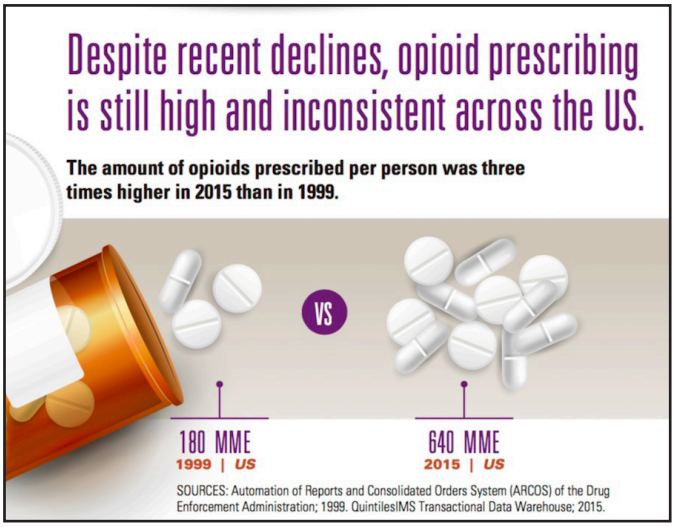
Using All the Tools

Vanderbilt Pilot Takes Multimodal Approach to Medication Safety

Why rely heavily on one method when other, equally effective options are also available?

That was Vanderbilt University Medical Center's approach to adopting opioid reduction strategies in acute pain management.

Presenting lessons learned from successful surgical pilot programs to a gathering of health leaders at a recent Tennessee Center for Patient Safety summit, Medication Safety Program Director Terry Bosen, PharmD, said the idea wasn't to cut out opioids altogether but to encourage consideration of additional medications with various mechanisms of action to best serve patients. "Spread the love," she said with a smile, adding intravenous lidocaine, ketamine, nonsteroidal anti-inflammatory drugs, and steroids including dexamethasone all offer alternatives in post-surgical acute pain management.



Noting Tennessee's high rate of painkiller prescriptions per person, Bosen said data from the Tennessee Department of Health is beginning to show improvement in prescribing practices. "We're moving in the right direction. The awareness has really grown," she said of rethinking pain management. "Our morphine milligram equivalents (MME) are going down, and our addiction treatment medications are going up," she added of the per capita data that tracked a 20.28 percent decrease in MME prescribed for pain between 2013 and 2016. Despite that improvement, however, drug overdose deaths continue to rise in Tennessee, led by opioid overdose deaths.

As an academic tertiary medical center and leader in translational research, Bosen said Vanderbilt wanted to look at effective ways to turn the tide on opioid overprescribing and misuse. The drive to use a multimodal approach to pain management before, during and after surgery was a provider-led effort spearheaded by anesthesiologists. The pilot program, which focused on colorectal surgery patients, looked at decision-making in the inpatient setting, as well as prescriptions at discharge.

Physicians were encouraged to consider alternative post-surgical pain management options while patients remained in the hospital under close clinical supervision. Bosen said to aid in this endeavor, changes were made to the electronic health record to provide information on opioid alternatives. "Whatever we can do with clinical decision support to help the prescriber, we're certainly trying to load that into the EHR," she noted.

Bosen said it was also critically important to consider the type and quantity of painkillers sent into the community at discharge. "If you are prescribed 80 tablets and use only two, then there are 78 sitting in your medicine cabinet," she pointed out, noting numerous studies have shown the majority of people don't dispose of unused medications.

To manage perioperative pain, both intravenous lidocaine and ketamine were considered as viable options to opiates. Although ketamine is a dissociative anesthetic agent at high doses, it is an analgesic at low doses. Lidocaine has also been studied for pain management and shown to have minimal side effects.

The lidocaine infusion was ordered for a maximum duration of 24 hours following colorectal surgery with dosing based on a patient's weight during the pilot, which launched in 2014. Contraindications for this therapy include cardiac disease, seizure disorders, liver disease, and active electrolyte disturbances. The ketamine pilot, which started in May 2017, was used in a post-surgery population in three stepdown and two general care units at the hospital. Contraindications for ketamine use include psychosis or recent myocardial infarction.

Bosen said data was collected on ERAS (enhanced recovery after surgery) bundle components for multimodal analgesia at baseline and then at a defined Phase I and Phase II follow-up point. "We were able to show that with these bundles, we had a decrease in length of stay and decrease in opioid use on the inpatient side," she explained. From baseline, intraoperative opioid use dropped from just under 35 MME to right at five MME by Phase II.

"When we started piloting the lidocaine infusion, the buzz about decreased length of stay led to wanting to broaden the pilot quickly because the results were so great," Bosen said. However, she added, it was critical to evaluate a variety of compliance and safety parameters.

She continued, "With ketamine, we've really moved from pilot towards standard-of-care, but we have continued to limit the scope of surgeries we allow this in and are keeping a tight rein for patient safety." The ketamine is being used primarily for colorectal, bariatric and abdominal surgeries at this point. "Ketamine is a drug typically used in the OR and some in the ICU. It's very specialized so we're keeping a close eye on this therapy," Bosen said of using it in post-acute care units and adding the team has written a standard operating procedure for low dose ketamine infusion.

Bosen said she's encouraged by what the data has shown so far in decreasing opioid use. "When you have a structured approach, and you add multimodal therapies to your order sets and combine it with prescriber education, it appears you can make a significant dent in your opioid usage and volume," she said of Vanderbilt's results.

Dr. Terry Bosen

"We're still getting the whole picture. We're still figuring out the end of the story. We have some data on the decrease in inpatient opioid usage, but how has that trend decreased discharge prescriptions? Looking to see the impact on decreasing opioids in the community … that's ultimately the whole reason why all of this inpatient work exists," she continued.

Bosen said the next steps in the journey are to assist in creating a feedback loop of provider data so physicians are more aware of their prescribing habits, preparing to expand multimodal analgesia bundles to broader surgical groups, and embarking on education programming to make sure patients have realistic expectations of pain control.

"It takes a lot of work to cookbook it. It takes time to create culture change," she concluded.

The Tennessee Center for Patient Safety, a department of the Tennessee Hospital Association, develops and shares hospital and health system success stories and promotes best practices.

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