Editorial

Introduction to the SMART-MD Pain Issue

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This quarter's issue of SMART-MD Journal of Precision Medicine focuses on pain management. Chronic pain is the most common chronic disease in the world and it afflicts one in four adults in the United States. The most common chronic painful conditions are spinal pain, arthritis pain, headaches, fibromyalgia, and neuropathic pain (including visceral neuropathic pain). Poorly treated chronic pain has devastating health impacts, including the consequences of inactivity, such as obesity and cardiac risks, as well as harming mental health. Depression, anxiety, and rates of suicide are all increased in patients with severe chronic pain and are directly tied to the neurobiological mechanisms which amplify and perpetuate pain perception.

One reason that poorly managed chronic pain persists and has become a national epidemic is that even for treatments that are efficacious (such as neuropathic pain medications or physical therapy), the response rates in clinical trials and in real world practice are only about 40%. This results in a frequent cycle of trial and error for different treatments until the patient and clinician stumble on a treatment or a combination of treatments which make the pain manageable. A key deficit in our field is the lack of guidance for clinicians as to which treatments are likely to work best in each individual patient based on their phenotype, such as the characteristics of their pain syndrome and biological variables, also known as *precision medicine*.

The gap in precision medicine approaches to pain management is striking and hinders the field, leading to unnecessary and prolonged suffering, Alexis Robinson is a patient with lived experience of chronic pancreatitis pain related to genetic causes, who eloquently describes these matters in her illness narrative published in this issue, "From Dismissed Pain to Precision Empowerment: A Young Woman's Journey with Hereditary Chronic Pancreatitis." Strikingly, Ms. Robinson notes that precision medicine approaches involving genetic testing combined with a comprehensive, multimodal pain management approach reinforcing her agency and self-efficacy in self-managing her chronic disease has enabled her to lessen this cycle of suffering.

This issue contains several other exciting papers exploring innovations and current approaches to managing a range of painful disorders. Dr. Yi Jiang and colleagues describe the use of quantitative sensory testing (QST) as a phenotyping measure in disorders with chronic visceral pain. QST is a psychophysical test where responses to experimental pain stimuli (such as pinprick to the fingers, pressure pain to the trapezius muscles, or heat pain to the forearm) can be used to describe pain inhibitory and facilitation processes in the nervous system.

Dr. Coates describes the pharmacology and pathophysiology of newly approved sodium channel blockers (e.g., suzetrigine) for acute pain and their application to chronic abdominal pain, such as in inflammatory bowel disease. And lastly, Dr. Ben Alter describes the interactions between joint pathology in the knee and the nervous system, at peripheral nerve, spinal cord, and brain levels. He details the how complexity of interactions between the musculoskeletal and nervous systems drive the experience of painful knee osteoarthritis. These recently described phenomena suggest several future directions for evaluation and treatment of this common disease of aging.

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Abbreviations: QST, quantitative sensory testing

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