

The Military and Osteopathy

Jodie Hermann, DO, FACOI, FACP, MBA

October 2019

OMED

Disclosures

- There are no financial or affiliation disclosures.
- I work at the University of New England College of Osteopathic Medicine.

Jodie Hermann, DO, FACOI, FACP, MBA

- Dually Board Certified:
 - Internal Medicine
 - Neuromusculoskeletal Medicine
- Fellowship:
 - Integrative Medicine
- Chair, Osteopathic Manipulative Medicine
 - University of New England College of Osteopathic Medicine
- Hospitalist
 - Maine General Medical Center, Augusta, Maine
- Sports Medicine Team Physician
 - University of New England, Biddeford, Maine

Objectives

- A. T. Still
- Tenets of Osteopathic Medicine
- 5 Models of Osteopathic Medicine
- Opioids
- Pain and the Military
- Pain Pathway
- Osteopathy and Pain
- Settings: Battlefield, clinic, anywhere
- Osteopathy and Alternative Medicine
- Military and Osteopathic Medicine

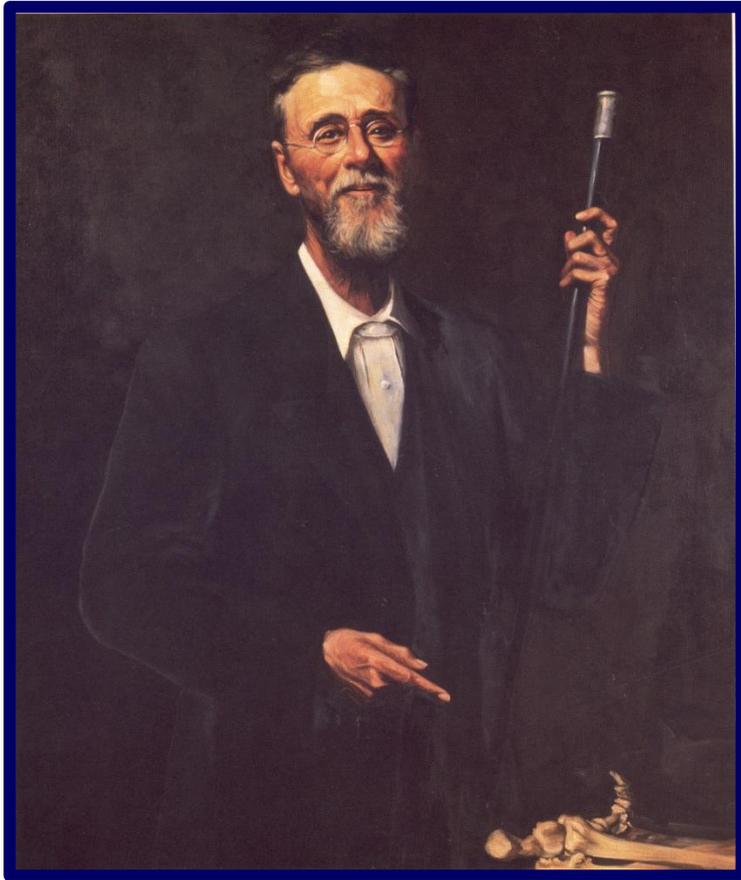
19th century medicine

- American medical training lagged far behind it's European counterpart
 - Disorganized at best; highly variable healing traditions
 - “Regular” (Allopathic medicine)
 - “Heroic Therapies”
 - Bleeding, purging, blistering
 - Arsenic, mercury, belladonna
 - Homeopathy, Botanical Medicine, Phrenology, Mysticism, Spiritual Medicine, Indigenous healers, etc.

Birth of 19th Century Intellectualism

- Movement toward holism
 - Phrenology was a seminal science
 - Science of the mind
 - Body and mind are part of the universe and thus subject to universal laws
 - Following these laws through knowledge and management can optimize mental and physical health
 - Evolution, Physiology, Anatomy, Neurology
 - Literature, philosophy, economics

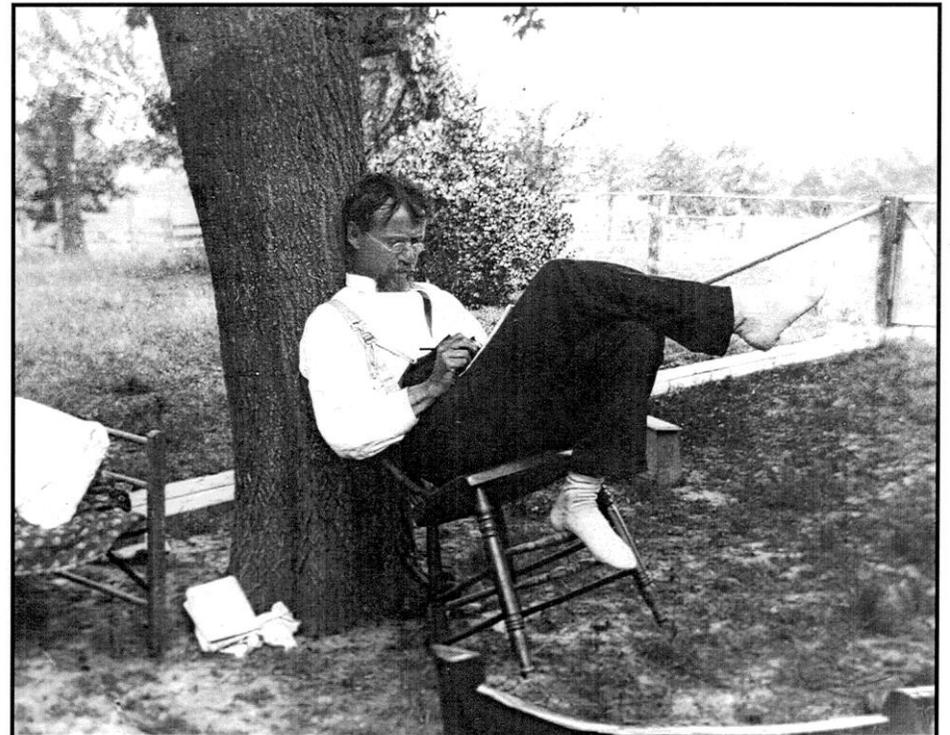
Osteopathic History



- Andrew Taylor Still, MD
 - Born August 6, 1828 in Jonesboro, Virginia
 - Apprenticed father, a physician and Methodist minister
 - MD, Kansas City School of Physicians and Surgeons
 - Surgeon and Major, Union Army during Civil War

1864 – AT. Still

- Whole family sick with meningitis
 - Physicians unable to help with heroic medicine
 - Three children died
 - Faith in regular medicine shaken forever



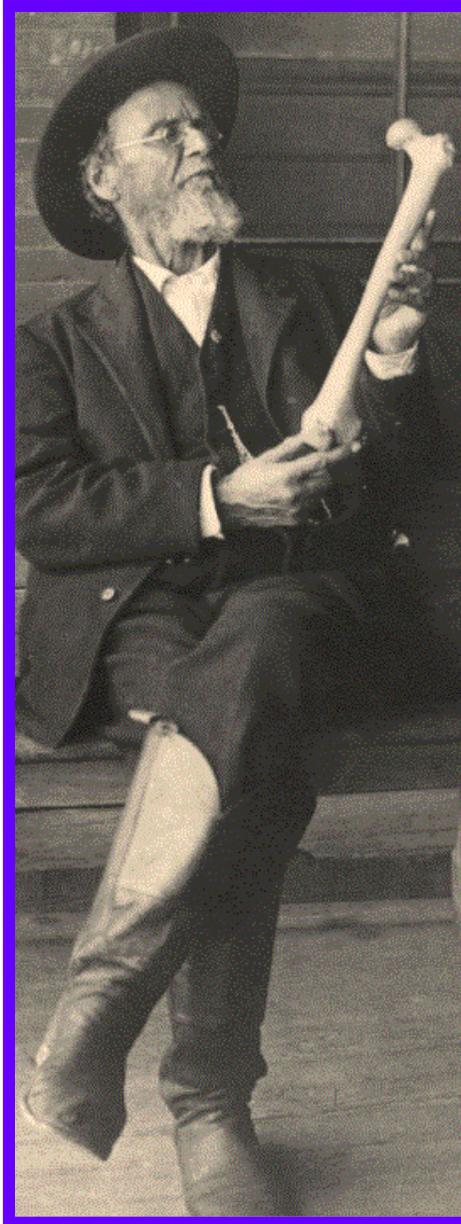
Why Osteopathy?

Environment

- Dissatisfaction with “regular” medicine
- Intellectual shift toward holism
- Scientific milieu fostered reform

Dr. Still

- “Cure” often worse than “illness”
- Medicine is “disease based” not “health based”



The object of the
physician is to
find health, any
fool can find
disease.

Early Osteopathy

- Anatomy, anatomy, anatomy
- “To know a bone in its entirety would close both ends of eternity”
- “You must begin with anatomy, and end with anatomy, a knowledge of anatomy is all you want or need”

Early Osteopathy

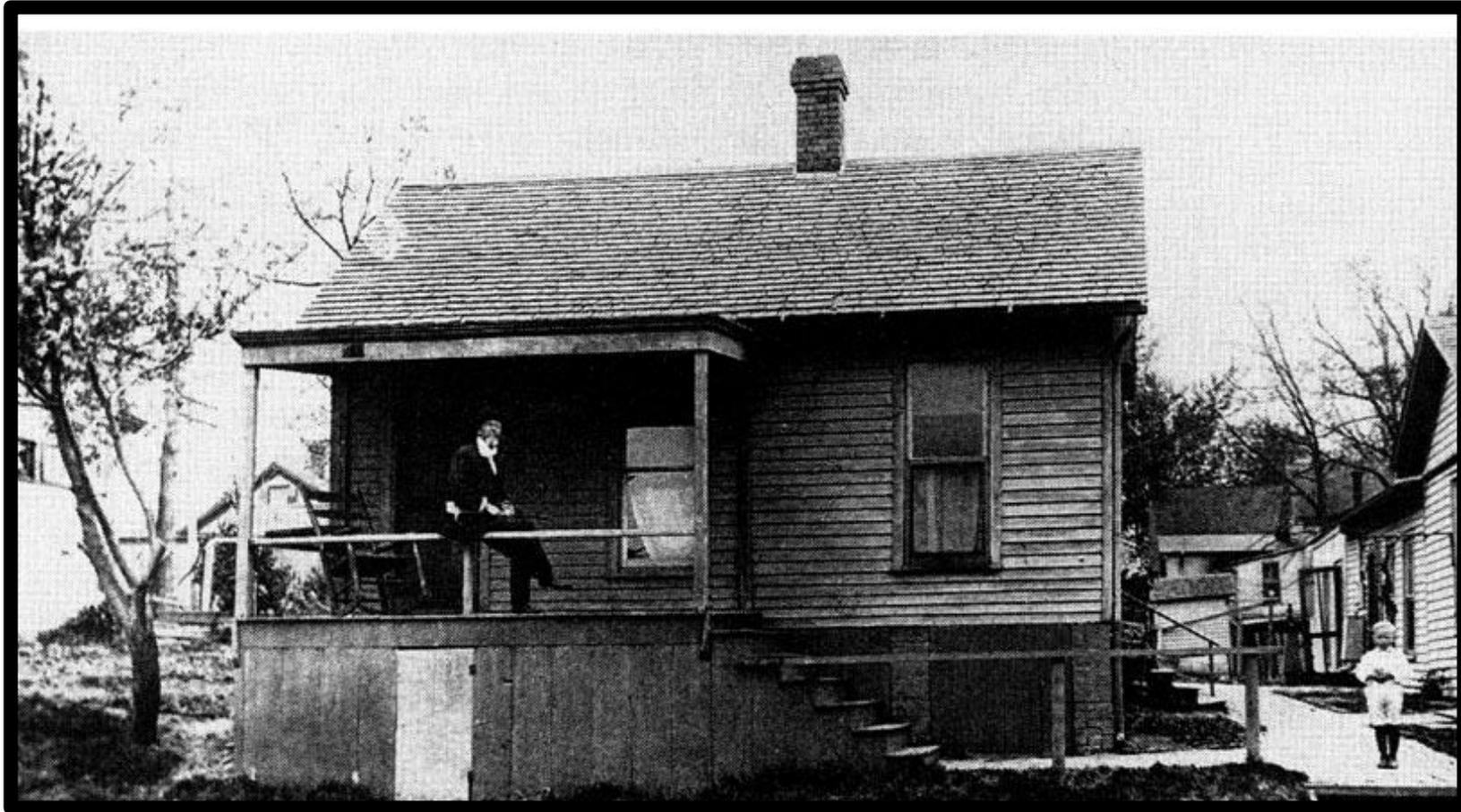
- Anatomy, anatomy, anatomy
- “The artery is a river of life, health, and ease, and if muddy or impure disease follows.”
- “The rule of the artery must be absolute, universal and unobstructed, or disease will result.”

Osteopathic Tenets

The Tenets of Osteopathic Medicine express the underlying philosophy of *Osteopathic Principles and Practice (OPP)* and were approved by the AOA House of Delegates as policy.

- The body is a unit of mind, body and spirit.
- The body is capable of self-regulation, self-healing and health maintenance.
- Structure and function are reciprocally interrelated.
- Rational treatment is based upon an understanding of the basic principles of body unity, self-regulation and the interrelationship of structure and function.

1892: American School of Osteopathy



- Started in a small house with his own savings
- 18 students, 5 women
- Johns Hopkins started the next year with a \$7 million grant



Women made up 20% of the first DO class vs. 5% in MD schools

Osteopathic Medicine

- 38 accredited COMs, in 59 locations
- 25% of medical students are future DOs
- >145,00 osteopathic physicians and students (2018)



5 Osteopathic Pathophysiological Models

Academy of Osteopathy

- Assessing patient functioning, assessment and care central to OPP
 - Biomechanical-Structural
 - Respiratory-Circulatory
 - Neurological
 - Metabolic-Nutritional
 - Behavioral- Biopsychosocial

5 Osteopathic Pathophysiological Models

The Bioenergetic Model in Osteopathic Diagnosis and Treatment: An FAAO Thesis, Part 1 Jan T. Hendryx, DO, FAAO

Biomechanical- Structural

Primarily from a structural perspective. Emphasize anatomy: muscles, spine and extremities; posture and motion.

OMT directed to normalizing biomechanical somatic dysfunctions (joints, myofascia), thus restoring normal structural integrity, physiological functioning, adaptive potential and homeostasis.

OMT to normalize biomechanics include high-velocity low amplitude thrusting, muscle energy, counterstrain, ligamentous articular strain, myofascial release, facilitated positional release and Still technique.

Respiratory-Circulatory

Emphasizes normalization of pulmonary, cardiovascular, and circulation of fluids (blood, lymph, cerebrospinal fluid).

Horizontal diaphragms (tentorium cerebelli, respiratory, pelvic), thoracic inlet, thoracic cage, extracellular matrix, lymphatics and viscera (heart, lungs, kidneys) are important anatomical structures addressed.

Osteopathy in the cranial field, cervical, thoracic and rib mobilization, lymphatic drainage, respiratory diaphragm myofascial release, and visceral osteopathic manipulative techniques are helpful in restoring health. The Bioenergetic Model in Osteopathic Diagnosis and Treatment in combination with medications, surgery, intravenous fluids and even ventilation as appropriate.

5 Osteopathic Pathophysiological Models

The Bioenergetic Model in Osteopathic Diagnosis and Treatment: An FAAO Thesis, Part 1 Jan T. Hendryx, DO, FAAO

Neurological

Peripheral, autonomic and central nervous system

Control, coordinate and integrate body functions. Proprioceptive reflex and muscle strength imbalances, spinal segmental facilitation, nerve compression and entrapment disorders, autonomic reflexes and visceral dysfunctions, nociceptive influences and brain dysfunctions are common problems.

Manipulative treatment may include osteopathy in the cranial field, Chapman reflexes, rib raising, counterstrain, muscle energy, neural release and inhibition. Exercise therapy, including proprioceptive balance training, stretching and strengthening.

Appropriate neurological evaluation, referral, surgery and medications may be appropriate in patient management.

Metabolic-Nutritional

Maximizing the efficiency of the patient's natural self-regulatory and self-healing mechanisms.

Homeostatic adaptive responses are orchestrated through positive and negative feedback systems to regulate various forms of energy exchange and conservation that occur through metabolic processes and organ functioning. The neuroendocrine-immune system and all internal organs are the focus.

Lifestyle changes such as appropriate exercise, nutritional counseling and stress reduction are primary therapeutic modalities, as are appropriate use of medications. Osteopathic manipulative treatment includes lymphatic pump and visceral techniques.

5 Osteopathic Pathophysiological Models

The Bioenergetic Model in Osteopathic Diagnosis and Treatment: An FAAO Thesis, Part 1 Jan T. Hendryx, DO, FAAO

Behavioral- Biopsychosocial

Addresses a patient's mental, emotional, social and spiritual dimensions in relationship to health and disease. Mind-body interactions can have a huge influence on a patient's wellbeing and functioning in society.

Depression, anxiety, stress, habits, addictions and numerous other conditions must be addressed appropriately, often in conjunction with medications, psychiatry or psychotherapies, stress reduction, meditation, and support groups.

Military and Osteopathic Medicine

- AT Still
 - MD, Kansas City School of Physicians and Surgeons
 - Surgeon and Major,
Union Army during Civil War
- Found that being an MD lacked resource and applicability on the battle field.
- His resourcefulness of utilizing principles of OPP and OMM were very helpful in any setting.

US Opioid use

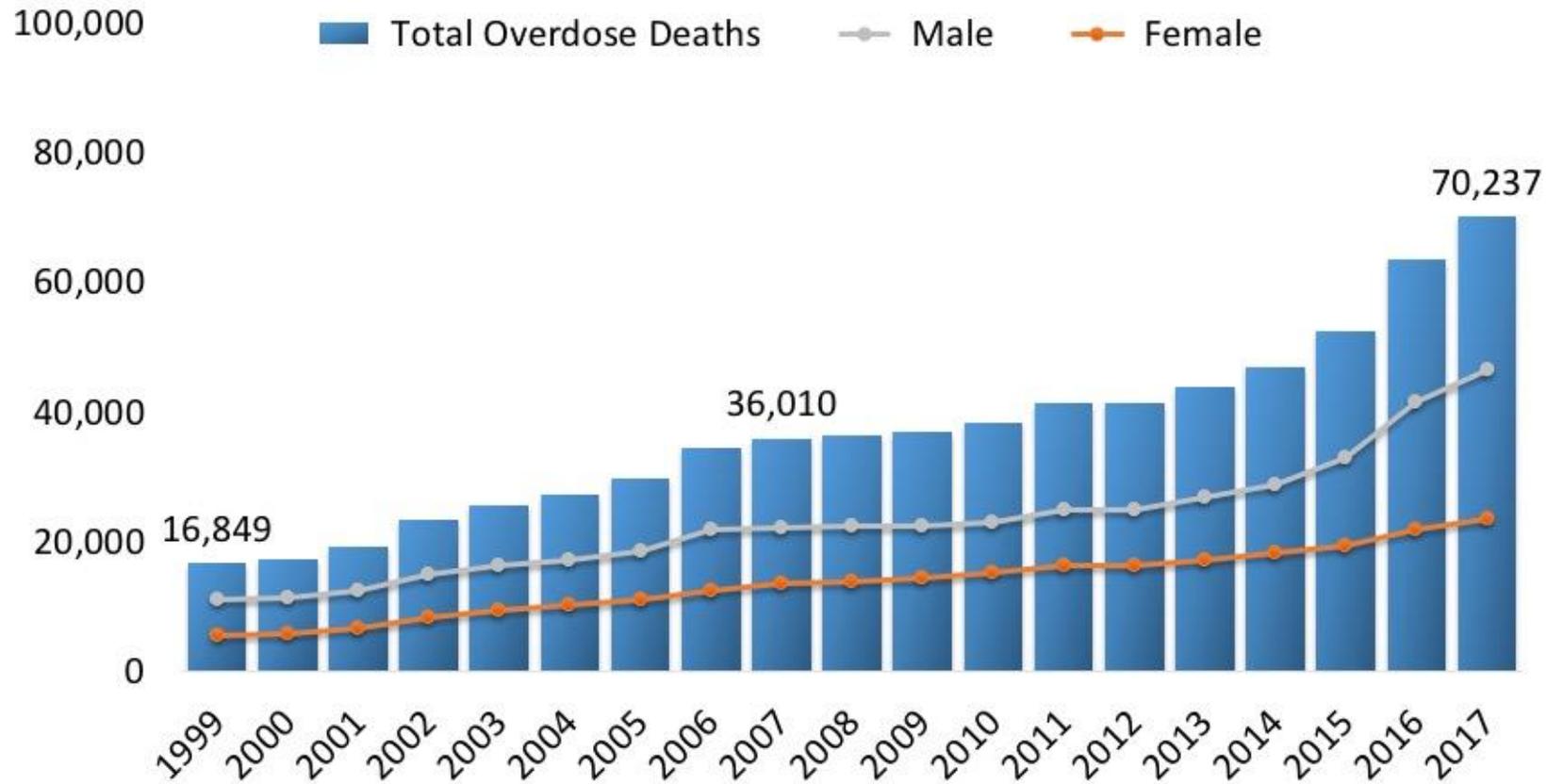
<https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates>

- 2 Million US people diagnosis of substance abuse disorder
 - Rx opioids
- Deaths due to opioid OD (Rx and illicit), Most common age: 18-25
 - 2010: 21,000 deaths
 - 2016: 42,000 deaths
 - 2017: 70,200 deaths

- Military 1:4 have opioid Rx in any given year in all services.

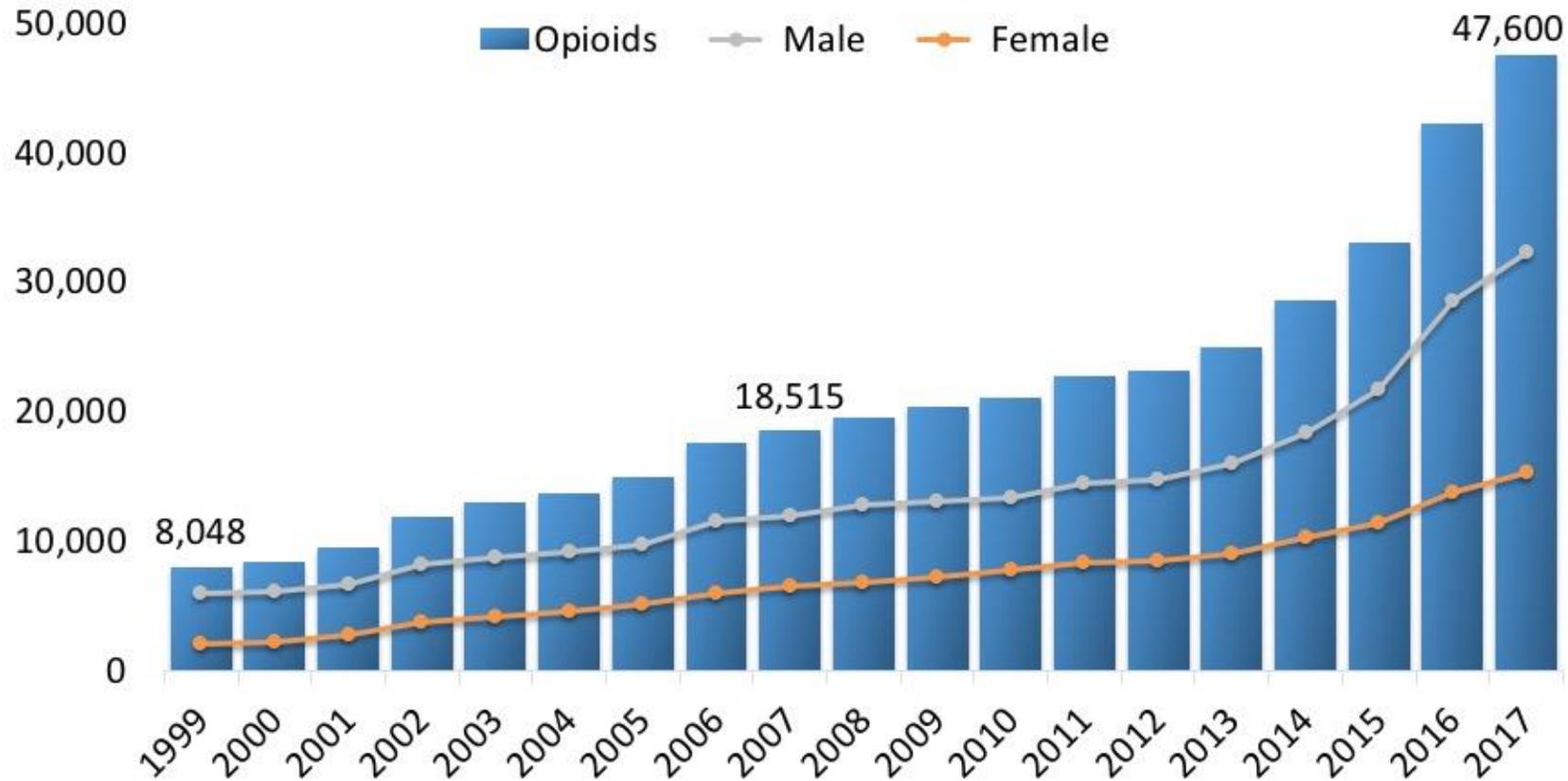
<https://pcssnow.org/resource/opioid-abuse-u-s-military/>

Figure 1. National Drug Overdose Deaths Number Among All Ages, by Gender, 1999-2017



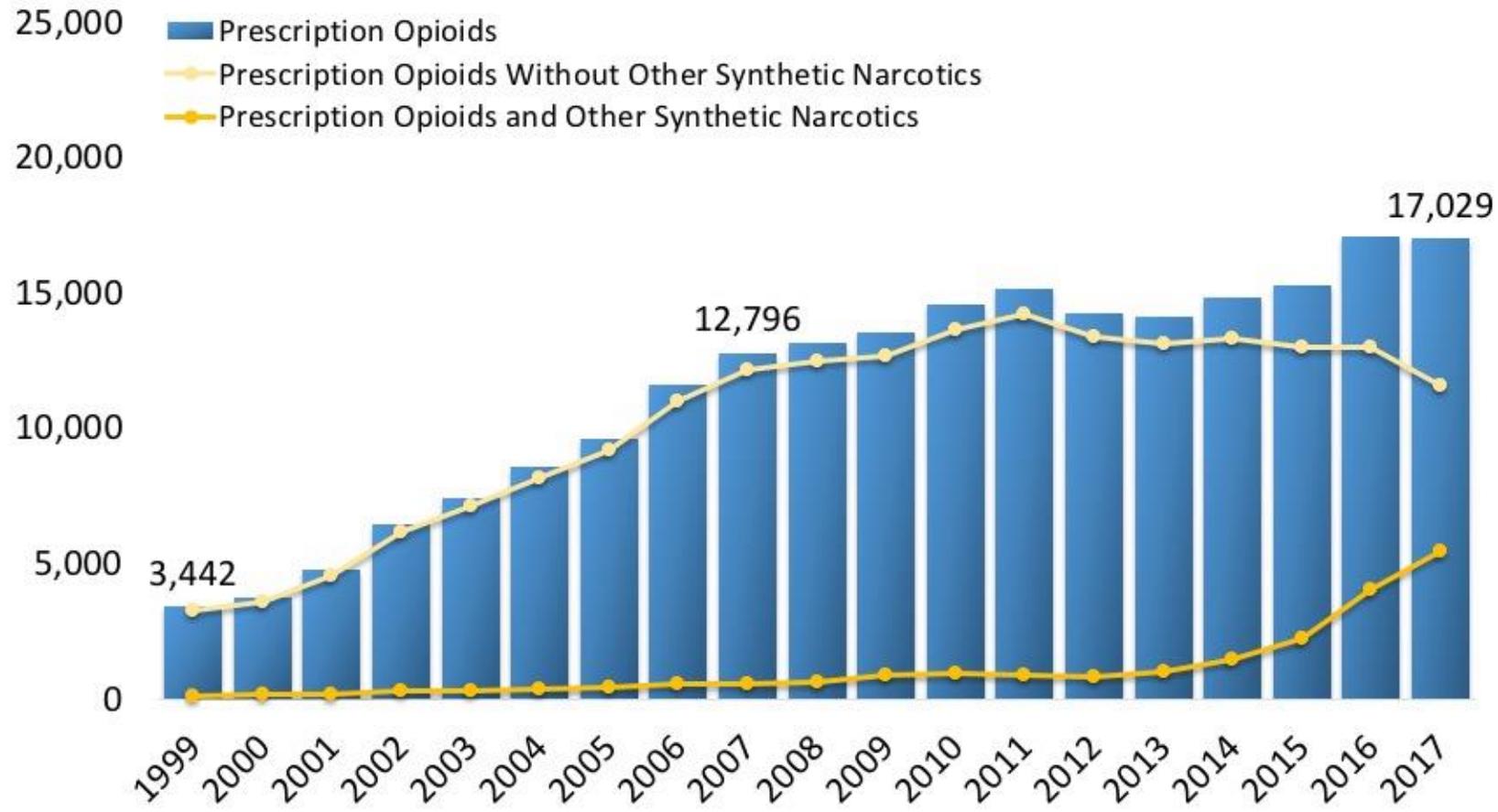
Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Figure 3. National Drug Overdose Deaths Involving Any Opioid, Number Among All Ages, by Gender, 1999-2017



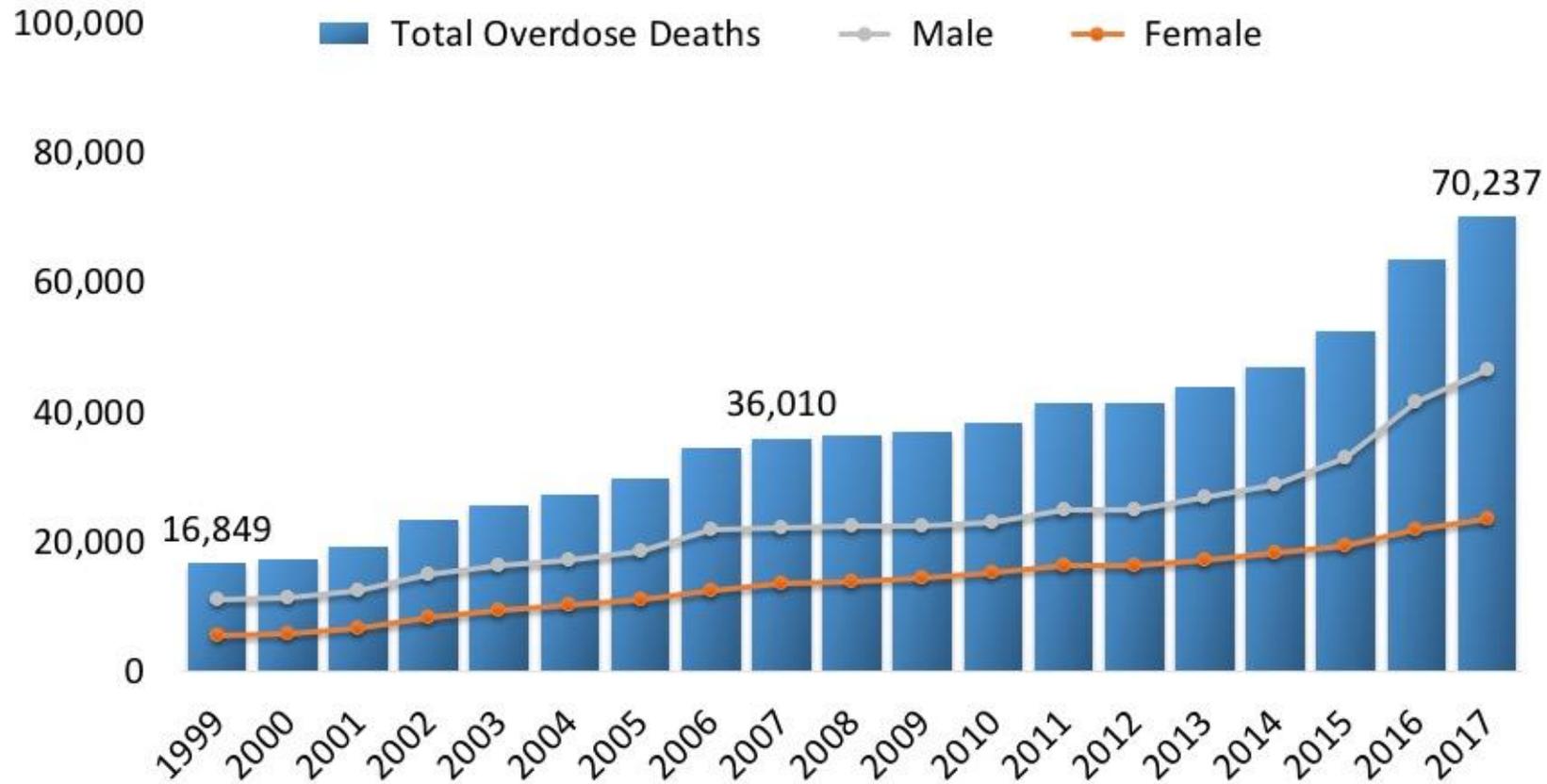
Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Figure 4. National Drug Overdose Deaths Involving Prescription Opioids, Number Among All Ages, 1999-2017



Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Figure 1. National Drug Overdose Deaths Number Among All Ages, by Gender, 1999-2017



Source: : Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2017 on CDC WONDER Online Database, released December, 2018

Pain, opioids and the Military

- Active Military
- Veteran Military



- Increased dosing and use of pain medications
- Increased suicide rate



<https://www.militarytimes.com/pay-benefits/2018/12/04/one-in-four-troops-have-an-opioid-prescription-in-a-given-year/>

Mechanism of Action: Opioids

- Oxycodone has the same mechanism of action as other opioids: binding to a receptor, inhibition of adenylyl-cyclase and hyperpolarisation of neurons, and decreased excitability. These mechanisms also play a part in the onset of dependence and tolerance. The clinical efficacy of oxycodone is similar to that of morphine, with a ratio of 1/1.5-2 for the treatment of cancer pain
<https://www.ncbi.nlm.nih.gov/pubmed/17525040>
- Binds to opiate receptors in the CNS, causing inhibition of ascending pain pathways, altering the perception of and response to pain; produces generalized CNS depression

https://www.uptodate.com/contents/oxycodone-drug-information?sectionName=Adult&topicId=9729&search=oxycodone&usage_type=panel&anchor=F204907&source=panel_search_result&selectedTitle=1~149&kp_tab=drug_general&display_rank=1#F204867

Veterans and opioid abuse. [Reuters](#) (11/10, Goldberg)

- Twice as likely as non-veterans to die from accidental *overdoses* of the highly addictive painkillers
- VA needs to understand whether overmedication of drugs, such as opioid pain-killers, is a contributing factor in *suicide-related deaths*.
- 20 veterans commit suicide every day, 21 percent higher than for other U.S. adults.
- Stalled in Congress: Veterans Overmedication Prevention Act “aimed at researching ways to help Veterans Administration doctors rely less on opioids in treating chronic pain.”

Active soldiers

- *JAMA Internal Medicine* examined the prevalence of chronic pain and opioid use among U.S. soldiers following deployment.

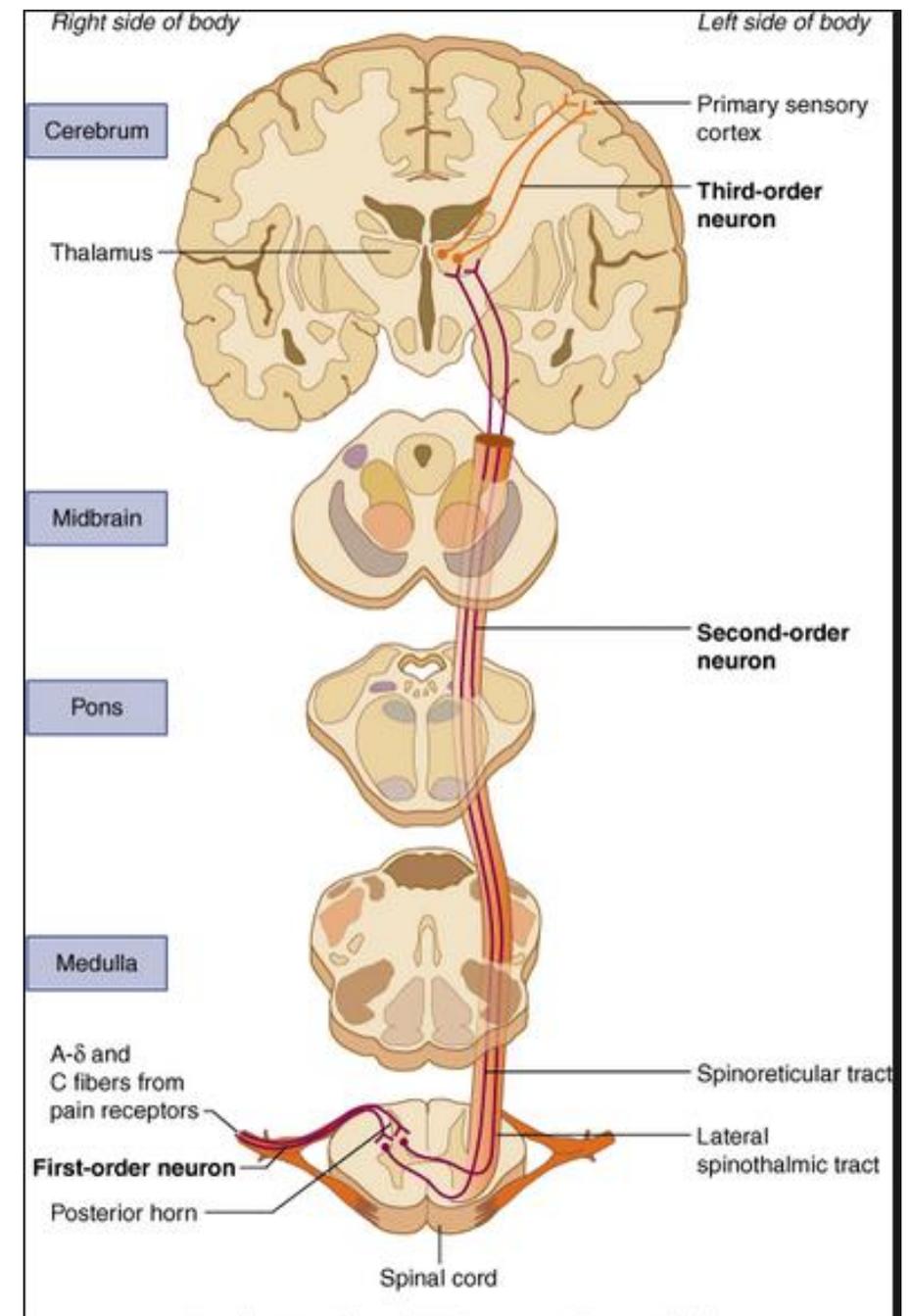
<https://nccih.nih.gov/health/military-veteran>

- $\geq 2,500$ participants surveyed
- 44 percent had chronic pain
 - 15 percent regularly used opioids—rates much higher than the general population.
- After combat deployment, soldiers report greater rates of both chronic pain and opioid use than does the civilian population.
- Dx of PTSD more likely to use prescription opioids plus sedatives or cocaine.
- F:M 3x more likely; co-occurring PTSD symptoms and prescription opioid use problems. <https://pcssnow.org/resource/opioid-abuse-u-s-military/>

Nociceptive System and Pain

Foundations of Osteopathic Medicine, 4th edition. Pp 268-295

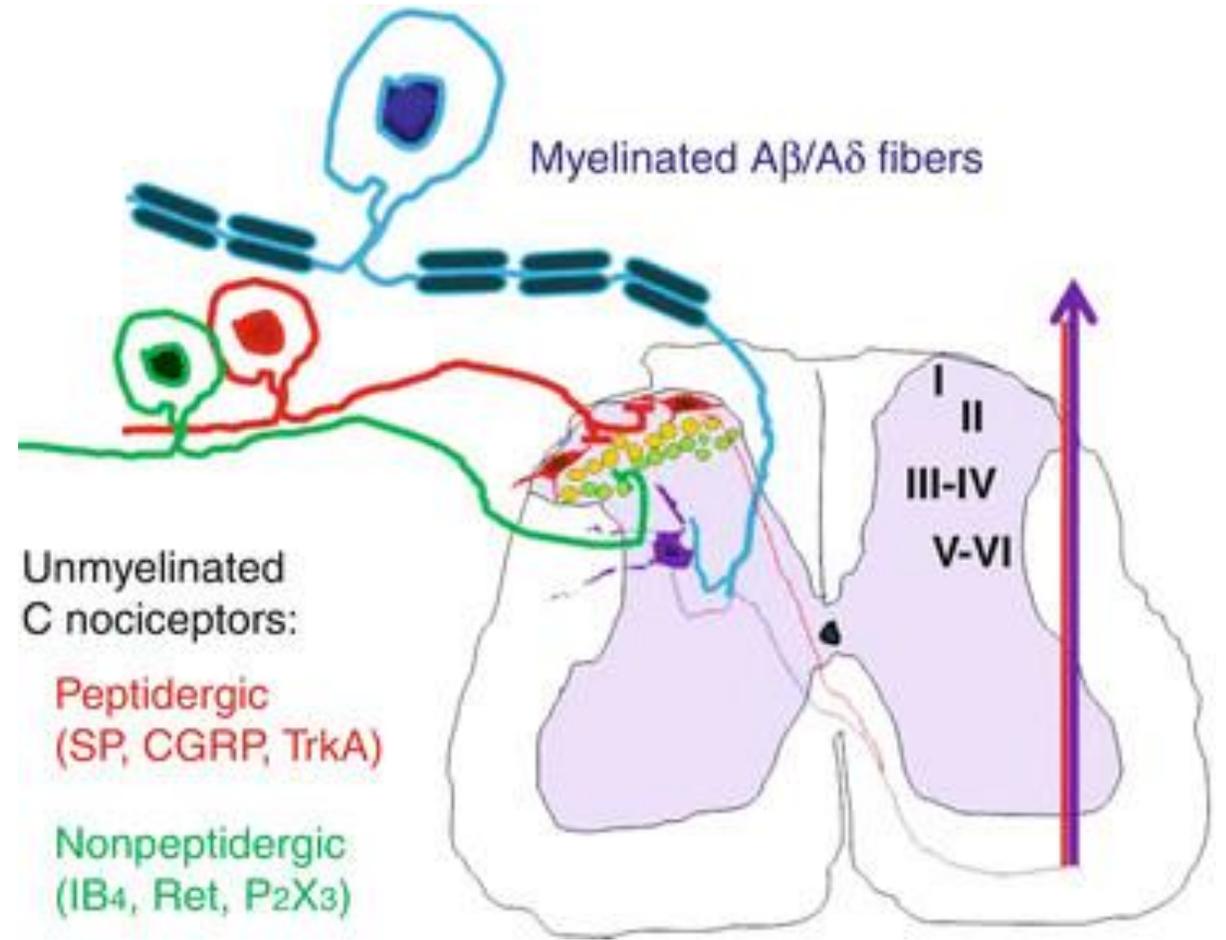
- Primary afferent nociceptors
 - Somatic and Visceral
 - Skin, fascia, muscle, tendon, blood vessels, nerves, joints, viscera, meninges, annulus fibrosis
- Respond to mechanical, thermal or chemical stimuli
- Feed-forward principals used to evoke rapid responses to noxious or potentially noxious stimuli.



Peripheral Nervous System

Foundations of Osteopathic Medicine, 4th edition. Pp 268-295

- Small fibers
 - Primary afferent nociceptors (PAN)
 - A-delta – myelin sheath
 - C fibers
- Target dorsal root ganglion
- PAN receptors
 - Ion channels
 - G-coupled proteins
 - Growth factor response
- Inflammatory allodynergens
 - Allodynia – feeling pain from things that don't normally cause pain; can result from several nerve related conditions
 - Bradykinin
 - Histamine
 - Prostaglandins
 - Cytokines



Osteopathy and Pain

- DVCIPM: Defense & Veterans Center for Integrative Pain Management
- Goal of osteopathic manual medicine is to restore the entire body to a state of homeostasis
- Employs palpation using providers hands to detect sources of pain and dysfunction with the skin, fascia, viscera, muscles, ligaments and tendons.



Common uses of Osteopathy

- Biomechanics
 - Observation of pt in motion, Goal: optimize health, restoring the entire body to a state of homeostasis
- Palpation
 - Hands are trained to detect TART:
 - Tenderness, Asymmetry, Restriction and Tissue texture changes
- Diagnosis
 - OPP: Inclusion of entire pts health and restrictions (ie, depressed, MSK issue)
 - OSE: Osteopathic Structural Exam, which is placed directly after the PE in a note. Employs palpation using providers hands to detect sources of pain, dysfunction and malalignment with the skin, fascia, viscera, muscles, ligaments and tendons.
- Treatment
 - OPP
 - Consider the entire pt relative to optimizing health using the Tenets
 - OMM
 - Goal: decrease restrictions to increase movement and decrease pain in Skin, fascia, muscle, tendon, blood vessels, nerves, joints, viscera, meninges, and annulus fibrosus ^{1,2,3,4,5,6}
 - Direct and Indirect techniques



Osteopathic Manipulative Medicine

Hands on diagnosis and treatment of the body

- TART

- Tenderness
- Asymmetry
- Restriction
- Tissue Texture Changes

Techniques

- Direct

- High Velocity/Low Amplitude
- Muscle Energy
- Articular
- Soft tissue

- Indirect

- Balanced Ligamentous Tension
- Facilitated Positional Release
- Cranial in the osteopathic field
- Strain counterstrain



Contraindications for OMM

- Contraindications for OMM are specific to technique:
 - Direct techniques
 - Pt is interactive, tissue brought to restrictive barrier
 - Therefore, moving a region with a fractured bone does not work well
 - Indirect techniques
 - Pt is not interactive, tissue brought to area of ease
 - Therefore, be considerate about the current condition of the pt, ie. Region with surgical incision, fracture, etc.

Settings for Osteopathy

- Battlefield
- Airplane
- Athletic field
- Hospital bed
- Gurney
- Moving around/in motion
- Seated
- Standing
- Ambulance
- Anywhere.....



Alternate Routes in treatment of pain...?

- Doctor of Osteopathy
 - *Doctor*
 - Deploy anywhere
- Use their skill to diagnose and treat, anywhere

Osteopathy and Pain

- Apply not only traditional approaches to pain management, but also incorporate osteopathic principles and treatment methods, including manipulative approaches and behavioral approaches.
- Understand the presence of somatic dysfunction as a key contributor to pain generation and modulator of the sensation of pain.
- Apply medical management with behavioral and neuromusculoskeletal interventions to pain patients.
- Osteopathic physicians have a unique role as providers of comprehensive pain care.

Osteopathy and Alternative Medicine

- OMM is a treatment option from a physician.
- OMM has no cost for resources, as it is the physician.
- OMM compliments other forms of treatment as the goal is to optimize the pts health via decreasing restrictions in pts tissue.
- Contraindications for OMM are specific to technique.
 - Direct techniques
 - Pt is interactive, tissue brought to restrictive barrier
 - Therefore, moving a region with a fractured bone does not work well
 - Indirect techniques
 - Pt in not interactive, tissue brought to area of ease
 - Therefore, be considerate about the current condition of the pt, ie. Region with surgical incision, fracture, etc.

Military and Osteopathy: Conclusions

- Tenets
 - The body is a unit of mind, body and spirit.
 - The body is capable of self-regulation, self-healing and health maintenance.
 - Structure and function are reciprocally interrelated.
 - Rational treatment is based upon an understanding of the basic principles of body unity, self-regulation and the interrelationship of structure and function.
- Models
 - Utilization of OPP/OMT for care of defense and veteran pts in any setting.
- Benefits
 - Osteopathic manipulation is based in using organic resources of our hands and thought process.
 - OPP/OMT is a skill that is in the provider, not outsourced or adding additional costs ie. Chiropractor.

Military and Osteopathy: Recommendations

- Recommend: DVCIPM develop regional partnerships with Colleges of Osteopathic Medicine beginning in VISN / SAMHSA Region 1
- These Civ-Mil Partnerships will invest in the future of Integrative Pain Management by investing in future Osteopathic Physicians

Thank You



References

1. Andersson, G., Lucent, T., et al. *A Comparison of Osteopathic Spinal Manipulation with Standard Care for Patients with Low Back Pain*. November 4, 1999. *N Engl J Med* 1999; 341:1426-1431
DOI: 10.1056/NEJM199911043411903
2. Licciardone, J., Brimhall, A., et al. *Osteopathic manipulative treatment for low back pain: a systematic review and meta-analysis of randomized controlled trials*. *BMC Musculoskeletal Disorders* 6, Article number: 43 (2005)
3. Gamber, R., Shores, J. *Osteopathic manipulative treatment in conjunction with medication relieves pain associated with fibromyalgia syndrome: Results of a randomized clinical pilot project*. *Journal of the American Osteopathic Association*. Vol 102, No 6, June 2002, pp 321-325.
4. Lynton, G., Muller, R. *Chronic Spinal Pain: A Randomized Clinical Trial Comparing Medication, Acupuncture and Spinal Manipulation*. *Spine*. July 15, 2003. Volume 28. Issue 14, pp 1490-1502.
5. McReynolds, T., Sheridan, B. *Intramuscular Ketorolac vs Osteopathic Manipulation in the Management of Acute Neck Pain in the Emergency Department: A Randomized Clinical Trail*. *Journal of American Osteopathic Association*. Vol 5, No 2, Feb 2005, pp 57-68.
6. Giles LG, Muller R. *Chronic spinal pain syndromes: a clinical pilot trial comparing acupuncture, a nonsteroidal anti-inflammatory drug, and spinal manipulation*. *J Manipulative Physiol Ther*. 1999;22(6):376–381. 33.
7. Ruddock, J., Sallis, H., et al. *Spinal Manipulation vs Sham Manipulation for Nonspecific Low Back Pain: A Systematic Review and Analysis*. *Journal of Chiropractic Medicine*. Vol 15, Issue 3, Sept 2016, pp 165-183. <https://doi.org/10.1016/j.jcm.2016.04.014>
8. Coulter, I., Crawford, C., et al. *Manipulation and mobilization for treating chronic low back pain: a systematic review and meta-analysis*. *The Spine Journal*. Vol 18, Issue 5, May 2018, pp 866-879. <https://doi.org/10.1016/j.spinee.2018.01.013>