Understanding Pain

(45 Years of Pain Science in < 45 Minutes)

Kevin Cuccaro, D.O.
Faculty Disclosure:

The speaker, Dr. Kevin Cuccaro, has declared they have no relevant financial disclosures.
Learning Objectives

• Assess outcomes with common pain management treatments
• Define modern pain science using a new conceptual model.
• Describe how to assess and ‘deconstruct’ pain in order to direct treatment.
Today’s Goals

↑ Pain Awareness
Challenge Beliefs
Think *Differently*
Kevin Cuccaro, D.O.

Before:

• Anesthesiology (Univ. of Chicago)
• ‘Pain Medicine’ (Univ. of Michigan)
• Assoc. Program Dir. (NMCSD)
• Board Certified ‘Pain Injection Specialist’

“Why aren’t people better?”

Now:

• Pain Specialist & Consultant
  ✓ Healthcare Systems/PCPCH’s
  ✓ OHA Clinical Innovations Fellow
  ✓ Oregon Pain Management Commission
  ✓ OHA HERC Chronic Pain Task Force
What We’ll Cover Today:

• Concept #1: What Is The Purpose of Pain & How Can People Hurt Even If It Appears “Nothing’s Wrong”

• Concept #2: What Is The Most Common Misconception About Pain Almost Everyone Makes (& Which Causes Treatments To Fail)

• Concept #3: How To Think Differently For Safe & Effective Pain Treatment
# A Pain Problem?

## Pain

- Common presenting symptom
- Most common disability
- $600+ Billion annually
- 116 Million Americans*

## Back Pain

- 2nd Most Common Reason for ALL Physician Visits
- Lifetime Prevalence of 60-90%
- Industrialized & Developing World
- *Disability Rates Very Different*

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## Cost & Benefit

### What We Did…
- ↑ MRI’s 300%
- ↑ Procedures 130-700+%
- ↑ Surgeries 300+%
- ↑ Opioids 690+%  

### What We Got…
- ↑ Disability Rates
- ↑ Complication Rates
- ↑ Healthcare Costs
- No Improvement in Self Reports  

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Overall Results...

2000
US Pop. 282 Million
45 Million Chronic Pain

2010
US Pop. 309 Million
100 Million Chronic Pain

↑122%
How ↑122%!?! Despite More ‘Treatment’?
What Is Pain?

Concept #1: What Is The Purpose of Pain & How You Can Hurt Even If It Appears “Nothing’s Wrong”
Pain or No Pain?
Pain or No Pain?
Who Has Pain?
How can someone...

Severe pain in their foot... but no spike?

Have a nail in their thumb... but little pain?

‘Spinal deformity’... but no pain?

‘Normal’ X-Rays... but tremendous pain?
What Is Pain?

“Pain is an unpleasant sensory & emotional experience associated with actual or potential tissue damage or described in terms of such damage.”

IASP 1994

Unpleasant Sensory AND Emotional Bodily Experience In Response To Perceived Danger
Key Concept #1

The Purpose of Pain Is **Protection** Not Punishment

“Hurt ≠ Harm”
1. Protection Not Punishment

(“Hurt” ≠ “Harm”)

‘Harm WITHOUT Hurt’
- Distraction
- Life or Death Events
- General Anesthesia
- Belief of Harmlessness

‘Hurt WITHOUT Harm’
- High (But Not Too High) Threat
- Expectation of Harm or ‘Vulnerable’ Expectation
- Belief of Harm

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Pain ≠ Damage!

No Pain

Pain!

Key Concept #1: The Purpose of Pain Is Protection
Hurt ≠ Harm
Key Concept #2

Pain Does NOT “Come From...” The Body

Pain Is “Constructed” In The Brain
IF Pain “Came From…”

...Then cutting, poking, adjusting, drugging, ‘Pain Pus Pathways’ would **consistently & predictably** work with **sustained** results...

But is this true?
Maybe Our Model Needs An Update...?

16th Century

21st Century

Fig. 2. The body-self neuromatrix. The body-self neuromatrix, which

How We Construct Pain

Unpleasant Sensory AND Emotional Bodily Experience In Response To Perceived Danger

Fig. 2. The body-self neuromatrix. The body-self neuromatrix, which
How We *Construct* Pain

Unpleasant

Sensory **AND** Emotional

*Bodily Experience*

In Response To

*Perceived Danger*

Sensation (Feeling)

‘Where is it?’ & ‘What is it like?’

+ Emotion (Meaning)

‘What does this mean?’

+ Cognition (Thinking)

‘Does it matter right now? & What should I do?’

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Confusing? Not Really

Firefighters Understand This

Pain

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Fuel, Heat, & Oxygen of Pain

Cognition/Attention (“Heat”)
- Threat Appraisal
- Accidental vs. Intentional
- Uncertainty & Anxiety

Sensation/Transmission (“Fuel”)
- A-Beta vs. A-Delta vs. C-fibers
- Interoceptive, Proprioceptive...
- ‘Top-Down’ Influences

Emotion/meaning (“Oxygen”)
- Fear & Loss Meaning
  - Ex. Abd Pain
- Anger & Injustice
- Loss & Depression
Structure OR Sensation Alone ≠ Pain

Key Concept #2: Pain is Constructed. It Does Not “Come From...”
Key Concept #3:
If You Know **What** You’re Treating...
You Know **How** To Treat It
Firefighters Understand Fire
Then ‘Deconstruct’ It To
Target Treatment
The Same Applies To Pain

‘Pain Fire’ Examples
Spike In Boot

**Sensation/Transmission ("Fuel")**
- ‘Tissue Issues’ or No?

**Cognition/Attention ("Heat")**
- Threat, Uncertainty, Anxiety?

**Emotion/ Meaning ("Oxygen")**
- Fear, Loss/Harm Meaning?
Nail In Thumb

**Sensation/Transmission (“Fuel”)**
- ‘Tissue Issues’ or No?

**Cognition/Attention (“Heat”)**
- Threat, Uncertainty, Anxiety?

**Emotion/ Meaning (“Oxygen”)**
- Fear, Loss/Harm Meaning?
Nail In Thumb
‘Normal Spine’

Sensation/Transmission (“Fuel”)
  – ‘Tissue Issues’ or No?

Cognition/Attention (“Heat”)
  – Threat, Uncertainty, Anxiety?

Emotion/meaning (“Oxygen”)
  – Fear, Loss/Harm Meaning?
‘Normal Spine’
Scoliosis

**Sensation/Transmission ("Fuel")**
- ‘Tissue Issues’ or No?

**Cognition/Attention ("Heat")**
- Threat, Uncertainty, Anxiety?

**Emotion/meaning ("Oxygen")**
- Fear, Loss/Harm Meaning?
Scoliosis

No Pain
Why This Matters

What We Assume About Pain

What ALL Pain Actually Is
“Your Pain Is Coming From...”

How We ‘Treat’ Pain...

- Increased MRI’s 300%
- Increased Procedures 130-700+% 
- Increased Surgeries 300+% 
- Increased Opioids 690+ 
- Structure-Focused Therapy 
- Body-Focused Messaging 

Focused Here
Different ‘Fires’ May Have Different *Primary* Treatment...
...But Multiple Places To Intervene...
Most Important...Often Not Appreciated

- Genetic/Epigenetic
- Developmental
  - Childhood Illness, Abuse, Neglect
- Adult Victimization/PTSD
- High Stress
  - Early Life
  - Chronic Stress
  - Acute Stressors

- Anxiety
- Depression
- Pain Beliefs & Expectations
- Maladaptive Coping
  - Pain Intensity
  - Nonorganic Signs
  - High Baseline Impairment
But Where Improvement Seen...

Changes In:

- Pain Beliefs
- Coping Strategies
  - Passive ➔ Active
- Pain Self-Efficacy
- Psychological Distress

(Even With ‘Physical’ Modalities)
The Challenges of Pain

• Pain Constructed from 3 Elements
  – But Focus Is on 1.

• Medical Tx Limited
  – Rx. Are ‘Fast’
  – Surgery & Injections are Profitable

• Misinformation, Fear & False Beliefs
The Goals

- Understand **Pain**
- Question Beliefs
- **Think Differently**
  (Like A Firefighter)
The Key Concepts…

• Key Concept #1: The Purpose of Pain Is Protection, 
  \( \uparrow \) Danger (not Damage) \( \uparrow \) Pain

• Key Concept #2: Pain Is Constructed, It Does Not “Come From…” 
  Requires Three Dimensions To Construct (Not One)

• Key Concept #3: Understand Pain & How It Is Constructed… Then ‘Target’ Your ‘Treatments’ (Like A Firefighter).
Questions?

Contact:
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(References Next)
References


J P Fisher et al. BMJ 1995;310:70 (Boot & Nail Image)

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