

The Presurgical Psychological Evaluation For Spinal Cord Stimulation

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Disclosures

- Coauthor of a published psychological test (BHI 2) used for the assessment of patients with pain and injury
- In the past, Dr. Bruns has worked as a consultant for SCS device manufacturers regarding spinal cord stimulators

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Presentation Overview

- What is spinal cord stimulation (SCS)?
- SCS and guidelines
- Test selection for SCS
- Conducting the SCS evaluation
- Using the Medical Intervention Risk Report for SCS psych evals

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**It is more important
to know what sort of person
has a disease,
than to know what sort of
disease a person has.**

Hippocrates, 400 BCE

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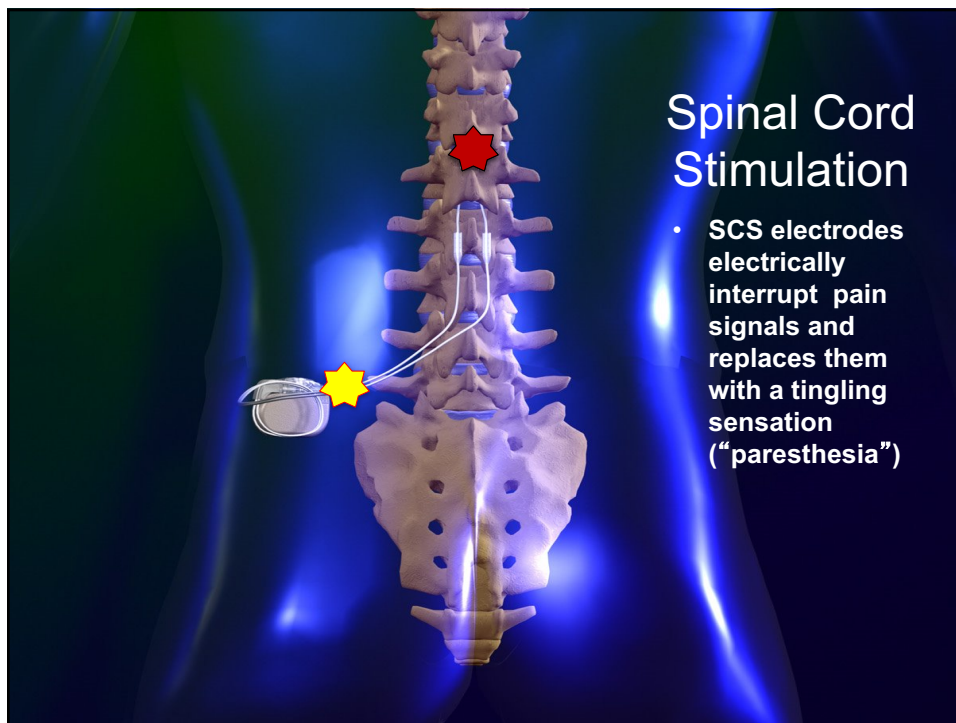
Basic SCS Concepts

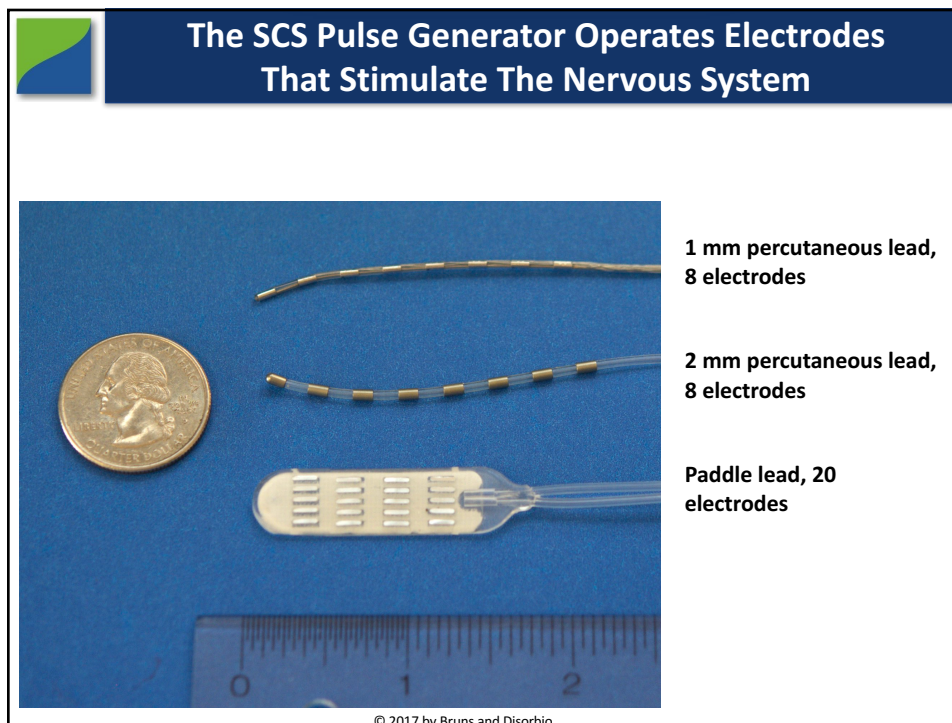
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What is Spinal Cord Stimulation?

- SCS is an electrical treatment for pain, and an alternative to opioids
- SCS is most commonly used for non-spinal pain (i.e. arms, legs, gut)

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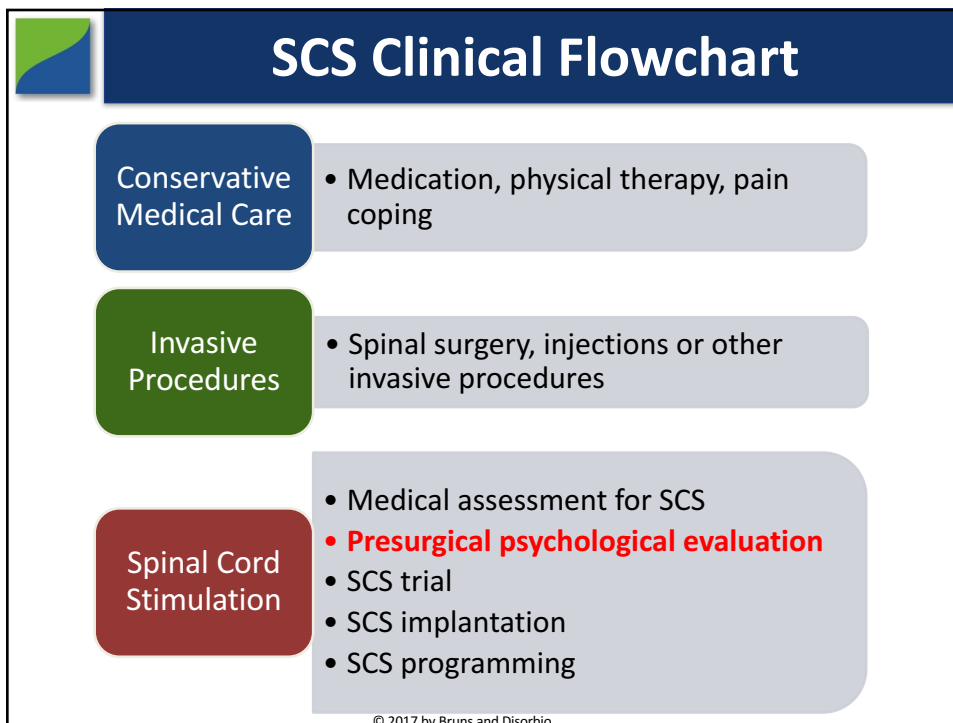




More Info on SCS

- More SCS info including
 - Bruns & Disorbio 2009 review article on assessing risk factors for SCS
 - Bruns & Disorbio 2017 article on SCS
 - Bruns & Disorbio 2017 primer on electrical treatments for pain and the biopsychosocial model (50+ pages)
 - Bruns 2016 NASS CME video for spinal surgeons on presurgical psych evals
- www.healthpsych.com/scs.html
- **Go there later to avoid disconnecting from webinar!**

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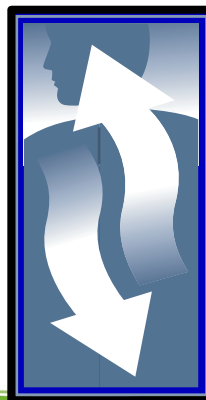
A Multitude of Payers, Organizations and Guidelines Now Require Psychological Evaluations Prior to SCS

- Medicare/Medicaid
- Private Payers (Blue Cross, Cigna, United Healthcare, etc)
- American Pain Society
- International Society for Advancement of Spine Surgery
- MD Guidelines
- American College of Physicians
- North American Spine Society
- Official Disability Guidelines
- State and Federal Guidelines

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How can a psychological evaluation predict SCS treatment outcome?

How does that work?



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© 2002 by Pearson Assessments

“SCS is a surgical treatment whose success is based on its ability to change the patient’s verbal behavior.”

(Bruns and Disorbio, 2017)

The goal of SCS is to reduce reports of pain, and produce patient satisfaction.

Can we predict that?

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What Predicts Surgical Outcome?

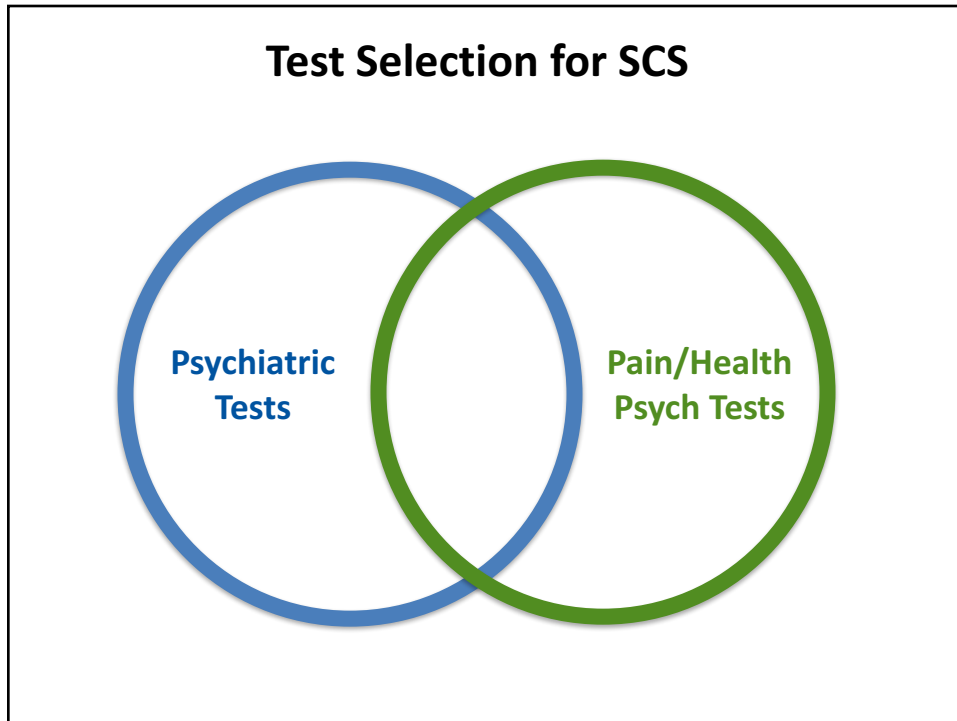
**Psychological tests can outperform
medical tests at predicting poor
response to back surgery**

(Carragee, et al, 2005; 2004)

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Test Selection For SCS Evaluations

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Test Selection: Psychiatric vs Health Psych		
Overlap	Psychiatric Tests <small>(assumption of psych dx)</small>	BHI 2 <small>(assumption of medical dx)</small>
Central Construct	DSM disorder	Biopsychosocial disorder
Depression	Mood disorder	"Medical reactive depression"
Anxiety	Irrational Phobias	"Death Fears"
Chemical Dependency	Alcoholism	Dependence on Prescribed Medication
Physical symptoms	Suggest somatization?	Fit with medical disease/injury Dx?
Social	Conflict with spouse	Conflict with physicians
Weakness	No personality inventory includes pain ratings	Doesn't assess mood swings, OCD, etc.

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BHI 2 Has 27 Measures For Pain Disorders	
Pain Assessment Concerns	BHI 2 Pain Variables
0-10 Pain Rating (13 pain ratings)	Pain in 10 body areas, highest, lowest, and overall pain
Pain variability	Pain range
Pain tolerance	Pain tolerance index
Pain cognitions (e.g. catastrophizing)	Catastrophizing
	Dysfunctional Pain Cognitions
	Dysfunctional Somatic Cognitions
Widespread pain?	Pain Complaints
Anatomic pain distribution (5 measures)	5 Pain Diagnosis Percent Fit Scores
"Pain sensitivity"	Somatic Complaints
Fear of painful exercise	Kinesiophobia
Perception of disability	Functional Complaints

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Selecting tests for SCS
<ul style="list-style-type: none"> • What are the norms? <ul style="list-style-type: none"> – Normal – Psychiatric – Medical patient – Pain patient • What are the items? <ul style="list-style-type: none"> – BHI 2 has no items about mood swings – No existing psychiatric tests includes pain ratings

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The Psychological Fallacy

Psychiatric inventories generally score all physical symptoms as signs of psychiatric syndromes

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Interpreting Symptoms in Pain Evals

Side effects of amitriptyline

Fatigue

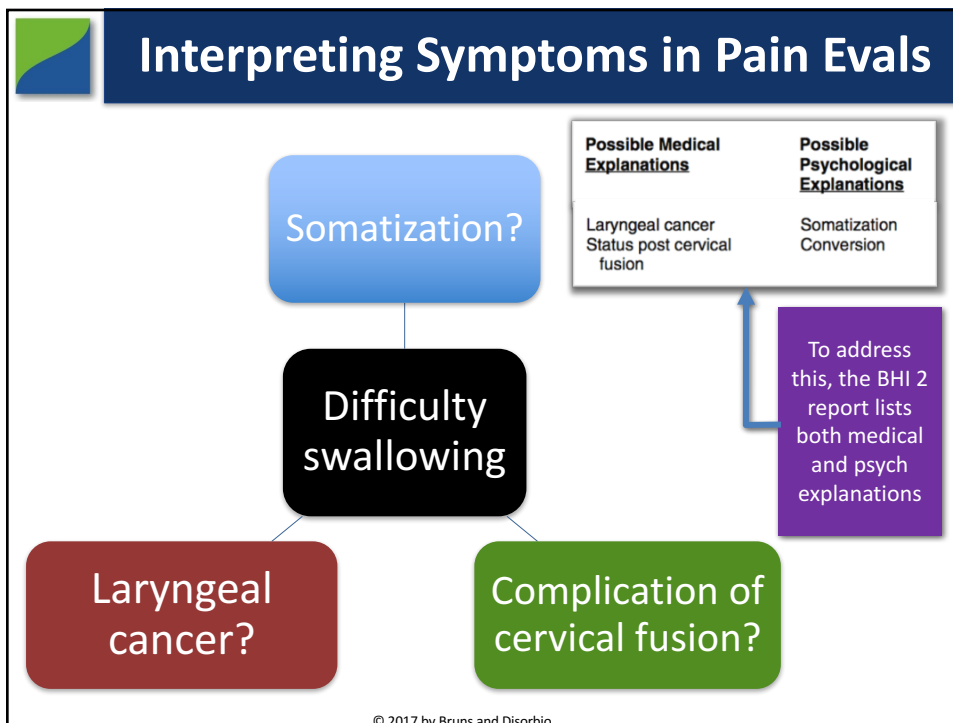
Weight gain

Loss of libido

Sleeping 12 hours

- In chronic illness, one third of psychiatric inventory variance may be due to disease severity (Nalibof, 1982)
- To address this, the BHI 2 assesses physical and psychological symptoms of depression on separate scales

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Rule of thumb

Select your tests based on
 the risk factors you are assessing,
 and how much time and
 resources you can devote

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Conducting Presurgical Psych Eval For SCS

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What Does Research Suggest About Presurgical Psych Evals?

- **Two-tier presurgical psychological assessment suggested by the literature**
 - Bruns and Disorbio, 2009
 - Adopted by Colorado Guidelines 2012, 2017; MDGuidelines 2017
- **Primary risks**
 - Psychosocial **Red Flags**
- **Secondary risks**
 - Psychosocial **Yellow Flags**

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Primary Psychosocial Risk Factors For Surgery



- **“Red Flag”** Risk Factors:
 - Suicidal, homicidal, psychotic, acute intoxication, etc.
 - Severe psychological instability
 - Stop and reassess before proceeding with elective surgery!

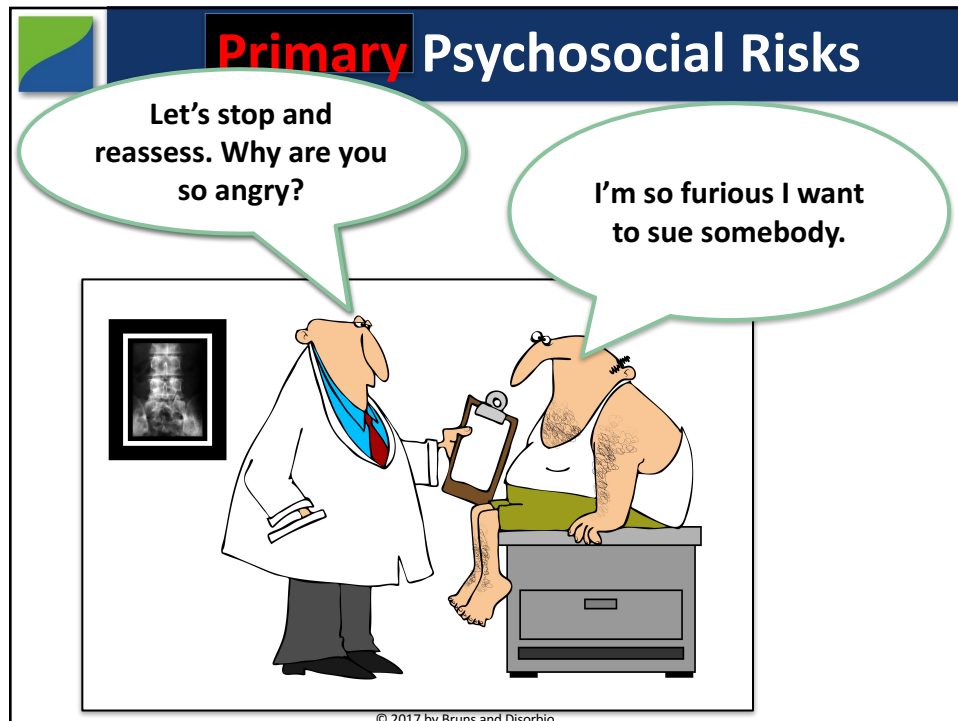
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Research on **Primary** Risk Factor Assessment

- Our group has conducted 12 research studies of patients with primary risk factors, using the BHI 2 to predict:
 - Plan for Suicide (N=80; Fishbain & Bruns, 2009)
 - Homicidal ideation (N=49; Bruns & Disorbio, 2000)
 - Suicide/homicide ideation (N=62; Fishbain & Bruns, 2011)
 - Thoughts of killing MD (N=71; Bruns & Fishbain, 2010)
 - Thoughts of suing MD (N=60; Fishbain & Bruns 2007)

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Secondary Psychosocial Risk Factors For Surgery

Stress Pain
Worries
Fears
Depression

- **“Yellow Flag”** risk factors
 - Depression, anxiety, pain coping, poor physical functioning, somatization, job dissatisfaction, etc.
 - Much more common!
 - [Most research about surgical outcome is about this](#)
 - More secondary risks => increase the odds that the patient will be unhappy with the outcome

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Research on **Secondary** Risk Factor Assessment

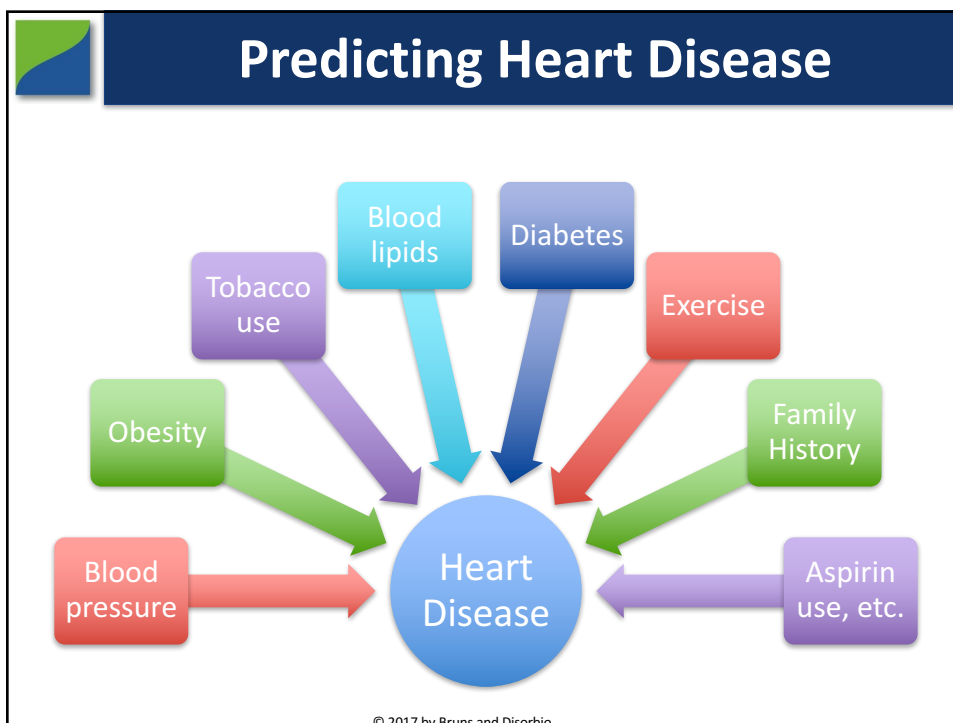
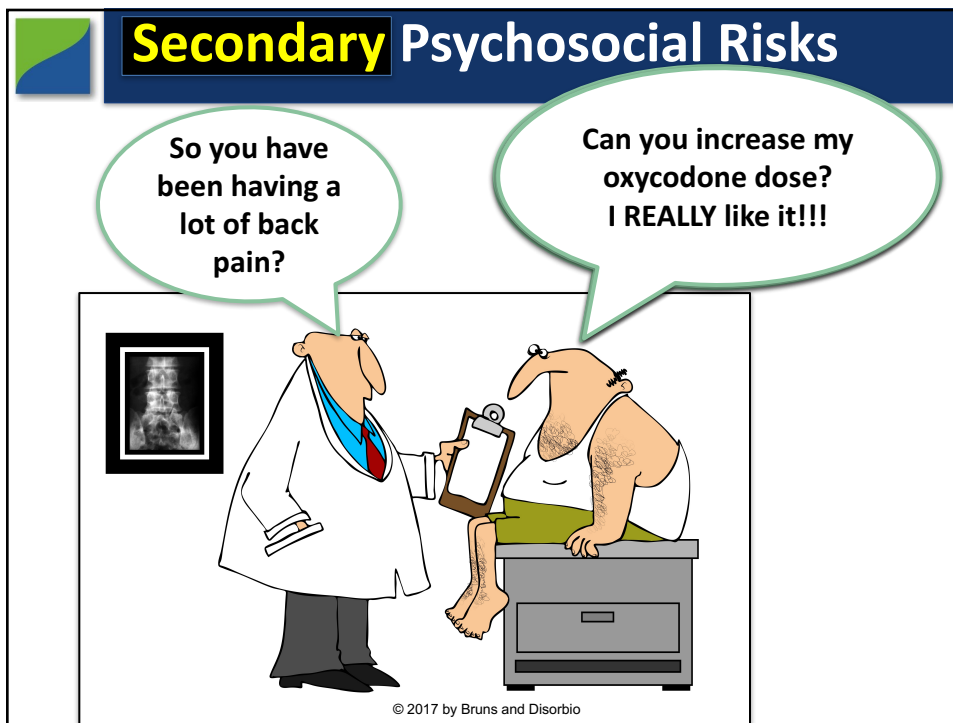
- **Systematic reviews**
 - Den Boer (2006)
 - Celestin (2009)
- **Review of empirical and consensus risk factors for poor surgical outcome**
 - Bruns and Disorbio (2009)
 - Then used 1254 patients to test these risk factors ability to predict disability (unemployment) and with dissatisfaction with care

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What is the Effect of **Secondary** Psychosocial Risk Factors?

- The presence of 4 or more secondary psychosocial risk factors can :
 - Increase the risk of the presence of a psychological disorder by a factor of 14
 - Double the risk of failure to return to work after medical treatment (Gatchel, 2006)
- These high risk patients can be treated successfully with interdisciplinary care (Dersh, 2007)

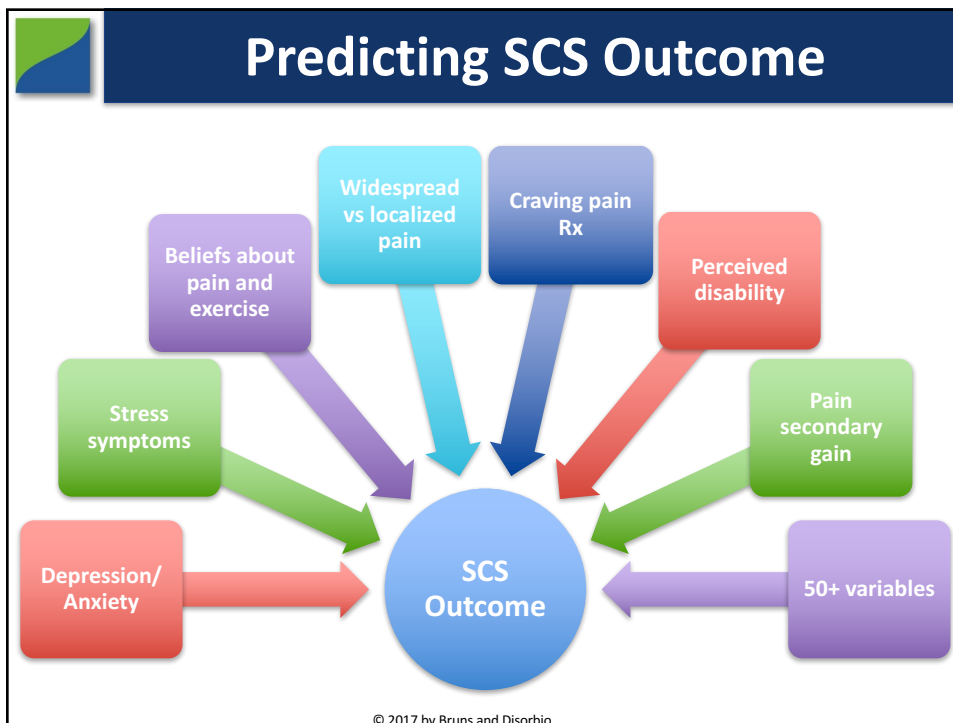
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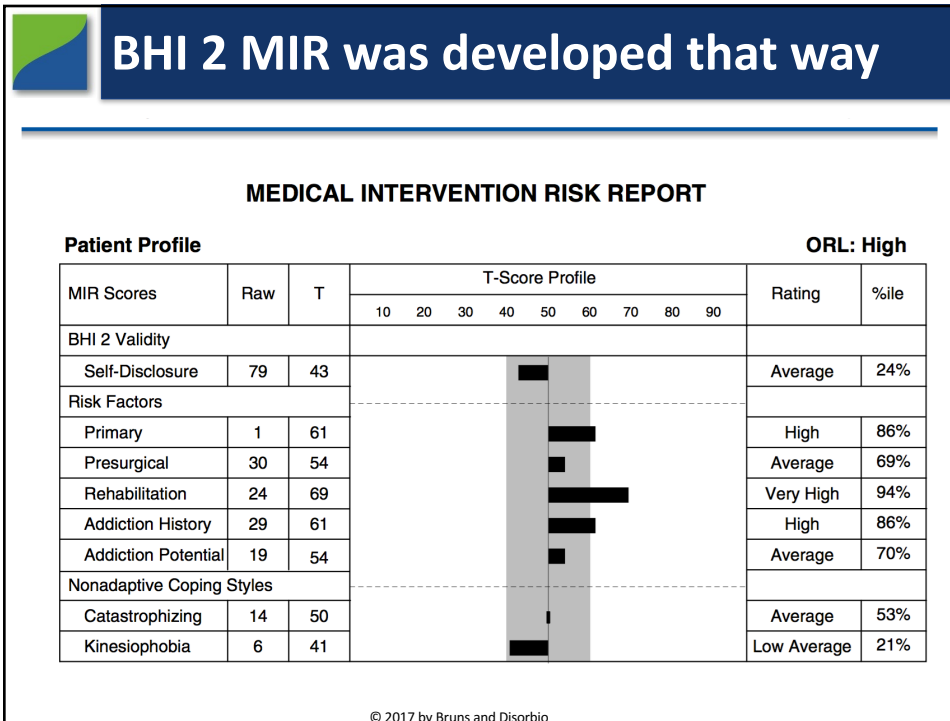


All of these variables can be entered into a regression equation to predict heart disease

The same thing could be done for spinal cord stimulation

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The BHI™ 2
Battery for Health
Improvement 2

BHI™ 2 © 2003 by NCS Pearson


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Battery for Health Improvement 2

- **BHI 2**
 - For comprehensive biopsychosocial assessments
 - 217 items
 - ~35 minutes
- Designed from its inception to assess chronic pain secondary to injury or illness
 - Bruns & Disorbio, 2003


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10 BHI-2 Norm Groups

<ul style="list-style-type: none"> • Subjects <ul style="list-style-type: none"> • 1452 subjects from 106 sites in 36 US states • Norm Groups <ul style="list-style-type: none"> • Typical patient in treatment for pain/injury • Typical community member 	<ul style="list-style-type: none"> • Pain Subgroup Norms <ul style="list-style-type: none"> • Chronic pain • TBI/headache pain • Neck pain • Arm/hand pain • Back pain • Leg/foot pain • Fake health good • Fake health bad
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BHI 2 is like two separate tests

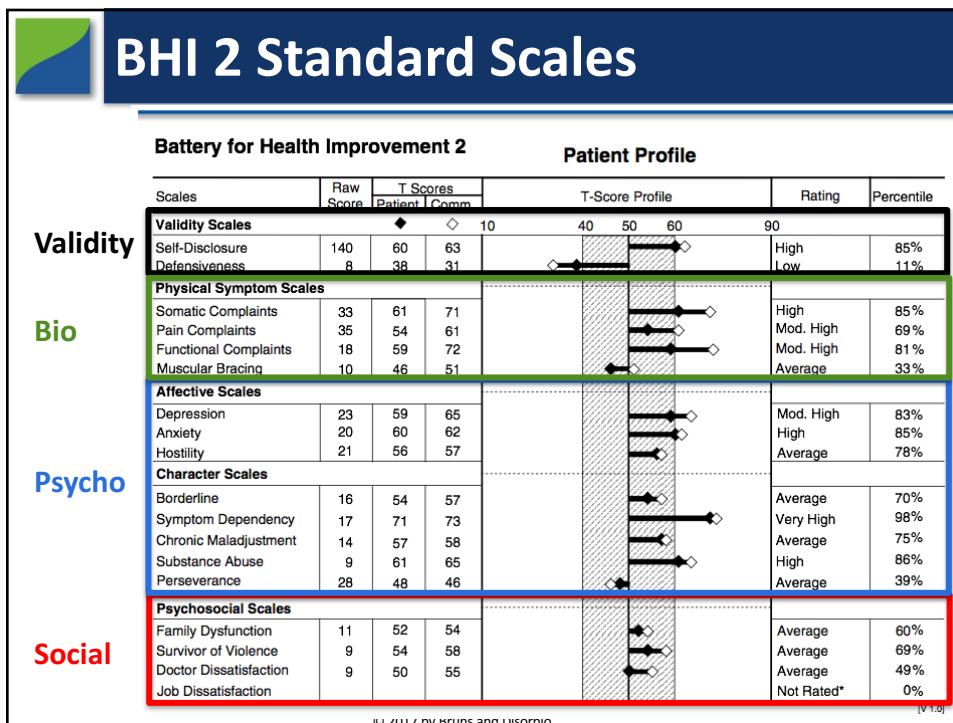
- **The Original BHI 2** (Bruns & Disorbio, 2003)
 - 18 scales
 - 40 subscales
 - 27 pain-related measures
- **BHI 2 MIR** (Bruns & Disorbio, 2016)
 - Six additional scales related to Tx risk
 - More understandable to MDs
 - Like a second test that uses the same items

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The BHI™ 2 Original Report

BHI™ 2 © 2016 by NCS Pearson

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BHI 2 Report Components

PATIENT SUMMARY

The following are the results of your BHI 2 test. These results were generated by a computer analysis, which compared your responses to the responses of national samples of rehabilitation/chronic pain patients and nonpatients in the community. This analysis indicates that you reported the following significant information about yourself. It is important to remember that although the computer generated hypotheses about your condition, only your doctor can form a final opinion about what your results mean. If you think that any of the following statements are incorrect, you should discuss them with your medical caregivers. Additionally, if the following interpretation seems to miss important points about you that your doctor or other caregivers should know, be sure to share that information with them.

- Your report indicates that you feel burdened by problems in your life. It also indicates that you want to make it clear to others how serious your problems are. People who respond in this manner are often hoping that someone will listen to them and help them.
- You reported a high level of physical illness symptoms. There are a number of possible medical explanations for these symptoms, which should be discussed with your physician. The symptoms that you reported can also be produced by stress. Stress-related symptoms are very real and are no less important than other types of symptoms, and there are effective treatments for them. Lifestyle changes or treatments that lower your physical and emotional stress may be helpful for you.
- You reported a high level of anxious thoughts and feelings, indicating that you are very worried about your health or other areas of your life. There are many effective treatments for anxiety including medication and talking to a professional about your worries and fears. It is important to address your anxiety because it could complicate your recovery.
- You reported that you feel an increased need for the care and support of others. Although recovery often involves the support of family, friends, and the medical community, you are also an important part of the solution. There are some things that only you can do for yourself. Learning to work with your caregivers will be an important part of your recovery.

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The BHI™ 2 Medical Intervention Risk (MIR) Report


BHI™ 2 © 2016 by NCS Pearson

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What is the MIR?

- The BHI 2 MIR report identifies risk factors thought to negatively impact a patient's response to medical treatments, and makes suggestions for behavioral alternatives
- Bruns & Disorbio, 2016


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MIR Scales

Scale	Definition
Self Disclosure	Over or under reporting of info
Primary Risk	Danger to self/others, Severe psychopathology
Presurgical Risk	Risk of poor outcome from surgery
Rehabilitation Risk	Broader set of predictors of poor Tx outcome
Addiction History	Antisocial pattern of behavior and addiction
Addiction Potential	Distressed patient with poor coping loves Rx
Catastrophizing	Exaggerating the negative aspects of life
Kinesiophobia	Fear that exercise/activity will cause injury

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The Medical Intervention Risk (MIR) Report

BHI™ 2 Medical Intervention Risk Report
07/01/2016, Page 5
ID: 2818
Joe Sample

- Patient reports history of psychological trauma. Medical caregivers should be sensitive to this when examining the patient.
- Explore patient's frustrations with the medical system.

Psychological Treatments

- Education for the biopsychosocial nature of pain and stress symptoms and/or meditation-based stress reduction
- Relaxation training or biofeedback
- Pain management training
- Cognitive behavioral therapy for self-defeating cognitions related to health: kinesiophobia
- Treatment for high level of affective distress indicated for: depression, anxiety, anger
- Psychotherapy to determine if elevated level of death fears are realistic or medical phobias.
- Treatment for acceptance of chronic symptoms should be considered
- Explore reasons for medical frustrations

Patient Strengths

- No indication of report bias
- Below average level of problems with functioning
- Stable life history

End of Report

NOTE: This and previous pages of this report contain trade secrets and are not to be released in response to requests under HIPAA (or any other data disclosure law that exempts trade secret information from release). Further, release in response to litigation discovery demands should be made only in accordance with your profession's ethical guidelines and under an appropriate protective order.

The MIR Report is a computerized analysis of risk factors for poor response to medical interventions, that was derived from the BHI 2 questionnaire.

Case Studies

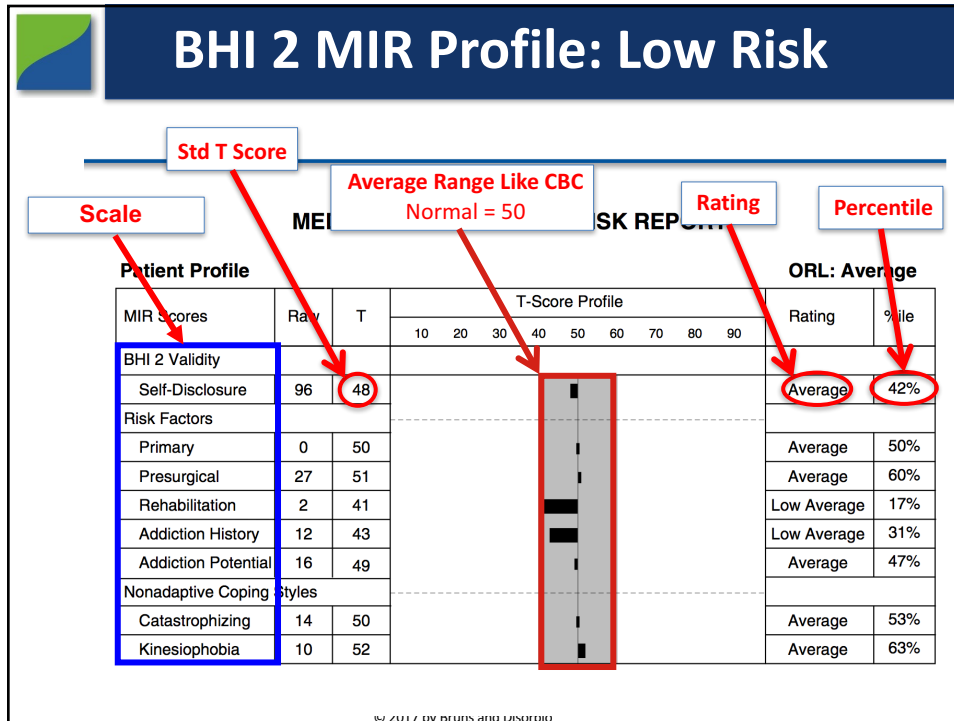
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Case 1: Low Risk Patient

- 59 yo male
- Loved outdoors, hiking
- Lumbar injury when skiing
- Chronic sciatic pain radiating into his leg

- SCS?

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MIR Recommendations

RECOMMENDED RISK REDUCTION INTERVENTIONS AND PATIENT STRENGTHS

Elevated risk scores on the MIR are based to a significant extent on modifiable behavioral variables, which can often be decreased with effective psychological treatments. This patient's MIR report results suggest the following actions and/or treatment plans should be considered, while also taking into account his strengths.

Recommended Actions

- No actions indicated.

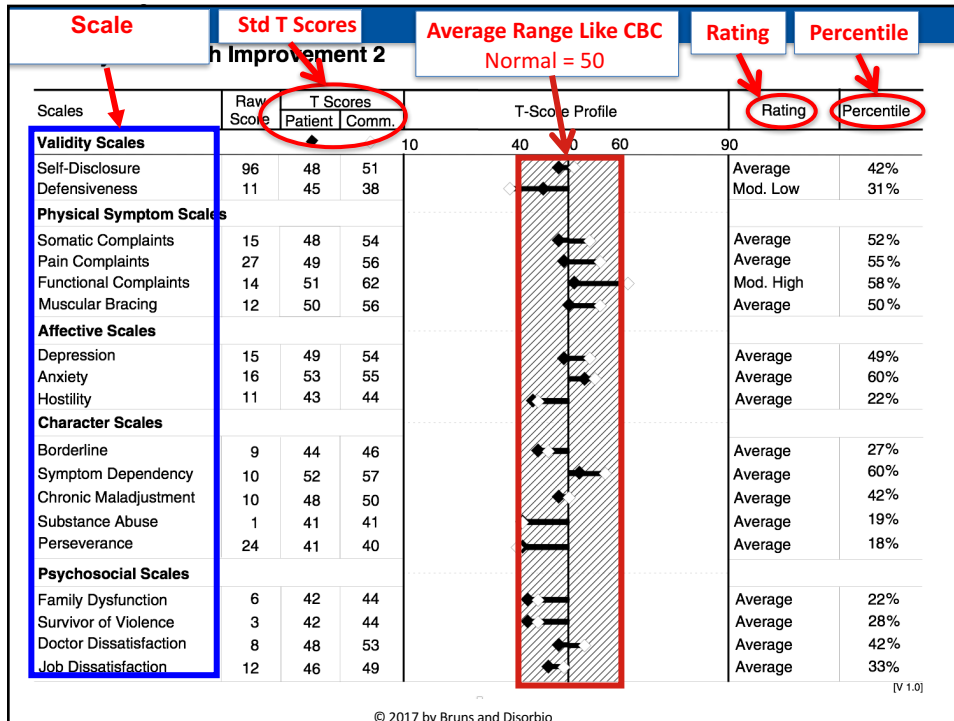
Psychological Treatments

- Pain management training

Patient Strengths

- No indication of report bias
- No indications of severe psychological difficulties
- Below average level of problems with functioning
- Below average level of emotional distress
- Positive relationship with:
 - family
 - employer

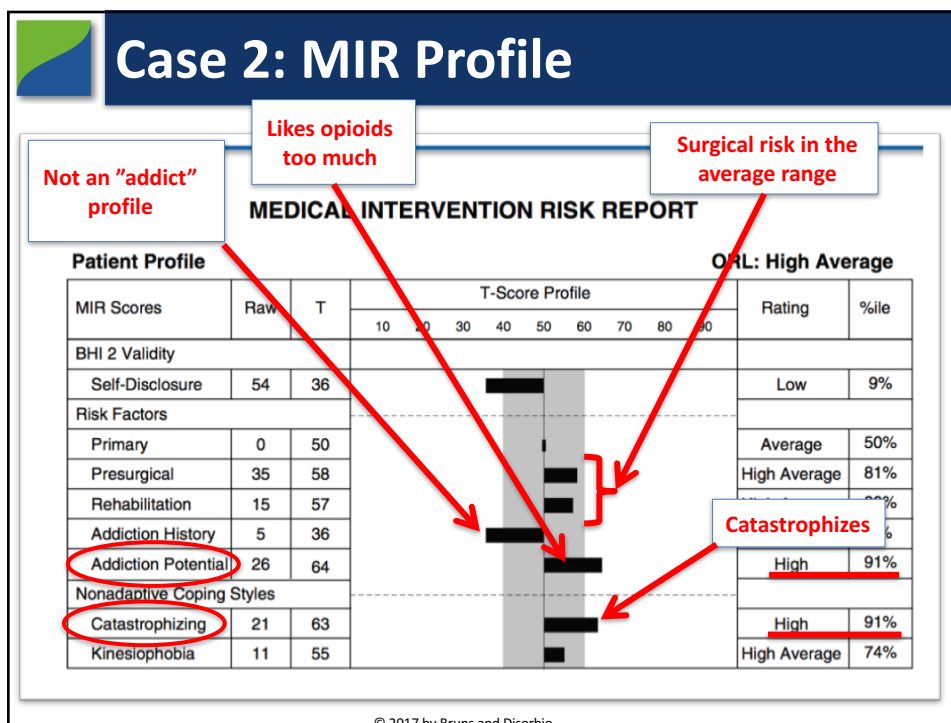
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Case 2: Phantom pain

- 44 yo male
- Traumatic amputation of hand in work-related accident
- Phantom pain: Felt like missing fingers were bent back to the breaking point.
- Taking high doses of opioids
- SCS?

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Rx: SCS plus multidisciplinary care

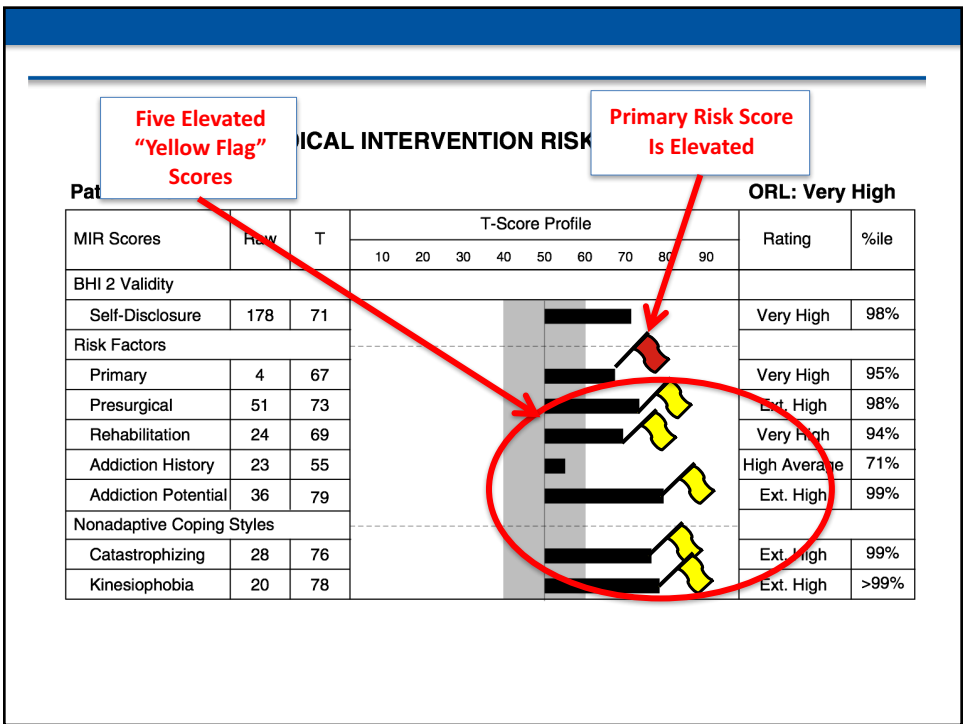
- Is an OK candidate for SCS
 - Most patient have some risk factors
 - Likely to feel SCS helped
 - Likely to still want opioids
 - Likely to still have suboptimal coping
- SCS does not change how you think, and does not prevent opioid withdrawal
 - Psych treatment for catastrophizing and opioid dependence may be able to lower the risk factors further and improve outcome

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Case 3: Gunshot Wound

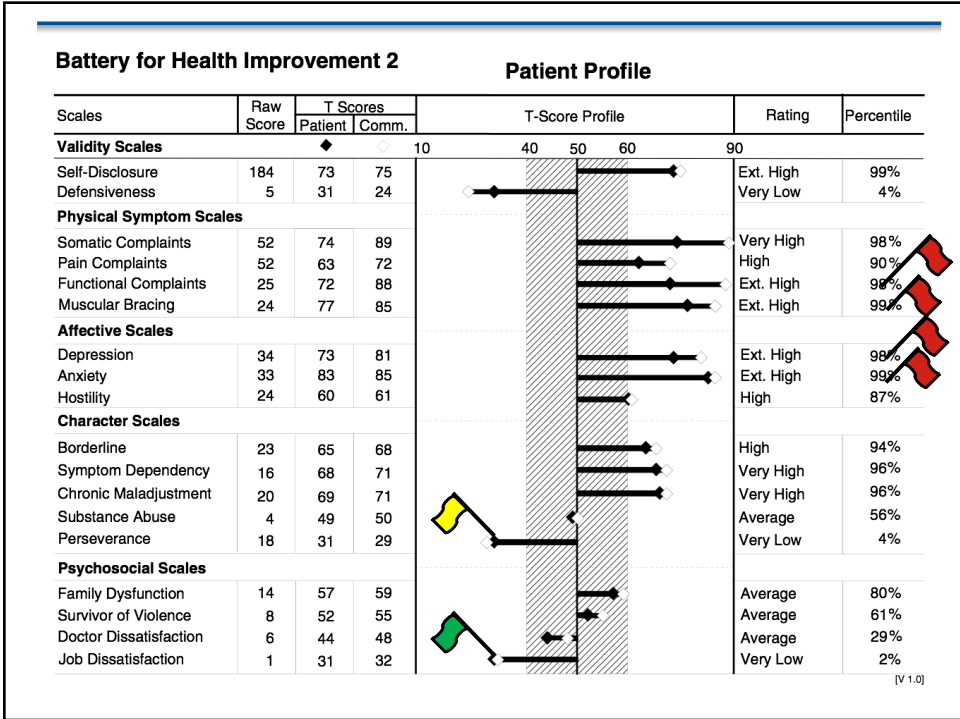
- 37 yo Female
- Gunshot wound to the right upper arm in drive by shooting targeting somebody else
- Second time she had been shot in high crime neighborhood!
- CRPS (chronic regional pain syndrome)
- SCS?

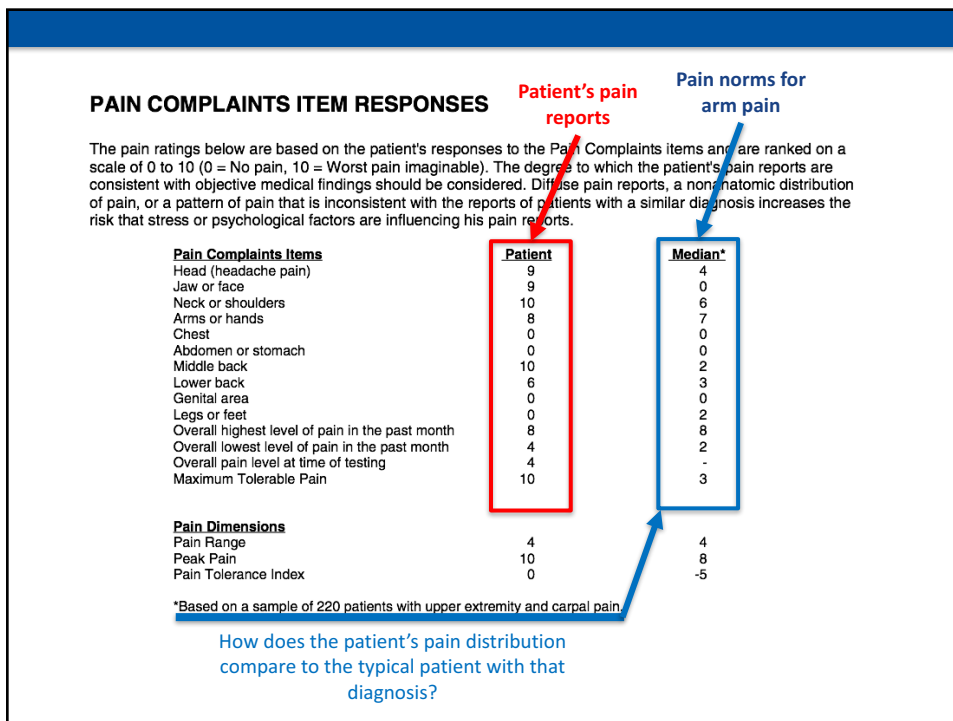
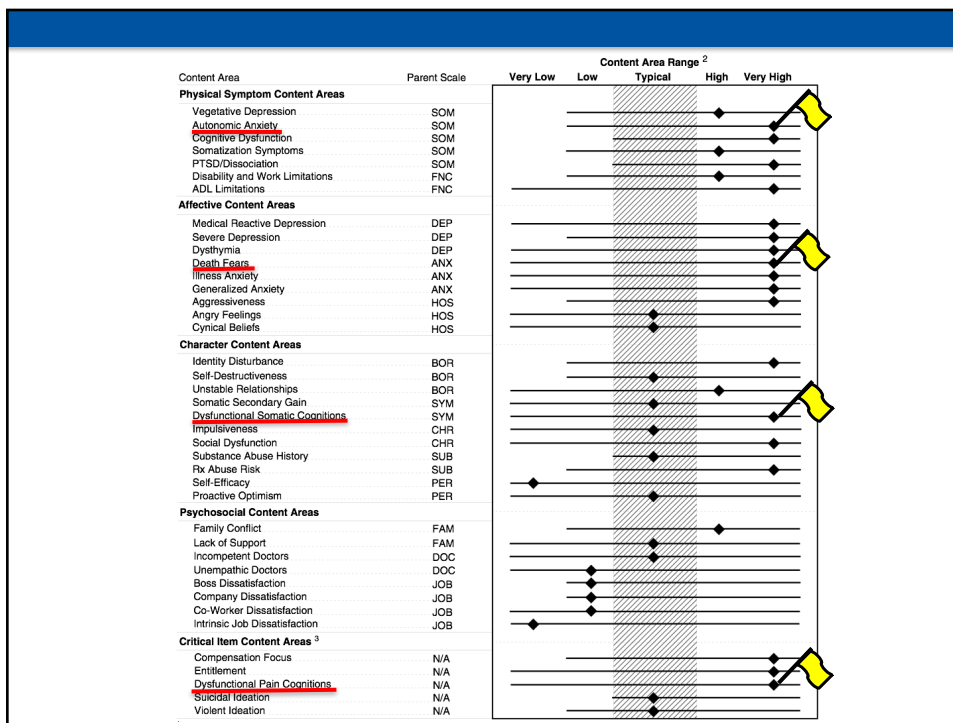
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This Patient Has 4 Primary Risk Factors

- Primary risk factors on this profile were extreme scores (> 99th %):
 - Extreme depression
 - Extreme anxiety
 - Measures of panic, worries, death fears all highly elevated
 - Extreme problems with functioning
 - Signs of extreme stress reactions





DIAGNOSTIC PROBABILITIES

What is the percent match* between the distribution of pain symptoms and common diagnostic categories?

The Upper Extremity Injury Pain Diagnostic Category was selected as the area of primary concern by the clinician. However, the overall pattern of pain complaints is statistically more consistent with the Head Injury/Headache category. This could be explained by multiple injuries, an incorrect medical diagnosis, organic pain complicated by stress-related pain, or psychogenic pain. If the patient's pattern of pain complaints is not consistent with objective findings, psychological or psychophysiological explanations should be considered. The statistical findings are presented below.

Head Injury/Headache	96%
Neck Injury	91%
Upper Extremity Injury	83%
Back Injury	37%
Lower Extremity Injury	2%

Pain Diagnostic Category
 Predicted by BHI 2
 Selected by clinician

Head Injury/Headache
 Upper Extremity Injury

* This analysis is generated by 10 cross-validated discriminant functions

Battery for Health Improvement 2

Patient Profile

Scales	Raw Score	T Scores		T-Score Profile	Rating	Percentile
		Patient	Comm.			
Validity Scales		◆	○	10 40 50 60 90		
Self-Disclosure	184	73	75		Ext. High	99%
Defensiveness	5	31	24		Very Low	4%
Physical Symptom Scales						
Somatic Complaints	52	74	89		Very High	98%
Pain Complaints	52	63	72		High	90%
Functional Complaints	25	72	88		Ext. High	98%
Muscular Bracing	24	77	85		Ext. High	99%
Affective Scales						
Depression	34	73	81		Ext. High	98%
Anxiety	33	83	85		Ext. High	99%
Hostility	24	60	61		High	87%
Character Scales						
Borderline	23	65	68		High	94%
Symptom Dependency	16	68	71		Very High	96%
Chronic Maladjustment	20	69	71		Very High	96%
Substance Abuse	4	49	50		Average	56%
Perseverance	18	31	29		Very Low	4%
Psychosocial Scales						
Family Dysfunction	14	57	59		Average	80%
Survivor of Violence	8	52	55		Average	61%
Doctor Dissatisfaction	6	44	48		Average	29%
Job Dissatisfaction	1	31	32		Very Low	2%

[V 1.0]



How much of this is CRPS?

- CRPS + headache pain pattern with extreme anxiety, stress symptoms and muscular bracing.
- Being patient-centered. What is the best thing to do? SCS will not make her safe
- Had begun living with her boyfriend during medical treatment. Is that a safer place to be?
- Will reassess when her stress is lower

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Case 4

- 58 yo female
- Professional with a masters degree
- Staff infection following total knee replacement, chronic leg pain
- Has been talking to an attorney about healthcare, but has not retained one

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MEDICAL INTERVENTION RISK REPORT

Patient Profile

ORL: High

MIR Scores	Raw	T	T-Score Profile							Rating	%ile
			10	20	30	40	50	60	70		
BHI 2 Validity											
Self-Disclosure	110	52								Average	59%
Risk Factors											
Primary	2	63								High	90%
Presurgical	34	57								High Average	77%
Rehabilitation	14	56								High Average	76%
Addiction History	9	40								Low	18%
Addiction Potential	20	55								High Average	72%
Nonadaptive Coping Styles											
Catastrophizing	16	53								Average	70%
Kinesiophobia	9	49								Average	51%

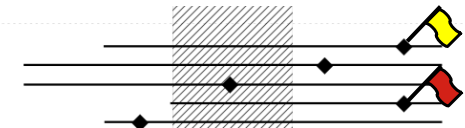
Battery for Health Improvement 2

Patient Profile

Scales	Raw Score	T Scores		T-Score Profile	Rating	Percentile
		Patient	Comm.			
Validity Scales						
Self-Disclosure	110	52	55		Average	59%
Defensiveness	8	38	31		Low	11%
Physical Symptom Scales						
Somatic Complaints	25	55	64		Mod. High	75%
Pain Complaints	45	59	68		Mod. High	81%
Functional Complaints	21	64	78		High	92%
Muscular Bracing	10	46	51		Average	33%
Affective Scales						
Depression	23	59	65		Mod. High	83%
Anxiety	13	47	50		Average	36%
Hostility	14	47	48		Average	38%
Character Scales						
Borderline	20	61	63		High	87%
Symptom Dependency	9	50	55		Average	45%
Chronic Maladjustment	4	35	37		Low	8%
Substance Abuse	2	44	44		Average	34%
Perseverance	23	40	38		Low	15%
Psychosocial Scales						
Family Dysfunction	13	55	57		Average	74%
Survivor of Violence	0	36	37		Low	4%
Doctor Dissatisfaction	26	88	93		Ext. High	99%
Job Dissatisfaction	24	62	69		High	90%

IV 1.01

Critical Item Content Areas ³	
<u>Compensation Focus</u>	N/A
Entitlement	N/A
Dysfunctional Pain Cognitions	N/A
<u>Suicidal Ideation</u>	N/A
Violent Ideation	N/A




Quote from MIR report:

“ This patient reported severe conflicts with the medical profession, including reports of dissatisfaction with medical care, a history of emotional instability, and feeling entitled to financial compensation. **This patient's profile is also associated with thoughts of nonviolent retribution directed towards physicians.**”

What to do?

- **This patient may or may not have a valid complaint about one or more physicians, and she is extremely angry with physicians and suicidal.**
 - First manage suicide risk
 - High risk at this time that her response to SCS would be problematic
 - Explore alternative low-risk interdisciplinary treatments

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SCS Eval Conclusion?

- **Some MDs only want a yes or no.**
- **Better: What is the best thing to do for the patient?**

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Questions?

More info at:
www.healthpsych.com/scs.html

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