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Drugs stolen from hospitals remains a stubborn problem. AI is seen as a solution.

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Hospitals are increasingly employing artificial intelligence to crack down on drug thieves in their ranks.

Theft of addictive opioids from hospitals, doctors' offices and other health care settings — either for personal use or profit — has become a more urgent problem amid a rise in fatal drug overdoses of more than 50 percent during the pandemic. And health care executives say most of the thieves have been getting away with the pilfering. But now, federal officials and health care executives are expanding their use of AI tools to make that a lot more difficult.

More than 700 hospitals nationwide use tech company Wolters Kluwer's AI surveillance tool to uncover potential theft and monitor medication inventory. Another firm, Invistics, built the machine-learning tool with funding from the National Institute on Drug Abuse before Wolters Kluwer bought it a year ago. It's one in a burgeoning marketplace of AI services health care facilities can choose from to safeguard their drug supply and protect against theft.

The expanded use of the tools comes at a time when federal and industry data show an estimated 10 percent of health care workers abuse drugs; roughly 1 percent of the millions of doctors, nurses and support staff steal medicine; and 148 million controlled-substance doses were lost in 2019 — a 215 percent increase from the year before. Meanwhile, fatal drug overdoses in the country remain near record highs at around 110,000 a year, according to the CDC.

Existing systems to find and prevent theft "can be slow and prone to error and manipulation," Dr. Nora Volkow, director of the National Institute on Drug Abuse, told POLITICO in a statement. Volkow said her agency is "committed to supporting …. projects that tap into artificial intelligence and other new technologies to detect drug diversion from real-time data in a more effective way."

Already, the number of health care leaders who say they use AI to uncover diversion, the technical term for the drugs' theft, has nearly doubled, from 29 percent to 56 percent, since 2019, according to a 2023 survey by Wolters Kluwer.

Seed money

Support from the NIDA has helped propel those technological shifts.

From 2017 to 2019, the NIDA armed medical intelligence firm Invistics and its CEO, Tom Knight, with more than $2.1 million in grant funding to develop an AI system that would test new drug-diversion methods.

The result, a sweeping 2022 study whose findings, several industry leaders told POLITICO, helped accelerate machine-learning surveillance in hospitals nationwide. The study found the AI tool could detect missing drugs 160 days earlier than previous methods, on average. And, using an initial sample dataset, it flagged transactions indicating a high risk of theft with more than 96 percent accuracy.

"They were so effective, above and beyond what we expected," said Knight, who oversaw the tool's development at Invistics.

For decades, Invistics software could track controlled substances across the supply chain, making sure manufacturers followed Drug Enforcement Administration regulations. Funding from NIDA — and the credibility that came with the agency's backing — allowed Invistics to expand the capabilities of its software and test it in hospitals.

“It was the expansion from the NIH grant that allowed us to continue to track those same drugs forward in the supply chain after they were purchased by the hospitals,” Knight said, referencing NIDA’s parent agency. “And do more than just make sure they were complying with the [Drug Enforcement Administration] regulations. Also to detect if the drugs had been stolen.”

Hospitals noticed.

“Around that time period is really when things started to change towards like, ‘Oh, this is value to my institution,” said Alex Rodriguez, lead compliance data analyst at St. Jude Children’s Research Hospital in Memphis, Tennessee.

In September, Volkow’s agency gave more than $1.5 million to a company aiming to use AI and blockchain technology to build better datasets across computers to detect theft in the transportation and administration of drugs.

“Without this grant, we would not have been able to do whatever we have accomplished so far and do what we’ve set out to do for the next year or so,” said Behnood Gholami, co-founder and CEO of Autonomous Healthcare. “This has been instrumental.”

Other grants have gone to recipients working with text-message intervention strategies that remind users about the safe storage and disposal of drugs, web-based simulations and novel pill-dispensing systems.

The old methods for catching the thieves, which could rely on anomalous usage reports or video monitoring systems, often aren’t enough to combat the bad actors’ methods, experts said.

Generative AI, which analyzes vast datasets to respond to questions, could see patterns currently missed.

From 15 to 100

Hospitals and health systems in New Hampshire, Michigan, Massachusetts and Virginia have settled with the DEA over alleged violations of the Controlled Substances Act. Meanwhile, patients have suffered pain and some have died in several high-profile cases in which care providers swapped out medication for water.

Drug thieves in health care are clever, said Karen Kobelski, a vice president at Wolters Kluwer. “They record higher pain scores than the patient actually states. They have so many ways around that you would never notice a missing drug,” she said.

In June 2020, Donna Monticone, a nurse at the Yale Reproductive Endocrinology and Infertility Clinic in Connecticut, began stealing fentanyl from vials reserved for fertility patients and replacing it with saline solution, a federal investigation later found.

Women who received the saltwater during their surgical procedures described “torturous pain.” A subsequent civil investigation found the clinic had racked up hundreds of potential violations of the Controlled Substances Act’s record-keeping mandates. Yale University shelled out more than $300,000 to resolve the allegations.

At Asante Rogue Regional Medical Center in Oregon, a nurse in the intensive care unit allegedly replaced patients’ intravenous fentanyl with unsterile tap water. Upwards of 30 wrongful deaths may be connected to water-based infections at the hospital, said a law firm representing clients at Asante in March. Dozens more were sickened. News broke of police investigating the theft in December 2023. Asante is facing millions in damages.

The synthetic opioid fentanyl is at the center of the country’s staggering opioid epidemic and is among the most commonly diverted drugs.

Cautionary tales like those prompted officials at St. Jude’s to start building out their AI surveillance program in 2020, initiating a six-month vendor-selection process and then loading tranches of data into new machine learning software.

“The technology had finally caught up to being able to connect to all these different systems,” said Rodriguez.

Before the hospital adopted its AI system, staff monitored roughly 15 percent of all drug transactions. Now, the technology sifts through them all, flagging the ones that are high risk.

Rodriguez's optimism is reflected by data. More than half of hospital leaders using AI and machine learning to track drug theft say they are "very confident" in their methods, according to a Wolters Kluwer survey. Just 23 percent of hospital leaders not using those tools express the same confidence.

"While these tools help, the other part is making sure that your staff is educated, that they know what to look for, what diversion looks like," Rodriguez said. "You can't have one or the other. But having both sets you up for success."