Prudent Opioid-sparing Therapies: An Evidence-based, Strategic Approach

PAUL ARNSTEIN, RN, PHD, FAAN

4/5/17
Pain: a Universal Experience

A teleological adaptive response
Complications & Costs Linked to Poorly Controlled Pain

- Impaired Sleep
- Mobility
- Emotions
- CV stress, DVT / PE
- GI Motility
- Ileus, N/V
- Breathing
- Atelectasis, PNA
- Catabolism, Immunologic suppression
- Longer LOS
- ICU/Hospital
- Impaired or Delayed Rehabilitation
- Chronic Pain
- Dissatisfaction
- Readmissions
- Complications
- Opioid-related ADEs
- Higher Costs
- Lower payment rate

References:
IOM (2011) Relieving pain in America.: 24, 74
Hutchison RW. (2007). AM J Health Sys Pharm, 64 (6) S2-S5
Guay et al. (2016) Cochrane Database Syst Rev. 5;1:CD005059
Harmful Effects of Chronic Pain

CNS remodeling with 5-10% gray matter loss
  ◦ Reversible with better pain control

Long-term exposure to potential dangerous drugs

Health care expenditures average $10,000/pt./yr.

50% increase in all-cause mortality within 10 years
  ◦ Three times higher with severe pain

Chronic pain is a common reason for:
  ◦ Seeking health care,
  ◦ Specialist consultation
  ◦ Risk of developing depression

More Liberal Prescribing Patterns

The graph shows the trends in prescribing patterns for various opioids over the years from 2000 to 2012. The y-axis represents the grams per person per year of morphine equivalent. The x-axis represents the years. The graph illustrates an increasing trend in prescription rates for Oxycodone, Methadone, Hydrocodone, Fentanyl, Morphine, Hydromorphone, Codeine, and Meperidine.
2 Major Public Health Crises

### Chronic Pain

- 126 million > 3 mo.
  - 25 million daily
  - 23 million disabling

**Leading burden of disease (WHO)**

- Lower back & neck pain
  - Afflicts 900 million
  - 95 Million YLD

**$635 Billion / year**

- Healthcare & disability

### Addiction (SUD)

- 20 Million with SUD
- 2 Million with OUD
- 600,000 Heroin users

**Overdose Deaths (2014)**

- 88,000 alcohol
- 47,000 (all drugs)
  - 28,647 Any opioid
  - 11,346 Rx opioids
  - 10,574 Heroin
  - 6,727 Synthetics

**$400 billion/ year**

- Crime, health, disability & social services

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Since 2012, 13% reduction in opioid prescriptions (at lower dose and lower pill counts)

[Decrease IR = 13% ER = 11%]
Carfentanil
Acetyl-fentanyl
Acryl-fentanyl
Butyr-fentanyl
Furanyl-fentanyl
MT-45
AH-7921
U-47700
W-18

Commonly Prescribed Opioids
(Natural & Semi-Synthetic Opioids and Methadone)

Other Synthetic Opioids
(e.g., fentanyl, tramadol)


https://www.cdc.gov/drugoverdose/images/data/opioid_deaths_multicolor.gif  Released 2/9/17
1. 75% have illicit Fentanyl; 50% have heroin in system at time of death
2. 8% have been prescribed an opioid in past month
Nonmedical Opioid Use

Nonmedical use is highly problematic

- Using drug in a way other than prescribed
  - Unsupervised use for different problem
    - Prevent pain, insomnia, anxiety, different pain
    - Seeking pleasure, euphoria, “high”
    - Different dose, different dosing interval
    - Manipulation to change route of administration
    - Drug not prescribed
- 40-81% self-medicate for pain
- 80% of heroin users started with nonmedical OUD
Existing Know-how: Pain Relieving Strategies

Stepped approach

Pre-emptive approaches

Multimodal treatments
  ◦ Address multiple physical pathways
  ◦ Address psychosocial aspects
  ◦ Consider active & passive approach
Gate Control Theory of Pain

How can a “shot” hurt worse than being shot?

Pain fiber activity “opens gate”

Activity of larger fibers “closes gate”

Spinal Gate

Thoughts, feelings, motivation

May open or close gate

Think, feel and respond to pain

Pain Signal Transmitter

Gate open

Addresses simple acute pain physiology; not complex chronic pain
Gain Control Model of Pain

Dampeners

Turn down the pain signal “volume,” facilitating activity, healing & Quality of Life

Amplifiers

Turn up the pain signal “volume,” inhibiting activity, healing & Quality of Life

Spiritual

Mind

Spinal

Tissue

Social

Gain Control: Tissue Level

Dampeners

- Stop tissue damage
- Homeostasis
  - Good circulation/O$_2$
  - Good nutrition
  - Activity/rest balance
  - Adequate sleep
- Positional support
- Muscle relaxation
- Low stress / eustress

Amplifiers*

- Ongoing tissue damage
- Inflammation/infection
  - TNF-$\alpha$, IL$^{1\beta,6}$, Ca$^{++}$
  - CGRP, Substance P
- Electrolyte imbalance
- Environmental extremes
- Hypoxia
- Muscle tension / spasm
- Sleep deprivation

*Partial list
Gain Control: Mind Level

Dampeners:
- Emotional stability
- Feel loved
- Self efficacy, optimistic
- Acceptance
- Realistic beliefs and expectations
- Mental distraction
- Pain & stress coping

Amplifiers:
- Emotional distress
- Anxiety, fear, depression…
- High or prolonged stress
- Unhelpful thoughts
- Catastrophizing
- Self doubts
- Helplessness, hopelessness
Gain Control: Social & Spiritual Level

**Dampeners**
- Socially engaged
- Essence unchanged
- Meaningful, pleasurable activities pursued
- Sense of purpose / Faith
- Sense of connection
- Effective communication
- Work, volunteering
- Energy flow balanced

**Amplifiers**
- Spiritual distress
- Lost connections
- Dire meaning
- Suffering
- Energy imbalance
- Socially isolated
- Relationship/role conflict
- Over-dependency
- Dysfunctional coping
Best Practices per Guidelines

Comprehensive assessment of pain & its impact
  ◦ Risk assessment of short-term/long term effects
Pre-emptive, multimodal analgesia (not opioid-only)
Educate patients for realistic expectations
  ◦ Need to balance benefits and potential risks
  ◦ Laws affecting opioid prescribing, dispensing, use & disposal
Benefits of learning & using non-drug relief methods
Need for vigilant monitoring
Ongoing risk-benefit analysis to continue therapy
Optimal Pain Management

Care is individualized
- Common language/terms
- Mutually agreed goals
- Treatment based on assessment & reassessment

Care is collaborative:
- Interdisciplinary in conjunction with patient & family

Pain assessment is consistent
- Across different shifts, disciplines and settings

Systematic reassessment & interventions evaluated
- Findings & plan are well documented
  - Assessment parameters, goals, outcome
Realistic Comfort/Function Goal

Eliminate or control cause of pain
Analgesics provide partial, temporary relief
  ◦ 50% < pain considered “good” for acute / cancer pain
  ◦ 30% < pain considered “good” for chronic pain

Balance desire for pain reduction with:
  ◦ Improved functioning (self care, participate in therapy)
  ◦ Avoidance of drug-related adverse effects
  ◦ Developing nondrug skills to better cope with pain

Goals should be SMART*, both daily & long-term

* SMART = Specific, Measurable, Attainable, Relevant & Time-bound
Strategies Differ based on Pain Type

Acute, Transient Pain
- Pre-emptive ~ intermittent if mild/episodic
- Pain reduction > 50%
- Prevent, monitor, treat side effects
- Optimum functioning for healing

Persistent Pain (chronic disease model)
- Realistic pain reduction expectation (30%)
- Functioning, self-management & coping despite pain
- Emotional stability and QOL

Pain at the end of life
Best Practice Guidelines

Assess pain & mental health/SUD risk

Treat with analgesics & adjuvant
- Base on prior experience / pharmacology
  - Requires regular dosing for opioid dependent
  - Limit dose escalation (<200mg/day) & concurrent Benzodiazepine
  - Avoid problem-prone drugs
- Anticipate, recognize & treat side effects

Monitor closely, tailor to responses

Attend to psychosocial concerns & aberrant behaviors

Nondrug, interventional/specialty care prn
E.R.A.S. Protocols

Preoperative preparation
- Nutrition, Exercise
- Learn non-drug pain management approaches
- Taper opioid to lowest tolerated dose if applicable

Initiate Perioperative Multimodal Approaches
- Local Anesthetics, Acetaminophen, Coxib or NSAID, Ketamine &/or gabapentinoid
- Carbohydrate loading up to 2 hours prior to induction; optimize fluid balance
- PONV prophylaxis (e.g., corticosteroids, scopolamine, odansetron, 5HT-3)

Scheduled non-opioid ATC (until 7 days post-op) + non-drug comfort measures
- Opioid prn, oral route ASAP
- Early mobilization & gut wake-up
- Avoid sedatives, treat side effects
- Patient / Family education
Best Practices Chronic Opioid Therapy

Risk stratified care
- Informed consent & treatment agreements
- Frequent re-evaluation, including adherence
  - e.g. Urine drug screens, pill counts, State monitoring
- Base on prior experience / pharmacology
  - Requires regular dosing for opioid dependent
  - Limit dose (≤200mg/day) & duration of opioid Rx (as possible)
- Anticipate, recognize & treat side effects

Tailor to bio-psychosocial needs/responses

Nondrug, interventional/specialty care prn


Multi-modal therapy balances concerns by selecting:

A combination of different interventions to treat pain (drug & nondrug)

Use low doses of different drug classes for combined and synergistic effects to:

- Target different mechanisms of pain
- Lower amplifiers of pain and side effects
- Lower end-organ toxicity

Multimodal Therapy

Therapeutic communication/use of self, prayer, rituals, pet therapy, support groups, Complementary Integrative Medicine

Coping strategies, relaxation/imagery; patient/family education & counseling

Reduce extraneous stimuli; stimulation (proximal, distal, contra-lateral), positional alignment, physical therapy, graded activity

Heat, cold, position, orthotics, exercise, massage, wound support, TENS, compression, rehabilitation

Cause-directed interventions

- Acetaminophen
- Opioids
- Alpha2 agonists
- Ketamine
- Ca++ channel α2-δ ligand
- Local Anesthetics
- Capsaicin (chronic use)
- Steroid / NSAIDs / Cox-2

Local anesthetics: Spinal, Epidural, Intravenous

Descending modulation

Ascending input

Dorsal horn

Dorsal root ganglion

Pain

Peripheral nerve

Spinothalamic tract

Peripheral nociceptors

Trauma
Acetaminophen (APAP)

- First-line analgesic for older adults
  - Especially mild - moderate musculoskeletal pain
- Less effective than NSAIDs for inflammatory pain
- Ineffective for chronic low back pain and arthritis
- Inadvertent exposure common
  - Co-ingredient in many common OTC drugs
  - (fever, cough/cold, headache, etc)
  - Co-analgesic in many pain relievers
  - Dose caps implemented by FDA helped

NSAIDs Help But May Be Toxic

#1 prescribed drug class in world
Effective for many pains; & synergistic with acetaminophen
Causes 3300 deaths; 41,000 hospitalizations/yr

Ibuprofen or Celecoxib ~ have best efficacy & GI safety

- Diclofenac sodium & naproxen (doubles) risk
- Piroxicam, indomethacin, ketorolac >4X GI risk

Can worsen hypertension, CHF, renal disease

- Naproxen (880mg/d) or low dose (200mg/d) celecoxib best

With cancer ~mask fever or predispose to bleeding

<table>
<thead>
<tr>
<th>Drug (Daily Max)</th>
<th>Recommended Starting Dose</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaminophen (3,000-4,000mg)</td>
<td>500-1000mg q4-6h</td>
<td>↓ 50-75% with liver co-morbidity</td>
</tr>
<tr>
<td>Celecoxib (200mg)</td>
<td>100-200mg daily</td>
<td>Gastroprotection if ASA used</td>
</tr>
<tr>
<td>Naproxen (1,500mg)</td>
<td>250mg q8-12h</td>
<td>500mg load. Less cardiotoxic, more GI effects (protect).</td>
</tr>
<tr>
<td>Ibuprofen (3,200mg)</td>
<td>400-600mg tid</td>
<td>Avoid w/ cardioprotective ASA. Takes a week for best effect. Gastroprotection ≥ 1800mg/d</td>
</tr>
<tr>
<td>Nabumetone (2Gm)</td>
<td>500-750mg q8h</td>
<td>1Gm Load. Long half life; little platelet effect. Less GI effects</td>
</tr>
<tr>
<td>Salsalate (2Gm)</td>
<td>1-1.5Gm q12h</td>
<td>Dosed once or twice daily. Takes 3-4 days for best effect</td>
</tr>
</tbody>
</table>
Topical NSAIDs

Higher concentration @ target tissue
Lower concentration distant areas
High level patient acceptance
Better when pain is localized
Less GI & CV side effects than oral
  ◦ More likely in patients with Hx GI side effects
  ◦ Dry skin in 25% of patients

Safe NSAID Use: Longer-Term

Avoid long-term use with risk factors

- Over age 70
- Co-morbid GI, renal, hypertension, cardiac, hepatic states
- Drug-drug interactions (e.g. NSAIDS, Steroids, anticoagulants)

Gastroprotection with PPIs (e.g. omeprazole)

Warn patient about hidden OTC sources of Non-opioids

- Especially Acetaminophen, (not a true NSAID)
  - No more than 2 Gm Acetaminophen/day with liver risk
  - No more than 4 Gm Acetaminophen/day with liver risk

Limit duration of indomethecin or ketorolac

Baseline & periodic monitoring of risk/complications

- GI, Renal, Blood counts, BP, skin, cognition
# Opioid Starting Doses*

*(in opioid naïve patients)**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Oral</th>
<th>Parenteral</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morphine</td>
<td>15mg</td>
<td>2.5 - 5mg</td>
<td>Women tend to need higher doses for same effect. Avoid with renal dysfunction (M3G).</td>
</tr>
<tr>
<td>Oxycodone</td>
<td>7.5mg</td>
<td>NA</td>
<td>Oxycodone has longer duration than morphine. CYP 2D6 &amp; 3A4</td>
</tr>
<tr>
<td>Hydrocodone</td>
<td>10mg</td>
<td>NA</td>
<td>Watch co-analgesic dose. CYP 2D6 &amp; 3A4 metabolism, drugs or food may affect response</td>
</tr>
<tr>
<td>Hydromorphone</td>
<td>2mg</td>
<td>0.5mg</td>
<td>Significantly more potent than morphine with quick onset and shorter duration of action</td>
</tr>
<tr>
<td>Tramadol</td>
<td>50mg</td>
<td>NA</td>
<td>Lowers seizure threshold. 200-400mg/day maximum. Risk of serotonin syndrome</td>
</tr>
</tbody>
</table>

* Doses not equipotent  ** Start with 25-50% lower dose in older adult
Opioid titration/tapering

Based on frequent re-assessments (4-A’s)
  ◦ Analgesia, Activity, Adverse effects, Aberrancy

Change dose based on response
  ◦ 10% when small adjustment needed
  ◦ 25% when expedient adjustment needed
  ◦ 50% when rapid adjustment needed

Titrate/taper bolus doses can be incrementally

Adjust the dosing interval

Adjust continuous infusions daily if used


Patient is Opioids Tolerant if,

Take at least 1 of the following daily for > 1 week

- 60mg oral morphine/day
  - 20mg IV Morphine per day
- 25mcg/hr TD Fentanyl
  - 600mcg IV Fentanyl/day
- 30mg oral oxycodone /day
- 8mg oral hydromorphone/day
  - 1.6mg IV Hydromorphone (Dilaudid)/day
- 25mg oral oxymorphone (Opana) /day
  - 2.5mg IV Oxymorphone/day
- Equianalgesic dose of other opioid

Opioid Naïve definition: No exposure to opioids for greater than 3 months
Medical Marijuana

Legal in 28 States and Washington DC
- 16 States allow Cannabidiol (CBD) for medical use
- 7 States and Washington DC permit recreational use

Research appears to support
- CBD effective against neuropathic/chronic pain and seizures
- THC reduces nausea/vomiting and improves appetite
- Cannabis helps MS spasticity; Tourette’s; PTSD
- CBD low SEB; THC high SEB

Potential Harms
- Unintentional injury (MVC), COPD, Testicular germ cell tumor, pediatric OD
- Learning, memory, performance-related impairment
- Psychosis, schizophrenia (especially with use < age 18), worsens bipolar disorder

Schedule I

# Approaches to refractory pain

Relative success in treating Neuropathic Pain / NNT

<table>
<thead>
<tr>
<th>Approach</th>
<th>NNT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opioids</td>
<td>2.7</td>
</tr>
<tr>
<td>Gabapentin/Pregabalin</td>
<td>3.2</td>
</tr>
<tr>
<td>TCA / SSNRI</td>
<td>4</td>
</tr>
<tr>
<td>Lidoderm 5%</td>
<td>4.4</td>
</tr>
<tr>
<td>Capsaicin</td>
<td>5.3</td>
</tr>
</tbody>
</table>

Anticonvulsants (Neuropathic Pain)

Gabapentin commonly used
- Favorable safety profile & positive RCTs in PHN/PDN
- Usual effective dose: 1200–3600 mg/d ~ higher

Pregablin equally effective, better tolerated

Analgesic effects established for other AEDs
- Phenytoin, Carbamazepine, Valproate,
- Oxcarbazepine (Trileptal), Lamotrigine (Lamictal)

Limited experience with other drugs

CNS depressant effect

Renal dosing adjustments as indicated
Antidepressants

Best evidence: $3^0$ amine TCAs (eg, amitriptyline)

$2^0$ amine TCAs (desipramine, nortriptyline) similar <$SE$

SSNRIs growing evidence of efficacy
  ◦ Duloxetine (Cymbalta), Vanlafaxine (Effexor), Savella (milnacipran)

Atypical antidepressants ~ tried
  ◦ Trazodone (Desyrel), Bupropion (Wellbutrin)

SSRI ~help underlying mood disorder (not pain)
  ◦ Paroxetine (Paxil), Fluoxetine (Prozac)
Local Anesthetic: Lidocaine

Topical

◦ EMLA
◦ LMX
◦ J-Tip
◦ Lidocaine 5% patch
◦ Skin reaction most common problem

IV Lidocaine for neuropathic pain

◦ Loading dose/bolus dose by Pain Service
◦ 1 mg/kg/hr to 4 mg/kg/hr titration for effect
◦ Monitor for neurologic and CV side effects
Capsaicin

Topical OTC version (0.25 – 0.075%)

Qutenza 8%

- Applied for ≤1 hour (up to 3 patches)
  - Very painful so area needs to be anesthetized
  - Monitoring and analgesia needed before and after application
  - Apply Cleansing Gel for a minute, then wipe dry
  - Skin will be sensitive for a few days to heat.
  - Approved for post-herpetic neuralgia (intact skin)
# Better choice adjuvants

<table>
<thead>
<tr>
<th>Drug</th>
<th>Recommended Starting Dose</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gabapentin (3,600mg/d)</td>
<td>100-300mg HS</td>
<td>Titrate q3-7 days. Renal dosing. Effect 2 weeks @ top dose</td>
</tr>
<tr>
<td>Prebabalin (600mg)</td>
<td>75mg BID</td>
<td>Titrate q3-7 days. Renal dosing. Seizure risk sudden withdrawal</td>
</tr>
<tr>
<td>Nortriptyline (150mg)</td>
<td>10-25mg HS</td>
<td>Risk for anticholinergic side effects (less than amitriptyline)</td>
</tr>
<tr>
<td>Duloxetine (60-120mg/d)</td>
<td>20-30mg Daily</td>
<td>Titrate weekly. Less toxic than TCS. Drug interactions, suicide</td>
</tr>
<tr>
<td>Tizanidine (32Gm)</td>
<td>2mg q6h</td>
<td>Titrate Q1-4 days. Sedation &amp; hypotension effects ~ drug interaction. Taper</td>
</tr>
</tbody>
</table>
Cause Directed Adjuncts

Muscle relaxants
- Tizanidine (Zanaflex)
- Botulinum Toxin type A (BOTOX, Myobloc)
- Antispasmodics
  - For Smooth Muscle (e.g. GI / GU spasms)
  - For Skeletal Muscle (e.g. Baclofen [Lioresal])

Caffeine

Serotonin receptor agonist
Teach Patients

Medication ~ necessary but alone is insufficient
Use the right drug for right discomforts in right way
  ◦ Analgesics: lowest dose, shortest time
  ◦ Adjuvants, Give adequate trial
Avoid interactions;
  ◦ 1 prescriber – 1 pharmacy
  ◦ Know foods, drugs, herbs, alcohol that can interact  [http://healthtools.aarp.org/drug-interaction](http://healthtools.aarp.org/drug-interaction)
With opioids
  ◦ Always use opioid sparing methods to limit adverse effects
  ◦ Always be concerned about safe storage, safe use, safe disposal
  ◦ Never sell or give opioids to another person
Rx Opioid Disposal

New “Disposal Act” expands ways for patients to dispose of unwanted/expired opioids

Decrees amount of opioids introduced into the environment, particularly into water

Collection receptacles
Call DEA Registration Call Center at 1-800-882-9539 to find a local collection receptacle

Mail-back packages
Obtained from authorized collectors

Local take-back events
• Conducted by Federal, State, tribal, or local law enforcement
• Partnering w/ community groups

Voluntarily maintained by:
• Law enforcement
• Authorized collectors, including:
  § Manufacturer
  § Distributer
  § Reverse distributor
  § Retail or hospital/clinic pharmacy
    • Including long-term care facilities

DEA National Prescription Drug Take-Back Days

Spectrum of Pain Relief Options

<table>
<thead>
<tr>
<th>Spectrum of Pain Relief Options:</th>
<th>Treatment Targets (Evaluate effectiveness)</th>
<th>Professional-monitored or “High-tech” Approaches</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-monitored or “Low-tech” Approaches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Massage, rubbing</td>
<td>Medications:</td>
<td>Physical Therapy (acupuncture)</td>
</tr>
<tr>
<td>Moist heat</td>
<td>NMDs;</td>
<td>Electric stimulation (TENS)</td>
</tr>
<tr>
<td>Application: ice</td>
<td>TENS, TENS (TENS)</td>
<td>Specialized massage techniques</td>
</tr>
<tr>
<td>Positioning</td>
<td>Capsaicin or mustard cream</td>
<td>Trigger Point injections</td>
</tr>
<tr>
<td>Braces, catheters, compression</td>
<td>Local Anesthetics</td>
<td>Low-level Laser therapy</td>
</tr>
<tr>
<td>Tensile strain, cause of pain</td>
<td></td>
<td>Surgery</td>
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<tr>
<td>Region of Pain &amp; Spinal Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduce local irritation</td>
<td>Medications:</td>
<td>Nerve blocks</td>
</tr>
<tr>
<td>Counter-irritant stimulation</td>
<td>Capsaicin</td>
<td>Cryotherapy, Radiofrequency</td>
</tr>
<tr>
<td>Prolonged local stimulation</td>
<td>Nociceptor Quanti (gels)</td>
<td>Percutaneous nerve blocks</td>
</tr>
<tr>
<td></td>
<td>Antidepressants</td>
<td>Peripheral Nerve Stimulation</td>
</tr>
<tr>
<td></td>
<td>Reduce nerve inflammation</td>
<td>Spinal Cord Stimulation</td>
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<td></td>
<td>Mucosa release (transaxial)</td>
<td>Psychological Stimulation</td>
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<td>Physical manipulation, traction</td>
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<tr>
<td>Whole Body</td>
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<tr>
<td>Diet, nutritional supplements</td>
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<td>Acupuncture, Acupressure</td>
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<tr>
<td>Exercise, pacing activities</td>
<td></td>
<td>Waste Management</td>
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<tr>
<td>Herbal or Aroma Therapy</td>
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<td>Functional Restoration</td>
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<tr>
<td>Breathing techniques</td>
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<td>Multidisciplinary Rehabilitation</td>
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<td>Yoga, Tai Chi</td>
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<tr>
<td>Brain or Mind-Body Focused</td>
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<tr>
<td>Relaxation, imagery, hypnosis</td>
<td>Medications:</td>
<td>Biofeedback training</td>
</tr>
<tr>
<td>Knowledge about condition</td>
<td>Capsaicin</td>
<td>Counseling</td>
</tr>
<tr>
<td>Motivational, distraction</td>
<td>Nociceptor Quanti (gels)</td>
<td>Electroconvulsive therapy</td>
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<tr>
<td>Journal writing</td>
<td>Antidepressants</td>
<td>Deep Brain Stimulation</td>
</tr>
<tr>
<td>Change thinking, attitudes</td>
<td>Other to analgesics</td>
<td>Cognitive-Behavioral Therapy</td>
</tr>
<tr>
<td>Reduce fear, anxiety, stress</td>
<td></td>
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<tr>
<td>Reduce sadness, apathy</td>
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<tr>
<td>Spiritual or Energy-Focused</td>
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<tr>
<td>Prayer, meditation</td>
<td></td>
<td>Spiritual Healing</td>
</tr>
<tr>
<td>SaD-appraisal, re-ignite pain</td>
<td></td>
<td>Magnetic Therapy</td>
</tr>
<tr>
<td>Meaningful rituals</td>
<td></td>
<td>Homopathic remedies</td>
</tr>
<tr>
<td>Energy vouch (e.g. T.I, reiki)</td>
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# Spectrum of Pain Relief Options

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<th>Self-initiated or “Low-tech” Approaches</th>
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<th>Professional-initiated or “High-tech” Approaches</th>
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</thead>
<tbody>
<tr>
<td><strong>Immediate Area of Pain:</strong></td>
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<td></td>
</tr>
<tr>
<td>Massage, rubbing</td>
<td>Medications:</td>
<td>Physical Therapy (modalities)</td>
</tr>
<tr>
<td>Moist heat</td>
<td>NSAIDs</td>
<td>Electric stimulation (TENS)</td>
</tr>
<tr>
<td>Application ice</td>
<td>Treat cause (e.g. headache)</td>
<td>Specialize massage techniques</td>
</tr>
<tr>
<td>Positioning</td>
<td>Capsaicin or menthol cream</td>
<td>Trigger Point Injections</td>
</tr>
<tr>
<td>Braces, orthotics, compression</td>
<td>Local Anesthetics</td>
<td>Low level Laser therapy</td>
</tr>
<tr>
<td>Remove source, cause of pain</td>
<td></td>
<td>Surgery</td>
</tr>
<tr>
<td><strong>Region of Pain &amp; Spinal level</strong></td>
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</tr>
<tr>
<td>Reduce local irritation</td>
<td>Medications:</td>
<td>Nerve Blocks (sensory, autonomic)</td>
</tr>
<tr>
<td>Contra-lateral stimulation</td>
<td>Opioids,</td>
<td>Cryotherapy, Radiofrequency</td>
</tr>
<tr>
<td>Proximal/distal stimulation</td>
<td>Anticonvulsant (gabapentin)</td>
<td>Prolotherapy (sugar injected in tendons)</td>
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<tr>
<td></td>
<td>Antidepressants</td>
<td>Peripheral Nerve Stimulation</td>
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<tr>
<td></td>
<td>Reduce nerve inflammation</td>
<td>Spinal Cord Stimulation</td>
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<tr>
<td></td>
<td>Muscle relaxers (tizanidine)</td>
<td>Epidural / spinal analgesia</td>
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<td>Physical manipulation, traction</td>
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<td>Whole Body</td>
<td>Diet, nutritional supplements</td>
<td>Acupuncture, Acupressure</td>
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<td>Exercise, pacing activities</td>
<td>Work Hardening</td>
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<td></td>
<td>Herbal or Aroma Therapy,</td>
<td>Functional Restoration</td>
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<tr>
<td></td>
<td>Breathing techniques</td>
<td>Multidisciplinary Rehabilitation</td>
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<tr>
<td></td>
<td>Yoga, Tai Chi</td>
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<tr>
<td>Brain or Mind-Body Focused</td>
<td>Relaxation, imagery, hypnosis</td>
<td>Medications</td>
<td>Biofeedback training</td>
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<tr>
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<td>Knowledge about condition</td>
<td>Opioids,</td>
<td>Counseling</td>
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<td>Music, distraction</td>
<td>Anticonvulsants</td>
<td>Electroconvulsive therapy</td>
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<td>Journal writing</td>
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<td>Deep-Brain Stimulation</td>
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<td>Change thinking, attitudes</td>
<td>Other co analgesics</td>
<td>Cognitive-Behavioral Therapy</td>
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<td>Reduce fear, anxiety, stress</td>
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<td>Reduce sadness, helplessness</td>
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<td>Spiritual Healing</td>
<td>Magnetic Therapy</td>
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<td>Prayer, meditation</td>
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<td>Homeopathic remedies</td>
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<tr>
<td>Self-reflection, re: life / pain</td>
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<td>Meaningful rituals</td>
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Developed by Paul Arnstein at MGH  pmarnstein@partners.org  
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General Domains of CIM

∞ Natural Products
  - Herbs (botanicals), vitamins and minerals, and probiotics.

∞ Mind and Body Practices
  - Chiropractic, Physical Therapy; and osteopathic manipulation,
  - Yoga, & meditation,
  - Massage therapies (most popular mind / body practices)
  - Energy Therapies

∞ Traditional healers,
  - Ayurvedic medicine, traditional Chinese medicine,
  - Homeopathy, and naturopathy
Most patients will need more than one tool to relieve pain

Pharmacological and non-drug methods

Active and passive \((1 + 1 = 3)\)

Simultaneously targeting:

- Body
- Mind
- Spirit
- Social interactions

Treat Known amplifiers
We Must Work Together to Stop the Pendulum Swing Away from Effective Pain Control!

Thank you for your Commitment to Effective Pain Care