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## Ketamine for Acute Pain Management: Balancing Efficacy and Safety

### Announcer:

You're listening to *Clinician's Roundtable* on ReachMD. On this episode, we'll learn about the use of ketamine in acute pain management with Dr. Padma Gulur, who's a Professor of Anesthesiology and Population Health Sciences at Duke University. Let's hear from her now.

### Dr. Gulur:

Ketamine is a medication primarily used for starting and maintaining anesthesia, so that's what it's been used for for years. More recently, it has been used outside of the operating room for treatment of pain and depression. How does it commonly treat pain? It's got a very unique mechanism of action. It functions as an NMDA receptor antagonist, which blocks the pain pathways in the central nervous system and alters the way that the brain would respond to painful stimuli. It's commonly used to treat pain because there is purported anti-inflammatory properties, though not high. It does not depress the respiratory system, at least not at therapeutic doses, which makes it attractive and reasonably safe when we're concerned about those things.

So both ketamine and opioids can treat acute pain. Ketamine, because of its NMDA action, can be particularly effective when people have neuropathic pain or pain due to their nerves whereas opioids are generally less effective, other than specific ones like methadone, which also have some NMDA action. In terms of safety, on the other hand, both come with a lot of baggage. So opioids are well known to cause gastrointestinal issues like slowing your gut, constipation, respiratory depression, sedation, etc. Ketamine, while it does not cause respiratory depression—again, within therapeutic doses (it can, if given in high amounts or with other medications)—it has its own risks. The primary risks from ketamine are the sense of dissociation and hallucinations; some people report feeling locked in; some psychosis can set in, so a lot of mental health; and it can also increase your blood pressure and a few other things, which could be dangerous for people with underlying cardiac disease.

We have to recognize that ketamine is also a drug of abuse, so choosing patients carefully is very important, and monitoring them closely if you were to give them ketamine therapy is as important as when we are giving opioids to patients at risk for addiction.

The other thing that's really important with ketamine is dose titration, so always start low and adjust the dose based on the patient's response and monitor side effects, especially since I mentioned these are mental health side effects, like psychosis, etc. Patients can do harm to themselves and others in those states, so it's particularly important to be very, very thoughtful and careful as you are titrating these doses and to carefully monitor for any psychological effects such as the hallucinations or disorientation associated with it as well.

The other thing that is important is educating patients on the use of this medication, to make sure that they're not taking other things that could exacerbate the side effects and to make sure that the storage and disposal of these medications is carefully being done so inadvertently, younger folks and others are not given exposure to this medication, which can be very dangerous for them if administered in a nonmonitored setting.

Recognizing the treatment of pain or depression, whichever condition we're treating when we're administering this, it's multimodal. We should not be relying on one medication because you will quickly go outside the therapeutic window, and patients can suffer from severe side effects or long-term consequences, like we've discussed, so it's really, really important not to make this the only therapy being done. You need to have a detailed treatment plan to address your pain condition, and this should just be one element of it and, again, not the primary element.

If patients are experiencing side effects, well, first and foremost, stop the medication. Rotate and use other therapies, including

nonpharmacologic therapies, to try to treat the condition, but you can also adjust the dose. Lowering the dose usually will lower the side effects while still achieving pain relief. And then you can also symptomatically treat it. For instance, if they do have psychological effects, you could consider anti-anxiety medications; but again, the combination of those two medications can be dangerous, so that should definitely not be the first approach. Educating patients about the side effects and encouraging them to report these right away, including their families so they could notice it, is important so that we can manage this and reduce the risks to the patient.

**Announcer:**

That was Dr. Padma Gulur discussing the use of ketamine in acute pain management. To access this and other episodes in our series, visit *Clinician's Roundtable* on ReachMD.com, where you can Be Part of the Knowledge. Thanks for listening!