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Research updates on management of neuropathic pain and spasticity

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Neuropathic Pain: What We Know

- Occurs in 62-91% of NMOSD patients
- Severe, debilitating and persistent
- Correlates with anxiety, depression and disability
- Impacts quality of life (QoL) more than other symptoms
- Refractory to treatment



Kanamori et al., 2011; Qian et al., 2012;
Pellkofer et al., 2013; Zhao et al., 2014; Mealy
et al., 2016; Kong et al., 2016

Currently available treatments

- Anti-epileptics, antidepressants and non-steroidal anti-inflammatories
 - Frequent use of multiple medications
 - Frequent breakthrough opioid use
 - Side effects are independently associated with slower reaction times and fatigue



Qian et al., 2012; Pellkofer et al., 2013; Zhao et al., 2014

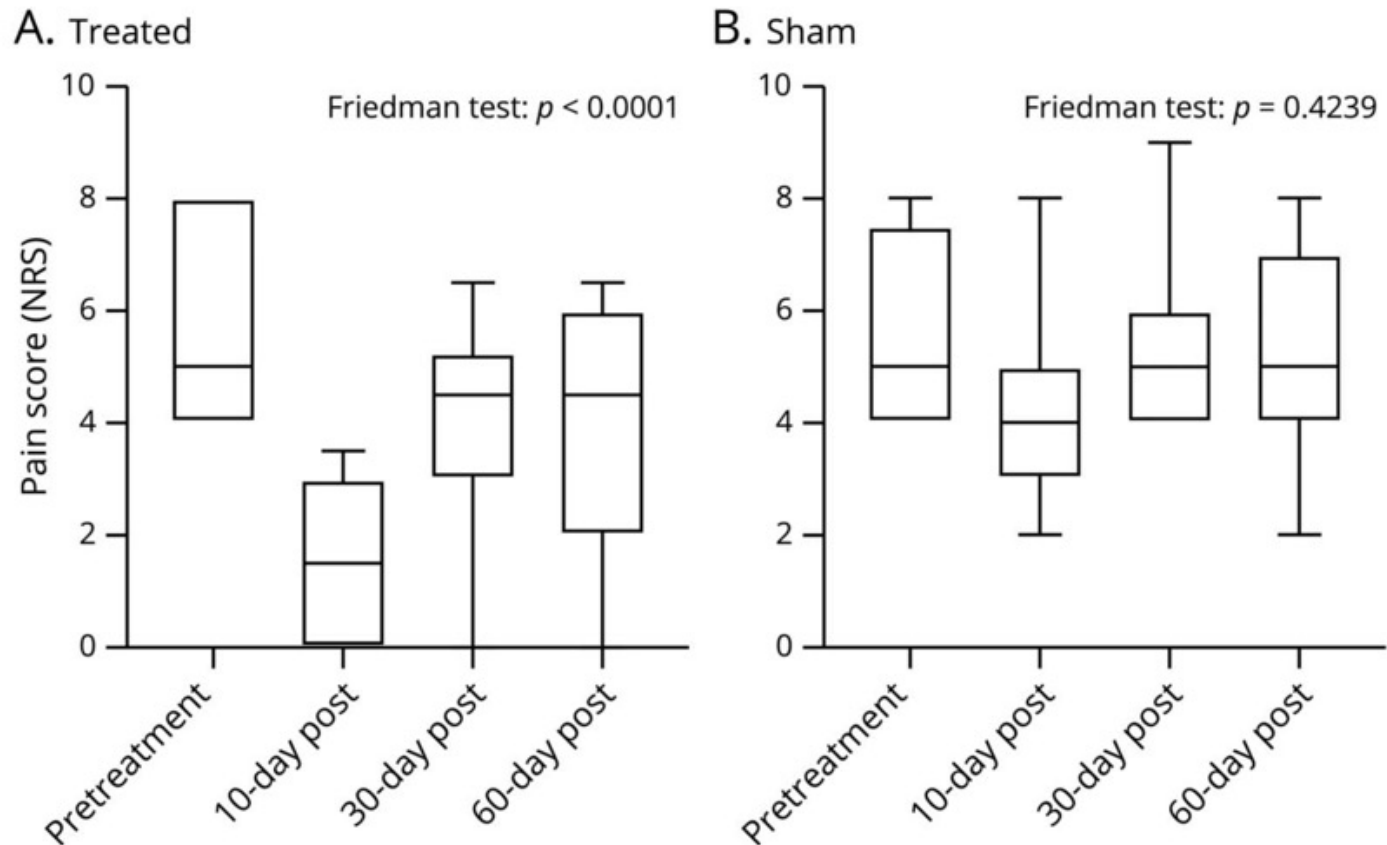
Transcutaneous Electrical Nerve Stimulation (TENS)

- Previously reported data in peripheral neuropathic pain
- Twenty-six peer reviewed reports, mostly open-label observational
- Patients received 10 Scrambler treatments
- Overall, reduced pain for up to 3 months



GEOMC Pain Scrambler model MC-5A with electrode placement; permission from Thomas Smith, MD

TENS in NMOSD



Quell Device



Click image to open expanded view



Quell 2 Value Bundle, Black, 1 Count

Brand: Quell

★★★★☆ 344 ratings

| 126 answered questions

Style: **Quell 2.0 Value Bundle**

Brand Quell

Item Form Band

Use for Legs, Feet

Unit Count 1 Count

Item Weight 1.5 Pounds

About this item

- Advanced prescription strength TENS, now even works with your Apple Watch
- Relieves chronic leg, foot and knee pain
- Designed for use during the day while active and at night when sleeping
- Powered by the Quell Relief app for advanced personalization and control
- Substantial savings with the Quell 2.0 Value Bundle. Includes 1 Quell 2.0 device, 6 month supply of electrodes, 1 travel case, 1 wearable band, and 1 device charger

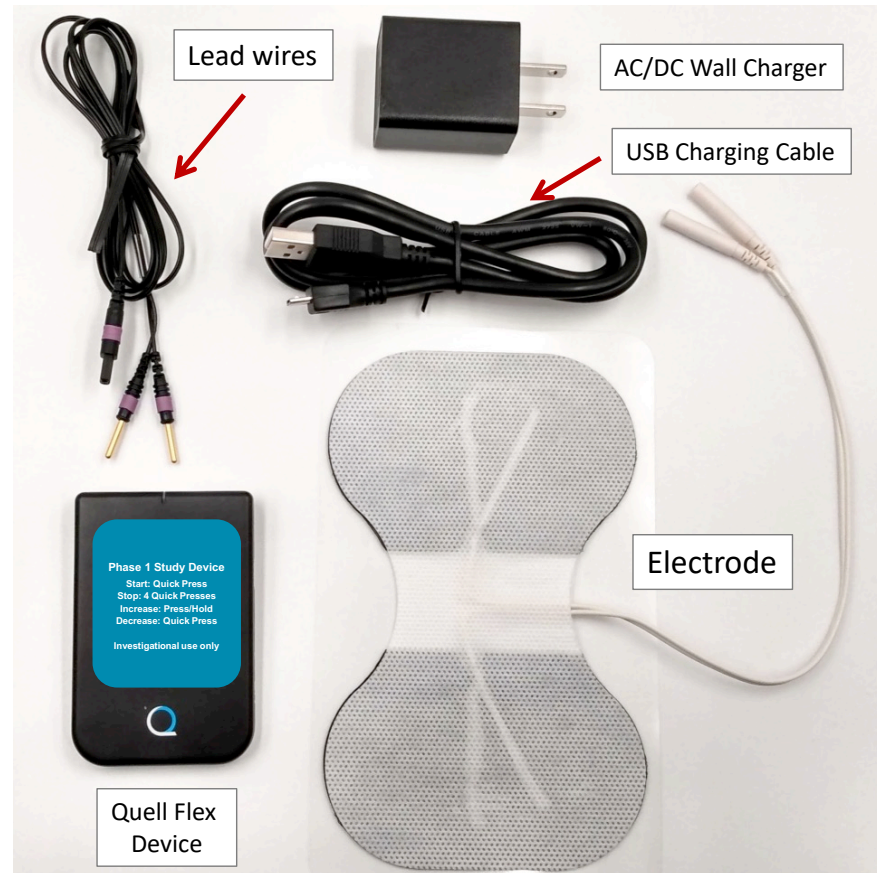
Additional Details

Small Business

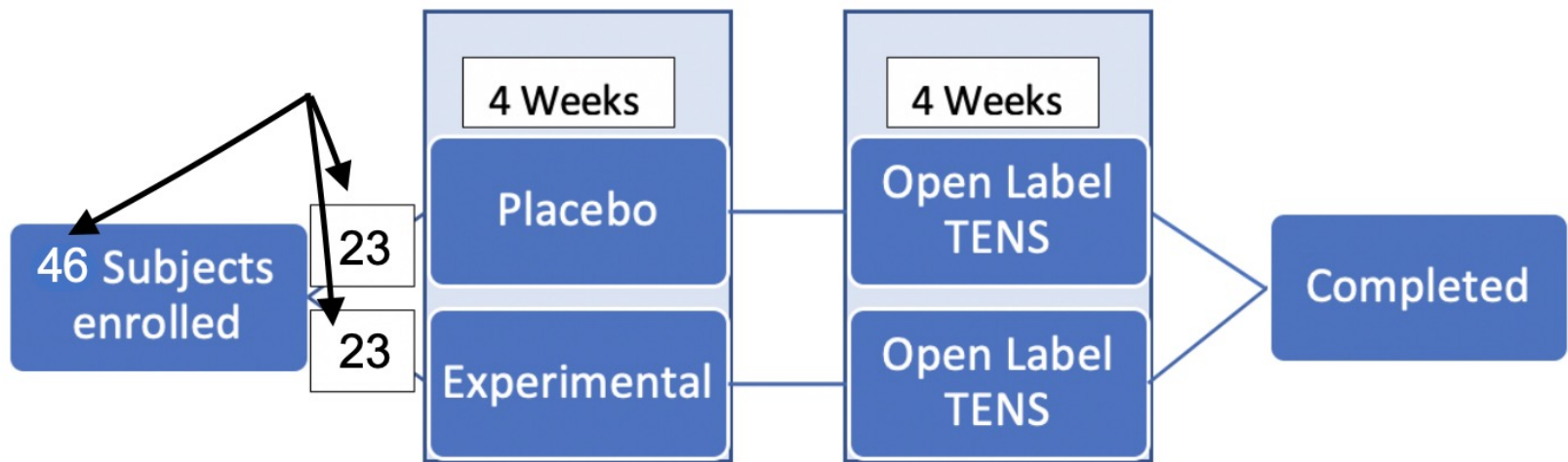


This product is from a small business brand. Support small. [Learn more](#)

Quell Study



Quell Study Design



Quell Study Status

- Enrollment completed!
- Data locked.
- Analysis in progress – to be published soon.

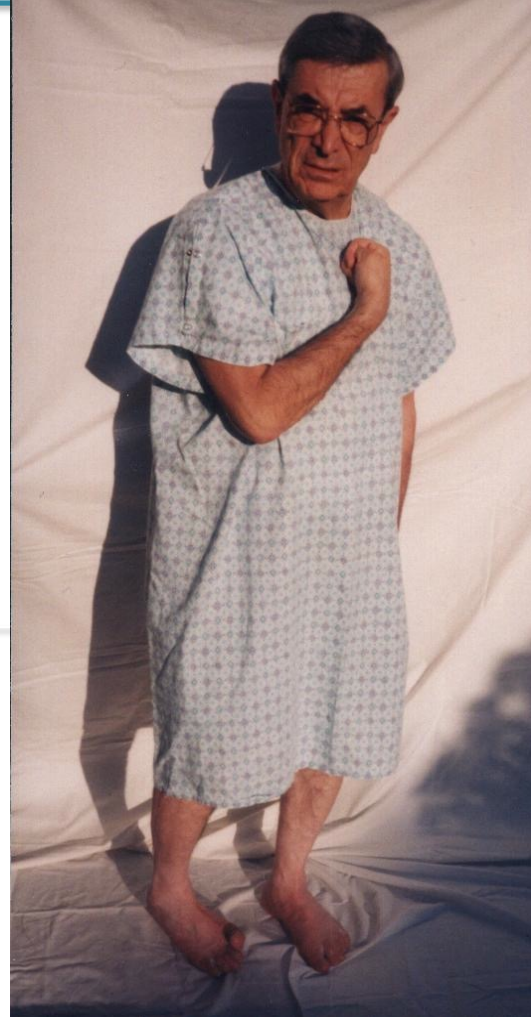


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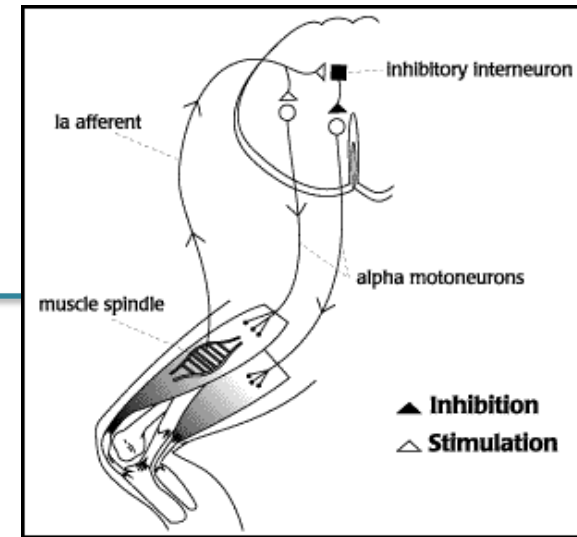


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Spasticity

- Results from demyelination in the descending corticospinal, vestibulospinal, and reticulospinal central nervous system (CNS) pathways
- Can be manifested in a variety of muscle groups depending on the lesion location
- Spasticity may increase over time without new CNS lesions
- May mask weakness and limit mobility
- Very cold temperatures may aggravate spasticity
- Other exacerbating factors- stress, infection, pain



Spasticity, cont'd

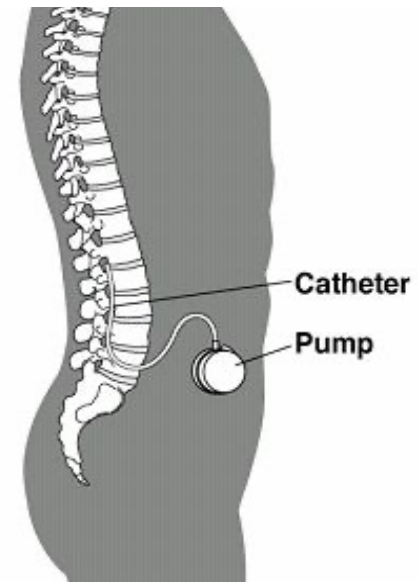
- **Treatment of spasticity should be multi-factorial**
 - Rehabilitation
 - PT / OT - ROM / stretching, strengthening
 - Oral medications
 - Baclofen (Lioresal) – GABA agonist
 - Overshooting target will cause weakness
 - Sudden withdrawal can cause seizures
 - Tizanidine (Zanaflex) – alpha-2 agonist
 - Purportedly causes less weakness
 - Can cause fatigue
 - Benzodiazepines (Klonopin)
 - Especially for nocturnal spasms
 - Gabapentin (Neurontin)
 - Local treatment
 - Botulinum toxin
 - Surgical treatment
 - Cut nerve / tendon
 - Rhizotomy / myelotomy



Intrathecal Baclofen (ITB™)

Advantages

- Reversible
- Potential for lower side effects than PO
- Potential for lower doses than PO
- Evidence to support efficacy in reducing spasticity
- May improve function, comfort, and care



Disadvantages

- Complications: infection, catheter breakage, overdose, baclofen withdrawal
- Refills- approximately every 3 months
- Cost

Marijuana (Cannabis)

- Use is quite common in chronic illness
 - Depending on source, potency and purity may vary
 - Inhaled cannabis has an effect on cognition
 - Study comparing cognitive worsening in MS vs non-MS pot smokers showed worsened cognitive decline in MS cohort
 - Components of cannabis
 - Tetrahydrocannabinol (THC) - psychoactive component, can help with nausea and vomiting
 - Cannabidiol (CBD) - can help with neuropathic pain
 - Unfortunately, THC >> CBD in natural cannabis
 - Dronabinol (Marinol) - mainly THC, approved for N/V and weight loss for patients on chemotherapy or with AIDS
 - Sativex (THC and CBD) - approved in Canada and EU for MS symptoms, including spasticity and pain; however, data more impressive for subjective than objective improvement
 - Studies with Sativex for spasticity in MS and maybe NMO



The Great Experiment

- Focusing on Quality of Life

