

Editorial

Multisociety response to *The BMJ* publications on interventional spine procedures for chronic back and neck pain

We write respectfully in response to the efforts of Wang et al., Busse et al., and Ballantyne to address the complex issue of chronic spine pain through their systematic review/network meta-analysis (NMA), clinical guideline, and editorial, respectively [1–3]. Their works have stimulated important dialogue about the role of interventional procedures in managing chronic spine pain and have called appropriate attention to the need for high-quality randomized controlled trials (RCTs) to allow progressive improvement in clinical care for patients with spine pain. However, we must disagree that the interventional pain medicine field does not consider patient preferences for treatment and refer to two recently published guidelines that emphasize the importance of informed consent and patient values in choosing treatment [4,5]. Furthermore, based on extensive clinical experience and a review of the evidence, we, the undersigned societies comprising physicians who prescribe or perform interventional spine procedures, have serious concerns about the methodology and conclusions drawn in these publications and their potential impact on patient care.

1. Heterogeneity

The analyses aggregate diverse patient populations, diagnoses, spinal regions, and interventional procedures. According to the Cochrane Handbook, “A valid network meta-analysis relies on the assumption that the different sets of studies included in the analysis are similar, on average, in all important factors that may affect the relative effects” [6]. Grouping the studies in this way allowed pooling of data at the expense of interpretable conclusions. For example, clinicians familiar with the conditions, procedures, spinal structures, and populations will identify concerning forest plots such as eFig 2, where novel and non-standard radiofrequency techniques for the cervical spine and sacrum are considered alongside historical and modern radiofrequency techniques for the lumbar spine. Another concerning aggregation of studies occurs in eFig 6 and eFig 8, where several non-ablative intra-articular pulsed radiofrequency treatments of varying structures (lumbar facet joints and sacroiliac joints) are presented as “joint radiofrequency” alongside other investigations involving medial branch or lateral branch nerve radiofrequency neurotomy.

It seems necessary to point out that these procedures are not similar and that intra-articular pulsed radiofrequency treatments are uncommonly performed procedures not covered in the United States. A serious clinician would not use evidence about non-ablative sacroiliac joint intra-articular pulsed radiofrequency treatment to inform a medial branch radiofrequency neurotomy treatment in the cervical spine. Nor should serious clinician scientists or policymakers accept aggregating techniques with such broad treatment heterogeneity when considering

the evidence.

The authors of the systematic review/NMA are certainly aware that these sources of clinical heterogeneity commonly lead to differences that impact the point estimates and confidence intervals associated with treatment effects, resulting in a broadening of the estimated pooled effect. We note that, as indicated by the authors, appropriate selection of studies to pool would have resulted in too few studies to conduct a meta-analysis effectively.

The guideline conclusions similarly aggregate disparate groups of patients, conditions, spinal regions, and procedures. Conflating these groups in analysis is convenient but misguided; in guideline development, it is misleading and irresponsible.

Another fatal flaw of the proposed guidelines is that they use studies of abandoned procedures and non-standard and non-covered techniques to draw conclusions about the use and coverage of commonly used and well-accepted techniques. We frankly cannot understand why this would be acceptable in any field of medicine, and we reject the authors' position that the guidelines reflect a reasonable interpretation of the meta-analysis.

The disappointing truth is that there are not enough high-quality RCTs in interventional spine care to perform a well-powered meta-analysis in this area. As a result, we rely on carefully reasoned and balanced systematic reviews that incorporate the breadth of the available literature [7–16]. We are confident that the authors will support our call for increased research funding on interventional spine care to provide clarity and improve clinical decision-making. We hope to partner with the authors to pursue the best possible care for patients with spine pain as we pursue informative research in this field, which we recognize is a pressing need.

2. Omission and inaccuracy of extraction

Unfortunately, omissions of important studies and inaccurate data extraction from included studies casts additional doubt on the reported results and conclusions. For example, the systematic review/NMA omitted the strongest RCT addressing the efficacy and effectiveness of lumbar transforaminal epidural steroid injections [17]. This omission is particularly concerning given the importance of this study in demonstrating the significant benefits for patients with lumbar radicular pain.

Additionally, the authors inaccurately extracted data from the strongest RCT supporting cervical medial branch radiofrequency neurotomy [18]. Supplementary meta-analysis materials incorrectly depicted this RCT's diagnostic block threshold as “unclear” despite a detailed explanation of the diagnostic block paradigm in the study's Methods section. Because mean visual analog scale (VAS) data were not

reported, the study is not included in the forest plot. This omission is disappointing because of the high proportion of complete relief of pain reported in the study using an accepted and technically sound radio-frequency technique. However, the exclusion was appropriate per the systematic review's methodology. We were unable to review all extracted data against the studies and recognize the titanic effort required to review all of the included studies, but we note the discrepancy and are left to wonder whether there may have been other errors in extraction.

3. Technical fidelity

Our societies strongly advocate that every study of interventional procedures should require documentation of technical accuracy. This documentation may include, for example, verification of needle placement via imaging and contrast injection where indicated to ensure the intended target is reached. Published guidelines demonstrate the technical expectations for these procedures [19,20]. Deviation from these technical standards is unfortunately common within published studies, especially in older studies, and is frankly widespread among the publications selected for inclusion in this systematic review/NMA. We encourage the development of novel techniques when there is an advantage for safety or efficacy and abandonment of the disfavored approaches. Unfortunately, this systematic review/NMA was not designed to assess whether the studies used accepted and anatomically accurate techniques.

Additionally, the publications fail to acknowledge even the simplest procedural (i.e., interlaminar vs. transforaminal vs. caudal for epidural steroid injections and parallel vs. non-parallel electrode placement for radiofrequency neurotomy) and technical factors (e.g., lesion size, number, and temperature for radiofrequency neurotomy) that yield different results [21–23].

4. Compassion and multi-modal care

Interventional procedures are not a panacea and are not appropriate for all patients with spine pain. Many of these procedures are potential elective components of a multimodal treatment strategy that may also include physical therapy, cognitive behavioral therapy, and other treatments. Some procedures are only indicated when other conservative treatments have failed to yield sufficient improvements in pain and function. In appropriately selected patients, interventional spine procedures can offer substantial relief, improve function, allow for return to work, and may delay or obviate the need for more invasive surgical interventions or long-term reliance on opioids. Thus, they remain an essential treatment option for patients.

5. Our recommendations

- Balanced Authorship:** Future systematic reviews, meta-analyses, and guideline development should involve balanced panels with participants from different training backgrounds and specialties, including both methodological experts and clinicians experienced in performing interventional procedures who bring important clinical context to the efforts.
- Enhanced Study Design and Execution:** Future systematic reviews and meta-analyses should:
 - Ensure appropriate grouping of studies by patient population, spinal region, diagnosis, procedure type, and technique.
 - Ensure the intervention meets current technical standards.
- Broader Evidence Inclusion When RCT Data are Lacking:** Clinical guideline development must recognize the limitations of the supporting systematic review and incorporate well-designed prospective studies when RCT data are lacking.
- Policy Implications:** Policies regarding coverage and access to interventional pain procedures must consider the nuanced evidence

supporting their use. Denial of these procedures based on inaccurate interpretations of existing data will drive patients toward more invasive, more expensive, and riskier treatments and remove options known to be safe and effective.

- The BMJ Clinical Practice Guideline Retraction:** Given the methodological issues discussed above and concerns regarding policy implications, we urge *The BMJ* to retract the flawed guideline publication.

6. Conclusion

We acknowledge that interventional spine procedures are not universally effective and that careful patient selection is essential. We agree with Wang et al., Busse et al., and Ballantyne that patients suffering from chronic spine pain deserve to be properly informed and receive personalized care where they choose their path to safe and effective pain relief. When provided with treatment options and informed consent, we remain confident that many patients will continue to choose interventional spine procedures performed by highly skilled and caring physicians. When performed with technical precision and integrated into a broader, individualized treatment plan, these procedures have been shown to provide significant benefits. We also stress the importance of selecting, analyzing, and aggregating appropriate studies when developing clinical guidelines. We call upon researchers, clinicians, and policymakers to recognize the complexity of chronic spine pain and to support expanded research and ongoing access to interventional procedures underpinned by rigorous clinical standards.


Sincerely,
 International Pain and Spine Intervention Society
 American Academy of Pain Medicine
 American College of Radiology
 American Society of Neuroradiology
 American Society of Pain and Neuroscience
 American Society of Regional Anesthesia and Pain Medicine
 American Society of Spine Radiology
 ANOA (Arbeitsgemeinschaft der Nicht Operativen Orthopädischen)
 Association of Pain Program Directors
 Belgian Pain Society
 Boston Pain Society
 Dutch Society of Musculoskeletal Medicine
 Eastern Pain Association
 Flemish Anaesthesiology Association for Pain Management
 GIMDO (Gruppo Italiano Multidisciplinare Dolore Orofacciale)
 IGOST (Interdisziplinäre Gesellschaft für Orthopädische/Unfallchirurgische und Allgemeine Schmerztherapie)
 Indian Society for Study of Pain
 ISAL Foundation - Institute for Pain Research
 Italian Society of Pain Clinicians
 Korean Pain Society
 Latin American Pain Society
 North American Neuromodulation Society
 North American Spine Society
 Oregon Society of Interventional Pain Physicians
 PA'N, Dutch Chapter of the IASP
 Pacific Spine and Pain Society
 Pain Section of the Dutch Society of Anesthesiology
 SIAARTI (Società Italiana di Anestesia Analgesia Rianimazione e Terapia Intensiva)
 Sierra Spine Society
 Society of Interventional Radiology
 Spanish Pain Society
 Turkish Society of Physical Medicine and Rehabilitation Specialists
 World Academy of Pain Medicine United
 World Institute of Pain

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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