ELECTRONIC CONTROLLED SUBSTANCE TRACKING IN EMS

Real stories of how modern measures are improving the safety and efficiency of medication delivery

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Establishing and maintaining a secure means of tracking dispensed pharmaceuticals has come under heightened scrutiny in recent years. In 2016, 28 investigations of physician registrants in which the U.S. Drug Enforcement Administration (DEA) was involved resulted in the arrest and prosecution of the registered physician. These cases have gotten the attention of agencies both large and small and the systems of oversight they have in place to safeguard against cases of provider diversion. Legal penalties can be severe, running into the millions of dollars in fines per infraction, in addition to license revocation and even imprisonment.

However, specific regulatory policies as they relate to EMS agencies have been inconsistent at best.

"From the provider’s end and the view of the medical directors, there has been a fair amount of confusion," says Cameron Decker, MD, LP, medical director of Harris County Emergency Corps (HCEC), which provides EMS in North Houston for Harris County Emergency Services District No. 1. HCEC covers more than 400,000 people spread across 130 square miles and operates 12 front-line ambulances and four peak ambulances, with four 24-hour shifts of medics. While responding to more than 20,000 calls a year, HCEC also serves as a regional dispatch center for 17 other fire and EMS agencies and delivers training and a robust event medicine division that provides medical coverage for Houston’s largest venues.

Decker explains that EMS is not specifically addressed in many federal regulations, leaving some medical directors without much guidance and in fear of medical board action and federal repercussions. Congressional resolutions come and go but governmental regulatory agencies have difficulty coming together on firm guidelines. “It makes it challenging to craft a system that checks all the boxes,” Decker says.

Fortunately, modern technology is allowing more user-friendly monitoring of scheduled substance dispensing, allowing management and administration to institute a proactive strategy to keep a close watch on the entire life cycle of every dose of medication, from opening the manufacturer’s original shipment all the way through a paramedic’s administration to a patient in the field. This way, as regulations become more strictly codified, an agency can stay ahead of the curve and able to adapt to new state and federal directives.

Field EMS personnel with MedStar Mobile Healthcare, based in Fort Worth, Texas, stock six different medications classified and tracked as narcotics, including ketamine, a schedule III narcotic under the DEA, explains Michael Potts, CCEMT-P, MedStar’s logistics manager. MedStar provides advanced life support ambulance service to 436 square miles and more than 978,000 residents in Fort Worth and surrounding cities, and responds to about 131,000 emergency calls per year with a fleet of 57 ambulances. Potts oversees all logistical needs, the ordering of supplies, facilities and fleet maintenance, special events coordination and the assorted administrative responsibilities associated with a busy EMS department. Like HCEC, MedStar faces the challenge of inconsistent and sometimes contradictory rules regarding controlled substance tracking among its field personnel, Potts says.

Historical Practices

Paper charting has been the established method of patient records throughout the age of modern medicine, and EMS operations are no different.

“We were using paper logs [to track medications],” recalls Decker of Harris County Emergency Corps’ system when he came on board. “The narcotics control...
administrator would assign an individual control number to each vial of medication.” At shift change, EMS personnel would log the numbers and both sets of crew members would sign, attesting to the handoff. Paper administration records were submitted to the administrator for manual entry into an Excel spreadsheet.

“It made for a very challenging audit process,” Decker says of the paper-based system. Transcribing errors, illegible handwriting, lack of individual provider accountability and the fact that Decker had no “live” minute-to-minute inventory status made data collection difficult. Audits could take days, which posed a challenge to Decker, who prefers much more frequent regular audits of the HCEC medication inventory.

Similarly, MedStar Mobile Healthcare used a homemade Microsoft SharePoint application that required paper charting to be entered into the system to produce a PDF report, which posed similar obstacles. “We had to maintain the product ourselves,” Potts says, adding that documents had to be completed that contained reconciliation testimonials of how much medication each provider used, wasted and resupplied. Each document had to be witnessed and signed.

“We had to keep up with 70 pieces of paper per day,” says Potts, since approximately 35 administrations of medications take place daily. An average of 5 reports per day had to be returned due to errors or discrepancies, and the PDF format made data processing problematic. “When you use paper for cradle-to-grave it’s very difficult,” Potts continued. “Logs, documentation, everything to support the transaction had to be recorded on paper. We’re a large system and we simply could not continue with that process.”

A Better Way

Because of the restrictions inherent in fragmented, paper-based protocols, agencies large and small are beginning to investigate digital processes for tracking medication administration. These forward-thinking companies point to specific advantages with these EMS-specific electronic systems.

Focused audits. “If you perform a random audit of controlled substances then look for breaks in their chain of custody, you’ll find that a lot of times patients and EMS personnel are just not being careful with the medications,” Potts says.

DEA Scheduling System of Controlled Substances

Schedule I Controlled Substances
Substances in this schedule have no currently accepted medical use in the United States, a lack of accepted safety for use under medical supervision and a high potential for abuse.

Some examples of substances listed in Schedule I are: heroin, lysergic acid diethylamide (LSD), marijuana (cannabis), peyote, methaqualone and 3,4-methylenedioxymethamphetamine (“Ecstasy”).

Schedule II/IIN Controlled Substances (2/2N)
Substances in this schedule have a high potential for abuse, which may lead to severe psychological or physical dependence.

Examples of Schedule II narcotics include: hydromorphone (Dilaudid), methadone (Dolophine), meperidine (Demerol), oxycodone (OxyContin, Percocet) and fentanyl (Sublimaze, Duragesic). Other Schedule II narcotics include: morphine, opium, codeine and hydrocodone.

Examples of Schedule IIN stimulants include: amphetamine (Dexedrine, Adderall), methamphetamine (Desoxyn) and methylphenidate (Ritalin). Other Schedule II substances include: amobarbital, glutethimide and pentobarbital.

Schedule III/IIN Controlled Substances (3/3N)
Substances in this schedule have a potential for abuse less than substances in Schedules I or II and abuse may lead to moderate or low physical dependence or high psychological dependence.

Examples of Schedule III narcotics include: products containing not more than 90 milligrams of codeine per dosage unit (Tylenol with Codeine) and buprenorphine (Suboxone).

Examples of Schedule IIN non-narcotics include: benzphetamine (Didrex), phendimetrazine, ketamine and anabolic steroids such as Depo-Testosterone.

Schedule IV Controlled Substances
Substances in this schedule have a low potential for abuse relative to substances in Schedule III.

Examples of Schedule IV substances include: alprazolam (Xanax), carisoprodol (Soma), clonazepam (Klonopin), clorazepate (Tranxene), diazepam (Valium), lorazepam (Ativan), midazolam (Versed), temazepam (Restoril) and triazolam (Halcion).

Schedule V Controlled Substances
Substances in this schedule have a low potential for abuse relative to substances listed in Schedule IV and consist primarily of preparations containing limited quantities of certain narcotics.

Examples of Schedule V substances include: cough preparations containing not more than 200 milligrams of codeine per 100 milliliters or per 100 grams (Robitussin AC, Phenergan with Codeine) and ezogabine.

Source: Drug Enforcement Administration, https://www.deadiversion.usdoj.gov/schedules/
Audit, you have the capacity to determine whether one provider is administering a higher amount of medications,” Potts says. “It’s unfortunate, but diversion does happen.” If Potts receives a report such as a defective container, he can track it back to find out where and when the defect occurred—potentially all the way back to the manufacturer.

Because audits can be completed in an afternoon, rather than a period of several days, Decker can run audits several times per year. “It gives me peace of mind, and those hours saved can be put back into staff training,” he says. “It’s a profound improvement in time management.”

Accountability. “As a medical director, it’s empowering that I can review the entire life cycle of a medication, from receiving the shipment from the manufacturer to the end-user delivering it,” says Decker, adding that expired medications and destruction can also be tracked. “Everything is right there to generate reports on the fly.”

Security. “From day one of my tenure [with HCEC] it was apparent that we take this topic extremely seriously,” Decker says, adding that an electronic system embodies the next generation of medication security. His system’s biometric fingerprinting feature eliminates the worry of shared passwords or providers logging on through another’s profile. “Does it stop someone from hypothetically pulling a syringe, giving the patient a vial of saline, and pocketing the drug? No, but no system will ever be able to prevent that 100% of the time,” Decker says. “While we look at individual provider usage trends, perform drug screening and focus on provider health and wellness, at some point, you need to have faith that crews will do the right thing.”

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Words of Wisdom

Health systems considering an electronic controlled substance tracking system should first ensure that it fits their company’s budget and culture, advises Decker. Weigh risks and benefits, and have a defined implementation strategy.

“You need the buy-in from the medics,” Decker says. “Demonstrate those benefits to the ground-level user.” HCEC rotated crews in during their regular trimester training session to become familiar with the system, providing them with login and fingerprint profiles, having them practice transferring medications and documenting medication administration. On the back end, one challenge was registering the current inventory of medication, which involved adding a control number to 1,000 vials of medication, in addition to hardware purchase and installation at the stations.

Still, these inconveniences were worth the investment for the agencies, and staff in both organizations got up to speed quickly.

If an EMS agency feels this is the right move for them, first, management should determine what they’re hoping to achieve and run an objective return-on-investment analysis, advises Potts. “The last thing you want to do is introduce a new piece of software and have it sit on the shelf,” he says.

In the end, perhaps the most valuable advantage to an electronic controlled substance tracking system is the perception among medical providers, payers, regulators and the community that EMS systems take medication accountability seriously and are embracing the latest measures to ensure safe and effective administration. “If the FDA wants to come through your door at any time, you’ll be ready to produce what they ask for on demand,” Potts says.

And the peace of mind among both medical directors and EMS personnel in the field that comes with these processes cannot be overstated. “I’ve worked for systems in which accountability was not as strict,” concludes Decker. “I simply didn’t feel comfortable there.”