

Foundations of Pain Management

Biopsychosocial Issues

MiCCSI

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University of Michigan Medical Center

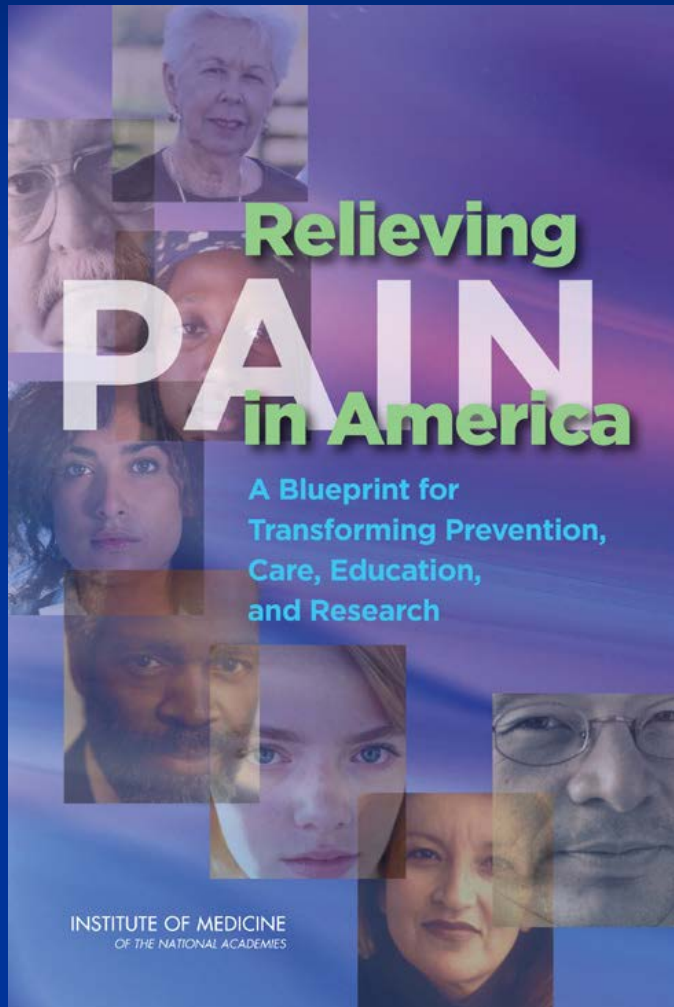
Ann Arbor, Michigan

Disclosures

- Consultant to Community Health Focus Inc.
- President of the American Pain Society
- Funded for research by NIH

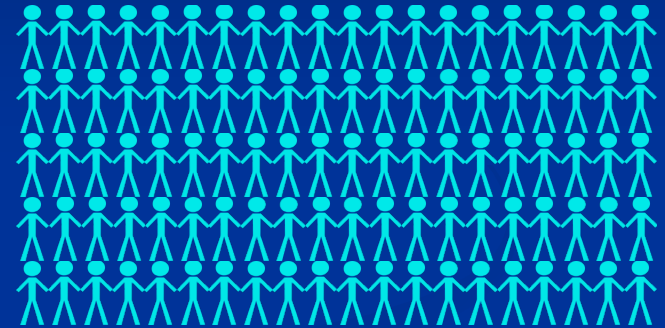
There will be no use of off-label medications in this presentation.

100 Million Individuals in the U.S. have Chronic Pain



More people have Chronic Pain than Diabetes, Heart Disease, and Cancer Combined

Chronic Pain 100 Million



Diabetes 29.1 Million



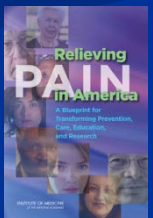
Heart Disease 27.6 Million



Cancer 13.7 Million



 = 1 Million individuals



Most Pain Care Visits occur within Primary Care



Peterson K, et al.. VA ESP Project #09-199; 2017.

How good is our black bag for treating chronic pain?



Treatment	Impact on Chronic Pain
Long term opioids	32% reduction
Pain drugs generally (across classes)	30% - 40% get 40% - 50% relief
Spinal fusion	75% still have pain
Repair herniated disk	70% still have pain
Repeat Surgery	66% still have pain
Spinal cord stimulators	61% still in pain after 4 yrs. average pain relief 18% across studies

Facet blocks: Limited evidence

Slipman CW, Bhat AL, Gilchrist RV, Isaac Z, Chou L, Lenrow DA. A critical review of the evidence for the use of zygapophysial injections and radiofrequency denervation in the treatment of low back pain. *Spine J.* 2003; 3:310-316.

Carette S, Marcoux S, Truchon R, et al. A controlled trial of corticosteroid injections into facet joints for chronic low back pain. *N Eng J Med.* 1991; 325:1002-1007.

Biomedical Model Generally: Limited evidence

Chou R, Loeser JD, Owens DK, et al. Interventional therapies, surgery, and interdisciplinary rehabilitation for low back pain: an evidenced-based clinical practice guideline from the American Pain Society. *Spine.* 2009; 34:1066-1077.

Hogan QH, Abram SE. Neural blockade for diagnosis and prognosis: a review. *Anesthes.* 1997; 86:216-241.

Merrill DG. Hoffman's glasses: evidenced-base medicine and the search for quality in the literature on pain medicine. *Reg Anesth Pain Med.* 2003; 28:547-560.

Staal JB, de Bie RA, de Vet HCW, Hildebrandt J, Nelemans P. Injection therapy for subacute and chronic low back pain: an updated Cochrane review. *Spine.* 2009; 34:49-59.

Epidural steroid injections: Limited evidence

Armon C, Argoff CE, Samuels J, Backonja M. Assessment: use of epidural injections to treat radicular lumbosacral pain: report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. *Neurology.* 2007; 68:723-729.

Bowman SJ, Wedderburn L, Whaley A, Grahame R, Newman S. Outcome assessment after epidural corticosteroid injection for low back pain and sciatica. *Spine.* 1993; 18:1345-1350.

Carette S, Leclaire R, Marcoux S, et al. Epidural corticosteroid injections for sciatica due to herniated nucleus pulposus. *N Eng J Med.* 1997; 336:1634-1640.

Koes BW, Scholten RJPM, Mens JMA, Bouter LM. Efficacy of epidural steroid injections for low-back pain and sciatica: a systematic review of randomized clinical trials. *Pain.* 1995; 63:279-288.

If Patients don't respond to what we offer...

- They must be crazy
- The pain is all in their heads
- They don't want to get better

OR perhaps

- We don't fully understand pain
- Treatment of pain requires a different approach than the traditional biomedical model
- Effective pain treatment requires a different financial model

Pain Medicine Versus Pain Management: Ethical Dilemmas Created by Contemporary Medicine and Business

John D. Loeser, MD† and Alex Cahana, MD, PhD*†*

Biomedical Model Interventional Pain Medicine

- **Procedure Driven**
- **Focus on curing/fixing**

Patient is passive recipient

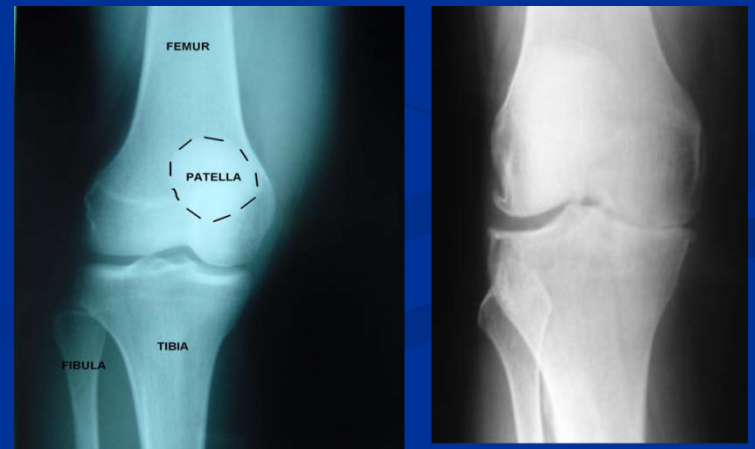
Biopsychosocial model Interdisciplinary Pain Management

- **Focus on multidisciplinary teams**
- **Focus on pain management**

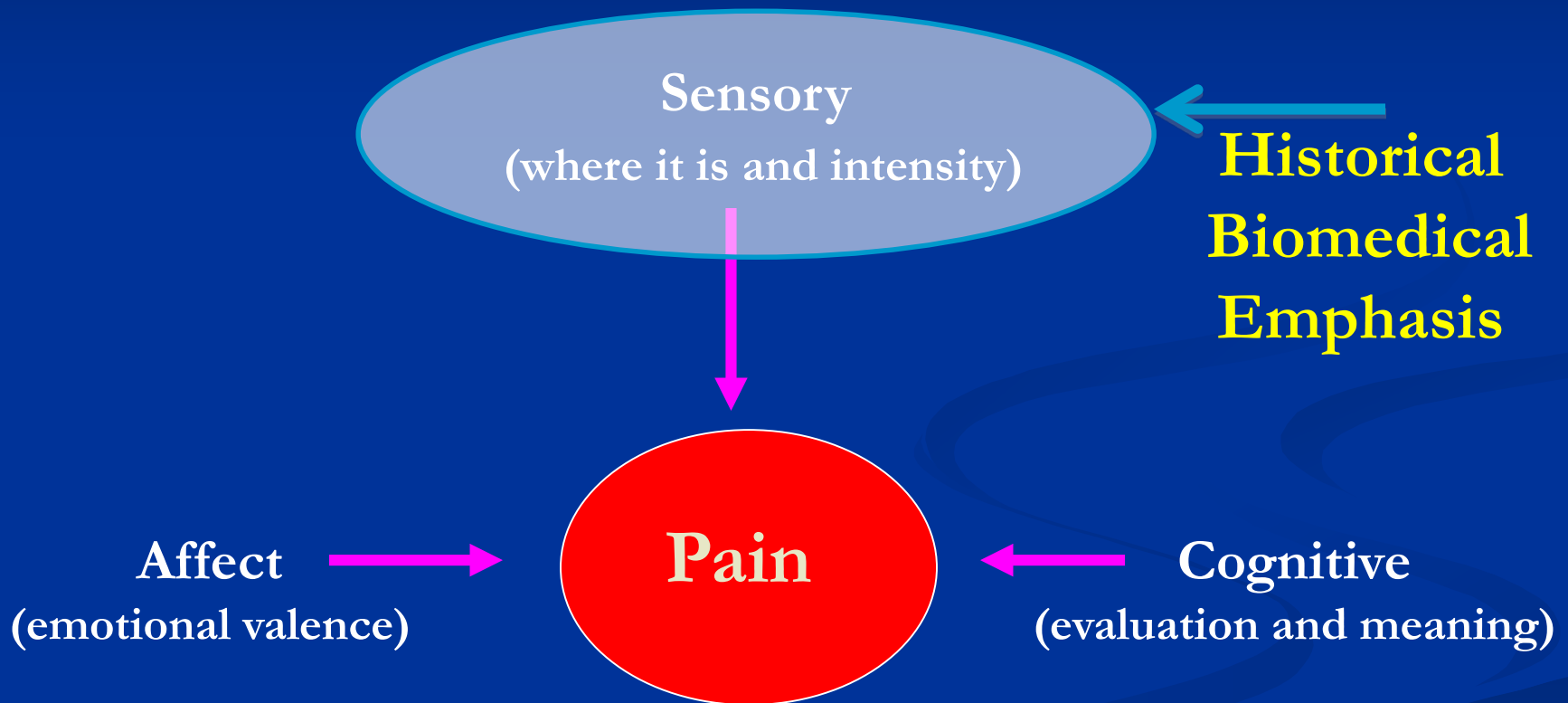
Patient is active participant

Thinking Differently about Pain

- Chronic Pain is not observable pathology that can be fixed
- Pain is an experience
 - Much like hunger or orgasm
 - The experience is not equivalent to the biological processes
 - Fixing the identified biology won't fix the perceptual process or the perception itself



Chronic Pain has Three Components: The BioMedical Model addresses 1 of them



Neurobiological perspective

Brain regions associated with pain processing involve both sensory and affective/cognitive regions

- **Sensory / discriminative dimension**
 - Somatosensory cortices (S1, S2)
 - Dorsal posterior insula
- **Affective / Cognitive dimensions**
 - Anterior insula
 - Prefrontal cortex
 - Anterior cingulate cortex
 - Thalamus
 - Amygdala
 - Hippocampus



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I still feel
pain

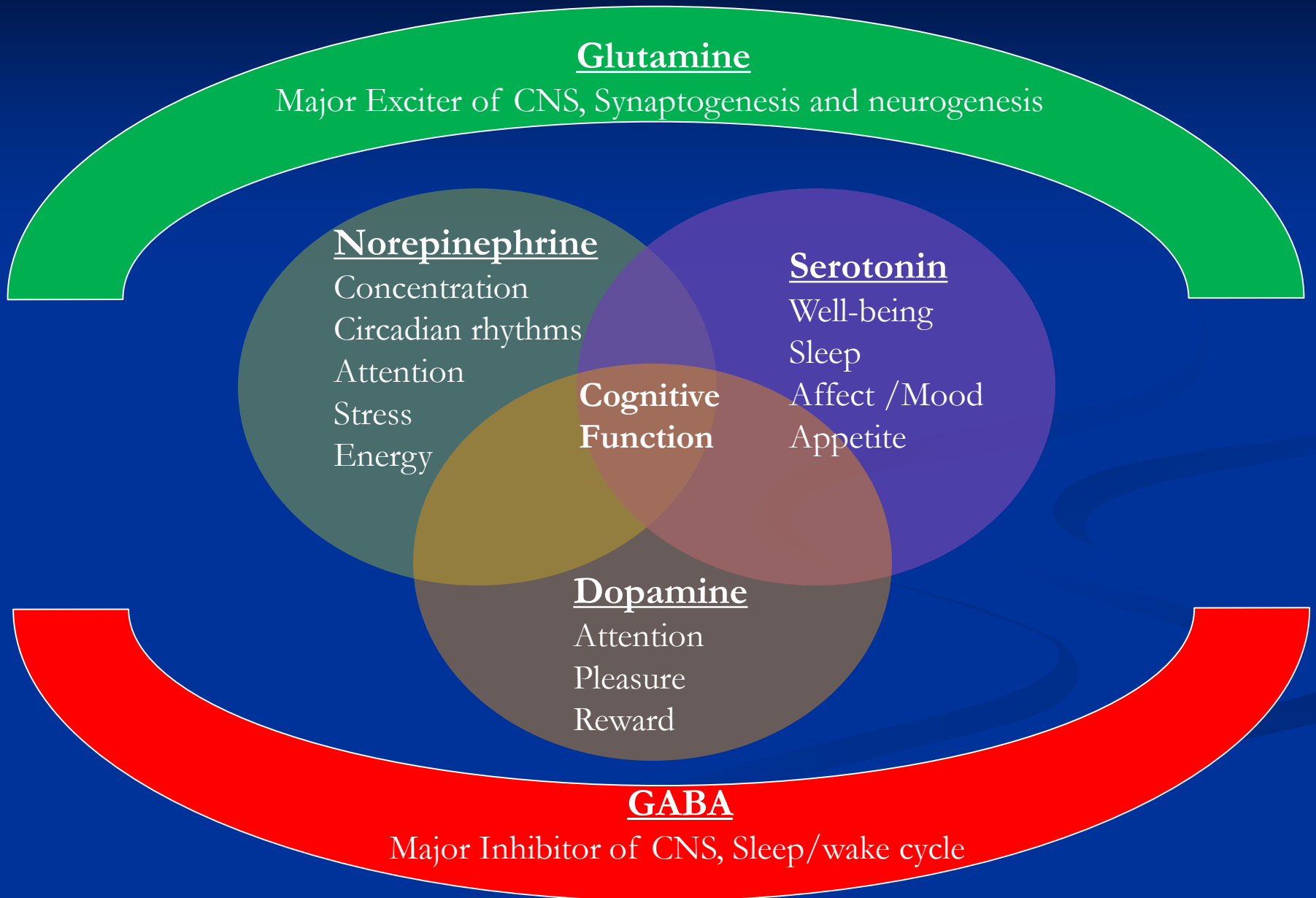


Chronic Pain

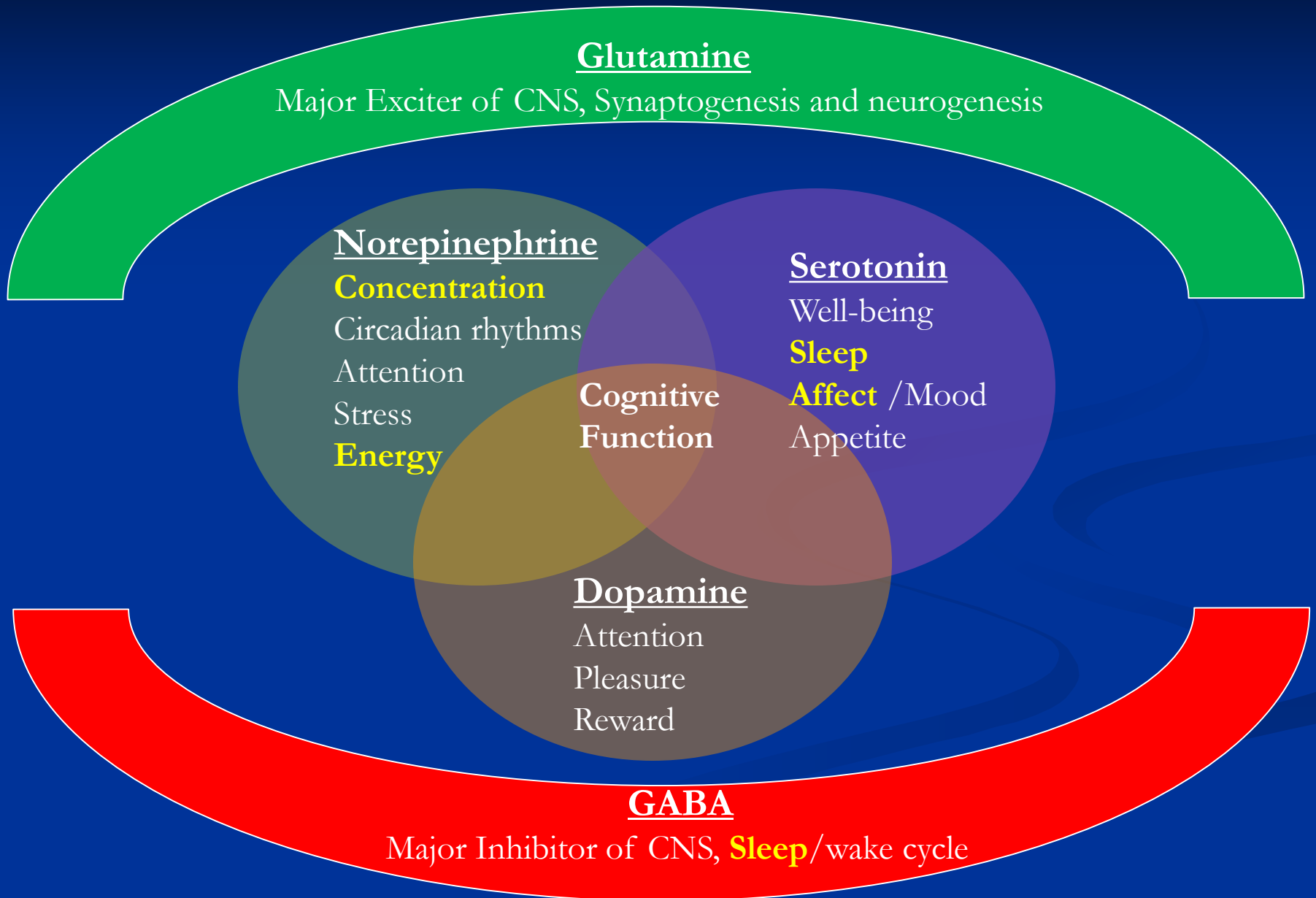
- Similar in mechanism to an emotion but experienced as a bodily sensation



Neurotransmitters for Pain Processing



Neurotransmitters for Pain Processing



Shared Neurotransmitters Explain

- The complexity of chronic pain presentation

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- Gives clinicians more targets to intervene on the mechanisms that drive the perception of pain.

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- Sleep, Pain, Affect, Cognition, Energy

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Chronic Overlapping Pain Conditions

COPCs	US Prevalence
Irritable Bowel Syndrome	44 Million
Temporomandibular Disorder	35 Million
Chronic Low Back Pain	20 Million
Interstitial Cystitis / Bladder Pain Syndrome	8 Million
Migraine Headache	7 Million
Tension Headache	7 Million
Endometriosis	6 Million
Vulvodynia	6 Million
Fibromyalgia	6 Million
Myalgic Encephalopathy / CFS	4 Million

¹Veasley, C. et al (2015). White paper from the *Chronic Pain Research Alliance*.

Central Sensitization

Clinical Assessment:

- Pain disproportionate to nature and extent of injury (not nociceptive)
- Not due to lesions or damage within CNS (not neuropathic)
- Wide-spread pain distribution
- General hypersensitivity of senses, stress, emotions, mental load,
- S.P.A.C.E.



Action of Non-Pharmacological Interventions across COPC's

- Interventions that are successful at desensitizing or calming CNS activity associated with central sensitization are likely to be beneficial across conditions
- Interventions that diminish “central load” are likely to be helpful over time. It takes time to calm (reset) a sensitized CNS.



Dually Focused Management of Chronic Pain

Symptoms of Pain, Fatigue, etc.

- Nociceptive processes (damage or inflammation of tissues)
- Disordered sensory processing



Functional Consequences of Symptoms

- Increased Distress
- Decreased activity
- Isolation
- Poor sleep
- Maladaptive illness behaviors



Pharmacological therapies to improve symptoms



Nonpharmacological therapies to address dysfunction



Non-Pharmacological Therapies for Chronic Pain States

Strong Evidence

- Education
- Aerobic exercise
- Cognitive behavior therapy

Modest Evidence

- Strength training
- Hypnotherapy, biofeedback, balneotherapy

Weak Evidence

- Acupuncture, chiropractic, manual and massage therapy, electrotherapy, ultrasound

No Evidence

- Tender (trigger) point injections, flexibility exercise

How to ERASE S.P.A.C.E.

Exercise & Physical Activity

Reframing & Relaxation

Affect

Sleep

Energy Efficiency



Sleep, Pain, Affect, Cognitive changes, Energy deficits

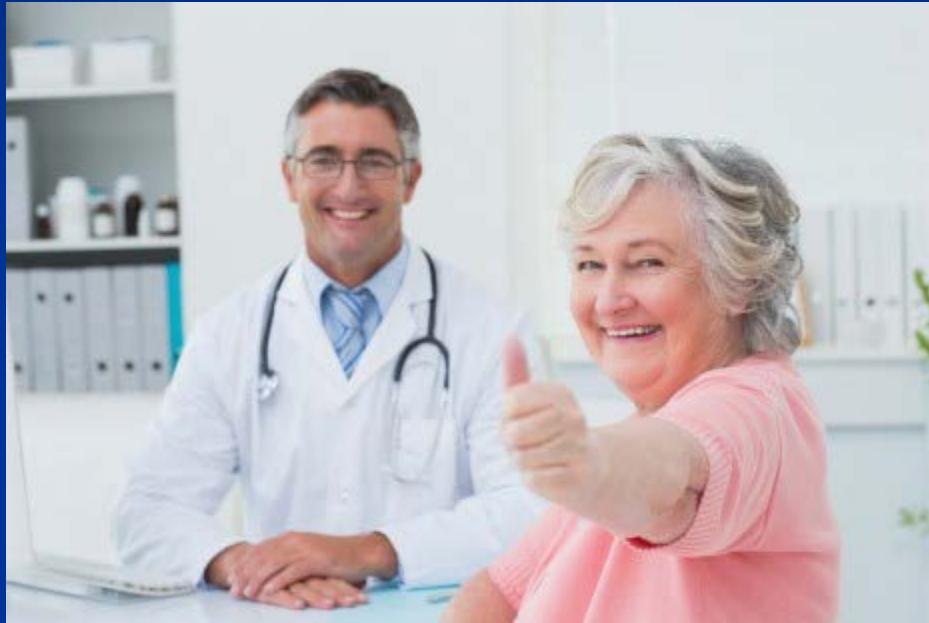
Exercise and Physical Activity

- Multiple reviews and meta-analyses, and professional society guidelines recommend exercise and physical activity for the treatment of chronic pain and fatigue





“Many studies show that exercise will help your pain and fatigue.
I want you to start exercising.”



OK!!

More common responses



Silence



The are “you insane” stare



Resistance

What does not work...



Confrontation

You're not fat,
you're just...
easier to see.

INSTAGRAM @DESI.SARCASM



Sarcasm



Shaming

Exercise needs to start with a patient-centric conversation

- Merits
- Barriers
- Motivation
- Rewards
- How to get started

Merits

20 Exercise Benefits

1. Reduces body fat
2. Increases lifespan
3. Oxygenates body
4. Strengthens muscles
5. Manages chronic pain
6. Wards off viruses
7. Reduces diabetes risk
8. Strengthens heart
9. Clears arteries
10. Boosts mood
11. Maintains mobility
12. Improves memory
13. Improves coordination
14. Strengthens bones
15. Improves complexion
16. Detoxifies body
17. Decreases stress
18. Boosts immune system
19. Lowers blood pressure
20. Reduces cancer risk

www.facebook.com/montereybayholistic



THE BRAIN BENEFITS OF EXERCISE



INCREASES PRODUCTION OF
NEUROCHEMICALS THAT
PROMOTE BRAIN CELL REPAIR



IMPROVES
MEMORY



LENGTHENS
ATTENTION SPAN



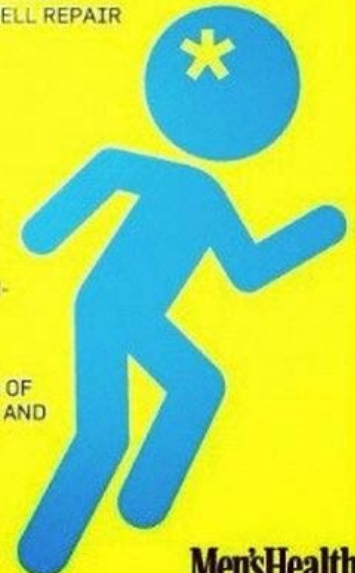
BOOSTS DECISION-
MAKING SKILLS



PROMPTS GROWTH OF
NEW NERVE CELLS AND
BLOOD VESSELS



IMPROVES
MULTI-TASKING
AND PLANNING



Men'sHealth

Barriers



I'm in too much pain to exercise



I'm too fatigued to exercise

Skinny people will laugh at me.

I'm too busy to exercise

I can't afford a gym membership

It's not fun

I hate sweat.

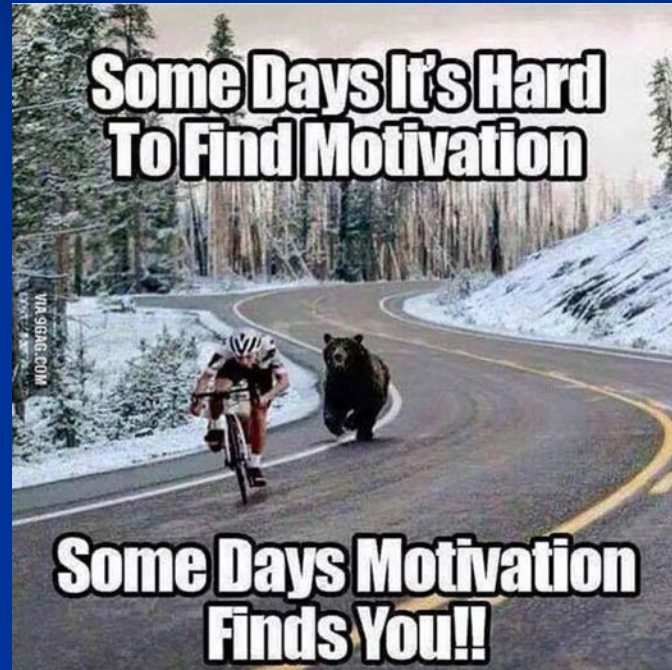
I don't live where I can exercise

I don't have any workout clothes

I have kids to drive around

No one will exercise with me.

Problem Solving, Motivation, and Rewards



**EXERCISE IN
THE MORNING**
BEFORE YOUR BRAIN FIGURES
OUT WHAT YOU'RE DOING

**EXERCISING WOULD
BE SO MUCH MORE
REWARDING IF
CALORIES
SCREAMED WHILE
YOU BURNED THEM**

Types of Physical Activity

■ Aerobic training

- at moderate intensity can improve pain, fatigue, depressed mood and physical limitations

■ Strength training

- may decrease pain, and depression, and improve overall well-being

■ Movement therapies

- Tai Chi – improves balance, well-being, fitness and pain
- Yoga – improves pain functioning, HRQOL

Hassett & Williams. Best Pract Res Clin Rheumatol 2011;25:299-309.; Hauser et al. Arthritis Res Ther 2010;12:R79.; Jones et al. Rheum Dis Clin North Am 2009;35:373-91.; Arnold. Psychiatr Clin North Am. 2010;33:375-408. Peng. Reg Anes Pain Med 2012;37:372-82; Wang et al. N Engl J Med 2010;363:743-54; Haaz & Bartlett. Rheum Dis Clin North Am. 2011;37:33-46.; Langhorst et al. Rheumatol Int 2012 Epub. Ward et al. Musculoskeletal Care 2013;11:203-17.

Step Counts

- Activity trackers – Fitbit (\$100) and pedometers can be found for as little as \$10.
- Every day beat the day before by 50 steps.
- Healthy: 10,000 steps a day
 - (18 – 1,900 steps in a mile)



Lifestyle Physical Activity

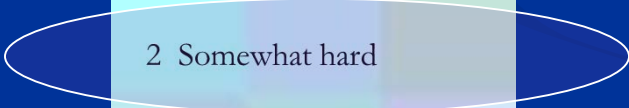


Aerobic Lifestyle Fitness



How should I do it?

- Follow the F.I.T.T. principle:
 - *Frequency* – Number of days per week. (e.g., 3x per wk)
 - *Intensity* – How hard the activity feels to you.

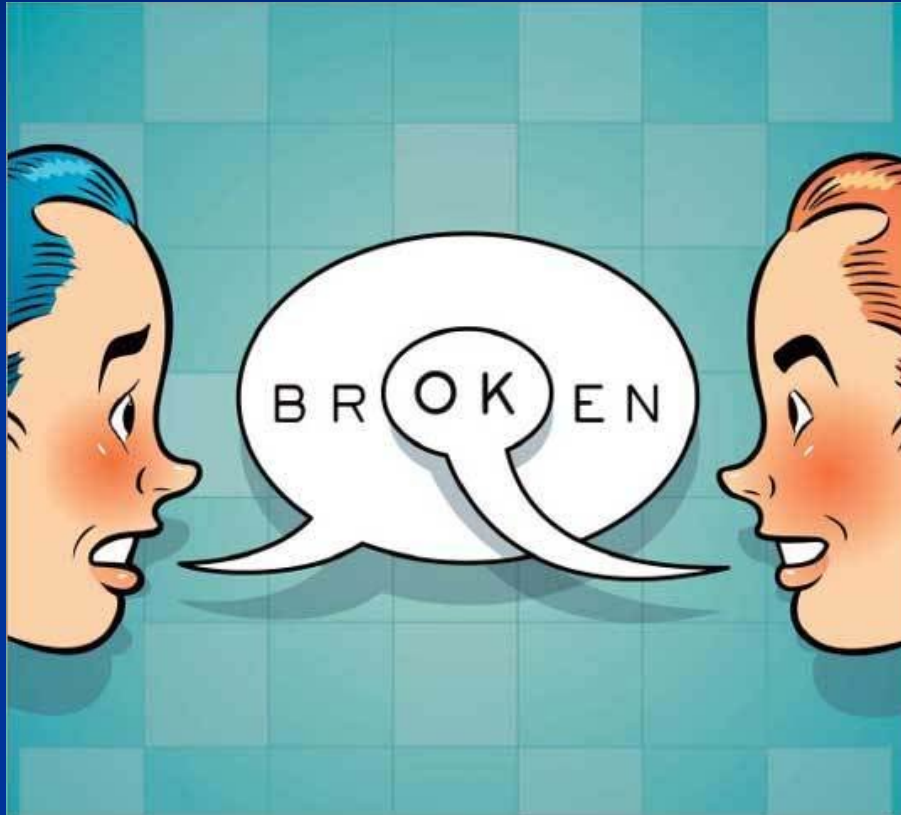


<i>RPE</i>
4 Maximal effort/strain
3 Quite hard
2 Somewhat hard
1 Quite easy
0 Minimal effort/strain

- *Time* – The total time you do physical activity. (e.g. 30min)
- *Type* – The kind of physical activity you do.

ERASE

Reframing



Novel learning vs Automatic thinking



Novel skills



Novel acquaintances



Novel places

Requires Time and Energy

Automatic Thinking Saves Energy and is Efficient



But...Can close off need
for novelty, and creativity

If Novel Learning is Negative, Automatic Thinking becomes Negative

Acute pain is awful

Learns to rest, avoid tasks, withdraw socially

Prepares self for the worst

Catastrophizing – produces negative emotions

When pain becomes chronic

Tendency to retain acute pain thinking

Don't revisit assumptions about pain

Physiological toll - deconditioning



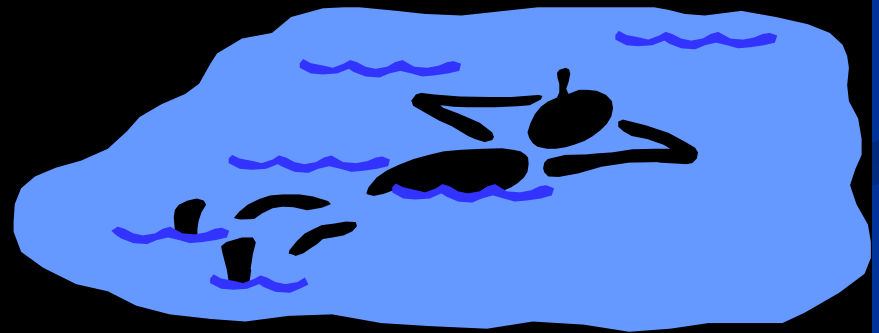
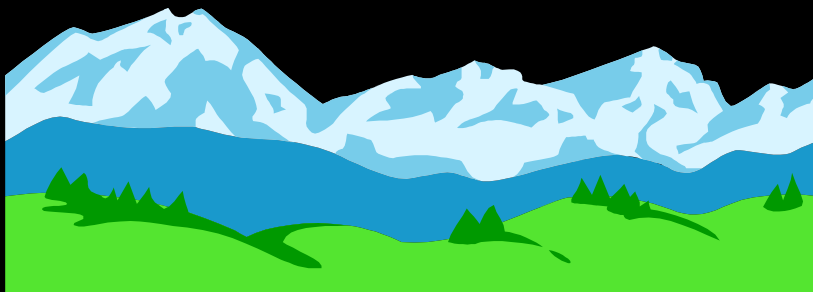
Mindfulness Meditation

- State of consciousness where the focus is on attention, awareness and moment-by-moment experience
- Attitude of curiosity, openness, and acceptance
- Decreased automatic thinking, and analytical self-referential rumination



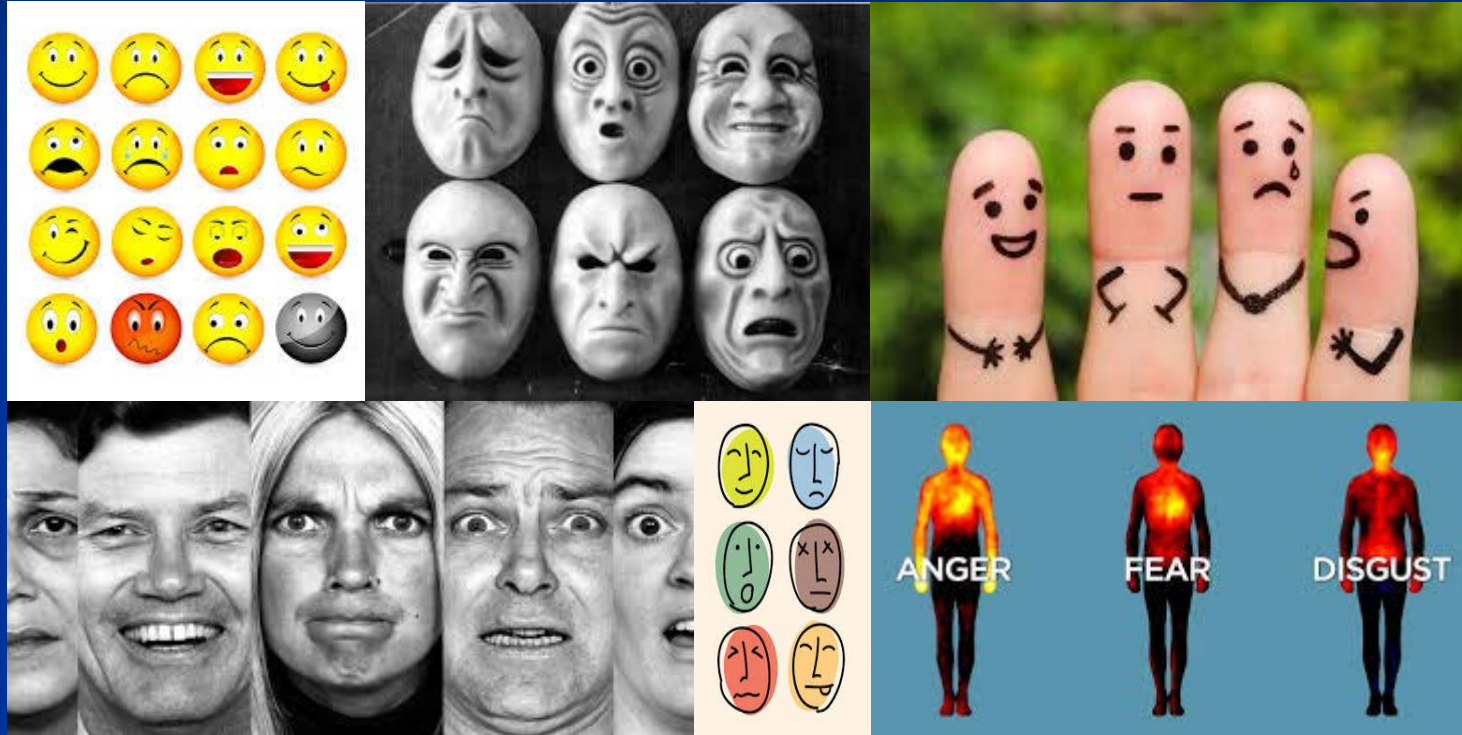
The Relaxation Response

Progressive Muscle Relaxation
Visual Imagery
Meditation
Biofeedback
Yoga

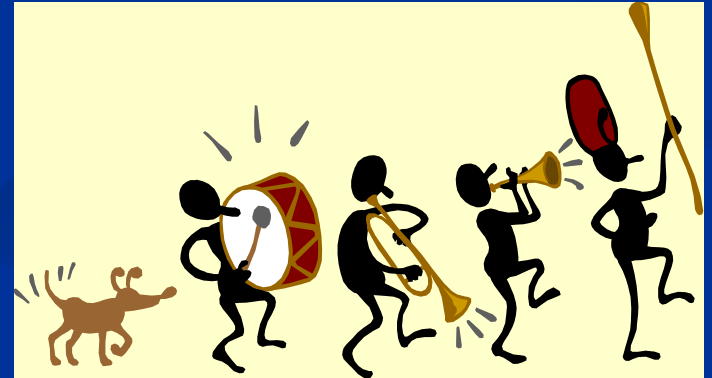


ERASE

AFFECT



Pleasant Activity Scheduling



Pleasant Activity Scheduling

- Initiates movement through pleasant events
- Pleasant affect buffers pain
- Scheduling is better than random occurrences
 - More likely to happen
 - More predictable, less flare-ups



Emotional Awareness and Expression Therapy (EAET)

- Based on assumption that pain is influenced by unresolved emotional conflict/trauma
- Therapy seeks to resolve affective perturbation
- Effects similar to CBT with some profound remissions of pain
- May be good fit for individuals with trauma history



ERASE

Sleep



One night's loss of sleep...

■ Impacts the next 2 days

■ Physical ability

- Coordination
- Dexterity
- Energy

■ Mental ability

- Emotional stability
- Memory
- Concentration



Sleep Hygiene Skills

Timing

Regular bed time/wake time

Sleep Behavior

Get in bed only when sleepy

Use bed for sleep

Get up after 15' if no sleep

Thermal Tips

Decline in core temp signals sleep

Exercise, warm bath before bed

Environment

Steady room temperature

Keep room dark

Ingestion

Decrease nicotine

Decrease Caffeine

Alcohol interferes with sleep

Light snack is recommended

Mental Control

Effort will not produce sleep

Avoid mental stimulation

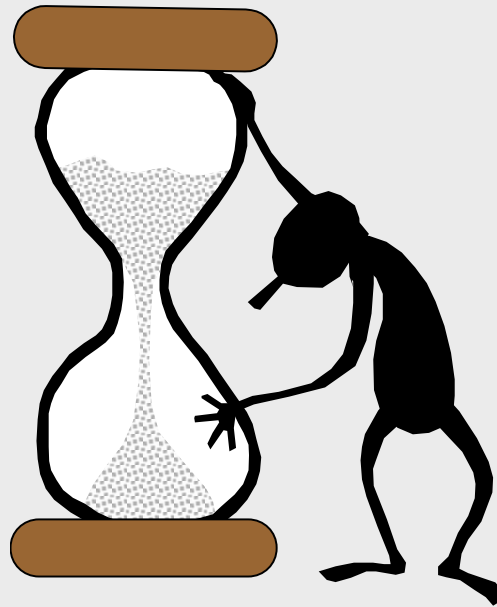
Seek mental quiescence

Energy Efficiency



Behavioral Activation Skills

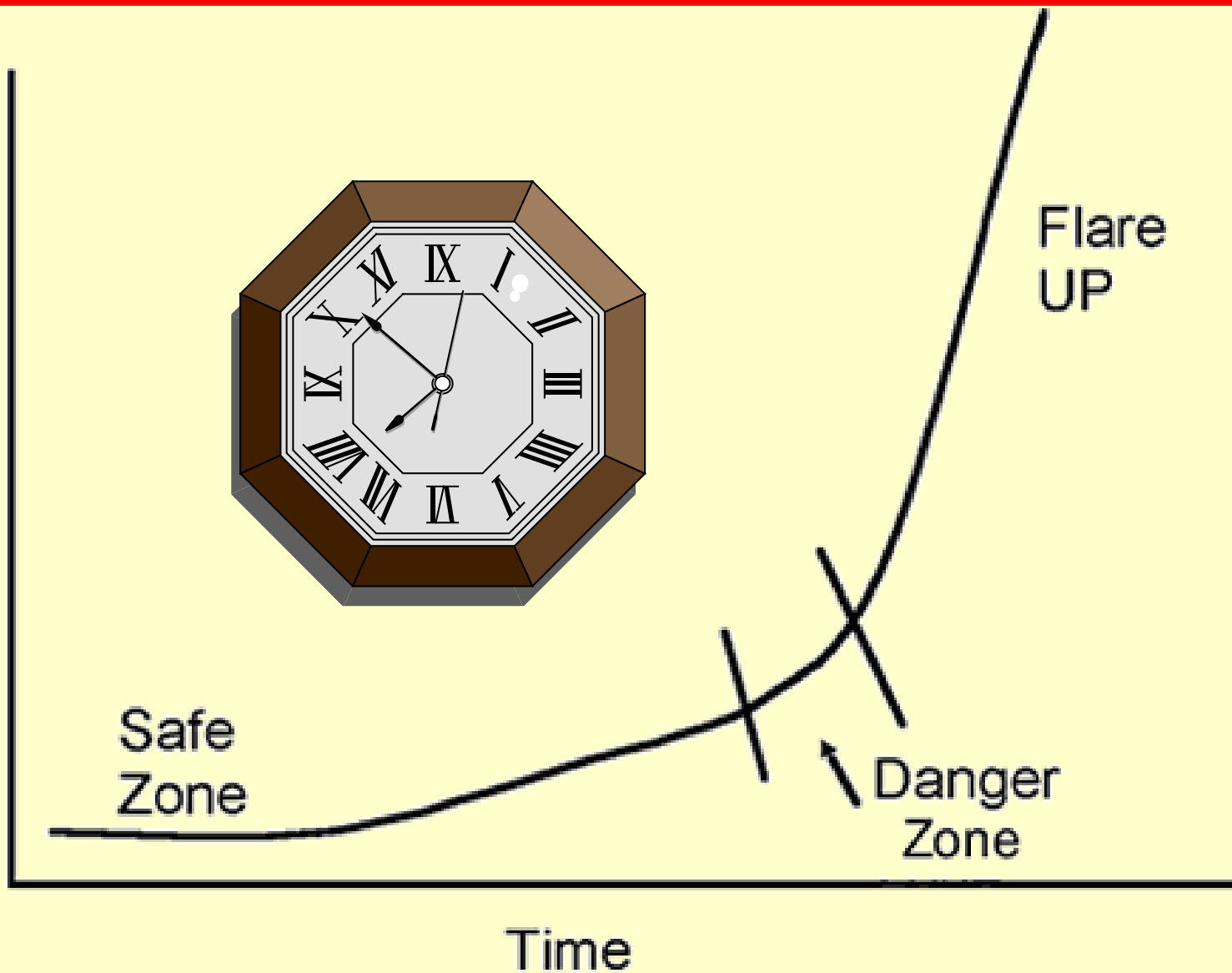
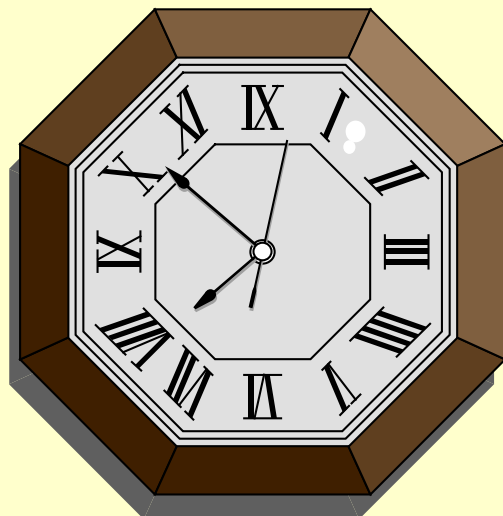
Time-Based Pacing



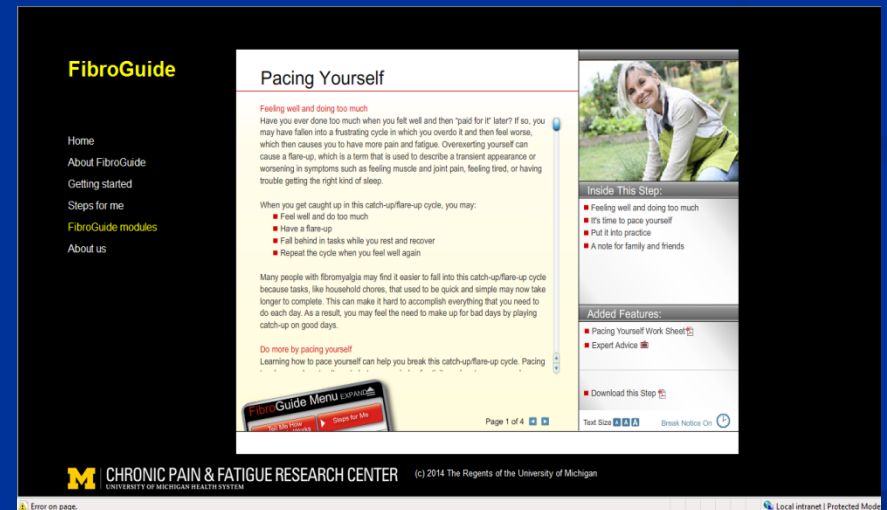
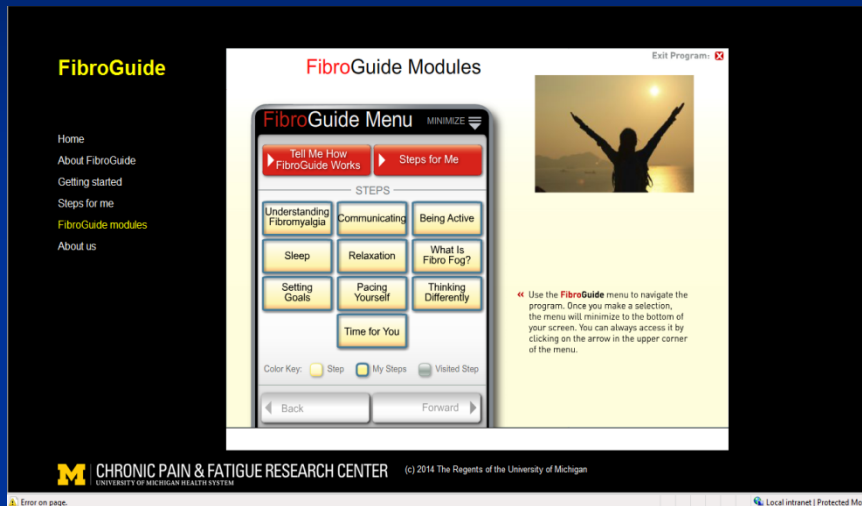
Activity-Rest-Activity-Rest

S
Y
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L



Web-based self-management “FibroGuide”



<http://fibroguide.med.umich.edu/>

Primary Models of Pain Care

1

QUERI

Evidence Brief: Effectiveness of Models Used to Deliver Multimodal Care for Chronic Musculoskeletal Pain

January 2017

Optimized Antidepressant Therapy and Pain Self-management in Primary Care Patients With Depression and Musculoskeletal Pain A Randomized Controlled Trial

2

Telecare Collaborative Management of Chronic Pain in Primary Care A Randomized Clinical Trial

Kurt Kroenke, MD; Erin E. Krebs, MD; Jingwei Wu, MS; Zhangsheng Yu, PhD; Neale R. Chumbler, PhD; Matthew J. Bair, MD

3

Evaluation of Stepped Care for Chronic Pain (ESCAPE) in Veterans of the Iraq and Afghanistan Conflicts A Randomized Clinical Trial

Matthew J. Bair, MD, MS; Dennis Ang, MD; Jingwei Wu, MS; Samantha D. Outcalt, PhD; Christy Sargent, BS; Carol Kempf, RN; Amanda Froman, BS; Arlene A. Schmid, PhD, OTR; Teresa M. Damush, PhD; Zhangsheng Yu, PhD; Louanne W. Davis, PsyD; Kurt Kroenke, MD

4

Collaborative Care for Chronic Pain in Primary Care A Cluster Randomized Trial

5

¹Peterson K, et al.. VA ESP Project #09-199; 2017.; ²Kroenke, K, et al, JAMA, 301:2099-2110, 2009; ³Kroenke, K JAMA. 312:240-248, 2014; ⁴Bair et al, JAMA Intern Med. 175:682-689, 2015; Dobscha, SK et al. JAMA. 301:1242-1252, 2009.

Patient	Step	Provider	Functions
Pain Free	Primary Prevention	PCP	Promote healthy lifestyle through self-management: nutrition, sleep, exercise, stress reduction, smoking cessation, meaningful activities, social support, safe environment
Acute Pain	Pain treatment	PCP	Medications + Self-management
Chronic Pain	Patient Aligned Care Team (PACT)	PCP + Case Manager	Regular Monitoring of pain and medications, comorbidities, self-management
	Secondary Consultation	Collaborative Care with PCP/Case Manager	Multidisciplinary Pain Medicine Specialty Teams, Rehabilitation Medicine, Behavioral Pain Management Mental Health SUD Programs
	Tertiary Pain Centers	PCP + consultants	Advanced Pain Medicine, CARF Pain Rehabilitation

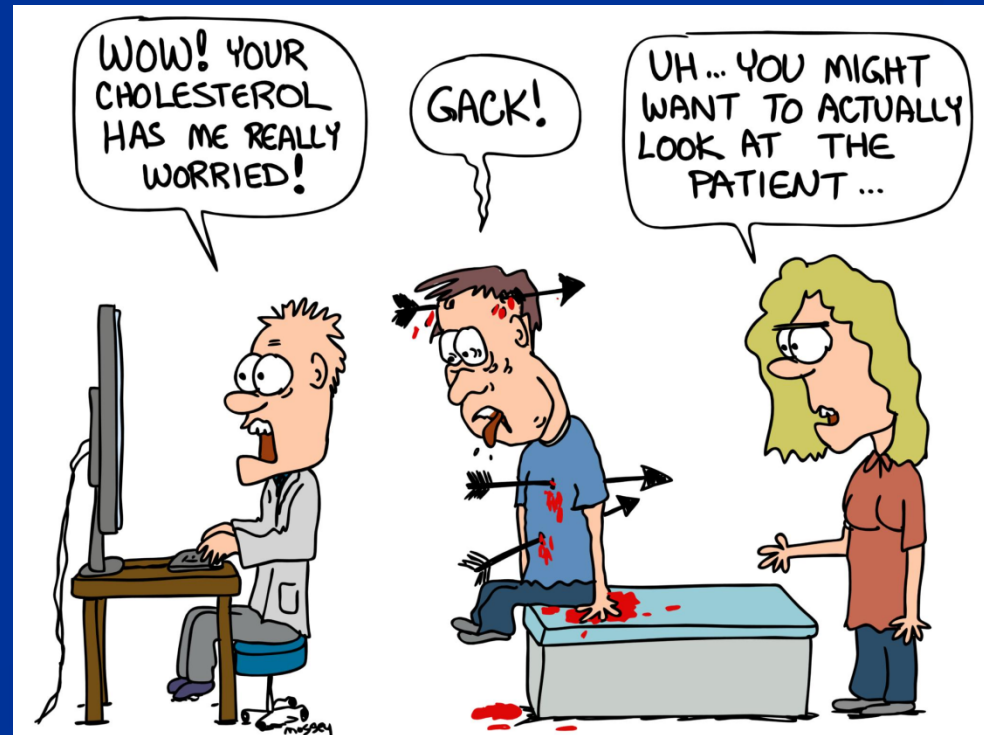
Intervening in the PCP Encounter







Where's the patient?





Are we losing touch — literal touch — in the doctor-patient relationship?

Sacha Pfeiffer *August 18, 2014*

<https://hms.harvard.edu/news/>

KHN
KAISER HEALTH NEWS

Patients Lose When Doctors Can't Do Good Physical Exams

By **Sandra G. Boodman** | May 20, 2014

*This KHN story was produced in collaboration with **The Washington Post***

By **MARLYS HARRIS** / **MONEYWATCH** / *May 2, 2011, 12:20 PM*

Are Doctors Losing Their Touch?

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Last Updated May 13, 2011 1:07 PM EDT

The New York Times

HEALTH

Are Doctors Losing Touch With Hands-On Medicine?

By **ABIGAIL ZUGER** JULY 13, 1999

The New York Times

HEALTH | CASES

Not on the Doctor's Checklist, but Touch Matters

DANIELLE OFRI and M.D. AUG. 2, 2010



Three things you can Practice Tomorrow

- 1. Maximize the power of touch through physical exam
- 2. You don't always need to have a psychologist deliver emotional support to patients. Just listen to the story. You will be treating the affective and social components of pain.
- 3. If you recommend self-management (exercise, relaxation, sleep hygiene etc.), ask about it with the same enthusiasm and regularity that you ask about drugs. Patients learn what you think is really important by what you ask about.