Addressing Pain in Children - Pediatric Grand Rounds-20241108_082935-Meeting Recording

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Kamat, Deepak M started transcription

Kamat, Deepak M 0:28

Good morning.
It's 730 and time to start our pediatric grand rounds.
Just a quick reminder that this presentation has been designated by the UT Health San Antonio for one credit of education in pain management and prescription of OPI.
Again, the CME code is in the chat box and will keep repeating it every 10 to 15 minutes.
It's my great pleasure to introduce this morning's grand Round speaker, doctor Melissa Fry Jones.
Who joined the Department of Pediatrics at UT Health San Antonio after completing her periodic hematology oncology fellowship in 2008.
She practices as a primary hematology specializing in red bird cell disorders.
Is especially sickle cell and thalassemia, as well as general hematology conditions.
She serves as a medical director of the comprehensive sickle cell and Thalassemia program, and the comprehensive Vascular Anomaly clinic at UT Health. At UHS, she's involved in both medical students and resident education, and has served as pediatric hematology Oncology Fellowship program director since 2012.
She has participated in as a writer for American Academy of Pediatrics Prep editorial board for the Hematology oncology, as well as the item writer for the American Board of Pediatrics.
He met already oncology certifying examination on the state label. She is member of the state SCLC Task Force and the multidisciplinary team for SQL Cell data collection Grant, as well as chair of the Texas Department of Health Newborn Screening Advisory Committee.
The title for her to her presentation is addressing pain in children, but thank you very much for.
Discussing the pain management in children today. Thank you.
The floor is yours.

Frei-Jones, Melissa Joy 2:22

Thank you.

So I'm gonna try and in this single 50 minute time period to talk through some of the issues about addressing pain in children, including treatment and some of the special challenges we have treating pain at in this time of medical practice.

So I have no financial disclosures.

I will be discussing off label use of medications cause many pain medications, especially different types of opioids, are not actually FDA approved for children and infants, though we have used them as part of clinical practice for for many, many years. And so officially it's off label, but we.

Have.

Plenty of data to support the use of these medications.

So my learning objectives today gonna think a little bit about the complexities of pain and pain assessment.

That varies between this dramatically different group of patients.

We take care of from infants children's to adolescents. Development plays a huge role in helping us understand pain and pain assessment.

We're going to explore some of the pharmacologic and non pharmacologic methods of pain management, talk about pain management and some special populations and then we're going to talk a little bit about prescribing opioids in the modern era, which includes some of the guidelines that involve.

Contracts, the prescription monitoring database and how we now prescribe opioids electronically.

So you know what is pain? I mean the the basic definition, you know, it's an unpleasant sensory or emotional experience.

So just to highlight how complex pain is.

Who we are, what we're feeling, what's going on at the moment, it's happening directly impacts how we experience.

This unpleasant sensation, and it may be associated with actual or potential tissue damage.

So you know the classic picture of you putting your hand on the stove and withdrawing it because the heat or the fire is causing tissue damage, though sometimes the damage isn't as obvious.

Or, you know the the experiences described in terms of such damage.

So as you know, as people who take care of patients, you know when when do when is pain pain the the basic tenet among pain practicing physicians is, you know, pain is whatever the person experiencing it has it.
You know, you'll learn that there is no test, there's no objective test that I can do.
There's no lab work.
There's nothing even sometimes vital signs can.
Cannot tell the whole truth.
About the pain a patient is experiencing and so.
Whatever the patient says is their pain.
That is what we are supposed to believe and and to address them based on their experience. Since I cannot experience it for them.
So pain exists if the person experiencing it says it does.
And the patient is going to be the authority on pain.
So we'll talk a little bit about some of the different types of pain that patients can experience.
So we can think about acute pain.
So this is, you know, sudden onset should be self limited over a period of time.
It usually involves a couple of different.
Types of pathways.
And so the Nosebleed pathway, that's sort of our our classic the example I just mentioned, you know putting your hand on the hot stove and withdrawing it and so that that pain sensation.
Is is in the nose septative pathways and so the normal processing of those pathways include both somatic input.
So from our bones, our joints are connected tissue sometimes and in people who can describe the pain, it's aching or throbbing. And usually you can localize the pain like it's this finger that hurts. But this also no susceptive pain.
Is part of our how our visceral system.
Our organs are soft tissue, so like our intestines are visceral and and when you have diarrhea and have cramping, that's a nose septic pain process. And so this real pain can sometimes be localized, but it can also be diffuse, which can be one of the challenges in local.
Those symptoms and then another type of, you know, processing of pain is neuropathic.
And so this is centrally mediated.

And this.
Can evolve for a number of reasons.
One of the classic things that will sometimes use as an example is an individual who's had an amputation.
So those nerves have been severed. Therefore, when they fire, they are abnormally processing because the localized place that would be injured and sending the signal is no longer there, but the nerves are firing and so.
So.
That is an example of of neuropathic pain.
We can have centrally and peripherally mediated.
Peripherally mediated is a little bit less common in in Pediatrics, though we can see it in in our oncology population.
From as a result of medical therapies like Van Christine, this would be one of the the conditions that adults may deal with in in the diabetic population.
Who developed diabetic and or vascular peripheral neuropathies?
These tend to be sharp.
Shooting.
Electric sensations.
And so the description of neuropathic pain is often very different than the description of no susceptive pain.
And it often does not respond great to opioids.
And so if the pain you're identifying as neuropathic, then choosing an opioid may not be the best choice.
And then chronic pain.
So we we have a lot more awareness of chronic pain.
We're trying to understand more about it.
There's definitely.
Lots of gaps in our knowledge.
And we struggle to know exactly what to do for patients who develop chronic pain syndromes. But the general definition is that it's it's a pain sensation.
So again, a patient expresses feeling something they identify as pain present for at least three to six months, and it no longer serves the purpose of pain.
It's no longer a warning sign that something bad is happening.
It's just there all the time.
And you know, it can dramatically affect.

All aspects of of a patient's life. It's it usually involves, you know the sensation of the pain, emotion, cognition, memory, contact.
Sometimes the pain is worse if they're in certain situations.
Based on maybe the initial feelings of the pain, it can be no susceptive or neuropathic in quality, and it's one of our most difficult conditions to treat.
OK.
So what about pain in children? You know we.
The the classic saying, you know, children are not little adults.
And so you know, what are the special things that happen in children?
Well, one is to note that the nociceceptive pathways are functional at birth. Many, many years ago there was a belief that babies couldn't feel pain.
And so, you know, there was not felt to be a need to address that, though. Now we know infants can feel pain and there are many interventions that are taken.
In our youngest patients to try to alleviate pain when they experience it, pain triggers both physiologic and behavioral responses at all age.
So no matter whether you're a toddler, a teenager or an adult, you have physical sensations of your pain.
But it also affects the way you react and behave.
There are developmental changes in the pain pathway.
Early in life that can impact your response to pain medicines and alter processing.
Of pain later in life.
Repeated exposure to untreated pain early in life leads increased anxiety and perception of pain can make it more difficult to treat painful events in the future.
Children require unique coping strategies that different from those in adults because of developmental differences.
Let's think about, you know, like, what are some of the types of pain that we may encounter as we take care of children?
Well, one of the first ones, we can often think about is trauma.
So accident, you know, the kid falls on the playground.
They are riding a bike and they have an event and then sports.
We have many young children who participate in recreational and even higher level sports from very early ages, and that can result in them having lots of different pain complaints.
I know there was a sports medicine lecture recently.
You know, knee pain, all of those type of things.

Then you know we have children who develop different types of cancer.
The diagnosis itself can cause a lot of pain, depending upon the location and type of cancer, the treatment of the cancer with surgery and medications and therapies that can also provoke more pain. We can have surgical pain, you know, for the child who has the tonsillectomy, who has.
The appendectomy there are occasionally surgical procedures.
That our patients may have to experience and would need to have pain treatment, we can think about procedural pain sometimes.
This is maybe more minimized or dismissed.
Like, oh, everybody gets immunizations, you know? Oh, this just a little poke in the arm in lab draws, though. Those can be very difficult and very distressing for children.
And actually, for many adults, this is kind of a side note. But there were some studies during the COV.
Pandemic that there were.
There were some adults who were did not want to seek out the vaccine because of needle phobia because they were more afraid of the needle and so that is something that developed over time due to exposure to vaccines as a child and to adulthood.
And so there were.
People who were looking at addressing that so you know the the fear and pain related to vaccines is real among our patients.
And then we can have chronic disease related pain syndrome.
So our patients who have recurrent pancreatitis.
Many of our inflammatory bowel disease patients, patients who have juvenile arthritis, lupus, any type of chronic arthropathy and then our sickle cell patients. And then there are other pains, you know that we have to deal with, you know the chronic functional abdominal pain, chronic headaches, the growing pain.
That people come in and report for children we have to distinguishes that, you know, just truly growing pains. Or is it something more? Pathologic and then dental pain, you know, occasionally have.
Come in with swelling, a broken tooth, a cavity. Those type of things.
So there are lots of parts of the body that can cause a patient to experience pain.
So what are some of our issues and challenges in treating pediatric pain right now?
Well, most researches in cancer pain, we lack a lot of information on prevalence and epidemiology data for pain in children. We have significantly limited research in neonates. We have limited use of pain guidelines for many years.

There were literally no pain guidelines for the general pediatric population.
There may be some specific ones for certain conditions. As I mentioned, cancer.
Or sickle cell.
There have been some newer guidelines published by the AEP in the past two to three years, which are helpful and then effective pain on quality of life as poorly characterized.
So, you know, due to all the developmental reasons which make it difficult to assess pain in children, it can also be difficult to understand how it impacts them.
So now we're kind of move on to.
So we've talked about pain.
We don't know a lot about pain, but we are confronted with pain in our patients frequently.
So how do we assess pain in children?
So again, we have to use developmentally appropriate pain scales. I'm going to present three or four types of pain scales that can be used. If you look in the literature, there's bunches of different kinds.
Some are.
Other iterations of the ones that I'm going to be.
Talking about, but these are sort of the gold standard ones that have been used and have the most information sort of evaluating them and validating them in, in our patients, so.
In in younger children we use the FLAC pain scale, which I'll show you example of that in a minute for patients who are pre verbal.
So kids under three years of age and then for older, non verbal patients, we certainly have.
You know, a growing population of patients who, for various developmental reasons, are not able to communicate verbally with us, even on into young adulthood. And the patients who are developmentally unable to use what's called the Facey scale, which again, I'll also show you that.
You can use the facies pain scale for patients three years and older.
And typically.
The severe pain is defined as eight to 10 on a zero to 10 scale scale and then it's defined as greater than five on the flax scale.
So so for children less than three, this is the flock scale.
So the flock is an acronym for Face Legs Activity, Cry Consolability.

And so there are definitions for what is happening on those five criteria for a young child. And so you get points based on when of which of these things are happening.
So for scores of 0, which would be no pain.
You know, they they don't have any particular facial expression.
They're relaxed.
They're lying quietly.
They're not crying. They're content that makes sense.
And then as you move up the scale you they identify physical evidence that the child may be in distress or in pain with grimacing clenched jaw, you know, rigid legs crying, difficult to console and comfort.
And so this is the the traditional scale we use.
Or nonverbal patients so you can apply this also to older patients who are not able to communicate.
And then for children ages 3 and older.
You can use the faci scale I have here represented the classic Wong Baker Facey scale. This has been in use for a very, very long time.
And was the traditional facy scale. There are lots of other iterations of this.
There are some scales that have actual children's faces on them. Some of the newer scales. The Zero is a neutral face as opposed to being a :).
Because there's been some understanding that if you're in a hospital and somebody shows you this and you're a child, you may pick a two because you're not that happy to be in the hospital.
And so there are some some specifics.
That have changed what these faces look like over time.
Now, some of the caveats.
Is that, you know, young children may not be able to distinguish between physical or emotional discomfort. And so again, sometimes they may pick slightly higher numbers.
Also, there's some developmental things where children do naturally pick higher numbers.
You know, do you want one cookie or 4 cookies?
Those type of things.
So when you use this pain scale, you do have to very carefully.
You know, kind of give them some anchoring for it that, you know, this 10 Hertz worse is not because my brother took my cookie because I could look like that and

cry and be sad if if I lost something important to me.
That's more of an emotional discomfort as opposed to, you know, I fell off my bike or fell down the stairs that that type of thing should be used when having.
Children use the faces scale, at least initially, as they get older and they understand a little bit more about what these numbers are supposed to represent.
Or these faces are supposed to represent, they may not need as much guidance as initially.
Then, frequently in an older patients and in adults will use a verbal analog scale.
We may not have those faces with us for the patients to look at and so we'll ask them out loud, you know, on a zero to 10, you know, where is your pain?
And.
You know, we we tend to.
Just give patients that as opposed to you know providing them with some anchoring statement. So it is important to say you know.
Zero. I'm comfortable.
I'm you know, no pain at all.
I'm like some people say I'm laying in a fluffy bed versus 10.
You can pick any number of different things.
I had one attending once.
He was like 10.
You jumped into a pool without water, so like trying to give them some a dramatic like, this is supposed to be dramatic pain.
Very severe pain that would limit what you could normally do.
And again, as I mentioned, young children may develop me to pick higher numbers if they don't understand the anchors that you're using.
And then I'm gonna talk a little bit about functional pain scales.
I really like functional pain.
Pain scales, especially in our patients who have chronic pain.
There's a general movement that for chronic pain patients, the traditional faces and verbal pain scales of zero to 10 really are not helpful because these patients live with pain on a daily basis and and it may go up and down, but it never goes to 0 for sure.
And so that's why we sometimes get patients who.
Telling you their pain is a 15 and a 20 on a zero to 10 scale because that scale no longer serves as a good tool to help understand how their pain is affecting their life or our chronic pain patients. And so more of the research in chronic pain.

Again, this is mostly an adult, so I think we could use it in our adolescent Aya patients are in functional pain scales, and so this looks at.
More and has the patient think about more of what can I do?
What can I not do?
What is my pain limiting me from doing? What can I normally do that?
Isn't able to accomplish because of my pain and so it it shifts it from pain assessment toward patient function and impairment.
Unfortunately, again, these functional pain scales are not yet validated in children, but I find them to be more helpful in our patients with chronic pain syndromes.
So you know what are some of our barriers?
What are reasons why children who are in pain may not get the treatment that they need?
Well, I mean, some of it's us, the physicians, nurses, pharmacists, you know we we now are fearful.
We we have a lack of experience and discomfort with these meds.
You know, when I started training.
The 5th vital sign of Pain had become, you know, the thing that was checked off every you know, every so many hours.
And there was a lot of advertising and promotion that we need to ask patients about pain.
We need to address their pain.
We need to respond to within 30 minutes.
We were using a lot more pain medications.
During that time period, but now in light of the opioid epidemic, which I will address later in the presentation, you know we use it less frequently and there's a lot of fear related to it.
We have more fear of opioid induced complications.
Because we don't have as much experience with the medications, then fear of consequences of treating pain again.
The consequences of treating pain.
We don't have a lot of data on because that's like quality of life and impact when an adulthood about not having pain treated as a child. Those are things that are more difficult to quantify and it's easy to quantify number of times a patient had respiratory depression and.
So that's one of the reasons why it can be difficult.

For us to feel comfortable giving these pain medications.
Are the family of the patient can be a barrier?
The caregiver can have a fear that, you know, even one dose of these pain medicines could result in an addiction.
And there's a huge social meaning in our country right now related to opioids and narcotics and legal pain medicines and and illegal substances.
And so there's a lot of.
Weight in some families, when we talk about using these medications.
And then patients, barriers, verbal communication, language. If they can't tell you, they're hurting. If they can't communicate with you about how the medicines make you feel, it can be a real difficulty to determine if the doses and medication you're using are effective, or if you need to use.
Another one.
So again, I just wanna highlight the effects of uncontrolled pain.
So when a patient is in pain and they're not appropriately treated, they do not receive.
Doses of medicine that will cause some decrease in their pain or some relief. We know that we can't erase all pain, but if there's not some lifting of the intensity of the pain, then you know patients become agitated, they become depressed, there's anxiety, they have loss of app.
And sleep disturbance.
Decrease quality of life.
Interruption of family life.
They can develop what's called pseudo addiction and so this is where they're in so much pain and they're so desperate for relief that they may start having behaviors that you would typically see or you would typically associate with an individual who had an opioid addiction where they're they.
Going, I mean, they're in so much pain and no one's treating them, so they just keep going to different places and asking until they hopefully find someone who.
May be compassionate enough to actually give them medication to provide some relief, because they're and having so much suffering, and so they can develop behaviors that look like addiction. But it's not because they're truly opioid addicted. It's because they have pain that is not being addressed.
And then the other effects of not treating pain is that we put patients at risk of developing opioid misuse, which again I will discuss in some subsequent slides.

OK.
So what are our pharmacologic strategies of pain management?
Are usually the things we think of. First, when we wanna treat patients with pain.
We immediately were doctors.
We prescribe medication, so if somebody has a problem, I'm going to give a medication for it.
So that's usually our our first.
Action that we do in patients who have pain.
And so there's The Who pain ladder, which is about been around for a long time, that discusses like for mild pain you can use, you know, non opioids.
So insaids acetaminophen.
And then as the pain goes up, you should consider adding like weak opioids.
And then strong opioids as your pain gets gets higher and to continue using some of those non opioid medications.
So you put about using the pain ladder in children. Usually the recommendation for.
Children is to do more of a two step strategy instead of the three-step strategy for for mild pain, use things like ibuprofen and naproxen, naproxen.
Umm acetaminophen. Umm. And you're gonna skip the middle step of using some of the weak opioids because the benefits of using a stronger opioid outweigh the benefits of the intermediate opioids in the pediatric population.
So, you know, I know for many years people felt comfortable prescribing codeine.
But 33% of patients do not metabolize codeine to an active analgesic, so you're functionally giving them nothing.
And then there's a certain percentage, probably about 20%, who will.
Under metabolize the active analgesic.
And so they're at risk of excessive sedation and so.
Codeine is not recommended for use and so that leaves us with maybe some of the more.
More classic opioids to moderate to severe pain to treat with hydrocodone initially and then consider morphine and then the other agents depending upon the type and severity of pain for the patient.
So you know, medical management of severe pain, you know this is.
Specific to.
You know, think about some of the things you have to think about when you're addressing a patient with pain is, you know, what is the mechanism of their pain and

what is the Natural History of this patient's pain.
You know, I stub my toe.
It's gonna feel bad for a day and then feel better the next day. You know, there are other things I can potentially do to treat it, but let's say I have a patient with a large abdominal tumor. That's not going to go. Go away quickly. They're gonna have.
Pain for quite a while, and so I need to.
Address their pain and I need to address it in a way that doesn't cause them to have these huge shifts and swings. If I'm in a lot of pain and then I'm not in pain.
So you know as needed or PRN medications are not appropriate for severe pain.
You don't want patients to have these swings of pain scores of 10 and then better 'cause. I got a pain medicine and then not get anything for a while until I go back up to attend the untreated pain leads to anxiety and even more severe pain experiences in.
The situation so you know scheduling.
Analgesic in patients with these type of severe pain that is not gonna get better rapidly and then having some additional medications for increased your breakthrough pain.
I mean, you do have to.
You have to adapt it to the individual child. You know you dosing relief versus adverse effects.
So if the dose is too high and they're too sleepy, then back off on it. If the dose is not enough, then go up on it.
There's these medications are completely titratable.
You just have to be willing to try a lower dose. If that's not enough, then go up a little bit and and keep adjusting.
It based on the patient's response.
So when we are looking at patients with severe pain, morphine is still recommended as the initial opioid. Though I've had several anesthesiologists tell me it's kind of a crappy opioid, but it's the one that we've had the most experience with. And so it's still the one that we.
Use. There's really not a lot of evidence to recommend using like going straight to hydromorphone or one of those other medicines. If you are have a patient in severe pain.
Morphine is still the gold standard.
It can be given oral IV, sub Q, rectal transdermal, inter nasal.

So there's lots of ways in which you can administer these pain medications to patients and in general, in most of the pain literature, there is no longer a reason to administer intramuscular opioid injections, especially in children.
Again, we've already talked about how needles and injections, or a source of pain and distress in patients, and so if you.
In pain. And then you're going to have to have an injection that is also anxiety and stress induced.
It's gonna raise your your experience of the pain you're having right now.
And so the pain literature recommends strongly against giving intramuscular pain Med injections, and then you're gradually going to increase the dose until it's effective. You want to limit the pain between the doses so you don't, again, you don't want to have these wide swings of being at a.
Zero and being at A10. If you find that the medication you're using isn't working.
And you're having lots of adverse effects, then that would be a reason to switch to another.
Pain medicine. So if you're on a dose of morphine and the patient has horrible itching and nausea, and they just feel terrible on it and they're still in pain, then that would be a reason to consider switching to hydromorphone.
OK.
So breakthrough pain.
So this happens in patients who are taking scheduled pain medicines that their pain will will start to increase.
Sometimes that could be, you know, the end of the dose.
So the pharmacology of these pain medications that we are that we are using some medications you know last a long time, some last a short period of time.
So you know, if you dose morphine every six hours, it's definitely out of your system.
If you do excuse if you dose if you dose.
IV. Morphine.
You know, it's usually two to four hours.
Of IV morphine.
And then it's mostly out of your system. So you know if a patient is having pain because you're not giving them their IV morphine.
So for every six to eight hours, well, that's because you don't have a dose interval correctly. Or is it associated with movement or procedure pain?
So they only have pain whenever they get out of bed.

Well then maybe you need to think about having an additional dose of medicines available to them to take either before or after they get out of bed.
Or maybe it's with physical therapy, so they need to have a dose right after they do their physical therapy because their pain goes.
Up, but you don't need to change their scheduled dose of medicine.
It's just for when they have, you know, increased pain.
So typically there's not.
Again, we lack data.
So there's not like data that says there's a specific way in which you treat breakthrough pain.
We usually use either four or immediate release morphine and you give the rescue doses about 5 to 10% of the total morphine equivalent the patient has during the day.
You can also consider using patient controlled analgesia, which is the.
Morphine or?
Other pain medication in the pump with the button where the patient can then control when they get a dose. If they're getting ready to have physical therapy, they can take a dose of their pain medicine before they do that as a tool that gives the patient more control.
So the therapeutic window.
So again, This is why we want to have scheduled pain medicines.
So if we are giving a patient a dose at a regular interval, then we keep the dose of drug in this therapeutic window.
And if our interval is too close together or our dose is too high, then we can end up in this toxic area and have side effects. And we know we need to drop either the interval of the dose. However, if we're not giving the dose frequently enough or.
We're not giving a good enough dose then we are in the ineffective period.
So the patient is not having any pain relief.
So we really want to try to get our dosing. So the patient is living in this sort of therapeutic window.
OK.
So we've talked about a little bit about the philosophy of prescribing opioids in patients who have pain.
Then we can talk about some of the adverse effects.
So these are the things that we're afraid of.

These are the things that patients are afraid of.
So sedation, you know, excessive sedation can be present without respiratory depression.
That's a separate process.
And then there's also the risk of respiratory depression with excessively high doses.
Now the respiratory depression is most common in patients who are opioid naive patients.
You've had previous opioids or especially on oral opioids at home, the risk of respiratory depression with IV doses is significantly lower.
They can have sedation, but they don't have the same risk of respiratory depression itching.
Itching is a huge side effect.
Constipation, nausea, vomiting, urinary retention and some patients will experience headaches with their opioids.
So I highlighted the fact that in 2024 or I mentioned that the AAP has put out some pain guidelines and so this is from this was just recently published.
The they made some assessments. Again, it's just like all other guidelines.
It goes through how they decided what the data was, you know what are strong.
You can see they have strong recommendations versus recommendations, but the couple things the references is on the slide.
So you can certainly access this.
On your own, but a couple of things that I was gonna highlight.
Is that it's listed in several places that there is a strong recommendation to not prescribe codeine or Tramadol in in our patients anymore.
Either post you know, post surgical, we're treating acute pain in patients who have obesity, obstructive sleep apnea, like there's literally multiple things that say don't use codeine and tramadol don't use codeine and tramadol.
So if we get anything out of the presentation.
Hopefully we will stop prescribing codeine and tramadol in our pediatric patients.
There are maybe a handful of Aya patients that I treat specifically with sickle cell in a very specific, you know, sort of shared decision making process with them and having tried other pain medicines where they may occasionally use some tramadol.
But again, that's a very different situation than you know post tonsillectomy. You know, general pain, those type of things.
So I'm gonna hit a little bit on the medications.

I don't want to spend too much time on this because you guys can access this through any number of different formularies. You can talk to your pharmacist, but just to kind of highlight, you know, what are our non opioid analgesics. So you know our oral ones are I.
Naproxen sodium. You know, I forgot to add on here. Selaccsib or Celebrex is actually FDA approved for.
It was down to H2 there there, but there is an FDA approval for naproxen and for SELECOXIB primarily related to our arthropathy and arthritis patients.
Naproxen does have a liquid formulation, but Celicoxid doesn't. Aspirin.
We don't traditionally use as a analgesic in children.
It's more often we may see using it in our patients who have inflammatory diseases kawasakis.
You know, maybe as anti platelet agent agent.
And stroke patients and thing.
And then acetaminophen, you know, we have a lot of patients who use that we have. Be careful though, 'cause, there's lots of combination drugs with acetaminophen in it, and I know we have to really caution families to not mix too many different medications to avoid acetaminophen toxicity. And then we do have 4 toradol or torolac, which is a nice medication to use in.
Our hospitalized patients there is an oral form, but.
It's a tablet and I tend to not like to use it.
Umm and save it for our hospitalized patient. But 30 milligrams of Ketorolac is supposed to be comparable to 6 milligrams of morphine, so it can be a profound analgesic in patients. If there's not a contraindication. So you know you're not supposed to use it in pain patients who.
Hepatic dysfunction.
Anybody who has ulcers or patients who have are on anticoagulants or have coagulopathies patients at risk of bleeding.
So there are some patients where it's not safe to use, but in patients it may be a good choice to try ahead of an opioid in a hospitalized patient.
Who's experiencing some pain if they don't want to have the sedation and itching related to the opioid?
Then we have our opioid analgesics.
So this list hasn't changed a whole lot.
We don't have like a bunch of new ones out there for us to use.

It's kind of the same.
Suspects all the time, so we've already mentioned about morphine and hydromorphone and fentanyl.
So these are the ones that we most commonly will think about using.
You know fentanyl, we don't use too often as an analgesic.
We may use it in like the emergency room 'cause there is an intranasal component and so they are looking at using it for more rapid pain relief, at least acutely when a patient shows up in severe pain in the ER.
Typically an inpatient settings we may be using the IV forms of morphine or hydromorphone.
Methadone is actually available, IV or PO, that we traditionally use it orally.
It's a synthetic opioid, and it does have activity against both no susceptive and neuropathic pain.
So it can be very helpful in our chronic pain patients.
Demerol, I do include it on here because it still shows up at some points in time.
A lot of the dentists still like to use IM Demerol so they're not paying attention to the current guidelines for like office sedation and things like that.
But in general.
Imerol has been removed from all children's hospitals for malaris because there's an increased risk of seizures, especially in patients with renal disorders.
And there can be abnormal metabolism, especially patients with liver issues. Patients who have seizure disorders, who get Demerol, it lowers their seizure threshold so.
In general, it's not used as an analgesic.
We will use it occasionally to treat patients who have.
Chills.
Or, you know, shakes like with I can remember using it in patients who were getting ampheteracin and things like that to help treat those symptoms. And then we have some of our more common oral oxycodone with and without acetaminophen and hydrocodone, which unfortunately is only combined with A/C.
So most patients and this also can be related to some of the insurance regulations start with hydrocodone and then if they fail that, maybe they can use oxycodone. The benefit between the two is oxycodone does have.
Faster onset takes it kicks in about 10 minutes.
Hydrocodone takes about 30 minutes, so that's the main benefit I think of the oxycodone is that it has quicker onset of action. And then I mentioned I put codeine

here, but I'm reminding you it's not recommended for use in children.
OK.
And so then just I mentioned methadone. So there are some newer pain medicines that are floating around out there. If you're in the hospital setting, you may have some patients who are starting to get low dose ketamine.
You know, there's a protocol in the ICU for certain patient populations and then we have one for our sickle cell patients and then again, methadone has an unpredictable half life. But we do use it often in our chronic pain patients and palliative will often use it.
In some of our oncology patients.
So there's also non classical pain medications.
So these are things we don't always think about is helping us treat pain, but they definitely do.
So we have for neuropathic pain, we have amitriptyline, gabapentin, pregabalin.
Again, this is one of those things not approved in children, but we do sometimes use it in our older patients, so this may be good for things like phantom limb pain, which I mentioned. The classic example of neuropathic pain.
And then because pain is a total person, total body experience.
That there's such a large emotional component to it as well.
Many SSRIs can be helpful in managing patients with severe pain syndromes. So the fluoxetine, citalopram, duloxetine are the three that are recommended to use as an adjuvant for medical therapy in our patients with pain syndromes.
OK, so I wanted to move on from pain syndromes to or off of pharmacologic syndromes to what can we do these?
We always think of this stuff 2nd and probably we should start thinking of some of this stuff first or at the same time that we're thinking of the medications.
So many pain, especially our patients with chronic pain syndrome, they really benefit from.
From these other therapies.
So you need a multimodal approach.
So physical and cognitive therapy using heat.
The the 10s the the transcutaneous nerve stimulation.
Maybe they need a wheelchair so that they don't have to walk so far.
Which provokes their pain. Things like distraction, mindfulness, breathing.
Integrative medicine, vitamins breathing, yoga, acupuncture, acupressure, massage,

all of our therapies, physical and occupational therapy, music and art therapy. Child life.
Counseling and support groups.
There are so many different things that can be incorporated into treating pain besides just using a medication.
These interventions are beneficial.
We know that things like cognitive behavioral therapy and a biofeedback and relaxation and hypnosis.
Some studies have found that they reduce pain intensity for children when these are employed. When people have chronic headaches and the benefits are sustainable.
They've been shown to improve pain and disability, also for non headache pain.
So it's been shown in patients with sickle cell disease, fibromyalgia, recurrent abdominal pain that these strategies can help reduce pain.
And improve chance of return to normal activities.
This table you guys can refer to in the presentation.
This is an example of some developing appropriate non pharmacologic pain strategies. If you spend anytime with our child life staff you will notice how they use many of these things when they're trying to help patients cope with behaviour with with interventions or procedures or things that are Dist.
And painful.
And so, you know, some are involved, touch and sensory.
So music massage, some involved activities. Believe it or not, blowing bubbles.
You know all of those type of things and then imagery can be very helpful to help patients think about something else besides what's happening to them.
All right, so now I'm gonna touch base for a few minutes on some pain management and special populations.
So for procedural pain, so examples, venipunctures immunizations, medication injections, there is a tool.
And again, you may have noticed the nursing staff and child life have these buzzy tools.
So what are they?
They are vibration.
You can also get these little cold wing packs attached to them, but it's not necessary.
And so the cold and vibration distractions all distracts all the nerves around where the injection's being given.

And so you don't feel the injection anymore?
Studies have found it reduces pain up to 88% and it reduces needle fare. I can tell you we have kids who specifically ask for this when they come into clinic now, which is very nice because they're less fearful of injections and less fearful of venipunctures cold.
Spray can also help and then we have the topical M1 lmax which can be used at sites where procedures may happen such as menopunctures or bone marrow. Those type of things.
Which can be important.
Preoperative pane so you know it's it's good to be aggressive initially because pain is historically under treated in pain. But fortunately for us, you know most surgical pain gets better in a few days. So it doesn't have to.
We're not looking at long term pain meds. You can use again the lidocaine imbala cream before the surgical procedure for IV starts to help relieve pain and related to that going into the procedure.
And then for postoperative pain, you know apcaa is safe to use in children over six years of age, and that may be a useful way to allow patients to have control and take medicines when they're hurting the most.
And I hit a little bit on sickle cell patients. So for our sickle cell patients, you know they have acute and chronic pain.
And we try to have them have what's called a home pain action plan.
These are used across the country and it basically has them escalate their pain.
It's The Who pain ladder, but it's written like an asthma action plan for mild pain.
You know, they start ibuprofen, then they may start their depending upon how severe their pain is, they may start additional pain medicines and then it gives them instructions on what to do when they're pain is really bad.
And so when a sickle cell patient presents to the ER, the recommendation is that they are triage to level 2 and that they should receive pain meds within 60 minutes of arrival.
The main issue is that we need to regard the patient or the caregiver as the expert on this disease and if they are in pain, we need to address their pain.
We can assess them with the pain scale.
There are no laboratory or vital signs that will prove or disprove the present of their pain.
Hydration may be important, but boluses don't change the pain.

And what's more important than giving them flu is is getting them analgesia, which can be titrated if they've been using their home pain action Plan IV opioids are appropriate.
There's no reason to give them orals when they've already been taking orals at home, but if they are occasionally a young kid who comes in for his first pain crisis and he hasn't had any oral opioids, you could certainly try an oral dose and see if that's suff.
Other supportive care while they're starting with these pain crises such as heat and massage.
Those type of things can be helpful and there is recommendation for patients 12 and older to have individual Ed pain plans to help the ER manage these patients as they get more complex as they get older.
Inpatient care. We do, you know, think most patients who need two to three doses of IV opioids need to be admitted. And then we continue to Schedule IV pain meds while they're admitted.
Again, we have individualized pain plans for the patients who are 12 and older.
We always have to remember to include the supportive care because we've already talked about all the side effects of opioids, so they get constipated, so they need a bowel regimen.
There's lots of itching, so we have use of Narcan, drips and and other medicines to try to alleviate these side effects as frequently. There's not another option to treat the severe pain there in and they do have to tolerate a certain amount of side effects unfortunately.
With the opioid.
One of the things that is often highlighted with our sickle cell patients is that they are sort of the the example used for the presence of implicit bias in pain management.
I I posted up here.
This. Are they going to believe me?
This is a a common theme in in discussions and support groups for patients with sickle cell disease that they feel like they're going to the hospital. They're not going to be believed.
The data actually supports that.
Providers tend to overestimate risk of addiction. For patients with sickle cell, and then patients consistently report that they're misbelieved mistreated and dismissed within the healthcare system.

There was a study that looked at sickle cell pain and femur fractures and the sickle cell patients waited 25% longer than the general patient sample and they waited 50% longer than patients who had femur fractures to get pain medications.
So there's there's clearly.
Work that we need to do to treat these patients fairly and again to believe them when they come in and tell us that they are in pain.
So chronic pain.
This is.
A.
A issue that I kind of talked about a little bit earlier. It really needs multimodal interventions in order for us to address it.
Lots of gaps and things that we don't know.
Cancer pain again.
This needs to be individualized for the patient.
We often involve palliative care for our patients who have severe progressive or relapsed or terminal disease.
We want to try to maximize their time at home and so we use oral medications.
At if we can and then depending upon the patient's other symptoms, we may need to use other other types of administration with IV.
OK.
So I'm gonna talk a little bit about opioid crisis, pain contracts and prescription monitoring for the end of our presentation.
So you know, the opioid crisis has been in the news for more than 10 years now.
This has been a definite impact on children.
There's a risk of poisoning an overdose for them within their homes.
Opioid misuse in pregnancy, we could have a whole separate lecture on neonatal abstinence syndrome that our NICU is having to deal with.
It has affected parenting and attachment.
Maternal deprivation, and there may be extended separation from parents.
So so when the adults in their lives have opioid addiction, it directly effects our patients that we're taking care of.
But what does this mean when we're treating children with pain? Despite the opioid crisis?
We should not be ignoring their pain, you know.
But we should also.

Think about using other tools that I talked about, non pharmacologic methods.
In addition to pain medicines, you know we do need to be thoughtful about how many medications we prescribe in terms of number of pills and and how often we are giving refills. We need to provide good education to the older patients and their parents.
It's really important to use the fewest number of analgesics to control pain, so patients shouldn't be sent home on 6 different types of pain medicine that increases their risk of misuse.
In 2016, the CDC presented some guidelines for prescribing chronic opioids.
This was aimed at primary care physicians and for adults. There were no recommendations in these guidelines for children and adolescents because they felt there was no data or evidence that they could comment on.
So these guidelines are for adults.

Perlman, Jeremy S 53:01
OK.

Frei-Jones, Melissa Joy 53:04
And what was the effect of this?
Well, unfortunately for our sickle cell patients, because they were not included specifically as being separate, they included cancer as a different group that didn't apply to these guidelines are sickle cell patients unfortunately.
Were swept up in the group and then we found there were a couple groups that found that we had increased hospitalizations and patients were receiving fewer pain medicines, which led to their increased hospitalizations as a result of these guidelines in 2016.
So then in 2022, the CDC also said, oops, we made a mistake and they updated the guidelines and said, by the way, these guidelines don't apply to sickle cell disease or cancer or patients receiving palliative or end of life care.
So that's still been it still taking time for that to trickle down that those patients are excluded from some of those opioid prescribing recommendations.
So what is opioid use disorder?
This is when a patient uses an opioid without a prescription or differently than the prescription is written for.
Our adolescents are at risk for oud. That's reported that one in 315 youth experience

opioid use disorder the following year that they receive an opioid prescription. And where are they getting these opioids?
From about 39% from relatives, 26% from doctors.
12% are being bought risk factors.
So there's a 1.2 to two times risk with ADHD and trauma.
Patients similar risk for chronic pain.
Age and mood disorder has a three to seven times risk, and if you have a patient who has previously been diagnosed with a substance use disorder, there's a twenty time risk.
So these patients are especially vulnerable when you're deciding to give them an opioid prescription.
The good news is that there's a declining overall prevalence of opioid use disorder.
In 2015, before those 2016 guidelines came out, they reported about 12.5 million.
This is people 12 and older, so lots of adults are included in this and most recently in 20/19 it had fell to 9.7 million.
So they do believe those 2016 guidelines are helping with the adults who were developing opioid use disorder.
It's estimated that about 3.6 of adolescents will misuse their prescription opioids.
And post dental visits or so dental visits are the leading source of opioids for adolescents.
So it's when our patients go get their wisdom teeth removed, major dental procedures that they get given an opioid and that's often the 1st place that they're exposed.
So what can the pediatrician do?
You can provide adolescents and caregivers with, you know, tailored information about the risk of developing addiction. If you're going to prescribe pain medication, start with low doses and increase slowly.
Counsel, patients and caregivers about safe storage and proper disposal of opioids.
You know, advise them about, you know, dental procedures and what type of pain medicine you want from that says that seems to be a a key area where our teenagers are exposed to the opioids.
So pain contracts.
These are recommended for patients over the age of 18, but I do use them as some of my chronic pain patients, especially in preparation for transition to adult.
It typically includes opioid safety practices.

So there may be a good reason to use it. Any number of different patients. You're not going to share your prescription, you're only going to take it as prescribed. You're not going to ask for prescriptions from other providers, you're going to use the same pharmacy and you need to have clinic visits every three months for regular prescriptions.
And then the last thing I was gonna mention was this prescription data monitoring database. Any of us who have ADA number and have ability to prescribe controlled substances can look up any individual patient and there is a requirement if you prescribe controlled substances to check this database.
In order to see if your patient's getting medicine from other places or when their last prescription was filled.
And it can be useful for our patients.
Who have chronic pain syndromes?
Again, it's supposed to remind you to limit the number of days of medication for acute pain patients.
Again, not counting chronic pain, cancer, Hospice, palliative care and sickle cell patients.
In the epic system, if you prescribe an opioid, this window will pop up depending upon the age of patient, there may be some other things that pop up, but it's very easy.

Perlman, Jeremy S 57:45
Play.

Frei-Jones, Melissa Joy 57:50
You just click on the review pdmp.
And then it will open up the patient's.
This is a little example of what it looks like for a particular patient.
It'll talk about, you know, their overdose.
Score. It'll talk about how much medicines when they've been getting medicines.
It'll show you the pharmacies where they've been getting their medication, and then you can just click that you reviewed it and you've met any requirements for checking the prescription database monitoring program.
Again, it's easy to do through epic.
Alright, so in conclusion, the person experiencing the pain is the expert about their

pain.
Pain in children is often under treated, which can lead to increased anxiety.
Opioids are important tools in treating pain in children and can be safely prescribed.
Prescription opioid misuse is declining, but our adolescents are at risk. Populations and safe opioid prescribing practices in adults include prescription database review and opioid contracts.
These tools, although note required, are useful.
Adolescents with chronic pain.
So I realized this was a whirlwind of information.
There are lectures. The AAP has information on any of these specific topics as whole.
Separate lectures. If anyone wants to explore more about integrative medicine or non pharmacologic pain management strategies.
Then I have some references.

Kamat, Deepak M 59:19
You could exercise for education, educating us on management of pain in children quite a bit of questions in the chat box. I'll read first one.
Can you comment on in Pediatrics?

Frei-Jones, Melissa Joy 59:27
OK.
Yes, so so acetaminophen is a analgesic that is available as an oral rectal IV.

Kamat, Deepak M 59:33
I will try and all, yeah.

Frei-Jones, Melissa Joy 59:43
It seems to be a very potent analgesic. Most of the data on four Tylenol is in surgical setting. So there's some data about taking, you know, giving IV acetaminophen before surgical procedure decreases. The amount of opioids needed after the surgical procedure. And so I think it is a.
Useful.
Analgesic to use in again operative settings. Hospitalized settings.
Obviously not something you have access to in the outpatient world.
I know we have run into some issues with some shortages of it in the hospital, so

there have been some limitations on how much we can dose it or how frequently we can dose it.
Typically, we've had some instances we give a few doses, but we can't keep giving it for multiple days.

Kamat, Deepak M 1:00:27
OK. The second question for our patients with more chronic pain syndrome, the normal pain scales are sometimes counterproductive.
Hard to use distraction when they are constantly being asked to assess their pain.
I know we have discussed functional pain scale. I have found it difficult for a nursing staff to get on board with this because they are required to document number of pains in EPIC.
Any thoughts about the peace process and how we can work with our other staff to move forward?
More helpful assessment tools for certain patients.

Frei-Jones, Melissa Joy 1:00:59
Yeah, I think that's a great question.
I know it's been a couple years ago that the UHS updated some of their like opioid and pain medicine prescribing for the adults 'cause.
I was on that committee and I know they added functional pain scales for the adults.
And they're supposed to be.
I don't know if the adult side is doing both, but we we kind of run into this.
You know it's it's it's it's competing demands because.
Like we just had our J Co visit and they checked the nurses to see if they were documenting pain scores. If they were responding to pain scores.
And so there's these administrative people who are going to come and check to make sure that there were still documenting the numbers and we can't get away from that 'cause that's not in our control.
But I wonder if we can engage to try to decide if we can update some of the pediatric nursing policy to have both documented in certain patients.
That might be something we can talk to the nursing leadership about.
I can.
I don't remember who led the adult.
Policy. But the updated adult policy has functional pain scales in it as preferred.

Kamat, Deepak M 1:02:11
Next question is, can you talk about non opioid options for gastrointestinal pain?

Frei-Jones, Melissa Joy 1:02:17
Oh goodness.
So I am probably not gonna be able to speak very much on that.
That might be more for our GI doctors who treat our irritable bowel syndrome. I mean, I know that there are newer medications.
One of them I dental.
There's a couple that I've seen.
It's not something that I have as much experience with, but maybe one of our GI colleagues could could provide some insight on that.

Kamat, Deepak M 1:02:43
Next question, should we pre medicate with SMN in front for routine vaccines?
And secondly, what is your thoughts on using both alternating? I said I'm in a fan and ibuprofen for febrile illnesses.

Frei-Jones, Melissa Joy 1:02:58
Oh, those are great questions.
So, you know, I think there's there's been some data out there questioning pre vaccine analgesia and response to vaccines and altered immune response to vaccines.
And I mean, I think.
I think probably you could use other tools for your vaccine, like in a buzzy.
You know, use some things 'cause. The reason you're giving the the Tylenol beforehand is because you have a fear of.
The needle pain, the injection pain, the infusion pain. That's what you're using the acetaminophen for frequently is the pain associated with the vaccines.
So maybe you could explore non pharmacologic ways to treat or address injection pain at the time and then only add acetaminophen or ibuprofen after the vaccines given if the patient develops a symptom like a fever or, you know, increased pain and swelling 'cause I find that it's typ.
Parents are using it because they're more worried about the pain the child is going

to experience.
Experience from the injection itself, so maybe you could use a non pharmacologic and then you know scheduling a CETA benefit, ibuprofen for fever. I mean I think we tell patients to do that.
My husband's an ID doctor.
So he's like fever's. Good. Fever's your immune system fighting your infection.
Why are we so afraid of fever?
So you know, there's that there's that.
There's that that disconnect because our parents are very fearful of fever and they're afraid whether, oh, their fever was 102, you know, versus 99 and just, you know, they can.


Kamat, Deepak M 1:04:26
Hmm.


Frei-Jones, Melissa Joy 1:04:30
There's a lot of emotion and fever for our parents.
Sometimes. And so I mean, I don't think there's been no data suggest that that's harmful.
We also have the parents who say Tylenol never works. Ibuprofen is something that lowers our fever. Certainly if you have a very anxious and distressed patient, that may be very appropriate to give them something to do. So they feel like they're doing something to help their child feel.
Better and to lower their fever curve, potentially so that they feel less distressed and caring for the and caring for the child.


Kamat, Deepak M 1:05:02
But I wonderful presentation on management of pain in children.
Thank you all for attending this morning's grand round.
I'm going to conclude this morning's grand round.
Have a wonderful Friday and wonderful weekend again.
Thank you, Doctor Vaidy janss.


Frei-Jones, Melissa Joy 1:05:16
Thank you. Bye.

◉ **Kamat, Deepak M** stopped transcription