

CVIM Pain Management

**Using a Multidisciplinary Approach to
Collaborative Care**

Dr. Mary Brennan Wirshup

Faculty Disclosure

- I, Dr. Mary Brennan Wirshup, state that spouse nor my significant other have any relevant financial relationships during the past 12 months. I do not intend to discuss an off-label use of a product during this activity.
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Objectives

Upon completion of this educational activity, you will be able to:

1. Review the types of pain and how to recognize them
 2. Describe how to assess pain
 3. Discuss a holistic approach towards management of pain using pharmacologic and non-pharmacologic treatment
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The opioid epidemic

- More than 40 people die everyday from overdoses involving opioids
- Since 1999, there have been over 165,000 deaths from overdose related to prescription opioids
- 4.3 million Americans engaged in non-medical use of prescription opioids last month
- In 2013, enough prescriptions were written for every American adult to have a bottle of pills

• CDC, U.S. Department of Health and Human Services

Case 1

- ZD- 58 year old female daycare worker and active hiker
- History: hypothyroidism
- Problem: neck and shoulder pain
 - Electric shock-like pains going from her left neck all the way down to her arm
 - No history of trauma



What is Pain?

- The International Association for the Study of Pain defines pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage”
 - Pain is the most common reason for physician consultation in the US
 - Pain is present in >50% ED visits, 30% of family practice visits
 - After 3 months it is considered “Chronic Pain”
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The Impact of Pain

Pain → No Job → No \$\$ → No Insurance
→ Loss of Life

- “Lost their life”
 - “Disrupted sleep, no energy”
 - “Lost self-esteem and confidence”
 - A patient described pain as “A shadow on your life that’s always with you”
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How to Assess Pain

- O= Onset (When did it start?)
 - P= Progression (Has it gotten better/worse?)
 - Q= Quality (sharp, dull, radiate)
 - R= Relief (What makes it better/worse? Do you take anything for the pain?)
 - S= Severity (1-10 scale)
 - T= Timing (What makes it worse? Time of Day?)
 - A= Associated Symptoms (Is there anything else that comes with____?)
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Collaborative Care Model

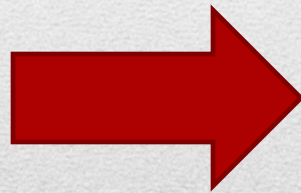
- Treatment needs a multidisciplinary team in a health care home or free clinic setting
 - Medication should not be the sole focus of treatment
 - Provide counseling, acupuncture, physical therapy, and other modalities
 - Set the goal for the patient, which is not to be pain free, but at least 30% improved
 - Decide as a free clinic what treatments you want to offer (opioids or no opioids)
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Types of Pain

1. Neuropathic
 2. Nociceptive
 - Somatic
 - Visceral
-

Types of Pain

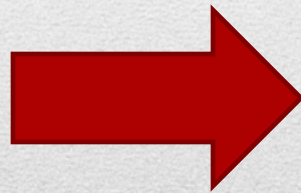
- Dull
- Deep
- Pressure like
- Cramping



Nociceptive
Visceral

Types of Pain

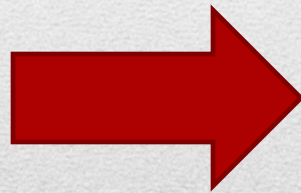
- Sharp
- Dull
- Steady
- Aching
- Throbbing



Nociceptive
Somatic

Types of Pain

- Burning
- Stabbing
- Tingling
- Shooting
- Electric



Neuropathic

Pain Scale

Where is the pain that you want to address today:

☐ head/face ☐ neck ☐ shoulder ☐ hand/wrist/arm ☐ back (upper/mid/low) ☐ hip ☐ knee
☐ foot/ankle ☐ throat ☐ chest ☐ stomach ☐ abdomen ☐ other: _____

What word(s) that best describe your pain:

☐ ache ☐ throbbing ☐ burning ☐ sharp ☐ shooting ☐ cramping ☐ twinge ☐ dull
☐ other: _____

What other symptoms, if any, have you experienced that are related with this pain:

☐ weakness ☐ numbness ☐ tingling ☐ nausea ☐ trip/fall ☐ stiffness ☐ swelling
☐ sensitive to light or sound ☐ other: _____ ☐ none

What medical treatments have you tried to relieve your pain:

☐ aspirin ☐ Advil/Aleve/Tylenol/etc. ☐ prescription pain medicine ☐ prescription muscle relaxer
☐ shots/injections ☐ cream/ointment/patch ☐ other: _____ ☐ none

What else have you done to try to relieve this pain:

☐ heat ☐ ice ☐ PT ☐ acupuncture ☐ acupressure/reflexology ☐ chiropractor ☐ massage
☐ exercise ☐ yoga ☐ meditation ☐ TENS ☐ other: _____ ☐ none

PEG Assessment Scale

1. What number best describes your pain on average in the past week:

0	1	2	3	4	5	6	7	8	9	10
No pain					Pain as bad as you can imagine					

2. What number best describes how, during the past week, pain has interfered with your enjoyment of life?

0	1	2	3	4	5	6	7	8	9	10
Does not interfere					Completely interferes					

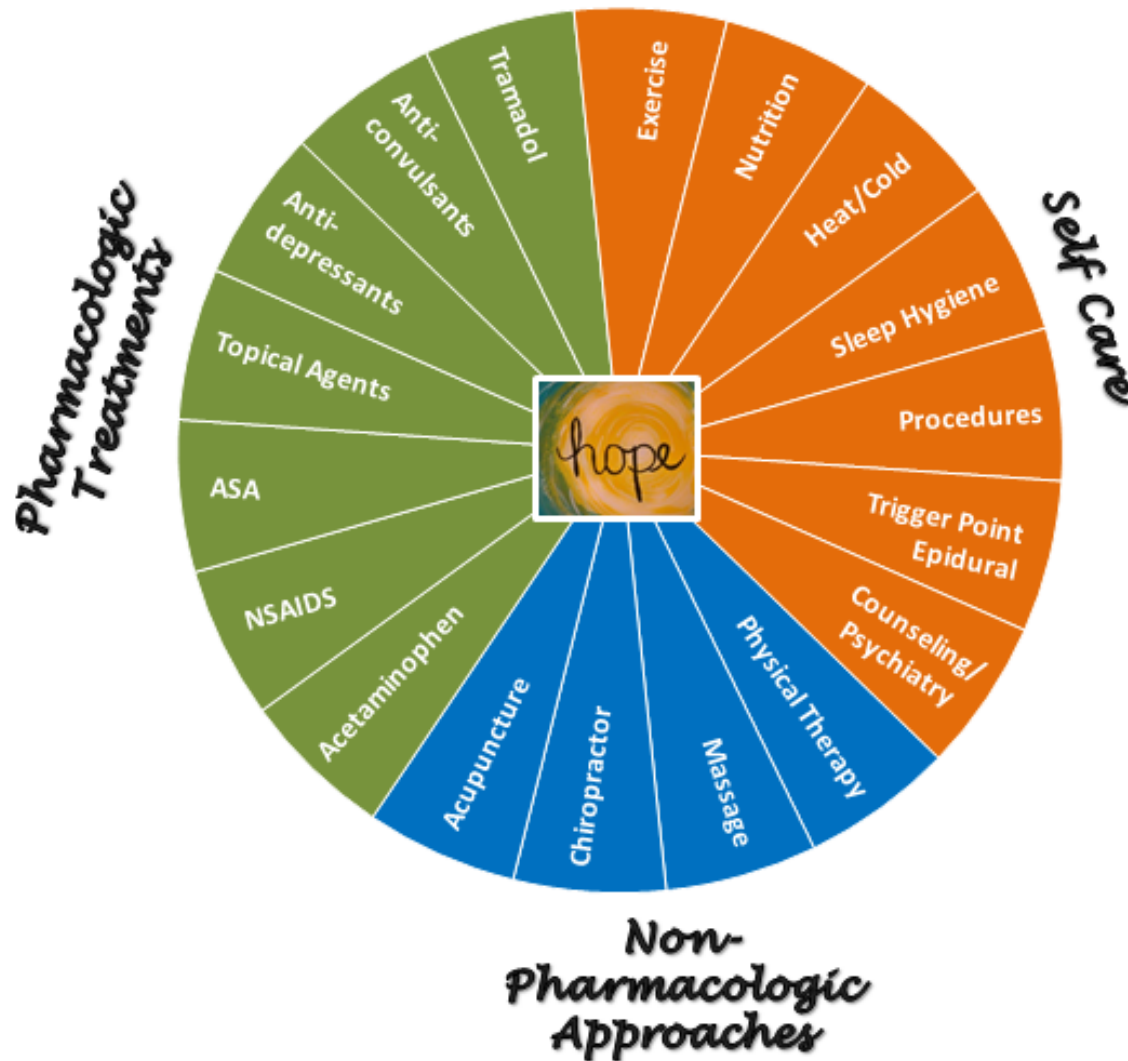
3. What number best describes how, during the past week, pain has interfered with your general activity?

0	1	2	3	4	5	6	7	8	9	10
Does not interfere					Completely interferes					

To compute the PEG score, add the three responses to the questions above, then divide by three to get a final score out of 10.

The final PEG score can mean very different things to different patients. The PEG score, like most other screening instruments, is most useful in tracking changes over time. The PEG score should decrease over time after therapy has begun.

CVIM Pain Management



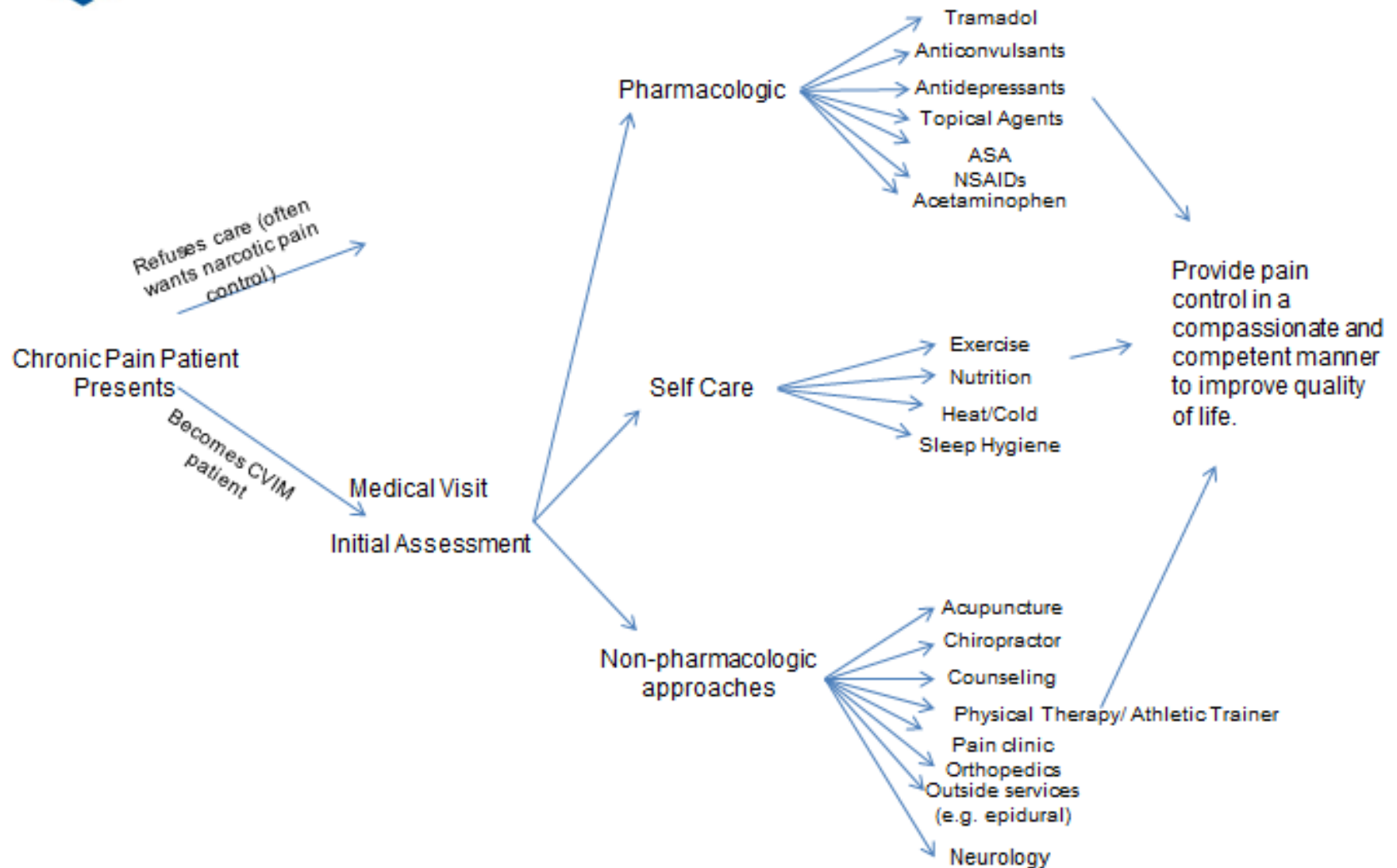


CVIM PAIN PROGRAM DRIVER DIAGRAM

Primary Drivers

Secondary Drivers

Outcomes



The Superheroes of CVIM Pain Management!



Self Care

- Nutrition
 - Heat/Cold
 - Sleep Hygiene
 - and...
-

Laughter

- Norman Cousins wrote *Anatomy of an Illness*
 - Diagnosed with Ankylosing Spondylitis
 - Watched Marx brothers on candid camera, and found 10 minutes of belly laughter. This gave him two hours of pain relief
 - 400 child, adult 20
-

Nutrition

- “Let thy food be thy medicine, and let thy medicine be thy food” –Hippocrates
 - Plant based diet
 - Avoiding milk products
-

Meditation

Mindfulness

- Dr. Jon Kabat-Zinn is the founder of MBSR Mindfulness Based Stress Reduction Clinic
 - Teaches mindfulness to help patients cope with stress, anxiety, pain, and illness
 - Yoga
-

Exercise!



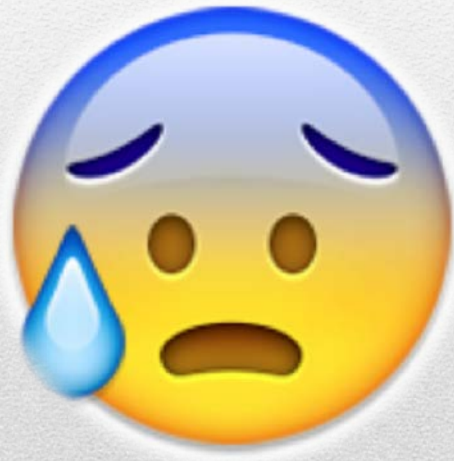
Psychological Issues



ANGER



DEPRESSION



ANXIETY



Counseling

- CBT: Cognitive Behavioral Therapy
 - Structured
 - Goal Oriented
 - Problem Focused
 - Time limited
 - 10-20 Sessions
 - Patients learn how to modify their thoughts
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Specialty Referrals

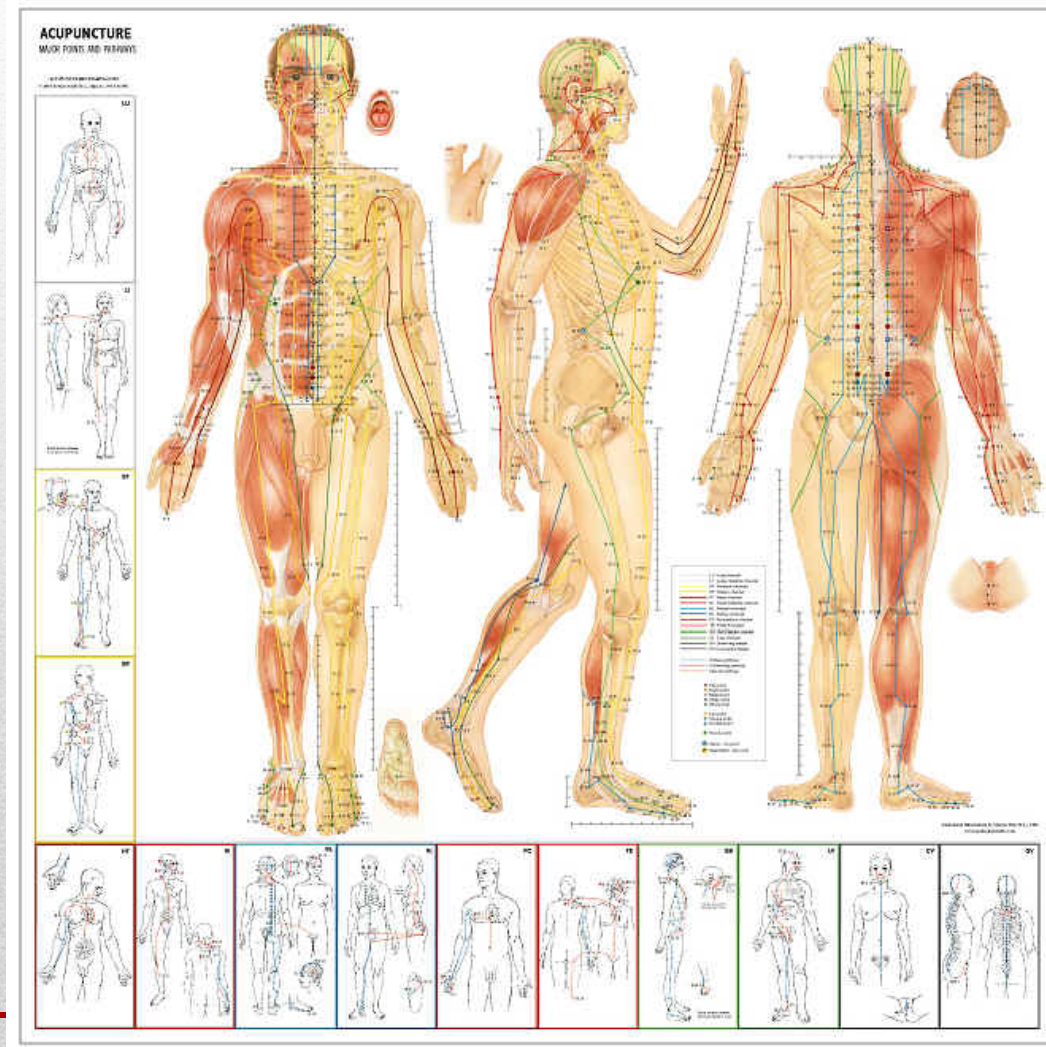
- Acupuncture
 - Chiropractor
 - Athletic Trainer
 - Neurologist
 - Neurosurgeon
 - Orthopedics
 - Rheumatologist
-

Medical Acupuncture

- ❖ Acupuncture performed by a physician trained in traditional Chinese medicine concepts
- ❖ Therapeutic insertion of solid needles in various combinations and patterns based on
 - ❖ Classically described acupuncture channels or meridians of encouraging the flow of Qi
 - ❖ Neuroanatomical and segmental distribution



Acupuncture Meridians



Historical Background

Now, Let Me Tell You About My Appendectomy in Peking...

Continued From Page 1, Col. 8

her thinking that it was rather a complicated way to get rid of gas on the stomach, but there was a noticeable relaxation of the pressure and distention within an hour and no recurrence of the problem thereafter.

I will return to the theory and controversy over this needle and herbal medicine later. Meanwhile, a couple of disclaimers.

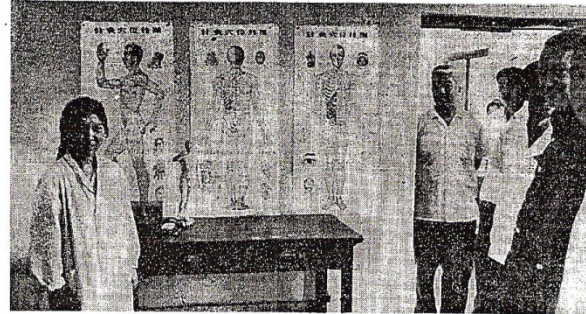
Judging from the cables reaching me here, recent reports and claims of remarkable cures of blindness, paralysis and mental disorders by acupuncture have apparently led to considerable speculation in America about great new medical breakthroughs in the field of traditional Chinese needle and herbal medicine. I do not know whether this speculation is justified, and am not qualified to judge.

Hardly a Journalistic Trick

On the other side, it has been suggested that maybe this whole accidental experience of mine, or at least the acupuncture part of it, was a journalistic trick to learn something about needle anesthesia. This is not only untrue but greatly overstates my gifts of imagination, courage and self-sacrifice. There are many things I will do for a good story, but getting slit open in the night or offering myself as an experimental porcupine is not among them.

Without a single shred of supporting medical evidence, I trace my attack of acute appendicitis to Henry A. Kissinger of the White House

staff. The author is in Peking now.



James Reston, in dark shirt, visited a hospital in Thao Yang two weeks ago and was shown charts detailing the acupuncture points in the human body. Last week, in Peking, Mr. Reston experienced that treatment first-hand.

said that if we should happen to notice "a large group of buildings with green-tiled roofs not far from the southeast corner of the Forbidden City, it might be interesting to inquire what those were."

It was interesting indeed. My wife and I were taken to Building No. 8, which is the wing used to serve the Western diplomatic corps and their families. On the right of the entrance was a large sign quoting Chairman Mao (it was removed during our stay). "The time will not

dure have been transformed. The doctors at the Anti-Imperialist Hospital make an average of about 150 yuan, or \$65 a month and take their turn for six months or more, training barefoot doctors in rural farm and industrial communes. The aim is to prepare a medical army of young men and women for public-health service all over the People's Republic as fast as possible. Their training begins with political indoctrination in the thoughts of Chairman Mao.

Everything Was Roses

Communists took over this country in 1949, four million people died every year from infectious and parasitic diseases and that 84 per cent of the population in the rural areas were incapable of paying for private medical care even when it was available from the 12,000 scientifically trained doctors.

That helps explain the current emphasis on rapid expansion of the medical corps and the determination of the Government to increase the use of

acupuncture in overcoming post-operative constipation by putting barium in a patient's stomach and observing on a fluoroscope how handle manipulation in the limbs produced movement and relief in the intestines.

Even the advocates of Western medicine believe that necessity has forced innovation and effective development of traditional techniques.

Mr. Snow quotes Dr. Hsu Hsiang-tu, a former deputy director of the hospital, as saying: "Diseases have inner and outer causes. The higher nervous system of the brain affects the general physiology."

Professor Li said that despite his reservations he had come to believe in the theory that the body is an organic unity, that illness can be caused by imbalances between organs and that stimulation from acupuncture can help restore balance by removing the cause of congestion or antagonism.

Dramatic Cures Reported

The controlled Chinese press is reporting on cases that go well beyond the relief of pain in the gastrointestinal tract and illnesses of the nervous system or those of neurological origin. It is reporting not only successes in treating paralysis and arthritis but spectacular results in curing blindness and deafness.

While I have no way of knowing the validity of the reports, the faith even of the professionally qualified doctors at the Anti-Imperialist Hospital is impressive. Mao-

- ❖ James Reston, New York Times 1971
- ❖ Reporter discussed acupuncture-assisted post-surgical appendectomy pain management during an international visit to china by US President Nixon

Current Use

- 2007 survey, 3.2 million Americans had undergone acupuncture in the past year
 - ❖ 11th most commonly used CAM Treatment according to NCCIH
 - Most widely accepted form of CAM recommended by physicians
 - US spent estimated \$33.9 billion on CAM treatments
 - ❖ 11.2% of total out-of-pocket expenditures on health care in September 2015 according to NCCIH
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Pharmacologic Pain Management

NSAIDs



Acetaminophen - APAP

- Antipyretic, analgesic
 - Little to no effect on platelets or inflammation
 - No risk of peptic ulcers or bleeding
 - **Route:** Oral, Per Rectum and IV
 - Often used in combination with many other drugs
 - BE CAREFUL
 - **Max dose** by McNeil: **3 grams per day**
 - Max dose by FDA: 4g/d
 - **Caution:** in patients with **liver dysfunction**
 - **Usual dose:** 325-650mg q4-6h prn for pain
-

NSAIDs

- Ibuprofen (Advil), Naproxen (Aleve), Meloxicam (Mobic), Nabumetone (Relafen)
 - Analgesic, antipyretic, *anti-inflammatory*, and some *anti-platelet effects*
 - Not all NSAIDs are made equal
 - **CAUTION:**
 - Pre-existing **renal dysfunction** and **cardiovascular problems**
 - Co-administration with anti-platelet drugs
 - Increased risk of bleeding
 - Co-administration with blood pressure medications
 - NSAIDS may decrease efficacy
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Tramadol (Ultram)



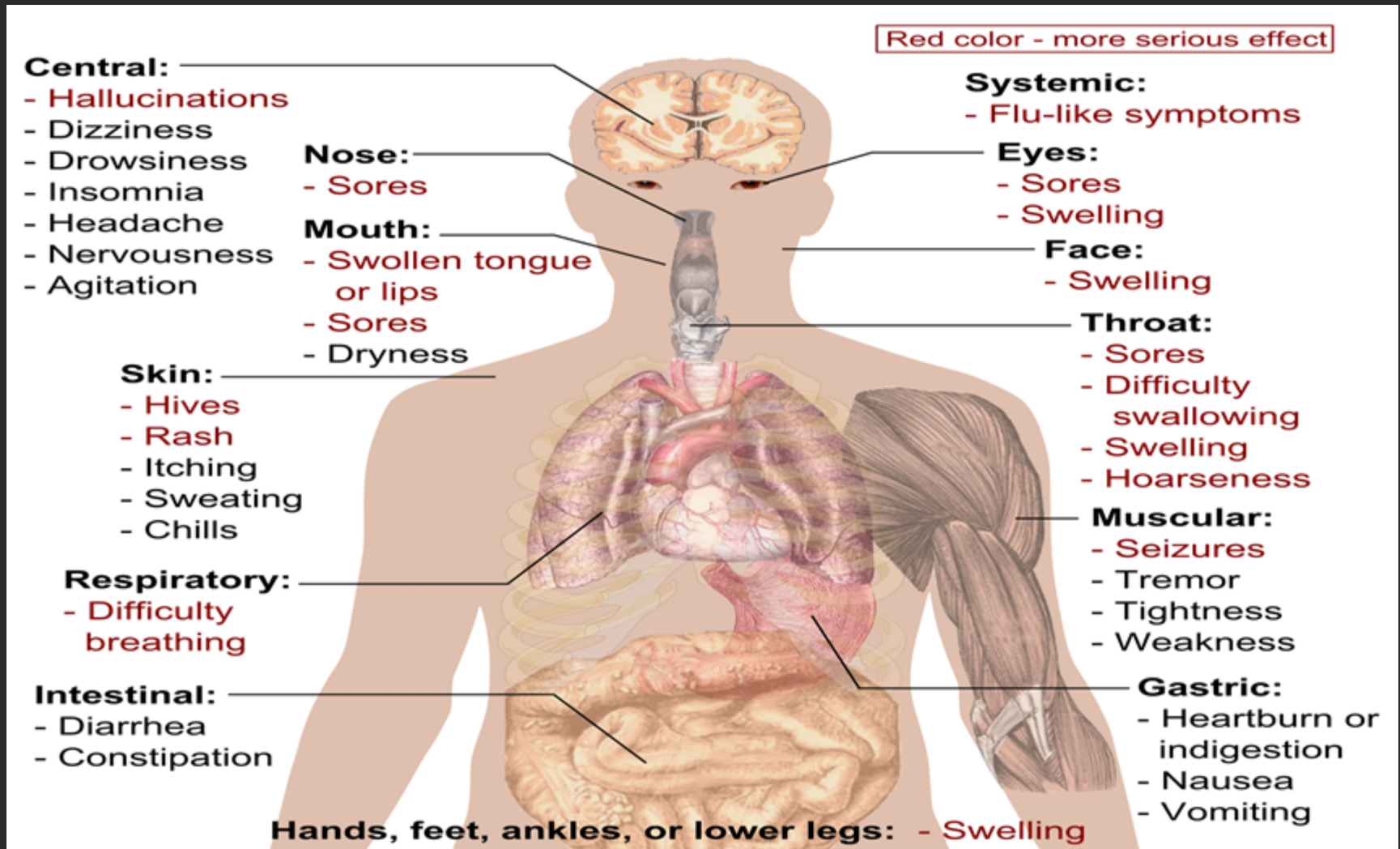
- MOA: Binds to mu(μ) receptors and weakly inhibits norepinephrine reuptake
- Tramadol is also known to inhibit serotonin reuptake
 - Need to be **CAUTIOUS** of **serotonin syndrome** with co-administration of SSRIs or TCAs
- Tramadol and ULTRACET (tramadol/APAP)

NOW CONTROLLED SUBSTANCE (CIV)

- Potential for physiological addiction
 - Tramadol is metabolized extensively by CYP3A4 and CYP3D4
 - Side effects: Nausea, dizziness, drowsiness, seizure
-

TRAMADOL

SIDE EFFECTS



Skeletal Muscle Relaxant

- Cyclobenzaprine (Flexeril), Metaxalone (Skelaxin)
 - Reduces tonic somatic motor activity influencing both alpha and gamma motor neurons
 - Dosing: Do not use longer than 2 to 3 weeks
 - Contraindicated: during or within 14 days of MAO inhibitors, hepatic dysfunction, hyperthyroidism, heart failure, arrhythmias, heart block or conduction disturbances, and/or acute recovery phase of MI
 - Side effects: drowsiness, dizziness, xerostoma
-

Neuropathic Pain

- **Anticonvulsants**

- Neurontin (gabapentin), Topamax (topiramate), Lyrica (Pregabalin) – controlled substance
 - Must TITRATE UP and taper off!
- Decreases spontaneous nerve firing
- **Side effects:** Can cause sedation and dizziness
- **CAUTION:** in patients with **renal impairment**

- **Serotonin-Norepinephrine Reuptake inhibitor (SNRI)**

- Cymbalta (duloxetine) and Effexor (venlafaxine)
 - Must titrate up and taper off!
 - Can help with psychological component of pain
 - **CAUTION:** in patients with **hepatic dysfunction** and **cardiac disease**
-

Neuropathic Pain

Misc. oral agents

- **Tricyclic Antidepressants (TCA) – Alternative Therapies**
 - Nortriptyline (Pamelor), Amitriptyline (Elavil)
 - Dosing: less than normal antidepressant dosing
 - Can help with psychological component of pain and insomnia
 - Anticholinergic effects
 - Can cause dry mouth, constipation, weight gain, blurred vision
 - **DUMBBELLSS** - Diarrhea, Urination, Miosis, Bradycardia, Bronchospasm, Emesis, Lacrimation, Lethargy, Salivation and Seizures
 - **CAUTION:** BEERS criteria, diabetic patients, hepatic/renal impairment, co-administration with MOAIs
-

Clinical pearls

- Approach pain using a combination of drugs that target different pathways and this can result in an increase in analgesia and fewer side effects
 1. Use a step wise approach – START LOW AND GO SLOW
 2. Make sure the medications are administered in a comfortable route for the patient
 3. Administer medication around the clock to prevent catch up
 4. Always have a individualized approach to pain
 5. CLOSELY FOLLOW UP WITH PATIENTS!!!
-

Neuromodulation

- Electrical stimulation by providing series of eclectic shocks
- Nociceptive, neuropathic, and musculoskeletal pain
- Shown to be effective in reducing pain with ongoing treatment
- NONINVASIVE
- **Acute and chronic**
 - Nociceptive, neuropathic, and
 - musculoskeletal pain



Diclofenac

- Patch (Flector) 1.3% (5 each, 30 each) – apply one patch q 12 hours to dry, intact skin over the major site of pain. Accumulates transdermally, with only 1% of the bioavailability of p.o. diclofenac. T_{1/2} is 12 hours, vs. 1-2 hours for p.o. diclofenac
 - Uses: **acute pain** 2/2 strains, sprains and contusions
 - Watch for dermatitis, rash, hypersensitivity rxn, blistering
 - Gel (Voltaren 1%)
 - Uses: **osteoarthritis** or acute strains, sprains or contusions
 - Lower extremities, OA: apply 4 grams tid-qid to affected joint maximum 16 grams per joint per day
 - Upper extremities, OA: apply 2 grams tid-qid to affected joint, maximum 8 grams per joint per day
 - Acute pain 2/2 strains, sprains, contusions: 2-4 grams tid-qid to affected area, up to 7 days
 - Treat up to 7 days
 - Do not cover with occlusive dressing or apply heat over treated area
 - Do not use sunscreen or other lotions over treated area
 - Wash hands after application, avoid bathing or showering for one hour after application
 - Watch for pruritus, rash, contact dermatitis
-

Topicals

- Diclofenac
 - Lidocaine
 - Capsaicin
 - Methylsalicylate
 - Menthol
 - Trolamine salicylate
 - Camphor/menthol
-

Diclofenac

- Solution (Pennsaid or generic) 1.5%. Also available as Pennsaid 2%, for **OA of knee**
 - More adverse skin reactions than with gel
 - 1.5%: apply 40 drops to affected knee four times daily. Dispense 10 gtts into hand, then rub into knee, repeat until all 40 gtts are applied
 - 2%: apply two pumps to affected knee twice daily
 - **Diclofenac, all formulations: use caution in patients with renal impairment, liver disease, bleeding risk, heart disease, HTN, ASA sensitive asthma. Do not use for pain relief in CABG patients.**
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Additional Agents

- Capsaicin cream .025% or .075% (Zostrix)- used off-label for PHN. May cause burning, erythema, skin irritation
 - Methylsalicylate 15%, 30% (Bengay)- monitor for salicylate toxicity – may be additive w/other salicylate meds
 - Menthol 2%, 5%, 10%, 16% as cream, gel, ointment, patch (icy hot)
 - Trolamine salicylate 10% (asperc crème)- monitor for additive toxicity
 - Camphor 11%/menthol 11% (tiger balm)
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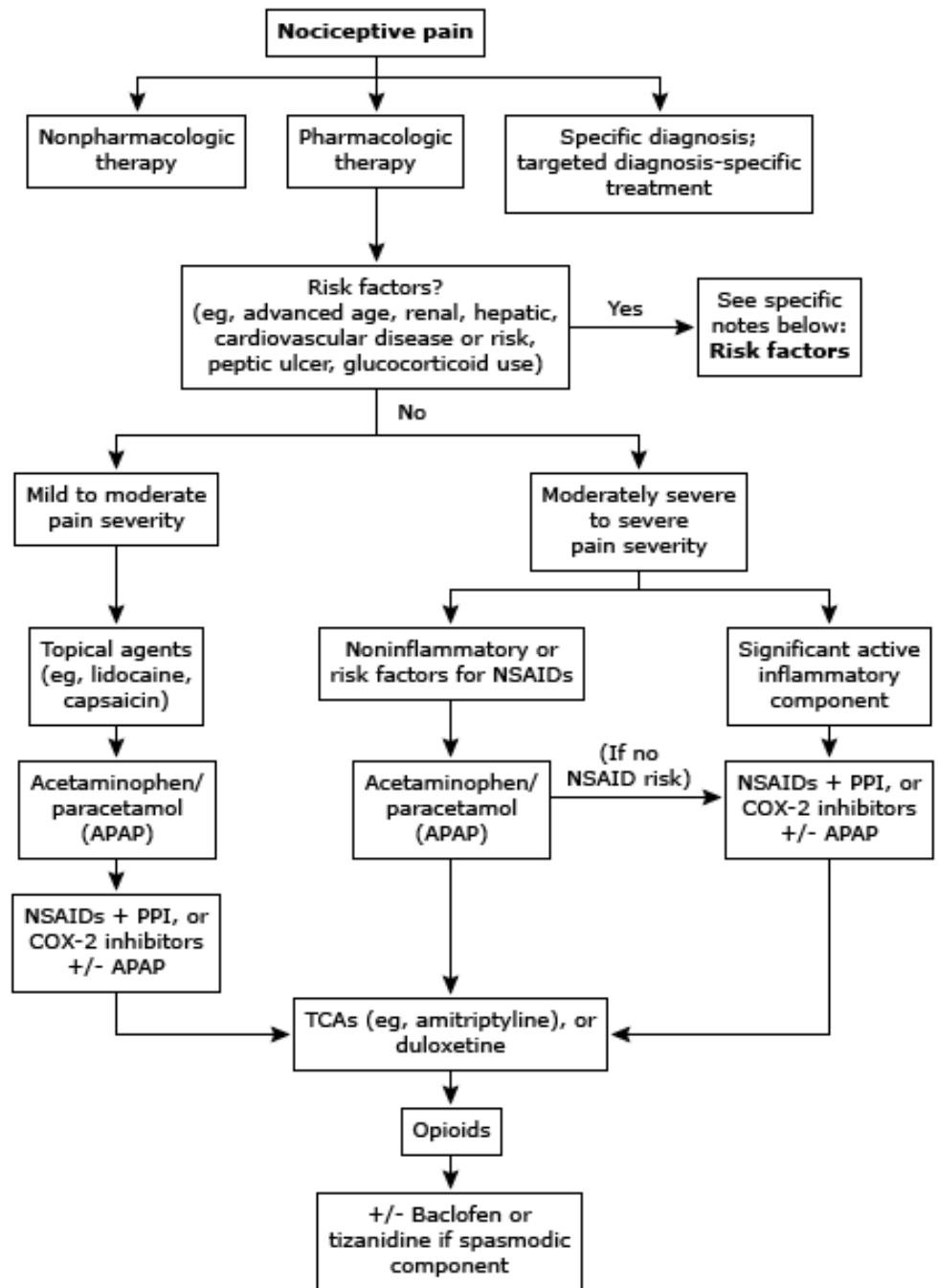
Lidocaine 5% patch (3.6% OTC)

- May be used only for well-localized neuropathic pain (esp. post-herpetic neuralgia - PHN) or allodynia
 - One patch applied for twelve hours, followed by twelve hours patch-free.
 - May be used as monotherapy for PHN but usually used as adjunct to systemic therapy
 - Not effective for acute pain
 - Also available as 5% gel
 - AE's include blistering, rash, dermatitis
 - Caution in patients w/amide anesthetic allergy, or patients receiving class I anti-arrhythmics as effects may be additive.
 - Each patch contains 700 mg of lidocaine of which only 1-5% is absorbed.
Keep discarded patches away from pets and children.
-

Capsaicin 8% patch

- For PHN. Apply up to 4 patches at once one time only, leave on for 60 mins, then remove.
 - Apply with nitrile gloves. Apply a topical anesthetic to the treatment area prior to the capsaicin patch. Cleanse area of remaining capsaicin after patch removal using cleansing gel.
 - May repeat treatment only once every three months.
 - May cause burning, stinging, airway irritation.
 - Only health professionals may place capsaicin patch
 - For temporary relief of minor muscular aches & sprains, arthritis, neuralgia.
 - applied tid-qid
 - Not recommended for use longer than 7 days
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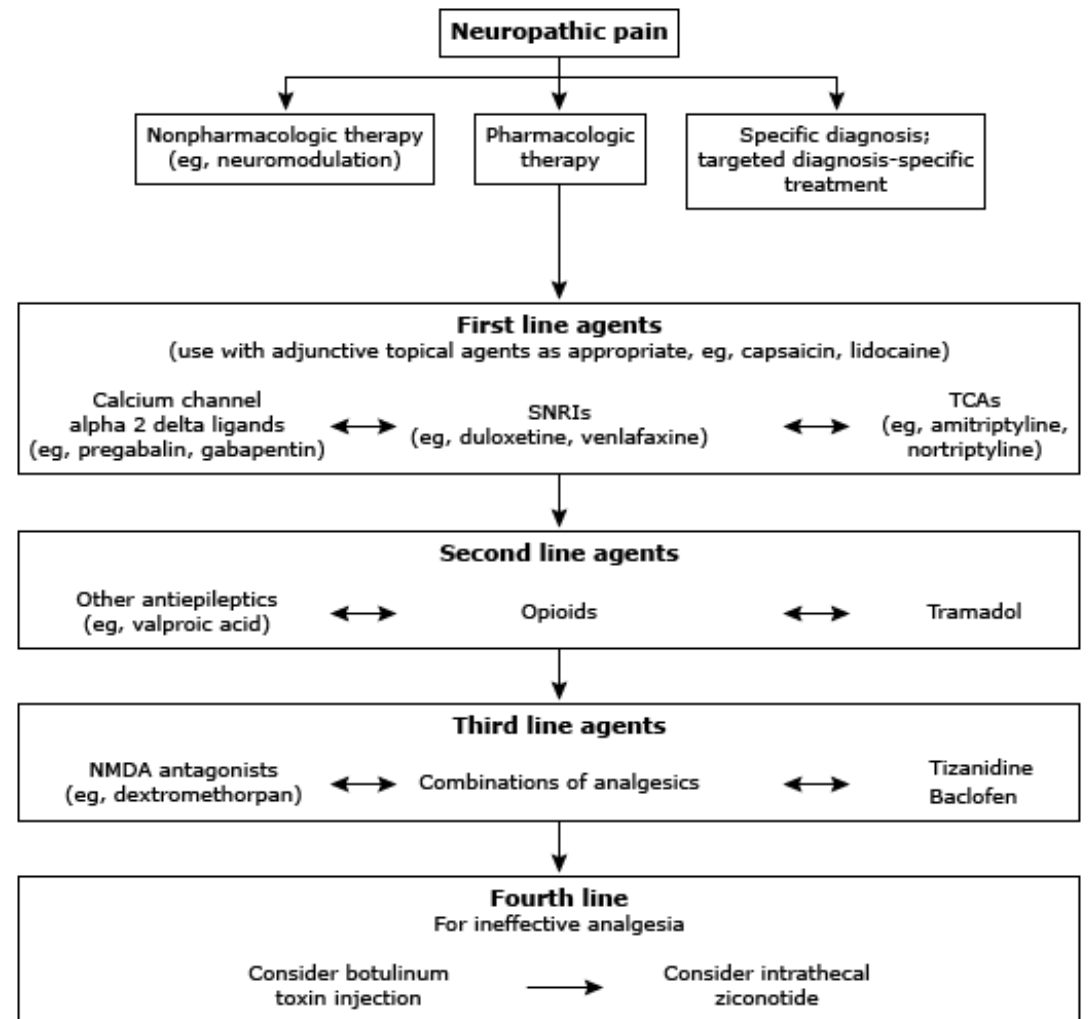
Nociceptive Pain



Source: Rosenquist, E.W.K. (2017). Overview of the treatment of chronic pain. *UpToDate*. Retrieved April 24, 2018, from https://www.uptodate.com/contents/overview-of-the-treatment-of-chronic-non-cancer-pain?search=chronic%20pain&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1#H195876576

Neuropathic Pain

Source: Rosenquist, E.W.K. (2017). Overview of the treatment of chronic pain. *UpToDate*. Retrieved April 24, 2018, from https://www.uptodate.com/contents/overview-of-the-treatment-of-chronic-non-cancer-pain?search=chronic%20pain&source=search_result&selectedTitle=1~150&usage_type=default&display_rank=1#H195876576



What is marijuana?



- THC
 - Partial Agonist of CB1 (brain) and CB2 (systemic)
 - Euphoria/Relaxation
 - Anxiety
 - Memory impairment
 - Cannabidiol (CBD)
 - Inhibits THC binding in CB1
 - Decreases THC psychoactivity
 - May prevent degradation of natural endocannabinoid
-

Available Preparations

- Local
 - Topicals: location, balm, cream
- Systemic
 - Oils for vaporization
 - Oral liquid formulations
 - Capsules
 - Patches (oral and transdermal)
 - Suppositories (vaginal and rectal)



Indications for Use

- Amyotrophic Lateral Sclerosis
 - Autism
 - Cancer
 - Crohn's Disease
 - Damage to the nervous tissue of the spinal cord
 - Epilepsy
 - Glaucoma
 - HIV/AIDS
 - Huntington's Disease
 - Inflammatory Bowel Disease
 - Intractable Seizures
 - Multiple Sclerosis
 - Neuropathies
 - Parkinson's Disease
 - PTSD
 - Severe Chronic Pain
 - Sickle Cell Anemia
-

Case 1

- ZD- 58 year old female daycare worker and active hiker
 - History: hypothyroidism
 - Problem: neck and shoulder pain
 - Electric shock-like pains going from her left neck all the way down to her arm
 - No history of trauma
-

Case 1

- First visit - 8/16/2017
 - Medication treatment with Naprosyn and Flexeril
 - Referred to physical therapy
 - Referred to acupuncture on 8/31/2017
 - 9/26/2017 - Referral to pain clinic/neurosurgeon
 - Felt left scalene spasm with mild cervical spondylosis; continued same medicines
 - Medical visit on 10/23/2017 – d/c Naprosyn, Flexeril. Tried amitriptyline 20 mg at night. Consulted chiropractor and massage
 - MRI cervical spine on 12/26/2017
 - C6-C7: severe neural foraminal narrowing
 - Referred again to acupuncture
 - On 2/26/2018, her pain was 80% better.
 - On 3/18/2018, patient experienced exacerbation of pain, and was treated with Prednisone taper. Referred to outside pain clinic for an epidural shot.
-

Case 2

- KK is a 48 year old school bus driver
 - History: gastric bypass, bipolar disease
 - Problem: chronic back, knee, and hip pain from significant osteoarthritis
 - Describes pain as aching in quality in knees and lower back, related to MVC in the past and being 400 pounds in the past
-

Case 2

- Orthopedic referral – started injections in knees as needed
 - Acupuncture treatments
 - Massage therapy
 - Psychiatry to help control bipolar
 - Also has had counseling
 - Referred to YMCA for aquatic exercises
 - Medical visits
 - Monitored pain scores that have come down from 18 to 10
-