

# Using Psychological Evaluations to Improve Patient Care and Outcomes

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## Daniel Bruns, PsyD

- 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- $\delta$  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)

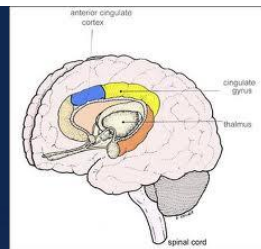
“My Pain Never Changes”

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
  - Social pain (rejection) (Eisenberger, et al 2003)
  - 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



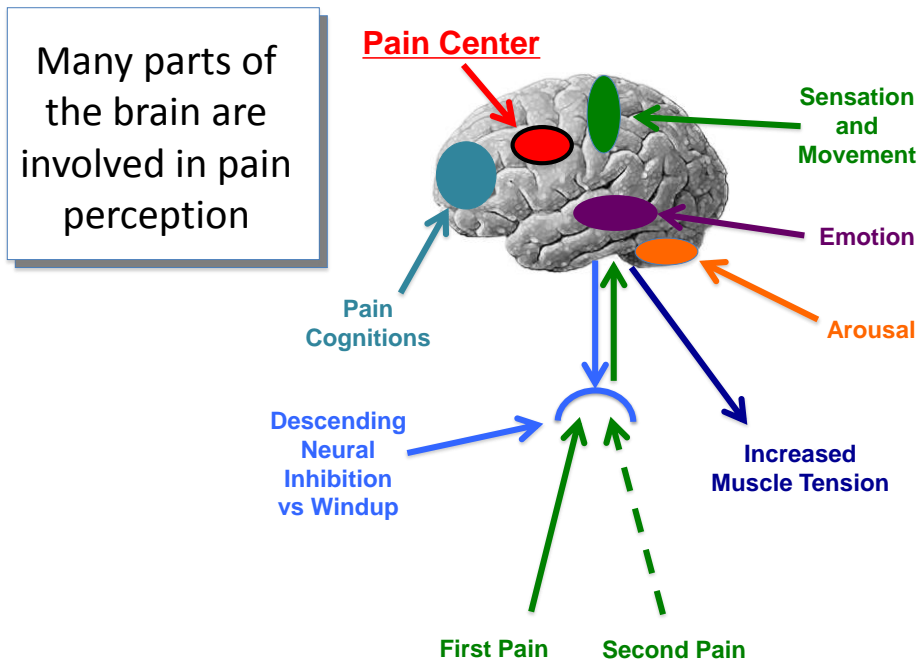
## Strange but true...



- 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)



## 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

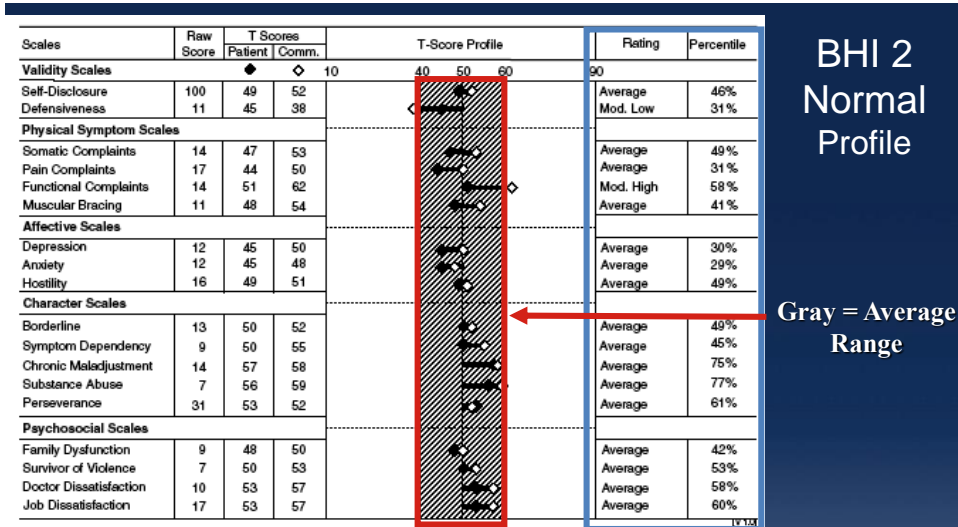
- Biopsychosocial test
  - 217 items/ 18 scales + other measures
  - 30-35 minutes
- Uses
  - Presurgical psych evals
  - Pre-medical treatment psych evals
  - Interaction of psych and physical symptoms
- Bruns and Disorbio, 2003

## 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

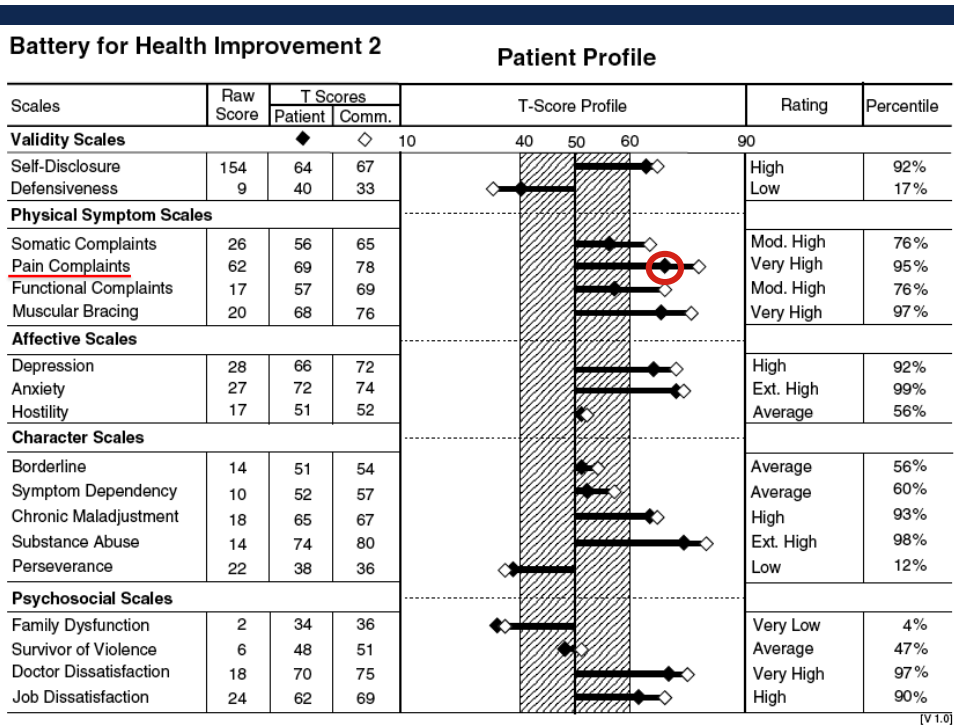


- For each scale:
- No diamonds outside the 40-60 range means scale score is average.
- One diamond outside indicates a moderate elevation (more sx than healthy people)
- Two diamonds outside indicates a clinical elevation (more sx than other patients)

## Case History 1

- Male work comp patient with severe pain
- Not responding to treatment
- Overusing opioids
- Will surgery help?





**PAIN COMPLAINTS ITEMS**

**Head (headache pain):**  
**Jaw or face:**  
**Neck or shoulders:**  
**Arms or hands:**  
**Chest:**  
**Abdomen or stomach:**  
**Middle back:**  
**Lower back:**  
**Genital area:**  
**Legs or feet:**  
**Overall highest level of pain in the past month:**  
**Overall lowest level of pain in the past month:**  
**Overall pain level at time of testing:**  
**Maximum Tolerable Pain:**

PATIENT
10
6
4
2
10
8
4
10
0
8

MEDIAN*
3
0
4
1
0
0
4
8
0
5

10  
10  
10  
**0**

0  
10  
**-10**

8  
3  
-  
-

**PAIN DIMENSIONS**

**Pain Range:**  
**Peak Pain:**  
**Pain Tolerance Index:**

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

Battery for Health Improvement 2				Patient Profile			
Scales	Raw Score	T Scores		T-Score Profile	Rating	Percentile	
		Patient	Comm.				
<b>Validity Scales</b>				◆ ◇ 10 40 50 60 90			
Self-Disclosure	154	64	67		High	92%	
Defensiveness	9	40	33		Low	17%	
<b>Physical Symptom Scales</b>							
Somatic Complaints	26	56	65		Mod. High	76%	
<u>Pain Complaints</u>	62	69	78		Very High	95%	
Functional Complaints	17	57	69		Mod. High	76%	
<u>Muscular Bracing</u>	20	68	76		Very High	97%	
<b>Affective Scales</b>							
Depression	28	66	72		High	92%	
<u>Anxiety</u>	27	72	74		Ext. High	99%	
Hostility	17	51	52		Average	56%	
<b>Character Scales</b>							
Borderline	14	51	54		Average	56%	
Symptom Dependency	10	52	57		Average	60%	
Chronic Maladjustment	18	65	67		High	93%	
<u>Substance Abuse</u>	14	74	80		Ext. High	98%	
Perseverance	22	38	36		Low	12%	
<b>Psychosocial Scales</b>							
Family Dysfunction	2	34	36		Very Low	4%	
Survivor of Violence	6	48	51		Average	47%	
<u>Doctor Dissatisfaction</u>	18	70	75		Very High	97%	
Job Dissatisfaction	24	62	69		High	90%	

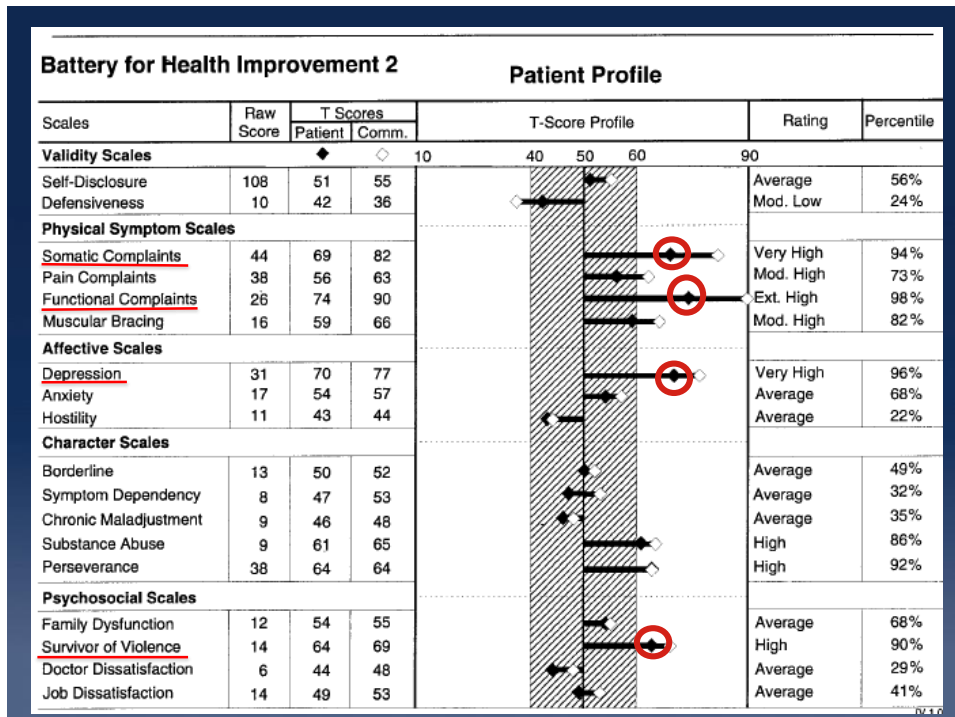
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## Treatment Plan

- 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”

## Battery for Health Improvement 2

## Patient Profile

Scales	Raw Score	T Scores		T-Score Profile	Rating	Percentile
		Patient	Comm.			
<b>Validity Scales</b>		◆	◇	10 40 50 60 90		
Self-Disclosure	169	69	71		Very High	97%
Defensiveness	9	40	33		Low	17%
<b>Physical Symptom Scales</b>						
<u>Somatic Complaints</u>	51	74	88		Very High	97%
<u>Pain Complaints</u>	68	72	82		Very High	97%
Functional Complaints	14	51	62		Mod. High	58%
Muscular Bracing	13	52	59		Average	59%
<b>Affective Scales</b>						
Depression	28	66	72		High	92%
Anxiety	18	56	59		Average	74%
<u>Hostility</u>	41	83	84		Ext. High	99%
<b>Character Scales</b>						
<u>Borderline</u>	24	67	70		Very High	95%
Symptom Dependency	12	57	62		Mod. High	80%
<u>Chronic Maladjustment</u>	23	76	77		Ext. High	99%
Substance Abuse	5	51	53		Average	64%
Perseverance	30	51	50		Average	54%
<b>Psychosocial Scales</b>						
Family Dysfunction	12	54	55		Average	68%
Survivor of Violence	10	56	60		Mod. High	75%
Doctor Dissatisfaction	9	50	55		Average	49%
<u>Job Dissatisfaction</u>	27	66	73		High	94%

© 2005 by Bruns and Disorbio

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## 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

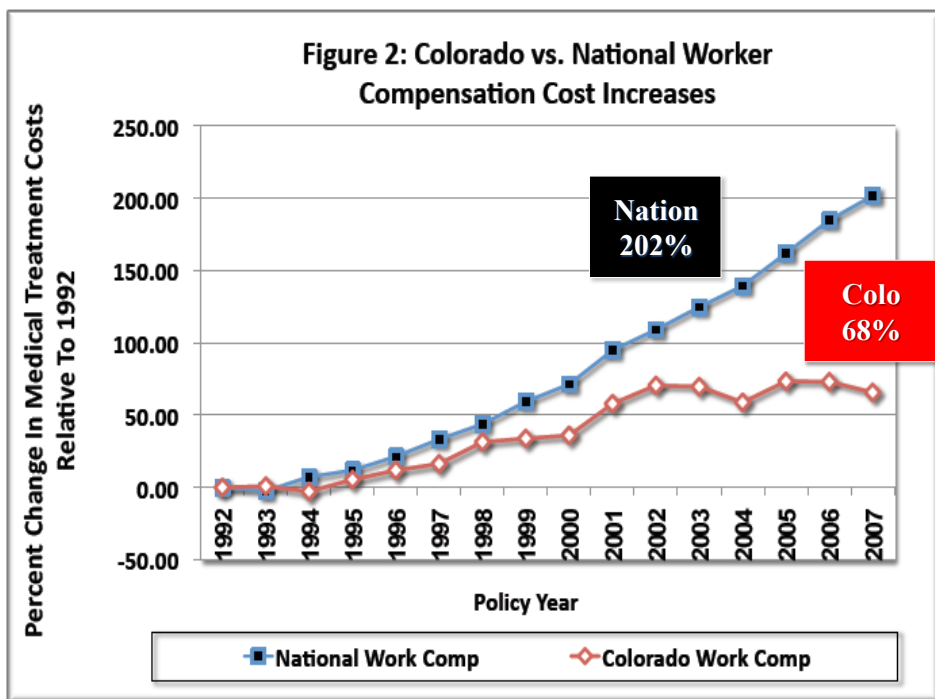
- For select patients, psych coping treatment is as effective as lumbar fusion surgery for chronic back pain
  - Mirza and Deyo, 2007; Chou et al 2009
- The initial costs of lumbar fusion surgery are 168x more than for psych coping treatment
  - Bruns, Mueller and Warren, 2012

## Guidelines Recommending Pretreatment Psych Evals

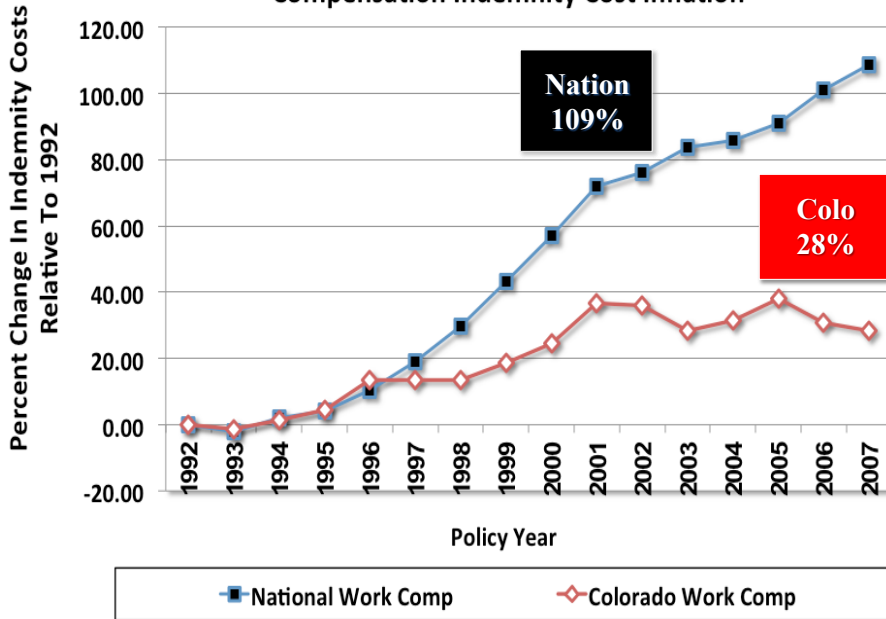
- Colorado
- ACOEM
- ODG

## What Happens When you Mandate The Biopsychosocial Model?

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



**Figure 4: Colorado vs. National Worker Compensation Indemnity Cost Inflation**



Estimated Colorado WC  
cost savings in 2007 alone:

**\$859,000,000**

Bruns, Mueller and Warren, 2012



## 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!

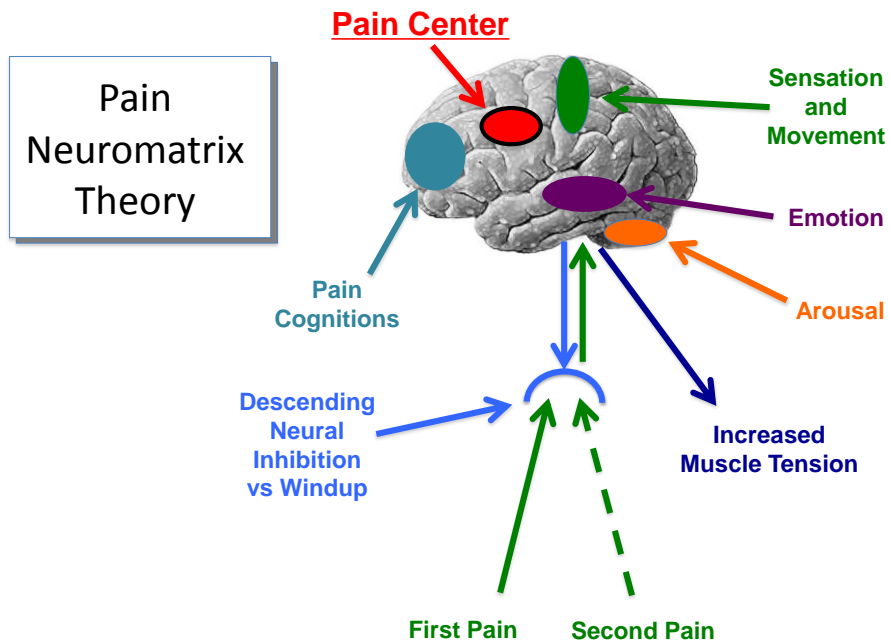
## Biopsychosocial Style

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



End

# Case History 3

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

## Battery for Health Improvement 2

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## 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