



Digital Pain Technologies: Promises and Problems

A Cross-Disciplinary Workshop

May 1-2 2023

Cornell University, Ithaca, NY

The management of pain in the United States is affected by a number of converging trends that require new systems of pain management. The societal and individual burden of chronic pain has risen steadily over the past decades, partially due to demographic change. By now one in five Americans suffer from pain. At the same time, the hitherto go-to solution for treating pain, mainly prescribed opiate drugs, has come under increasing scrutiny due to high rates of opioid addiction and overdose deaths. Finally, the COVID-19 pandemic has exacerbated this situation while adding the challenge of providing pain care at a distance. As a response to these interlocking developments, policymakers, practitioners, and companies strive to introduce novel systems of pain management that are effective, accessible, and do not carry the risk of addiction.

Amid this crisis, a landscape of pain technologies is emerging. These include and often combine digital applications that monitor pain symptoms and behaviours, new generations of wearable neuromodulation devices, as well as telehealth platforms. Next to pain relief, these technologies share the goals of empowering patients outside the clinic, providing better access to care especially in rural areas, and offering new kinds of data to providers as well as patients. However, while there are many success stories and promising products, these emerging pain technologies have not yet taken a foothold in pain management more broadly. In addition, their prospective integration into new systems of pain management raises a range of ethical, political, and technical questions. For instance, how does the availability of digital pain data impact communication between patient and provider? Whose claims about pain do such data harness and whose do they discredit? What new kinds of vulnerabilities do emerge at the device-body interface, such as data leakages or safety issues? Does digital integration make pain management more accessible or produce new inequities?

This workshop departs from the premise that innovation in pain management is not only a question of better therapies or technologies but equally about designing *responsible systems of pain management* that are more equitable, accessible, and integrated. In this workshop, we are asking what emerging pain technologies can contribute to those systems and seek to assess their challenges and opportunities. For this, we bring together academics from social science and technical disciplines, along with health professionals, patient advocates, and companies. It will facilitate trans-disciplinary dialogue assessing whether and under what conditions innovative pain technologies can constitute a meaningful and responsible contribution to the crisis of pain management in the United States and beyond.

Program

DAY 1 Keynote, reception & dinner	
<i>Monday, May 1</i>	
16:00 – 17:30	<i>Keynote Lecture</i> “Digital biomarkers and immersive therapeutics in the age of virtual care” – Deborah Estrin, CornellTech & Weill Cornell Medicine 700 Clark Hall
17:30 – 18:30	<i>Reception</i> 701 Clark Hall
19:00	<i>Dinner</i> Statler Hotel, Castello room

DAY 2 Workshop	
<i>Tuesday, May 2</i>	
08:00 – 09:00	<i>Arrival & breakfast</i> 401 Physical Sciences Building
09:00 – 09:15	<i>Welcome & introductions</i>
09:15 – 09:45	<i>Introduction to workshop</i> “Democratizing pain Innovation, where we are and where we’re going”, Brian Mayrsohn, American Academy of Pain Medicine, Innovation Committee “Emerging Pain Technology as Socio-Technical System” Stephen Hilgartner, Cornell University
09:45 – 10:00	<i>Coffee break</i>
10:00 – 11:30	<i>Session 1: Data-driven pain management</i> Chair: Steven Jackson “Technologies for living: Multi-dimensional, real-world pain assessment” – Carl Saab, Cleveland Clinic “Some reflections on PRO’s, PGHD, and digital biomarkers for pain” – Deborah Estrin, CornellTech & Weill Cornell Medicine “Ethical perspectives on the use of digital apps and technologies in the management of chronic pain” – Kim Overby, Cornell University

11:30 – 12:30	Lunch
12:30 – 14:00	<p><i>Session 2: Integrated pain management</i> Chair: Suman Seth</p> <p>“Unpacking equitable, whole person, multimodal pain care in the context of responsible, real-world solutions” – Amy Goldstein, Alliance to Advance Comprehensive Integrative Pain Management</p> <p>“Leading with lifestyle: How digital pain management tools can improve pain patients’ quality of life” – tba, Fern Health</p> <p>“The Intersection of data needs: challenges to payors, patients, and clinicians” – Neel Mehta, Weill Cornell Medicine</p>
14:00 – 14:15	<i>Coffee break</i>
14:15 – 15:45	<p><i>Session 3: Remote pain management</i> Chair: Malte Ziewitz</p> <p>“Equity, access & privacy in remote care: pitfalls and opportunities” – Kate Nicholson, National Pain Advocacy Center</p> <p>“Care at the human-machine interface. What patients do to make digital pain technology work”, Benjamin Lipp, Cornell University</p> <p>“Compassion, integrated: why the most successful solutions aren’t stand alone services” – Rachel Trobman, Upside Health</p> <p>“Paindrainer – 360° patient-centric monitoring of chronic pain patients” – Erik Frick & Carl Borrebaeck, Paindrainer</p>
15:45 – 16:00	<i>Coffee break</i>
16:00 – 17:00	<p><i>Adjourn</i></p> <p>Discussion of joint publication and/or future collaborations</p>

List of presenters

Organizers

Benjamin Lipp	Cornell University, Department of Science & Technology Studies
Stephen Hilgartner	Cornell University, Department of Science & Technology Studies

Participants

Amy Goldstein	Alliance to Advance Comprehensive Integrative Pain Management
Brian Mayrsohn	American Academy of Pain Medicine, Innovation Committee
Carl Borrebaeck	Paindrainer AB, Lund University, Sweden
Carl Saab	Cleveland Clinic, Pain Science Technology and Research Lab
Deborah Estrin	CornellTech & Weill Cornell Medicine
Erik Frick	Paindrainer AB
Kate Nicholson	National Pain Advocacy Center
Kim Overby	Cornell University, Department of Science & Technology Studies
Neel Mehta	Weill Cornell Medicine, Brain & Spine Center
Rachel Trobman	Upside Health, Inc.
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