

## Out of office hours: scalable, on-demand, digital support for patients tapering prescription opioids

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In the past year, multiple government agencies have published guidance on prescription opioid tapering and extolled the virtues of methods that take a patient-centred approach, use nonopioid treatments, and provide rapid symptom management.<sup>4,6</sup> However, healthcare systems and clinicians are rarely able to provide patients with such best-practices support; such critical gaps in care may undermine patient goal attainment for voluntary opioid reduction and contribute to patient suffering. Digital health technologies (DHTs) may help bridge this gap by providing patients with scalable, on-demand pain management and withdrawal symptom support during the tapering process. Consider the following case in point:

The patient, a 58-year-old man, had been on high-dose opioids for many years—up to 360 mg oral morphine milligram equivalents (MMEs) at times, currently 125 mg MME—for the management of “failed back surgery syndrome.” Opioids had become less effective over time and he reported negative cognitive effects from the medication. He was functioning reasonably well despite the pain, and reported wanting to taper his opioid doses to reduce his health risks, improve work-related performance at a new job with increased cognitive demands, and to eliminate concerns about maintaining medication supply.

Because of the high starting dose and long duration of use, the patient and his pain physician codeveloped a slow tapering plan to reduce his opioids by 5 mg MME every 2 weeks under the supervision of his primary care physician. To support him during and after the tapering process, the patient was given a book describing CBT-based pain self-management strategies and was offered individual sessions with a pain psychologist.

At his 6-week follow-up appointment, he had reduced his dose by only 5 mg. The patient expressed disappointment and frustration with his lack of tapering progress. He blamed insufficient support to manage symptoms of pain and withdrawal in between appointments with his primary care physician. He reported social isolation and anxiety about the possibility of his pain worsening. He wanted ongoing encouragement, education,

and support from a healthcare provider (“I have these skills, but when I’m in pain and in the thick of it, they are not front of mind. I need to be reminded of what to do when I’m stuck”). Notably, he was also unable to attend sessions with the pain psychologist due to frequent travel and caring for elderly parents.

Despite good motivation, a slow, individualised taper schedule, and access to information about managing pain flare-ups, the patient was falling short of his tapering goals. Like many patients in his situation, he was experiencing a number of life challenges that prevented in-person appointments with his healthcare team. Irregular support amplified his fear of common withdrawal symptoms including anxiety, pain, mood imbalances, and disrupted sleep. Other patients may face additional barriers to accessing support, including financial limitations, poor insurance coverage, or lack of pain services in the community. In-person pain psychology services are sparse, often inaccessible, and patients may be reluctant to attend clinics on account of fear of exposure to nosocomial harms (eg, COVID-19). Access to real-time or near real-time support for managing symptoms associated with opioid tapering is required to better meet the needs of vulnerable patient populations.

Advances in DHTs may provide accessible, cost-effective, and scalable solutions to the need for greater support for patients who are tapering off prescription opioids. Digital health technologies (including mHealth and eHealth interventions) can offer patients timely validation, reassurance, pain education, and self-management strategies to help them to meet their tapering goals with greater ease and comfort. We posit that DHTs, which provide patients with on-demand, responsive, personalised emotional and informational support between clinic visits, will boost patients’ opioid reduction goal attainment more effectively and comfortably than in-person clinic follow-ups and pain-coping skill books (bibliotherapy) alone.

Pilot studies of digital support for voluntary opioid reduction are yielding encouraging results. For example, an on-demand, telephone-based automatic voice-response intervention for maintaining pain coping skills after 11 weeks of group cognitive-behavioural therapy for chronic pain was found to be effective in helping patients to continue to decrease pain, improve pain coping, and reduce opioid use up to 8 months posttreatment.<sup>8</sup> More recently, a randomized controlled trial found that breast cancer surgery patients who received internet-delivered pain education and skills to regulate cognition, emotion, attention, and pain-related distress before breast cancer surgery achieved postsurgical opioid cessation on average 6.5 days earlier than patients who received internet-delivered general health education.<sup>2</sup> Importantly, this eHealth intervention did not direct patients to reduce postsurgical opioid use, although this was the observed outcome.

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Digital support for opioid tapering may also be achieved through automated electronic monitoring and response to patient-reported symptoms. For example, in a 4-state study of voluntary patient-centred opioid reduction, Darnall et al.<sup>1</sup> have applied an interactive electronic patient monitoring system that validates patient-reported symptoms in real time, acknowledges symptom severity, offers patients actionable steps (self-triaging symptoms at home or engaging clinic staff), and outlines how their clinician will respond to their symptoms. Patients are surveyed weekly about their taper experience and symptoms, and the system provides patients with on-demand care where clinicians simply cannot. This instant-response system of communication and documentation offers patients compassionate reassurance and messages that align with the patient's care plan while addressing emergent problems such as increased pain or safety concerns such as suicidality.

Research into the efficacy of digital support for opioid tapering is nascent and requires further testing. However, the efficacy of digital behavioral interventions for complex health conditions, including chronic pain, is encouraging. For example, patients with chronic pain who completed "The Pain Course"—an internet-delivered pain management program—showed significant improvements in disability, depression, anxiety, and pain, which were maintained at 12 and 24 months of follow-up.<sup>3</sup> In addition, mHealth interventions have been found to support smoking cessation,<sup>11</sup> increase treatment adherence and lifestyle changes in patients with complex chronic diseases,<sup>12,13</sup> and reduce the incidence of depression in vulnerable populations<sup>10,14</sup> relative to standard care. At the same time, however, research has identified several barriers to patient engagement with digital health interventions, including reluctance to interact with DHTs, scepticism about the efficacy of DHTs, and concerns over personal data security and protection of confidential information.<sup>9</sup> Studies indicate that barriers to engagement can be overcome, however, when DHTs are *patient-centred and personalised*.<sup>5</sup>

It is critical for patients to be involved in the process of development, design, and implementation of DHTs. To ensure that DHTs for prescription opioid tapering are patient-centred, we recommend interviewing patients from a range of clinical settings to identify their perspectives on critical challenges they face during the first few weeks and months of prescription opioid tapering. The language used to compose supportive, informational, or motivational messages delivered to patients can then be adapted to mirror the words and phrases commonly used by patients to describe their pain, worries, and barriers to tapering. Digital health technologies can be personalised by using patients' own names, allowing patients to determine the frequency of messages they receive, and giving patients the ability to choose the type of support they receive at any given moment (reassurance, motivation, pain education, skills for coping with pain, and symptoms of withdrawal). The development of design prototypes to engage consumers will in most cases require the digital design experts in the private sector, which may of course incur costs to researchers, institutions, or governments. Nevertheless, content as well as presentation of information should be pilot tested for acceptability and perceived helpfulness and engagement by patients with chronic pain.

Finally, the efficacy of digital tapering support interventions should be empirically based. Ideally, a large multisite randomised controlled trial should be conducted to test the efficacy of the digital health intervention compared with standard patient support (outpatient care) and informational support (pain self-management books or pain education booklets). We expect that as demand for digitally delivered health care and patient support increases, research in this field will burgeon and our understanding

of how to optimize patient engagement with digital health interventions to support prescription opioid tapering will improve.

In summary, we urge pain management clinicians and researchers to work together with patients with chronic pain to develop DHTs to support prescription opioid tapering. Applying a patient-centred design strategy and rigorous empirical testing and will help to ensure that DHTs are acceptable, engaging, and effective. Digital support for voluntary prescription opioid tapering can extend the good care of healthcare clinicians outside office hours, to help patients achieve their tapering goals more safely and effectively.

## Final words

It should go without saying that the availability of high-quality, evidence-based digital health interventions for prescription opioid deprescribing does not minimize the importance of evidence-based, empathically delivered patient education and counselling by primary health care providers. A recent systematic review of digitally delivered chronic pain management programs found that contact with healthcare providers was associated with greater patient engagement with digital health interventions, and better patient outcomes.<sup>7</sup> Consistent with this, we are suggesting that DHTs be developed to supplement good health care provided by clinicians ("out of office hours") rather than replace clinician-directed patient care (in person or by telehealth).

It should also be stressed that digital support for prescription opioid tapering does not replace the need for clinicians to have conversations with patients about the reasons for opioid tapering (ie, better pain management and improved functioning), and to adequately prepare patients psychologically to cope with expected, temporary opioid withdrawal symptoms (including possible worsening of pain and mood, nausea, and sleep disturbance). These conversations, albeit difficult, are essential for identifying and problem-solving barriers to patients engaging with opioid-tapering advice. For patients who agree to a safe, patient-centred tapering plan to achieve better long-term pain management, DHTs may offer providers and patients alike with supplemental support for the tapering process.

## Conflict of interest statement

The authors have no conflicts of interest to declare.

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