

# **Practical PAIN MANAGEMENT**

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## **Chronic Pain and Biopsychosocial Disorders**

# CHRONIC PAIN AND BIOPSYCHOSOCIAL DISORDERS

## The BHI™2 Approach to Classification and Assessment

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**A**ccounting for over 35 million office visits a year, pain represents the most prevalent reason why an individual chooses to seek out medical treatment.<sup>1</sup> So prevalent, in fact, research has shown that the cost associated with the treatment of pain exceeds the costs attributable to the treatment of other disorders, such as heart disease, respiratory disease, or cancer.<sup>2</sup> Pain also represents a condition that has both medical and psychological components.

Chronic pain is widely regarded as a biopsychosocial disorder.<sup>3-8</sup> Chronic pain and associated disability are often life-altering conditions, have a profound psychosocial impact, and psychiatric conditions are common in such patients. One study of an injured patient population found a 55% incidence of depression,<sup>9</sup> where even minimal levels of depression were associated with increased rates of social morbidity and service utilization.<sup>10</sup> Another study reported that of 1595 injured patients, 64% had one or more diagnosable psychiatric disorders, compared to a prevalence of 15% in the general population.<sup>11</sup> In some cases, preexisting psychological conditions may predispose the patient to develop chronic

pain. In other cases however, the psychological difficulties may be the consequence of the pain condition, itself.<sup>12</sup> Thus, when pain appears in conjunction with stress, anxiety, depression or other psychiatric syndromes, the arrow of causality can sometimes point from pain to psychiatric condition, and in other cases from psychiatric condition to pain.

Overall, the research literature suggests that psychological difficulties are common among patients with pain. Left undetected and untreated, these difficulties may impede a patient's progress in treatment and lead to long-lasting symptomatology. Among those who report pain and injury, psychosocial factors may play a major role in delayed recovery. One study of psychosocial factors demonstrated an ability to accurately predict delayed recovery for patients suffering acute pain 91% of the time without using medical information.<sup>13</sup> Another study found that psychosocial factors play a dominant role in surgical outcome.<sup>14</sup> Lastly, in a World Health Organization study of 25,916 medical patients from around world, psychological factors were found to be a stronger contributor to disability than was disease severity.<sup>15</sup>

While chronic pain is generally recognized as being a biopsychosocial phenomenon, what is often overlooked is that illness, injury, psychological and social factors interact over the course of time to produce distinctly different types of biopsychosocial disorders. Effective treatment requires that the clinician not only identify the biological, psychological and social aspects of a condition, but also understand how each component interacts.

**Types of Biopsychosocial Disorders**  
A classification system for biopsychosocial disorders was created during the development of the Battery For Health Improvement 2 (BHI™2). Unlike most psychological tests, which were designed to assess psychiatric disorders, the BHI 2 was designed to assess biopsychosocial disorders in general, with particular attention being paid to chronic pain disorders. The development of the BHI 2 began with a model of biopsychosocial disorders, which held that biological, psychological and social aspects of these disorders become intertwined, in various ways, over the course of their history.

The BHI 2 model classified biopsychosocial disorders into four distinct

types. Called psychomedical classification, this approach classified these disorders into a 2x2 schema (see Table 1). This divided biopsychosocial disorders into ones that had either physical (physiogenic) or psychosocial (psychogenic) origins. It also divided these disorders into ones where the mind-body connection was physical, as opposed to psychological.<sup>16</sup> As part of this model, an overall paradigm was developed to try to depict the interrelationship of biopsychosocial variables over the natural history of these disorders (see Figure 1).

### **Biopsychosocial Disorders with a Physical Origin**

Some psychomedical disorders clearly originate with a physical injury or disease process, and can be broken down into two subtypes: organic biopsychosocial disorders and reactive biopsychosocial disorders. Both types can be described as physical conditions that lead to the subsequent development of a psychological condition and social consequences.

Organic biopsychosocial disorders are those that begin with an organic condition that affects the central nervous system and, in so doing, manifests itself cognitively or emotionally. Some organic psychological disorders are the result of injury, such as the memory loss or heightened emotionality secondary to brain injury. In other cases, organic biopsychosocial disorders result from disease, such as depression secondary to a bipolar disorder. In these conditions, underlying organic processes produce the psychological symptoms. For example, an organic biopsychosocial disorder could begin with hypothyroidism. This hypothyroidism could effect on the central nervous system, producing depression. This depression could then impact the patient socially, both at home and in the workplace.

Reactive biopsychosocial disorders also begin with an objective disease or injury. In this case, there is no direct mechanism by which the disease process produces the psychological complications. Instead, with reactive disorders it is the psychological impact of the condition that produces the psychological reaction. For example, suppose an injured patient with chronic pain has difficulty functioning, and as a result suffers the loss of a job. The patient may then react to the job loss with feelings of depression. In this case, even though the loss of the job and the

subsequent reactive depression was a consequence of the pain condition, there is no direct biological mechanism whereby the disease directly causes the depression. In reactive biopsychosocial disorders, the psychological symptoms are produced by the patient's perception of, and reaction to, the disease process and its consequences.<sup>12</sup> Consistent with this, one study found that in a large cohort of patients with pain-related disability, the prevalence of major depression was 25 times higher than general population estimates.<sup>11</sup>

### **Biopsychosocial Disorders with a Psychological Origin**

In contrast to disorders having a physical origin, a psychogenic disorder is one in which an individual's psychological processes trigger the onset of a biopsychosocial disorder. Although the term "psychogenic" has negative connotations for some, this is unwarranted. There is nothing inherently "bad" about psychological conditions. At the same time, when patients with psychogenic conditions persist in seeking a medical explanation for their symptoms, both patient and physician are likely to become frustrated. Like physiogenic conditions, psychogenic conditions are common, neither good nor bad, and can benefit from care by appropriate professionals.

There are two types of psychogenic disorders: psychophysiological and somatizing disorders. Both types can be described as psychological conditions that subsequently lead to the development of physical symptomatology.

Psychophysiological biopsychosocial disorders have their origin in the psychosocial realm, but they come to have an objective effect on the body through an organic connection. This effect is generally produced through the effects of the "fight or flight response" involving both the autonomic nervous system and hormones associated with stress. Stress or strong emotional reactions can cause hundreds of physiological changes in the body, including accelerated heart rate, increased blood pressure and muscle tension, cooling of the hands and feet due to vascular constriction, and rapid respiration, to name just a few.<sup>17,18</sup> When the body experiences psychophysiological reactions such as these, a variety of physical symptoms can result. Some psychophysiological disorders, such as tension

headaches, are extremely common. Other types of psychophysiological disorders include temporomandibular joint pain secondary to bruxing, stress-related heart palpitations and functional dyspepsia.<sup>19</sup>

Somatizing biopsychosocial disorders denote a group of disorders that, like psychophysiological disorders, have their origin in psychological processes. However, they differ in that there are no detectable organic changes to the body. This group of disorders includes somatoform disorders, anxiety or depression that is manifested physically, and some types of factitious disorders.

In somatizing disorders, psychological processes give rise to the perception or report of physical symptoms, which the patient interprets as organic in nature, even though no detectable organic disorders are present.<sup>20-22</sup> Most somatizing disorders involve the misguided pursuit of a medical solution to a problem that is essentially psychological in nature. Persons with somatizing disorders have an underlying psychological condition, which for conscious or unconscious reasons they do not acknowledge. They wrongly attribute the symptomatology of this psychological condition to a medical disorder, while the underlying psychological dynamics go unrecognized. This tendency to medicalize symptoms may be reinforced by the patient's social environment.<sup>23</sup>

An example of a somatizing disorder would be a patient with severe anxiety who repeatedly goes to an emergency room to be evaluated for a heart attack. This patient refuses to believe that this could be a psychiatric condition, and instead insists on repeated cardiac assessments. However, if the patient can be convinced that a particular organic condition has been ruled out, somatoform disorders can "metastasize" into other body areas or organ systems, producing an evolving pattern of diffuse symptoms. Thus, just when one disease is ruled out, a new and puzzling symptom is reported. This may require a consultation with another specialist, and a new round of medical tests begin. In this case, focusing on the physical symptomatology enables the patient to avoid acknowledging the underlying anxiety. Thus, the patient seeks a medical explanation that prevents the patient from having to admit that he or she has any emotional weaknesses. Denying any psychological conditions out of a deep sense of shame, somatizing patients in-

stead save face by reframing these symptoms as being signs of a medical condition. They therefore seek the wrong kind of treatment, which ultimately is not what is needed and, at best, offers only a calming placebo value.

Patients with somatizing disorders sometimes do acknowledge emotional distress. When they do, though, they often regard any psychological difficulties as being the consequence of the reported physical conditions, rather than the cause. For example, sometimes a patient like the one above might admit to being anxious. In this case however, the twist is that the patient says that the anxiety is due to the fact that death could occur at any moment from a heart attack, and physicians are refusing to listen! In so doing, they deny that their condition has a psychological origin. Thus, when patients with somatizing disorders do acknowledge emotional distress, they portray any psychological difficulties as being the consequence of the reported physical conditions (that is, a reactive disorder), which is the reverse of the actual state of affairs.

Another form of somatizing disorder is the factitious disorder. In these disorders, psychological processes give rise to the report of physical symptoms. Such patients are believed to be motivated by primary gain. That is, they find the idea of being a patient to be intrinsically appealing, and report or self-induce symptoms in order to gain patient status. However, once pa-

tient status is achieved, significant secondary gain may also be available.<sup>24</sup>

### The Natural History of Biopsychosocial Disorders

The natural history of biopsychosocial disorders often follows an identifiable path. While there are four different types of biopsychosocial disorders, their natural histories share common threads. During the development of the BHI 2, a paradigm was developed to explain how biological, psychological, and social processes could interact over the course of time to produce the various types of biopsychosocial disorders.

### Factors Affecting Onset of Biopsychosocial Disorders

In the physically healthy person, psychosocial and behavioral factors may increase the risk of onset of a variety of physical illnesses or injuries. For example, if the patient engages in an unhealthy lifestyle with regard to diet, exercise, or stress, this increases the risk of a variety of medical conditions. Other psychological factors may also increase the risk of injury.

One study found that up to half of all traumatic brain injury hospitalizations are associated with alcohol intoxication, while up to two thirds may have a history of substance abuse.<sup>25</sup> Patients reporting drug or alcohol abuse were also found to be more likely to sustain violent injuries.<sup>26</sup> Other studies have also found that brain

injury was associated with increased levels of depression, anxiety disorders, substance abuse and other psychiatric conditions.<sup>27</sup> In the workplace, job dissatisfaction has been found to play a significant role in the report of back pain.<sup>28</sup>

Chronic stress can give rise to the onset of painful conditions through a variety of psychophysiological mechanisms, such as when emotional distress or stress-related muscular bracing leads to pain.<sup>29,30</sup> Additionally, various psychological conditions can increase the risk that physical symptoms will be reported, even when no organic pathology is present. One example of this would be a somatizing disorder called alexithymia, where emotional pain is not recognized, and is instead reported as physical pain.<sup>31,32</sup> By whatever means pain appears, once it does, the experience of pain can be shaped by a variety of psychological and social forces.

### Psychological reactions to illness and injury

Following the onset of a serious illness or injury, it is quite common for patients to have a psychological reaction to it. Illness, injury, pain and distress can lead to a reduction in the ability to function, increasing the disruption of work patterns, and leading to greater financial distress.<sup>33</sup> Limitations in functioning can also lead to an alteration of family roles, and this may cause friction within the family if the patient cannot perform the tasks that he or she is expected to do.<sup>34,35</sup> Finally, limi-

TYPE OF MIND-BODY CONNECTION		ORIGIN OF DISORDER	
		Physical Origin	Psychological Origin
Physical Connection		Organic Psychological Disorders	Psychophysiological Disorders
	Sample Types:	Depression due to severe brain injury or hypothyroidism	Chronic anxiety leads to muscular bracing and tension headaches
	Mechanism:	Illness or injury has direct effect on CNS, and on emotions, cognition, or personality	Chronic autonomic arousal or unhealthy behaviors lead to actual organic problems
Psychological Connection		Reactive Psychological Disorders	Somatizing Disorders
	Sample Types:	Injury produces pain, disability and reactive depression	Psychogenic pain, somatization
	Mechanism:	Understandable emotional reaction to an objective physical condition	Misperception or exaggerated report of physical symptoms without organic basis, which are driven by psychodynamics

TABLE 1. Chronic Pain and Types of Psychomedical Disorders. (Adapted from Bruns and Disorbio, 2003)

tations in functioning can interfere with recreational activities, reducing the patient's available psychological outlets. As a result, the onset of a medical condition may lead to anxiety over an uncertain future, anger about the perceived unfairness of the circumstances, and depression over the difficulties in life. In addition to whatever physical symptoms are present, this emotional distress can increase the patient's overall level of suffering, and interfere with functioning.<sup>36</sup>

### **Complications Secondary to Psychological Vulnerabilities**

The course of a biopsychosocial disorder may intersect with preexisting psychological vulnerabilities. For example, if a patient with chronic pain has had a history of chemical dependency, and is subsequently prescribed opioid analgesics, the possibility of opioid abuse will need to be addressed.<sup>37</sup>

Another psychological vulnerability is a history of chronic depression or anxiety. This affective vulnerability may increase the intensity of the affective response to pain or disability. Additionally, if a patient has had chronic difficulties with expressing emotions, this may precipitate a crisis,<sup>38</sup> as he or she is now experiencing intense affective distress, without the ability to articulate it. Emotional distress tends to erode a patient's adaptive energies, and reduce the ability to tolerate pain and frustration. The resultant overall level of perceived suffering, while in part being attributable to physical symptoms, is also in part attributable to the emotional distress the patient is experiencing.<sup>36</sup>

Some psychological vulnerability risk factors have to do with certain cognitive traits. For example, patients who have a low perceived sense of self-efficacy may have more difficulty adjusting to an illness or injury, and perceive themselves as being unable to make the needed behavioral changes.<sup>39</sup> Similarly, pessimism has been found to be related to poor functioning.<sup>40</sup> If a person believes that he or she cannot do something, this may have a disabling effect. In contrast, perseverance has been found to be associated with positive outcomes from pain conditions.<sup>41</sup>

Numerous studies have found personality disorders to be closely associated with chronic pain and delayed recovery. For example, one study of injured patient populations found a 51% incidence of personality disorders,<sup>12</sup> while other

studies found 70%<sup>11</sup> and 77%,<sup>42</sup> which are far higher levels than those found in the general population.<sup>11</sup> As they are associated with chronic maladaptive behavior, personality disorders are also thought to interfere with recovering from illness or injury.

A variety of other psychological traits can also magnify how a patient may respond to the onset of a medical condition. Some patients are more prone to somatization or somatic preoccupation, and this may magnify their perception of symptoms. Additionally, some patients may be pain-intolerant, or feel entitled to be pain-free.<sup>43</sup> The combination of being preoccupied with intolerable symptoms tends to lead to a very distressed patient with unrealistic expectations.

Overall, the effect of psychological vulnerabilities is to increase the intensity of problematic psychological reactions to the onset of a medical condition. These same vulnerabilities can also interfere with treatment in a number of ways. Overall, the effect of these vulnerabilities is to increase the degree of psychosocial difficulties secondary to a medical condition, and in so doing, to delay recovery.

### **Influence of the Social Environment**

A patient's social environment can also significantly influence the respond to treatment. Having a serious illness or injury can stress the family system,<sup>44,45</sup> often requiring other family members to change and adapt. If a family is appropriately supportive, this is not a problem. However, if family dysfunction is present, the patient's elevated level of need at home may lead to conflict, and to failure of the family to offer support. Reports of a history of being physically or sexually abused are also associated with chronic pain.<sup>46,47</sup> Alternatively, an overly solicitous family may reinforce patient passivity, encouraging the patient to adopt a disabled role.<sup>48,49</sup>

The course of a pain condition is influenced greatly by the doctor-patient relationship.<sup>50,51</sup> If the physician is perceived as being competent and supportive, patient distress decreases. However, if a patient feels that he or she is not being taken seriously, the patient may be motivated to magnify the reports of pain or other symptoms in order to persuade the physician to take action. If the doctor-patient relationship is able to overcome this obstacle, then the physician may be able to

guide this patient in the direction that is needed. However, if this is not the case, this may plant the seeds for a growing dissatisfaction with medical care, and increase the risk of noncompliance.

Another factor in the social environment that cannot be overlooked is the presence of secondary gain.<sup>52</sup> Secondary gain is often equated with monetary gain, as is commonly seen when litigation is present, or when the patient may be eligible for disability benefits. However, another form of secondary gain occurs when patients use the report of their medical symptoms to gain the attention and support of others. In this manner, the effect of social secondary gain is to allow the patient to fulfill dependency needs.

For the dysfunctional patient in the worker's compensation system, a cornucopia of reinforcers are available. By reporting work-related pain, a worker may receive time off with pay, light duty when at work, gain control over hours worked, and be provided free opioids and frequent massages. Additionally, if the patient does not do well in treatment, this will tend to increase the amount of any disability settlement. For the typical responsible individual, these are not temptations. However, the high level of personality disorders in chronic pain patients suggests that when antisocial or other dysfunctional traits are present, these incentives can prove to be substantial barriers to recovery.<sup>11, 53</sup>

### **The Biopsychosocial Vortex**

For the patient who is psychologically healthy, there are a numerous motivations to recover. Patients are generally frustrated with their physical symptoms and difficulties with functioning. The desire to be healthy motivates them to strive to overcome whatever hurdles are in their path. Most patients are able to persevere through the course of treatment and recover. However, in some cases, whether due to the severity of the medical condition, incorrect diagnosis, inadequate treatment, preexisting psychological vulnerabilities, complicating psychological reactions, or factors in the social environment, some patients fail to recover, and instead enter a downward spiral (see Figure 1).

A number of factors can contribute to this downward spiral. First, some patients have unrealistic expectations of a total cure, or seek a cure that does not involve

effort on their own part. Such patients may have no desire to alter their lifestyle, perform unpleasant exercises, or take medications that have unpleasant side effects. When such patients fail to persevere with more realistic treatment, and demand instead a magical solution, physicians may become frustrated and lose interest in treating the patient.

The patient may make some last efforts to cope with the symptoms. There may be a further exaggeration of symptoms, seeking to motivate clinicians and family to be more responsive. However, if this does not lead to the ideal solution that is hoped for, the patient may experience a growing sense of depression and agitation mixed with severe insomnia, and feel that recovery is hopeless. The disgruntled patient may also develop a growing sense of anger directed toward the medical profession, and by a desire for retribution on those who are blamed for causing this condition.

At this point, whatever the patient's objective medical condition is, the psychosocial complications are so severe as to severely undermine any chances for a positive outcome. The extreme emotional distress may act to aggravate any underlying medical condition, magnify the perception of symptoms, and interfere with compliance. Being physically and emotionally exhausted, the patient may feel too tired to exercise. Additionally, the patient at this point can become progressively more intolerant of pain, medication side effects, and the frustrations of medical treatment in general.

Because of these severe psychosocial complications, medical conditions that might otherwise improve may thus become intractable biopsychosocial disorders. In some cases, even when the original organic condition has resolved, there can be enduring residual symptoms — maintained by the severe emotional distress and psychophysical complications—which remain refractory to all care.

### The Somatoform Solution

In some cases, a patient may consciously or unconsciously arrive at a "somatoform solution" to life's problems. In this scenario, psychosocial processes are reorganized around the report of pain or other physical symptoms, and this becomes the modus operandi for addressing a variety of life challenges. Like the child who learns to complain of a tummy ache to avoid something unpleasant at school, the somatoform patient comes to use the complaint of physical symptoms as a face-savings means of interacting with the world. Some somatoform symptoms are quite benign and extremely common, such as using the report of a physical symptom to excuse oneself from an undesirable social event. In contrast, somatoform disorders can become much more serious in nature.

Through the complaint of pain or other physical symptoms, the somatoform solution may enable a patient to justify withdrawal from disliked home responsibilities, or escape from workplace stressors. Somatoform symptoms may provide a means of coercing others to provide the support that is desired, justify the receipt of financial compensation, and enable the patient to assume a dependent role. For a patient who was unable to adequately express emotional needs before, somatoform symptoms can be a way of seeking the support of others without having to directly express any underlying emotional needs. In some cases, somatoform symptoms become associated with feelings of entitlement, and the symptoms can consciously or unconsciously

### Illness and Injury Risk Factors

- Unhealthy lifestyle, e.g. diet, exercise, substance abuse, tobacco use, or poor biomechanics
- High stress level
- High psychophysical reactivity
- Risk taking or dangerous behavior

### \* Intractable Biopsychosocial Disorders

- Objective medical disorders are more likely to become intractable when psychosocial complications are not addressed. These complications can drain the emotional energy needed by the patient to invest in compliance, add stress-related complications, and magnify the perception and report of symptoms.
- Intractable biopsychosocial disorders can involve a "somatoform solution." In such cases, the personality is reorganized around physical symptoms, which become central to identity, and which supply a physical pathway for the expression of affective distress. By focusing only on the physical aspects of emotional pain, the patient may avoid facing the emotions internally. Additionally, the physical symptoms may provide a face saving means of seeking the attention and support of others, without having to expose these emotional vulnerabilities. In so doing, the physical symptoms may allow the patient to escape from intolerable aspects of life, justify adopting a dependent role, while absolving the patient from guilt due to any avoidance of responsibility. The somatoform solution may also provide financial gain, a means of punishing others, or a rationalization for the abuse of prescription or illicit drugs.
- Somatoform disorders are unlikely to resolve unless the underlying psychosocial complications are addressed.

### Factors Blocking Escape from Vortex

- Misdiagnosis or ineffective treatment
- Multidisciplinary treatment is not available
- Environment does not support attempts at adjustment
- Unrealistic patient hopes of an easy, total cure are frustrated by the difficult realities of medical treatment
- Entitlement, compensation focus and litigation
- Feelings of depression, fear, or anger are vented on the physician.
- Physician becomes frustrated, the patient gives up and looks for an alternative solution

# The Biopsychosocial Vortex

The BHI™ 2 Paradigm Of How Intractable Biopsychosocial Disorders Develop

## Onset of Illness or Injury

### Common Reactions

- Difficulties adjusting to:
  - Pain or illness symptoms
  - Loss of function or disfigurement
  - Possibility that condition is incurable or terminal
- Affective reactions may include:
  - Major depression
  - Panic or anxiety disorders
  - Anger at perceived injustice
- Social difficulties may include:
  - Changes in family dynamics
  - Financial and work problems
  - Forced lifestyle changes

## Intractable Biopsychosocial Disorders\*

### Failure to cope with symptoms leads to:

- Exaggeration of symptoms in attempt to gain support
- Exhaustion and resignation
- Medical fears and helpless depression
  - Growing anger/ wish for retribution
  - Identity fragmentation
  - Wish to be rescued

Frustration with limitations and pain, grief over loss of function and desire to be healthy drive the nonpsychologically involved patient to persevere in treatment, and escape from the vortex.

### Psychological Vulnerability Risk Factors

- History of chronic depression, anxiety, panic or hostility
  - Inability to identify feelings, or unwillingness to disclose them
  - Somatization or somatic preoccupation
  - Pain magnification or intolerance
  - Use of symptoms to justify dependency
  - Chronic maladjustment
  - Borderline personality traits, self-destructive tendencies or emotional instability
- Low level of perseverance, including pessimism or low self-efficacy
- History of substance abuse

### Psychological Complications

- Magnification of physical symptoms
- Actual psychophysiological changes due to autonomic arousal or muscular bracing
- Conversion of emotions into experience of physical symptoms
- Passive dependency needs lead to wish for quick cure without effort on one's own part

### Psychosocial Environment Risk Factors

- Lack of support at home slows recovery
  - Job dissatisfaction reduces motivation to return to work
- Dissatisfaction with medical care leads to noncompliance
- Past history of violence or trauma increases emotional vulnerability and physical reactivity
- Lack of outlets for frustrations
- Medical symptoms enable the patient to avoid disliked activities
- Environment encourages medicalizing the problem by offering secondary gain for medical symptoms in the form of increased attention, decreased responsibility, monetary compensation, or allowing abuse of medication

**Figure 1**

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BHI™ 2 SCALES	
Scale Group	Scale Name
Validity and symptom magnification	Defensiveness * Self Disclosure
Physical Symptoms	Somatic Complaints * (somatization) Pain Complaints * Function * Muscular Bracing
Affect	Depression * Anxiety * Hostility
Character Disorders	Borderline Personality Symptom Dependency Chronic Maladjustment Substance Abuse Perseverance
Social Environment	Family Dysfunction Survivor of Violence Doctor Dissatisfaction Job Dissatisfaction

\* Included on the BBHI 2

**TABLE 2.** BHI™ 2 Scales

empower the patient to extort compensation from others, or to gain revenge on others for perceived injustices.

The somatoform solution may also offer various types of primary (internal) gain. One type of primary gain involves internal absolution, where the presence of pain or other physical symptoms can enable a patient to avoid guilt for what might otherwise be considered to be irresponsible behavior. Similarly, exaggerated disability can be employed internally to justify work avoidance or maintain a self-righteous expectation that others should provide care. The somatoform solution may thus give the patient permission to retreat from personal autonomy, become dependent, receive support and monetary compensation, and justify the abuse of prescription or illicit drugs. Beyond this, such patients may feel entitled to the admiration of others for having to endure the reported serious medical condition. Such patients are less apt to assume responsibility for their failures, instead blaming such failures on the unconscionable acts of others, who caused the injury, provided poor treatment, or who unreasonably withheld their support. This may be a conscious or unconscious process, since such patients may not be cognizant of the degree to which their perceived physical symptomatology is produced by psychological processes.

### Assessment and Intervention

Biopsychosocial disorders are complex, and require a multidimensional assessment. The psychomedical classification system and the biopsychosocial vortex described above were used to develop the BHI 2. The goal in BHI 2 development was to create, in one psychological test, the ability to assess the full spectrum

of psychological and social variables discussed in this paper. This test assesses 18 scales (see table 2), and numerous other variables as well.

In order to make sense of the information generated by the BHI 2, part of the development of this test involved the creation of a computerized software system to aid in interpretation. Using a technology, which is sometimes referred to as "narrow artificial intelligence," the BHI 2 software examines over a hundred variables and then writes two plain language explanations, one for the clinician, and another for the patient. Unlike some psychological tests, which conclude that somatoform disorders are present without taking medical findings into account, the BHI 2 was designed to be used in conjunction with medical tests. Since it was intended to assess biopsychosocial disorders, the BHI 2 computerized report addresses problems unique to these conditions, such as considering the type of biopsychosocial disorder, and addressing the "arrow of causality" problem noted above.

While the BHI 2 offers a thorough evaluation of biopsychosocial disorders, it is too lengthy for some situations. Consequently, a shorter version, the Brief Battery For Health Improvement 2 (BBHI™ 2) was also developed, which is better suited for use in the fast pace of medical settings.<sup>54</sup> The BBHI 2 can be administered in 8-10 minutes, and provides a multidimensional assessment of pain, as well as assessing function, depression, anxiety, somatization, symptom magnifying/minimizing, and 17 additional critical items. It can be used for both assessing biopsychosocial complications and for tracking treatment outcomes as well.

### Conclusion

The psychomedical vortex provides a paradigm of how biopsychosocial disorders become intractable. Using this paradigm, a variety of interventions can be identified which may act to prevent a downward spiral into this vortex. Alternately, when a seemingly intractable condition has already appeared, this model can offer some suggestions as to how to identify the roadblocks to recovery, and where to intervene.

When chronic pain appears within the context of a biopsychosocial disorder, comprehensive assessment requires assessing all of the biological, psychological and social aspects of the condition, and understanding the relationship between them. By correctly assessing the type of biopsychosocial disorder that is being treated, and understanding the history of how it developed, a more effective treatment plan can be developed. Research suggests that when the biological, psychological and social aspects of disabling pain are all identified and adequately addressed, even complex biopsychosocial disorders can be treated successfully.<sup>55</sup> ■

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