Clin Orthop Relat Res (2023) 481:1-6
DOI 10.1097/CORR.0000000000002693

Clinical Orthopaedics and Related Research®
A Publication of The Association of Bone and Joint Surgeons®

Not the Last Word

Published online: 4 May 2023

Not the Last Word: When Opinions Are Fervid but Evidence is Lacking, a Misinformation Consensus is Ripe for Backtracking

Joseph Bernstein MD[1]

Unless the building is truly burning down, don't go shouting "fire" in a crowded theater. Screaming in theaters is generally considered impolite, and false alarms might start a panicked stampede. Nonetheless, however rude and dangerous it may be, shouting "fire" in a crowded theater is not illegal.

The First Amendment of the US Constitution guarantees freedom of speech, and this right has not been restricted by a fire-and-theater exception for over half a century. The idea that shouting "fire" in a crowded theater could be regulated by law was suggested by Justice Oliver Wendell Holmes in the case *Schenck v. United States,* but *Schenck* was overturned in 1969.

Even so, the right to freedom of speech in the United States is not limitless. The Supreme Court, in *Miller v. California, New York Times v. Sullivan, Brandenburg v. Ohio, Chaplinsky v. New Hampshire,* and other important opinions, declared that the First Amendment doesn't protect four narrowly tailored categories of speech: obscenity, defamatory statements, language encouraging imminent lawless action, and provocative "fighting" words that lead to violence.

The state of California has now tried to add a fifth category of speech outside of First Amendment protection: medical misinformation. California Governor Gavin Newsom recently signed Assembly Bill 2098 [12], a law establishing that a physician who shares "false information that is contradicted by contemporary scientific consensus" about COVID-19 has committed unprofessional conduct.

The California law is currently on hold, blocked by a circuit court's injunction [7]. An appellate court, and perhaps the Supreme Court too, will weigh in. I hope the law is shot down for good.

Advocates of the law could argue that it focuses on speech that is similar to the other exempt categories, specifically speech that results in harm. They might also argue that the law restricts speech only when it is made in an official capacity as a licensed physician—a position with state-granted privileges, and therefore open to state-imposed limitations. Additionally, they could argue that medical speech is essentially a form of conduct, subject to legal regulation. (This concept of "speech as action" is indisputable in psychiatry, for example, where talk therapy is used to produce mood-altering chemicals in a patient's brain [8], but it can be found in orthopedics too, one may say, such as when a surgeon gives weightbearing instructions after a procedure.)

But these defenses are distractions. The California law is fatally flawed because it relies on an illogical construct: namely, "scientific consensus."

Michael Crichton explains it [6] plainly: "Historically, the claim of consensus has been the first refuge of scoundrels; it is a way to avoid debate by claiming that the matter is already settled. Let's be clear: the work of science has nothing whatever to do with consensus. Consensus is the business of politics. Science, on the contrary, requires only one investigator who

A *note from the Editor-in-Chief: We are pleased to present to readers of* Clinical Orthopaedics and Related Research® *the next* "Not the Last Word." *The goal of this section is to explore timely and controversial issues that affect how orthopaedic surgery is taught, learned, and practiced. We welcome reader feedback on all of our columns and articles; please send your comments to eic@clinorthop.org.*

The author certifies that there are no funding or commercial associations (consultancies, stock ownership, equity interest, patent/licensing arrangements, etc.) that might pose a conflict of interest in connection with the submitted article related to the author or any immediate family members.
All ICMJE Conflict of Interest Forms for authors and *Clinical Orthopaedics and Related Research®* editors and board members are on file with the publication and can be viewed on request.
The opinions expressed are those of the writer, and do not reflect the opinion or policy of *CORR®* or The Association of Bone and Joint Surgeons®.

J. Bernstein ✉, University of Pennsylvania, 424 Stemmler Hall, Philadelphia, PA 19104, USA, Email: orthodoc@uphs.upenn.edu

[1]Department of Orthopaedic Surgery, University of Pennsylvania, Philadelphia, PA, USA

Not the Last Word

happens to be right, which means that he or she has results that are verifiable by reference to the real world. In science, consensus is irrelevant. What is relevant is reproducible results. The greatest scientists in history are great precisely because they broke with the consensus. There is no such thing as consensus science. If it's consensus, it isn't science. If it's science, it isn't consensus. Period."

One of the saddest illustrations of a misguided scientific consensus is the recently prevalent idea that pain should be considered the "fifth vital sign." This misconception no doubt fueled the opioid epidemic that is still with us (Fig. 1). In retrospect, the fallacy of this consensus should have been easily apparent, as subjective symptoms like pain are categorically different than objective signs [1] like heart rate or blood pressure. In the moment, however, it may be hard to detect when the crowd is unwise. One marker of what Skrabanek calls a "nonsensus consensus" [16] is a sudden reversal in stance, without new evidence to compel it. Indeed, such fact-free flip-flopping was seen frequently with COVID-19 opinions (Table 1).

I would like to look beyond that. Even if the current consensus on COVID-19 is correct, it is imperative to protect the freedom of speech that is threatened by the California law. First, refining and improving current opinions requires the expression and testing of rival points of view. Just as genetic mutations (although often detrimental) can propel evolutionary progress, dissenting scientific opinions (even if mostly misguided) can advance medical knowledge. Besides, patients will trust medical advice more readily if they believe that their doctors are permitted to speak freely. For those reasons alone, even if the current consensus on COVID-19 is correct, the right to dissent is critical.

Preservation of dissent is a core aim of the First Amendment. And while Justice Holmes's thoughts on crowded theaters no longer define the law, his philosophy on dissent endures: "If there is any principle of the Constitution that more imperatively calls for attachment than any other it is the principle of free thought – not free thought for those who agree with us but freedom for the thought that we hate" [17].

Jason Koh MD, MBA

Mark R. Neaman Family Chair of Orthopaedic Surgery, NorthShore University HealthSystem

Director, Orthopaedic and Spine Institute

Clinical Professor, Pritzker School of Medicine, University of Chicago

Adjunct Professor, McCormick School of Engineering, Northwestern University

Dr. Bernstein's thoughtful comments on a well-intended but problematic piece of legislation meant to protect public health raises many important questions about free speech, "scientific consensus," and what the legislature's role should be in determining science and professionalism. As he points out, the First Amendment, which states that "Congress shall make no law… abridging the freedom of speech," is a high barrier to overcome, even if we must protect expression of—in the words of Justice Oliver Wendell Holmes—"the thought that we hate." The 1969 Supreme Court decision in *Brandenburg v. Ohio* [2] made this clear when the Court reversed the conviction of Clarence Brandenburg, a Ku Klux Klan leader who advocated violence, since it would not result in "imminent lawless action." Medical misinformation, albeit reprehensible and potentially harmful, would probably fail to meet this standard.

Another aspect worth exploring is the concept of "scientific consensus," which is the collective position of the majority of scientists based on their interpretation of the available evidence [11]. As Dr. Bernstein notes, this is subjective. As we have also seen, scientific results can be difficult to reproduce, and evidence changes over time. Studies showing that pain was undertreated in hospitals prompted James Campbell in his 1996 address to the American Pain Society to call pain "the fifth vital sign" (although it is neither objective nor necessary to life). Subsequently, the Joint Commission on Accreditation of Healthcare Organizations implemented pain standards in 1999 and the Veterans Health Administration adopted them in 2000. Expanded use of opioids to treat any type of pain was largely based a single article—really, it was just a letter to the editor, one paragraph in length—from 1980 in the *New England Journal of Medicine* that stated only four out of 11,882 hospitalized patients developed addiction after receiving opioids [13]. Later, the American Pain Society and the American Academy of Pain Medicine released a consensus statement in 1997 and the American Medical Association's Council on Scientific Affairs released best practice guidance in 2000 echoing that the risk of developing "opioid addiction among patients without a history of misuse or abuse was low," and the Federation of State Medical Boards issued guidance that opioids "may be essential." We now know that these consensus statements and beliefs, combined with aggressive marketing tactics by pharmaceutical companies, contributed to the current opioid crisis [14].

Finally, this legislation attempts to define science and medicine. Federal Judge William Shubb's preliminary injunction is based in part on the lack of clarity of who decides what, and when scientific consensus has been achieved [7]. Historically, state medical boards have been in charge of determining when

Not the Last Word

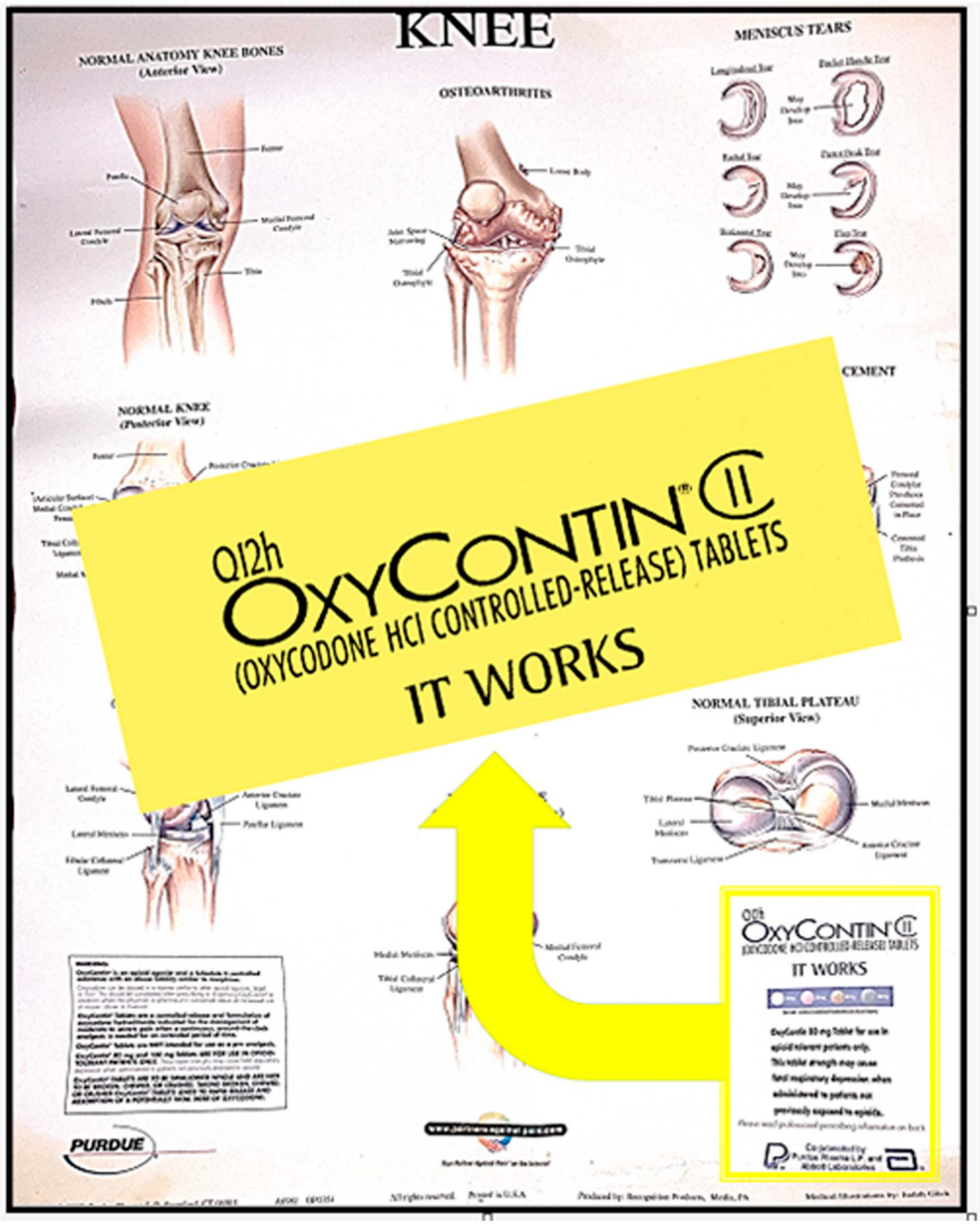

Figure 1 An annotated photograph of an anatomic chart of various knee conditions, provided to my office about 20 years ago by a pharmaceutical salesperson who was promoting the use of narcotics to treat arthritis and meniscal tears. All annotations in yellow are my artistic contributions, though 20 years ago, a giant red "X" might have been a more apt and helpful one. To my discredit, I did not dissent loudly enough from the "pain is a vital sign" consensus.

Not the Last Word

Table 1. The wavering medical consensus related to COVID-19

Time-honored tradition	Post-COVID nonsensus consensus
1. Masks are not needed during pandemics caused by respiratory viruses.	1. Masks are mandatory during pandemics caused by respiratory viruses, except in restaurants–but only when seated.
2. Dating back to the Athenian Plague of 430 BC, we have known that previous infection confers immunity. Thus, historically, the CDC has recommended that you do not need to get a vaccine if you have evidence of immunity against the disease for which the vaccine is designed [3].	2. According to the CDC, you should get a COVID-19 vaccine even if you already had COVID-19 [4].
3. The term "emergency" refers to an "urgent, sudden, and serious event or an unforeseen change in circumstances that necessitates immediate action to remedy harm or avert imminent danger to life, health, or property; an exigency" [5]	3. Emergencies can last 40 months. For example, the Secretary of Health and Human Services (HHS) can declare a public health emergency in January 2020, and reiterate that declaration 10 more times, every three months. The President can announce that the "pandemic is over" in September 2022, but the Secretary of HHS can declare a COVID emergency two times again after the President's comment anyway. Finally, on January 30, 2023, the President can proclaim the emergency's end, on exactly May 11, 2023.
4. Since the days of Edward Jenner, circa 1796, the term "vaccine" refers to a substance administered to stimulate the immune system to prevent a disease and its spread.	4. The term "vaccine" refers to a preemptive therapeutic: a substance that neither prevents a disease nor limits its spread, but is given before getting sick on the assumption it might help minimize adverse outcomes if one ultimately contracts disease.
5. Informed consent is a hallmark of Western medical ethics. It requires physicians to respect patients' autonomy by giving them the information needed to understand the risks and benefits of a proposed intervention, as well as the reasonable alternatives (including no intervention), so that they may make independent decisions [15].	5. The state may compel a person to accept a preemptive therapeutic for COVID that has no beneficial effect on anyone else, independent of the person's risk for COVID infection or prior COVID exposure, and indeed all other reasons. That is, the state may compel a person to accept a preemptive therapeutic for COVID, without exception and without consent.

misinformation violates standards of care and professionalism. To this point, legislatures (on behalf of the public) have felt that it's better for physicians to assess their peers rather than lawmakers. The new precedent this California law sets might invite legislators to get more involved in medical decision-making when they are not qualified to do so.

In the midst of an evolving epidemic with limited, often contradictory, and constantly changing data, scientific consensus is hard to achieve and can be wrong. It is only through testing and discarding competing hypotheses that we get closer to the truth. This well-meaning law limits scientific discussion and invites untrained individuals to apply vague standards. This will only result in confusion.

João Marecos LLM

Research Fellow and PhD Candidate, Institute of Global Health Innovation, Imperial College of London

While reading Dr. Bernstein's opinion, I felt familiar contradictory feelings. As a European lawyer, I was trained to entertain broader restrictions to freedom of expression. After qualifying in the US and studying First Amendment jurisprudence, I have grown fond of the American views on free speech. My work on health misinformation—as an activist, a World Health Organization consultant, and a researcher—has sought to find a balance between the need for serious action to curb the spread of false information and ensuring that freedom of speech maintains its place as the core pillar of democracy.

As such, I look at the California bill with benevolence and perplexity—but not with Dr. Bernstein's outrage.

On one hand, COVID-19 caused an unprecedented wave of health misinformation, which jeopardized the

Not the Last Word

implementation of vital public health initiatives and promoted vaccine hesitancy [9]. This misinformation was not only peddled by anonymous trolls and ignorant people; it became a political weapon in a highly polarized country, a source of conspiracy theories on big pharma and government control, and, ultimately, turned into a matter of faith rather than science. Curbing this misinformation is an outstanding policy goal, and an incredibly hard one to achieve, which explains the relative lack of legislative solutions attempted around the world [18]. Hence, my benevolence.

The California bill, however, focuses on only one misinformation source, licensed physicians, in one particular context: the treatment of patients. This narrow scope is unlikely to meaningfully change the face of the problem: Even if no doctor ever uttered another medical falsehood to a patient, the problem of rampant health misinformation would remain. While the law appropriately distinguishes misinformation from disinformation, it fails to recognize how the two demand different responses. Arguably, disinformation as defined by the law—"misinformation that the licensee deliberately disseminated with malicious intent or an intent to mislead"—would already be considered unprofessional conduct, and likely malpractice. Words spoken by a doctor with the malicious intent to harm a patient would not be protected by the First Amendment nor by the most ardent free speech maximalist.

Hence, the perplexity: This could have been an ambitious legislative project that sparked a relevant and important debate about the challenges and opportunities to combat misinformation within constitutional boundaries. As many have argued [19], including myself [10], the First Amendment may be unprepared to deal with the current landscape of online speech and misinformation. This bill could have forced that judicial debate. Instead, it falls overwhelmingly short, and will inevitably be struck down.

Its definition of health misinformation is absurd. As Dr. Bernstein eloquently put it, consensus is a terrible and dangerous way of asserting the truth. Just ask Galileo Galilei, who was imprisoned for life for defending heliocentrism against the then-contemporary scientific consensus. The bill could have, however, relied on that concept in a different way, perhaps salvaging it from an inevitable demise. In science, "contemporary scientific consensus" is not the standard to abide by, but the standard to beat. In healthcare, however, scientific consensus retains importance, not as a measure of truth, but as a measure of risk. A patient must be made aware when a medical opinion goes against contemporary scientific consensus, not because it may be false information, but because that knowledge is needed for a free and informed health decision. Doctors' opinions carry immense weight to their patients, who may not think to challenge them. That needs to be recognized and protected.

Hence, my lack of outrage. Although I fully agree that consensus is a ludicrous measure of truth, I believe I see what legislators were trying to protect. Licensed practitioners should be able to issue good-faith opinions that go against the contemporary scientific consensus because they have freedom of speech and because scientific knowledge inevitably evolves beyond contemporary consensus. However, they should also be obliged to disclose when a specific medical opinion on a treatment is being given in direct contradiction of a well-established scientific consensus. The patient, free and now informed, should then decide which path to take.

I am convinced that, in a free and democratic society, misinformation cannot be fought with less speech; it must be fought with more speech. This can take the form of education on media, health, and online literacy; it can be embedded in information as credibility or fact-checking labels; or it may simply be the imposition, on certain professional sources that operate under a code of ethics (such as doctors, lawyers, and journalists), to disclose certain facts about their work that are relevant for their respective audiences to form truthful and accurate opinions.

The California bill missed the target all together, and in doing so, risks quelling dissent and scientific progress, and therefore entirely deserves Dr. Bernstein's criticism.

Acknowledgements Dr. Bernstein acknowledges James Bernstein's law review article, "Speaking Up for Universities?" for strongly influencing his thinking about protecting free speech.

References

1. Bernstein J. Fine wigns. *Clin Orthop Relat Res*. 2010;468:1165-1167.
2. *Bradenburg v Ohio*, 395 US 444 (1969).
3. Centers for Disease Control and Prevention. Chickenpox vaccination: what everyone should know. Updated April 28, 2021. Available at: https://www.cdc.gov/vaccines/vpd/varicella/public/index.html. Accessed April 5, 2023.
4. Centers for Disease Control and Prevention. Frequently asked questions about COVID-19 vaccination. Updated March 29, 2023. Available at: https://www.cdc.gov/coronavirus/2019-ncov/vaccines/faq.html. Accessed April 5, 2023.
5. Cornell Law School. Emergency. Updated July 2021. Available at: https://www.law.cornell.edu/wex/emergency. Accessed April 5, 2023.
6. Crichton M. Aliens cause global warming. The Caltech Michelin Lecture. Available at https://stephenschneider.stanford.edu/Publications/PDF_Papers/Crichton2003.pdf. Accessed March 30, 2023.

Not the Last Word

7. Gans J. Federal judge blocks California misinformation law. *The Hill*. Available at: https://thehill.com/regulation/court-battles/3833306-federal-judge-blocks-california-misinformation-law. Accessed April 10, 2023.
8. Kandel ER. Psychotherapy and the single synapse. The impact of psychiatric thought on neurobiologic research. *N Engl J Med*. 1979;301:1028-1037.
9. Lee SK, Sun J, Jang S, Connelly S. Misinformation of COVID-19 vaccines and vaccine hesitancy. *Sci Rep*. 2022;12:13681.
10. Marecos J, Duarte FDA. A right to lie in the age of disinformation: protecting free speech beyond the First Amendment. In: De Abreu BS, ed. *Media Literacy, Equity, and Justice*. Routledge; 2022.
11. Ordway DM. Covering scientific consensus: what to avoid and how to get it right. *The Journalist's Resource*. Available at: https://journalistsresource.org/media/scientific-consensus-news-tips. Accessed April 10, 2023.
12. Physicians and Surgeons: *Unprofessional Conduct, Assemb. 2098*, 2021-2022 Session (Cal 2022). Available at: https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=202120220AB2098. Accessed April 5, 2023.
13. Porter J, Jick H. Addiction rare in patients treated with narcotics. *N Engl J Med*. 1980;302:123.
14. Sarpati A, Sinha MS, Kesselheim AS. The opioid epidemic: fixing a broken pharmaceutical market. *Harvard Law and Policy Review*. 2017;11:463-484.
15. Sedig L. What's the role of autonomy in patient- and family-centered care when patients and family members don't agree? *AMA Journal of Ethics*. Available at: https://journalofethics.ama-assn.org/article/whats-role-autonomy-patient-and-family-centered-care-when-patients-and-family-members-dont-agree/2016-01. Accessed March 30, 2023.
16. Skrabanek P. Nonsensus consensus. *Lancet*. 1990;335:1446-1447.
17. *United States v. Schwimmer*, 279 U.S. 644, 654-55 (1929).
18. Word Health Organization. Toolkit for tackling misinformation on non-communicable disease: forum for tackling misinformation on health and NCDs. Available at: https://www.who.int/europe/publications/i/item/WHO-EURO-2022-6260-46025-66542. Accessed April 10, 2023.
19. Wu T. Is the First Amendment obsolete? *Michigan Law Review*. 2018;117:547-581.