Functional Approaches to Chronic Pain Management
Relevant Financial Disclosure
Corinne Basch, MD

- I have nothing to disclose
Gratitudes

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Chronic Pain Management

- You look at your schedule:
  - Mrs. C - 38 yo woman with fibromyalgia
  - Mr. B - 54 yo M, chronic low back pain
  - Ms. G - 24 yo woman with IBS
  - Ms. T - 36 yo woman with headaches

Your distress score on a scale of 1-10?
From Suffering...
... To Healing
The Problems with Current Pain Management

- Limited palate of Approaches
  - Non-opioid medications
  - Opioids
  - Injections
  - Physical Therapy
- Integrative Medicine adds some options, but often requires multiple visits, not covered by insurance, etc.
Symptom Management: Limitations of the current model for Medical Treatment of Pain

WHO's pain ladder
- developed for cancer pain, now applied for nonmalignant chronic pain as well

- Step 1 Non-Opioid Analgesics
  - Aspirin
  - Tylenol
  - Other NSAIDs
Acetaminophen toxicity

- Chronic tylenol ingestion of 4 g per day (8 of the old Vicodin, 12 norco) can produce liver damage
- Patients may combine with OTC products
- Lesser doses can be toxic when fasting/not eating well or when consumed in conjunction with alcohol

1,600 cases of acute liver failure in the United States per year between 2000 and 2004
86% from intentional or unintentional overdoses of APAP

Hepatology. 2005 Dec;42(6):1364-72
NSAID-related Toxicity

GI Bleeding
- 107,000 hospitalizations/yr for NSAID-related GI complications
- At least 16,500 NSAID-related deaths occur each year among patients


- Overall mortality from GI bleeds 1 in 13
  - 1 in 5 in those using NSAIDs or aspirin

BMC Gastroenterology, 2009, Vol. 9, Special section p1-7

Cardiovascular
- RR MI 1.30 (1.20-1.41) generally, 1.61 if known CV dz possibly lower for naproxen
- Risk non-fatal MI inc more than fatal MI

PLoS One. 2011 Feb 8;6(2):e16780
NSAIDs Impair Joint Repair

In vivo studies with NSAIDs at physiologic concentrations have shown that several NSAIDs reduce glycosaminoglycan synthesis.

- Salicylate
- Acetylsalicylic acid
- Fenoprofen
- Isoxicam
- Tolmetin
- Ibuprofen

“…femoral head collapse and acceleration of osteoarthritis have been well documented in association with the NSAIDs…”

Lancet. 1985 Jul 6; 2(8445): 11-4
The Problems with Current Pain Management

- Limited palate of Approaches
  - Non-opioid adjunctive medications – issues with cost, efficacy, sedation, etc.
  - Others
    - Opioids
    - Injections
    - Physical Therapy
- Integrative Medicine adds some options, but often requires multiple visits, not covered by insurance, etc.
The Problems with Current Pain Management

- Limited palate of Approaches
  - Non-opioid medications
  - Opioids
  - Injections
  - Physical Therapy
- Integrative Medicine adds some options, but often requires multiple visits, not covered by insurance, etc.
Opioid Overdose Deaths
<table>
<thead>
<tr>
<th>Max prescribed daily opioid dose, mg/d</th>
<th>Death rate per 1000 Person-months</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Patients with Chronic Noncancer Pain Diagnoses</td>
<td>Patients with Acute Pain Diagnoses</td>
</tr>
<tr>
<td>0</td>
<td>0.09</td>
<td>0.12</td>
</tr>
<tr>
<td>1-&lt;20</td>
<td>0.11</td>
<td>0.21</td>
</tr>
<tr>
<td>21 -&lt;50</td>
<td>0.24</td>
<td>0.36</td>
</tr>
<tr>
<td>50 -&lt;100</td>
<td>0.66</td>
<td>1.13</td>
</tr>
<tr>
<td>≥100</td>
<td>1.24</td>
<td>1.82</td>
</tr>
</tbody>
</table>

# Pain Meds in the Elderly

<table>
<thead>
<tr>
<th></th>
<th>NSAIDs</th>
<th>Coxibs</th>
<th>Opioids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiovascular risk</td>
<td>1</td>
<td>HR 1.28 (1.01-1.62)</td>
<td>1.77 (1.39-2.53)</td>
</tr>
<tr>
<td>GI bleeding</td>
<td>1</td>
<td>0.6 (0.35 – 1)</td>
<td>1</td>
</tr>
<tr>
<td>Fracture risk</td>
<td>1</td>
<td>1</td>
<td>4.47 (3.12-6.41)</td>
</tr>
<tr>
<td>All-cause mortality</td>
<td>1</td>
<td>1</td>
<td>1.87 (1.39-2.53)</td>
</tr>
</tbody>
</table>

Arch Intern Med. 2010 Dec 13;170(22):1968-76
Other issues with Opioids

- **Opioid-induced hyperalgesia**
  - Documented in animals and humans
  - A number of case reports document decreases in pain with stopping opioids
  - Mechanism may be NMDA receptor-mediated central sensitization

- **Opioid-related Endocrinopathy**
  - Up to 90% of patients treated with opioids!
  - More pronounced in doses > 100 mg morphine per day
  - Opioids bind to receptors in hypothalamus
    - Decrease stimulation of the pituitary

The American Journal of Medicine Volume 126, Issue 3, Supplement 1, March 2013, P S12–S18
The Problems with Current Pain Management - an Aside on the Opioid Crisis

- Current changes in Opioid Prescription Guidelines
- “Just say no”?

Opinion: Stop The War On Chronic Pain Patients

War On Opioids Punishes Desperate Pain Patients

Opioids have become the newest enemy in the war on drugs. Doctors are becoming afraid to prescribe such meds. People in severe chronic pain are suffering.
Survey of patients in first 100 days after rescheduling of hydrocodone
- 39.0% no changes in access to hydrocodone
- 61% experienced some barriers
  - 64.2% had to visit their healthcare providers more often
  - 30.3% reported some type of issue interacting with their pharmacy

Of those who could no longer get hydrocodone
- 18.1% borrowed pain medications
- 17.1% turned to marijuana
- 13.1% used alcohol
- 2.3% used illicit drugs.
- 88.3% felt that the rescheduling was neither a fair nor appropriate solution to the abuse of hydrocodone

For those still working, 46.2% reported that they had missed work because of the stricter regulations.
- 27.2% reported having thoughts of suicide since the rescheduling

Pain Med (2016) 17 (9): 1686-1693
Commentary

Turning the tide or riptide? The changing opioid epidemic

Stefan G. Kertesz, MD, MSc

Pages 3-8 | Accepted author version posted online: 18 Nov 2016, Published online: 18 Nov 2016

National Overdose Deaths

Number of Deaths from Prescription Opioid Pain Relievers (excluding non-methadone synthetics)

- Total
- Female
- Male

Source: National Center for Health Statistics, CDC Wonder

National Overdose Deaths

Number of Deaths from Heroin and Non-Methadone Synthetics (captures illicit opioids)

- Total
- Female
- Male

Source: National Center for Health Statistics, CDC Wonder
New York State’s Department of Health found that 79.5% of heroin users had used opioid analgesics before beginning heroin, compared to only 1% of users who initiated heroin before using opioid analgesics.
Shifting the Blame –

Beyond the scope of this talk, but an important equity issue. . .

- **White opioids: Pharmaceutical race and the war on drugs that wasn’t**  

- "..pharmaceutical development and dissemination increasingly stand in as primary public health interventions for conditions that are rooted in economic inequalities, political disempowerment, and social exclusions, including HIV infection, psychiatric diagnoses, and narcotic addiction."

- "An increase in prescriber monitoring has shifted the focus from addicted people to prescribers as a threat, paradoxically driving users to illicit markets and constricting their access to pharmaceutical treatment for opioid addiction. Prescriber monitoring is also altering clinical cultures of care, as general physicians respond to heightened surveillance and the psychosocial complexities of treating addiction with either rejection of opioid dependent patients, or with resourceful attempts to create support systems for their treatment where none exists."

Alcohol Abuse is also increasing

Alcohol Use Disorder Trends

Between 2006 and 2014, the number of ED visits involving alcohol consumption increased 61.6%, from 3,080,214 to 4,976,136. Alcoholism Clinical & Experimental Research January 2018

Suicide and Chronic Pain

Survey:
- 50% of CNP patients had inadequate pain relief
- 50% "considered suicide due to feelings of hopelessness associated with their pain"

J Pain Symptom Manage. 1994 Jul;9(5):312-8

Severe pain increases risk of suicide in vets

April 2017 Volume 18, Issue 4, Supplement, Page S62

Individuals with physical pain were more likely to report:
- Lifetime death wish ($p = 0.0005$)
- Current and lifetime
  - Suicidal Ideation (both $p < 0.00001$)
  - Suicide Plan (current: $p = 0.0008$; lifetime: $p < 0.00001$)
  - Suicide Attempt (current: $p < 0.0001$; lifetime: $p < 0.00001$)
  - Suicide Deaths ($p = 0.02$).

The Problems with Current Pain Management

- Limited palette of Approaches
  - Opioids
  - Non-opioid medications
  - Injections
  - Physical Therapy
- Green Medicine - adds some options, but often requires multiple visits, not covered by insurance, etc.
  - Acupuncture
  - Chiropractic
  - Energy work
  - Etc.

Sometimes these produce durable results in acute pain, but often there are ongoing needs in chronic pain patients, without resources to provide for them.
Injections

- Systematic Review:
  - Epidural steroid injection
    - Moderately effective for short-term
    - No effect for long-term symptom relief

PM R. 2009 Jul;1(7):657-68

BMJ 2011;343:d5278
Another Detour: Money and Pain Management


Many patients are referred for noninterventional pain care after all the procedures (covered by insurance) have been carried out, and patients are then told they are being referred for “chronic pain management.”

The Problems with Current Pain Management

- Limited palate of Approaches
  - Opioids
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  - Injections
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- Green Medicine - adds some options, but often requires multiple visits, not covered by insurance, etc.
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Sometimes these produce durable results in acute pain, but often there are ongoing needs in chronic pain patients, without resources to provide for them.
What does Functional Medicine Add to Pain Management?

- A conceptual framework to think about chronic and complex illness and to address it
  - Focus on underlying causes
    - The wisdom of the 2 year old – “Why?”
  - Focus on patient education and empowerment
    - Provider as partner or guide on healing path
Are you a mopper or a turner-offer?
What does Functional Medicine Add to Pain Management?

- A conceptual framework to think about chronic and complex illness and to address it
  - Focus on underlying causes
    - The wisdom of the 2 year old – “Why?”
  - Taxonomy ≠ Etiology
MRI and Back Pain

Magnetic Resonance Imaging of the Lumbar Spine in People without Back Pain

- MRI examinations on 98 **asymptomatic** people
- Only 36% had a normal MRI
- 52% - bulge at at least one level
- 27% - protrusion
- 1% - extrusion.
- 38% - abnormality of more than one intervertebral disk.

“Given the high prevalence of these findings and of back pain, the discovery by MRI of bulges or protrusions in people with low back pain may frequently be coincidental”

Name it, Blame it, Tame it

- **Name:** Lumbar Disc Disease
- **Tame:** Treat with surgery, injections, etc
- **And the result?**
Back Pain treatment - Surgery or Non-surgical

Failed Back Surgery Group

<table>
<thead>
<tr>
<th>Measure</th>
<th>Value</th>
<th>Non-specific chronic back pain Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>VAS at rest</td>
<td>3.8 ± 1.5</td>
<td>3.2 ± 1.2*</td>
</tr>
<tr>
<td>VAS in motion</td>
<td>5.6 ± 1.6</td>
<td>5.4 ± 1.1</td>
</tr>
<tr>
<td>VAS at night</td>
<td>3.5 ± 2.1</td>
<td>2.1 ± 1.4*</td>
</tr>
<tr>
<td>Beck Depression</td>
<td>16.5 ± 5.5</td>
<td>13.2 ± 5.5*</td>
</tr>
<tr>
<td>Inventory</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

J Phys Ther Sci. 2017 May; 29(5): 891–895. * p<0.05

Why such poor results?
Human beings—and their diseases—are complex

- Many conditions may emerge from a single cause (e.g., the many varied signs and symptoms of gluten intolerance).
- Individuals have their own pathways toward a diagnosis—one person’s asthma or diabetes or heart disease is not the same as another’s. Fibromyalgia is a prime example.
- Outcomes are not predictable; what works for one person will not necessarily be effective with the next.
- Everything is connected to, and can be influenced by, everything else—body, mind, and spirit. The latter two are much more important in chronic pain than has previously been appreciated.
  - Engaging patients in addressing this without having them feel minimized or accused is an art, and takes time.
Top image is a screen grab from a talk on the web from Lorimer Moseley.

His study to the right compared PT and education to Usual treatment. 
Individual and Group Education

- 4 1-hour individual sessions
- One 4-hour group session

Predictors of Low Back Pain in People with Asymptomatic Abnormal MRI’s

Forty-six asymptomatic individuals who had a high rate of disc herniations (73%) were observed for an average of 5 years.

Low back pain was predicted by (P < 0.001):
- listlessness
- job satisfaction
- working in shifts

**NOT** by abnormal discs

Principles of Functional Medicine

Change the metaphor from:

- Name-it, Tame-it, and Blame-it
- Doctor-Knows-Best

...to...

Participatory common sense
Pain **may be mandatory**, but **suffering is optional**

- **Functional Approach to Chronic Pain**
  - Addressing the sources of pain
  - Addressing the perception of pain
  - Addressing the suffering associated with pain

The definition of Healing may be different for different people, but there are opportunities for intervention at each of these levels.
As I present it to Patients:

- Heal the Body – more on this topic in a few minutes
- Heal the Brain – I now think we need to introduce this early
- Heal the Person
Understanding Pain
Explaining This to Patients...

- Understanding Pain
- The Rules of Pain
- Useful metaphors...
The Rules of Pain

1. All pain is real
- Builder jumped on a 7-inch nail
- Required intravenous sedation in the ER
Builder jumped on a 7-inch nail
Required intravenous sedation in the ER
When boot was cut away, the nail had passed BETWEEN the toes

Fisher et al, British Medical Journal 1995
Construction worker was working with a nail gun.
6 days later he had a toothache and went to the dentist.
Construction worker was working with a nail gun.
6 days later he had a toothache and went to a dentist.

From USA Today
The Rules of Pain

1. All pain is real
2. The purpose of pain is protection
What happens if you cannot feel pain?
What happens if you cannot feel pain?

Diabetic Foot Ulcer

Leprosy
The Rules of Pain

1. All pain is real
2. The purpose of pain is protection
3. The brain learns to do pain
   - Like any skill, it improves with practice 😞
Acute Pain

- Adaptive:
  - Indicates tissue injury
  - Initiates protective behavior
In an ideal world...

Acute pain - develops with injury, and then Resolves
In chronic pain:
Chronic Pain

- Maladaptive:
  - Signal no longer related to trauma/injury
  - Ongoing message is harmful, not protective

Right after a fill-up
Chronic Pain

- Maladaptive:
  - Signal no longer related to acute trauma/injury
  - Ongoing message is harmful, not protective
  - The disease may be in the BRAIN, not the painful body part

- Chronic nonmalignant pain is common:
  - >50 million Americans
    - The American Journal of Bioethics, 10:11, 5 – 12, 2010
  - 26% of Kansas adults >18 yo, according to a population-based survey (2011) 1249–1255
Effects of Chronic Pain

**Physical**
- Stress
- Interrupted sleep
- Poor wound healing
- Decreased immunity

**Psychological**
- Depression
- Isolation
- Self-medication

**Spiritual**
- Reminder of mortality
- At times perceived as a punishment or evidence of moral wrongdoing
- Causes feelings of powerlessness, hopelessness

In establishing trust with patients, it is important to acknowledge these impacts - we will not linger here, but do not skip this step with your patients.
Another metaphor

The Balanced Brain
THE PAIN BRAIN
Integrative Pain Management

PAIN MAY BE MANDATORY,
BUT SUFFERING IS OPTIONAL
Solutions?

- Heal the Body
- Heal the Brain
- Heal the Person
Circling back: What does Functional Medicine Add to Pain Management?

- A conceptual framework to think about chronic and complex illness and to address it
  - Focus on underlying causes
    - The wisdom of the 2 year old – “Why?”
  - Taxonomy ≠ Etiology
Tacks Rule #1

If you are sitting on a tack, it takes a lot of aspirin to make the pain go away.

Sidney Baker, M.D.
Tacks Rule #1

- If you are sitting on a tack, it takes a lot of aspirin to make the pain go away.
  - You can substitute psychotherapy, meditation, organic foods, etc for the aspirin and the rule still holds.
- The proper treatment for tack-sitting is tack removal.
If you are sitting on two tacks, removing just one does not result in a 50% improvement.
Tacks Rule #2

- If you are sitting on two tacks, removing just one does not result in a 50% improvement.
  - If you have a mechanical issue AND a sleep problem/hormone problem/brain changes from chronic pain, treating either one of these may not result in improvement until both are addressed.

- Chronic Illness is, or becomes, multifactorial.
Tacks Rule #3

- If you are sitting on 3 tacks, you have an environmental problem
Tacks Rule #3

- If you are sitting on 3 tacks, you have an environmental problem
  - Rancidity - oxidative stress
  - Bugs - parasites, yeast, bacteria
  - Toxins - yours and others
A Corollary to the Tacks Rules

- If you are sitting on a tack and you use morphine to make it feel good, this may prevent you from removing the tack.
Example of Underlying Causes Approach

Bob E. - 67 yo man with new onset RA
Marital counseling, journaling and Elim diet
The Two Questions
– Biochemical Individuality

▲ Is there something for which you have an **unmet special need?** *(Get)*
  ▲ Biochemical Individuality

Or

▲ Something for which you have an **unmet special need to get rid of or avoid?** *(the rule of tacks)* *(Rid)*
MTHFR SNPs

- Polymorphisms are associated with risk of:
  - Autism
  - Depression
  - Cancer
  - Cardiovascular disease
  - Neural tube defects

- Methylfolate appears to decrease symptoms
More on individuality – the individual’s story

It is more important to know what person has the disease than which disease the person has.

—Sir William Osler
ATM model

- Person-centered diagnosis proposed by Leo Galland
  - Antecedents
  - Triggers
  - Mediators
Triggers - Discrete entities or events that provoke disease or its symptoms ("Straws")

- Trauma
- Microbes
- Drugs
- Allergens
- Foods
- Toxins
- Stressful life events

**Precipitating events**: before this event, patient was healthy, after...never again!
Antecedents (GULCH): factors predisposing to illness

- Mother’s health before and during pregnancy
- Congenital, acquired, or inherited
- Family history (with attention to the ideas of epigenetics)
- ACEs - Adverse Childhood Experiences
- Exposure to toxins
- Trauma
- Microbial milieu of the body
- Nutrition
- Learned patterns of behavior
Mediators/Mechanism: aid the illness cascade, maintain illness

- **Biochemical**
  - Free radicals, Cytokines, Hormones, Neurotransmitters
  - Electromagnetic fields
  - Neurologic wind-up/neuroplasticity

- **Social**
  - Lack of resources – especially as disability and its financial consequences develop
  - Reinforcement for staying ill
  - Lack of support - Loneliness

- **Psychological**
  - Low self-esteem, low self-efficacy
  - Conditioning
  - **Fear**
Identifying ATM’s -

A clinical pearl, especially for Fibro

- When is the last time you felt really well for more than a few days at a time?
- During the six months preceding that date, did you experience any illness or major stress, change your use of medication or dietary supplements, or make any significant life changes?
GO TO IT – another tool of FM we will not cover in detail, for time, but emphasize the TELL

- Gather
- Organize
- Tell
  - Retelling ATM’s and case highlights
  - Invite patient to join in correcting and amplifying the story
  - Establish the context of partnership
- Order
- Initiate
- Track
The Matrix

“When one tugs at a single thing in nature, he finds it attached to the rest of the world.”

John Muir
Physiology and Function: Organizing the Patient’s Clinical Imbalances

Assimilation
- Digestion
- Absorption
- Microbiota/GI Respiration

Defense & Repair
- Immune
- Inflammation
- Injury/Infection

Structural Integrity
- Subcellular Membrane to Musculoskeletal Structure

Emotional
- Emotional regulation, grief, sadness, anger, etc.

Mental
- Cognitive function, perceptual patterns

Energy
- Energy Regulation, Mitochondrial Function

Communication
- Endocrine, Neurotransmitters, immune messengers

Spiritual
- Meaning & purpose, relationship with something greater

Biotransformation & Elimination
- Toxicity, Detoxification

Transport
- Cardiovascular, Lymphatic System

Modifiable Personal Lifestyle Factors

<table>
<thead>
<tr>
<th>Sleep &amp; Relaxation</th>
<th>Exercise &amp; Movement</th>
<th>Nutrition</th>
<th>Stress</th>
<th>Relationships</th>
</tr>
</thead>
</table>

Name: _________________________ Date: ____________________ CC: ____________________
FUNCTIONAL MEDICINE MATRIX

Physiology and Function: Organizing the Patient’s Clinical Imbalances

Assimilation
(e.g., Digestion, Absorption, Microbiota/Gut, Respiration)

Defense & Repair
(e.g., Immune, Inflammation, Infection/Microbiota)

Antecedents
(Predisposing Factors—Genetic/Environmental)

Structural Integrity
(e.g., from Subcellular Membrane to Musculoskeletal Structure)

Emotional
(e.g., emotional regulation, grief, sadness, anger, etc.)

Mental
(e.g., cognitive function, perceptual patterns)

Spiritual
(e.g., meaning & purpose, relationship with something greater)

Biotransformation & Elimination
(e.g., Toxicity, Detoxification)

Transport
(e.g., Cardiovascular, Lymphatic System)

Communication
(e.g., Endocrine Neurotransmitters, Immune messengers)

Triggering Events
(Activators)

Mediators/Perpetuators
(Contributors)

Modifiable Personal Lifestyle Factors

Sleep & Relaxation | Exercise & Movement | Nutrition | Stress | Relationships

Name: ___________________________ Date: ___________________________ CC: ___________________________
Small Intestine Bacterial Overgrowth (SIBO) as an example

- Abnormal lactulose breath test is found in patients with fibromyalgia
- Pain scores may correlate with peak hydrogen production
  - Endotoxin increases hyperalgesia in animals

Treatment of SIBO relieved RLS, which is associated with fibromyalgia.

- Ten of thirteen patients exhibited $\geq 80\%$ improvement from baseline in RLS symptoms with Rifaximin treatment.
  
  *Dig Dis Sci.* 2008 May;53(5):1252-6

Anecdotally, treatment of SIBO sometimes helps fibromyalgia, interstitial cystitis, and other pain syndromes.
The blessing and the curse...

- The complexity of interactions means that the logic of your intervention may need some explaining to the patient
  - “Why are you so focused on my bowel movements when I came to you for my back pain?”
- The gift is that you do not have to “fix” every node – sometimes tweaking 1 or 2 things will allow the system itself to find a new balance
Stretch Break
As I present it to Patients:

- Heal the Body – more on this topic
- Heal the Brain
- Heal the Person
Corollaries to the Rule of Tacks in Pain Management

- Accurate diagnosis is important
  - Do not rush to control symptoms and ignore the message about an underlying health problem
- Remove tacks where possible, i.e. treat underlying causes
  - Surgical treatment
  - Physical therapies
  - Specific medical treatment for neuropathy, systemic inflammation related to gut disturbances, etc.
  - Sleep, hormonal, nutritional influences on tissue healing
  - Counseling - History of trauma
Structural issues and Manual Medicine

- OMT vs. control for LBP
  - OMT significantly reduced low back pain (effect size, -0.30; 95% confidence interval, -0.47 – -0.13; P = .001).
  - Short, intermediate and long-term follow-up
    BMC Musculoskelet Disord. 2005; 6: 43

- OMT systematic review musculoskeletal pain:
  - 11 studies no benefit
Structural issues and Manual Medicine

How Effective is Chiropractic Care?

- **Chiropractic patient satisfaction**
  - Satisfaction score for chiropractic patients better than medical patients [Am J Public Health. 2002 Oct;92(10):1628-33.]

- **Neck pain: manual therapy resulted in faster recovery than physiotherapy and general practitioner care** [Korthals-de Bos et al (2003), British Medical Journal]

Etc. . . .
# Acupuncture

<table>
<thead>
<tr>
<th>Study ID</th>
<th>SMD (95% CI)</th>
<th>Acupuncture N, mean(SD)</th>
<th>Notreatment N, mean(SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pain in the immediate term</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coan (1980)</td>
<td>-0.95 (-1.54, -0.36)</td>
<td>25, 26 (20)</td>
<td>25, 47 (20)</td>
</tr>
<tr>
<td>Brinkhaus (2006)</td>
<td>-0.88 (-1.17, -0.60)</td>
<td>146, 34.5 (28.5)</td>
<td>79, 58.6 (25.1)</td>
</tr>
<tr>
<td>Witt (2006)</td>
<td>-0.56 (-0.64, -0.48)</td>
<td>1350, 17 (12)</td>
<td>1244, 24 (13)</td>
</tr>
<tr>
<td>Zarringhalam (2010)</td>
<td>-0.80 (-1.43, -0.17)</td>
<td>21, 47 (19.1)</td>
<td>21, 64.3 (23.8)</td>
</tr>
<tr>
<td>I-V Subtotal (I-squared = 53.2%, p = 0.093)</td>
<td>-0.59 (-0.67, -0.52)</td>
<td>1542</td>
<td>1369</td>
</tr>
<tr>
<td>D+L Subtotal</td>
<td>-0.73 (-0.96, -0.49)</td>
<td></td>
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</tr>
<tr>
<td>Disability in the immediate term</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Charkin (2001)</td>
<td>-1.27 (-1.58, -0.95)</td>
<td>94, 7.9 (.71)</td>
<td>90, 8.8 (.71)</td>
</tr>
<tr>
<td>Brinkhaus (2006)</td>
<td>-0.62 (-0.90, -0.34)</td>
<td>146, 18.8 (13.1)</td>
<td>79, 27.1 (14.1)</td>
</tr>
<tr>
<td>Zarringhalam (2010)</td>
<td>-0.99 (-1.63, -0.35)</td>
<td>21, 6.4 (2.9)</td>
<td>21, 9.8 (3.9)</td>
</tr>
<tr>
<td>I-V Subtotal (I-squared = 78.2%, p = 0.010)</td>
<td>-0.91 (-1.11, -0.71)</td>
<td>201</td>
<td>190</td>
</tr>
<tr>
<td>D+L Subtotal</td>
<td>-0.95 (-1.42, -0.48)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Meta-Analysis of Acupuncture versus Notreatment for CLBP in Pain and Disability.**


*Published online 2015 Feb 24. doi: [10.1371/journal.pone.0117146](https://doi.org/10.1371/journal.pone.0117146)
SHINE-MT - a useful mnemonic
For T’s and M’s in the ATM

- Sleep
- Hormones
- Infection
- Nutrition
- Exercise

- Mindbody
- Toxicity
Pain Interferes with Normal Sleep

- Alpha wave intrusion on sleep - deep, delta wave sleep is disrupted.

- The alpha-EEG anomaly is present in:
  - Fibromyalgia
  - RA
  - Osteoarthritis
  - Primary Sjogren's Syndrome
  - PTSD
  - CFS

Poor Sleep Increases Pain

- Pain severity was related to fewer hours slept and delayed sleep onset. J Pain Symptom Manage. 1991 Feb;6(2):65-72.


- 55.4% of patients with OSA have chronic widespread pain. J Phys Ther Sci. 2015 Sep;27(9):2951-4. doi:10.1589/jpts.27.2951

- Sleep deprivation lowers the pain threshold.
The Vicious Cycle

- A night of poorer sleep was followed by a significantly more painful day.

- A more painful day was followed by a night of poorer sleep.

Remove the peas
Sleep - treatment

- Search for and treat sleep apnea
  - Seen in in 14% of patients with chronic spinal pain
  - Unfortunately, CPAP did not decrease opioid use in vets

- Look for other underlying causes
  - PLM/RLS - iron deficiency and other causes

- Sleep hygiene

- Treat nighttime pain

- Circadian rhythm disturbances
  - Melatonin - 0.5 mg EARLY and am light or light box
Alt Treatment Sleep Apnea

- CPAP/Bipap
- Sleep with your head elevated, such as in a recliner
- Consider BreatheRight strips
- Dental devices - Mandibular advancement

Check out https://www.aveosleep.ca/

- There is a very inexpensive version of this device available on amazon.com – search for “tongue apnea.”
Increased dreams for the first 1-2 weeks
Usually start in evening, move to am use
Symptoms of Low Thyroid Activity

- Muscle Aches
- Fatigue
- Cold Intolerance
- Constipation
- Dry Skin and Hair
- Depression
- Difficulty Losing Weight

Thyroid dz. A risk factor for chronic pain
Reasons Blood Tests May Not Show Hypothyroidism

TSH may be normal with low thyroid activity:

- Central/hypothalamic dysfunction
- Opioid Endocrinopathy
  J Neuroendocrinol. 2010 Aug;22(8):960-70

- Peripheral conversion of T4 to T3
  - Selenium deficiency
  - Soy and some xenobiotics

- Peripheral competition for the receptor, such as in PCB and other environmental chemical exposure

- Mutations in receptor leading to thyroid resistance
Temperature Testing for the Thyroid

- Low RMR in women with fibromyalgia
  

Thyroid autoimmunity is associated with fibromyalgia


- Morning Basal Temperatures below 97.6 may indicate low thyroid activity
  
  Measurement should be made in the first part of the menstrual cycle in menstruating women

- Consider trial of therapy with T3 or armour/nature-throid – Stanford has a clinical trial of this
Hypothalamic Pituitary Adrenal Axis

- Set Point is determined by stressors in early life
- Studies are contradictory but ACTH response to stress is exaggerated in fibromyalgia, while adrenal response to ACTH is blunted
- Opioid-related Endocrinopathy also may be significant
Symptoms of Adrenal Insufficiency

- Fatigue
- Hypoglycemia
  - sugar craving
  - shakiness relieved by eating
- Low blood pressure, esp. dizziness with standing
- Recurrent infections

Salivary cortisol testing now available per standard labs.
Treating the Adrenals

- Nutritional – pantethine, magnesium
- Glandular extracts
- Cortef
- Safest may be herbal:
  - Siberian ginseng
  - Licorice if blood pressure is low – but monitor BP, potassium
Growth Hormone

- Secreted in Stage 3 + 4 Sleep
- Depleted in Fibromyalgia
- Symptoms of growth hormone deficiency:
  - reduced exercise capacity
  - poor general health
  - muscle weakness
  - cold intolerance
Elevators of Growth Hormone

- Exercise
  - 10 minutes above lactate threshold intensity
- Adequate hydration
- Deep Sleep
- Low GI diet
- L-glutamine 2 grams, GABA 5 grams
Sex Hormones

- Sex steroids will be modulated by stress and HPA axis
- Low Androgens associated with Fibromyalgia:
  - DHEA-S - optimal is 120-180 for women, 300-500 for men
  - Testosterone - consider treating in the lower 20% of the normal range
Menopause

- For some women, pain increases at menopause, and HRT may decrease this effect.
- Consider HRT if symptoms worsen in premenstrual period, if there has been TL or hysterectomy.
Chronic Infection and Pain

- Viral infections
  - Hepatitis C
  - Possibly XMRV, EBV, etc.

- Chronic bacterial infection
  - Mycoplasma and Chlamydia pneumoniae
  - Gut dysbiosis and spondylarthropathy
  - SIBO associated with diffuse pain

- Yeast overgrowth

Another subject for a talk all its own...
Diet as a “tack”

- Food Sensitivities - a factor in 40-50% of patients with fibromyalgia and rheumatoid arthritis.
  - Consider elimination diet, celiac test
  - Elevated GI meals assoc with inc. CRP
  - Particular attention to glutamate agonists:
    - MSG
    - Aspartame
- Living Foods Diet - 8+ clinical trials in FM, RA
  - Whole foods (loads of fruits and veggies) with minimal or no animal products, no processed grains or oils, no sugar.
- Nightshades (eggplant, tomato, peppers, potatoes) -
  - little data to support this, but lots of great anecdotes
Changing food choices

Not the “organic” version of oreos and other highly processed foods

The Cost per calorie of the convenience diet was 24% higher than the healthy diet.
Dietary cost did not change at 6 months, but significantly decreased from baseline to 1 year.
Proteins

Dried Beans
$0.06/ounce

Boneless skinless chicken breast
$0.17/ounce

Sirloin steak  $0.35/ounce

Deli meat $0.57/ounce

Eggs
$0.06/ounce
<table>
<thead>
<tr>
<th></th>
<th>Cost/serving</th>
<th>Calories</th>
<th>Fat</th>
<th>Protein</th>
<th>Fiber</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Beans</td>
<td>$0.16</td>
<td>140</td>
<td>0g</td>
<td>18g</td>
<td>30g</td>
</tr>
<tr>
<td>Extra lean ground beef</td>
<td>$0.62</td>
<td>256</td>
<td>19g</td>
<td>21g</td>
<td>0g</td>
</tr>
</tbody>
</table>
Even better -

- Have them figure it out themselves

<table>
<thead>
<tr>
<th>Produce:</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 dark-green leafy vegetables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 deep-yellow or orange fruits or veggies (and deep yellow under a peel or skin)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 fruits/vegetables your family usually eat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 fruits/vegetables you have never seen before today</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 produce items that are “packaged” in a way that makes them ready to eat now</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 good deals in fruits/vegetables your family would eat - you would like to try soon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carrot</td>
<td>Cost/lb carrots</td>
<td>Cost/lb baby carrots</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spinach</td>
<td>Cost/oz fresh/washed</td>
<td>Cost/or frozen</td>
<td>Cost/or canned</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Protein:</th>
<th>Protein</th>
<th>Fat</th>
<th>Calories</th>
<th>Fiber</th>
<th>Cost per (container/mt)</th>
<th>Cost per serving</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 eggs</td>
<td>12g</td>
<td>9g</td>
<td>140 kcal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ground beef (27% fat) 2 ounces</td>
<td>15.2g</td>
<td>21g</td>
<td>280 kcal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X-Lean 90% beef (12% fat) 2 ounces</td>
<td>15.0g</td>
<td>12.0g</td>
<td>181 kcal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dried kidney beans 1C cooked</td>
<td>13.5g</td>
<td>0.6g</td>
<td>210 kcal</td>
<td>9.5g</td>
<td>___/b</td>
<td>(0.13 x cost per pound)</td>
</tr>
<tr>
<td>Canned kidney beans 1C</td>
<td>13g</td>
<td>1.5g</td>
<td>210</td>
<td>11g</td>
<td><em><strong>/</strong></em> oz</td>
<td>(0.2 x cost per pound)</td>
</tr>
<tr>
<td>Lentils</td>
<td>16.4 g</td>
<td>13.35g</td>
<td>523</td>
<td>14.5g</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Supporting Diet change

- Mindful eating exercise
- Recipe books - we hand one out to our pain patients
- Lending library materials
  - Novick’s Fast Food
  - The Sneaky Chef
  - Smoothie recipes
  - Good and Cheap
  - EWG
- Groups -
  - Consider bringing some unfamiliar foods to share
  - Food preparation as a group
  - Invite patients to share their favorite new healthy recipes
    - We actually have check-in questions about what is your favorite purple food, what new recipe have you tried since last group
  - Develop a repertoire for patients with limited cooking facilities
Nutrition and Pain

- Remove Dietary Tacks
- Improve Dietary Quality
- Supply nutrients for healing:
  - Protein
  - Zinc
  - Vitamin C and bioflavonoids
  - Specific nutritional supplements – more later if time allows
- Address gut issues
Supplements for the Underserved

- Alternatives to/low cost versions of supplements:
  - Fermented foods (yogurt and kefir recipes, Cultures for Health)
  - Red Star baking yeast as a source of Saccharomyces Cerevisiae ¼ tsp bid
    - Saccharomyces boulardii is a subspecies of boulardii
    - Cerevisiae is GRAS (Generally Regarded as safe)
    - My clinical experience with it has been great
  - Epsom salts for magnesium (starting dose ¼ tsp)
  - Bone broth for hydrolyzed collagen, bone and joint health as well as the gut
  - Turmeric “tea” with ginger and black pepper
  - Sardines
  - Wildcrafted herbs – plantain, nettles, cleavers
  - Apple cider vinegar
Supplements for the Underserved

- Some things can be prescribed (sometimes covered)
  - Leucovorin
  - Carnitine
  - Pancreatic enzymes
  - Cholecalciferol (or ergo)
  - Lovaza/Max EPA
  - CoQ10
  - VSL#3
Supplements for the Underserved

- Low cost sources of supplements
  - Vitacost.com, Swanson
  - Specific products as reviewed by consumerlab.com
Supplements for the Underserved

- Carry and dispense supplements in the office
  - Many manufacturers will sell to practitioners at 50% off suggested price
    - We can pass those savings to patients (add nominal markup to cover staff time)
- We can split bottles for short-term needs or samples
  - Betaine HCl samples to see if patients can tolerate
  - Mediclear samples to see if brain fog clears
  - Bromelain in small quantities for sprains or sinusitis
  - Essential oil thyme/eucalyptus in tiny dropper bottles
  - “Cold care kit” – shorter supplies of multiple items
DIY compounding

- Topical turmeric with occlusion
- Capsaicin recipes
- Lidocaine with voltaren, gabapentin capsules for topical pain treatment
- LDN (low dose naltrexone) from crushing naltrexone tabs
- Vit C in lecithin – liposomal, jewelry polisher
Why Exercise?

- Decrease pain
  - Transient elevation in pain thresholds.
    - Not directly rel. to plasma endorphin levels.  

- Increase ability to participate in life
  - Increase in expectancies of capability
  - Decrease in worry and concern about exercising.
    Pain. 1986 Mar;24(3):365-72

- Anti-inflammatory
  - Decrease CRP with exercise.  
Shrink the Pain Map by Flooding the Brain Using
Thoughts, Images, Sensations, Memories, Soothing Emotions, Movement, and Beliefs

Prefrontal
- Pain, Executive Function, Creativity, Planning, Empathy, Action, Emotional Balance, Intuition, Morality, Understanding

Anterior Cingulate
- Pain, Emotional Self-Control, Sympathetic Control, Problem Solving, Conflict Detection and Resolution

Supplementary Motor
- Pain, Planned Movement, Mirror Neurons

Somatosensory 1 and 2
- Pain, Touch, Temperature, Pressure, Position, Vibration, Proprioception

Posterior Parietal
- Pain, Sensory, Visual, Auditory Perception, Internal Location of Stimuli, Location of External Space, Mirror Neurons

Insula
- Pain, Temperature, Itch, Empathy, Emotional Self-Awareness, Disgust, Pleasure, Quiets the Amygdala, Sensual Touch, Connects Emotion to Bodily Sensation, Mirror Neurons

Amygdala
- Pain, Fight/Flight, Emotional Extremes, Pleasure, Sight, Scent, Emotional Response, Post Traumatic Stress

Posterior Cingulate
- Pain, Visual Spatial Cognition, Autobiographical Memory

Movement - Imagine without pain
Get out of my amygdala
Shrink the map
Do something pleasurable
Smell peppermint oil

Imagery

Massage

Remember how I felt before pain
Arthritis in Seniors

The Fitness Arthritis and Seniors Trial (FAST). JAMA 1997;277(1):29
Which Conditions Benefit?

- **Low Back Pain**
  - 52% decrease in pain scores N Engl J Med. 1990 322(23):1627-34

(Note benefits for depression, cognition as well)
Exercise and Depression

10 months after 4-month exercise intervention

Long-term regular physical activity, including walking, is associated with significantly better cognitive function and less cognitive decline in older women.

JAMA. 2004;292:1454-1461
General Guidelines for Safe Exercise in People with Chronic Pain

- Warm up before and stretch after exercise
  - Gentle stretches - no bouncing!
- Start Low, Go Slow
- Emphasize Concentric Exercise, avoid Eccentric Exercise
A side note on neuroplasticity and the fear of movement
Pain is protective

Before

The good news...

True tissue capacity

Protection by pain

Activity etc
Chronic Pain: The system becomes way too protective
Movement

- Movement is not dangerous
- Imitate healthy pain free body if pain is asymmetrical
- Start with a movement enjoyed in the past, but only in limited way, building up repetitions over time
- Plan movement consciously to evoke Supplementary Motor Area
- Move to change the brain-body loop
- If pain prevents movement, think about and visualize moving without pain
Positive Metaphors – Antidotes!

- Motion is Lotion
Exercise Motivation and Adherence

- Solitary vs. Group vs. “Buddy”
- Keeping it interesting
  - Conversation
  - Books on tape
  - Moving meditation
  - Exercise equipment and television/VCR
- Goals and Challenges
  - Pedometers
  - FitBit
Specific Forms of Exercise

- Water Exercise
- Walking
- Low-impact
  - Elliptical Trainers
  - Nordic Track
- Particular studies in
  - Yoga  *Pain.* 2010 Nov;151(2):530-9 and many more
  - The Healer Within by Jahnke
Talking about moderation...
Let pain be your guide
No Pain, No Gain

Graph 2: Trying to Beat Pain

- Flare-up occurs
- Working through pain and not giving in
- Pain onset
- Incapacitated
- Eventual activity limit
The road less travelled

- Understand pain so that you don’t fear it
Movement

- Movement gradually suppresses the pain system
- Movement helps you learn
- Movement protects you against other problems
- Movement is the best way to recover
- Even imagining movement is helpful.
SHINE-MT - a useful mnemonic
For T’s and M’s in the ATM

- Sleep
- Hormones
- Infection
- Nutrition
- Exercise

- Toxicity - See my presentations on toxins and pain

- Mindbody
Toxins

- Endotoxins
  - End products of metabolism
  - Bacterial endotoxins

- Exotoxins
  - Drugs (prescription, OTC, recreational)
  - Agricultural chemicals
  - Food additives
  - Household
  - Pollutants/contaminants
  - Microbial
And in relation to pain:

- CFS/Fibromyalgia:
  - Arsenic, Benzene, Cd, EMR, FA, Pb, Hg, Mold
  - Ni, PCE, POPs, PCBs, Solvents, PVC, Dioxin

- Peripheral Neuropathy
  - As, Pb, Hg, PCBs

- Tobacco
  - Associated with chronic back pain

- Environmental obesogens
Treatment

- **Avoidance!**
  - Patient Education

- **Detox support** - Human and Experimental Toxicology 30(1) 3–18, 2011
  - Dietary
    - Fiber
    - Sulfur, crucifers, protein, antioxidants
  - Nutritional support
    - NAC
    - Combination detox products
  - Sauna/sweating
    - Toxicology & Industrial Health. Sep 2012, Vol. 28 Issue 8, p758-768. - Meth exposure and chronic illness in police officers improved with sauna
SHINE-MT - a useful mnemonic

For T’s and M’s in the ATM

- Sleep
- Hormones
- Infection
- Nutrition
- Exercise
- Toxicity
- Mindbody – this will be explored on multiple levels
Stretch Break
Pain may be mandatory, but suffering is optional

- Functional Approach to Chronic Pain
  - Addressing the sources of pain
  - Addressing the perception of pain
  - Addressing the suffering associated with pain

The definition of Healing may be different for different people, but there are opportunities for intervention at each of these levels.
How Powerful is the Mind?

- Warning: this is a trigger for many patients
  - “It’s all in your head”
- Examples I use with patients:
  - Paralysis
  - Cardiogenic Shock
  - Death
  - Contagious
  - Hallucinations
Moseley video – check out his TED talk
Pain = physical sensation + CONTEXT

- The old idea
- The Neurotag idea

A TYPICAL PAIN NEUROTAG

1. PREMOTOR/MOTOR CORTEX
   organize and prepare movements
2. CINGULATE CORTEX
   concentration, focusing
3. PREFRONTAL CORTEX
   problem-solving, memory
4. AMYGDALA
   fear, fear conditioning, addiction
5. SENSORY CORTEX
   sensory discrimination
6. HYPOTHALAMUS/THALAMUS
   stress responses, autonomic regulation, motivation
7. CEREBELLUM
   movement and cognition
8. HIPPOCAMPUS
   memory, spatial recognition, fear conditioning
9. SPINAL CORD
   gating from the periphery
Visual Illusion as a way to explain this without the stigma

- Lines of the same length look different

- I use the videos from http://www.michaelbach.de/ot/

- There is no stigma associated with visual illusion, we are just fascinated – “Why does this happen?”

- Answer: Context – the brain is interpreting every sensation to make sense of it, to tell us what we need to DO
Modulating Pain Perception
Imagine...

- The brain has messages coming in and has caller ID.
  - It can screen calls
  - Some callers are filtered out altogether
  - Some callers are amplified

The messages reaching the brain depend not just on what is happening in the outside world, but also on how the messages are transmitted.
Pain Perception:
Peripheral fibers

- Sensory Nerves
  - A-delta Fibers
    - Myelinated, 40 mph,
    - Well-localized
    - Fatigue with repeated stimulation.
  - C Fibers
    - Nonmyelinated,
    - Poorly localized.
    - Does not fatigue or extinguish with repeated stimulation.

- Sensitization – chemical mediators from inflammation or injured tissue can sensitize small fibers, so that non-painful stimuli will be perceived as painful.
Pain Transmission
Mechanism/Theory

Many Points of Intervention
Pain Perception: Spinal Cord Modulation

- **Spinal Cord**

- Modulation: Transmitting cells are influenced by multiple signals coming in from periphery as well as inhibitory messages coming down from the brain (serotonin, norepinephrine, endorphin)
Gate Control Implications: Mechanical Stimuli Can Decrease Pain Sensation

Chronically firing pain neurons can be “silenced” by intense mechanical stimuli.

Boal RW, Gillette RG. Central neuronal plasticity, low back pain and spinal manipulative therapy. 

Pain Transmission Mechanism/Theory

Infection
Inflammatory Diet
Capsaicin
Massage
Chiropractic

Opioids
Endorphins
Pain Perception: Central Modulation – The Brain

- Brain
  - Can tonically amplify or suppress the messages coming in from the periphery
  - Gives meaning to the pain experience
    - Differences in pain levels of victims of automobile accidents vs. those responsible for the accident
      - Perceived injustice in Fibromyalgia [Journal of Psychosomatic Research, 2012-08-01, Volume 73, Issue 2, Pages 86-91]
      - Recalled Injustice amplifies even acute pain [Eur J Pain 20 (2016) 1392--1401]
    - Carolyn Myss insights, etc.
    - John Sarno and repressed anger (put a pin in this)
LDN – Low Dose Naltrexone

- Studied in Crohn’s, Fibromyalgia
  - Claims made for MS and numerous other conditions
- Small transient opioid blockade
  - Rebound upregulation of endogenous opioids and opioid receptors
  - Decrease inflammation
Relationship between baseline ESR and change in pain on LDN.
Clin Rheum 2014 33:451-459
LDN in Fibromyalgia

Patient Global Impression of Change after LDN

- Very much improved: 37%
- Much improved: 20%
- Minimally improved: 20%
- No change: 10%
- Minimally worse: 10%
Adjunctive Medications

- Antidepressants
- Anticonvulsants
- Antiarrhythmic drugs
- Ultram
Antidepressants for Pain

- Work by affecting neurotransmitters
- Do not only work for treating pain by improving depression.
  - Work as well in non-depressed people as in people with depression
  - Effectiveness for pain does not correlate with effectiveness for depression
- Do not work for all types of pain.
Topical Adjunctive Medications
– unfortunately, $$$

Lidocaine, capsaicin, anti-inflammatories, others can be compounded to affect multiple mechanisms of pain e.g.

<table>
<thead>
<tr>
<th>Ketamine 3%</th>
<th>Gabapentin 3%</th>
<th>Lidocaine 2.5%</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMDA Antagonist</td>
<td>AMPA-Na channel antagonist</td>
<td>topical anesthetic</td>
</tr>
<tr>
<td>Clonidine 0.2%</td>
<td>Baclofen 2%</td>
<td>Loperamide 1%</td>
</tr>
<tr>
<td>α2-antagonist</td>
<td>GABA&lt;sub&gt;B&lt;/sub&gt; agonist</td>
<td>Mu agonist-substance P antagonist</td>
</tr>
<tr>
<td>+/- Ketoprofen 7% compounded in PLO gel</td>
<td>NSAID</td>
<td>NSAID</td>
</tr>
</tbody>
</table>
UCSF Study with Cannabis and Opioids

- Patients on chronic morphine or oxycodone
- Vaporized cannabis
- Morphine levels lower, oxycodone unchanged
- In 5 days of cannabis use they saw a 20-33 percent reduction in average pain score

- They suggest cannabis may allow people to use lower doses of opioids
Medical cannabis laws and dispensaries decrease opioid scrips for Medicare Part D

- prescriptions filled for all opioids decreased by 2.11 million daily doses per year from an average of 23.08 million daily doses per year when a state instituted any medical cannabis law. Prescriptions for all opioids decreased by 3.742 million daily doses per year when medical cannabis dispensaries opened.

- JAMA Intern Med. 2018;178(5):667-672
TENS

- Conflicting evidence from systematic reviews, but problems with study design, dosing
- Patient satisfaction ratings consistently high
  
PAIN, Volume 152, Issue 6, June 2011, Pages 1226-1232

- Consider a device “lending library” in your office to see if there is significant relief from this
PEMF/Portable device

Neuroplasticity and Pain

The MIND CAN CHANGE THE BRAIN
Basic Rules of Neuroplasticity

- What fires together Wires together
- What you don’t use you lose
- When you make them you break them; when you break them you make them
What fires together Wires together
What you don’t use you lose

- The more we repeat something the stronger and more numerous the connections (the deeper the ruts in the road)

- More connections means that we have become more skilled in the learned activity

- Every thing we do well has been improved by repetition and practice
The Regional Functional Brain

- The different parts of the brain have multiple functions
- Each part is different than another
Connections in the Brain

When we stop doing something, the connections melt away
Stopping Persistent Pain

- To decrease pain we must **increase other regional functions**
- During pain spikes pain nerve cells fire and wire
- If this is countered by the firing of other regional nerve cells during pain spikes, then the population of firing pain nerves is decreased
- Eventually the brain rewires away from pain
Shrink the Pain Map by Flooding the Brain Using

Thoughts, Images, Sensations, Memories, Soothing Emotions, Movement and Beliefs

- Prefrontal:
  - Pain, Executive Function, Creativity, Planning, Empathy, Action, Emotional Balance, Intuition, Morality, Understanding

- Anterior Cingulate:
  - Pain, Emotional Self-Control, Sympathetic Control, Problem Solving, Conflict Detection and Resolution

- Supplementary Motor:
  - Pain, Planned Movement, Mirror Neurons

- Somatosensory 1 and 2:
  - Pain, Touch, Temperature, Pressure, Position, Vibration, Proprioception

- Posterior Parietal:
  - Pain, Sensory, Visual, Auditory Perception, Internal Location of Stimuli, Location of External Space, Mirror Neurons

- Insula:
  - Pain, Temperature, Itch, Empathy, Emotional Self-Awareness, Disgust, Pleasure, Quiets the Amygdala, Sensual Touch, Connects Emotion to Bodily Sensation, Mirror Neurons

- Amygdala:
  - Pain, Fight/Flight, Emotional Extremes, Pleasure, Sight, Scent, Emotional Response, Post Traumatic Stress

- Posterior Cingulate:
  - Pain, Visual Spatial Cognition, Autobiographical Memory Retrieval

- Imagery:
  - Remember how I felt before pain

- Massage:
  - Movement - Imagine without pain

- Shrink the map

- Do something pleasurable

- Smell peppermint oil

- Get out of my amygdala
Scent Circuit

- Nasal mucosa to nerves that penetrate skull bone and synapse with olfactory track
- The next synapse is amygdala
  - Amygdala is the first place we perceive pain
- Insula responds to Circuit by setting off pleasure circuits or disgust
- Sensory areas of the brain are stimulated
- The brain identifies the strongest sensation, and pushes others into the background

Peppermint blocks Substance P and calcium channels
Positive Metaphors – Antidotes!

ONE GOOD THING ABOUT MUSIC, WHEN IT HITS YOU, YOU FEEL NO PAIN.
- Bob Marley
Shrink The Pain Map By Flooding The Brain

- Steal back those brain areas with:
  - Thoughts
  - Images
  - Sensations
  - Memories
  - Soothing Emotions
  - Movement
  - Beliefs
Mind-body
How Emotions and Stress Affect Chronic Pain

- Chronic muscle tension can cause pain in a non-injured body part
- Neurogenic inflammatory response
- Altered sleep, depression can cause chronic pain
How Chronic Pain Affects Emotions and Stress

- Body tension is perceived as emotional by the brain
- Secondary effects on:
  - Sleep
  - Disability
    - Financial fall-out
- Side effects of tx

Stress

- Poor Sleep
- Decreased GH
- Increased cortisol

Pain

- Decreased Tissue Repair
Guided imagery tape 3 days preop and 6 days postop

- Median increase in worst pain score was 72.5 controls, 42.5 imagery group (P < 0.001)
- Total opioid requirements – 326 mg in the control group vs. 185 mg imagery group (P < 0.001).


http://www.cpmc.org/services/ambulatory_surgery/prepare/imagery.html
http://www.valleyhealth.com/Programs_Services.aspx?id=5502
CBT and Multidisciplinary Interventions in Chronic Pain

- **Physical symptoms:**
  - CBT superior to control in 71% of studies
  - Possibly superior (i.e., a trend) in 11%

  *Psychother Psychosom* 2000;69:205-215

- **Combined CBT and PT:**
  - significantly greater improvement
  - Differences were maintained at 6 month follow-up.
Mindfulness-based stress reduction for failed back surgery syndrome

- Statistically significant and clinically significant:
  - Increase in pain acceptance and quality of life
  - Decrease in functional limitation
  - Decrease in pain level
  - Decrease in frequency, potency of analgesics
  - Increase in sleep quality

  *J Am Osteopath Assoc. 2010 Nov;110(11):646-52*
Effects on Utilization

After a behavioral medicine intervention:

- 36% reduction in clinic visits in the first year postintervention
- Projected to an estimated net savings of $12,000 for the first year of the study posttreatment and $23,000 for the second year

FIG. 2. The projected cost of clinic visits to the HMO for 1 year preintervention and the savings 1 year postintervention (taking into account the cost of the intervention) and 2 years postintervention.
Psychogenic Origins of Pain

- Sometimes, the pain is not just exacerbated by stress, but is actually created by psychological factors

- Remember the low back pain story...
- And perceived injustice....
Why Would the Brain Cause Pain?

- **Freud’s theory**: punishment for unacceptable feelings (usually sexual)
- **Sarno’s theory**: Defense
  - Parts of your mind may think they need to protect you from dangerous or threatening feelings
Unconscious - unaware

Repression

Conscious

Unconscious - unaware

TMS

Rage
Neurologic Mechanism for MBS

- Anterior cingulate cortex
- Dorsolateral prefrontal cortex
- Autonomic Nervous System
The Psychology of MBS
Who Gets Chronic Pain, and When?

- **Historical Features**
  - Trauma in early life
  - Trauma/victimization at time of onset

- **Personality traits**
  - Perfectionism
  - “Good-ism”
  - Driven people

- **Current stresses**
  - Not uncommonly, onset is related to a stressful event/relationship/job/etc.
<table>
<thead>
<tr>
<th>Adverse Childhood Experience* Categories</th>
<th>Impact of Trauma and Health Risk Behaviors to Ease the Pain</th>
<th>Long-Term Consequences of Unaddressed Trauma (ACEs)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Abuse of Child</strong></td>
<td><strong>Neurobiologic Effects of Trauma</strong></td>
<td><strong>Disease and Disability</strong></td>
</tr>
<tr>
<td>- Recurrent Severe Emotional abuse</td>
<td>- Disrupted neuro-development</td>
<td>- Ischemic heart disease</td>
</tr>
<tr>
<td>- Recurrent Physical abuse</td>
<td>- Difficulty controlling anger-rage</td>
<td>- Cancer</td>
</tr>
<tr>
<td>- Contact Sexual abuse</td>
<td>- Hallucinations</td>
<td>- Chronic lung disease</td>
</tr>
<tr>
<td><strong>Trauma in Child’s Household Environment</strong></td>
<td>- Depression</td>
<td>- Chronic emphysema</td>
</tr>
<tr>
<td>- Substance abuse</td>
<td>- Panic reactions</td>
<td>- Asthma</td>
</tr>
<tr>
<td>- Parental separation or divorce -</td>
<td>- Anxiety</td>
<td>- Liver disease</td>
</tr>
<tr>
<td>- Chronically depressed, emotionally</td>
<td>- Multiple (6+) somatic problems</td>
<td>- Skeletal fractures</td>
</tr>
<tr>
<td>disturbed or suicidal household</td>
<td>- Sleep problems</td>
<td>- Poor self rated health</td>
</tr>
<tr>
<td>member</td>
<td>- Impaired memory</td>
<td>- Sexually transmitted disease</td>
</tr>
<tr>
<td>- Mother treated violently</td>
<td>- Flashbacks</td>
<td>- HIV/AIDS</td>
</tr>
<tr>
<td>- Imprisoned household member</td>
<td>- Dissociation</td>
<td></td>
</tr>
<tr>
<td>- Loss of parent – (by death,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>by suicide, - or - by abandonment)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Neglect of Child</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Abandonment</td>
<td></td>
<td><strong>Serious Social Problems</strong></td>
</tr>
<tr>
<td>- Child’s basic physical and/or</td>
<td></td>
<td>- Homelessness</td>
</tr>
<tr>
<td>emotional needs unmet</td>
<td></td>
<td>- Prostitution</td>
</tr>
<tr>
<td>* Above types of ACEs are the “heavy</td>
<td></td>
<td>- Delinquency, violence, criminal behavior</td>
</tr>
<tr>
<td>end” of abuse.</td>
<td></td>
<td>- Inability to sustain employment</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Re-victimization: rape, DV</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- compromised ability to parent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Intergenerational transmission of abuse</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Long-term use of health,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>behavioral health, correctional,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and social services</td>
</tr>
</tbody>
</table>

Disease and Disability
- Ischemic heart disease
- Cancer
- Chronic lung disease
- Chronic emphysema
- Asthma
- Liver disease
- Skeletal fractures
- Poor self rated health
- Sexually transmitted disease
- HIV/AIDS

Serious Social Problems
- Homelessness
- Prostitution
- Delinquency, violence, criminal behavior
- Inability to sustain employment
- Re-victimization: rape, DV
- compromised ability to parent
- Intergenerational transmission of abuse
- Long-term use of health, behavioral health, correctional, and social services
The higher the ACE Score, the greater the likelihood of:

- Severe and persistent emotional problems
- Health risk behaviors
- Serious social problems
- Adult disease and disability
- High health and mental health care costs
- Poor life expectancy
Who gets pain?

- People with ACEs

<table>
<thead>
<tr>
<th>Pain That Interferes With Activities</th>
<th>Odds Ratio</th>
<th>Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>Childhood Physical Abuse</td>
<td>1.67</td>
<td>1.29–2.16</td>
</tr>
<tr>
<td>Childhood Sexual Abuse</td>
<td>1.31</td>
<td>0.88–1.94</td>
</tr>
<tr>
<td>Parental Marital Conflict</td>
<td>1.44</td>
<td>1.09–1.90</td>
</tr>
<tr>
<td>Parental Psychopathology</td>
<td>1.58</td>
<td>1.23–2.04</td>
</tr>
<tr>
<td>Poor Parent-Child Relationship</td>
<td>1.21</td>
<td>0.89–1.65</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Household mental illness</th>
<th>Healthy (%)</th>
<th>IBS(%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emotional Abuse</td>
<td>13.64</td>
<td>27.03</td>
<td>0.004</td>
</tr>
<tr>
<td>Sexual Abuse</td>
<td>9.74</td>
<td>19.59</td>
<td>0.022</td>
</tr>
</tbody>
</table>
Pain = physical sensation + CONTEXT

- The old idea
- The Neurotag idea
Who gets pain?

- People who do not feel safe
DANGEROUS

Protectometer always weighing these two things

SAFETY
Who gets pain?

- People who do not feel safe
- AC Es
- Trauma survivors
Who gets pain?

- People who do not feel safe
  - ACEs
  - Trauma survivors

- 35-50% of patients w PTSD have chronic pain
  - 39% of MVA survivors
  - 39% of assault victims
  - Injured workers sent for rehab 35%
  - Fibromyalgia 20% curr., 42% life

<table>
<thead>
<tr>
<th></th>
<th>% PTSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic pain</td>
<td>20.5</td>
</tr>
<tr>
<td>General population</td>
<td>5.1</td>
</tr>
</tbody>
</table>
Who gets pain?

- People who do not feel safe
- ACEs
- Trauma survivors
- People who are stressed

<table>
<thead>
<tr>
<th></th>
<th>High-impact Chronic Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adults over age 50</td>
<td>8.2%</td>
</tr>
<tr>
<td>People over age 50 in lowest wealth quartile (Poor people)</td>
<td>17.1%</td>
</tr>
</tbody>
</table>
Who gets pain?

- People who do not feel safe
- ACEs
- Trauma survivors
- People who are stressed
- People with trouble identifying feelings

<table>
<thead>
<tr>
<th></th>
<th>Patients</th>
<th>Controls</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Difficulty Identifying feelings</td>
<td>21.1</td>
<td>12.3</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Difficulty describing feelings</td>
<td>15.6</td>
<td>12.1</td>
<td>0.001</td>
</tr>
</tbody>
</table>
Reminder:

Thoughts and beliefs are nerve impulses too
DANGER

Protectometer is always weighing these two things

SAFETY
DIMs and SIMs

- We have pain when our brains “weigh the world” and “decide” that there is more Danger to the body than Safety.

- Example: You sprain your ankle and it is starting to swell.

- You think: “Oh no, I hurt myself terribly, I won’t be able to walk for a week...”

- OR

- You think: “Look at me, what a self-healer am I!”
Back to TMS: The Symptom Imperative

- When there is an underlying need for the mind to distract the patient, a new symptom will have to arise to replace any symptom that has been treated/eradicated.

- Thus:
  - Back pain improves and reflux becomes severe
  - Neuropathy improves but depression gets severe
  - Etc.
How Might the Brain Cause Pain?

- Spinal cord modulation - central control of pain messaging
- Autonomic Function
  - Circulation of blood and oxygen to tissues
  - Control of gut motility and tone
- Neurogenic inflammation
Talking to Patients about Pain of Psychogenic Origin

- Emphasize the pain is real –
  - Tissue ischemia
  - Spinal Cord Amplification
- Flattery
  - This happens to nice and good people
- As an advocate
  - I am trying to protect you from a surgery that may be unnecessary and may not be helpful
So What Can We Do About This?

1. Understand the true cause of the pain is this process, not the structural abnormalities.
2. Reflect on this every day. Read a portion of one of Samo’s books, read the handout, etc. Spend 30-60 minutes on this daily.
3. Think psychological, not physical.
4. Talk to your brain.
Treating PTSD

PTSD and chronic pain tend to improve together

Effect sizes larger for psycho-therapies than pharmacotherapies
Evidence-based treatments for PTSD

- Psychotherapies
  - Prolonged Exposure (PE) therapy (high)
  - Cognitive restructuring (CR, CPT) (mod)
  - Cognitive behavioral therapy (CBT)-mixed therapies (mod)
  - Eye movement desensitization and reprocessing (EMDR) (mod-low)
  - Emotional freedom technique (EFT) (mod)
  - Narrative exposure therapy (mod-low)
  - Acupuncture (low)
  - Neurofeedback (low)

**** Treatments that are accessible in my community and in our groups
Write!

- Remember the purpose of the pain is to distract you from feelings that are considered dangerous, like rage, hurt, sadness, sorrow, guilt, or fear.

  These are feelings we are not aware of.

- Make a list of all the important factors in your life that might be contributing to your pain. Write an essay about each one. Also, divorce, loss of a parent, etc.
Treatment Program

- Schedule **daily** time for study and reflection – Repetition is important!
- Review your pressure list daily
- Don’t give up – it takes time to change the unconscious mind
- Start resuming physical activities when the pain is almost gone – start gradually
Treating the Emotional Pieces: Effectiveness

- Emotional awareness and Expression Therapy – Schubiner, Lumley et al
  - Rate of 50% reduction in pain was 2-3x that of usual care

- Sarno’s case series – Follow-up 6 months after consultation for TMS
  - 70% 80-100% pain free
  - 75% 80-100% unrestricted physical activity
Tapering Opioids

The rise and fall of opioid prescriptions in the U.S. since 1992
Prescribed morphine milligram equivalents, in billions

1992: 25.4
2011: 240.3
2017: 170.7

Source: IQVIA Institute for Human Data Science
THE WASHINGTON POST
Tapering and Stopping Opioids

- Five hundred-nine Veterans Health Administration (VHA) patients whose clinicians discontinued them from LTOT (long-term opioid therapy)

- Forty-seven patients (9.2%) had SI only, while 12 patients (2.4%) had SSV suicidal self-directed violence

- Nearly three times the rate of veterans at large per WP

Patient-centered Opioid Tapering in Chronic Pain

Figure. Change in Opioid Morphine Equivalent Daily Dose and Absolute Change in Pain Intensity Score From Baseline to Month 4 for Study Completers
Break
But how can patients afford this?

- Diagnostics
- Therapeutics
Intake - Understanding the timeline and populating the matrix takes time!

- Negotiate a longer intake visit with administration at your clinic
  - If that first visit is long enough, follow-ups can be shorter
  - We recommend 1 hour
- Schedule new patients at the end of a half day
An Aside:
Financial Options/Practice Management

- Coding for counseling
  - 99214 – 25 minutes if >50% of time spent in counseling and coordination of care
  - 99215 – 40 minutes
  - 99354 – an additional hour beyond the usual

- The Holistic Surcharge
  - ABN – Advanced beneficiary notice for services NOT covered by Medicare/Medicaid
    - Acupuncture – I often add ear needles during a regular medical visit
    - Herbal consultation
    - Nutritional consultation other than for diabetics
  - This can be waived at the practitioner’s discretion
Leverage the time

- Intake Questionnaires - or not

Comprehensive New Patient Health History - Adult

Current Date _____/____/____

Name ___________________________ Preferred first name/nickname (if different):____________________

Date of Birth _____/____/____  Birth Gender: ☐ male  ☐ female  Current Gender: ☐ male  ☐ female

Welcome to the Full Circle Center for Integrative Medicine. This questionnaire has been designed so that we can both review your past medical history and other factors in your life that affect your health. The questionnaire makes it possible for us to be more thorough within the constraints of a brief clinic visit. It is long and detailed! Some of this information may already be in your medical records, but we are going to ask you to repeat it here to be sure we are getting your complete history. Some questions are very personal, if you do not wish to answer them, just leave them blank.

Female Intake Questionnaire

General Information

Name ___________________________ Age _____  Today's Date ______________________

Date of Birth ______________________ Email ________________________________

Address ___________________________ City____________________ State _____ Zip________

Female Intake Questionnaire
Leverage the time

▶ Follow-up questionnaires for problem areas identified

▶ Follow-up/take-home timeline
Leverage the time

- Use the team!
  - My staff help those with lower literacy to complete this information
  - Data entry in your chart
    - My intake questionnaire is arranged in the order of the fields in my EHR
Leveraging Follow-up Appointment Time

- Follow-up Intake Questionnaire: review prior to the visit
- Lifestyle timelines
- Symptom diaries – Patient empowerment and engagement
  - Sleep
  - Headache
  - Elimination diet/food reintroduction
  - Etc.

Food Introduction Diary

<p>| Name: ____________________________ |</p>
<table>
<thead>
<tr>
<th>Date</th>
<th>Time eaten</th>
<th>New food</th>
<th>Digestion/bowels</th>
<th>Pain in joints or muscles</th>
<th>Headache</th>
<th>Nasal or chest congestion</th>
<th>Skin rash or itching</th>
<th>Bladder function</th>
<th>Energy level</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
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</table>
But how can patients afford this?

- **Diagnostics**
- **Therapeutics**
  - Use extra tools
  - Using support staff
  - Groups
Treatment

- Facilitating Complex Interventions with limited time:
  - Use your EHR: macros/”dot-phrases” - (toolkit resource)
    - Instructions for common supplements
    - Mnemonics for your notes/specific conditions - see my xSIBO
    - Warning s/sx for treatments (see my thyroid trial of therapy)
  - Handouts
Using Handouts in the Clinical Visit

- Limit the number to 2 per visit
- Literacy level appropriate – a plea for your help
- Personalize!
Multimedia

- Cultivate online resources for patient education
  - Some links on im4us.org for back exercises, etc.
  - Advanced directive videos
  - Youtube videos on Feldenkrais, belly breathing, etc.
  - EFT training
  - Others: DrAxe.com, Chris Kresser’s website, Mark Hyman, Joel Fuhrman

- Apps
  - Craving to Quit
  - Belly Bio
  - MyFitnessPal
Lending Library

Books

- Your favorites to Recommend
  - In our office:
    - Feeling Good, When Panic Attacks, by David Burns
    - Forgive for good by Fred Luskin
    - The Mindbody Prescription by John Samo
    - Eat to Live by Joel Fuhrman
    - The Healer Within by Roger Jahnke
    - Etc.

- Cookbooks!

Audio

- Relaxation, guided imagery
- Recorded books
Lending Library

- Videos
  - Forks over Knives
  - Fat, Sick and Nearly Dead
  - Some cooking videos
    - (Novick’s fast food), others
  - Yoga and other exercise videos

- Devices
  - Light boxes
  - CES units
  - TENs units
  - Bone stimulator
  - EMF monitor
  - Pulse oximeters
Making a Lending Library Work

- Stock the library with second-hand materials
- Accept donation from patients (with review by provider before incorporating materials)
- Volunteer to manage materials and make reminder calls
- TIMELY reminder calls much more effective
- Make copies of the more expensive CD’s, DVD’s
Team

- Invite the MA in as you are instructing someone for a test kit, counseling on the elimination diet, reviewing a handout, etc. and then they can do the next!
- Collaborate with others in the area
  - Neurofeedback therapist joined our office
  - Dieticians
  - Health Coaches
  - RN
  - Etc.
Pain may be mandatory, but suffering is optional

- Functional Approach to Chronic Pain
  - Addressing the sources of pain
  - Addressing the perception of pain
  - Addressing the suffering associated with pain

The definition of Healing may be different for different people, but there are opportunities for intervention at each of these levels.
And my affordable pearl for relieving suffering . . .

- Healing Groups for People Living with Chronic Pain
From Dean Ornish...

- The Difference between Illness and Wellness
  - Illness
  - Wellness
From Dean Ornish...

- The Difference between Illness and Wellness
  - I
  - We
Group medical visits as a vehicle to deliver this care

- 8-10 Patients
- 2 hours
- Psychotherapist and physician
  - +/- guest speakers
Multidisciplinary Groups Incorporating CBT, Relaxation

- Pain. 1992 Mar;48(3):339-47. Comparison of cognitive-behavioral group treatment and an alternative non-psychological treatment for chronic low back pain. Nicholas MK, Wilson PH, Goyen J. The combined psychological treatment and physiotherapy condition displayed significantly greater improvement than the attention-control and physiotherapy condition at post-treatment on measures of other-rated functional impairment, use of active coping strategies, self-efficacy beliefs, and medication use. These differences were maintained at 6 month follow-up.

- Cognitive-Behavioral Therapy for Somatization and Symptom Syndromes: A Critical Review of Controlled Clinical Trials


  and many others...
Improved outcomes

- **Process outcomes**
  - Adherence to guidelines for care (check microalbumin, foot exams, etc.) - multiple studies

- **Patient Behaviors**
  - Improved medication compliance. Jaber, J A Bd F Med 2006; 276-90

- **Disease-related outcomes**
  - Decreased low birth weight. Obstet Gynecol 2003;102:1051
  - Improved blood pressure, cholesterol. Jaber, J Am Board Fam Med 2006; 276-90
Mindfulness-based stress reduction for failed back surgery syndrome

- Statistically significant and clinically significant:
  - Increase in pain acceptance and quality of life
  - Decrease in functional limitation
  - Decrease in pain level
  - Decrease in frequency, potency of analgesics
  - Increase in sleep quality

- J Am Osteopath Assoc. 2010 Nov;110(11):646-52
GROUP = TOOLS

PAIN
FEAR
Anxiety
Loneliness
Worthless
Pain
Less

Managed Pain
Confidence
Meditation
Pacing
Friends
Work
Value
Managed Pain
Impact on Isolation

Joy Shared is Twice Joy
Sorrow Shared is Half Sorrow

“Being with other people who understand what it is to live with constant pain that has no end in sight and sharing our experiences in a safe environment has ended my feeling of isolation”

The Buddy System – homework may include checking in with buddy daily about relaxation exercises

The provider is no longer the sole source of emotional support!
Provider Burnout

Seeing people get better is the best antidote to burnout...
Logistics

- Who is already doing group visits?
- Any particular challenges?
Recruitment

- Advertising/Outreach
  - To whom:
    - Existing Patients
    - Patients from outside your clinic
  - Mechanism
    - Outreach Workers
    - Posters/Flyers
    - Letters to colleagues
    - Word-of-mouth
Retention

- Engaging Curriculum
- Incentives
  - e.g. Lottery tickets each session with drawings every 3rd – 4th session
- Influence of interval
  - Better retention with weekly groups
  - Falls off as interval increases
  - Calls between sessions may help
- Interval also impacts on billing however: medical necessity of visits must be met
Staffing

- **Medical Providers**
  - Continuity
  - Redundancy to allow for vacations/illness, etc.

- **Adjunctive Professionals**
  - Behavioral Health
  - Dietician
  - Yoga/tai chi/PT
  - Health Coach/Patient Educator

- **Support staff/MA’s**
  - Initial attendance for vital signs/check-in
  - Participation throughout the group
Financial Aspects

- Potential to generate increased revenue
  - Ann Fam Med 2004; 2 Suppl 3:S1-S21
- Grant support
- E/M services billing
  - One author: Break-even point 10-12 patients
  - Other recommendations state 3x #patients you could see in individual visits in same time frame
E/M Services

- Document and code using E/M codes
  - Do NOT do time-based billing

- Alternate billing models
  - Bill every participant every time
  - Selective billing: Bill selected participants
    - One member of a family
    - Subset of participants depending on patient request, rotation

- Individualized notes are needed – usu 99213, 99214
  - See patients separately in separate space or Provide individual services in group
  - Value of feedback sheets to generate the note
Have patients complete documentation for you:

**Feedback Sheet for Physician**

Name: ___________________ Date: ____________

1. Over the past 2 weeks has your pain level:
   DECREASED _____ STAYED THE SAME _____ INCREASED _____ ALL OVER THE PLACE_____
   What changes have you noticed? (Please be as specific as you can!) __________________________

2. Over the past 2 weeks has your emotional state:
   IMPROVED_____ STAYED THE SAME____ WORSENERD_____ ALL OVER THE PLACE____
   What changes have you noticed? (Please be as specific as you can!) ________________________

3. Rate your average mood for the past 2 weeks:
   VERY SAD 1 2 3 4 5 6 7 8 9 10 VERY HAPPY

4. Rate your average pain score for the past 2 weeks:
   NO PAIN 1 2 3 4 5 6 7 8 9 10 VERY SEVERE PAIN

5. What goal did you set last time? ____________________
   Did you accomplish it? (Y/N) _____ If you did not accomplish it, can you come up with a plan that might help you succeed by identifying the obstacle and a solution to the obstacle?
   Obstacle __________________________ Solution __________________________
12. The following could be medication side effects or from your underlying condition. Are you feeling/experiencing:

<table>
<thead>
<tr>
<th>Symptom(s): Indicate: yes or no</th>
<th>Medication(s) or other condition(s) you think caused it:</th>
<th>How did you deal with it:</th>
<th>Do you want suggestions?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constipation:</td>
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<tr>
<td>difficulty sleeping:</td>
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<tr>
<td>dizzy, dopy:</td>
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<tr>
<td>nausea/vomiting:</td>
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<td>difficulty waking in the morning:</td>
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<td>loss of libido:</td>
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<tr>
<td>Any other symptoms or problems?</td>
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</tbody>
</table>
More Logistics

- Locations
  - Conference Rooms
  - Waiting room use after-hours
  - Off-site locations
    - Possibilities and challenges
- Time of Visits
  - Morning vs afternoon - better in afternoon for most pain patients
  - Evening or Saturday for working patients
  - Daylight timing for those with driving issues
  - Beginning of half-day so provider can schedule individual visits afterwards
Clerical/Logistical Issues

- Identifying workflows for new processes
- Informing staff when groups are occurring
- Scheduling for group visits
  - Challenges with electronic scheduling systems
- HIPAA issues and forms
- Supplies
  - Nametags
  - Notebooks
  - Cooking/food prep materials
  - Physical activity supplies
  - Art supplies
Each Session

- Break up the time -
  - Lecture
  - Participation
  - Movement
- Check-in early in group
  - Avoid finding out about crises too late in the session
- Have a behavioral medicine person help lead groups
  - Physician can work on documentation, write refills, etc.
- Provide materials -
  - Notebook patients can refer back to in the future
  - Relaxation recording
- Assign buddies the first or second session
  - Reinforce doing the homework
Our groups:

- Check-in
- Relaxation practice
- Medical portion
- CBT portion
- Group medical visit – related to symptoms indicated by patients on feedback sheets
- Closing and homework

Provider feedback generally given in printed format, generated from EMR or an excel file while group underway
Planned Curriculum

- Logical series
  - Check-in relates to material from the time before
- Start by establishing understanding and trust
  - Keep it positive. Acknowledge suffering early on, but then:
    - Focus on goals
    - Gratitude Journal
- Develop self-soothing skills
- Generate a notebook that patients can refer back to later
- Ultimately introduce more challenging material like John Sarno’s work
<table>
<thead>
<tr>
<th>Session 1</th>
<th>Session 2</th>
<th>Session 3</th>
<th>Session 4</th>
<th>Session 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relaxation Exercise</td>
<td>Abdominal Breathing</td>
<td>Mindful eating</td>
<td>Imagery - Safe place</td>
<td>Chair yoga</td>
</tr>
<tr>
<td>Medical Portion</td>
<td>Pain Physiology</td>
<td>Introductions</td>
<td>Stress and Relaxation</td>
<td>Body Scan</td>
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<tr>
<td>CBT/Behavioral Portion</td>
<td>N/A</td>
<td>Intro to CBT</td>
<td>Pleasurable Activities</td>
<td>Listening to Body!</td>
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<td></td>
<td>Pacing, etc.</td>
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<td>Group share ergonomic</td>
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<td></td>
<td></td>
<td></td>
<td>ideas</td>
</tr>
<tr>
<td>Handouts</td>
<td>Medication Lists</td>
<td>Feelings pictures and list</td>
<td>Gratitude</td>
<td>Ergonomics handout</td>
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<tr>
<td></td>
<td>Outline</td>
<td>Feelings letters (caution with</td>
<td>Gratitude Journal</td>
<td>Mantra list</td>
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<td>this in people who have</td>
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<td>a lot of baggage) - may want to</td>
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<td>delay until Samo or at least to</td>
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<td>cognitive restructuring;</td>
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<td>helpful in people who have little</td>
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<td></td>
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<td>insight into their feelings</td>
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<tr>
<td>Homework</td>
<td>Relaxation Response</td>
<td>Relaxation Response</td>
<td>Relaxation Response</td>
<td>Relaxation Response</td>
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<tr>
<td></td>
<td>Pain Diary</td>
<td>Pain Diary, Feedback sheet</td>
<td>Pain Diary</td>
<td>Pain Diary</td>
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<td>Self portrait exercise</td>
<td>Change Plan worksheet</td>
<td>Pleasurable activities -</td>
<td>Gratitude journal</td>
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<td></td>
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<td>4.6-4.10</td>
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</tbody>
</table>
Relaxation
- Diaphragmatic Breathing
- Mindfulness
  - Mindful eating exercise
  - Body scan
  - Mindfulness with pain
- Guided imagery
- Mantra Meditation
- Chair yoga
- Tai chi

Acupuncture
- Scalp
- Auricular

Art
- Self-portraits
- Timeline/life path
Medical

Participatory lecture style

- Pain physiology
- Nutrition
- Exercise
- Sleep
- Supplements
- Hormones
- John Sarno
- Specific pain syndromes - migraine, fibromyalgia, etc

CBT

- Meaning of pain -
  - Roles, function
- Thoughts and feelings
- Gratitude, pleasurable activities
- Pacing
- Cognitive restructuring
- Forgiveness
- Communication
- Problem-solving
Pulling it Together

The group fills in the blanks for the

Healing Plan
Panic Plan

Tools to use on an ongoing basis or resume in case of flare:

| Diet/Intestinal Health | Limiting sugar, juices, aspartame/MSG  
Anti-inflammatory diet **+**  
more vegetarian  
Elimination of allergens and irritants  
Nurture with healthy food |
|------------------------|--------------------------------------------------|
| Exercise/Movement/Body Work | Yoga, Tai Chi  
Walking  
Massage, chiropractic, osteopathy,  
#QUAKEDUPPE  
PT – recruiting muscles not used  
Painful joints |
| Mind/Body/Emotional Health/Spirituality | Meditation – scheduled  
Variety of tools  
Moving as well as sitting, sensory deaccessorization  
Daily devotion/prayer  
Breathing  
Music  
Dog TV |
| Vitamins/Nutritional Supplements/Herbs | Aromatherapy  
Passionflower  
Vitamin D, B12/B complex  
Magnesium  
Probiotics  
DHEA  
Turmeric  
and Boswellia, grapeseed, etc. |
| Standard Medical Therapies (meds, hormones, etc.) | TENS unit  
Thyroid  
Antibiotics  
Antacids  
Opioids – with things for constipation  
Lidoderm  
Anticonvulsants – gabapentin  
Antidepressants  
Muscle relaxants |
Additional topics in Aftercare

- Advance Directives
- ACEs and Resilience
- PTSD and Pain
- Companion and Therapy Animals
- Toxics and Pain
- Cannabis and Pain
- Sugar and Pain
- Emotional Brain Training
- Headaches
- More on Sleep

- Art Projects
  - How Full is Your Bucket
  - Letting Go and Hanging on
  - Worry dolls
- Forgiveness revisited
- Schubiner Workbook
- Neuroplasticity and pain
Learn Self-efficacy

- Pain makes us passive/the victim
Learn Self-efficacy

- Initial treatment may fail/cause flare
- Pain makes us passive/the victim
Learn Self-efficacy

- Persistence reduces pain episodes
- Initial treatment may fail/cause flare
- Pain makes us passive/the victim
Learn Self-efficacy

- Repetition changes conscious learning into unconscious learned expertise
- Persistence reduces pain episodes
- Initial treatment may fail/cause flare
- Pain makes us passive/the victim
Stretch Break
“HELPING, FIXING, AND SERVING REPRESENT THREE DIFFERENT WAYS OF SEEING LIFE. WHEN YOU HELP, YOU SEE LIFE AS WEAK. WHEN YOU FIX, YOU SEE LIFE AS BROKEN. WHEN YOU SERVE, YOU SEE LIFE AS WHOLE. FIXING AND HELPING MAY BE THE WORK OF THE EGO, AND SERVICE THE WORK OF THE SOUL.”

— RACHEL NAOMI REMEN
The paradox... A single therapist behavior significantly predicted client drinking a year later

- The more the therapist confronted, the more the client drank $r(34)=0.65 \quad p<0.001$

- **Confronting =** challenging, disagreeing, head-on disputes, incredulity, sarcasm, emphasizing negative client traits

  *Journal of Consulting and Clinical Psychology 1993, 61(3):455-461*
Motivational Interviewing

- Dancing rather than wrestling
- Outperformed traditional advice-giving in 75% of studies
- Results are even better than that when you optimize training and performance of the technique
Motivational Interviewing Philosophy In Groups

- Ask open-ended questions
- Avoid portraying judgment for what is shared
- Allow group members to generate the change talk
- Limit specific advice-giving in the group – evokes resistance
  - Redirect for troubleshooting/brainstorming general or similar situations
    - Who has been through something like this?
    - What worked for you?
Support Self-efficacy

- Hold your own belief in the possibility of change, and share it.
- Ask about previous areas where they have had success.
  - If failure in the past, focus on the learning.
- Praise any steps so far (even if it is just coming in today) as a sign of commitment.

- Approach to dirty urine screens - my personal attitude.
Curriculum

- Start with Safety/Harm Reduction
- 1st Step Equivalents –
  - Some caution on allowing major horror stories to dominate
- CBT topics overlap with the chronic pain curriculum
- Relaxation practices are also helpful
- ACES, Resilience, PTSD once there is some trust
  - SeekingSafety.org
- Art projects
A few other pearls

**NADA Points**
- Shen Men
- Autonomic Point
- Kidney
- Liver
- Lung 2

**Auricular Trauma Protocol**
- Shen Men
- Point Zero
- Master Cerebral
- Hypothalamus
- Amygdala
- Hippocampus
Nux Vomica

- Opioid treatment

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Dropout before 48 hours</th>
<th>Dropout after 48 hours</th>
<th>Completed successfully (1 year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-homeopathic</td>
<td>184</td>
<td>11%</td>
<td>23%</td>
<td>42%</td>
</tr>
<tr>
<td>Homeopathic</td>
<td>138</td>
<td>7%</td>
<td>15%</td>
<td>63%</td>
</tr>
</tbody>
</table>

Not randomized – self-selected whether to take a dose of Nux vomica 200C (Homœopathic Links 2015; 28(01): 054-056)

- Other homeopathics for acute withdrawal: Arsenic album, Nux-vomica, Ipecac, Chamomilla, Rhus tox, Pulsatilla
  - Significantly better than placebo for Sneezing, Yawning, Abdominal pain, Lachrymation and Irritability  \( P<0.05 \)

DLPA

- DLPA (DL-phenylalanine) 550 mg 2 pills twice a day or three times daily for mood or pain
  - The D-phenylalanine blocks enkephalinase

Minimal research, but I have seen benefit

Some favorite resources:

- Everything by Lorimer Mosely
  - Ted Talk “Why Things Hurt”
  - Other youtube talks by him and Butler
  - Books: Explain Pain, The Protectometer, Painful Yarns
- Norman Doidge
  - The Brain that Changes Itself (book and film) and The Brain’s Way of Healing
    - Neuroplastix – Michael Moskowitz
- John Samo
  - Youtube 20/20 segment
  - The Mindbody Prescription, The Divided Mind
- Schubiner
  - Unlearn Your Pain
- From Fatigued to Fantastic by Jacob Teitelbaum

Materials from our healing groups are at [https://tinyurl.com/FCCGroupMaterials](https://tinyurl.com/FCCGroupMaterials) (contact me at connieb@fullcirclemed.org for access to 2018 materials)