

# DISABILITY MEDICINE

The Official Periodical of the American Board  
of Independent Medical Examiners

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## DISABILITY MEDICINE - THE QUEST CONTINUES

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The response to the inaugural Issue of *Disability Medicine* was both positive and overwhelming. From your mail and personal conversation it was obvious that there is a great interest in a periodical that focuses on the issues facing the field of Disability Medicine in general and the Independent Medical Examinations in particular. Every article of the Inaugural issue received comment. Obviously the article on Fibromyalgia received the most attention, as there is passion on both sides. Impairment and disability resulting from the claims of these various controversial diagnoses continues to be a challenge for Independent Medical Examiners because of the polemic nature of the problem. Everything about these various controversial diagnoses engenders controversy except for the suffering it causes. It is my sincere hope that colleagues from all sides of debate would not lose sight of the isolation, frustration, and marginalization of these patients, which need to be addressed by the clinicians.

Some of the comments from our international readers, particularly from Europe and Australia underscored my conclusion that the challenges facing the

practitioner of disability medicine are without border and that our colleagues performing Independent Medical Examinations and impairment and disability assessment down under and elsewhere in the industrialized world face some of the same issues as we deal with regularly including controversial diagnoses, misuse and abuse of benefit systems and legal challenges.

The more recent attention by public and legislators in some jurisdiction regarding Independent Medical Examinations about all aspects of these examinations including qualification and credentials of examiner, fee structures, ethics- shows that the subject stirs up deep emotions because it affects the way the resources of benefit systems are distributed, and it affects our perception of fairness and justice.

In this regard, I should note that a sense of trust and open communication are the essential ingredients in gaining acceptance for the IME process. There obviously is a distinct need for education and credentialing of the Independent Medical Examiner. What is needed above all is an unbiased, evenly balanced process and a dialogue between industry, politics, and the



public. The ultimate aim of helping people and serving society must never be lost from sight.

The past decade has shaped our organization and made it what it is today. We can look back with pride on our relatively short past, which has shown that the American Board of Independent Medical Examiners has always adapted itself successfully to the demand of the evolving environment of Disability Medicine. In this regard, ABIME's certified doctors have

petitioned the Board of Directors in the past for an alternate pathway for re-certification without examination. After considerable deliberation the Board of Directors in its recent meeting unanimously agreed to an alternate Re-certification pathway without examination. The initial certification by ABIME would still require certification examination; however, the 5-year re-certification process would have an alternate pathway without examination but with rigorous requirement of

continuous education and training. This new pathway would be an alternate option to the current re-certification examination, which would remain available. The details will be available shortly.

**Mohammed I. Ranavaya, M.D., M.S.,  
FRCPI, FFOM, FAADep, CIME,  
Professor, Marshall Univ.  
Joan C. Edward, School of Medicine,  
Huntington, West Virginia**

## GENERAL INFORMATION – DISABILITY MEDICINE, VOLUME 1, NUMBER 2

*Disability Medicine* is an educational publication of the American Board of Independent Medical Examiners (ABIME) intended to provide a forum for dissemination of a wide range of responsible scholarly opinions, research, and practice relevant to Independent Medical Examiners and disability medicine. The editors and all contributors to *Disability Medicine* enjoy a full latitude in expressing opinions on the subjects presented to better inform the readers. The views expressed by contributors are not necessarily those of the American Board of Independent Medical Examiners. *Disability Medicine* does not endorse or sponsor any articles, but rather presents them for the information and education of its readers.

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**Manuscripts** should be addressed to Mohammed I. Ranavaya, MD, Editor-in-chief of *Disability Medicine*, RR 4, and Box 5C, Chapmanville, WV 25508. Fax (304)-855-9442, e-mail: mranavayamd@newwave.net.

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## MOTIVATION DETERMINATION (SINCERITY OF EFFORT): THE PERFORMANCE APGAR MODEL

Alan L. Colledge, MD, FAADEP  
Medical Director  
Labor Commission of Utah  
Salt Lake City, Utah  
Sports Medicine and Orthopedic  
Associates  
Provo, Utah

Edward B. Holmes, MD, MPH  
Chief Medical Consultant  
Utah Disability Determinations Services  
for Social Security  
University of Utah  
Rocky Mountain Center for  
Occupational and Environmental Health  
Salt Lake City, Utah  
Send Correspondence to:  
9581 Hillsborough Heights Rd.  
Sandy, Utah 84092  
HolmesCo1@aol.com  
801-321-6522

E. Randolph Soo Hoo, MD, MPH, FACOEM  
Chief Medical Consultant, Arizona DDSA  
Regional Medical Director, Union Pacific  
Railroad  
Tucson, Arizona

Richard E. Johns Jr., MD, MSPH,  
FACOEM, FAADEP, CIME  
Medical Director  
Alliant Techsystems  
Professor (Clinical)  
Department of Family & Preventive  
Medicine  
University of Utah School of Medicine  
Salt Lake City, Utah

John Kuhnlein, DO, MPH, FACPM,  
FACOEM  
President ORCA, PC  
Corporate Medical Consultant  
IBP, Inc.  
Fitness for Duty Medical Director  
Union Pacific Railroad  
Omaha, Nebraska

Scott DeBerard, PHD  
Assistant Professor  
Department of Psychology  
Utah State University  
Logan, Utah

### ABSTRACT:

**Background:** Making an objective determination of the amount of effort an individual expends to recover from injury or illness is an essential component in making stability and capability statements. Individuals, whose effort and motivation are less than optimal may over use treatment, have increased medical costs, more disability payments, and a prolonged recovery. This paper presents a new standardized reporting methodology, referred to as the *Performance APGAR*, that is a comprehensive summary of current methods used to measure the amount of personal commitment and effort the patient has expended to improve their condition.

**Methods:** Various experts in the field of impairment and disability evaluation did an extensive literature review and developed a consensus method to better evaluate the motivation and effort of the patient and the role of that effort in determining Residual Functional Capacity (RFC) and predicting recovery.

**Results:** The authors developed the *Performance APGAR* model as an acronym that provides an easy to remember method to estimate patient motivation, credibility and effort.

**Conclusions:** The authors conclude that the *Performance APGAR* model provides clinicians a new, easy method to uniformly measure patient motivation and effort. *Performance APGAR* scores can be measured at each visit, over a series of visits or at final impairment rating. The authors feel that further research will validate the proposal that motivation and effort are key factors in predicting recovery and RFC.

### INTRODUCTION:

Physicians are more frequently being asked to determine an individual's physical, mental or social abilities, for either temporary or permanent conditions. Those requesting this information include: Social Security, State Welfare, Employment Security, Labor Commissions, Vocational Rehabilitation, Driver's License Divisions, employers, insurance companies, workers' compensation, short and long term disability, and loan deferment plans among others. The ability to accurately measure the amount of effort expended by a patient to improve their condition is a critical determination. It is particularly critical that medical providers quantify a patient's effort so that administrators can appropriately allocate limited disability funds. In 1996, direct medical



costs for persons with disability were estimated to be \$260 billion.<sup>1</sup> As the applicant pressures increase for different disability policies, there is a growing and significant need for a comprehensive instrument that reliably measures effort. In 1992 there were approximately 3,200,000 individuals in pay status under the SSA Disability Insurance program. By the first of 2001, this number had grown to approximately 5,100,000.<sup>2</sup> US employers have seen their costs for work-related injuries and associated disabilities increase from \$2.1 billion in 1960 to an annual estimated total cost of \$171 billion a year.<sup>3</sup> Currently the average cost of a lost-time work related injury is more than \$20,000.<sup>4</sup> Medically determined physical abilities statements are the first step toward the final administrative disposition as to whether a person is determined qualified for some type of disability benefit. These ability decisions carry heavy legal and ethical responsibilities as fitness for duty decisions are often directly related to the individual's earning capacity and/or disability benefits. In making capability statements, physicians should be cognizant that returning individuals to gainful employment is one of the most potent therapeutic and rehabilitative modalities available. Work promotes independence and is essential to a person's self-respect and quality of life.<sup>5</sup> Resumption of work has also been

shown to be a significant part of the treatment for an injury or illness, even benefiting patients suffering from chronic pain.<sup>6,7,8,9</sup> Conversely, prolonged time away from work makes recovery, and eventually returning to work progressively less likely.<sup>10,11</sup> Studies have shown that workers who return to their original employer are usually better off financially than workers who choose other options, such as alternative vocational rehabilitation plans that include retraining or new job placement.<sup>12,13</sup> Effective accomplishment of returning impaired individuals to work often requires the combined efforts, of the individual, health care provider, and employer, to carefully evaluate the patient's ability and then, if necessary, consider efforts to provide reasonable accommodations.<sup>14</sup> In order to complete accurate fitness for duty reports, stability statements, and residual functional capacity (RFC) determinations, clinicians need to consider and report the motivation and effort of the patient. All experienced clinicians have noted that the same physical condition or impairment can cause widely divergent levels of functional loss in different individuals. This difference in functional loss among individuals can often be attributed to motivation and patient effort. Many clinicians have noted with consternation the difference in recovery times and final capability between an

injured elite athlete and other patients. As a general rule, elite athletes with severe joint injuries are highly motivated to return to full functional capacity. On the other hand, some injured individuals, for various reasons, have less motivation to return to full functional capacity in a timely fashion.

A review of the medical literature demonstrates that compensation benefits alone can significantly affect motivation toward recovery.<sup>15,16,17,18,19,20</sup> All parties involved in the recovery of a patient receiving compensation, should recognize the unique set of expectations, critical periods and specific needs that must be met to attain return-to-work status. Current research has shown conclusively that in cases of delayed recovery, nonphysical factors are often present directly impacting the injured individual's motivation.<sup>21,22,23,24,25,26,27</sup> There might be a single factor or a combination of factors present, i.e. social, emotional, neurotic, economic and even sometimes-vindictive motives. Beneath this lies the original physical complaint that maintains the disability compensation payment.

Epidemiological studies reveal distinct characteristics in the occupational and psychological profiles of people disabled by soft tissue injuries, particularly low back pain.<sup>28,29,30,31,32,33,34,35,36,37,38,39,40,41,42</sup> For example, job dissatisfaction, monotony and stress are



common characteristics. Persons facing these problems are more likely to suffer from depression, anxiety, hypochondriasis and hysteria. These nonbiological factors have an even greater impact on motivation when the patient retains an attorney and becomes a legal claimant.<sup>43,44</sup> Once this happens the patient is obligated to prove and preserve injury or illness. To improve physically jeopardizes the ability to prevail in a suit. Additionally, the patient's own credibility is placed at risk. Hence, the impairment continues and may even worsen throughout the litigation process, even in the absence of any objective medical basis for the impairment.

In addition to motivation and effort, disability programs such as social security have attempted, through policy, to determine the actual credibility of the alleged pain or limitations and their legitimate effect on RFC.<sup>45</sup> Although the authors feel the determination is probably better labeled a "consistency assessment", the term "credibility" will be used in this paper since it is used in the Social Security Administration (SSA) regulations. In the context of this paper and in SSA regulations, *credibility* refers to the degree to which the statements of symptom-related functional restrictions are believed. Credibility does not refer to the integrity of the individual.

In order to simplify and justify assessments of motivation, effort and credibility, the authors have developed the *Performance APGAR*. Originally developed by Virginia Apgar in 1951, to measure a newborn's health, others in the literature have built on this model as a basis for other types of measures.<sup>46,47,48,49</sup> Bigos et al concluded that a simple work APGAR score yielded significant predictive validity with regard to future reports of back pain.<sup>50</sup> Most APGAR models are rated on a scale of 0-10, with 10 representing normal. As with others, this *Performance APGAR* score is scaled from 0 to 10 and can be used to quantify effort at the initial visit, as a summary of progress at subsequent visits, or on the final determination of RFC.

### MOTIVATION DETERMINATION — THE PERFORMANCE APGAR

Motivation and effort can conceivably be plotted along a continuum with the physiologic bone ligament complex responses to loading conditions<sup>51,52</sup> and with psychosocial factors determining how one performs in relationship to these physiological limits. Elite athletes perform much closer to their physiological limits than most persons.

Effort has been shown to be influenced by multiple factors, including illness, injury, personality, coping style, self-esteem, associates, environment and self-confidence.<sup>53</sup> Due to the complex

nature of the mental, social and physical demands of work; objective measurement of effort and motivation is a difficult task. Effort measurements are particularly important for those patients who receive compensation, are victims, or in some way perceive themselves as entitled to compensation for their physical condition.<sup>54,55</sup> For such individuals, research has demonstrated a more prolonged recovery,<sup>56,57,58</sup> increased disability cost,<sup>59,60,61,62</sup> and decreased potential to return to work.<sup>63,64</sup>

On the other hand, caution is given to clinicians who draw unwarranted conclusions about a patient's motivation, in that they may be "violating the rights of the person being tested," with the potential for the report to be emotionally and financially devastating.<sup>65</sup> This is particularly true when an undiagnosed physical condition is later discovered that was truly limiting performance.

Currently, a number of procedures are promoted for a clinician to objectively assess motivation, including Waddell's non-organic signs<sup>66</sup>, dynamometric grip strength variation<sup>67</sup>, bell-shaped force curves<sup>68</sup>, Rey 15-Item Test for Malingering<sup>69</sup>, and rapid exchange grip.<sup>70</sup> Other evaluations include the correlation between musculoskeletal evaluation and functional capacity evaluation<sup>71</sup>, documentation of pain behaviors and symptom



magnification<sup>72,73</sup>, and the ratio of heart rate to pain intensity.<sup>74</sup> The Social Security Administration uses an assessment of the credibility of allegations in their overall disability evaluation process. Table 3 provides an example of a tabular assessment of credibility for use within the *Performance APGAR*.

An attempt to develop a comprehensive performance model that considered the above components was recently

published as the BICEPS model.<sup>75</sup> After further review, research and consultation, the Biceps model has been modified by the authors to the *Performance APGAR* model. Like the infant APGAR, which is given at birth, the *Performance APGAR* is a composite summary of methods used to determine patient motivation level and is rated on a scale of 1-10. A score of 8-10 is consistent with what is optimally expected from a motivated patient, a score of 4-7 indicates concern about

motivation, and a score of 0-3 suggests poor patient motivation to improve their functional abilities. The *Performance APGAR* scores can be used for many different types of impairments. *Performance APGAR* scores can be given at each visit or over a series of visits and provide the reader with an indication of the motivation a patient is currently expending to improve their condition.

**TABLE 1**

<b>CREDIBILITY ASSESSMENT TOOL:</b>			
Use this table to make an assessment of allegation credibility for the <i>Performance APGAR</i> score.			
	<b>Not consistent with the objective evidence and/or expected outcome/severity (0 points)</b>	<b>Partially consistent with the objective evidence and/or expected outcome/severity (1 point)</b>	<b>Fully Consistent with the objective evidence and/or expected outcome/severity (2 points)</b>
Impact of symptoms or condition on ADL's			
Type, dosage, effectiveness and side effects of medications			
Treatment sought and received			
Opinions about function given by other treating and examining sources in the file			
Inconsistencies or conflicts in the allegations, statements or medical evidence in the file			
		Total Credibility score= _____ (0-10)	
<b>Credibility Determination:</b> Total Credibility Score of 0-3= <b>Not credible</b> Total Credibility Score of 4-7= <b>Partially Credible</b> Total Credibility Score of 8-10= <b>Fully Credible</b>			Result of Credibility Determination to be used in the APGAR table

Table 3. Each of the 5 areas should be scored 0, 1 or 2 points. The 5 area scores are then totaled for an overall credibility score of x/10. This score is then used in the credibility section of Table 1 (Not, Partially or Fully Credible).





A worksheet for the comprehensive APGAR performance score is shown in Table 1, along with descriptors for each variable. Each of the 5 categories of the APGAR can be given a value of up to 2, making the maximum composite score of 10, consistent with acceptable motivation and effort. The 5 components of the APGAR, (Acceptance, Pain, Gut, Acting, and Reimbursement), are described below. Each section of the APGAR has multiple possible measures that can be scored. When scoring, the single best method under each letter is chosen that is most appropriate for a particular patient. Alternatively, if there are several items under a specific letter (A, P, G, A or R) that have been tested these may be averaged to give a mean score for that letter. A simplified, blank scoring card is available in table 2 for office use.

**ACCEPTANCE**

*Accepting of condition:* Most patients, as they reach a plateau in their healing and performance, have an understanding of their condition and what they need to do to control their symptoms. Unfortunately many patients, who have pain persisting after the tissue has healed, will be left with some residual discomfort. To some patients, this is interpreted as an acceptable part of living<sup>76,77,78</sup> yet others perceive this discomfort as unacceptable. How the patient

**TABLE 2**

		<b>Score</b>
<b>A</b>	Acceptance	_____ of 2
<b>P</b>	Pain	_____ of 2
<b>G</b>	Gut (intuition)	_____ of 2
<b>A</b>	Acting	_____ of 2
<b>R</b>	Reimbursement	_____ of 2
		Total Performance APGAR _____

Table 2. Performance APGAR simple scoring card. This card can be used by those who have memorized a set of tests to perform for the Performance APGAR. A score of 8-10 is consistent with what is optimally expected from a motivated patient, a score of 4-7 indicates concern about motivation, and a score of 0-3 suggests poor motivation to improve their functional abilities.

responds to the following question “*If this just doesn’t get any better, what will you do?*” helps identify where the patient is, either consciously or subconsciously on the Kubler-Ross continuum of acceptance.<sup>79,80</sup> Research has shown that acceptance is a very legitimate goal for intervention in patients with chronic pain. Patients who have learned to live with their pain are more accepting of their condition, have reduced levels of

unrealistic thinking, less pain related distress, higher activity levels, higher levels of internal orientation and require fewer medications.<sup>81,82</sup> Those patients who don’t accept their condition, often express anger at caregivers, their employer, or “the system”, denial or statements reflective of bargaining and feel secondary anxiety or depression. Unfortunately, these patients often resort to more medical opinions, treatments,



alternative health care therapies, or aggressive surgeries with marginal if any chance for improvement.<sup>83</sup> See Table 1 for scoring instructions.

*Job Satisfaction:* It has been shown that job satisfaction is a significant predictor of return to work. Those dissatisfied with their work or employer are more likely to have a prolonged recovery and more likely to never return to full capacity.<sup>84, 85</sup> Furthermore, some research has shown that job dissatisfaction is more predictive of work injury than the actual physical factors of the work.<sup>86</sup> Other researchers have found only weak associations between job satisfaction and return to work.<sup>87</sup> See Table 1 for scoring instructions.

## PAIN

*Pain Drawing Score:*<sup>88</sup> The patient should have been given a pain drawing on which they describe their symptoms. Symptom patterns of the drawing are to be compared to known anatomical distributions and scored. Scoring is related to expected physiologic patterns and described in table 1.

*Assessment of Pain Behavior:* Table 18-5, AMA Guides 5<sup>th</sup> Edition refers to a method by which pain impact on a patient's function can be estimated. This table may be used as one method to score pain behaviors. Pain Behaviors may be viewed as indicating symptom magnification, especially when they

grossly exceed what an experienced practitioner might expect with a similar diagnosis. Pain behaviors include the following: sitting with a rigid posture, moaning, moving in a guarded or protective fashion, frequent shifting of posture or position, facial grimacing, using a cane, cervical collar or other device (even when not indicated for the condition), limping or distorted gait, extremely slow movements, or stooping while walking. As pain behaviors are scored, the 3 scoring categories should be used to correlate with an APGAR section score of 0, 1 or 2.

## GUT OR THE EVALUATOR'S INTUITION.

*Credibility Assessment:* Physicians involved in the evaluation of impairment, disability determination, and fitness for duty, regularly make judgements regarding the veracity and reliability of the patient's alleged symptoms. It is a difficult process to attempt to determine whether or not a patient is reporting the truth. The determination becomes even more difficult as the amount of potential secondary gain increases. Experienced clinicians become skilled in the art of distinguishing between real and fabricated allegations. The process may seem subjective and judgmental, but experienced physicians, working with the multifaceted issues involved in functional limitation determination, are keenly aware of the need to make a

judgement regarding the credibility of the allegations. It should also be noted that a credibility assessment is not to be thought of as a judgement about a person or patient's character. A credibility determination is designed to make an informed judgment about the truthfulness of the alleged symptoms or limitations being evaluated. The current symptoms and limitations may be entirely credible in an otherwise historically dishonest individual.

## CREDIBILITY DETERMINATION PROCESS

It is generally accepted that one should use caution in determining the existence of permanent impairment to function on the basis of symptoms alone. For example, Social Security Administration (SSA) rules state "Under no circumstances may the existence of an impairment be established on the basis of symptoms alone."<sup>93</sup> Furthermore, SSA states, with regard to disability evaluation, that regardless of how many symptoms a patient alleges, or how genuine the patient's complaints may be, impairment cannot be established in the absence of objective medical abnormalities. If there are clinically accepted medical signs and laboratory findings of an impairment or diagnosis that could reasonably cause the alleged symptoms or limitations, it is then necessary to further evaluate the alleged limitations. One initially makes



a professional assessment of the extent to which the symptoms can reasonably be accepted as consistent with the objective and other evidence available in the case file.

## CREDIBILITY FACTORS TO CONSIDER

When making a credibility assessment it is useful to consider guidance provided by the Social Security Administration (SSA).<sup>94</sup> The SSA disability determination process closely evaluates the credibility of symptoms and their true effect on function. In this guidance the SSA lists several factors to consider before making a final judgement about the limiting effects of the alleged symptoms. Some factors to consider are:

- **Effects of symptoms or impairment on Activities of Daily living.** How are they reporting their functioning with regard to shopping, cooking, self-care, housework, yard work etc.? For example: Is the pain so severe that the patient cannot even cook or wash dishes?
- **Type, dosage, effectiveness and side effects of medications.** Are they requiring large doses or multiple medications to relieve discomfort? Is the medication addicting? Is there evidence of narcotic drug seeking behavior? Are there legitimate side effects to required medication that will limit functional ability in a work

setting? A clear pattern of progressively increasing use of narcotics, well monitored with no indication of abuse, could provide a reasonable basis for determining the legitimacy of the pain allegations. This pattern could also legitimize limitations due to medication side effects.

- **Treatment sought and received.** Have they sought relief for the alleged symptoms from professionals? Has there been extensive searching for relief by attempting multiple treatments; even unconventional treatment? Have they been compliant with appropriate treatment recommendations? Someone who has been repeatedly noncompliant with mainstream medical treatment on a repeated basis and is using unproven, ineffective treatment alternatives may be less credible than a fully compliant patient.
- **Opinions about function given by treating and examining sources in the record.** If the patient has been examined and treated by various specialists who have been able to examine the full medical record, their opinions about the true impact of symptoms on functional capacity will be valuable in a credibility assessment.

- **Inconsistencies or conflicts in the allegations, statements or medical evidence in the file.** A patient who presents with severe allegations of a certain pain or injury at one physician evaluation and completely different allegations at another physician evaluation is inconsistent. A patient with completely non-physiologic pain that is unrelated to objective test results has a “conflict” in the findings compared to the allegations; this leads to doubts about the credibility of the alleged limitations.

Inconsistencies and conflicting statements make a significant contribution to the overall credibility assessment. Consistency is very important in determining credibility, however it obviously is not the only measure. A strong indication of credibility is given by the degree to which the allegations are consistent with the objective evidence. Another area where consistency is important is in the history given at different examinations. For example, the history of the injury/illness, onset and duration of symptoms as well as functional effects on ADL's should be fairly consistent as reported to various medical professionals. The initial history and physical exam should be reasonably consistent with Independent Medical Evaluations (IME's) for worker's compensation and these should be consistent with other



specialist consultations in the file. Furthermore, the longitudinal medical record should be consistent in demonstrating the attempts to treat the condition. One may also make some limited inferences about the overall credibility of the allegations based upon the frequency of treatment. If the allegation is quite severe, yet no medical treatment has been sought, the credibility of the allegation comes into question. One would then need to consider whether there were financial or other impediments to obtaining the appropriate level of treatment for the diagnosis.

## CONSIDERING MEDICAL OPINIONS

Another component of the overall credibility determination is the weight given to the opinions of treating and examining physicians in the file.<sup>95</sup> The opinions of other physicians in the file regarding the patient's functional ability can vary significantly based on the physician's role in the patient's care and the information available to that physician at the time of the evaluation. Many treating physicians inadvertently become inappropriate advocates for the patient by prolonging the disability period or assuming causal relationships to work without obtaining details from the employer's investigation of the alleged claim. How does the physician evaluating functional ability determine which recommendation to follow? In

this process, the evaluating physician reviews all the information regarding credibility listed above and then compares that information with the other treating/examining physician opinions in the file. Other sources of opinion evidence might include chiropractors, physical therapists, optometrists, etc. Such sources can be valuable in determining the true extent of limitations and thereby assist in the overall credibility determination. In general, when differing opinions about function are in the file, the opinion most consistent with the evidence will be given the most weight. Other factors to consider in making a determination about which source opinion to follow include:

- *Examining sources:* Those who have examined the patient would be given greater weight than the opinions of those who have not (insurance company file reviews, etc.).
- *Treating sources rather than one time exams.* In general a medical provider with a longstanding relationship may be more familiar with the patient's limitations than would a one-time consultant.
- *Supporting evidence:* A source that provides supporting evidence to substantiate the opinion about functional ability would be given more weight than one without supporting evidence.

- *Consistency with the record:* Obviously, those opinions most consistent with the preponderance of evidence will be given greater weight.
- *Specialty:* The opinion of a specialist in the field may be given greater weight than a generalist, even if the length of treatment was much less. A physician who is more familiar with the demands and tasks in the workplace will likely be given greater weight than a physician unaware of such demands.

Many sources will write opinions such as "light duty", "moderate lifting" or "sedentary work". These generalized, non-specific statements of functional ability are inherently unreliable and meaningless in making appropriate ability statements. There is no consistency among physicians as to the definition of "light work" or "sedentary work". Further confusion can come when a treating physician writes a note into a file that states "This patient is disabled". Again, there is not a specific level of impairment, known by all physicians, to equate with "disabled". To one physician the inability to lift more than fifty pounds may make their patient disabled. To another examining physician this same patient may be felt capable of performing the essential functions of his/her current job. The important thing to remember is that the opinion of the physician, who knows the patient best and has the most



TABLE 3

<b>PERFORMANCE APGAR</b> Measurement of the Sincerity of Effort an Individual Puts Forth						
			Scoring Options			Score up to 2 points
			0	1	2	
<b>A</b>	Acceptance (choose best test or average)	If this just does not get any better, what will you do?	I can't live like this	I am going to have some problems	I will live with it	<b>A</b>
		Are you satisfied with your job?	Not satisfied	Partially satisfied	Satisfied	= ____
<b>P</b>	Pain (choose best test or average)	Pain Drawing	Non-Physiologic	Some of it physiologic	Physiologic	<b>P</b>
		Pain Behaviors score AMA Guides table 18-5	Exaggerated or non-physiologic	Mixed or ambiguous	Appropriate and confirm clinical findings	= ____
<b>G</b>	Gut (intuition) (choose best test or average)	Credibility Tool (see table 2)	Not Credible	Partially Credible	Credible	<b>G</b>
		Intuition or Effort	Poor Effort	Partial Effort	Excellent Effort	= ____
		Duration	Much Longer than expected	Longer than expected	As expected	
<b>A</b>	Acting (choose best test or average)	Consistency with Distractions	Poor consistency	Partial consistency	Excellent consistency	<b>A</b>
		Waddell signs	More than 2 Waddell signs	2 Waddell signs	0 to 1 Waddell sign	= ____
		Grip Strength testing	Unreliable grip strength (high variance, etc.)	Partial validity	Reliable grip strength	
<b>R</b>	Reimbursement	Compensation/Litigation	Someone else liable WC, PI, Disability Application Attorney Representing	Someone else liable WC, PI, Disability Application	No one Liable	<b>R</b> = ____
<b>Total Performance APGAR Score = ____</b> (Add A, P, G, A, R sections for a maximum of 10)						

TABLE 1. Under each letter (APGAR) choose the most applicable test for the particular patient or more than one test can be done and the scores averaged for that section. A total score of 8-10 is consistent with what is optimally expected from a motivated patient, a score of 4-7 indicates concern about motivation, and a score of 0-3 suggests poor motivation to improve their functional abilities.

knowledge about the specific limiting condition, should be weighed carefully in a functional evaluation and integrated carefully with an understanding of the work environment. In some cases where the treating physician makes a generalization regarding functional ability, further contact with the physician may be required in order to clarify the specific functional restrictions and the true residual capacity. Once the weight to be given is determined, it should be addressed in

the report, giving the specific reasons why more weight was given to one opinion over another.

The experienced clinician will make the appropriate objective medical assessment of the patient and then consider all the factors of credibility, weigh the source opinions and then make a final determination of the patient's functional ability.

**CREDIBILITY CONCLUSIONS**

Finally, when evaluating the credibility of a patient's allegations in a written

report, cite the specific findings on exam, in the history, or in the test results that led to a specific finding of credibility. For purposes of the *Performance APGAR* there are 3 proposed credibility determinations (see Table 3):

1. **Allegations are credible:** If you make a finding that the allegations are credible and consistent with the diagnosis and the objective evidence, you are essentially giving those allegations such great weight that they are guiding your ultimate



determination of patient functional ability.

**2. Allegations are partially credible:** In this case you have analyzed the data as outlined in this section and determined that the allegations of pain and or limitation are not completely credible and consistent with the diagnosis and the objective evidence. You should cite specific reasons and evidence upon which you made this determination in your report.

**3. Allegations are not credible:** This, hopefully, is a rare circumstance where largely all allegations of pain or limitation are found to be entirely unfounded.

The credibility assessment described above can be simplified by use of the *Credibility Assessment tool* in Table 3. The assessment tool is used to quantify credibility into a standardized number that can then be incorporated into the overall *Performance APGAR score* (Table 1).

*Intuition or Effort:* Experts working with different conditions have extensive experience with a wide spectrum of patients, from the motivated elite athlete to the elderly, thereby developing an intuitive sensitivity to a patient's motivation to improve. This includes compliance with medications, exercises, medical appointments, weight reduction, smoking cessation,

etc. This intuition has been objectively described as a sensitive indicator of effort.<sup>96,97,98</sup> The evaluator uses judgement, experience and intuition in giving a score for this section in Table 1, the *Performance APGAR* table.

*Duration:* By comparison with national published guidelines,<sup>89,90,91</sup> experience from other patients with similar conditions and the medical literature,<sup>92</sup> the evaluator is to make a determination as to the healing and progress of the patient compared to the expected. The time required for healing is scored per the instructions in table 1.

## ACTING

*Consistency with Distractions:* Most medical practitioners are aware of various methods by which to observe a patient while he/she is distracted. The evaluator is to observe them walking into and out of the office, in the parking lot or in the exam room during questioning. As a side note, it is interesting to note that many experienced examiners have developed a sense of a significant correlation between inconsistent behavior and tattoos. There is little research to substantiate this correlation to date but Raspa et al found that Psychiatric disorders, such as antisocial personality disorder, drug or alcohol abuse and other disorders are frequently associated with tattoos.<sup>99</sup> Consistency is determined and scored per Table 1.

*Waddell's Non-organic Signs:*<sup>100,101</sup>

Waddell's non-organic signs were first described in 1980 and are the physical examination findings most widely used in studies of patients with both acute and chronic low back pain.<sup>102,103,104,105,106,107,108,109,110,111</sup> These eight behavioral signs are believed to be overt, inappropriate physical examination manifestations that signify the patient is coping poorly with the pain and is showing psychological distress out of proportion to the organic back disorder. Their presence can interfere with medical interventions and cause delayed recovery and failure to return to work. Waddell's tests should be performed and scored. The presence of zero or one Waddell signs translates to 2 points on the *Performance APGAR*. Two positive Waddell signs equate to an APGAR score of 1. More than 2 positive Waddell signs equate to an APGAR score of zero for this section.

*Performance of Testing Maneuvers.* This could include a measurement of grip strength<sup>112</sup>, or perceived exertion as measured by the Borg RPE Pain Scale, comparing the perceived psychophysical with actual.<sup>113</sup> For grip strength, the reviewer is to note the repeated maximal grip strength testing. If the grip strength varies greatly between attempts, this inconsistency is noted. More detailed grip consistency testing can involve calculation of the coefficient of variation, the Bell-shaped curve, or the Rapid Exchange Grip. The



patient's performance is scored per the instructions in Table 1.

## REIMBURSEMENT

*Compensation-Litigation:* Paradoxically, compensation programs designed to help a patient return to gainful employment have been shown to inherently prolong recovery, increase disability cost, and decrease the potential to return to work. The majority of compensation-related litigation is directly related to the frustration, ignorance, anxiety, unrealistic expectations, and/or fear level of the injured worker.<sup>114</sup> These non-biological factors have an even greater negative impact on motivation when the entitled patient retains an attorney and becomes a legal claimant.<sup>115</sup> Once this happens the patient is obligated to prove and preserve an alleged injury or illness. Medical recovery jeopardizes the ability to prevail in a suit. Additionally, the worker's own credibility is placed at risk. Hence, the disability continues throughout the litigation process, even in the absence of any objective medical basis for the disability. This is not to say that the pain or disability is nonexistent, only that it cannot be objectified, and could therefore be attributable to secondary gain factors.<sup>116</sup> See table 1 for scoring guidelines for this section.

## CASE STUDIES FOR APPLICATION AND INTER-RATER RELIABILITY

To assist with understanding the application of the *Performance APGAR*, the following case scenarios are described along with the appropriate *Performance APGAR* score. Studies are currently under way to assess the inter-rater reliability of the *Performance APGAR*. We encourage subsequent researchers to conduct validity studies on the *Performance APGAR* model.

### MECHANICAL BACK PAIN, WORKERS' COMPENSATION

A twenty-three year old construction worker had a low-back injury claim six months ago following a slip on the ice wherein he landed on his buttocks. He had no known medical history of prior back pain. His x-rays have been read as normal and he has undergone a course of physical therapy and medications. Although he has continued to work, he still notes his discomfort on a pain drawing of drawing intermittent low-back pain with referred pain into the back of the legs that does not go into his feet. These symptoms have been consistent without any pain behaviors noted. He has primarily used over-the-counter medications, but occasionally requires a prescription anti-inflammatory. Occasionally he uses an L.S. brace to work in. He has been declared medically stable and released to full duty. His therapist notes

excellent compliance. When asked the question if this just doesn't get any better, what will he do, he remarks "he will just have to live with it".

**Score: Acceptance=2, Pain=2, Gut=2, Acting=2, Reimbursement=1. Total=9**

### LUMBAR COMPRESSION FRACTURES, WORKERS' COMPENSATION

Eighteen months ago a thirty-three year old roofer fell 18 feet landing on his feet. He had immediate back and heel pain, and was taken to the hospital where x-rays demonstrated acute compression fractures of T11(20%), T12 (30%), and L1(10%) and bilateral calcaneo fractures. He was treated surgically with a three-level fusion (four vertebral segments). The heel fractures were treated conservatively. He has completed a course of physical therapy over 4 months duration, attending less than 50% of scheduled appointments. His therapist notes his effort was suspect. His current pain drawing demonstrates generalized back, abdominal, neck, bilateral shoulder, and bilateral leg and foot pain and numbness, with Waddell's showing 3/5. Therapy notes indicate that he has reached a plateau in his treatment, 8 months ago, with limitations of lifting up to 10 lbs with his walking limited to 3 blocks with his condition. The therapists note that he actually went deer hunting last fall and even shot and dressed a deer. He has retained an attorney in order to "get what is



coming to him". In asking the question that if this just doesn't get any better what will be do, he replies, "he does not know, he will just have to wait and see".

**Score: Acceptance=1, Pain=1, Gut=1, Acting=0, Reimbursement=0. Total=3**

## TOTAL BODY PAIN FROM A PERSONAL INJURY

A forty-four year old female has a history of a back, neck and buttocks pain 1 year ago following a chair collapsing under her at a restaurant wherein she landed on her buttocks. At the time she "made them call for an ambulance", in that she was paralyzed. She was examined at the emergency room, where x rays and even an emergency MRI was completed, which were normal. She was discharged and told to follow-up with her local physician the following morning. 3 days later she went to her chiropractor, of which she saw her 3 times a week for 8 months, (an estimated 80 to 90 times) for treatment consisting of hot pack, ultrasound, massage, and manipulation. She indicates that this treatment has help some, but it doesn't last long. 4 months ago, at the insistence of the insurance company she was sent to another physician who noted her pain drawing showing complete body pain, numbness, and tingling. Although his exam was physically normal, he did note many pain behaviors along with give away

weakness that were inconsistent with anatomical and physical understanding. He recommended a bone scan, (which was negative) and physical therapy. The therapist's noted poor compliance, attending less than 40% of the appointments, stating car troubles, scheduling conflicts etc for the reasons. The therapists indicated that she really could have done better, and always complained of the exercises she was assigned to do and wanted "just to be massaged," in that "that was the only thing that helped." She reached a plateau in her exercise performance 1 week into the three-week program, at a sedentary level. She claims she has not been able to work since the injury because of the pain. When asked the question what will she do if this just doesn't get any better, she remarks, I don't know, but I cannot live with this. Within the first week of her fall, she retained an attorney to assist her with "all of the hassles, in that she probably will never be as she was before the fall."

**Score: Acceptance=0, Pain=0, Gut=0, Acting=0, Reimbursement=0. Total=0.**

## CONCLUSION

Making an objective determination of the amount of effort an individual expends to recover from illness or injury is an essential component in making stability and capability statements. Considerable energy and resources are spent in determining a

patient's sincerity of effort. Patients whose efforts are not sincere during rehabilitation or testing may overuse treatment, have a prolonged recovery, have increased cost of care, or receive unwarranted disability payments.<sup>117,118</sup> Effort can be influenced by multiple factors, including the illness or injury, the patient's personality, coping style, self-esteem, associates, environment and self-confidence. Due to the complex interaction between the mental, social and physical demands of work, measurement of effort is a difficult task. This is particularly true for patients who are receiving compensation to get well or perceive themselves entitled to some form of compensation.<sup>119,120</sup> For such individuals, research has demonstrated a more prolonged recovery, increased disability, and decreased potential to return to work.

Although a number of methods are promoted in the medical literature as means by which a clinician can make objective estimates of the sincerity of effort, there has been no comprehensive model yet developed. For this reason, the authors, who have extensive experience in disability evaluation, performed a pertinent literature review with the purpose of developing a simplistic, flexible, yet uniform method to evaluate the effort a patient expends to improve their condition. Based on this review and the authors' experience, we propose the *Performance APGAR*





score. Patterned after other APGAR scores in the literature<sup>121,122,123,124</sup>, this *Performance APGAR* (Acceptance, Pain, Gut (intuition), Acting, and Reimbursement) provides an easy mnemonic by which to remember a method to quantify patient motivation, credibility and effort either at a single visit, over multiple visits or during a one time comprehensive fitness for duty evaluation.<sup>125</sup>

As the number of people making application for disability increases, there is a growing and significant need for a comprehensive instrument that reliably and validly measures the sincerity of effort expended by a patient in their own recovery process. The *Performance APGAR* allows physicians to uniformly measure a patient's sincerity of effort. Some preliminary studies validate the inter-rater reliability and construct validity of the *Performance APGAR*, although more definitive studies need to be conducted and are in process. It is the authors' belief that further research of the *Performance APGAR* will demonstrate its utility in accurately predicting patient capability and recovery.

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## MILD TRAUMATIC BRAIN INJURY

### AN OVERVIEW OF PATHOPHYSIOLOGY, BIOMECHANICS AND EVALUATION

J. True Martin, M.D.

#### TRAUMATIC BRAIN INJURY (TBI)

Traumatic brain injury is a silent, costly epidemic in the United States. The current annual incidence of TBI is 175-200 per 100,000 persons, or well over two million people per year — double the incidence of ischemic strokes or schizophrenia.<sup>1</sup> Neurological sequelae from TBI are more common than any other neurological disease except for headaches.<sup>2</sup>

Motor vehicle accidents account for approximately 50% of cases, falls 35%, and assaults 5%.<sup>3</sup> Males represent approximately 75% of cases, females 25%. Some 500,000 cases of TBI will require hospitalization in a given year. Between 70,000 and 90,000 patients will be left with significant neurological deficits, 5,000 will develop epilepsy, and 2,000 will live in a chronic vegetative state requiring total care. Mortality from TBI in the United States in the dozen years from 1981 to 1993 exceeded the cumulative number of American battle deaths in all wars since the founding of our country. The economic cost to our society is appreciable: \$25 billion per year.<sup>4</sup>

Increased research in the area of head trauma during the past 15 years has led

to significant advancements in our understanding of the pathophysiology and biomechanics of TBI.

Cranio-cerebral trauma resulting from mechanical force (energy directly involved in moving matter) can be separated into two major categories: 1) contact injuries that require a direct blow to the head (head movement not necessary) and 2) acceleration-deceleration injuries that require head movement (direct cranio-cerebral trauma not necessary).<sup>5</sup>

Contact injuries cause skull fractures, epidural hematomas, coup and contrecoup injuries, contusions, lacerations of meninges, and intracerebral hematomas. Acceleration-deceleration injuries cause subdural hematomas, contre- or intermediate coup contusions, and diffuse axonal injuries. Not infrequently, both movement and contact forces are generated during a single injury. A high-speed motor vehicle accident (MVA) often produces this combination of contact and movement injuries. The shaken baby syndrome without direct cranio-cerebral trauma represents a fairly pure form of acceleration-deceleration injury. Direct trauma to the head with a blunt object (sledge

hammer, gun butt, etc.) causes significant pathology from contact forces and intracranial pressure waves without significant movement.

The clinical spectrum of cranio-cerebral trauma ranges from brief concussions with no neurological symptoms to chronic vegetative states and death. Disability, defined in the Fourth Edition of the *AMA's Guides to the Evaluation of Permanent Impairment* as "... an alteration of an individual's capacity to meet personal, social or occupational demands . . .," is without dispute in the patient with severe TBI.<sup>6</sup> Severe brain injuries are characterized by cognitive dysfunction and additional neurological findings including, but not limited to, paralysis, hypertonia, incontinence, and seizures.

Impairment ratings in the Fourth Edition of the *AMA's Guides to the Evaluation of Permanent Impairment* reflect the complete or partial loss of various brain functions including level of consciousness, speech, behavioral disturbances, and paralysis, to note a few. The exact impairment rating provided by physicians experienced in the use of the Guides may vary because each category of impairment has a range of numbers from which to select.



The fourth chapter of the Fourth Edition outlines the appropriate methodology for arriving at a numerical value for injuries to the brain. The reader is also referred to the Nov/Dec 1998 issue of *The Guides Newsletter* for additional review of central nerve system impairment ratings.<sup>7</sup>

Small variations in the numerical value assigned to the whole person impairment rating provided by skilled physicians should not represent a significant obstacle in the medicolegal arena. As stated in the first chapter, fifth section of the Fourth Edition of the *Guides*, "It must be emphasized and clearly understood that impairment percentages derived according to **Guides** criteria should not be used to make direct financial awards or direct estimates of disabilities".<sup>8</sup>

### MILD TRAUMATIC BRAIN INJURY (MTBI)

On the opposite end of the spectrum, few diagnoses generate more controversy and confusion than mild traumatic brain injury (MTBI) with permanent cognitive impairments. The lack of associated visible, physical signs leads many physicians and nonphysicians to be skeptical of the diagnosis.

In 1993, the American Congress of Rehabilitation Medicine (ACRM) reduced some of the confusion in the

literature by establishing this definition of MTBI:

*A patient with mild traumatic brain injury is a person who has had a traumatically induced physiological disruption of brain function, as manifested by at least one of the following:*

1. *Any period of loss of consciousness.*
2. *Any loss of memory for events immediately before or after the accident.*
3. *Any alteration in mental state at the time of the accident (e.g., feeling dazed, disoriented, or confused).*
4. *Focal neurological deficit(s) that may or may not be transient but where the severity of the injury does not exceed the following: loss of consciousness of approximately 30 minutes or less; after 30 minutes, an initial Glasgow Coma Scale of 13-15; and post-traumatic amnesia not greater than 24 hours.*<sup>9</sup>

This definition was based on the acute injury clinical characteristics. Most clinicians would also agree that neuroimaging studies are usually normal.<sup>10</sup>

Though multiple underlying structural pathologies secondary to mechanical forces can be associated with MTBI, diffuse axonal injury (DAI) is the most commonly proposed neuroanatomical

lesion. At the time of impact, mechanical acceleration-deceleration forces, generated by linear, rotational or angular movements of the head, are transmitted to the brain. Though these forces are distributed throughout the brain, based on physics, the frontal and temporal lobes receive the maximal forces. These regions of the brain contain neuronal structures responsible for cognitive functions such as memory and storage and retrieval of information.<sup>11</sup> The characteristic microscopic pathological lesions are axonal bulbs and clusters of microglia.

In addition to the mechanical forces (contact injuries and acceleration-deceleration injuries), other proposed mechanisms of injury for MTBI include oxidative stress, excitatory cell death, alteration of calcium homeostasis, and several other less well-known theories. The above mechanisms of injury are not mutually exclusive.

With acceptance of the ACRM definition of MTBI, and acceptance of scientifically supported mechanisms of injury by the medical community, the focus of interest and research shifted to 1) defining clinical parameters that could differentiate among those patients who would experience transient versus permanent neurological symptoms following MTBI; 2) differentiating post-concussive psychiatric syndrome from MTBI with structural damage; and 3) determining



the role of neuropsychological testing in confirming, or excluding, the diagnosis of permanent MTBI.

Despite the significant progress in our understanding of the pathophysiology and biomechanics associated with MTBI, it has been very difficult to apply this information to specific clinical situations. From a clinical and medicolegal standpoint, the most important question is, "Which patients have structural injuries that cause persistent symptoms from a mild traumatic brain injury?"

In July 1995, Dr. Michael Alexander authored an article in *Neurology* entitled "Mild traumatic brain injury: pathophysiology, natural history, and clinical management." Therein he stated, "The duration of unconsciousness is brief, usually seconds to minutes, and in some cases there is no loss of consciousness but simply a brief period of dazed consciousness".<sup>12a</sup> In 10-15% of patients, this could cause permanent symptoms.<sup>12b</sup> Dr. Alexander subsequently was inundated with referrals of patients, many of whom were involved in litigation, complaining of persistent cognitive symptoms following whiplash trauma that involved no loss of consciousness (personal communication).

As a result of his increased experience with the above clinical scenario, Dr.

Alexander authored a second article in *Neurology* in 1998. This article, entitled "In the pursuit of proof of brain damage after whiplash injury," essentially stated that the first article in 1995 was incorrect. "Mild traumatic brain injury with loss of consciousness and amnesia of 30 to 35 minutes can produce modest diffuse axonal injury".<sup>13</sup> In Dr. Alexander's opinion, the amount of mechanical force necessary to produce a permanent brain injury had been substantially increased.

As expected, this revision generated immediate controversy. Some authors stated that loss of consciousness (LOC) was not necessary for a permanent traumatic brain injury. Furthermore, it was pointed out that Dr. Alexander's conclusions in the 1998 article were based on a selective review of the literature.<sup>14</sup>

Currently, the issue is not resolved, with each opinion supported by selected articles in the literature. Dr. Alexander does agree, however, that after age 40 there is an increased vulnerability of the brain to mechanical forces (or other postulated mechanisms of injury for MTBI).

In clinical practice, and from a practical point of view, each patient should be assessed on an individual basis. Sometimes, especially in a high speed MVA, it is not possible to determine whether or not there was LOC, or if

there was, its duration. Confusion can arise when there are conflicting histories between the patient and observers. To the observer, a patient is unconscious until the eyes are opened and he or she begins to speak or move. A patient, on the other hand, will give a history of being unconscious until he/she is able to form consecutive memories (anterograde amnesia). The period of retrograde amnesia (loss of memory before the trauma) can be established by determining the patient's last memory before the accident. There is an imprecise, but rough, correlation between the severity of anterograde and retrograde amnesia and the severity of TBI.<sup>15</sup> Therefore, it is very important to ask questions about the patient's cognitive abilities and memory immediately following the trauma.

If the patient can provide detailed information such as a social security number, relatives' addresses or phone numbers, or if the patient made telephone calls with a cellular phone at the scene, permanent cognitive impairment from diffuse axonal injury is unlikely. The higher the level of functioning, the less likely a significant, permanent brain injury is present. Agitated, aggressive behavior reported by emergency personnel or other observers should not be misinterpreted as an uncooperative patient; such behavior can reflect underlying brain damage.



Permanent injuries from MTBI include impairment in one or more of the following: concentration, memory, storage and retrieval of information, executive function, and divided attention deficits. Despite a fairly consistent set of symptoms following MTBI, the symptoms lack specificity or a high positive predictive value for DAI (or other structural pathology). The reason for this is that similar symptoms of cognitive dysfunction can be associated with several psychiatric disorders, including depression,<sup>16</sup> post-traumatic stress disorder,<sup>17</sup> adjustment disorders with depression or anxiety, and somatoform disorders.<sup>18</sup>

Complaints of impaired concentration and memory may also be secondary to loss of normal sleep pattern from musculoligamentous injuries. Vertigo and/or nonvertiginous dizziness and dysequilibrium from a post-traumatic vestibulopathy can also contribute to a general feeling of ill health. The treating physician, therefore, must remember that mechanical forces generated at the time of impact (contact or acceleration-deceleration forces) can damage multiple anatomical regions, each of which can contribute to the clinical presentation.

Each patient's symptoms must be analyzed from an anatomical perspective and evaluated and treated on an individual basis. In other words, symptoms or signs reflecting cervical or vestibular pathology, post-traumatic

muscle contraction or vascular headaches, and so on, are evaluated, diagnosed, and treated individually. Significant psychiatric conditions arising from traumatic brain injury are also aggressively evaluated and treated. This approach will improve functional outcome.

In isolation or in combination, chronic depression, anxiety and pain can generate persistent cognitive complaints, but not a brain injury. Initial recognition and aggressive evaluation and treatment of these conditions will be cost-effective and eliminate confounding factors in determining whether or not there is a primary brain injury.

Following the acute trauma, the number of diagnostic studies ordered for evaluation of cognitive complaints will usually depend on the severity and duration of symptoms. Both CT scan and MRI of the head lack sensitivity in detecting DAI, the pathology most commonly associated with MTBI. EEG abnormalities are nonspecific but, if present, require further evaluation with neuropsychological testing.

Positron emission tomography (PET scan) and single photon emission computerized tomography (SPECT scan) can be abnormal in DAI. However, similar patterns of abnormalities can be seen in patient populations with depression or

anxiety.<sup>19,20</sup> The American Academy of Neurology does not recommend use of the PET scan or SPECT scan in the routine evaluation of head trauma, as the significance of the abnormalities is uncertain.<sup>21,22</sup> PET and SPECT scans remain investigational tools.

The current gold standard for evaluation and confirmation of persistent cognitive symptoms/signs from MTBI is neuropsychological testing.<sup>23</sup> Intuitively this would seem obvious, as entrance into college, graduate school, or medical or law school, is not based on MRI results, functional imaging of the brain, or electrophysiological studies; rather, it is based on intelligence, ability to concentrate, solve problems, memorize, and so on. The administration of neuropsychological testing has been reviewed and standardized by the American Academy of Clinical Neuropsychology (1999). In addition to objectively evaluating cognitive abilities, neuropsychological testing routinely includes test batteries designed to detect malingering or inconsistent effort, information which is invaluable to the clinician. Inclusion of the Minnesota Multiphasic Personality Inventory (MMPI), or other psychological testing, identifies those patients who need aggressive psychiatric evaluation and treatment.

Mental status testing and standardized basic questionnaires are useful but have



a significant false negative rate and fail to detect subtle cognitive abnormalities.<sup>24</sup> If litigation is involved, or patients continue to complain of cognitive symptoms, especially after treatment of depression and anxiety, detailed neuropsychological testing is essential and recommended by the American Academy of Neurology.<sup>25</sup>

The diagnosis of MTBI (or DAI) is based on a pattern of abnormal subtest scores in the neuropsychological test. Though overall IQ might be within normal limits, there are “pockets” of impaired functioning. [Some may disagree, but this author contends that “postconcussion syndrome” exists when multiple cognitive and physical complaints are present but the neuropsychological testing reveals no evidence of brain injury.]<sup>26</sup>

Though still in the investigational stage, functional MRI in the future might contribute significantly to our understanding and diagnosis of MTBI. Dr. McAllister, et al., published a paper in *Neurology* indicating an abnormality in activating, modulating and allocating portions of the brain in response to increasingly complex information.<sup>27</sup>

To maximize functional recovery (return to work, activities of daily living, *et cetera*), and minimize erroneous diagnoses, a logical, thorough, step-by-step evaluation is necessary. In order to meet these goals,

as a treating physician who is coordinating the patient’s care, I consider the following clinical points essential when evaluating patients with MTBI:

- 1) Inform patients of the excellent prognosis (85-90% of patients will return to baseline in 3-12 months).
- 2) Discourage illness behavior.
- 3) Confirm the diagnosis of MTBI with neuro-psychological testing.
- 4) Ensure the accuracy of neuropsychological testing by having a qualified professional experienced with this type of testing interpret the data.
- 5) Do not over-interpret. Over-interpretation of neuropsychological testing validates the patient’s symptoms, creates illness behavior, and can lead to costly, unnecessary litigation.
- 6) Question interpretations. If the qualified professional to whom you refer always finds a brain injury, there is usually a problem with over-interpretation.
- 7) Test more than once. Two neuropsychological tests approximately 12 months apart are required to make a diagnosis of permanent brain injury following MTBI. The second test should improve from the initial evaluation, reflecting the natural history of the

injury. The exception to this recommendation occurs when the brain injury is old (greater than two to three years) and is stable.

- 8) Reconsider the diagnosis of permanent MTBI if #7 is not met.
- 9) Always keep in mind that patients with MTBI will react to the loss of cognitive functioning, and many will develop an adjustment disorder with depression and/or anxiety.
- 10) Conversely, remember that many patients with depression and anxiety with no brain injury will also complain of impaired concentration and memory (pseudodementia).
- 11) Use a multidisciplinary approach in the evaluation and treatment of the TBI patient. This will provide independent clinical opinion regarding the patient’s diagnosis and treatment. Discrepancies among physicians should be thoroughly explored.
- 12) Always reconsider the diagnosis if new, relevant information is provided that is inconsistent with the working diagnosis.
- 13) Remember that the initial alteration of cognitive functioning of patients with permanent symptoms/signs from MTBI has a range. This is greater than being “dazed” or “stunned” by low impact trauma,



but less than a defined time frame of 30 minutes of amnesia with loss of consciousness. Each person has an individual susceptibility to injuries from mechanical forces.

- 14) Include the patient's age as a factor in the evaluation. After the age of 40, less mechanical force is required to produce permanent structural brain damage.
- 15) Be careful not to be overly cynical. Patients who have sustained brain injuries will often have legal representation. It is easy as a physician to become skeptical of the validity of the symptoms when attorneys are involved, but the literature supports the position that patients are not cured by legal verdicts.<sup>28,29,30</sup>
- 16) Compare pre-injury neuropsychological testing, if available, to post-injury testing.

This has been declared the "decade" or "century" of the brain by medical professionals.<sup>31</sup> Through intensive investigation, we are unraveling the mysteries of the gene. With 2% of all deaths in the United States secondary to trauma (with trauma as the most common cause of death below the age of 35, with 25% of these secondary to brain injuries), significant research is being directed towards improving the clinical outcomes of patients with brain injuries.

The unfortunate fact remains that 90% of traumatic brain injuries from MVA's, falls, and assaults can be attributed to human error or aggression, not to the complex mysteries of genetic encoding. Human, or societal, behavior is hard to change, and there is little evidence that our children are exposed to less violence. Trauma-induced mortality and morbidity, and disability medicine will remain a part of American culture for the foreseeable future.

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## BOOK REVIEW

“RISK AND DISABILITY EVALUATION IN THE WORK PLACE”

VOL. 15, No. 4, OCTOBER-DECEMBER 2000

OCCUPATIONAL MEDICINE: STATE OF THE ART REVIEWS

Edited by: David C. Randolph, MD, MPH, FAADEP, and  
Mohammed I. Ranavaya, MD, MS, FAADEP, CIME

As a physician who cares for injured workers without benefit of formal training in occupational medicine, I read with interest this compendium of review articles on disability evaluation in the work place. This book has value to any practicing physician, and to a lesser extent, the resident in training. The bibliographies following each article are exhaustive, and will provide much comfort to the serious scholar. The style and language of the text is surprisingly uniform considering the numerous authors. The texts are relatively straightforward, but might seem arcane to the casual physician reader.

There are concepts presented which would be of great benefit to the physician who has been working his way through the minefields of occupational medicine for at least 5 to 10 years. Several of the articles refer in an oblique fashion to the schizophrenic dichotomy between the Americans with Disabilities Act (ADA) and the Occupational Safety & Health Administration (OSHA). The articles

are helpful to the non occupational medicine physician, as much of Occ - Med has become legalistic in nature.

The lead article on upper extremity conditions was superb. I was especially pleased to read a cogent discussion of the conflict between the evidence-based model of occupational disease versus the symptom-based model.

The article by Dr. Colledge from Utah is probably the most significant in the compendium. He summarizes his concept with the acronym SPICE (simplicity, proximity, immediacy, centrality, and expectancy). In retrospect, I note from my own experience that I could prognosticate on the difficulty in caring for an injured worker by noting who ministered initial care. The worker treated by a straightforward, communicating, patient advocate was exponentially easier to treat. The advent of diagnostic imaging studies during the past two decades has lead to prolongation of temporary disability. Other forms of electronic testing also lead to self-fulfilling prophecy of disability.

A point worthy of repetition here is the existence of a window of opportunity in the treatment of the injured worker. If definite treatment is delayed beyond the third week following injury, achievement of a satisfactory outcome will be prolonged exponentially. If a worker is not employed within 6 months of the time of injury, the probability of him returning to the work force drops precipitously.

Two articles concerning chronic pain were satisfactory, but certainly not ground breaking in their content. The final article on functional testing and returning to work failed to give me any insight into the problem. One wonders if there has not been too much emphasis on “no lost time injury,” i.e. having the patient’s report to the work place while recovering from an injury which prevents any form of meaningful productivity. I also wonder if there has been too much emphasis place on job modification, when one could probably have a worker return to employment earlier, if he or she is permitted to return to his previous job description



for a shorter work day, which is gradually lengthened as healing occurs.

This reviewer has been involved in the care of the injured worker for 4 decades. Early on, occupational medicine was the treatment of punchpress injuries to fingers, and vertebral fractures from slate falls in coal mines. In the intervening years there has been a change in the injury patterns. There has been a change in job stability, and the relationship of loyalty between employer and

employee. The work place today is certainly safer but much different than that in 1960. The work force itself has changed with the advent of more working women. If one thing has remained constant, it is that the treating physician must remain as the empathetic patient advocate who can obtain and maintain the trust of the injured worker. They must share the common goal of returning the worker to a productive life. If the worker was unhappy with his employment prior to injury, this can be extremely difficult.

In summary, this publication is of benefit to non occupational medicine physicians who treat injured workers. It gives them insight that they are not alone, and other practitioners share the frustrations engendered by the legalistic aspects of compensable injures.

**Reviewer: Thomas Scott MD. Orthopedic Surgeon**

**Former senator, West Virginia Senate**



## LETTERS TO EDITOR

*As the field of Disability Medicine advances, the debate among various viewpoints is essential for continued progress. To foster the continuation and the strengthening of the dialogue between various parties this section of the Journal is intended to serve as a forum for debate. It is my sincere hope that readers would accept this challenge and participate in the ongoing dialogues on various issues. Here are couple of thought provoking letters. Responses are welcome and would be published, irrespective of the opinion expressed, subject to their relevance and suitable decorum. Editor.*

### RE: "FIBROMYALGIA AND CHRONIC FATIGUE SYNDROME," WHICH APPEARED IN THE FIRST EDITION OF *DISABILITY MEDICINE*

Dear Dr. Ranavaya,

Congratulations on your first edition of *Disability Medicine*. The journal was very attractively laid out and should be an excellent addition to our literature.

I did want to call your attention to several statements made by author Sigurdur Thorlacius of Iceland in his article entitled, "Fibromyalgia and Chronic Fatigue Syndrome." Thorlacius wrote:

In recent years it has become popular to label widespread pain and muscular tenderness as Fibromyalgia; the diagnosis is based on ...vague semi-objective signs; It remains unclear if these are reflections of one common underlying organic pathology or ...psychologically distressed individuals; The diagnosis [of CFS] is based on the patient's subjective description of symptoms; Symptoms [of

FM or CFS] can easily be attributed to an anxiety or mood disorder; [and], Many patients [wish to receive the] more "respectable" diagnosis of fibromyalgia or chronic fatigue syndrome.

These statements are generally skeptical and derisive. Perhaps Thorlacius forgets that FM and CFS are diagnosed by using *internationally* accepted case definitions. He also ignores a mountain of evidence that the biophysiology of these disorders is virtually *opposite* to that of depression, and that a minority of patients meet criteria for somatoform illness; yet he clearly concludes that FM and CFS are psychiatric conditions. When such incorrect comments are published, they negatively reflect on our organization. Unfortunately, such opinions are unfounded and are not the mainstream conclusions drawn by such venerable institutions as the NIH, the CDC, the World Health Organization, or the American College of Rheumatology.

While the terms FM and CFS may be misused or overused by uninformed

physicians, epidemiological data indicates that FM truly occurs in about 5% of the population and CFS has a prevalence of up to 800/100K. That makes these disorders more common than rheumatoid arthritis, breast cancer, and even AIDS. You consider those "respectable" I am sure!

Once again, I call for the ABIME and the AADEP to *not be prejudiced* by the views of a few outspoken members, but to consider the consensus views of knowledgeable individuals and organizations. To do otherwise will only depreciate the respectability of our organizations. Instead of negative editorialialization we ought to be seeking understanding of these novel conditions and devising new methods of determining disability.

Yours truly,

**Charles W. Lapp, MD, C.I.M.E.**

Assistant Consulting Professor at Duke University Medical Center

Diplomate, American Board of Internal Medicine

Hunter-Hopkins Center, P.A.



## LETTERS TO EDITOR (CONTINUED)

Dear Dr. Ranavaya,

We are writing you this letter today in the hopes that the American Board of Independent Medical Examiners would consider printing a position paper on the following issues. We are both board certified specialists in physical medicine and rehabilitation, and certified independent medical examiners. We do a great deal of medical legal work and independent medical examinations for a variety of referral sources, including various insurance carriers for the Industrial Commission of Arizona as well as attorneys.

The growing trend that we are seeing here in Arizona is requests, primarily from the attorney of the examinee, to have an independent medical examination either audiotaped or videotaped. Most of these cases occur when the referral source is a defense attorney, and the request for the audio/videotape is by the plaintiff attorney who represents the examinee. Often times, the attorney himself demands to be present during the exam. There is a trend developing where the attorney is advising the examinee not to fill out our pain intake questionnaire form, past medical history form, and often the attorney will advise his client not to answer certain questions during the history taking portion of the independent medical examination.

In addition to this, we are seeing a trend where the attorneys for the examinee are trying to subpoena not only our financial records, specifically as they relate to how much money our practice generates from doing independent medical examinations, but also they are trying to subpoena the results of our previous independent medical examinations, identify our referral sources, and basically attempt through the legal system to paint a picture of the independent medical examination portion of our practice as biased.

As this process is occurring here in Phoenix, Arizona, I would assume it is also occurring in other cities throughout the country. One option, of course, would be to refuse to perform the examination. However, this would significantly cut into our ability to practice as certified independent medical examiners and limit our referral base as well.

We would respectfully ask the American Board of Independent Medical Examiners to perhaps gather information from other physicians performing independent medical examinations around the country and see if this trend is developing elsewhere. Most importantly, we would respectfully request a position paper from the American Board of Independent Medical Examiners

regarding these issues. To summarize, where does A.B.I.M.E. stand on having independent medical examinations audiotaped or videotaped. Also, where does A.B.I.M.E. stand on having examinee's attorneys present during independent medical examinations and, often times, requesting that their client refuse to answer certain questions or fill out pain questionnaire forms. Finally, where does A.B.I.M.E. stand on divulging financial records regarding a physician's independent medical examination practice.

As practicing physicians who perform independent medical examinations, and have gone to great lengths to achieve special certification in this portion of our practice, we find this growing trend to be very disturbing and feel that it significantly hinders our ability to perform thorough, objective, effective independent medical examinations.

We patiently await your response and thank you for your consideration.

Sincerely,

**Kevin S. Ladin, M.D., F.A.A.P.M.R.,  
C.I.M.E.**

**Board Certified in Physical Medicine and  
Rehabilitation**

**Gary J. Dilla, M.D., C.I.M.E.**

**Board Certified in Physical Medicine and  
Rehabilitation**

**Center for Physical Medicine and  
Rehabilitation, P.C.**



# ABIME CERTIFICATION REVIEW AND AMA GUIDES TO THE EVALUATION OF PERMANENT IMPAIRMENT 5TH EDITION TRAINING COURSE 2001-02

**Program Chairman:** Mohammed I. Ranavaya, M.D., M.S., FRCPI, FFOM, FAADEP

**Co-chair:** Thomas A. Beller, MD, CIME, FAADEP

## DAY 1

7:00 a.m.	<b>Registration and Continental Breakfast</b>	1:00 p.m.	<b>Transition from 4th to 5th Edition.</b> Introduction to Key Revisions and changes in the 5th Edition of the AMA Guides to the Evaluation of Permanent Impairment.
7:30 a.m.	<b>Welcome &amp; Introduction and Review of course objective</b> <i>Mohammed I. Ranavaya, M.D., M.S., FAADEP</i>	1:30 p.m.	<b>Key Concepts in chapter 1 and 2</b> Philosophy, appropriate use and Practical application of the AMA Guides
	<b>Disability Medicine and the Law</b> <i>An overview of dealing with the legal system professionally and ethically.</i>	2:15 p.m.	<b>Beyond Musculoskeletal Systems</b> Impairment Evaluation of Other Systems AMA Guides 5th Edition, Chapters 3-12
7:45 a.m.	<b>A basic overview of Disability and Compensation systems and the Law</b>	3:30 p.m.	<b>Break</b>
9:00 a.m.	<b>Medicolegal considerations for Independent Medical Examiners.</b> A review of the role of various key players and their games.	3:45 p.m.	<b>Mock exam questions and answers.</b> Test your knowledge and skills
10:00 a.m.	<b>Morning Refreshment Break</b>	4:15 p.m.	<b>The Nervous System, Chapter 13</b>
10:15 a.m.	<b>How to swim in deep waters with big sharks and stay alive.</b> Essential deposition skills for Independent Medical Examiners.	5:00 p.m.	<b>Mental and Behavioral Disorder, Chapter 14</b>
11:15 a.m.	<b>Mock exam questions and answers.</b> Test your knowledge and skills	5:45 p.m.	<b>Mock exam questions and answers.</b> Test your knowledge and skills
12:00 p.m.	<b>Lunch and Learn with faculty – Case presentation</b> (continue learning with case presentation while you eat)	6:00 p.m.	<b>Adjourn</b>

**AMA Guides to the Evaluation of Permanent Impairment, 5th edition**

## DAY 2

7:00 a.m.	<b>Registration and Continental Breakfast</b>	11:30 a.m.	<b>Mock exam questions and answers.</b> Test your knowledge and skills
7:30 a.m.	<b>Spine impairment Rating, Chapter 15, With Case Presentation</b>	11:45 a.m.	<b>An Introduction to the scope of the ABIME Examination</b>
8:30 a.m.	<b>The Upper Extremities Impairment Rating, Using the 5th Ed. (Chap. 16)</b>	12:15 p.m.	<b>Basic Statistics, epidemiology, toxicology and other general issues on exam.</b>
9:45 a.m.	<b>Lower Extremities Impairment Rating, Using the 5th Ed. (Chapter 17)</b>	1:00 p.m.	<b>Adjourn</b>
10:30 a.m.	<b>Morning Refreshment Break</b>		
10:45 a.m.	<b>Impairment Rating for Pain, Using the 5th Ed (Chpt.18)</b>		

**Total CME hours: 15**

*Course Objectives and Faculty Profile on page 31*



## COURSE OBJECTIVES

*This course is specifically designed to educate and prepare physicians in the use of the AMA Guidelines to the Evaluation of Permanent Impairment 5th edition with general comparisons to 4th edition.*

### Educational Objectives

**At the conclusion of this learning activity, participants should be able to:**

- Describe the knowledge content related to the AMA Guides 5th edition.
- Discuss recent developments in the AMA Guides 5th edition
- Explain the main differences between the AMA Guides 4th and 5th edition
- Differentiate symptoms, pathology, impairment, function and disability
- Explain the fundamentals of quality disability evaluation services
- Relate clinical data to case issues
- Discuss skills needed to select and perform evaluations

- Perform musculoskeletal permanent impairment ratings according to the AMA Guides 5th edition to the Evaluation of Permanent Impairment
- Utilize skills to perform complex case evaluations of musculoskeletal pain disorders
- Explain the use of other chapters of the AMA Guides
- Define the steps needed for in your practice to implement the use of the AMA Guides 5th edition.

### Practical Objectives

- Perform impairment evaluations according to the AMA Guides 5th edition.
- Demonstrate skills in evaluating complex cases
- Evaluate and manage difficult impairment evaluations patients
- Perform excellent independent medical evaluations
- Provide IME services and serve as an expert medical witness
- Improve the quality of medical reports

## COURSE FACULTY PROFILE

**Mohammed I. Ranavaya, MD, MS, FRCPI, FFOM, FACPM, FAADEP, CIME** is a Professor of occupational and environmental medicine at the Marshall University School of Medicine in West Virginia and is Board Certified specialist in occupational and environmental medicine. Dr. Ranavaya also currently serves as the Director of the Appalachian Institute of Occupational & Environmental Medicine in West Virginia.

Dr. Ranavaya has performed several thousand independent medical evaluations and is an internationally recognized expert on AMA Guides and has taught globally over ten thousand physicians skills for performing independent medical evaluations and how to be more effective in the use of the AMA Guides to the Evaluation of Permanent Impairment.

Dr. Ranavaya has authored several chapters in various books on *Disability Medicine* and numerous articles regarding AMA Guides, disability guidelines and independent medical evaluations, etc. Dr. Ranavaya served as the chair of the editorial board of the *Medical Disability Advisor*, a book on workplace disability duration guidelines for various injuries and diseases. He served on the senior editorial advisory committee of the AMA Guides 5th edition and is a contributor to the AMA Guides 5th edition. He is Editor in chief of the journal *Disability Medicine* and serves on editorial board of the AMA Guides newsletter.

Dr. Ranavaya is the past President of the American Academy of Disability Evaluating Physicians. He is one of the founding fathers of the American Board of Independent

Medical Examiners (ABIME) and has helped develop the certifying exam for physicians seeking credentials as certified independent medical examiners.

Dr. Ranavaya can be reached via Email:  
mranavayamd@newwave.net  
PHONE: (304) 855-8605 Fax: 304-855-9442

**Thomas Beller M.D., FAADEP, CIME, Course CO-Director**, is board certified in internal and pulmonary Medicine and has served as a lead faculty for numerous prestigious continuing medical education programs. Dr. Beller is the chairman of the American Board of Independent Medical Examiners and is the Past President of the American Academy of Disability Evaluating Physicians

**Frank Jones M.D., CIME**, is a board certified Orthopedic Surgeon and is a specialist in hand surgery. He is one of the authors of AMA Guides 5th edition.

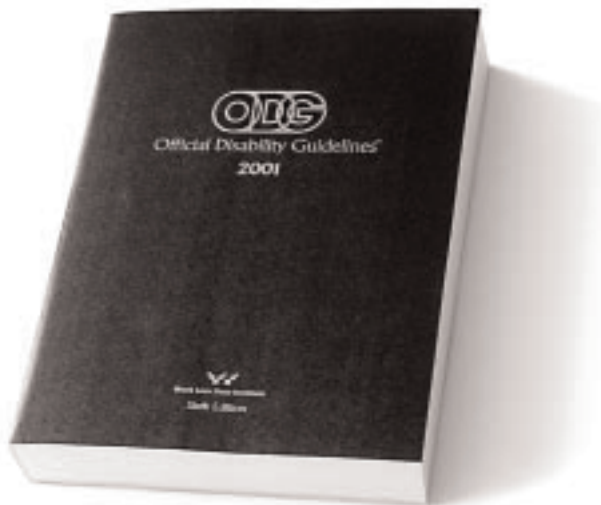
**John Pro M.D., CIME**, is board certified in Psychiatry. Dr. Pro has lectured nationally on the issues of psychiatric impairment and disability evaluations.

**Henry Roth M.D., CIME** is a pioneer in the field of disability medicine and has lectured extensively on issues of Independent Medical Examinations, disability management and rehabilitation of injured workers.

**Jim Talmage M.D., CIME** is a board certified Orthopedic Surgeon who has lectured extensively on topics of impairment and disability assessment.



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### **ODG is NOT another occupational health nursing textbook**

While *Official Disability Guidelines* does contain some descriptive information to help lay people understand each diagnosis, it is not meant to replace medical reference texts that nursing case managers may use to understand specific injuries and illnesses. For users desiring that information, *ODG On The Web* has prescreened the most valuable sources of information for each diagnosis, and hyperlinked them to the ODG description.

### **The norms in ODG are NOT made up by a few "experts"**

*Official Disability Guidelines* stands apart from its competitors in that we provide actual experience data, not the consensus recommendations of a few physicians. ODG is the only source for what is actually happening, providing the most valuable forecasting and benchmarking information available. Although it may be important to know what some experts think *should* be happening, how can these opinions be viewed objectively if clinicians don't also keep up with what is really happening?

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When decisions are being made in a field as important as occupational health, clinicians should ask for the data behind any recommendation, and if there is any data, they should determine whether that data actually supports the recommendations. You will find that *ODG* is the only reference with return-to-work guidelines that are fully supported by evidence-based data.

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Orlando, FL	February 2, 3	Chicago, Illinois	May 4, 5
Sydney, Australia	February 16, 17	Chicago, Illinois	July 13, 14
Hawaii	February 22	Phoenix, Arizona	September 21, 22
Hawaii	February 23, 24, 25	Chicago, Illinois	October 19, 20

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