Using Psychological Evaluations to Improve Patient Care and Outcomes

Daniel Bruns, PsyD
Greeley, Colorado

• Private practice 28 years in North Colorado
• Guideline Involvement
  – Colorado / ACOEM/ ODG/ California
  – AMA Guides to Impairment
• AAPM Textbook on Pain Management
• Chronic pain research
• Psychological test author*
Managing Patients

with Chronic Pain

“There is no reason why you should be feeling pain…”
How do you respond when a patient says:

You don’t believe my pain is real, do you?

My pain is not in my head – something must be wrong or I wouldn’t feel this way.

How do you respond when a patient says:

If you can’t explain why I have pain, could you refer me to somebody smarter who can figure it out?
To have great pain is to have certainty.

To hear that another has pain is to have doubt.

(Scarry, 1985)

Assessing patients with chronic pain:

What have we learned?
The Biomedical View of Pain

- Physical health and mental health are separate and distinct
- Pain is either
  - **Real** and biological
  Or
  - **Not Real** and “In your head”
    - Some people lie about pain (malingering)
    - Others imagine pain (psychopathology)

Evidence Proves That This Theory Is Wrong
The Nature of Pain

A Brief Review of The Pain Sensory System

Nociceptor = pain sensory receptor

- **Nociceptor types**
  - Mechanosensitive (cutting, pinching, stretching, deforming)
  - Thermosensitive (hot or cold)
  - Chemosensitive
    - activated by pain-producing substances, e.g. Substance P
  - Polymodal (all the above)
  - “Sleeping” (activated by inflammation)
    - hyperalgesia, central sensitization, and allodynia
The Two Pain Sensory Systems: Different Nerves, Different Paths

• **First Pain (Acute)**
  – A-δ nerve fibers follow neospinalthalamic tract to sensorimotor cortex

• **Second pain (Chronic)**
  – C nerve fibers follow paleospinalthalamic tract to the reticular and limbic systems

Acute Pain Sensory System

• AKA: “First pain” / “fast pain” (100 mph)
• A high speed conduit of information to the brain’s cognitive center
• A sharp, localized sensation associated with withdrawal from stimulus
Chronic Pain Sensory System

• AKA “Second Pain” / “Slow Pain” (1 mph)

• A low speed conduit routed through the arousal and emotion centers (fight or flight)

• A dull, nonlocalized ache, combining the effect of multiple pain receptors

Pain Riddles
Where is Pain?

How are pain and snow alike?
How are Color Blindness, Tinnitus, and Chronic Pain All Alike?

How Are Severe Injuries and Strobe Lights Alike?

The Blue Dot of Pain
How does singing in the rain differ from “Chinese” water torture?

Why can’t we all just sing in the rain?

• The helpless context makes the water punishment aversive

• The repetition made it intolerable
TSSP

- Unlike First Pain, Second Pain has a distinct, neurologically cumulative effect

- TSSP = Temporal summation of second pain
  - Causes “windup” of dorsal horn neurons

- “Windup” contributes to central sensitization of pain

Neurologically, chronic pain is more closely associated with memory and emotion than it is with sensory functions

(Apkarian, 2009)
“My Pain Never Changes”

Are you male or female?
Strange But True:

What Science Tells Us About Pain

The Perception of Pain

• f-MRI studies show that activity in the brain’s pain center can be triggered by:
  – Physical pain
  – Seeing a loved one in pain (Singer, 2004)
  – Imagined pain (Derbyshire, 2004)
  – Cognitive catastrophizing (Gracely, 2004)
Strange but true…

• Swearing reduces pain
  – (Stephens, 2009)

• Talk therapy reduces pain too
  – (Manchikanti, 2010)

Strange but true…

• Opioid use may increase pain
  – (Hay 2009)

• Placebos actually reduce nociception
  – (Eippert, 2009)
Strange but true…

• Some antidepressants are powerful analgesics
  – (Citrome, 2012)

• Tylenol can reduce emotional pain
  – (DeWall, 2010)

Strange but true…

• Chronic pain shrinks the brain
  – brains appear 10-20 years older
  – Apkarian et al 2004

• Pain can cause arthritis
  – Fiorentino, 2008
Strange but true…

• Chronic pain rewires the brain
  – Geha et al, 2008, in *Neuron*

• Brain changes may reverse with pain treatment
  – Seminowicz, et al 2011

Strange but true…

• Inflammation can cause depression
  – (Raison, 2011; Miller 2009)
Many parts of the brain are involved in pain perception.

Nociception Does Not Become Pain Until the Brain Says So

- Pain perception is not a one way street
- Pain is influenced by cognition, affect and arousal
Why can’t somebody find out what is wrong with me and fix it?

Rethinking Our Approach
The Value of Psychological Assessments

How Good Are Psychometric Tests?

• Psychological tests are comparable to medical tests in their ability to diagnose and predict outcome (Meyer, et al, 2001)

• Psychological tests better than MRI at predicting lumbar surgical outcome, (Carragee, et al, 2005; 2004)
The Science of Psychometrics

- Scientific surveys apply the science of psychometrics to the assessment of the feelings of populations, and predict behavior.

- Standardized psychological tests apply the science of psychometrics to the assessment of the feelings of individuals, and predict behavior.

Commonly Used Psychological Tests

- Tests of General Psychopathology
  - MMPI-2
  - MMPI-2-RF
  - MCMI-III
  - PAI

- Biopsychosocial Tests
  - BHI 2*
  - MBMD

- Brief Biopsychosocial Tests
  - BBHI 2*
  - P3

* Conflict of interest
My Own Research*

And Illustrative Case Histories

*Conflict of interest

Battery for Health Improvement 2

• Biopsychosocial test
  – 217 items/ 18 scales + other measures
  – 30-35 minutes

• Uses
  – Presurgical psych evals
  – Pre-medical treatment psych evals
  – Interaction of psych and physical symptoms

• Bruns and Disorbio, 2003
Standards

• Medications
  – Safe and effective

• Psychological tests
  – Valid and reliable

Validation of the BHI 2
And BBHI 2

• 2500 psych evals at 106 sites in 36 US states
• Data gathered on both medical patients and community members
  • Two norm groups
  • Average American community member
  • Average American rehab patient
For each scale:
- No diamonds outside the 40-60 range means scale score is average.
- One diamond outside indicates a moderate elevation (more sx than healthy people)
- Two diamonds outside indicates a clinical elevation (more sx than other patients)

**Case History 1**

- Male work comp patient with severe pain
- Not responding to treatment
- Overusing opioids
- Will surgery help?
Battery for Health Improvement 2

Patient Profile

<table>
<thead>
<tr>
<th>Scales</th>
<th>Raw Score</th>
<th>T Scores Patient</th>
<th>T-Score Profile</th>
<th>Rating</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validity Scales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Disclosure</td>
<td>154</td>
<td>64</td>
<td>67</td>
<td>High</td>
<td>92%</td>
</tr>
<tr>
<td>Defensiveness</td>
<td>9</td>
<td>40</td>
<td>33</td>
<td>Low</td>
<td>17%</td>
</tr>
<tr>
<td>Physical Symptom Scales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>26</td>
<td>56</td>
<td>65</td>
<td>Mod. High</td>
<td>76%</td>
</tr>
<tr>
<td>Pain Complaints</td>
<td>62</td>
<td>69</td>
<td>78</td>
<td>Very High</td>
<td>95%</td>
</tr>
<tr>
<td>Functional Complaints</td>
<td>17</td>
<td>57</td>
<td>69</td>
<td>Mod. High</td>
<td>76%</td>
</tr>
<tr>
<td>Muscular Bracing</td>
<td>20</td>
<td>68</td>
<td>76</td>
<td>Very High</td>
<td>97%</td>
</tr>
<tr>
<td>Affective Scales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>28</td>
<td>66</td>
<td>72</td>
<td>High</td>
<td>92%</td>
</tr>
<tr>
<td>Anxiety</td>
<td>27</td>
<td>72</td>
<td>74</td>
<td>Ext. High</td>
<td>99%</td>
</tr>
<tr>
<td>Hostility</td>
<td>17</td>
<td>51</td>
<td>52</td>
<td>Average</td>
<td>56%</td>
</tr>
<tr>
<td>Character Scales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borderline</td>
<td>14</td>
<td>51</td>
<td>54</td>
<td>Average</td>
<td>56%</td>
</tr>
<tr>
<td>Symptom Dependency</td>
<td>10</td>
<td>52</td>
<td>57</td>
<td>Average</td>
<td>60%</td>
</tr>
<tr>
<td>Chronic Maladjustment</td>
<td>16</td>
<td>65</td>
<td>67</td>
<td>High</td>
<td>93%</td>
</tr>
<tr>
<td>Substance Abuse</td>
<td>14</td>
<td>74</td>
<td>80</td>
<td>Ext. High</td>
<td>98%</td>
</tr>
<tr>
<td>Perseverence</td>
<td>22</td>
<td>38</td>
<td>36</td>
<td>Low</td>
<td>12%</td>
</tr>
<tr>
<td>Psychosocial Scales</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Dysfunction</td>
<td>2</td>
<td>34</td>
<td>36</td>
<td>Very Low</td>
<td>4%</td>
</tr>
<tr>
<td>Survivor of Violence</td>
<td>6</td>
<td>48</td>
<td>51</td>
<td>Average</td>
<td>47%</td>
</tr>
<tr>
<td>Doctor Dissatisfaction</td>
<td>18</td>
<td>70</td>
<td>75</td>
<td>Very High</td>
<td>97%</td>
</tr>
<tr>
<td>Job Dissatisfaction</td>
<td>24</td>
<td>62</td>
<td>69</td>
<td>High</td>
<td>90%</td>
</tr>
</tbody>
</table>

PAIN COMPLAINTS ITEMS

<table>
<thead>
<tr>
<th>Item</th>
<th>Patient</th>
<th>Median*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head (headache pain)</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Jaw or face</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Neck or shoulders</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Arms or hands</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Chest</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Abdomen or stomach</td>
<td>8</td>
<td>0</td>
</tr>
<tr>
<td>Middle back</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Lower back</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Genital area</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Legs or feet</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>Overall highest level of pain in the past month</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Overall lowest level of pain in the past month</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Overall pain level at time of testing</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>Maximum Tolerable Pain</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

PAIN DIMENSIONS

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain Range</td>
<td>0</td>
</tr>
<tr>
<td>Peak Pain</td>
<td>10</td>
</tr>
<tr>
<td>Pain Tolerance Index</td>
<td>-10</td>
</tr>
</tbody>
</table>

*Based on a sample of 316 patients with lower back pain/injury.
Treatment Plan

- Widespread pain with poor pain tolerance
  - Pain management
- Extreme anxiety, high depression
  - Rx and cognitive therapy
- Very high bracing response
  - Relaxation training
- Substance abuse to treat anxiety
  - Opioid contract, treat addiction
Case History 2

- Middle aged woman
- Back injury
- Excessive disability
- Chronically noncompliant with physical therapy
Treatment Plan

• History of rape in childhood and can’t stand for her male PT to touch her
  – Find female PT, reduce hands on work
• Severe depression with suicidal ideation
  – Tx depression, monitor safety
• Extreme somatic distress
  – Stress management training

Case History 3

• Prison guard injured during training exercise
• Being considered for cervical fusion
• Angry and threatening
• Demands to be “fixed”
Treatment Plan

- Hostile and dangerous to others
- Long history of maladjustment
- Treat depression and anger with Rx and cognitive therapy
- Pain management treatment
- Monitor dangerousness
Psych vs Surgery

- For select patients, psych coping treatment is as effective as lumbar fusion surgery for chronic back pain
  - Mirza and Deyo, 2007; Chou et al 2009

- The initial costs of lumbar fusion surgery are 168x more than for psych coping treatment
  - Bruns, Mueller and Warren, 2012

Guidelines Recommending Pretreatment Psych Eval

- Colorado
- ACOEM
- ODG
What Happens When you Mandate The Biopsychosocial Model?

- Colorado \( N = 520,314 \)
- Rest of USA \( N \approx 28.6 \) million
- Mean Medical Cost Per Case: 1992 – 2007
- Bruns, Mueller and Warren, 2012

![Figure 2: Colorado vs. National Worker Compensation Cost Increases](image-url)

(C) 2005 by Bruns and Disorbio

downloaded from www.PearsonClinical.com
Disability Cost Inflation

<table>
<thead>
<tr>
<th>Nation</th>
<th>Colo</th>
</tr>
</thead>
<tbody>
<tr>
<td>109%</td>
<td>28%</td>
</tr>
</tbody>
</table>

Estimated Colorado WC cost savings in 2007 alone:

$859,000,000

Bruns, Mueller and Warren, 2012

Using Psychological Evaluations to Improve Patient Care & Outcomes © 2005 by Bruns and Disorbio
How Does the Biopsychosocial Model Save Money?

The Goal of Many Orthopedic Surgeries is to Change Verbal Behavior

Bruns and Disorbio, 2009
Surgery does not…

• Change verbal behavior
• Cure addiction
• Cure depression
• Cure somatization
• Make a person want to work

Colorado Guidelines:
When to Refer for Psych Testing

• All patients with chronic pain
• Prior to biofeedback, CBT, and interdisciplinary treatment
• Lumbar fusion
• Spinal cord stimulators
• Artificial disc
• back surgery, if Waddell signs > 2
• Facet rhizotomy
• IDET
• Some shoulder surgeries
• > 8 weeks of TX and no progress
• Discograms
How do you make a referral for a psychological evaluation?

**Biomedical Style**

There is nothing physically wrong with you. The pain is all in your head. You need to see a psychologist!
Biopsychosocial Style

My goal is to address how you are doing both physically and emotionally.

Having you see a psychologist will help me understand you better, and to offer you better care.

Conclusions

• Psychological services are now accepted as an integral part of the assessment and treatment of pain conditions

• Utilizing psychological assessments and the biopsychosocial model is associated with both better care and controlled costs
Pain Neuromatrix Theory

Pain Center

Sensation and Movement

Emotion

Arousal

Increased Muscle Tension

First Pain

Second Pain

Pain Cognitions

Descending Neural Inhibition vs Windup

End
Case History 3

- Prison guard injured during training exercise
- Being considered for cervical fusion
- Angry and threatening
- Demands to be “fixed”

<table>
<thead>
<tr>
<th>Scales</th>
<th>Raw Score</th>
<th>T Scores</th>
<th>Percentile</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Validity Scales</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-Disclosure</td>
<td>159</td>
<td>69</td>
<td>71</td>
</tr>
<tr>
<td>Defensiveness</td>
<td>9</td>
<td>40</td>
<td>33</td>
</tr>
<tr>
<td><strong>Physical Symptom Scales</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Somatic Complaints</td>
<td>51</td>
<td>74</td>
<td>86</td>
</tr>
<tr>
<td>Pain Complaints</td>
<td>58</td>
<td>72</td>
<td>82</td>
</tr>
<tr>
<td>Functional Complaints</td>
<td>14</td>
<td>51</td>
<td>62</td>
</tr>
<tr>
<td>Muscular Bracing</td>
<td>13</td>
<td>52</td>
<td>55</td>
</tr>
<tr>
<td><strong>Affective Scales</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>28</td>
<td>58</td>
<td>72</td>
</tr>
<tr>
<td>Anxiety</td>
<td>18</td>
<td>56</td>
<td>59</td>
</tr>
<tr>
<td>Hostility</td>
<td>41</td>
<td>58</td>
<td>84</td>
</tr>
<tr>
<td><strong>Character Scales</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Borderline</td>
<td>24</td>
<td>67</td>
<td>70</td>
</tr>
<tr>
<td>Symptom Dependency</td>
<td>12</td>
<td>57</td>
<td>62</td>
</tr>
<tr>
<td>Chronic Misadjustment</td>
<td>23</td>
<td>76</td>
<td>77</td>
</tr>
<tr>
<td>Substance Abuse</td>
<td>5</td>
<td>51</td>
<td>53</td>
</tr>
<tr>
<td>Perseverance</td>
<td>30</td>
<td>51</td>
<td>50</td>
</tr>
<tr>
<td><strong>Psychosocial Scales</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family Dysfunction</td>
<td>12</td>
<td>54</td>
<td>55</td>
</tr>
<tr>
<td>Survivor of Violence</td>
<td>10</td>
<td>56</td>
<td>60</td>
</tr>
<tr>
<td>Doctor Dissatisfaction</td>
<td>9</td>
<td>50</td>
<td>55</td>
</tr>
<tr>
<td>Job Dissatisfaction</td>
<td>27</td>
<td>66</td>
<td>73</td>
</tr>
</tbody>
</table>
Treatment Plan

• Hostile and dangerous to others
• Long history of maladjustment
• Treat depression and anger with Rx and cognitive therapy
• Pain management treatment
• Delay elective surgeries till dangerousness addressed