

# No Zero Sum in Opioids for Chronic Pain: Neurostimulation and the Goal of Opioid Sparing, Not Opioid Eradication

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In 1967, Dr Norm Shealy and his colleagues reported on the first spinal cord stimulator (SCS) for dorsal stimulation.<sup>1</sup> Unfortunately, the patient succumbed to undiagnosed bacterial endocarditis 6 days following the onset of stimulation. Irrespective, the first patent for spinal cord stimulation was granted in 1968.<sup>2</sup> The first fully implantable SCS system was provided in 1981, with the first rechargeable system developed and released in 2004.<sup>2</sup>

Subsequently, the use of SCS to treat neuropathic pain has gained progressive popularity. Initially, strong evidence was rare,<sup>3,4</sup> many systematic reviews failed to establish strong supporting evidence, and there were numerous complications associated with the large and cumbersome units that were utilized for decades.<sup>5-7</sup> As the technology (and perhaps identification of appropriate patient candidates and technical expertise of interventionalists and surgeons) improved, the evidence-basis of SCS assessed via systematic reviews began to improve in the latter part of the first decade of this millennium.<sup>8,9</sup>

The demonstrated efficacy of neuromodulation for neuropathic pain conditions increased dramatically over the past decade as the quantity and caliber of published clinical results burgeoned. With the advent of new technologies such as high-frequency, burst SCS, and dorsal root ganglion stimulation – all of which provide advantages to the low-frequency, tonic stimulation that was provided by older units – further improvements in outcomes were reported. Not only do the newer units provide paresthesia-free or minimal-paresthesia analgesia, but they have been demonstrated through myriad systematic reviews to be safe, clinically effective, and even cost-effective in treating neuropathic pain of axial spine or radicular origin, as well as radicular symptoms, in addition to other types of neuropathic pain across different populations.<sup>10-22</sup>

While SCS has been a treatment option for chronic pain for only half a century, accounts of the use of opioids date back to at least 1550 BC, when an ancient Egyptian pharmacopoeia contained prescriptions for uses of opium.<sup>23</sup> Although effective as analgesics for many types of pain, opioids' efficacy for neuropathic pain has been determined to be extremely limited, at best.<sup>24-28</sup> Additionally, systematic reviews point to issues of tolerability,<sup>29</sup> and adverse effects including, but not limited to, constipation,<sup>30</sup> cognitive dysfunction,<sup>31</sup> endocrinopathy,<sup>32</sup> mood disturbance,<sup>33</sup> and sleep apnea.<sup>34</sup> Although some studies have attempted to

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demonstrate a causative relationship between opioid use and substance use disorders in chronic pain patients, variance in definitions and a prevalence of methodologically flawed studies based upon investigator bias make such a conclusion tenuous.

Although the past several years have witnessed a war on prescription opioids in the United States and on those who prescribe them,<sup>35</sup> clinicians involved in the care of chronic pain patients understand that a multimodal approach which might include prescription opioids is still a safe and reasonable avenue when the appropriate precautions are taken.<sup>36–39</sup> The individual clinical circumstance of each patient should allow for a personalized pain treatment strategy. While some appear to be focused on the eradication of opioids for chronic pain, the rational and ethical approach in light of the inability of many to access safer and more effective treatments is “opioid-sparing” rather than “opioid eradication”.<sup>40</sup> SCS has been demonstrated to be opioid-sparing. A 2019 systematic review,<sup>41</sup> for example, determined that in patients with chronic spine/limb pain, SCS was associated with an increased likelihood of decreasing consumption of pain medications. Only extremists on both sides of the opioid argument would reject the benefits of patient-centered opioid-sparing approaches such as SCS, which brings us to social media. Recently, we have seen a rash of posts (from anonymous accounts and some presumed to be from physicians who have lost their medical licenses and/or controlled substance licenses due to illegal and/or irresponsible opioid prescribing) suggesting that opioids are the only effective and viable treatment for chronic pain. In order to “prove” their disingenuous point, they are progressively painting a false narrative of the “evils” of all other treatments, eg, hyperbolically stating that any utilization of acetaminophen, even in a single instance, will result in grave hepatic injury. Recently, we have observed false claims regarding the lack of efficacy and safety of SCS disseminated across social media, inaccurately claiming that “most” patients who undergo implantation either “die” from infections or surgical errors or require that their units are explanted secondary to a lack of efficacy and dramatic increases in pain levels. Despite the demise of Dr Shealy’s unfortunate patient in 1967, the empirical data, as well as our 65 years of collective experience in working with SCS, clearly belie these disingenuous claims that SCS is anything but safe and effective.

From an ethical perspective, we are concerned that social media postings from unverified sources such as (ex-practicing) physicians may undermine the evidence-supported approach of multimodal chronic pain treatment.

Because these agents preach that only opioids are effective for chronic pain and that all other treatments are dangerous shams, vulnerable chronic pain patients desperate for relief might buy into false narratives, and, as a result, reject recommendations to consider SCS and other non-opioid pain management strategies. We recognize that neurostimulation is hardly a panacea for all patients with intractable chronic neuropathic pain, yet our experience and the research cited above strongly suggests that this neuromodulation approach can safely provide analgesia, improve function, enhance emotional functioning, and result in improved quality of lives. Opioid-sparing is an ethical and rational approach to chronic pain, and SCS can contribute to this goal. Until these online statements can be substantiated with appropriate data and the motives, conflicts of interest, and objectives of their purveyors can be clearly understood, the claims should be taken with great caution. Accordingly, patients should seek out reliable sources for medical information over the claims disseminated through social media. Our hope is that those who are greatly concerned with the treatment of chronic pain – patients, their loved ones and their treatment teams – will regard this editorial and begin to understand the level of potential harm being caused by these radically pro-opioid physicians, who should be honest and intelligent enough not to disregard the science. No one treatment is a solution for the complexity of chronic pain, and the motives of anyone who advocates for a non-negotiable solitary solution without nuance or individualization should be critically evaluated.

## Disclosure

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