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PAIN MANAGEMENT FOR PEOPLE WHO USE OPIOIDS

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[video transcript]

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Dr. Timothy Wiegand, has attended Iowa State University and graduated with honors and distinction in 1995. He received his MD from the University of Wisconsin School of Medicine and Public Health in Madison, Wisconsin in 2004. Like Reagan completed a categorical internal medicine residency at Hennepin County Medical Center in Minneapolis, Minnesota, and completed fellowship training and medical toxicology in Clinical Pharmacology at the University of California, San Francisco in 2006 and 2007, respectively. We weekend is the director of toxicology in the toxicology and addiction content service at the University of Rochester Medical Center and Rochester, New York, and He's an associate professor of Emergency Medicine and Public Health Services at the University of Rochester School of Medicine and Dentistry in Rochester, New York. He also serves as adjunct faculty and countertop toxicologist for the SUNY Upstate poison center, and SUNY Upstate Medical toxicology fellowship training program. He's also the medical director for hooter dot Doyle, in New York Oasis certified outpatient substance use disorder treatment program. He is a frequent lecturer locally in New York, nationally and internationally. On he used to be an orphan and on the treatment of opioid use disorder in the emergency department and hospital setting on the treatment of pain and perioperative management for patients on buprenorphine and methadone and drug testing during buprenorphine treatment and on other topics related to addiction medicine and medical toxicology. Welcome back to the wagon.

01:34
Thank you, Sharon. It's a pleasure to be here. I'm going to be presenting on pain management for people who use opioids and take medications for opioid use disorder. I just have one disclosure, I serve as a consultant for an advisory panel for Titan pharmaceuticals. We have some learning objectives today to describe basic opioid pharmacology, as well as dependence and tolerance and how that impacts the treatment of pain and to recognize the impact of opioid tolerance on achieving adequate analgesia and discuss strategies for pain management using opioid and non opioid medications. The guidance, the this, this talk was very much informed by an update to the ACM national practice guidelines in 2020. On the treatment of opioid use disorder, in particular, the section on pain management, which included an update from the 2015 guidelines, including 13 new recommendations, and these are really pertinent because they dramatically impact how we treat patients with medications who, that that are taking medications for opioid use disorder in the IDI in the hospital setting, as well as perioperatively. And I'm going to discuss other types of pain as well. But in particular, the hospital setting is a really important setting that needs to be done right or really bad things can happen to patients if they're not adequately managed. So again, ACM 2020 update includes 13 New wrecks and revisions to 35 recommendations. So I'm going to discuss the changes to the guidelines and provide a basis for the updates. We'll review buprenorphine, methadone and naltrexone, pharmacology, and have several case discussions to demonstrate techniques that providers can use to best treat different types of pain and manage patients perioperatively as well as in other settings, as they are also treated for opioid use disorder. This painting hangs in my office,

it is from Robert C. Hinckley and is the first operation under ether. And it reminds me of some of the breakthroughs in medicine. And I think we're really at that point in essentially with where we are in management of opiate use disorder, really with breakthroughs and how we can better help our patients appropriately and effectively manage their pain as well as their their opioid use disorder. There are a lot of challenges in treating pain. There's a lot of misunderstanding about the pharmacology. You get lots of different perspectives and advice. And this can really confuse patients as well as consultation services. The anesthesia service. One provider may say something about stopping buprenorphine or dosing it differently. Another provider may have a very different perspective. And that's that's why it's really critical to review the evidence and really have a good understanding about pharmacology and have expertise in this area that can be consulted to support providers and patients with a changing landscape of available medications. When the guidelines were first put out in 2015. We didn't have subcutaneous buprenorphine. We've got many more formulations of buprenorphine that are available some are for only pain indications. At lower dose, some are the higher dose. We've got different formulations in generic formulations. There's confusion about the dual versus the mono product. And there's stigma and bias incorporated into decision making. In particular, when we treat pain in patients with opioid use disorder. There's also altered pain tolerance with opiate dependence. And this is for a variety of different reasons. Some of it is due to hyperalgesia. Some of it is is due to the pharmacology the medications that are being used to treat opioid use disorder. And the the evidence base. The references aren't shown in this screen but the references are available for the the data on this slide. The studies have been done have been done in different subpopulations that show they have less pain tolerance when they're treated, for example, and women treated with methadone for opioid use disorder after C section that are on methadone for their opiate use disorder. They have less pain tolerance after C section compared to non methadone dependent patients. One of the key takeaways I want to leave you with this lecture is to treat pain effectively. You must continue to treat dependence. Patients are opiate dependent, have a need for ongoing opioid agonist continuation. If you take that away, you have exacerbation of the pain. opiate withdrawal includes pain and includes anxiety, it includes dysphoria, it includes panic, and those symptoms can make pain much worse. In addition, you also have ongoing analgesia from the opiate agonist of buprenorphine or methadone, if they are continued, that can be leveraged, in particular, if you dose differently. But if they're stopped in an acute pain setting, in particular, you have this vacuum that needs to be filled. And if one is looking at acute and severe pain, for example, full agonists, sometimes opioids that the individual may have began struggling with with their were first exposed to you know, their their precipitated the opioid use disorder potentially even aren't really good at treating the dependents as well as providing analgesics you gotta remember treat. To treat pain, you've got to treat the dependents. There's different types of pain. And there's a lot of variables that go into how the pain is experienced. There's acute pain, we have chronic pain, we have the degree of pain, we've got mild pain, we've got moderate pain, we've got severe pain. Sometimes you can plan ahead, you have a plan surgery, where you don't have pain necessarily at the time, but you will have pain when the surgery is done. What type of surgery is it? Can this be done with local anesthetics? Can this be done under general anesthesia? Is there a procedural component, for example, shoulder dislocation that just simply needs reduction? patient expectations and planning are really critical and having the best outcome. So getting them on board talking about what their expectations are? How do they perceive a procedure or an event going? There's

neuropathic pain, which is very different than inflammatory pain and traumatic thing. The duration of pain is really critical. As I mentioned, shoulder dislocation reduction may have an acute component that you can use a medication and non opioid medications such as propofol, the IDI to reduce the shoulder shoulder, but then you only have adult pain after that's probably best treated with a with a non steroidal. The site of pain has important implications as well. One can leverage regional anesthesia and multimodal anesthesia anesthesia. If an individual is admitted to the hospital for a procedure in the lower leg, a C section, you can use an epidural or spinal procedure to deliver local anesthetic that can be used instead of taking an opioid or non opioid orally. hyperalgesia develops in individuals that are taking opioids over time and there can be situations that really exacerbate the hyperalgesia which is the sensation of increased pain when one takes an opioid agonist, stress, depression and anxiety all exacerbate the situation the pain that's experienced during hyperalgesia. And then there's other substance use, which can complicate the treatment of pain in particular, making the use of opioids more dangerous. The sedatives gabapentinoids alcohol use, withdrawal, concomitant stimulant use potentially. So there's a lot of different variables and factors that I'd need to know about the patient and really working directly with the patients we can understand expectations is really important. The painting is called tree of hope, and is from artists that suffered chronic pain in 1925. She was planning on entering medical school this is from Frieda and I don't have her last Name it was cut off. This is a painting that expresses her experiences that she was treated throughout her life. She had many injuries from a serious accident volume of streetcars and a bus, broken vertebrae, legs, arms, abdominal injury, and just shows, you know, she struggled with pain throughout her life. And so, pain has really important implications on individuals mood, quality of life. And we have pain versus suffering. Not all pain is associated with suffering to individuals that have knee pain from arthritis, one may experience that pain in a very different way. In particular, if they suffer from a mood disorder, they have had emotional trauma. They come from a dysfunctional or alcoholic family. If they lack effective coping skills, they show dependent traits they have past history of substance use disorder. All of those factors impact whether that pain is experienced as suffering, or is experienced as pain and one can function better when it's experiences pain versus suffering, so different qualities to the pain and interpretation.

11:11
We talked about pain and treatment of opioid use disorder, want to remember that there's a lot of things we can do for pain that don't involve medications. And this is where comprehensive support for the patient is really important. There's physical treatments such as exercise, I particularly like yoga, I do yoga myself with a lot of arthritis. And I can't say that there's not a time that I feel better, leaving a hot yoga class. But swimming where the weight is reduced, and you have a lot of ability to maneuver that doesn't put stress on the body, physical therapy, occupational therapy are really important. So individuals can learn how to exercise and perform stretches even appropriately. So they don't injure themselves. They're stretching, which is a type of exercise that I think is underutilized. And then there's diet and weight reduction that go into this in particular, if individuals are struggling with arthritis, reducing that axial load is something that can be very effective and diet can impact inflammation and exacerbate certain types of pain as well. And sleep is really important. The lack of sleep can can exacerbate pain, mindfulness meditation have dramatic impacts on quality of life as well as pain you can get the

applications on the smartphone on one's watch to do breathing exercise to walk through meditation, some apps that are popular headspace and calm. Both of those I've used in the past and recommended to patients. There's acupressure acupuncture, massage, 10s orthotics, braces, and then we have some non oral pharmacology but injections steroids nerve blocks regional anesthesia, and then the non physical Pagham behavioral therapy monitor thoughts and feelings attention diversion and distraction hypnosis behavioral therapy activity monitoring, stretch monitoring, goal setting, goal setting monitoring progress, you start to see that in treating pain in particular for treating chronic pain. It really involves lifestyle and a team approach. Here we may have counselors we may have physical therapists, we may have access to a gym a pool, and access to applications and a smartphone or even biosensors potentially as well as the medications, some of which we use to treat opioid use disorder and then some other medications which we'll talk about. We have non opioid agents for pain, the nonsteroidals we have ibuprofen, naproxen. In the hospital, you can have parenteral nonsteroidals architour, lack or toradol is particularly effective. When you have inflammatory pain, there may be situations where that's contraindicated. However, acetaminophen, don't want to forget acetaminophen, I find that many of my patients in the hospital with opioid use disorder will say, Well, that doesn't work. In particular, they have very severe pain and I remind them we're approaching this from six different directions. It may be a small piece of the of the plan, but it's really important that we leverage all of the approaches that we have to best treat your pain and get ahead of this acetaminophen. Certain types of pain may be really receptive to responsive to try cyclic antidepressant depressants a neuropathic type pain or the SNRIs venlafaxine or duloxetine. There's evidence that shows fibromyalgia and other types of neuropathy are really responsive to the tray, cyclex and SNRIs. And then there's local anesthetics, both topically the patch lidocaine as well as injection, other agents, the Gabapentin and AIDS, baclofen steroids. I hesitate to really rely on the gabapentinoids they're opioid potentiate errs and the research is really shown in the acute setting. perioperatively is where you can read Use your opioid dose when used together paranoid, but really chronic use of the GABA paranoids has not been shown to improve outcomes and low back pain with or without radiculopathy and individuals often get left on them and that can be problematic in terms of increasing the risk of toxicity related to ongoing opioid agonist therapy or medication for opioid use disorder. They accumulate in renal impairment. So if an individual has acute kidney injury or as gets dehydrated they can become encephalo Pathak from the gabapentinoids baclofen may have a role of somebody has spasticity or spinal cord injury can be given intrathecal li but just be careful that the individual doesn't end up with multiple medications just because at least I'm not prescribing an opioid is what I often hear and they get put on a Cyclobenzaprine and Gabapentin it does entity. These muscle relaxants and agents really don't have a lot of evidence to support use in particularly in most of the settings where they're used. Alright, so let's talk about the medications for opioid use disorder and we'll start with buprenorphine. Buprenorphine when a patient is on buprenorphine, and they tell me Oh, that's not for my payments for my dependents. I remind them that different morphing was first available as a very potent agent in the hospital setting to treat moderate to severe pain. And here you see an image of an ampule of 300 micrograms of the IV buprenorphine, that still is available in the hospital setting. It is very potent. It is a very potent agent that has a ceiling effect. So a built in kind of safety mechanism, a very high affinity for the mu receptor and a slow dissociation so it sits at the morphine unit, the mu receptor, and it slowly dissociates. And this is really useful when we're treating patients craving dependence and preventing withdrawal. For

analgesia however, it it's interesting, it's like methadone, and that the analgesic effects for for buprenorphine are much shorter than the duration of action. It has for preventing withdrawal for treating craving, for blocking other opioids as they're used to prevent overdose. And the analgesic effect is about six to eight hours. So if you're dosing buprenorphine, and a patient that has both chronic pain, or acute pain, taking their same dose, and splitting it to every 68 hours can have an effect much more effect on their pain, whether it's chronic and acute. It also has interesting effects on the Kappa receptor to kappa receptor antagonist and individuals that have high kappa receptor activity have higher levels of dysphoria. And as a cap antagonists, this may offer some mood stabilization. It's also may prevent some of the tolerance that develops to other opioids or inhibit the hyperalgesia that happens with other opioids. And so certainly, further study on capa effect and how that impacts buprenorphine is effect on analgesia deserves to be studied, but I think it's a very positive effect in overall in patients that are taking it. So there's studies that show buprenorphine has better effects for chronic pain compared to other opioids. This is a paper that involves converting patients from high dose full opioid agonist to sublingual, buprenorphine, that were that had chronic pain that reduce their pain scores and improve their quality of life. They had less side effects, and they had less pain and improve quality of life. 3035 chronic pain patients aged ranges 24 to 66 mean morphine equivalents 550 milligrams, very wide range and burden to sublingual buprenorphine. Buprenorphine was continued for two months. It takes a little bit of time when you're converting individuals that are on other full agonist of buprenorphine to get used to it, but reduction in side effects and effectiveness for pain can occur very rapidly. This is another study for buprenorphine for pain, and opioid dependent patients. There's an observational study of chronic pain patients treated with buprenorphine in an outpatient psychiatric psychiatry console clinic 43 chronic pain patients with a diagnosis of opiate dependence that were treated for three years, all had been dependent on prescription drugs. There were two groups, alcohol and other drug dependent versus no substance use disorder. Most patients were male not working between ages 45 and 60. treatment group an orphan was effective, most patients had improved pain scores with treatment of the opiate dependence. There is no differences between those with or without a history of substance use disorder, and patients had much less preoccupation with pain and a greater satisfaction with buprenorphine treatment when they were treated with buprenorphine for pain.

19:57

So this is the case that I used to illustrate to maximize the potential of buprenorphine. We have a 42 year old male who is an x ray technician. He works at a local hospital. He's been treated for opioid use disorder with a dual combination product, buprenorphine Naloxone for several years. He worked shifts, and he established trouble he struggled, struggled staying on track with dosing. At times. He says his back bothers him if he goes over eight hours between the buprenorphine doses. He'd been on to such 0.5 milligrams, three times a day for about a year occasionally needing for an early fill for having taken an extra one as he had been transitioned to buprenorphine from mild prescription opioid use disorder. So we increase the dose to force us one three times a day. He has improvements in his pain, sleep and mood. And after about two months of the force is one three times a day, he is exercising, he's losing weight, he's more active, so it's functional scores increase. And I add another dose because he's working the shift work that he can take as needed. And he maintains that his pain is better, and he's more

functional than he'd been in years. And so this isn't illustrations gentleman had been transitioned onto buprenorphine because he'd been struggling with prescription opioids treated as opioid use disorder, and then use the buprenorphine split dosing rather than dosing once or twice a day, three times to four times a day to maximize the analgesic effect, and then increase the dose a little bit and leverage the higher dose to get better analgesia as well as more functional outcome. What about naltrexone so now track stone is an antagonist when you have no tracks on in place. You don't have an analgesic effect. This image shows the concentration of naltrexone and extended release Naltrexone is in red, and the yellow illustrates daily dosing of the oral 50 milligram oral naltrexone. You can see that there's peaks and troughs to the aural daily dosing of naltrexone. And you see that the concentration of the injectable standard release no tracks on the monthly product wanes over the course of 30 days. And so when you have an opioid antagonist if you need to treat acute pain or acute severe pain with another opioid, you can do so you just have to use a higher dose of a full agonist. I typically prefer hydromorphone, if you have a condition where you would use parenteral opioids, but dose however, is going to really depend on where they are in the timing of their dose of naltrexone. Somebody has a major trauma car accident, they come into the hospital and they've taken naltrexone that morning, your doses of opioid agonists are going to be higher initially. But over the course of 24 hours, you need to back off on that dose the opioid, because they'll have a decrease in the effects on concentration. So again, the naltrexone concentration varies by time of day and taking the oral naltrexone as well as time of month depending on the injectable. One of the complications that can occur in treating a patient that's receiving naltrexone for their opioid use disorder is how do you restart that if it's been held, and you've prescribed the opioids or treated in the hospital for a period of time, really educating providers if they're if you're serving as a consultant on the need for the washout period working with the patient on the washout period to restart looking to see is this time maybe to consider an alternative agent buprenorphine Are they are they dependent again, after reintroduction of opioids? There's a lot that goes into working with naltrexone. And if you're reintroducing an opioid in not just treating the pain but in potentially restarting the opioid. So I have an algorithm from naltrexone emergency pain management and again this really depends on what type of pain it is. Is it localized is acute is it chronic? If we have a severe trauma multiple fractures like the car accident, high dose parenteral full agonist to clinical effects are titrated to clinical effect while they're under observation in the IDI with a pulse ox or end tidal co2, start maybe with two milligrams hydromorphone before eight. If they're receiving oral naltrexone holding them then on tracks and obviously if it's been injected, a week prior to expire, again titrating to clinical effect and then coordinating with the patient's provider if you're not the treat treating provider providing the naltrexone after the acute pain and use of opioids has has ended. Remember spinal blocks local regional general anesthesia. In the hospital setting acute severe pain ketamine can be used in if oral naltrexone at the end of the day, just just hold and it's very easy to overcome, but you may need to alter your dosing of opioids because the patients are not dependent and that blockade effect will wane. If this is an abscess from an injection attempt, maybe the individual had relapsed and or was using another drug cocaine and tried to inject and has a localized infection that needs incentives incision and drain Ah, local anesthetics nonsteroidals acetaminophen, remember for all of these situations maximizing non opioid agents really focusing on multimodal analgesia is is important. a dislocated shoulder and elbow intoxicated patient where they're getting naltrexone maybe for alcohol use disorder as well as opioid use

disorder, propofol for procedural sedation for ketamine, potentially, and then the acute pain will wane once the shoulder has been reduced. Then prescribing acetaminophen and or non steroidal for the inflammation, chronic back pain and impatient maintain on that infection seen in the EDF their fall on the ice, and nonsteroidal lidocaine patch, or acetaminophen. And let me see if there's any I don't see the chats from my view. But I think there have been some chance I can we have enough time at this point. And I can see if there any questions from the audience that at this point in time before I continue?

25:55
Yeah, there are a couple of questions, if I can get to them for you. The first question is from Michelle Selman Fisher, what has changed with regards to white doctors and nurses treatment of black blood patients who complain about pain, there's a historical under underpinnings regarding African Americans and the perception that we don't feel pain. We Dr. Simmons, sorry.

26:21
Yes, I think there's

26:22
well gynecologic experience on black woman without anesthesia. Sorry. Yeah. So

26:27
I missed some of that. But I understand. So they were just recognizing in in that there is, unfortunately, been disparities in the treatment of pain in African Americans and other minorities, and we under treat pain, and also bring more stigma and bias to our treatment with them. So really recognizing that, and that is an important component to working with everybody. But that's an institutional and a systemic problem. And not just related to one type of treatment in one context, but really, is all throughout medicines, really recognizing that there's disparities in the treatment of pain and dosing of medications, what we offer to services, that across medicine is really an important factor. And there's several excellent lectures on racial disparities and social and social disparities inherent and systemic racism and medicine and society that were presented at ACM that encourage individuals to watch if they didn't have a chance to register for the conference. But that's an excellent question. And I really appreciate the comments.

27:43
And there's another question. What do you from also from Michelle salmon fishery, what do you suggest is the best approach to mitigate further dependence on pain management drugs for people with substance use disorder and opioid use disorder?

27:57
So those are great comments, and I think I'll answer throughout the presentation, as well as in some of the case studies. And there's a lot to that, again, it depends on the type of thing chronicity the resources, how you can leverage other support, what other comorbidities May the individuals have? Are you working with their mental health providers, and again, as we see a series of case studies at the end that we can have further discussion on related to that question.

One of the primary things is always to continue to keep the buprenorphine or methadone in place in the patients that have have medications for opioid use disorder, and to leverage them potentially in different ways with methadone, you're limited in the way that that can be used for pain because of the regulations or the opiate treatment programs. But with buprenorphine, you have much more range and flexibility in how you can dose what you can do with it. What you can add on top, the timing, the formulations that I think are really useful for the treatment of pain, but only part of the treatment of pain, not just the end. So good question but a lot to that. Any, any other questions?

29:11
Yes, there is one more. Also, again for Michelle has really great questions. What do you think of a reset, which is a prescription digital therapeutic for substance use disorder, and opioid use disorders is for patients 18 And over and covered by insurance companies.

29:28
So the reset I'm not familiar with there are some so I'd have to learn about what that specifically is. There are a variety of different devices that some of them are related to acupressure, some related to mindfulness, some related to relaxation that one can use biosensors that one can use to try and distract from stress your anxiety so I'd have to understand what the what reset is specifically. I'm not familiar with that.

30:05
And hey, Michelle, if you can type into the chat or a link so we can maybe understand what you're referencing to, so that we can answer the question at the end.

30:15
Pretty good. Yeah. Okay, let's let's move on with methadone, some methadone pharmacology one on one. So methadone. The typical formulation includes to an anti MERS, the RNAs that have very different pharmacologic properties. The rnam tumor is immune agonist. It's also delta agonist, it has a higher higher affinity than morphine. And the dextro method on the s&m tumor is an NMDA receptor antagonist. It also has some serotonin, norepinephrine reuptake inhibition. These effects may modulate the tolerance that is less of an issue with methadone dosing that you see developed with other opiate agonist C have less hyperalgesia with methadone than you have with other opioid agonists. It's a great analgesic. The problem is it's very complex. And in terms of dosing, the analgesic effect for methadone is different than the duration of effect it has on treating dependence and withdrawal and craving. The analgesic effect occurs only during this alpha curve you see in the graph, I'm not sure if you can see my pointer, but if someone takes a methadone dose, it's absorbed very rapidly, and then has a fast elimination phase. And then it slowly eliminates after this first rapid elimination phase, this alpha elimination curve occurs over eight to 12 hours. And that's where the analgesia for methadone is actually a little bit shorter, but six to eight hours for analgesia, if your patient is taking methadone for pain, you typically see a dose three times a day, if it's those four dependents, you dose it one time a day, unless an individual has rapid metabolism. If the patient is on methadone for dependence, and they're in the hospital setting, you have some flexibility, and how you can dose the methadone that they will have better analgesia. If I have a patient with a trauma or coming in for surgery,

and we're consulted in there, and they're taking methadone. First we have an interaction and discuss methadone and making sure to continue the methadone is of primary importance. And to recognize that the methadone isn't there for pain, it's for the dependence, we can dose differently, the patient also needs to be on board so they don't. So they understand the reason why you might be changing their dosing. Some individuals are very, would use to take in once a day, and to just abruptly suddenly receive a different dose of methadone in the morning without really engaging them and explaining why you're going to be splitting the dose that you're they're gonna get the same dose. You're gonna have other agents on top depending on what you're doing. If you need to use opioids, it's very important but discontinuing meth methadone with perception that we're going to use other opioids I've seen that happened in the cadence of a disaster. And again, methadone coordinating with the opiate treatment program working with a patient very important. Here, this slide illustrates the accumulation of methadone that occurs, if you have repeat dosing, this is dosing every eight hours over six days, and why you have high rates of fatalities when methadone is used for the treatment of pain by inexperienced clinicians. There's increased risk of fatality with rapid titration because it accumulates and the analgesic effect wears off. So you have an individual ticking another dose and it's accumulating at some point, your concentration is above the threshold for respiratory depression for the effect of the methadone on the respiratory drive, once the respiratory drive when the co2 is accumulating. So patient doesn't wake up at you know, if methadone dosing isn't dosed appropriately, which is typically dose increases every two to three days. Other medications can really increase the risk of toxicity with methadone, and other sensitive or alcohol use anti-psychotics Both because they can potentiate the opioid, as well as Qt prolongation, risk and certain medical comorbidities. pre existing cardiac disease, sleep apnea, alcohol use disorder. If somebody is using methadone, and they're in the hospital, and it's coming from an opiate treatment program, it's very important that the providers work with the opiate treatment program to communicate during the hospitalization and coordinate a discharge plan. There's some options potentially to increase the dose if other opioids are used in the hospital setting that really needs to be coordinated well with the opiate treatment program and the patients so that they don't have an abrupt change in dose and bad outcomes. This is Case illustrating the use of buprenorphine with other opioid agonists that you don't have a complete blocking effect to the analgesia when you use other full opioid agonist full agonist on top of the buprenorphine. So again, keep the buprenorphine in place when patients are hospitalized in almost all situations, even really severe pain and this is a major change from previous recommendations. When patients were hospitalized or had a surgery, they're often recommended to stop the buprenorphine and let it wash out for a period of time, which usually was a disaster because there wasn't consideration of well, what are you going to do for the dependency withdrawal, prescribing full agonist just for dependence withdrawal is not an option if the patient has opioid use disorder. If they're used for pain, they're often under dose because you have a very strong opioid agonist effect with buprenorphine, even though there's a ceiling effect to that you have a very strong effect when patients are on typical doses for opioid use disorder. This These photos show an individual presented to the hospital with really severe cellulitis, lymphedema and numerous abscesses from chronic injection drug use in his legs, and he required extensive debridement he was hospitalized with the lower extremity cellulitis abscess and septic arthritis. Shortly after admission, you started on buprenorphine. He didn't come into the hospital on buprenorphine, but he started on buprenorphine, initial induction dose titrated up to eight slash to three times a day, and he had

full agonist on top of the buprenorphine throughout his hospital stay, because he had very severe pain and required extensive debridement and dressing change. When you dose full agonist for buprenorphine patients maintain them buprenorphine typically have to use a dose two to three times that of standard doses. So I typically start at 20 to 30 milligrams if we're using an oral opioid of oxycodone, if it's parenteral. We'll start with two milligrams to four milligrams of parenteral hydromorphone. So this, you can see the second picture is taken during a dressing change and illustrates how deep the abscesses were needed to have this packed and changed daily twice daily. He typically would only allow once a day. But is he stabilized during the hospital of course, you really not only needed parenteral opioids for this dressing change, and for the dressing changed we titrated from two to four and ultimately six milligrams of hydromorphone, IV immediately prior to his wound care, and you had really good analgesic effect without any sedation or respiratory depression with the eight slash two milligrams of buprenorphine kept three times a day. So it was kept out of withdrawal is craving was satisfied. There wasn't any

37:50

withdrawal symptoms. You still had an analgesic effect with buprenorphine. We leveraged other agents acetaminophen, scheduled nonsteroidals, and a tri cyclic and then when we had this procedure that packing the wound care, we added a high dose full agonist and this creates a unique electric called an opioid sandwich. It's almost two different opioids, but really you have potent partial agonist with buprenorphine, that's also giving you some analgesia and then the full agonist on top, it's very interesting to dose it six milligrams and to see the analgesic effect without the respiratory depression without sedation. And it really also blunts the euphoria, but there's analgesic there. For those of you that have done this clinically in the hospital that's very effective and patients are all very pleased. With the outcome, we have less sedation less side effects with this type of leverage, keeping the buprenorphine in place. And a constant service sees patients for endocarditis for sternotomy for chest tube placement and when the buprenorphine is kept in place and use the appropriate doses of other agents and approach it from multiple directions. It patient's pain can be very well controlled. So there's an algorithm when you have a patient that's taking buprenorphine to treat pain, or some moderate this is an algorithm that I use, but there's some variations that essentially are the same thing. If you encounter a patient and you're in the IDI or in a clinic clinical setting or in the hospital setting, making sure that they have taken their dose that there hasn't been a delay is really important. The first thing to do if somebody is on buprenorphine is to split the dose. Somebody maintained on 60 milligrams a day. If you have acute pain, you would split it and those the same dose four times a day, so acute six hours, increasing the dose can be effective. So increasing from 16 to 24, going to perhaps eight milligrams sublingual three times a day, adding a supplemental dose of buprenorphine as needed. If they have PT ot some some procedural pain that's not severe that you can manage with as needed dose of buprenorphine. I've had patients that are really motivated not to use full agonists and in may have an acute procedure where they where you would use a full agonist using the parenteral. Buprenorphine you can get a higher analgesic effect. So that's the three at 150 to 300 micrograms, usually over 15 to 30 minutes pre procedure post procedure, but can be used Q six hours as needed. If if the sublingual form is not working, and you've maximized all your other options and they don't want to take a full agonist. The next step would be then if that's not working to add a full agonist on top of

buprenorphine a two to three times a standard dose and continue buprenorphine. And again, I mentioned some examples with oxycodone. And I typically would use hydromorphone, as my preferred full agonist, because of its affinity for the mu receptor and it works very well with buprenorphine. There are other agents if the pain is not controlled using high doses a full agonist ketamine, analgesia, Regional Spinal epidural, and again maximize non opiate agents, non steroidal acetaminophen, lidocaine, tri cyclic antidepressants, and the algorithm, again, a stepwise approach. So if there's any questions on that, I'm happy to stop your first minute and answer any questions on this algorithm have any other seen this elk similar algorithms, anyone have any different steps that they utilize?

41:25
don't hear anything. So I'm going to move on. This slide includes a reference to acute pain management for patients receiving methadone or buprenorphine that discusses some of the pharmacology and has basically the same strategy authored by Alfred competent in Samet, there's some other references at the end that give support and go into further discussion. Essentially, this slide also includes recommendations for methadone when a patient is hospitalized, and again, continue the maintenance dose, split the maintenance dose and add a full agonist on top if needed. If an individual is not able to take oral methadone, the bioavailability is 50% compared to IV so you can give potential methadone at half the oral dose it for the same effects and then short acting opioid analgesics on top of methanol important. Patients are taking methadone have tolerance, high tolerance, they also have lower tolerance for pain control, so you have to use higher doses of full agonists when full agonist are indicated on top of the methadone. So reminding the team that the methadone is there for maintenance and to treat the premium withdrawn dependence, we can leverage the dosing for analgesic effect, but you will have to add higher doses because of the dependence to treat and the tolerance to treat analgesic effectively if an opioid is indicated. Alright, so we've got a couple of cases and some polling questions as well. He's one is a 36 year old male with a history of IV drug use is impressive, but has had progressive lumbar back pain that's worsening over two weeks. The patient reports been sober since post incarceration two and a half years ago. He lives with his two kids aged five and eight and a significant other. He works as a contractor and in roofing and is limited and working due to his pain. He was started on buprenorphine, Naloxone and dual product post incarceration. He had been on it prior and severe opioid use disorder prior going in incarcerated 11 months. He takes a 12 such three milligram once a day and is not on other medications. So what polling question, what would be the best dosing regimen for him in this situation? For after adding acetaminophen and an ibuprofen trial? And I'll review the answers. So this is again, he's just complaining of back pain at oxycodone at two to three times the standard dose was buprenorphine Naloxone called slash three taken in the morning. Give them an extra PRN dose of buprenorphine to take this particularly severe pain. For example, one for section one milligram daily. See changes dosing regimen just for slash once I'm willing to look at it instead of the 12 Or three, once a day. D refer patients in opiate treatment program because because methadone is better for pain. Okay, so the 56% chose the correct answer, and that would be to split the dose, instead of keeping them on the 12 slash three once a day. We would first step he's just on the ones that a dosing would not to be to add full agonists on top would be to split increase the dose in the frequency, give them an extra PRN, that would be reasonable, but I would split the dose first, instead of keeping them on just

the first three ones today. So the next step, after C would be maybe adding another dose or another dose IVIG for PRN and D refer to an opiate treatment program. Because nothing is better for pain remembering the opiate treatment program does once a day. This is very different than getting a prescription for buprenorphine as well. patients seen an intake, the evaluation and the transition from buprenorphine or methadone is easier than the reverse, but that would not be the first step here. All right, let's move on in this case. Alright, so his back pain is getting worse. He has several Edy visits during these two weeks, and for two weeks prior when it was starting to bother him, during which he was told he has muscle spasms or he's drug seeking and he is really upset because if he relates that he has a history of substance use disorder, or is taking suboxone and quote, is it his quotes? He is very frustrated that it seems like they immediately label me as drug seeking. And he reports over the same type of pain is coming gone going back years but over two and a half years prior while he's incarcerated was there for about two months and went away and then it but it's back again. Patients adamant he's not going back to injecting drugs or relapsed. A urine screen at a recent IDI visit was negative for the standard analyte although there was no fentanyl or buprenorphine in the panel, which is a very basic drug panel. His primary care physician referred him to a spine clinic after pain increases and is running down the lateral sides of both lower legs. Now in this patient, you know, the IDI visits, hopefully, you know, could have gone better certainly approaching him with some compassion, maximizing the acetaminophen you know in a history of intravenous injection drug use. The data with back pain have concern for abscess Asti myelitis, disguised and getting something like a sed rate or CRP, certainly looking for leukocytosis is really important not to just simply say that it's a drug, drug seeking and chronic back pain which I've seen repeatedly repeatedly unfortunately. He is developing fevers and weaknesses legs, it feels like they're giving out here from the spine clinic. They're very concerned and admit them from the hospital after going to the spine clinic and an MRI shows that he is L four five disc itis and osteomyelitis at the associated Percuma level is white count CRP and ESR are quite high and blood cultures are pending and positive for MRSA. The patient have been taking this 12 sets three milligrams of view slit for size one tip since the week prior in the EDS give it a shot at toward all acetaminophen but it's been about 10 hours since he's last taken as buprenorphine. So really has been 10 hours since taking and buprenorphine and I've got a polling question. So what is the best option for the patient's pain now? A give the patient a five milligram IV dose of morphine to get him more comfortable. Be restart his buprenorphine right away and increase the dose and MPR and along with adjunctive meds, nonsteroidals and acetaminophen and reassess. See stop the buprenorphine and Naloxone and change to the mono product loam and Alloxan is blocking the analgesic effect of buprenorphine, or D stop the buprenorphine switched at 20 milligrams methadone per day. Okay, so 69% of the correct answer is restart to buprenorphine right away, increase the dose, add the PRN and adjunctive meds and reassess. And it's important to reassess if this pain is severe. I would then be adding a full agonist pretty quickly. Given a five milligram parenteral morphine to get them comfortable, that's a very low dose and someone that's tolerant and again, getting he spent 10 hours without the buprenorphine. So that's going to be important. The Naloxone does not have impact the analgesic effect of buprenorphine. It's really there to discourage you know, robbing inappropriate route of administration, you get get the same analgesic effect with the dual product compared to the mono product, so I wouldn't switch to the dual product. And good No one chose to stop the beep and switch to methadone. That would not be an option at this point.

That would, I think, be a good option. All right, next slide. So the patient ultimately requires a biopsy and some debris met which is quite painful and neurosurgery team requests input on post procedural pain control. He's receiving an IV antibiotics. His pain is controlled pre procedure, but he's concerned about surgery. He's asked about switching and buprenorphine alone doesn't then a lot some block DOP effects when he hears that he can receive opioids on top of the buprenorphine if needed, again. So educating about the buprenorphine and Naloxone really not having an impact on the ability to get an analgesic effect. It's the buprenorphine. That is really the most important component of that. He's educated about the Naloxone not having the blocking effect, and when taken sublingually Appreciate the clarification. So polling question, what is an appropriate perioperative post stoppered have planned for this patient if severe pain is anticipated with debris augments and biopsy which I would anticipate he would have severe pain. A increase the patient's buprenorphine Naloxone to aid slash to sublingual three times a day and keep the PRN doses with acetaminophen and nonsteroidal B hold the buprenorphine, preoperatively and useful opiate agonist after see at parenteral buprenorphine 300 micrograms IV six hours to a sublingual regimen, an adjunctive agents, or D continue the same buprenorphine regimen of four such one QID and a hydromorphone, PCA, patient controlled analgesia and a half milligram every 15 minute demand and nurse trigger dose of two hours PRN hydromorphone PRN IV if the pain is not controlled with the PCA, and then buprenorphine while continuing the CMF and and non steroidal as ABL

50:56
Okay, 68% chose the correct answer, which is the again continue to buprenorphine and reminder, you can get an analgesic effect, you just need to titrate the full agonist to the right effect if the two milligram dose was insufficient. If you're more foam formula gram dose, I typically find that patients maintain that 16 or 24 milligrams of buprenorphine, four milligram dose if you have severe pain in the hospital setting is sufficient to for control. Patient controlled analgesia if point five is a reasonable starting dose for an opiate dependent patient that's taking a medication for opioid use disorder. But if you have them coming out of surgery, having higher doses available to get them comfortable, acutely, they're coming out of general anesthesia. This is a very kind of complex time and really coordinating with anesthesia, the pain service and the medicine team or whatever sub specialty service they're on is really important. All right, next slide.

51:54
We have about five minutes left, or six minutes left in the presentation.

51:59
Yeah, we only have a couple more slides. There's only a couple of cases I can finish this patient does well during surgery. He has a PCA. Gabapentin is added for seven days and MDC. he transitioned from the PCA to oral oxycodone for 48 hours. Ultimately he has his dose increased buprenorphine Naloxone to eat size to tip before backing down unfortunately is one God. And he says that was much that went much better than I anticipated. It would a lot of contact working with the patient. And he agrees to follow up with subcutaneous buprenorphine after he had admitted that he had slipped up injected the buprenorphine Naloxone just once. He didn't think this would happen. He says he used to do it all the time before it was incarcerated. And I think

the subcutaneous monthly injection really useful if you have an individual that may be using either formulation and appropriate. This is a methadone case and a short case a 65 year old male with opioid use disorders receiving 80 milligrams a day of methadone from opiate treatment program hit by a car wash shopping suffered some bruising and abrasions along with fracture. The context of addiction meant service for recommendations regarding his methadone dose and pain management in the IDI polling question How should the methadone be managed during his stay at the methadone should be deseed, and he should be treated with full agonist hydromorphone, acutely and perioperatively, followed by oxycodone and painless severe B the methadone should be given as it was outpatient as 80 milligrams that should be sufficient to control this pain. See, the methadone should be continued as it was outpatient prior to hospitalization but split dosing to maximize analgesic effects. D the methadone should be continued, but split to maximize analgesia and a full agonist can be given on top as well if needed, as the methadone is primarily for his dependence on withdrawal. And almost everyone at 4% gets with the dose add full agonist on top remember the methadone is not for pain you but you can leverage dosing to best control on analgesia This is a single slide with a case 51 year old taking 120 milligrams methadone daily for opioid dependence comes the IDI with fever, chills and back pain. last dose of methadone was a day prior to IDI workup for meningitis possible number abscess osteomyelitis, you receive hydromorphone, point 424 For acute pain that remains uncontrolled. Methadone was held due to altered mental status and concern for aspiration. He's in withdrawal. He's dysphoric, febrile clammy skin and sweaty little bit tachycardic some of this may be from his infection. polling question Which of the following related to the treatment of pain independence should occur for this patient? A the methadone dose needs to be continued. patient needs this just to stay normal and out of withdrawal and non opioid agents maximized acetaminophen nonsteroidals be acute pain continuing methadone plus provide analgesia, if not taking oral can give IV or im. analgesic dosing of opioids may need to be higher and more frequent dosing. See discharge planning with opiate treatment program, the need to adjust methadone maintenance dose if it requires prolonged opioid use, or E, all of the above are correct items requiring attention. And we have Yes, all of the above need attention. The methadone needs to be continued coordinating with outpatients. And the last two slides simply include the recommendations in the ASAM focused update. So I'm not going to go over all of them. They're in bullet point and are available for the audience. We really covered all of these during the lecture. So I'm going to stop here and see if there's other questions. And I am also reachable via email and cell if anyone has questions. And I'm very happy to help. If there's any questions about pain control, management in these in these situations, I think it's really important to help our patients get the best treatment, they deserve some references and resources. And there's podcasts I can want to remind audience about any positive change is Drug User Health podcast, and have some prior episodes and the QR code. So any questions or comments?

56:16
We did have one question that Robert ball had posted a little while ago, it was mentioned that buprenorphine has a ceiling effect. Does methadone have the same ceiling?

56:27

No, methadone doesn't have the same ceiling effect, you have to be very careful and going up in higher doses of methadone, because of the accumulation titration needs to occur very carefully. And the Qt prolongation that occurs with the higher doses of methadone as well. So buprenorphine is a partial agonist methadone is a full agonist.

56:55
Also, see,

56:58
how about sublingual buprenorphine for chronic pain if not diagnosed with substance use disorder.

57:04
I think buprenorphine for chronic pain when an opioid is indicated is excellent choice. In fact, we have often patients presenting to the hospital that may have had a complication related to an opioid they're using for chronic pain, and I often recommend switching to buprenorphine. As you saw in those first slides, there's some studies showing that comparative compared to full agonist when they are indicated, buprenorphine is more effective, less side effects increase quality of life. There's an increasing number of studies that show that buprenorphine when an opiate isn't indicated is a better and more effective opioid for analgesia. So I, you know, a lot of formulations coming out, or in the future are going to be for non opioid use disorder, or they'll have dual indication of opioid use disorder or non opioid use disorder. But I think, again, when an opioid is an indicated consideration, buprenorphine is really important, but consider all the other options as well. Non pharmacologic, non opioid agents and, you know, patients really may respond to certain things in really unique ways and some may appreciate yoga mindfulness, others, some of the bio feedback applications, some exercise, getting support for mental health, overall health is really important as well.

58:26
Hey, thank you so much, Dr. Egan for this presentation.

[End Transcript]