

# Trample the Weak, Hurdle the Dead: The Tribulations of Integrating Research into Clinical Practice

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The slogan, *Trample the weak, hurdle the dead*, embosses my son's high school cross-country team's practice uniforms. Faithfully adorned by each cross-country runner, this aphorism expresses the individualism and difficulty of their sport. Ask each and they will proudly express that the demands of cross-country are consistent and inflexible, allowing no time outs, endorsing no rest periods or half times, and advocating one man or woman alone against the challenges of themselves and unpredictable yet always challenging terrain. It is my impression, that translating research into clinical practice is a real world representation of the worst and best of the quintessence of cross-country. Only, it's much, much more difficult.

Only recently have scientists began to examine the translation of evidence based knowledge to actual clinical practice<sup>1</sup>. Practicing evidence based research requires application of knowledge gained through clinical research and at present there is a wealth of information available to practitioners (both good and bad) in all healthcare domains<sup>2</sup>. Nonetheless, a disappointingly consistent finding is the gap between what is considered best practice and actual clinical care performed worldwide<sup>3</sup>.

Although the process of dissemination of best practice knowledge is poorly understood, studies have outlined notable barriers to translation<sup>4</sup>. All parties, whether centered in clinical practice, administration of patient care, academic exploration of knowledge, or dedicated to clinical research, contribute to a delayed or restrictive transition of knowledge. Either willingly or unwillingly, a clinician's

or researcher's knowledge, attitudes, and/or behaviors mold the transition of evidence to practice. Three barriers have previously been identified and deserve further exploration<sup>4,5</sup>.

### Knowledge Barriers

Many clinicians have poor access to best evidence and guidelines<sup>6</sup>. Further, the amount of material published on specific topics is too substantial for a clinician to consume<sup>7</sup>. Even tools such as systematic literature reviews provide information that is too voluminous for most clinicians that treat diagnostic classifications from a number of pathologies<sup>7</sup>.

Guidelines have been developed but suffer from a number of problems. Because guidelines are generally created from meta-analyses of RCT's, the quality of the meta-analysis and subsequent guidelines is dramatically affected by how the results of each study are reported. Several studies have demonstrated that the communication of research findings have consistently demonstrated a lack of elements allowing critical peer-review and data combination into systematic reviews and meta-analyses<sup>8,9</sup>.

Reporting delays or lack of complete published data require healthcare clinicians and policy makers to use statistical analyses, simulation studies, or dated information for treatment guidelines and subsequent care<sup>10</sup>. Some guidelines are too rigid and do not allow flexibility for treatment in patients who present with differences in symptoms<sup>3</sup>, whereas others fail to provide clinicians with the best treatment options because the guideline developers did not include those interventions. Lastly, few actually read the guidelines for care even when they do exist<sup>2</sup>. Consider the conditions of fibromyalgia and whiplash associated disorder. A

number of guidelines have been developed for both conditions yet it is unlikely that the majority of clinicians could outline the recommended suggestions for best evidence from any of the sources.

Translating knowledge through continuing education programs is also unsuccessful<sup>6</sup>. Continuing education program recipients struggle to find appropriate courses that have suitable locations, meet assigned objectives, or are evidence based<sup>11</sup>. Indeed the variety of quality today's market of smorgasbord-based continuing education greatly increases the variability of utility of the learned material. Sadly, all continuing education programs are not created equal and because no mechanism exists to filter inappropriate content, educational material is frequently consumed without recognition of value.

Another knowledge-based problem is a so-called disconnect between research findings and clinical utility<sup>6</sup>. This problem is commonly associated with basic science findings or *bench research*<sup>12</sup> but is also associated with findings that are too complex for a practicing clinician who does not have a strong research background. These terminological barriers for practitioners reduce the transferability of information and decrease the perceived value of given findings.

Lastly, conflicting findings can greatly decrease the potential transferability and use of best evidence. It is not uncommon to encounter two similar studies with widely disparate findings. Because a number of factors influence the outcome of a study, it is imperative to recognize the quality of the study design and the transferability of the findings. Checklists such as QUOROM, QUADAS, CONSORT, and others allow the consumer of the evidence to discern the quality of the evidence provided. Indeed, all evidence is

not created equal and some evidence is more compelling than others.

### Attitudinal Barriers

A number of attitudinal barriers can effect translation of evidence to clinical practice. One problem is a novel interpretation of the best evidence. For example, a novel interpretation occurs when a clinician decides to modify a test or an intervention because in his/her opinion, their modification improves the results. The novel interpretation may actually worsen the findings and certainly voids the original findings of the best evidence. Each variation demands testing and may or may not serve useful.

Regardless of experience, background, or level of training, every clinician struggles with internal perceived biases<sup>1</sup>. Perceived biases exist when a) a clinician feels his/her selection of care is better than the guideline-based suggestion; b) if the clinician feels that despite evidence supporting an intervention, his/her experiences and biases indicates the method is not useful. Studies have suggested that most clinicians have deep set uncertainties or certainties about the applicability of selected interventions and may overuse or under use treatment techniques depending on internal bias<sup>1</sup>.

One last attitudinal barrier involves the nihilistic clinician. Nihilistic clinicians feel that there are no interventions that substantially modify the outcome of a patient and do not feel that results change regardless of whether the treatment is evidence based or randomly allocated<sup>1</sup>. Nihilists tend to be egocentric, lack expectancy for dedicated pathologies or classifications, and have low self efficacy. Nihilistic behavior is more common in environments where change in patient outcome is slow such as worker's compensation or chronic pain settings.

### Behavioral Barriers

It's important to recognize that failure to translate best evidence to practice is not solely associated the clinician or researcher. Organizational barriers<sup>6,13</sup> are present because typically, no incentive exists in domains where fee for service prevails. In environments where better

care is provided, revenue and reimbursement may actually decline; better care should intuitively lead to fewer visits and less billable units.

Indeed, low patient adherence to treatments can effect translation as well<sup>6</sup>. In most cases, the amount of treatment time dedicated to one on one care with the clinician is marginal when compared to the activities performed by patients in their own settings. For example, although evidence supports the use of increased activity and directed strengthening for patients with low back pain the compliance of these interventions is often poor. Compliance is poor because the patient must perform a difficult and comprehensive strengthening program, usually daily. Poor compliance can lead to poor outcomes and a disincentive for treatment.

### More Barriers

Although not well documented, I feel the following knowledge, behavioral, and attitudinal barriers are present. Many clinicians have a poor foundation for research which leads to a lack of understanding and potentially a distrust in the findings. Secondly, regardless of foundation for research, some clinicians are apathetic toward evidence based practice and do not care to change their practice patterns. Lastly, and potentially most destructively, some clinicians refuse to accept any evidence that differs from their own dedicated care pattern. Thus, arrogance is another barrier, which can reduce the transferability of research into individual clinician's hands.

### What Seems to Work?

The good news is the future isn't completely bleak. Studies have provided tips for improving translation of evidence.

Tip number one involves getting the evidence straight<sup>1</sup>. Professional organizations should endorse their recommendations for best evidence and build a platform for dispensation throughout their professions. Organizational adoption is necessary to demonstrate a singular stance toward evidence to clinicians within the professional community and

to practitioners within other professions<sup>14</sup>. Mechanisms for driving this concept (picking the guidelines) involve synopses of evidence to further reduce the burden of sifting through volumes of material.

Tip two involves organization sponsored dissemination and measurement. Professional organizations should measure the effects of their recommendations to weigh the selection and the application elements and to determine effectiveness<sup>1</sup>. Because effusion is much slower when a number of organizations are involved, implementation of dedicated guidelines should allow for early data to self police the selected guidelines<sup>14</sup>.

Guidelines for best evidence should allow flexibility to localize treatment methods to the customized population without losing the flavor and intent of the intervention<sup>15</sup>. This allows the process (or the illusion of the process) of clinical reasoning for each patient and better buy in from each clinician.

Lastly, the use of information systems, clinical decision making software, or ontologies, has been suggested to reduce the lag associated with the marriage of identifying critical examination findings and guideline based care. Informatics specializes in information transfer and has a track record of creating innovative clinical solutions for previous problems<sup>16</sup>. As sophistication increases, third party payers will have the ability to identify selected treatments that are associated with dedicated clinical findings and will soon initiate creation of algorithms for care. It is my hope, that manual therapy remains ahead of the curve, and develops their own care pathways or provides the essentials variables we have identified that result in a useful outcome.

### Reflection

Will there be a day when everyone is using the best evidence for every patient? That's doubtful. Nonetheless, we must be proactive, vigilant, recognize the barriers to translation, and implement methods that improve clinical translation of research. We must give every opportunity for our colleagues to identify, un-

derstand, and use best evidence (decided by us), and to create an environment where evidence can flourish within *all clinics*. We need to decide how change in our patients is most effectively measured within the constructs and context of our environments<sup>17</sup>. With the accomplishment of these lofty goals we'll have our fair share of successes. All the same, in rare instances, we may be required to trample the weak (and show those who aren't ready that it really works) or hurdle the dead (once patience has run its course). Are we willing to take those losses?

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**REFERENCES**

1. Lang ES, Wyer PC, Haynes RB. Knowledge translation: Closing the evidence to practice gap. *Ann Emergency Med* 2007;49:355–363.
2. Kalassian KG, Dremsizov T, Angus DC. Translating research evidence into clinical practice: New challenges for critical care. *Crit Care* 2002;6:11–14.
3. Grol R, Wensing M. What drives change? Barriers to and incentives for achieving evidence based practice. *MJA* 2004;180:S57–S60.
4. Col N. Challenges in translating research into practice. *J Women's Health* 2005;14:87–95.
5. Higa CK, Chorpita BF. Translating research into practice. In RG Steele & TD Elkin, eds. *Handbook of Evidence-based Therapies for Children and Adolescents*. New York: Guilford, 2008.
6. Haynes B, Haines A. Getting research findings into practice. Barriers and bridges to evidence based clinical practice. *BMJ* 1998;317:273–276.
7. Partridge MR. Translating research into practice: How are guidelines implemented? *Eur Respir J* 2003;21:23s–29s.
8. Mills EJ, Wu P, Gagnier J, Devereaux PJ. The quality of randomized trial reporting in leading medical journals since the revised CONSORT statement. *Contemp Clin Trials* 2005;26:480–487.
9. Piggott M, McGee H, Feuer D. Has CONSORT improved the reporting of randomized controlled trials in the palliative care literature? A systematic review. *Palliat Med* 2004;18:32–38.
10. Becker NG, Cui JS. Estimating delay distribution from incomplete data, with application to reporting lags for AIDS cases. *Stat Med* 1997;16:2339–2347.
11. Austin TM, Graber KC. Variables influencing physical therapists' perceptions of continuing education. *Phys Ther* 2007;87:1023–1036.
12. Hait WN. Translating research into clinical practice: Deliberations from the American Association for Cancer Research. *Clin Cancer Res* 2005;11:4275–4277.
13. Bentley SM, Melville JL, Berry BD, Katon WJ. Implementing a clinical and research registry on obstetrics: Overcoming the barriers. *Gen Hosp Psychiatry* 2007;29:192–198.
14. Bradley EH, Webster TR, Baker D, et al. Translating research into practice: Speeding the adoption of innovative health care programs. *Issue Brief of the Commonwealth Fund* #724. 2004.
15. Hagedorn H, Hogan M, Smith J, et al. Lessons learned about implementing research evidence into clinical practice. *J Gen Intern Med* 2006;21:S21–S24.
16. Haynes RB, Hayward RS, Lomas J. Bridges between healthcare research evidence and clinical practice. *JAMA* 1995;2:342–350.
17. Skeat J, Perry A. Exploring the implementation and use of outcome measurement in practice: A qualitative study. *Int J Lang Commun Disord* 2008;43:110–125.