

Text message program shows 60 percent of opioid tablets unused after common procedures

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More than half of the opioid tablets prescribed for patients who underwent orthopaedic or urologic procedures went unused in a new

study by researchers at the Perelman School of Medicine at the University of Pennsylvania. Using an automated text messaging system that regularly checked in with patients on their pain and opioid use, the study also showed that most opioids are taken within the first few days following a procedure and may not be necessary to manage pain even just a week following a procedure. The study was published today in *JAMA Network Open*.

"Through simple text messaging we highlight a method which gives clinicians the information they need to reduce prescribing and manage [pain](#)," said co-lead author Anish Agarwal, MD, a clinical innovation manager in the Penn Medicine Center for Digital Health and an assistant professor of Emergency Medicine. "We found that more than 60 percent of the opioid tablets prescribed went unused, which tracks with the team's preliminary studies. We can begin to use these data in multiple ways: One approach would be to look at trends in patient-reported use and tailor future prescribing to meet the anticipated pain for the majority of patients undergoing a specific procedure."

In response to the opioid crisis, using text messaging to keep track of how many prescriptions patients actually take after a procedure—and to potentially right-size the amount prescribed—is relatively new but growing in popularity. The traditional ways that clinicians track their patients' [opioid use](#) could use a boost.

"Right now, care teams rely heavily on patient recall, which they may not be able to remember in detail; [phone calls](#), which require a lot of effort in making calls; or tracking from the health system ordering, which does not provide information from the patients themselves about how much they are using, and how much pain they are in," explained co-lead author Daniel Lee, MD, an assistant professor of Urology. "So with these older methods, either the data we are getting could be inaccurate, or the way we get the data is not scalable for an entire health system."

Using automated text messaging systems, then, provides the opportunity for large-scale, near-real-time polling of patients. But as an emerging method, it requires study.

With that in mind, Agarwal, Lee, co-author Eric Hume, MD, director of Quality and Safety and an associate professor of Orthopaedic Surgery, and senior author M. Kit Delgado, MD, an assistant professor of Emergency Medicine and Epidemiology, and their team set out to test the text messaging system. Over a span of several months in 2019, they enrolled patients who'd had common orthopaedic and urologic procedures, ranging from knee arthroscopy to hand fracture fixes and vasectomies to prostatectomies.

A little more than 900 patients—approximately 45 percent of those eligible—participated in the study. About 80 percent were orthopaedic patients and just under 20 percent had urological procedures.

Participants were asked to rate their pain (on a scale of zero to 10), as well as if they felt able to manage that pain on the fourth day following their procedure. Subsequent texts went out on days seven, 14 and 21 to measure the change over time. Each of these texts also inquired about opioid tablet use which was matched to their initial prescription.

As time went on, the text messages showed that the average pain scores fell among patients of both classifications of procedures. At the same time, the ability to manage pain climbed, according to patients. However, this all seemed to be accomplished with fewer and fewer opioid pills, the study showed, and certainly far fewer than were prescribed. By day seven, most patients had actually stopped taking tablets (the average patient in the study took zero tablets by day seven).

The average Orthopaedic Surgery patient took six tablets across the entire study period, but had been prescribed 20. Among Urology

patients, one tablet was the average amount used, compared to seven prescribed. The study showed that, across the board, 64 percent of patients didn't even use half of their prescription, and only 21 percent of Orthopaedic Surgery patients and 11 percent of Urology patients needed a refill a month out from their procedure.

"Having data on our prescription of opioids and the amount that was unused is eye-opening," said Hume. "This is so much more powerful and engaging than a generic message to reduce prescribing without an eye toward patient needs."

The team believes that knowing the difference between prescription rates and use, along with finding this reliable way to measure that difference, will be a game-changer in pain management for surgical procedures.

"The potential to translate these findings to tailor post-operative prescribing to patient needs and change national practice is high," said Delgado, who also serves as Co-Chair of the Penn Medicine Opioid Task Force. "This study has national implications, as it shows that [patients](#) only take a fraction of the amounts that we know are prescribed on average across the country. Previously we showed the median amount of [opioid](#) pills prescribed to be 40 tablets for knee arthroscopy and 20 tablets for prostate or bladder resections. We are in the process of rolling this automated text messaging platform to additional surgical groups within the health system and will continue to share our learnings to guide practice on a broader scale."

Provided by Perelman School of Medicine at the University of Pennsylvania

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