

Comment on the Social Security Administration’s *Consideration of Pain in the Disability Determination Process*, 83 FR 64493 (proposed Dec. 17, 2018)

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Executive Summary

This comment examines the difficulties of measuring pain. We first present a review of current scientific and medical literature on the existence and evaluation of pain, and suggest that the SSA recognize that chronic pain can exist independently of medically determinable physical or mental impairment. As currently written, the SSA’s disability determination process excludes individuals who may be suffering from pain for which there is no identifiable cause. This suggestion is in line with the actions of the World Health Organization and the United States Department of Veterans Affairs, which have begun to recognize that pain itself can be a disabling disease.

The second part of this comment evaluates the current effectiveness of the medical technologies that may help the SSA objectively evaluate the existence and severity of a claimant’s pain. We conclude that while the SSA should not currently use these technologies in individual determinations, they have the potential to provide additional evidence of pain, particularly in the absence of an overt, identifiable physical ailment. Further, these technologies may help inform administrative law judges, federal judges, juries, or other decision-makers about the complex nature of pain.

Finally, our comment recommends that the SSA commit to periodically revisiting these technologies to determine whether they are developed enough to serve as accurate and objective

¹ The authors are all students in the Duke Science Regulation Lab, an interdisciplinary course offered through the Duke University Law and Graduate Schools.

sources of evidence of a claimant's pain. Any present changes to the disability determination process should be made with potential future technologies in mind. If and when the SSA decides to rely on fMRI, EEG, or other technology, it should also take care to consider potential disparities in access.

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I. Introduction

A. Who We Are

The Duke Science Regulation Lab (SciReg Lab)² is composed of graduate students from a variety of disciplines at Duke University, including science, law, ethics, and policy. The SciReg Lab was originally inspired by the traditional role of *amicus curiae*: to provide a court with unbiased information necessary to reach a binding decision. As an extension of that concept, we now provide government agencies with the scientific information necessary to undertake effective rulemaking.

Modern society requires our government to handle increasingly complex scientific issues when deciding cases or making policy. We, the Duke Science Regulation Lab, believe that the general public benefits from judgments that are based on sound scientific knowledge. To assist decision makers in understanding a scientific matter at hand, the students of the Science Regulation Lab combine their expertise to offer a non-partisan, accurate, and accessible explanatory brief or comment.

The members of the Duke Science Regulation Lab vary in their academic backgrounds. **Kelly Hamachi** is a JD candidate who is jointly pursuing an MA in Bioethics and Science Policy; **Abigail Leinroth** is a PhD candidate in Cell Biology and the program in Developmental and Stem Cell Biology, studying musculoskeletal development; and **Ashle Page** is an MA candidate in Bioethics and Science Policy.

² Michael B. Waitzkin, JD, J. H. Pate Skene, JD, PhD, and Sarah Rispin Sedlak, JD, are the faculty members who lead the SciReg Lab and who oversaw the preparation of this Comment. We would also like to thank Amanda Pustilnik, JD, Professor of Law at the University of Maryland School of Law and faculty at the Center for Law, Brain & Behavior at Massachusetts General Hospital; Tor Wager, PhD, Professor of Psychology and Neuroscience, and Director of the Cognitive and Affective Control Laboratory at the University of Colorado, Boulder; and Steven George, PT, PhD, Professor at Duke University, Director of Musculoskeletal Research at Duke Clinical Research Institute, and Vice Chair of Clinical Research in Orthopaedic Surgery. These individuals provided valuable insight, analysis, and editing assistance throughout the preparation of this comment.

B. The Social Security Administration’s Request for Comments

This comment responds to the Social Security Administration’s (SSA) request for comments and supporting data related to the “consideration of pain and documentation of pain in the medical evidence [the agency] use[s] in connection with claims for benefits.”³ The SSA specifically asks for public input on eight different questions. This comment will respond to the following inquiries:

1. Are there changes that we should consider about how we consider pain in the disability evaluation process? If so, what changes do you suggest we make? Please provide data, research, or any other evidence supporting your suggestions where applicable.
3. How is pain and documentation of pain in the medical evidence assessed in other Federal, State, and private disability programs?
7. Can health care utilization and treatment regimens employed by physicians to manage patient pain provide objective insights into the intensity and persistence of pain? When should those regimens not be an indication of the severity of an individual's pain?
8. Is there any additional information that we should consider when we evaluate pain in our disability program?

II. The Social Security Act’s Disability Determination Process

The Social Security Act defines disability as the “inability to engage in any substantial gainful activity by reason of any *medically determinable* physical or mental impairment which can be expected to result in death or which has lasted or can be expected to last for a continuous period of not less than 12 months[.]”⁴ Physical or mental impairments are limited to “anatomical, physiological, or psychological abnormalit[ies]” that are demonstrable by “medically acceptable

³ Consideration of Pain in the Disability Determination Process, 83 Fed. Reg. 64493 (proposed Dec. 17, 2018).

⁴ 42 U.S.C. § 423(d)(1)(A) (2018) (emphasis added).

clinical and laboratory diagnostic techniques.”⁵ Thus, an individual suffering from chronic pain with no identifiable cause would not be considered disabled for SSI or SSDI purposes.

To determine whether an individual qualifies for disability benefits, the Social Security Administration engages in a sequential five-step inquiry that examines:

1. the individual’s work activity;
2. the severity of the individual’s physical and/or mental condition;
3. whether the individual’s medical condition meets or equals the severity of an SSA Listing;
4. whether the individual can do any of his/her past relevant work; and
5. whether the individual can perform any other type of work.⁶

The claimant must “submit all evidence known to [him or her] that relates to whether or not [he or she] is . . . disabled.”⁷ This evidence must include objective medical signs and findings; an individual’s statement about their pain or other symptoms alone is not conclusive evidence of disability.⁸ However, the SSA considers all evidence the claimant provides, including information about their activities; the location, duration, frequency, and intensity of the pain or other symptoms; treatments and medication; and functional limitations.⁹ Thus, the presence of pain is currently viewed by the SSA as evidence of disability, but an applicant suffering from pain would not be eligible for benefits in the absence of an identifiable cause.

⁵ *Id.* § 423(d)(3).

⁶ 20 C.F.R. § 404.1520 (2018).

⁷ *Id.* § 404.1512.

⁸ 42 U.S.C. § 423 (d)(5)(A).

⁹ *Id.* § 423(d)(5)(B); *See* 20 C.F.R. § 404.1529(c)(3)(i)-(vii). *See also Disability Evaluation Under Social Security: Part II: Evidentiary Requirements*, SOCIAL SECURITY ADMINISTRATION, <https://www.ssa.gov/disability/professionals/bluebook/evidentiary.htm> (last visited Feb. 11, 2019).

III. Chronic Pain in the Absence of a Medically Determinable Physical or Mental Impairment

Scientific and medical literature assert that chronic pain can exist independently of an identifiable cause.¹⁰ However, under the current SSI and SSDI regimes, pain alone is not sufficient to qualify an applicant for disability benefits, even if it renders the individual “unable to engage in any [] kind of substantial gainful work.”¹¹ Instead, the pain must be derivative of an underlying “physical or mental impairment,” and the claimant must be able to establish their disability with “objective medical evidence.”¹² Thus, individuals suffering from severe chronic pain from an unidentifiable source are excluded from receiving SSI or SSDI benefits. This is problematic because it conflicts with scientific and medical consensus about pain, which will be discussed further in Part B of this section.

The worldwide community and the courts have begun to accept that pain can be its own disease. In fact, prior to the SSA’s adoption of stringent disability standards in the 1980s, every circuit held that pain, on its own, was enough to render an individual disabled under the Social Security Act regardless of whether it was accompanied by an underlying disease or objectively measurable symptoms.¹³ To reflect the current medical and scientific understandings of pain, the SSA should again adjust its SSI and SSDI eligibility criteria to accept pain itself as a disease eligible for disability.

¹⁰ This will be discussed in detail in Section III B.

¹¹ The SSA defines physical and mental impairments as those that “result[] from anatomical, physiological, or psychological abnormalities.” 42 USC § 423(d)(2)-(3) (2018).

¹² 42 USC § 423(d)(3) (2018).

¹³ Amanda C. Pustilnik, *Imaging Brains, Changing Minds*, 66 ALA. L. REV. 1099, 1122 (2015).

A. The SSA’s current disability criteria exclude individuals who have chronic pain without an identifiable cause.

One of the difficulties the SSA faces when determining whether a claimant is eligible for disability benefits is assessing the severity of the claimant’s pain. Pain has been quintessentially decried as an inherently subjective topic, which complicates both the medical evaluation of the severity of pain and the legal determinations of disability benefits.¹⁴

Unlike a herniated disc, which can be visualized in MRI, objective ways of quantifying pain do not currently exist. In the medical field, this has lead doctors to rely heavily on their patients’ self-reporting. To help them, doctors typically use a numeric pain rating scale which asks patients to rate their pain on a scale of 1-10, with 1 being no pain and 10 being the worst pain possible.¹⁵ Physicians may also show their patients a chart with a gradient of happy and sad faces and have them pick the one that most closely matches how they feel.¹⁶ While these methods may provide insight into the pain the patient is experiencing, they do not fix the subjectivity problem. A 3 on the pain scale for one person could be a 7 for someone else.¹⁷

Despite the challenges of measuring pain, the SSA’s failure to classify pain as a condition that could potentially warrant disability benefits excludes individuals who suffer from debilitating chronic pain that is not incidental to a medically determinable mental or physical impairment. Their pain may be so severe that it renders them unable to engage in “any [] kind of substantial work,” yet without the requisite identifiable cause, they are ineligible for disability

¹⁴ See *id.* (“[T]he SSA itself explicitly recognizes that pain can be subjective and variable.”).

¹⁵ *The pain of measuring pain*, HARV. MEN’S HEALTH WATCH (Dec. 2018), <https://www.health.harvard.edu/pain/the-pain-of-measuring-pain>.

¹⁶ *Id.*

¹⁷ Pain experts contend that detailed questionnaires are the most effective and reliable method for assessing pain available today. While they are less reliable for comparing pain between patients, experts feel that questionnaires can be extremely useful and reliable for assessing the pain of a patient over time. Karen D. Davis et al., *Brain Imaging test for chronic pain patients: medical, legal and ethical issues and recommendations*, 13 NATURE REVIEWS NEUROLOGY 624 (2017).

benefits. As a result, the person may be disabled in a general sense but not under the Social Security Act.¹⁸

The SSA’s disability insurance programs were created in 1965 in response to a growing concern about protecting the disabled, a class of vulnerable Americans.¹⁹ But the laws were not without their critics. Those opposed to the programs argued that assessing whether a claimant is disabled would be too difficult and expensive.²⁰ Undeniably, these same concerns are still present today. However, if the goal of the SSDI and SSI programs is to protect disabled Americans, the scientific and medical evidence demonstrate that the current regime excludes a significant segment of the disabled population. Additionally, emerging medical technologies may help inform agencies, courts, and other decision-makers by providing them with new insights into pain. These will be discussed in further detail in Section IV.

B. Scientific and medical literature indicate that chronic pain may present with either discordant pain symptoms or no identifiable cause at all.

i. There are several different types of pain.

The International Association for the Study of Pain defines pain as “[a]n unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage[.]”²¹ Pain can be present either acutely or chronically. While acute pain is transient, chronic pain is sustained over a long period of time, often far past the point of typical

¹⁸ In 2017, over 2 million individuals applied to the SSA for disability benefits. *Disabled Workers Applications For Disability Benefits & Benefit Awards*, SOC. SEC., <https://www.ssa.gov/oact/STATS/table6c7.html> (last visited Feb. 15, 2018).

¹⁹ John R. Kearney, *Social Security and the “D” in OASDI: The History of a Federal Program Insuring Earners Against Disability*, 66 SOC. SEC. BULL. (2006), <https://www.ssa.gov/policy/docs/ssb/v66n3/v66n3p1.html>.

²⁰ *Id.* In fact, this opposition is the reason why disability was not included in the Social Security Act of 1935, which covered compensation for the unemployed, the elderly, the blind, and dependents.

²¹ TASK FORCE ON TAXONOMY OF THE INTL. ASSN. FOR THE STUDY OF PAIN, CLASSIFICATION OF CHRONIC PAIN 204–214 (2d ed. 1993).

healing for the known affliction.²² Because of its sustained nature, chronic pain is complex and typically multi-dimensional. For example, it can be either nociceptive (pain in response to stimuli) or neuropathic (pain caused by neuronal damage) in origin.²³ Furthermore, patients with chronic nociceptive pain may, over time, experience sensitization of neurons or neural death, resulting in a combination of both nociceptive and neuropathic pain.^{24, 25} In cases where the patient presents both neuropathic and nociceptive pain, it can be difficult to discern the pathological origin of each “type” of pain, yet its sustained nature can make it extremely disabling.^{26, 27}

ii. *Chronic pain intensity is often not aligned with the underlying identified source of pain.*

Beyond the complexity in assessing the type of pain, identifying the source of chronic pain can be difficult because the bases for many common chronic pain diagnoses are often unknown or heterogeneous in origin.²⁸ These cases can be thought of as “chronic pain without an identifiable cause.”²⁹ Both pain experts and research studies have indicated that severe pain does not require an identifiable cause to be disabling and necessitate treatment.³⁰

This discordance between identifiable conditions and pain can be seen across various chronic pain conditions. For example, in the case of lower back pain, some patients will present

²² *Id.*

²³ Ewan St. John Smith, *Advances in understanding nociceptive and neuropathic pain* 265 J. NEUROLOGY 231 (2018).

²⁴ Neural sensitization is a condition where neural circuits lessen their pain threshold. *Id.*

²⁵ Ian Gilron et al., *Neuropathic Pain: Principles of Diagnosis and Treatment*, 90 MAYO CLINIC PROCEEDINGS 532 (2015).

²⁶ *Id.*

²⁷ Luana Colloca, et al., *Neuropathic Pain*, 3 NATURE REVIEWS: DISEASE PRIMERS 1 (2017).

²⁸ N. Spahr, et al., *Distinguishing between nociceptive and neuropathic components in chronic low back pain using behavioural evaluation and sensory examination*, 27 MUSCULOSKELETAL SCIENCE & PRACTICE 40 (Feb. 2017).

²⁹ *Id.*

³⁰ Telephone interview with Steven Z. George, Professor, Duke University (Feb. 1, 2019).

with an identifiable source for their pain, such as a herniated disc, while others lack an identifiable source.³¹

Another example where pain symptoms cannot be explained by or directly correlated to the identifiable physical pathologies is osteoarthritis (OA), which is characterized not only by cartilage damage but also by knee pain.^{32, 33} Among osteoarthritis patients, there is a large diversity in the reported relationship between chronic knee pain and radiographic symptoms (physical damage to the knee and cartilage measured in MRI)³⁴ - one study found that anywhere from 15-76% of patients with chronic knee pain have radiographic symptoms.³⁵ It is well understood among clinical experts that OA cases often present with discordant pain and radiographic symptoms, and that pain is key to diagnosing OA. It is possible to think about OA as being separated into three diagnostic categories:

1. Chronic knee pain without radiographic symptoms;
2. Symptomatic radiographic OA without Chronic Knee Pain; or
3. Both radiographic symptoms of OA and Chronic Knee Pain

To date, the discordance between pain and physical symptoms typically seen in patients with conditions like chronic lower back pain or OA is not fully understood. Expanding the definition of disability to include those with debilitating chronic pain who may not show a physical or mental impairment would allow these individuals to apply for disability benefits. By

³¹ *Id.*

³² OA is a leading cause of disability in the elderly population. It is estimated that 6-8% of the general population, and between 19-28% of people in the elderly population suffer from OA. Annett Eitner, et al. *Mechanisms of Osteoarthritis Pain. Studies in Human and Experimental Models*, 10 FRONTIERS IN MOLECULAR NEUROSCIENCE 349 (2017).

³³ *Id.*

³⁴ Duygu Cubukcu, et al., *Relationships between Pain, Function, and Radiographic Findings in Osteoarthritis of the Kneew: A Cross-Sectional Study*, 2012 ARTHRITIS 1 (2012).

³⁵ John Bedson and Peter R. Croft, *The discordance between clinical and radiographic knee osteoarthritis: a systematic search and summary of the literature*, 9 BMS MUSCULOSKELETAL DISORDERS 1 (2008).

contrast, excluding chronic pain without an identifiable cause would be an improper classification of major diseases such as OA and chronic lower back pain.

iii. Chronic pain may have no identifiable cause.

Beyond cases like OA, which can present with discordant symptoms, other patients present with pain without any identifiable cause.³⁶ One major example of this is fibromyalgia, a chronic condition with complex etiology, in which the organic basis of the pain is often unclear.³⁷ Despite the lack of an identifiable pathology, studies have found that these patients have an altered brain structure suggestive of both pain sensation and long-term pain.³⁸ Experts contend that the lack of an identifiable cause for these patients' pain does not mean that the pain does not exist.³⁹

C. Pain is gaining broad recognition as a stand-alone condition.

Both the World Health Organization and the Department of Veterans Affairs now recognize that pain can exist in the absence of an identifiable underlying physical or mental impairment. These changes reflect their efforts to comport with current medical and scientific literature.

i. WHO and ICD-11 Codes

Pain is now recognized as a stand-alone condition in the worldwide health community. In June 2018, the World Health Organization (WHO), to which the United States is a member, released its new International Classification of Diseases (ICD-11). One of its big changes was

³⁶ Elizabeth J. Dansie & Dennis C. Turk, *Assessment of patients with chronic pain*, 111 BRITISH J. OF ANAESTHESIA 19 (2013).

³⁷ *Id.*

³⁸ Karen Jensen, et al., *Evidence of of dysfunctional pain inhibition in Fibromyalgia reflected in rACC during provoked pain*, 144 PAIN 95 (2009).

³⁹ Telephone interview with Steven Z. George, Professor, Duke University (Feb. 1, 2019); Telephone interview with Tor Wager, Professor, University of Colorado Boulder (Feb. 4, 2019).

classifying pain as its own disease.⁴⁰ These updates were made to “reflect[] progress in medicine and advances in scientific understanding.”⁴¹ ICD-11 will be adopted by Member States in May 2019 and will come into effect on January 1, 2022.

The ICD system serves as a tool for billing services and is also used to monitor the incidence and prevalence of diseases and other global health issues.⁴² The new ICD-11 classifies various types of pain, including chronic pain, under its own new category, rather than through associations with a location, etiology, or anatomical system as was done previously.⁴³ WHO’s recognition of pain as a disease itself is ultimately a signal to the medical community to reevaluate how pain is perceived and evaluated in a multitude of contexts. With the high prevalence of pain among individuals worldwide and in the United States, recognition of pain alone as a condition eligible for SSA disability benefits should have the support of medical organizations and medical professionals globally.⁴⁴

ii. *The United States Department of Veterans Affairs*

Courts have also determined that pain can be a disability in the absence of an identifiable physical or mental ailment. In 2018, the United States Court of Appeals for the Federal Circuit held in *Saunders v. Wilkie* that under the wartime disability compensation statutes, stand-alone pain could qualify as a benefit-eligible disability, regardless of whether it accompanied the diagnosis of a disease.⁴⁵ The court declined to apply a 19-year case from the Court of Appeals

⁴⁰ WHO releases new *International Classification of Diseases (ICD 11)*, WORLD HEALTH ORG. (June 18, 2018), [https://www.who.int/news-room/detail/18-06-2018-who-releases-new-international-classification-of-diseases-\(icd-11\)](https://www.who.int/news-room/detail/18-06-2018-who-releases-new-international-classification-of-diseases-(icd-11)).

⁴¹ *Id.*

⁴² *Classifications*, WORLD HEALTH ORG., <https://www.who.int/classifications/en/> (last visited Feb. 11, 2019).

⁴³ See Rolf-Detlef Treede, et al., *A classification of chronic pain for ICD-11*, 156 PAIN 1003 (June 2015).

⁴⁴ It is estimated that around 30% of Americans suffer from chronic pain. Dansie & Turk, *supra* note 36.

⁴⁵ *Saunders v. Wilkie*, 886 F.3d 1356 (Fed. Cir. 2018). The appellant, Melba Saunders, applied for veterans disability benefits after serving 7 years in the army. Though she received treatment for patellofemoral pain syndrome while serving, when she applied for disability benefits with the VA 14 years later, a VA doctor found that she had “no anatomic abnormality, weakness, or reduced range of motion.” Despite bilateral knee pain and severe issues with

for Veterans Claims, which held that “pain alone is not a disability for the purpose of VA Disability compensation,” on the grounds that the case failed to offer reasoned analysis as to why it could not qualify.⁴⁶

The VA’s and the SSA’s disability benefits programs are, no doubt, distinct programs administered by different agencies and operated under different statutes and regulations. In fact, the court in *Saunders* distinguished the two programs, noting that while the SSA requires that the physical or mental impairment “result[] from anatomical, physiological, or psychological abnormalities,” this limiting language is not present in the VA’s disability statute.⁴⁷ However, in the absence of a finding indicating that Congress intended that pain be excluded from the definition of a “disability” in the VA disability statutes, the court determined that “pain is an impairment because it diminishes the body’s ability to function, and that pain need not be diagnosed as connected to a current underlying condition to function as an impairment.”⁴⁸ The court found persuasive the VA Secretary’s concession that “pain *can* cause functional impairment in certain situations, that disability can exist in those cases, and that a formal diagnosis is not always required.”⁴⁹ It also relied on the VA’s *Chronic Pain Primer*, which acknowledges that “chronic pain can develop in the absence of the gross skeletal changes . . . detect[able] with current technology such as MRI or X-ray.”⁵⁰

mobility, she was deemed ineligible to receive benefits. She appealed to the Board of Veterans’ Appeals, which also concluded that she failed to qualify for benefits because she could not provide pathology evidence to explain her pain.

⁴⁶ *Sanchez–Benitez v. West*, 13 Vet.App. 282, 285 (1999).

⁴⁷ *Saunders*, 886 F.3d at 1365 (Fed. Cir. 2018), quoting 42 U.S.C. § 423(d)(3) (2018).

⁴⁸ *Id.* at 1364 (emphasis added). Disability in the VA context refers to the “functional impairment of earning capacity,” not the underlying cause of said disability.

⁴⁹ *Id.* at 364.

⁵⁰ *Id.* at 1367. See also *VHA Pain Management*, U.S. DEP’T OF VET. AFFAIRS (Apr. 30, 2018), <https://www.va.gov/PAINMANAGEMENT/Resources.asp>. The VA’s *Chronic Pain Primer* is a resource available to veterans that includes an introduction to basic information regarding chronic pain and multidisciplinary treatment.

Although the VA’s and the SSA’s disability benefits statutes set forth very different standards, both agencies share a common task: evaluating the presence and the intensity of an individual’s pain.⁵¹ Despite the challenging nature of this responsibility, *Saunders* demonstrates that federal courts and other agencies have begun to recognize that pain can exist in the absence of an identifiable physical or mental impairment. Altogether, these examples underscore the need for the SSA to also recognize that pain can develop independently of an identifiable cause.

IV. Technology: The Future of Pain Determination

Medical technologies capable of objectively assessing the existence and severity of a claimant’s pain would make the SSA’s disability benefit determinations more straightforward and accurate. Additionally, these technologies would create more consistency among agency staff, ALJs, and the courts, and would also significantly aid in reducing the error imposed by unintentional biases in diagnosing and treating pain.

A number of medical technologies that have the potential to improve how we measure and analyze pain, such as fMRI and EEG, are currently being developed. However, their present limitations indicate that they should not currently be used as dispositive evidence of an individual’s pain or lack of pain.

⁵¹ Under the statute at issue in *Saunders*, “disability” refers to “the functional impairment of earning capacity” rather than the underlying cause of the disability. *Saunders*, 886 at 1367. Thus, under the VA disability insurance statutes, pain alone can serve as a functional impairment. The court wrote that “[w]e conclude that pain is an impairment because it diminishes the body’s ability to function, and that pain need not be diagnosed as connected to a current underlying condition to function as an impairment.” *Id.* at 1364.

A. Pain determination in clinical practice, court rulings, and the SSA’s disability programs lacks a consistent and objective standard.

i. ALJs and federal judges make inconsistent pain determinations.

Despite the SSA’s rigorous disability determination procedures, recent studies suggest that both the agency’s ALJs and federal judges evaluate disability claims inconsistently, which has led to varying outcomes for similarly-situated applicants.⁵² Both ALJs and federal judges still retain generous discretion in determining whether a disability claimant is entitled to benefits.⁵³ A recent study found that the range of favorable decisions rates involving disability determinations varied between 4% and 98% among over 1,000 ALJs.⁵⁴ The different circuits also evaluate Social Security disability claims with widely varying standards.⁵⁵ For example, the Fifth Circuit requires that the pain be “constant, unremitting, and wholly unresponsive to therapeutic treatment.”⁵⁶ In contrast, the First Circuit is much more permissive and allows a finding of disability even if a claimant is capable of gainful employment, if engaging in such work would cause “great pain.”⁵⁷

These inconsistencies may, in part, stem from decisionmakers’ varying views on pain. As Professor Amanda Pustilnik writes, “[b]ackground expectations about the nature of the world and people’s behavior shape what decision makers credit as proof, how they weigh such proof, and the conclusions that they draw from such proof.”⁵⁸ But inconsistencies in decisions are also attributable, in large part, to the subjective nature of pain. Without accurate objective measures,

⁵² Harold J. Kent & Scott Morris, Inconsistency and Angst in District Court Resolution of Social Security Disability Appeals 67 HASTINGS L. J. 367, 372 (2016); *see also* Pustilnik, *supra* note 13, at 1128.

⁵³ Kent & Morris, *supra* note 52, at 371.

⁵⁴ *Id.* at 379. The average favorable rate was 56%.

⁵⁵ Pustilnik, *supra* note 13, at 1128.

⁵⁶ *Id.* at 1129

⁵⁷ *Id.*

⁵⁸ *Id.* at 1140.

it is impossible for ALJs or federal judges to determine with certainty amount of pain the claimant is suffering and how debilitating it is for him or her.

ii. *Disparities in clinical pain determinations disproportionately affect women and minorities.*

The SSA’s current disability determination process and the high degree of subjectivity involved in evaluating pain may also disproportionately affect racial minorities and women. Because the process relies on circumstantial evidence and physician reports, the process can create more difficulty for some population groups to obtain the evidence they need to prove that they are disabled.

Disparities in pain care among racial and ethnic groups across a wide variety of diseases and treatment settings have been well documented.⁵⁹ In particular, African Americans and Hispanics are more likely to be undertreated for pain than Caucasian patients.⁶⁰ Similarly, one study found that medical professionals were more likely to assign lower pain ratings to non-white patients due to false beliefs about biological differences among races.⁶¹

The effects of pain discrimination also disproportionately impact women, who are often undertreated for pain. Research indicates that doctors prescribe pain medication at lower rates to

⁵⁹ Carmen R. Green, et al., *The Unequal Burden of Pain: Confronting Racial and Ethnic Disparities in Pain*, 4 RNI PAIN MEDICINE 278 (2003). It is also worth noting that discrimination has been linked to increased incidence of pain in African Americans. In one study, the relationship between perceived discrimination and chronic pain continued even after controlling for socioeconomic and health-related characteristics. In this study, the relationship between chronic pain and perceived discrimination was significantly different between African Americans and non-Hispanic whites. See Timothy T. Brown, et al., *Discrimination hurts: The effect of discrimination on the development of chronic pain*, 204 SOCIAL SCIENCE & MEDICINE 1 (2018). Similarly, a study conducted with African Americans with sickle-cell disease determined an association between perceived discrimination from healthcare providers (based on disease status) and daily chronic pain and the burden of pain. See *id.* Another research study found that approximately 4.1 million people likely suffer from chronic pain due to their experiences with discrimination. *Id.* Similarly, disparities in pain care among racial and ethnic minorities across a wide variety of pain conditions and treatment settings have been well documented. Green, et al. at 278.

⁶⁰ Green, et al., *supra* note 59.

⁶¹ Kelly M. Hoffman, et al., *Racial bias in pain assessment and treatment recommendations, and false beliefs about biological differences between blacks and whites*, 113 PROC. NAT’L ACAD. SCI. U.S. 4296 (2016).

women than they do to men.⁶² While men may receive medication after complaining of pain, women expressing similar sentiments are often dismissed as having a physical manifestation of stress or a psychological problem.⁶³ Instead of painkillers, women are more likely to receive sedatives from their doctors.⁶⁴ Women also statistically have to wait longer than men to receive analgesics for abdominal pain in the emergency room and are only half as likely to receive pain medication after coronary bypass surgery.⁶⁵

These discriminatory trends affect SSA disability determinations because the agency considers, among other circumstantial evidence, “the type, dosage, effectiveness, and side effects of any medication,” and “treatments, other than medications for the relief of pain or symptoms,” when assessing a disability claimant’s pain.⁶⁶ Thus, current trends in treatment, like prescribing fewer pain medications to women and racial and ethnic minorities, could disproportionately prevent disabled members of these groups from obtaining benefits.

The subjective nature of pain combined with the way the way evidence is evaluated by the SSA may exacerbate inconsistencies in disability benefit determinations. Emerging technologies that could one day objectively evaluate pain, however, may eventually help mitigate these disparities and provide necessary relief to individuals experiencing pain-centric conditions.

⁶² Javeria A. Hashmi, et al. *Deconstructing sex differences in pain sensitivity*, 155 PAIN 10 (2014).

⁶³ Laura Kiesel, *Women and pain: Disparities in experience and treatment*, HARVARD HEALTH BLOG (Oct. 9, 2017), <https://www.health.harvard.edu/blog/women-and-pain-disparities-in-experience-and-treatment-2017100912562>.

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ See 20 C.F.R. § 404.1529(c)(3)(i)-(vii).

B. Functional Magnetic Resonance Imaging may provide supplementary evidence for the evaluation of chronic pain.

i. *The Advantages of fMRI*

One promising technology in brain imaging is functional magnetic resonance imaging (fMRI).⁶⁷ fMRI uses the unique oxygen signature of a neural signature to indirectly track brain activity.⁶⁸ Researchers are then able to analyze not only changes in brain architecture, but also the change in how patients respond to pain (i.e., if they have a lower threshold to pain, which often occurs in chronic pain conditions in which pain receptors become desensitized).⁶⁹

While fMRI imaging has previously been used to examine acute pain, the clinical usage of fMRI for chronic pain diagnosis is still new.⁷⁰ With that said, fMRI is one of the few emerging medical technologies for evaluating pain that has been used to examine chronic pain patients.⁷¹ For example, researchers have used fMRI to examine the differences between healthy patients and chronic lower back pain, rheumatoid arthritis (RA), and fibromyalgia patients.⁷² These studies have found that not only do each of these chronic pain patients have increased brain connectivity on fMRI in areas associated with pain, but also that these patients have increased

⁶⁷ Katherine T. Martucci et al., *Neuroimaging chronic pain: what have we learned and where are we going?*, 9 FUTURE NEUROL. 615 (2014).

⁶⁸ Debbie L. Morton et al., *Brain imaging of pain: state of the art*, 6 J. PAIN RES. 613, 614 (2016). The most common type of fMRI utilizes blood oxygen level dependent (BOLD) contrast imaging. Because active neurons require oxygenated blood, the fMRI-BOLD technique is able to monitor changes in brain activity by measuring changes in blood oxygen levels. Changes in oxygen utilization during neuronal activity generate fMRI signals, which can then be acquired both in a patient's resting-state and in response to pain.

⁶⁹ *Id.* at 619.

⁷⁰ Sezgi Goksan et al., *fMRI reveals neural activity overlap between adult and infant pain*, 4 ELIFE 1 (2015). fMRI research has demonstrated that the brain regions involved in infant pain closely mimic those in adult pain. This would suggest that fMRI use is not limited to assessing pain in elderly or adult patients, as it has previously been suggested. Thus, fMRI techniques may be useful in all populations suffering from pain.

⁷¹ Morton et al., *supra* note 68, at 614.

⁷² Marwan N. Baliki et al., *Chronic Pain and the Emotional Brain: Specific Brain Activity Associated with Spontaneous Fluctuations of Intensity of Chronic Back Pain*, 26 J. NEUROSCIENCE 12165 (2016); Marina Lopez-Sola et al., *Towards a neurophysiological signature for fibromyalgia*, 158 PAIN 34 (2017); Pär Flodin et al., *Intrinsic Brain Connectivity in Chronic Pain: a Resting-State fMRI Study in Patients with Rheumatoid Arthritis*, 10 FRONTIERS HUM. NEUROSCIENCE 1 (2016).

neuronal responses to painful stimuli, likely attributable to neuronal sensitization of pain.⁷³

Despite these findings, experts in the field contend that fMRI studies of chronic pain are extremely complex and cannot currently be used for diagnostic purposes.

While the utility of fMRI for diagnostic purposes remains unclear, fMRI shows promise for improving our understanding of the underlying mechanisms of pain. The neurological signatures derived from fMRI provide novel insight into the brain’s pain responses, and they may be useful in predicting pain responses and improving the efficacy of chronic pain treatments.⁷⁴ Thus, the power of fMRI may not be as a diagnostic tool for pain but rather as a research device to improve our understanding of and find treatments for chronic pain.⁷⁵

ii. *The Limitations of fMRI*

Experts in brain imaging and pain contend that fMRI may be useful for assessing pain treatments and for determining pain in non-communicative patients. However, fMRI is not currently accurate enough to be used as dispositive evidence of pain.

In 2017, the International Association for the Study of Pain (IASP) convened a panel of top experts in pain and brain imaging to write a report in which they evaluated the future of brain imaging techniques, including fMRI, and the implications of using them to evaluate chronic pain. This report concludes that self-report questionnaires are currently the most useful guideline for evaluating pain, and finds that “on the basis of what is currently known, brain imaging is not sufficiently reliable to be used as a pain detector to either support or contradict an individual’s self-report.”⁷⁶ However, experts do contend that fMRI and brain imaging techniques may be

⁷³ *Id.*

⁷⁴ Marianne C. Reddan & Tor D. Wager, *Modeling Pain using fMRI: From Regions to Biomarkers*, 34 NEUROSCI. BULL. 208 (2017).

⁷⁵ Karen D. Davis, et al., *Brain imaging tests for chronic pain patients: medical, legal and ethical issues and recommendations*, 13 NATURE REV. NEUROLOGY 624, 631(2017).

⁷⁶ *Id.* at 634–35.

useful in examining pain in non-communicative patients, or for providing supplementary evidence of pain. Beyond this, the panel highlighted two major issues with brain imaging techniques:

1. *Brain imaging techniques currently lack necessary specificity.*

One of the greatest potential misuses of fMRI and other brain imaging technologies is their use independently of or as a replacement for self-reporting.⁷⁷ The experts explain that many processes are not pain specific, so determining that a network within the brain is active is not enough to conclusively determine pain.⁷⁸ This would be an improper reverse inference. To make a valid claim, one must first demonstrate that there is pain when the area is active, and then that there is no pain when the area is not active.⁷⁹ However, the ability to demonstrate both of these situations is exceptionally difficult in patients with chronic pain.

2. *The processes in the brain responsible for chronic pain are not specific or well enough understood at this time to be used as a biomarker.*⁸⁰

At this time there is no gold standard for interpreting chronic pain, and the study of chronic pain in brain imaging still is in its infancy. Experts believe that the main processes underlying chronic pain are not pain specific because they have also been identified in other conditions like depression.

C. Electroencephalography may provide supplemental evidence for future chronic pain diagnoses.

i. The Advantages of EEG

Electroencephalography (EEG) is another technology that could potentially be used to evaluate the presence and severity of chronic pain in a patient. EEG measures voltage changes

⁷⁷ *Id.* at 634.

⁷⁸ *Id.* at 629.

⁷⁹ *Id.* at 628.

⁸⁰ *Id.* at 629.

and uses them as a proxy for neuronal activity. Through collecting this data, EEG has been used to record the brain's acute response to pain.^{81, 82} Quantitative Electroencephalography (qEEG), specifically, can be valuable to the determination of chronic pain because it is a non-invasive tool that provides information about brain function during rest, sensory stimulation, and cognitive tasks.⁸³ Studies in preclinical animals models have shown that EEG is effective in measuring pain, and other work has suggested that this method may be useful in measuring pain in humans.⁸⁴ In comparison to fMRI, EEG technology would likely be more accessible to patients because the technique is relatively quick, low-cost, and compact, and it could thus be performed more easily in clinics.⁸⁵

ii. The Limitations of EEG

Even the most promising studies, however, have produced varying results. For example, one study showed that without added stimuli, certain chronic pain patients, such as those with neuropathic and migraine pain, have increased levels of pain-related neuronal activity measured by EEG.⁸⁶ This would suggest that these patients have a higher level of daily pain. However, in patients with other conditions, such as lower back pain or fibromyalgia, EEG was not able to detect the daily increase in chronic pain.⁸⁷ These results suggest that EEG may be able to measure chronic pain, as seen in neuropathic and migraine conditions. However, the inconsistencies in results suggest that this method requires further research to understand how EEG can be used to evaluate clinical chronic pain.

⁸¹ Markus Ploner et al., *Brain Rhythms of Pain*, 21 TRENDS IN COGNITIVE SCIS. 100 (2017).

⁸² Morton et al., *supra* note 68.

⁸³ Eulália Silva dos Santos Pinheiro, et al., *Electroencephalographic Patterns in Chronic Pain: A Systematic Review of the Literature*, 11 PLOS ONE 1 (2016).

⁸⁴ Suguru Koyama et al., *An Electroencephalography Bioassay for Preclinical Testing of Analgesic Efficacy*, 8 SCI. REPS. 1 (2018).

⁸⁵ Morton et al., *supra* note 68, at 615.

⁸⁶ See Eulália Silva dos Santos Pinheiro, *Electroencephalographic Patterns in Chronic Pain: A Systematic Review of the Literature*, 11 PLOS ONE 18 (2016).

⁸⁷ *Id.*

D. Medical technologies could be used to supplement current methods of evaluating pain, but the SSA should first consider potential accessibility issues.

At present, self-reporting is still the most reliable and preferred method for analyzing pain.⁸⁸ While promising in their present states, emerging medical technologies like fMRI and EEG cannot currently replace the use of pain reporting questionnaires in clinical settings or provide dispositive evidence to the SSA during the disability determination process. Furthermore, they cannot currently be used to independently diagnose chronic pain.⁸⁹

Even if these technologies were capable of measuring pain, however, it may still be difficult to evaluate the impact of that pain on a person's life and functionality, which is a main inquiry in the SSA's evaluation process. For example, two people may feel comparable levels of pain, measurable by fMRI, but only one patient may have severely limited function and a significantly diminished ability to perform daily tasks.⁹⁰

Additionally, if fMRI, EEG, or another pain-measuring technology becomes more accurate in the future, the SSA should recognize that not all individuals will have easy access to it. Patients who live in rural areas, for instance, may only have access to a local clinic without fMRI or EEG capabilities. Especially in the early stages of implementation, these technologies may only be accessible at large research hospitals. Individuals with limited mobility may also find it difficult to travel to a hospital to undergo an fMRI or EEG to use as evidence in an application for disability benefits. Others may lack health insurance or be otherwise financially limited from obtaining testing.

⁸⁸ Telephone interview with Steven Z. George, Professor, Duke University (Feb. 1, 2019).

⁸⁹ Davis et al., *supra* note 75, at 636.

⁹⁰ Telephone interview with Steven Z. George, Professor, Duke University (Feb. 1, 2019).

Concerns regarding accessibility are shared throughout the scientific and medical community, as evidenced by statement from the International Association for the Study of Pain, which asserted that one of the most pressing issues in pain medicine is disparities in access to treatment.⁹¹ If the SSA ever decides to accept the results from these technologies as evidence of the existence or severity of pain, the agency should take care to ensure that already-vulnerable populations are not disadvantaged if they cannot provide this information.

Although medical technologies like fMRI and EEG have demonstrated their potential to help measure the presence and severity of a disability applicant's chronic pain, they are still in their early stages. Additionally, not every SSI or SSDI applicant will be able to undergo these tests, so a lack of results should not be grounds for denial nor should it disadvantage an applicant.

V. Conclusions and Recommendations

1. **The SSA should recognize chronic pain as a condition eligible for SSA disability benefits regardless of whether it is derivative of a medically determinable physical or mental impairment.** This change would be consistent with scientific and medical consensus that pain can exist independently of an identifiable cause.
2. **Given their current limitations, the SSA should not accept fMRI and EEG results as dispositive evidence of chronic pain in applications for SSI or SSDI benefits.** These results could be used as *supplementary evidence* of pain in *future* disability determinations.

⁹¹ Davis et al., *supra* note 75, at 635.

However, negative fMRI or EEG results, or a lack of test results, should not be grounds to deny applications for benefits.

3. **The SSA should commit to periodically revisiting these technologies to assess whether any developments warrant a change in how they are used by the agency in disability determinations.** Any changes to the current disability determination process should be written with the knowledge that these technologies may someday become more accurate.

4. **The SSA should use the insights gleaned from current medical and scientific literature, as well as from emerging medical technologies, to inform ALJs, judges, and other decision-makers about the complex nature of pain.**