

# Electronic 'nudges' may improve safety in opioid prescribing among California doctors, study finds

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On-screen prompts for prescribers decreased long-term, high-dose opioid prescriptions and increased orders for a lifesaving opioid

overdose reversal drug, according to a new USC study that examined Kaiser Permanente prescribing data.

The research, published earlier this month in *JAMA Network Open*, suggests that best practice alerts could help curb opioid [addiction](#) and prevent overdose deaths.

In 2018, California passed the Naloxone Requirement Bill, which mandated that the opioid overdose reversal drug naloxone, also known by the brand name Narcan, be prescribed alongside [opioids](#) for patients deemed to be high-risk for overdose. Experts at the USC Schaeffer Center for Health Policy and Economics and Kaiser Permanente evaluated the impact of the law as it was implemented for Kaiser Permanente Southern California patients.

At Kaiser, physicians prescribing opioids receive on-screen prompts with safety alerts that explain the risks of opioid prescribing, remind clinicians to order naloxone, and list recommended actions that clinicians can choose to follow or override.

The results were promising: Naloxone prescriptions increased while opioid prescriptions decreased. Naloxone is administered by nasal spray and restores breathing by blocking the effects of opiates on the brain.

"We wanted to know if the administrative burden surrounding safe prescribing of naloxone also made physicians more thoughtful about when they would choose opioids," explained Jason Doctor, co-director of the behavioral sciences program at USC Schaeffer Center and the study's senior author. "Our research showed that it did."

Doctor is also an associate professor and chair of the Department of Health Policy and Management at the USC Price School of Public Policy, where he holds the Norman Topping Chair in Medicine and

Public Policy.

## Prompting a shift in prescribing behaviors

Kaiser implemented the Naloxone Requirement Bill by providing prescribers with an automatic, electronic prompt, or "nudge," if the patient:

- is receiving more than 90 milligrams per day of morphine
- has an active prescription of benzodiazepines
- has had an opioid overdose in the previous two years.

In 2019, the first full year of the law, opioid prescriptions dropped by 23%. Muscle relaxant orders, initial and renewal opioid orders, and long-term high dose orders all decreased. Meanwhile, [naloxone](#) prescriptions increased by 27%—an especially promising finding given the record number of drug overdoses recorded last year.

"Best practice alerts in an electronic health record system can be a powerful tool to support clinical decision-making," said Lewei Duan, lead author of the study and a post-doctoral research fellow in the Department of Research and Evaluation at Kaiser. "However, to obtain clinicians' buy-in and achieve sustainable effects, the health system needs to develop different comprehensive mechanisms to promote behavioral change."

The researchers believe there are multiple reasons for the shift in opioid prescribing habits:

- Clinicians may evaluate their own response to the prompts based on a socially established standard for appropriate prescribing.
- The law creates friction by increasing the number of procedural obstacles before prescribing.

- The feeling of being observed while prescribing may have changed behaviors.

Doctor and his colleagues found that not all physicians reacted the same way to the prompt. Female physicians were more likely to adjust opioid prescribing compared with male physicians, and younger physicians were likelier to change habits compared to their older counterparts.

The researchers also found that primary care physicians changed their habits more than non-primary care physicians, while specialists and non-physician practitioners showed no change.

## **Understanding how nudges can improve opioid prescribing**

Currently four other states besides California—Delaware, Maryland, Oregon and Virginia—have similar prescribing laws. The study indicates that [nudges](#) can impact physician prescribing in ways that extend beyond simple compliance with the alerts.

"The most effective way to curb opioid addiction is to start upstream with how opioids are being prescribed," Doctor said. "Nudges can be a great way of changing behaviors."

In addition to Doctor and Duan, other study authors are Ming-Sum Lee, John L. Adams and Adam Sharp, all of Kaiser Permanente of Southern California.

**More information:** Lewei Duan et al, Opioid and Naloxone Prescribing Following Insertion of Prompts in the Electronic Health Record to Encourage Compliance With California State Opioid Law, *JAMA Network Open* (2022). [DOI: 10.1001/jamanetworkopen.2022.9723](https://doi.org/10.1001/jamanetworkopen.2022.9723)

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