THE DASH AND *Quick*DASH

Disabilities of the Arm, Shoulder, & Hand

OUTCOME MEASURES e-BULLETIN

SUMMER 2010

The Institute for Work & Health (IWH) is pleased to send you this Summer 2010 edition of its DASH and *Quick*DASH e-bulletin.

The aim of the e-bulletin is to provide you with information about the following:

Research Updates

DASH work module (DASH-W): a potential tool for measuring at-work disability

The DASH-W shows evidence of being a reliable and valid tool for measuring on-the-job difficulties (also known as presenteeism) among workers with shoulder or elbow injuries. This four-item module appears to work just as well as three other at-work disability measures, despite its brevity. This is according to a recent study published in the *Journal of Occupational Rehabilitation*.*

"This is the first published research to look specifically at the DASH work module," says physiotherapist and lead researcher Kenneth Tang of the Mobility Program Clinical Research Unit at St. Michael's Hospital in Toronto. "It's also one of the few studies to directly compare several tools within one patient group."

The study recruited 90 injured workers attending the Sunnybrook Holland Orthopaedic and Arthritic Centre's shoulder and elbow specialty clinic operated by Ontario's Workplace Safety and Insurance Board.

DASH-W Measurement Properties:

Scoring

- 4 items, each with 5 response categories (degree of difficulty at work [none (1) to severe (5)]
- Scores range from 0 (lowest at-work disability) to 100 = (highest at-work disability)

DASH-W Scores in sample of injured workers (n=75)

- Mean (SD) = 60.8 (22.4)
- Range 0 (min) to 100 (max)
- Median = 62.5

Reliability and Validity

- Test-retest reliability of the DASH-W (Not applicable, cross-sectional study)
- Reliability Coefficient (Cronbach's alpha) = 0.89
- Construct validity:
  - DASH-W correlation [Spearman correlation (r)] with Work Limitation Questionnaire (WLQ-16) subscales:
    - WLQ time management = -0.57
    - WLQ physical demands = -0.53
    - WLQ mental-interpersonal = -0.38
    - WLQ output demands subscale = -0.39
  - DASH-W correlation [Spearman correlation (r)] with SF-36 Role Functioning Physical = -0.66
  - DASH-W correlation [Spearman correlation (r)] with DASH (30-item) = 0.47
    Note: Negative correlations for WLQ-16 and SF-36 are because these measures have reverse scoring orientation to DASH-W

These workers were asked to fill out four tools:

- the four-item DASH work module (DASH-W);
- a 16-item Work Limitation Questionnaire (WLQ-16);
- a 23-item Work Instability Scale for Rheumatoid Arthritis (RA-WIS); and
- a six-item Stanford Presenteeism Scale (SPS-6).

No tool stood out as clearly superior

"The study showed that all four measures are suitable for measuring disability at work among this group — workers with shoulder and elbow disorders," says Tang. "One didn't clearly stand out from the others." However, in the end, the researchers did point to the WLQ-16 as "the strongest and potentially most versatile" of the four.

That said, because the tools assess at-work disability from different perspectives, each may be the preferred choice in certain situations. DASH-W, for example, focuses on physical difficulties at work. "If the job is largely physical in nature and your main concern is if the worker can do the same work, at the same pace, using the same techniques, this tool may be the one to use," says Tang.

DASH-W is also well-suited as a screening device because of its brevity. "If you want a quick screening test of how the worker is doing within the work context, this tool may also be a good choice," he says.

At-work measures provide fuller picture

Measuring at-work disability through tools such as these is one more way to find out – beyond measures of pain, ability and general health — how well injured workers are doing over time. "The at-work measures can add another piece of the puzzle in terms of how injured workers are affected by their injuries, focusing on their experiences in the workplace," says Tang. "These measures can also be used as outcomes to see if health interventions are helping injured workers be more productive in their jobs."

By and large, only researchers are currently using these tools. However, the aim is to eventually have clinicians use them as well. "There is growing recognition among clinicians that measuring at-work disability provides a fuller understanding of the impact of injuries," says Tang.

* Tang K, Pitts S, Solway S, Beaton D. Comparison of the psychometric properties of four at-work disability measures in workers with shoulder or elbow disorders. *Journal of Occupational Rehabilitation*. 2009; 19:142-154.

FAQs

Q. Is it better to use the DASH or the *Quick*DASH?

A. Both tools are valid, reliable and responsive and can be used for clinical and/or research purposes. However, because the full DASH Outcome Measure provides greater precision, it may be the best choice for clinicians who wish to monitor arm pain and function in individual patients.

Q. Can the DASH and *Quick*DASH be translated into other languages?

A. Yes, but in order to have a translation that can be called the "DASH/*Quick*DASH," a specific protocol must be followed. Guidelines for cross-cultural translation, which are available through the Institute for Work & Health, have been published by Guilleman (1999) and Beaton (2000) and are used internationally as accepted standards for translations. The Institute reviews the procedures used for translation and grants approval. This process is time-consuming and resource intensive, so check with the Institute for approved translations before embarking on this process. To date, official translations are available in 27 languages. See the following link http://www.dash.iwh.on.ca/translate.htm for a complete list of the cross-cultural adaptations completed on the DASH/*Quick*DASH.

Q. I found a version of the DASH in an article that is not on your website. Why is that?

A. There are unofficial versions of the DASH. By unofficial, we mean that the authors may have made changes to the response options from a 5-point scale to a visual analog scale or they may have created their own shortened form and still called it the DASH or modified DASH. We work to provide the DASH free of charge and unfortunately we cannot support modified versions of the DASH. When you download the DASH, you agree to retain its original format. In order to help us

deliver accurate information about the tool's performance, we need to focus only on the sanctioned versions. The cost of testing and maintaining every unofficial modification would be too much for us to manage. Particularly when the original versions (DASH and *Quick*DASH) seem, based on the testing by our group and by others, to be doing quite well.

Updates on interpreting DASH scores

Q. How do I interpret DASH scores for my individual patients?

A. The purpose of the DASH measure is two-fold. The first is to describe different subgroups of people (that is, to be a discriminative measure); to be able to discriminate between individuals or groups to compare the impact of upper-limb disorders. For example, the DASH scores should be different for those who can and cannot work. The second purpose is to evaluate or assess change over time (that is, to be an evaluative measure).

One common approach for assessing magnitude of change is using MCID (Minimal Clinically Important Difference) or the MDC (Minimal Detectable Change). The minimum clinically important difference (MCID) is considered the smallest change or difference in an outcome measure that is perceived to be important. Work is ongoing to establish the MCID for the DASH. There are different methods and viewpoints (patient, clinicians) that may be used to determine the MCID and it is important to realize that we are not expecting there to be only one MCID for the DASH. Recent work by Beaton (2001) suggests that a change in DASH score exceeding 15 points is the most accurate change score for discriminating between improved and unimproved patients. This and other indicators place the MCID at, or below, our current understanding of the minimal detectable change (MDC) at the 95% confidence level (MDC95). The MDC can be computed at varying confidence levels and is the minimum change score that must be observed before a clinician can be confident that a change in patient status has occurred rather than measurement error. An individual level change below the MDC is difficult to interpret and since some MCID work is placing the MCID at approximately the same value as the MDC95, it is reasonable to consider the MDC95 as an interim proxy for the MCID. Beaton (2001) has reported the MDC95 for the DASH to be 12.7 points.

Other methods for interpreting your patient's outcomes might include focusing on the final state. Some researchers have introduced the concept of reaching a threshold for a successful endpoint (or final state). When the final score is looked at for its interpretability, we would suggest using anything less than the mean DASH score in a general population. Normative data for the DASH tool has been collected in a large general population survey conducted by the American Academy of Orthopaedic Surgeons (AAOS) (Hunsaker 2002). In this paper, the mean DASH score for the general population is 10.1.

For even more detail, you can purchase a new DASH manual, 3rd edition (http://www.dash.iwh.on.ca/manual.htm) where there is a chapter on "Interpreting DASH scores for individual patients – what does the score mean?" The new manual should be available in January 2011.

References

Beaton DE, Davis AM, Hudak P, McConnell S. The DASH (Disabilities of the Arm, Shoulder and Hand) outcome measure: What do we know about it now? *British Journal of Hand Therapy* 2001; 6(4):109-118

Hunsaker FG, Cioffi DA, Amadio PC, Wright JC, Caughlin B. The American Academy of Orthopaedic Surgeons' Outcomes Instruments – Normative Values from the General Population. *Journal of Bone and Joint Surgery* 2002;84-A(2):208-215.

Q. Are you better or has your health state shifted?

A. Sometimes change is not the focus. The MCID work above really focuses on the interpretation of change scores (see above "How do I interpret DASH scores for my individual patients?". A bigger change score means you are better! However, how often do our patients tell us that they are better when they can do X – be it use a certain tool, open jars or hold their children. These are final states.

Work by Jacobson (1999) however reminds us that we need two things to declare that a person has responded to treatment. First we need to induce a change (our treatment has caused a change) and second the change must put the person/patient in a good place. The good place could be within normal values or for example no longer in the range of scores expected for people who are depressed. In order to achieve both of these, Jacobson's work has suggested we combine the MDC (change above which it is not likely just day-to-day variability in score) and final state (landing within the general population norms on the DASH for example).

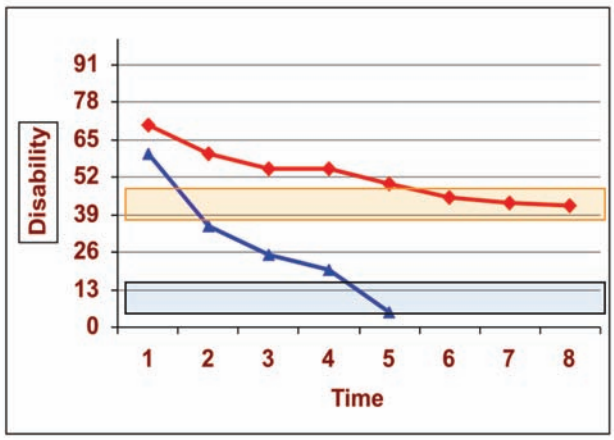


Figure. Plots to aid in understanding recovery over time

We believe this is what clinicians are doing when they are looking at the graphs over time (see Figure above of disability scores plotted over time). They can see change (and we can tell them when that is greater than the MDC by the shaded bars in the figure above) and they can see how close the person is to normal values. In addition, they are able to get a sense of how fast someone reached their goals. Here, clinical intuition meets measurement sciences. Comparisons between the combined approaches and the MCID show that the combined approach is less sensitive to subtle change (as expected) and more specific in its ability to pick up true improvement (Beaton, submitted).

Beaton DE, Van Eerd D, Smith P, van der Velde G, Cullen K, Kennedy CA, Hogg-Johnson S, Mazumder A. Interpretability of serial changes of health status: a direct comparison of three approaches suggests final state or combined change and state are most accurate. Manuscript submitted.

Jacobson NS, Roberts LJ, Berns SB, McGlinchey JB. Methods for defining and determining the clinical significance of treatment effects: description, application, and alternatives. *Journal of Consulting and Clinical Psychology* 1999; 67(3):300-307.

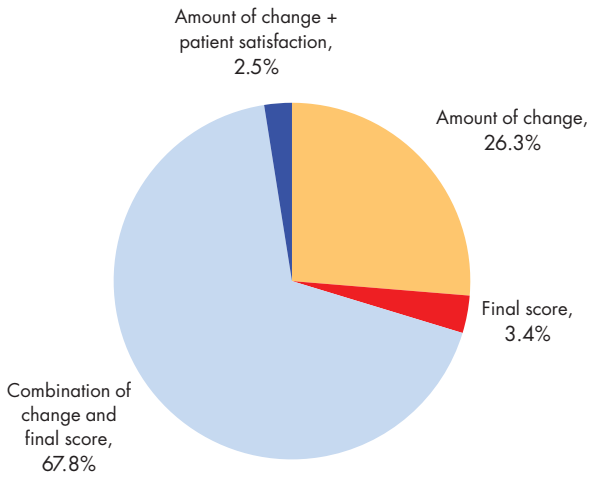
2009 DASH Survey

We recently did a DASH survey in which we asked DASH users about how they think about their patient's/client's progress:

Almost 70 per cent reported that they think about a combination of the fact that the patient/client has changed AND their final scores (final state). Twenty-six per cent reported that they think about how much the patient/client has changed. Fewer reported thinking only about the final score (3.4%). We also included an option to report other responses in which three respondents (2.5%) reported that they think about the amount of change plus the level of patient satisfaction.

These responses further support the work of Jacobson (1999) and Beaton (submitted) above. [See chart below for the distribution of responses to this question]

How DASH users think about patient/client progress (n=118)



Translation News

Translations in Progress

Translations of the DASH and *Quick*DASH into the following languages are currently in progress:

Amharic language
Contact: Dr. Wim Brandsma, ALERT
Addis Ababa, Ethiopia
jwbrandsma@gmail.com

Hindi language
Contact: Saurabh Mehta, McMaster University
Hamilton, Ontario, Canada
mehtas8@mcmaster.ca

Kannada (India) language
Contact: Shweta Agarwal, Manipal University
Karnataka, India
shweta.agrwl@gmail.com

Malaysian (Malaysia) language
Contact: Ameer Al-Husuny, University of Putra
Selangor, Malaysia
ameer_alhusuny@yahoo.com

Sinhala (Sri Lanka) language
Contact: G. Amara Damayanthi Perera, (Burns unit) National Hospital of Sri Lanka
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Spanish (Mexico) language
Contact: Linda Forst, University of Illinois at Chicago
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Tamil (India) language
Contact: Praveen Bhardwaj, Ganga Hospital
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Please frequently check the DASH website for availability: www.dash.iwh.on.ca/translations.

Links

DASH website:
http://www.dash.iwh.on.ca

Frequently Asked Questions:
http://www.dash.iwh.on.ca/faq.htm#thirteen

Translations:
http://www.dash.iwh.on.ca/translate.htm

Conditions of Use:
http://www.dash.iwh.on.ca/conditions.htm

Recommendations for the Cross-Cultural Adaptation of Health Status Measures (PDF, 393KB):
http://www.dash.iwh.on.ca/assets/images/pdfs/xculture2002.pdf

How to translate the *Quick*DASH or DASH Outcome Measure:
http://www.dash.iwh.on.ca/translate2.htm

Orthopaedic Scores:
http://www.orthopaedicscore.com/

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