idea of PTs and OTs working together without regard for professional boundaries was innovative in the 1970s. Today's cross-disciplinary collaboration is recognized as a means to develop new knowledge and is called a "transdisciplinary approach."

"We are told that our Society serves as a role model, depicting the first time that OTs and PTs have not only worked peacefully and constructively side-by-side, but also, have even enjoyed the experience."

• Pegge Carter OTR, Presidential Address, 1983

Initially, PT and OT had different perspectives, but worked and learned together, and what has evolved is a new body of knowledge where the patient with upper extremity disability was the focus. Of course, orthopedic and plastic surgeons did the same thing and for much the same reasons.

By choosing to blur professional boundaries and interests and work in collaboration we have put the patient first. The result has been (for our patients)—better quality of care and a unique body of hand therapy knowledge that distinguishes our profession. This is extremely important because what defines a profes-

"... Validation has been asked of us in the past, but nothing like it will be in the future."

• Presidential Address, Nancy Cannon, OTR, 1989

sion is a unique body of knowledge and skill.

It is critical to the ongoing development of the profession that we keep these two pillars of knowledge and skill strong within our society. New hand therapists will start out as PTs and OTs. We have much to teach them about our specialized body of knowledge and skill, and they have much to bring us in terms of the evolving knowledge within our parent professions. We must continue to create innovation by generating new ideas. We must also maintain contact with our parent sciences so that we can continue to be innovative by adapting emerging knowledge from our parent disciplines. For this and other reasons, it is incredibly important that we maintain a strong component of both PT and OT participation in our society.

2. COMMITMENT TO EVIDENCE-BASED PRACTICE

I am sure my bias is showing through here, but I believe this society was founded on a commitment to evidence-based practice. The importance of scientific rigor has been emphasized many times in previous society lectures.

Of course nobody was using the words evidence-based practice at that time, but actions speak louder than words. Let's take a look at some of the things that the small group of therapists who first formed ASHT did at their very first board meeting.

"When it comes to our science, we have to be vigilant in our pursuit of excellence; we have to set a high standard and we just can not accept anything less."

• 9th Nathalie Barr lecture, Kenneth Flowers, PT, CHT

- First research committee
- Discussed establishment of scientific paper session
- Research bibliography initiated
- Standardization manual developed

I would like to illustrate three examples of how this commitment to evidence has led to a strong position for hand therapy.

2a. The JOURNAL of HAND THERAPY

The JOURNAL of HAND THERAPY is the single most important indication that we are a discipline of hand therapy. Its credibility is a source of validation for all of us. Evelyn Mackin, its first editor accomplished a monumental task by getting the journal indexed by Medline. Few rehabilitation journals have achieved this level of external recognition, and it is incredibly important that when people search for evidence on hand therapy they find that we hand therapists have produced it. Dr. Robert Szabo illustrated this very nicely in his 2005 President's Invited Lecture, showing us how he found publications¹⁻³ on evidence-based practice in our journal by searching PubMed.

2b. Hand Therapy Certification

We are fortunate to have one of the most scientifically based specialization processes in the world. The process was based on a rigorous data-driven approach to practice analyses, test construction, and evaluation.⁴⁻⁷ This evidence-based process

not only serves as a model for other professional groups, but also validates our skill and knowledge externally.

2c. Scientific Approach to Clinical Assessment

The development of standards for clinical assessment⁸ and later outcome measures⁹ is incredibly important for the profession of hand therapy. Our validated assessment methods define unique elements of hand therapy science. Incorporating these standardized measures into everyday practice is the only way we can truly evaluate whether interventions are having the effects we anticipate. Birgetta Rosen (2005 Invited International Lecture) gave us a wonderful example at this meeting, how a well-structured outcome instrument can direct therapists to focus their attention on areas where clinical interventions are not achieving the desired effects and support the research that evaluates innovative new interventions to improve outcomes.

It is critical to our continued survival that we continue this commitment to using evidence to advance hand therapy practice. In today's world that means evidence-based practice.

Sackett¹⁰ defines evidence-based practice as "conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research."

I am fortunate to be on faculty at McMaster University—the birthplace of evidence-based practice and work with numerous colleagues who have a commitment to evidence-based practice in our teaching, research, and service activities. I particularly value the mentorship and collaboration I have with Mary Law. Mary

edited the first issue of the textbook, *Evidence-Based Rehabilitation*, and we are currently working together on a second edition. For those of you who have not been trained on EBP by people who really understand it and have heard that it is a "cook-book" approach, I would like to share our McMaster definition of EBP.

Evidence-based rehabilitation focuses on using research evidence, in partnership with clinical knowledge, and information from the client and their family to make decisions about rehabilitation service provision. Using evidence in practice involves creating a culture in which rehabilitation interventions are questioned and investigated, and practitioners work together to assess research information. In such a culture, research information, clinical experience and client and families' knowledge and desires are woven together to ensure that each person receives the most effective and appropriate rehabilitation services (School of Rehabilitation Science, McMaster University) www.fhs.mcmaster.ca/rehab/research/ebr.html.

I believe EBP provides a guide on how to use evidence as a means of providing high-quality care and continuing to improve your competency as a clinician. This process includes the following steps:

- Define the clinical question
- Effective search of literature
- Determine quality of studies available
- Grade the level of evidence for decision
- Communicate with patient to arrive at final decision
- Evaluate results

Step 1. Start with the patient and develop a clinical question that arises out of your interaction with the patient. Inevitably, this question will be influenced by your clinical experience and knowledge, as well as the patient's goals. To construct a clear clinical question derived from your case,

you must define the specific aspects of your patient that contribute to the question. What specific diagnostic test or treatment are you considering? What are the specific characteristics of your patient? What are the outcomes of interest? It is important to define these specific elements because this will help you narrow your search for the most relevant information.

Step 2. Select the appropriate resource(s) and conduct a search. In this electronic age, there are more resources of evidence than ever before. In fact, the problem now is information overload. It is very important to learn how to search electronic databases, and limit your search to retrieve only those studies that address the specific question you have defined. There are many sources of synthesized evidence line, systematic reviews available from the Cochrane Collaboration and electronic databases that help you search specifically for primary studies on your topic (PubMed, Pedro, OT Seeker).⁴

Step 3. Appraise the evidence to determine its quality and applicability to the specific question. The reason it is important to appraise research is that your confidence in the results of a study should be directly related to the quality of the study. When you discuss with patients what treatment interventions you recommend for them, you should be letting them know whether there is evidence to support your recommendations so that they can provide informed consent.

We usually speak about the level of evidence, as developed by Sackett.

Level 1. Meta-analyses, systematic reviews, or large, high-quality RCTs.

The randomized controlled trial (or systematic reviews of trials) is considered the highest level of evidence because this is a true experiment. Randomization controls for potential known and unknown confounders that may contaminate studies conclusions. As you go to lower levels of evidence you lose important elements of scientific rigor.

Level 2. Prospective cohort studies allow you to prospectively compare two groups or cohorts of patients, but you lose randomization. It is no longer clear whether the outcomes are related specifically to the manipulated variable, i.e., treatment, or to

other factors that contributed to how patients ended up in the separate cohorts. That is, you have lost control of potential confounders.

Level 3. Case-control studies allow you to compare the outcomes of two groups, but with retrospective data. You have lost another level of control over bias, as prospective data collection provides higher quality data, with less susceptibility to bias in reporting outcomes.

Level 4. Case series report the outcomes of a single group of patients. By losing a comparative group, you now no longer have any idea whether the outcomes achieved would have been different, if a different intervention had been selected.

Level 5. Finally, expert opinion, bench research, and theory are considered to be in the lowest level of evidence. You no longer have conclusions based on clinical data. While, this concept is more familiar now, it was quite revolutionary at that time, as it was often thought that if you proved something in the laboratory or if an expert said it was true, then that substantiated the conclusion. We now know that these sources of evidence are least likely to be valid to support clinical conclusions.

Step 4. Apply the results to the patient. EBP requires that you integrate the evidence with clinical expertise, patient preferences to arrive at a final decision—what action you will take for that particular clinical situation. EBP decision making starts with the patients and ends with the patient. Providing high-quality care requires that you interpret how the available evidence applies to your specific patient and then integrate your experience and patient values.

Step 5. Evaluate your performance—“reflective practice”. What I like about EBP practice is that it not only provides a guide on how to provide high-quality care, but also provides a model for increasing your competency as a clinician. It can be the difference between 20 years of experience and one year of experience repeated 20 times. The process of evaluating your clinical results requires a commitment to using outcome measures that reflect important aspects of outcomes—both for the direct treatment effects on impairments and also for the impacts we are hoping to have on health

and participation. It is popular today to talk about *reflective practice*. This involves an ongoing process of making observations about the outcomes of your clinical decisions, reflecting on how these might be improved, and planning to take further action to improve future outcomes. Incorporating standardized outcome measures and an evidence-based approach to practice provides a mechanism for reflective practice.

As a profession, we need to maintain our foundation! I am concerned that the commitment to what we now call evidence-based practice, so evident in our foundational activities, is not keeping pace with our expanding membership or the increasing external demands for evidence to support what we do. The number of submissions to the *JOURNAL of HAND THERAPY* has remained flat over the past few years. In 2004, eight submissions were from CHTs, all ASHT members; 18 submissions from international authors; and 31 submissions from non-ASHT members. Not one author was eligible in 2004 for the “New Author Award” presented to an ASHT member who was (for the first time) the lead author of a scientific paper published in the *JHT* (personal communication, Ken Flowers, 2005).

2d. Challenges to EBP

Certainly there are challenges to conducting EBP, but I think the largest of these is the need for more and better quality clinical evidence. To have more research, we need more hand therapists producing it. Specifically, we need more clinical researchers. Please do not think you can leave research to the academics. It is only if we see research as the professional responsibility of every hand therapist that we will collect the kind of data we need to show that hand therapy affects outcomes. Although I have recently moved into an academic position, I have spent many years in the clinic and many of my early publications were written while I was in full-time practice. We have some wonderful role models of clinical researchers in our profession, like Roz Evans^{11,12}—so know that it can be done. Our presidential lecture emphasized the importance of mentorship, and I

would encourage you to find a mentor to help with clinical research.

It is equally important that we have hand therapists who pursue advanced graduate training. It is very difficult to get federal research grants without a PhD and a strong research team. This level of funding is necessary to answer big questions, but more importantly to raise the profile of hand therapy science. We need more PhD trained hand therapy scientists and we need to keep them involved in the society.

3. COMMITMENT TO SPECIALIZED, PATIENT-CENTERED CARE

Our third core foundation is commitment to specialized, patient-centered care. In reaction to the technological focus in modern medicine that fits well with the predominant biomedical model, some have suggested that there has been a shift away from patients’ essential concerns about illness and alteration in the power structure between health care provider and patient. ASHT members have had a tradition of focusing on the patient.

“The improved function of our patients is one of the ultimate rewards of hand therapy. Hand therapy touches not only hands, but hearts, minds, and livelihoods.”

• Bonnie Olivett, OTR, CHT, Nathalie Barr lecture, 1992

“... if we never permit our high convictions and high standards for quality patient care and genuine caring to have any less importance in the future, Our professions will continue to prosper in the years to come.”

• Eighth Nathalie Barr lecture, Nancy Cannon, OTR, CHT

In today’s world, patient centeredness of care is an emerging discipline onto itself. There are explicit

descriptions of what comprises patient-centered care.¹³⁻²¹ As therapists, this is an area where we have tremendous expertise and experience. We should be leading the way in research and publication about patient-centered care. Too often we have tried to prove our value solely within the biomedical model, ignoring the vast expertise we have on other domains of health. In the spirit of EBP, it is important to consider whether patient-centered care is just a value or whether it has an impact on outcomes. In fact, it does affect outcomes. In a study of 315 patients, office visits were audiotaped and scored for patient-centered communication, and patients were asked to rate their perceptions of the patient centeredness of the visit. Positive perceptions on finding common ground were associated with better recovery from their discomfort and concern, better emotional health two months later, and fewer diagnostic tests and referrals.²¹

Like PT and OT, EBP and PCC complement each other. We need both to help patients return to full healthy participation in life activities. The end result is evidence-based patient-centered care.

I am very lucky to work with highly skilled hand therapists, surgeons in a multidisciplinary team at the Hand and Upper Limb Center in London. We are proud to provide the latest in innovative treatment. However, very few of our patients say, "I am so thankful that my doctor had a titanium implant" or "I was so relieved to find out my therapist had kinesiotape." Our patients tell us that they care about holding their baby, driving a tractor, or playing a guitar. That is where we have the greatest impact—we help the patient to return to activities that are meaningful.

I hope you believe, like I do, that the success of hand therapy is based on these three core foundations.

- Transdisciplinary knowledge sharing/collaboration,
- Evidence-based decision making, and
- Patient centeredness

We share a common bond that is our passion for hand therapy. It is our challenge to keep the torch burning, sustain our core values, and continue to advance our legacy of providing high-quality, evidence-based, patient-centered care.

REFERENCES

1. Williams RM, Westmorland MG, Schmuck G, MacDermid JC. Effectiveness of workplace rehabilitation interventions in the treatment of work-related upper extremity disorders: a systematic review. *J Hand Ther.* 2004;17:267-73.
2. MacDermid JC. The quality of clinical practice guidelines in hand therapy. *J Hand Ther.* 2004;17:200-9.
3. MacDermid JC. An introduction to evidence-based practice for hand therapists. *J Hand Ther.* 2004;17:105-17.
4. Kasch MC, Greenberg S, Muenzen PM. Competencies in hand therapy. *J Hand Ther.* 2003;16:49-58.
5. Muenzen PM, Kasch MC, Greenberg S, Fullenwider L, Taylor PA, Dimick MP. A new practice analysis of hand therapy. *J Hand Ther.* 2002;15:215-25.
6. Roth LP, Kasch MC, Fullenwider L, Mullins P, Dimick MP. The hand therapy certification examination: results of the first five years. *J Hand Ther.* 1996;9:213-7.
7. Roth LP, Dimick MP, Kasch MC, Fullenwider L, Mullins P. Practice analysis of hand therapy. *J Hand Ther.* 1996;9:203-12.
8. Fess EE. *Clinical Assessment Recommendations*. 2nd ed. Chicago, IL: American Society of Hand Therapists, 1992.
9. MacDermid JC, Turgeon T, Richards RS, Beadle M, Roth JH. Patient rating

of wrist pain and disability: a reliable and valid measurement tool. *J Orthop Trauma.* 1998;12:577-86.

10. Sackett DL. Evidence-based medicine. *Semin Perinatol.* 1997;21:3-5.
11. Evans RB. Clinical application of controlled stress to the healing extensor tendon: a review of 112 cases. *Phys Ther.* 1989;69:1041-9.
12. Evans RB. Eleventh Nathalie Barr lecture. The source of our strength. *J Hand Ther.* 1997;10:14-23.
13. Brown J, Stewart M, McCracken E, McWhinney IR, Levenstein J. The patient-centred clinical method. 2. Definition and application. *Fam Pract.* 1986;3:75-9.
14. Levenstein JH, McCracken EC, McWhinney IR, Stewart MA, Brown JB. The patient-centred clinical method. 1. A model for the doctor-patient interaction in family medicine. *Fam Pract.* 1986;3:24-30.
15. Stewart M. Towards a global definition of patient centred care. *BMJ.* 2001;322:444-5.
16. Stewart M, Brown JB, Weston WW, McWilliam CL, Freeman TR. *Patient-Centered Medicine: Transforming the Clinical Method*. Oxon, UK: Radcliffe Medical Press, 2003.
17. King G, Law M, King S, Rosenbaum P. Parents' and service providers' perceptions of the family-centredness of children's rehabilitation services. *Phys Occup Ther Pediatr.* 1998;18:21-40.
18. Lammi BM, Law M. The effects of family-centred functional therapy on the occupational performance of children with cerebral palsy. *Can J Occup Ther.* 2003;70:285-97.
19. Law M, Hanna S, King G, et al. Factors affecting family-centred service delivery for children with disabilities. *Child Care Health Dev.* 2003;29:357-66.
20. Rosenbaum P, King S, Law M, King G, Evans J. Family-centred service: a conceptual framework and research review. *Phys Occup Ther Pediatr.* 1998;18:1-20.
21. Stewart M, Brown JB, Donner A, et al. The impact of patient-centered care on outcomes. *J Fam Pract.* 2000;49:796-804.