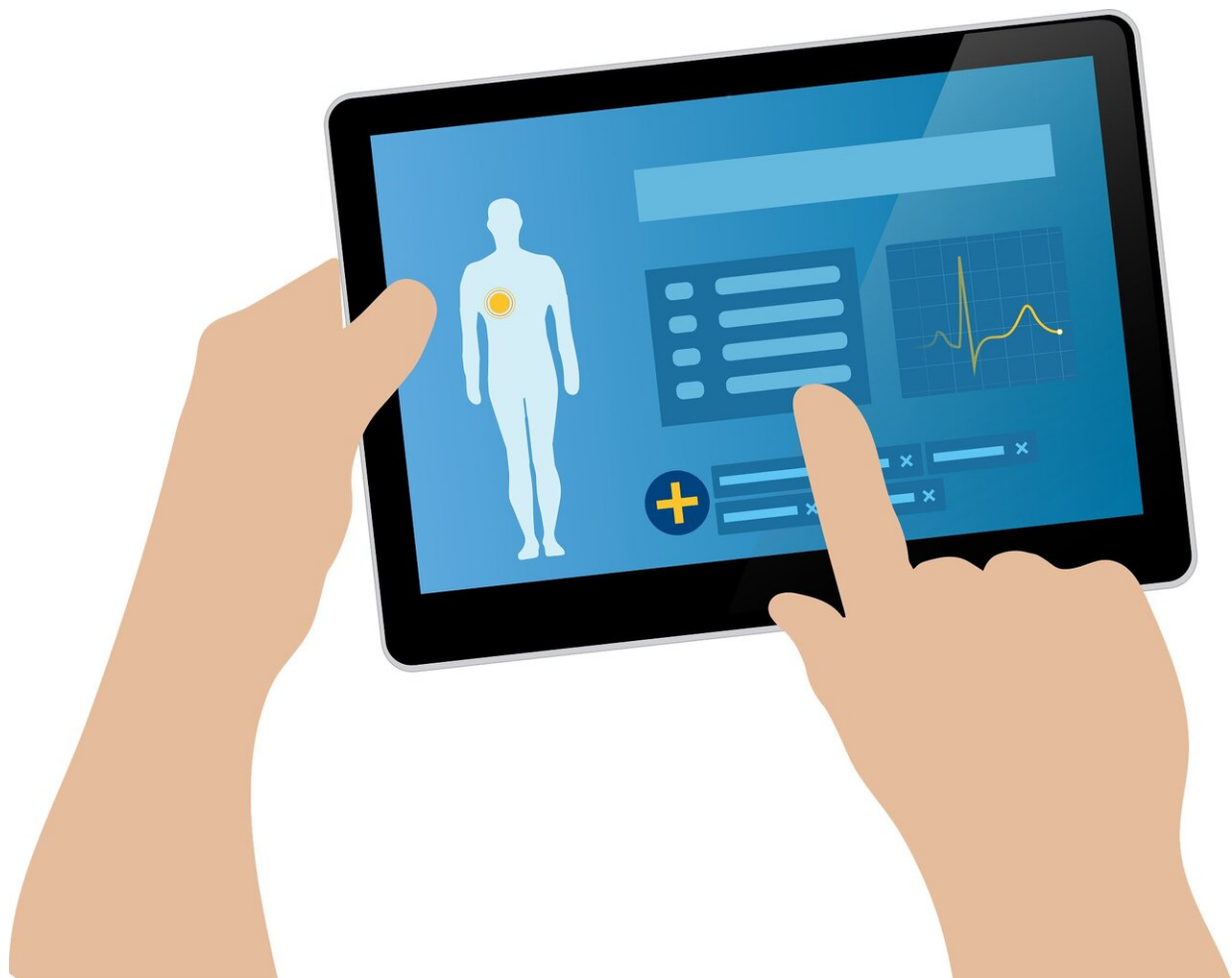# Artificial intelligence may influence whether you can get pain medication

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Credit: CC0 Public Domain

Elizabeth Amirault had never heard of a Narx Score. But she said she learned last year the tool had been used to track her medication use.

During an August 2022 visit to a hospital in Fort Wayne, Indiana, Amirault told a nurse practitioner she was in severe pain, she said. She received a puzzling response.

"Your Narx Score is so high, I can't give you any narcotics," she recalled the man saying, as she waited for an MRI before a hip replacement.

Tools like Narx Scores are used to help medical providers review controlled substance prescriptions. They influence, and can limit, the prescribing of painkillers, similar to a credit score influencing the terms of a loan. Narx Scores and an algorithm-generated overdose risk rating are produced by health care technology company Bamboo Health (formerly Appriss Health) in its NarxCare platform.

Such systems are designed to fight the nation's opioid epidemic, which has led to an alarming number of overdose deaths. The platforms draw on data about prescriptions for controlled substances that states collect to identify patterns of potential problems involving patients and physicians. State and federal health agencies, law enforcement officials, and health care providers have enlisted these tools, but the mechanics behind the formulas used are generally not shared with the public.

Artificial intelligence is working its way into more parts of American life. As AI spreads within the health care landscape, it brings familiar concerns of bias and accuracy and whether government regulation can keep up with rapidly advancing technology.

The use of systems to analyze opioid-prescribing data has sparked questions over whether they have undergone enough independent testing outside of the companies that developed them, making it hard to know

how they work.

Lacking the ability to see inside these systems leaves only clues to their potential impact. Some patients say they have been cut off from needed care. Some doctors say their ability to practice medicine has been unfairly threatened. Researchers warn that such technology—despite its benefits—can have unforeseen consequences if it improperly flags patients or doctors.

"We need to see what's going on to make sure we're not doing more harm than good," said Jason Gibbons, a health economist at the Colorado School of Public Health at the University of Colorado's Anschutz Medical Campus. "We're concerned that it's not working as intended, and it's harming patients."

Amirault, 34, said she has dealt for years with chronic pain from health conditions such as sciatica, degenerative disk disease, and avascular necrosis, which results from restricted blood supply to the bones.

The opioid Percocet offers her some relief. She'd been denied the medication before, but never had been told anything about a Narx Score, she said.

In a chronic pain support group on Facebook, she found others posting about NarxCare, which scores patients based on their supposed risk of prescription drug misuse. She's convinced her ratings negatively influenced her care.

"Apparently being sick and having a bunch of surgeries and different doctors, all of that goes against me," Amirault said.

Database-driven tracking has been linked to a decline in opioid prescriptions, but evidence is mixed on its impact on curbing the

epidemic. Overdose deaths continue to plague the country, and patients like Amirault have said the monitoring systems leave them feeling stigmatized as well as cut off from pain relief.

The Centers for Disease Control and Prevention estimated that in 2021 about 52 million American adults suffered from chronic pain, and about 17 million people lived with pain so severe it limited their daily activities. To manage the pain, many use prescription opioids, which are tracked in nearly every state through electronic databases known as prescription drug monitoring programs (PDMPs).

The last state to adopt a program, Missouri, is still getting it up and running.

More than 40 states and territories use the technology from Bamboo Health to run PDMPs. That data can be fed into NarxCare, a separate suite of tools to help medical professionals make decisions. Hundreds of health care facilities and five of the top six major pharmacy retailers also use NarxCare, the company said.

The platform generates three Narx Scores based on a patient's prescription activity involving narcotics, sedatives, and stimulants. A peer-reviewed study showed the "Narx Score metric could serve as a useful initial universal prescription opioid-risk screener."

NarxCare's algorithm-generated "Overdose Risk Score" draws on a patient's medication information from PDMPs—such as the number of doctors writing prescriptions, the number of pharmacies used, and drug dosage—to help medical providers assess a patient's risk of opioid overdose.

Bamboo Health did not share the specific formula behind the algorithm or address questions about the accuracy of its Overdose Risk Score but

said it continues to review and validate the algorithm behind it, based on current overdose trends.

Guidance from the CDC advised clinicians to consult PDMP data before prescribing pain medications. But the agency warned that "special attention should be paid to ensure that PDMP information is not used in a way that is harmful to patients."

This prescription-drug data has led patients to be dismissed from clinician practices, the CDC said, which could leave patients at risk of being untreated or undertreated for pain. The agency further warned that risk scores may be generated by "proprietary algorithms that are not publicly available" and could lead to biased results.

Bamboo Health said that NarxCare can show providers all of a patient's scores on one screen, but that these tools should never replace decisions made by physicians.

Some patients say the tools have had an outsize impact on their treatment.

Bev Schechtman, 47, who lives in North Carolina, said she has occasionally used opioids to manage pain flare-ups from Crohn's disease. As vice president of the Doctor Patient Forum, a chronic pain patient advocacy group, she said she has heard from others reporting medication access problems, many of which she worries are caused by red flags from databases.

"There's a lot of patients cut off without medication," according to Schechtman, who said some have turned to illicit sources when they can't get their prescriptions. "Some patients say to us, 'It's either suicide or the streets.'"

The stakes are high for pain patients. Research shows rapid dose changes can increase the risk of withdrawal, depression, anxiety, and even suicide.

Some doctors who treat chronic pain patients say they, too, have been flagged by data systems and then lost their license to practice and were prosecuted.

Lesly Pompy, a pain medicine and addiction specialist in Monroe, Michigan, believes such systems were involved in a legal case against him.

His medical office was raided by a mix of local and federal law enforcement agencies in 2016 because of his patterns in prescribing pain medicine. A year after the raid, Pompy's medical license was suspended. In 2018, he was indicted on charges of illegally distributing opioid pain medication and health care fraud.

"I knew I was taking care of patients in good faith," he said. A federal jury in January acquitted him of all charges. He said he's working to have his license restored.

One firm, Qlarant, a Maryland-based technology company, said it has developed algorithms "to identify questionable behavior patterns and interactions for controlled substances, and for opioids in particular," involving [medical providers](link).

The company, in an online brochure, said its "extensive government work" includes partnerships with state and federal enforcement entities such as the Department of Health and Human Services' Office of Inspector General, the FBI, and the Drug Enforcement Administration.

In a promotional video, the company said its algorithms can "analyze a

wide variety of data sources," including court records, insurance claims, drug monitoring data, property records, and incarceration data to flag providers.

William Mapp, the company's chief technology officer, stressed the final decision about what to do with that information is left up to people—not the algorithms.

Mapp said that "Qlarant's algorithms are considered proprietary and our intellectual property" and that they have not been independently peer-reviewed.

"We do know that there's going to be some percentage of error, and we try to let our customers know," Mapp said. "It sucks when we get it wrong. But we're constantly trying to get to that point where there are fewer things that are wrong."

Prosecutions against doctors through the use of prescribing data have attracted the attention of the American Medical Association.

"These unknown and unreviewed algorithms have resulted in physicians having their prescribing privileges immediately suspended without due process or review by a state licensing board—often harming patients in pain because of delays and denials of care," said Bobby Mukkamala, chair of the AMA's Substance Use and Pain Care Task Force.

Even critics of drug-tracking systems and algorithms say there is a place for data and artificial intelligence systems in reducing the harms of the opioid crisis.

"It's just a matter of making sure that the technology is working as intended," said health economist Gibbons.

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