Webinar title: Pain & Spasticity Management Without the Pills

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Want to Ask a Question?
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www.nntn.org

Helping people regain life thru neurotechnology

Focusing on education of and advocacy to access neurotechnology devices, therapies and treatments for people living with impairments, their care-givers and medical professionals.

www.themiamiproject.org

The Miami Project is dedicated to finding more effective treatments and, ultimately, a cure for paralysis resulting from spinal cord injury.
Objectives

- Understanding the Pain
- Options for pain management
- Alternative Therapies
- Technology integration
- Resource to learn more
Types of Chronic Pain

Nociceptive
- Somatic (musculoskeletal)
- Visceral

Inflammatory
- Appendicitis
- Rheumatoid Arthritis
- Shingles
- Inflammatory Bowel Disease

Neuropathic
- Diabetic Neuropathy
- SCI Pain
- Phantom Limb
- Post-Stroke Central Pain

Source: University of Wisconsin School of Medicine
Types of “Spasticity”

- Clonus
  - Alternating involuntary muscular contraction and relaxation in rapid succession.

- Spasticity
  - Increased resistance of muscle to sudden, passive movement; it is velocity dependent

- Hypertonia
  - Increased resistance of muscles to passive movement; is not velocity dependent
Options for Pain Management

Oral medications

Injections

TENS/MET/PENS

IDDS

SCS & Nerve Block

tDCS, TMS

Alternative devices

Massage, stretch, aquatic & yoga

Acupuncture

Source: ARSA & INS
Opioids Epidemic

Opioid overdoses driving increase in drug overdoses overall

Drug overdose deaths involving opioids, by type of opioid, United States, 2000-2014

SOURCE:
MMWR 2015.
www.cdc.gov/drugoverdose
Options for Pain Management

Oral medications
Injections
TENS/MET/PENS
IDDS
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tDCS, TMS
Massage, stretch, aquatic & yoga
Acupuncture

Alternative devices

Source: ARSA & INS
Alternative Therapies Reported by People With SCI

- Exercise
- Stretching
- Sleep/rest
- Changing position
- Massage
- Thermal (warm or cold)
Examples

Exercise and Stretching

“...cause the pain in my hands is there, you know, uh but in my hips you know I try to tell myself just keep moving, keep moving, keep moving, keep walking, you know. And um as a result it will go away somewhat.”

“If I’m inactive you know the body tightens up more and more. If I am active it does kind of loosen up.”

Sleep / Rest

“Some things that I can’t change and are, my legs are hurting real bad and I can’t do something I just lay down. I just try not even thinking about it, just listening to music and just letting it go away.”

“I just go up and lie down for an hour and hour and a half. Sort of like a nap time, then I get up, if I didn’t have that I don’t think I’d be able to stay the whole day up.”

Change Position

“I may wake up about four. You know, probably use the restroom, lay back down for another ‘bout 2 hours. And, um, it, it kind of helps, you know, it (mumbles) it really does help. Um, because when I do get up for final time, you know, I, I loosen up a little.”

“If I slouch over in my chair it would ease it a little bit.”

Massage / Thermal

“Once in a while I will soak my hands in warm water and that helps a little bit you know temporarily relieves it but um.”

“I try to um, first thing I do is lie down you know and put a heat pad on or I go to the clubhouse and go to the Jacuzzi which is the hot water that’s the best thing for me.”

Widerstrom-Noga and Anderson-Erisman, preliminary data
Coping Strategies that Help With Pain

- Resilience/minimizing
- Learning over time
- Distraction
- Optimism/humor
Resilience / Minimizing

“I go through a lot of pain in my back, in my stomach... I deal with it, you know what I’m sayin’ I won’t let it stop me.”

“I’m in constantly pain. From the time I wake up, from the time I got to sleep. It’s just, I just tolerate it; I put it to the back of my head cause I know I have to get stuff done.”

Learning Over Time

“Figure out your pain first and before you, before you try to make any major moves or any activities, get a grip on your pain as far as how to deal with it, manage it and control it and then life should be prosperous from there on.”

“For so long dealing with it, it’s not that bad of a pain to me anymore.”

“...knowing that you need to do that because otherwise it will just get worse.”

Distraction

“I try just to, um, you know, just to forget about it. I try to focus on, um, my mind on something else you know. Um, other than that you know, nothing else I do, um, nothing else I do other than try to focus on something else.”

“If I get my mind off of it. That’s a lot of good things at home that I do helps me get my mind off of it where I don’t think about it.”

Widerstrom-Noga and Anderson-Erisman, preliminary data
Acupuncture

- Proposed to work by enhancing the body’s production/release of endogenous (internal) painkillers and an increase in blood circulation.

- Recent study in SCI
  - Compared treatment with acupuncture or massage (2x/weekly for 6 weeks)
  - Acupuncture reduced neuropathic pain, general pain, pain unpleasantness, and improved coping compared to baseline
  - Massage improved pain interference
  - Neuropathic pain is partially responsive, but relief is temporary

Hypnosis

- Recent study in SCI
  - Compared self-hypnosis and biofeedback relaxation (10 sessions)
  - Both reduced pain intensity
  - Hypnosis significantly reduced daily average pain compared to baseline; maintained at 3 months follow-up
  - Hypnosis also significantly improved perceived control over pain; not maintained at 3 months follow-up

Cognitive-Behavioral Therapy (CBT)

- Recent study in SCI
  - Compared multi-disciplinary CBT to wait-listed control group (10 sessions of 3 hours each over a 10 week period)
  - CBT included educational, cognitive, and behavioral elements targeting coping with pain
  - Decreased pain intensity, pain-related disability, and anxiety
  - Increased participation in activities

Technology Integration

- TENS/MET/PENS
- IDDS
- SCS & Nerve Block
- tDCS or TMS
- Alternative Devices
TENS/MET
Transcutaneous Electrical Nerve Stimulation
Microcurrent Electrotherapy

Dynatronics
www.dynatronics.com

Electromedical Products Int’l
www.alpha-stim.com

Medical Science Products
www.medsciencepro.com

Neurotech Group
www.NeurotechGroup.com

RS Medical
www.rsmedical.com
TENS/MET
Transcutaneous Electrical Nerve Stimulation
Microcurrent Electrotherapy

Zynex Medical
www.zynexmed.com

NEUROMetrix
http://www.sensusrx.com

VQ OrthoCare
www.vqorthocare.com

Aleve Direct Therapy
www.aleve.com

Zimmer Medizin
www.zimmerusa.com
Surface Electrodes

Source: Axelgaard & Medical Science Products
PENS
Percutaneous Neuromodulation Systems

Algotec
www.algotec-ltd.com

SPR Therapeutics
www.sprtherapeutics.com

Biowave
www.biowave.com

StimRouter by Bioness
stimrouter.com
IDDS
Implanted Drug Delivery Systems

DePuy Synthes, Implantable Codman Pump
www.depuy.com

Medtronic ITB TherapySM Synchronmed
www.medtronic.com

Flownix, Prometra Pump
www.flownix.com
SCS
Spinal Cord Stimulation

Medtronic:
Restore Sensor
www.tamethepain.com

Boston Scientific:
Precision Spectra
www.controlyourpain.com

St. Jude Medical:
Eon/Axium
www.poweroveryourpain.com
SCS
Spinal Cord Stimulation

StimWave: Freedom-4
www.stimwave.com

Mainstay Medical: ReActiv8
www.mainstay-medical.com

Nuvectra: Algovita
nuvectramedical.com

Nevro: Senza
www.nevro.com
Alternatives Stimulation

Neuros Altius System
www.neurosmedical.com

Anodyne® Therapy
www.anodynetherapy.com

Shenzen Raycome
www.raycome.com
Alternatives

FDA Clearance

NeuroStar TMS Therapy® System
www.neuronetics.com

Fisher Wallace Stimulator™
www.fisherwallace.com

Rio Grande Neurosciences
www.riograndeneurosciences.com
Alternatives

Investigational Devices

Soterix Medical 1 × 1 tDCS Platforms
www.soterixmedical.com

eNeura: Spring TMS
www.eneura.com

Circuit Therapeutics
www.circuittx.com
Noted Clinical Trials

- University of Miami/Miami Project: Treatment of Pain and Autonomic Dysreflexia in Spinal Cord Injury With Deep Brain Stimulation
- Kessler Foundation: The Effect of Whole Body Vibration on Spasticity in Persons With Spinal Cord Injury
- NHS Greater Glasgow & Clyde: Brain-Train Home Based Pain Treatment
- Mount Sinai: Injecting Botulinum Toxin A Underneath the Skin to Treat Spinal Cord Pain in Patients With Spinal Cord Injury

Source: www.ClinicalTrials.gov
Considerations for Participating in any Pain/Spasticity Management Strategy

- Chronic Pain or Spasticity is a unique condition. Not all types of pain are alike. Not all programs are appropriate for all populations.

- Treatments are typically not a ‘quick fix’

- One treatment does not work for all cases. Many times it is trial and often times multiple treatment strategies work better than a single strategy

- **Recommended Next Steps**
  - Review resources provided here
  - If considering, use these resources to find a trained professional near you.
  - Make an appointment for an evaluation to see if you are a candidate

- **Commitments of self, family/caregiver**
  - Time
  - Out of pocket cost and/or reimbursement

- **Medical Professional Monitoring**
  - Peripheral nerve damage or skin damage
  - Device Maintenance
Additional Resources

- Neurotech Network: Pain Management Fact Sheet
- Chronic Pain Toolkit
- American Academy of Pain Management
- American Chronic Pain Association
- American Pain Foundation
- National Chronic Pain Outreach Association
- The Mayday Pain Project
- NIH Neurological Disorders and Stroke—Chronic Pain - NINDS Chronic Pain Information Pages
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