

Talking Sleep Season 4

Episode 5

March 11, 2022

The Daylight Saving Time Debate

Dr. Erin Flynn-Evans, guest

Episode Transcript

DR. KHOSLA: Thank you for joining us for Talking Sleep, a podcast of the American Academy of Sleep Medicine. I'm your host, Dr. Seema Khosla, medical director of the North Dakota Center for Sleep in Fargo.

Sunday marks the start of daylight saving time. Where we spring ahead an hour and throw off the circadian rhythms of everyone in the house, our kids, our pets and ourselves.

The AASM issued a position statement calling for an end to seasonal time changes, as well as the adoption of permanent standard time. To talk with us today about the reasons why is Dr. Erin Flynn-Evans. She is a circadian physiologist and sleep researcher. Her research focuses on examining the short- and long-term consequences of sleep loss as well as circadian misalignment in the real world. She leads a large government research lab and is a consultant to the AASM Public Safety Committee. Thanks for joining us today, Dr. Flynn-Evans.

DR. FLYNN-EVANS: Thank you so much for having me.

DR. KHOSLA: So it's that time of year again where we kind of throw caution to the wind and we start to tinker with our circadian rhythms. And I don't want to spend too much time on this particular piece since we covered it last year with Dr. Rishi, but can you remind us about the origins of daylight saving time? I mean, we always heard it was for the farmers. Is that true?

DR. FLYNN-EVANS: Yeah. It's such a funny, funny thing, isn't it? No. Farmer farmers are not to blame for daylight saving time. They're, you know, the origins are somewhat complicated.

There are some reports that go all the way back to Benjamin Franklin, who apparently published a satire suggesting that if we all just wake up earlier, we can improve our efficiency and maybe even save some candles.

And it wasn't until World War I and World War II that the concept of changing the clocks actually went into effect. And at that time, it wasn't called daylight saving time, and it wasn't to allow us more leisure activities. It was actually called wartime. And that the US reverted back to a mix of sort of standard time and daylight saving time, depending on the city or state that you lived in after World War II.

And that really caused a big problem because different cities and different states very close to each other were on completely different times. And so finally in 1966, Congress put forward the Uniform Time Act, which required all states to adhere to Standard Time and then observe daylight saving time during the summer. And at that time, states could exempt themselves from switching the clocks. And so we still have Arizona who maintain standard time. But everybody else followed that uniform time requirement from that Uniform Time Act.

DR. KHOSLA: So help me understand this. So the sun is in the sky for the same amount of time no matter what the clock says. So how does this idea of an extra hour of daylight...how did that come about?

DR. FLYNN-EVANS: Yeah, you're totally right. You know, when we change the clocks, we don't get more light at all. And I think that some people think about how the timing of light relates to their activities when they think of daylight saving time. In the winter, the sun sets right around the time that people finish working at home while we're on standard time and I think the appeal of changing the clocks to daylight saving time in the winter is that the evening commute would be in the light and there might even be a little bit of light after work where people could engage in activities outside. But the thing that people don't really realize is that that little bit of extra light after work would come at a pretty significant cost because winter mornings would be dark.

Yeah, in most places in the US, we wouldn't see sunrise until after eight in the morning during the middle of winter. And so really it's just a photo period change. We're just we would be resetting the clocks to, to set out social time, but the amount of sunlight that we get would, would be exactly the same. So we would gain that little bit of light at the end of the day, but we would lose it at the, at the beginning.

DR. KHOSLA: So talk to us about clock time versus body time.

DR. FLYNN-EVANS: Yeah. So we can think of clock time as sort of social time. And I think of this is the time we go to work, the time we go to school, the activities that we have that are kind of fixed in our life. Where body time is the time of your circadian rhythm, which is your internal timekeeper and your circadian rhythm tells your body when to sleep and when to wake. It also controls many other aspects of biological function. But there's a third clock, and that's the sun clock. So yeah, we all have circadian rhythms that are a little different from 24, but it's the light from the sun that keeps our body clock or circadian rhythm aligned with the 24 hour rotation of the earth. And so while we have to get up, maybe to go to work at a specific time every day, the determinant of our waking sleep is really coming from that sun clock. So when are the clock on our watches, the time on our watches is not set to align to that sun clock, that's when we see trouble.

DR. KHOSLA: Oh, so you are a circadian physiologist. Tell us how circadian alignment is affected during standard time versus daylight saving time.

DR. FLYNN-EVANS: Sure. So when we set our clock time or social time to a time that is slightly different from the timing of sunrise and sunset, we end up with just a modest circadian misalignment. And this can be hard to appreciate because normally we think of circadian misalignment as a really big change like shift work. But we can have very small amounts of circadian misalignment just based on the timing of our clocks relative to when the sunrise and sunset happens.

And it's hard to appreciate because I think we think of an hour or 2 hours is not maybe a big deal, but an example can help illustrate the problem. So when we live on standard time, our social time and sun time are pretty much aligned, at least on the eastern edge of the time zones. There may be a little bit of offset on the western edge, but in general it's not too bad. And this means that most people, circadian rhythms will be aligned with their social time. So put simply, that means that their bodies will be ready to wake up around the time that they would naturally need to wake up to go to work or school. So if you have to wake up at seven it'll feel like seven in your body. But when we shift to daylight saving time, our social schedule shifts earlier relative to our circadian rhythm, which means that waking up at seven during daylight saving time would actually feel in your body, like waking up at six or even five in the morning if you're on the western edge of a time zone, And there have been studies that have been done that have shown that people circadian rhythms don't adapt to the changing of the clocks during Daylight saving time, which leads to a sleep loss of about 30 minutes per night, sort of the entire season of daylight saving time. And it's probably attributable to this slight circadian misalignment. We get less sleep.

So there was a really fantastic study done by Dr. Till Roenneberg's group in Germany, and they looked at 55,000 Germans and found that during the season of daylight saving time, they don't really see a shift in the timing of the midpoint of sleep, but they see a net loss of 30 minutes per night on average across that 55,000 person population. So 30 minutes a night is a pretty substantial number.

DR. KHOSLA: Oh my gosh. Tell me how we lose that 30 minutes a night from when daylight saving begins to when it ends. It's cumulative.

DR. FLYNN-EVANS: Yeah. So, so what happens is our circadian rhythm is you can think about like this, our circadian rhythm kind of stays set to the sun. And so you can think of it almost as our circadian rhythm is kind of maintaining standard time when we shift our clocks for daylight saving time. And although we spring ahead, basically what that means is that we have to wake up an hour earlier throughout the entire season of daylight saving time relative to our

circadian rhythm, relative to when our body wants us to wake up. And so when you carry that forward, people tend not to go to bed earlier during daylight saving, but they have to get up at the same time. And so you just end up with this sort of curtailment of sleep because people will maybe even go to bed a bit later because it's light out later. And that can even further shift the circadian rhythm in the wrong direction. We should really be shifting everything earlier for daylight saving time, but the way that the photo period is set and the way that our circadian rhythms are aligned for standard time means that we shift effectively in the wrong direction and that leads to a sleep loss.

DR. KHOSLA: Oh, my gosh. So it's not just that first week. It's persistent. That's important to know.

DR. FLYNN-EVANS: Yeah, absolutely. Yeah. The entire season comes with that pretty significant cost.

DR. KHOSLA: So I heard you kind of hint at this about how there can be differences even within the same time zone.

DR. FLYNN-EVANS: Right. So, you know, in the US, people who live on the eastern edge of the time zone will experience sunrise timing. That's pretty closely aligned to body time during standard time. And they'll be maybe an hour off during daylight saving time. But circadian misalignment becomes more pronounced for people on the western edge of the time zone, where there can be as much as a two hour difference when we go into daylight saving time between that internal clock and social clock.

And for example, I grew up in West Michigan, which is actually part of the Eastern Time zone. And when I was a child, I remember in the summertime it didn't get dark until close to 10 p.m. And so that's pretty remarkable. And there have been a few studies that have looked at health impacts of circadian misalignment sort of across time zones and have found worse outcomes for people who live on the western edges.

DR. KHOSLA: Oh, wow. So are these related to cardiovascular disease, cancer...?

DR. FLYNN-EVANS: Yeah, well, probably all of the above, but the strongest evidence so far comes from it comes from studies looking at cancer risk around. And so we see increases in a variety of cancers on the western edge of the time zone compared to the eastern edge.

DR. KHOSLA: You know, years ago, we were asking we were kind of exploring how sleep impacts different fields. And I had this chance to, you know, call up this oncologist who did a lot of research. And I thought I was bringing this like late breaking news saying, hey, you know what? We kind of think that sleep is, you know, shift work and that sort of thing is a carcinogen. And it was so funny because she kind of, she was very kind about it, but she kind of laughed at me. And she's like, yeah, we've known that for a long time in our world. So I mean, it's definitely something I think that a lot of people appreciate. So tell me then, why this is still a battle. You know, you kind of hinted at what the law says that as far as I understand it, right. That the state can't switch to permanent daylight saving, but they can remain on permanent standard time, right? Like Arizona.

DR. FLYNN-EVANS: Yeah, that's right. So just based on that, you know, Uniform Time Act, states can either continue changing the clocks for daylight saving time twice a year or they can opt out like Arizona has done and just maintain standard time. But they can't choose do daylight saving time year round or any other way to set their clocks.

DR. KHOSLA: So are there any upcoming changes in legislation around this?

DR. FLYNN-EVANS: Yeah, that's a great question. So there are several states that have pending legislation to abolish that twice a year time change and shift to permanent daylight saving time year round. But because they're not allowed to do that without an act of Congress, none of this legislation will go forward unless Congress acts and allows for permanent daylight saving time year round.

Now, there is a House Committee on Energy and Commerce that's holding a hearing on this topic on March 9th, which I think will happen before this podcast airs. So we'll have to see what

comes of that. But the American Academy of Sleep Medicine is providing a witness in support of our consensus statement to abolish the time changes in favor of permanent standard time.

DR. KHOSLA: And how many states? You know, you kind of mentioned that there are quite a few states that had pending changes.

DR. FLYNN-EVANS: Yeah, there are several states. And depending on the year that the time that you look at what's happening in any given state, it changes. But as many as 30 states have now put forward legislation to either abolish daylight saving time or to move towards permanent daylight saving time year round.

DR. KHOSLA: Oh my goodness. You know, you kind of mentioned something earlier before the Uniform Time Act, how everybody just kind of had their own time zone. And I'm picturing this. I live in Minnesota, but I work in North Dakota. And this idea of having neighboring states potentially in different time zones sounds like a nightmare. And then you add in, opting in, opting out of the switch, it just sounds like a nightmare.

DR. FLYNN-EVANS: Yeah, I think it would be a disaster. And I think that history tells us that it didn't work very well. That's why we had to act in the first place. Right. So I think that our policymakers will have to take a very close look at that history to avoid repeating the same mistakes.

DR. KHOSLA: Let's take a short break. And when we come back, we'll talk more about how that one hour adjustment impacts our health. You're listening to Talking Sleep from the American Academy of Sleep Medicine.

AD BREAK: It's time to go “back to sleep” at SLEEP 2022. The annual meeting of the Associated Professional Sleep Societies is returning in person June 4-8 in Charlotte, North Carolina. Register, view the preliminary program and learn more at sleepmeeting.org.

DR. KHOSLA: Welcome back to Talking Sleep. We're talking with Dr. Erin Flynn-Evans about springing ahead this weekend and why daylight saving time is bad for our bodies.

So I was part of Hill Day recently and I had the opportunity to speak with our representative's staff and we talked about this issue. And honestly, I was kind of surprised at how political it was. So it seemed like everybody agreed that we should eliminate the switch. But then there was this point of contention almost about whether it should be permanent standard time versus permanent daylight saving time. So why is it that standard time is what the AASM endorses? I mean, why not permanent daylight saving?

DR. FLYNN-EVANS: Yeah, well, so what it really boils down to is that permanent standard time aligns best with most people circadian rhythm. And that will lead to better sleep and better health outcomes. And I think that I can really understand the case for why other people might think that permanent daylight saving time is a good idea. And, you know, it's it gets really tricky because I think people naturally think of summertime when they think of daylight saving time. Right? Yeah. And then summer, we have a long photo period in general. The weather's better. We do lots of other great things in the summer. But as we talked about earlier, when we change to permanent daylight saving time, we wouldn't have more light in the winter. The photo period would be the same. We would just change the timing of when we see light. And I think people don't realize that this would mean that it would be dark till eight in the morning in most places. And we actually did this experiment before. And yeah, in 1974 the US adopted a permanent switch to daylight saving time. And at the time it had a huge amount of public support and so you can understand why our politicians would say that they favor maybe daylight saving time because people again think of summertime, think, wow, that extra hour of light, I want that, that sounds great.

But the reality is when the US adopted permanent daylight saving time and everybody went into those dark mornings in the winter again, remember sunrise isn't going to happen until after eight in the morning in most places, support just massively plummeted and it became incredibly unpopular. It didn't even last a year and then it was repealed. So we really don't want to make the same mistake and move toward permanent daylight saving time.

And the same thing happened in Russia actually, when they tried to go to permanent daylight saving time. And there were a few studies that were conducted during their experiment, and one showed that teens were disproportionately affected and experienced much greater social jetlag, was sleeping in on the weekends and having a really hard time maintaining that daylight saving time schedule during the week. So I think that the experiments that were done in Russia and by the way, Russia also reverted back to their old.

DR. KHOSLA: Oh, they did.

DR. FLYNN-EVANS: They said, yeah, they lasted a couple of years, but it was very unpopular. And I think, you know, just those experiences are really important in considering what makes sense going forward, even from a public policy standpoint.

DR. KHOSLA: So that's really, you know, it's kind of alarming. I'm picture seeing all of these young kids waiting for the school bus in the dark. And to me, that seems dangerous.

DR. FLYNN-EVANS: Well, absolutely. I mean, we have there are there are even more considerations beyond just the effects to our sleep and circadian rhythms. You know, we have to think of safety, too. There are other stakeholders who should be involved in this conversation because, yes, our children, by and large, in the middle of winter would be waiting for the bus in the dark every single day.

DR. KHOSLA: Oh, my goodness. You know, I, I used to joke with my friends. You know, I'm I'm kind of very, you know, strict with the kids about when they go to bed and when they were little our neighbors would still be out on the trampoline at 10:00 at night because it was still light. And my kids are in bed and it's light. And I'm trying to convince them that it's really it's really bedtime, guys. I get that it's light, but it's still time for you to go to bed. I can't imagine shifting that to 11:00.

DR. FLYNN-EVANS: Absolutely. And you know that I think that your point is well taken because, you know, it's hard for a young child to understand. But think about our teenagers. You know, again, the Russian study showed that it was really hard on teens and many other advocates

at the American Academy of Sleep Medicine have really pushed to start school later and effectively we would just erase all of the gains that we've made on that front by adopting permanent daylight saving time.

DR. KHOSLA: Well, and so I'm glad you brought that up, because wasn't California really in favor of delayed school start times? But as I as I think about this, aren't they kind of proponents of permanent daylight saving time?

DR. FLYNN-EVANS: That's right. Yeah, we have that. We have that conflict. So right now in California, school starts after 8:00. So that legislation passed, which is fantastic. A huge win for start school later. But at the same time, we have this pending legislation to have permanent daylight saving time if Congress allows that. And again, that that would just be a huge step back for all of the work that's been done on the school start time front.

DR. KHOSLA: Wow. And so that is not just California then. I mean, because this has been something they've worked on for years and years in terms of education and advocacy that, yes, we need our children to get more sleep and to be more in line with their circadian rhythm and then potentially right in one fell swoop eliminating that.

DR. FLYNN-EVANS: Yeah, we would undo it all. It's very discouraging to think about that.

DR. KHOSLA: Oh, my goodness. So let's look at the other side then. We've kind of talked about why not permanent daylight? So what are the key what are the key components of why we really feel that standard time is what AASM endorses. So you've talked about safety and circadian alignment. What else?

DR. FLYNN-EVANS: Yeah, well, those are really the key issues. So we know that when we sleep at the time that our body is telling us to sleep, that not only do we get longer sleep of better quality and more stable day-to-day, we also have better long term health outcomes. And in addition to all of that, I think there's no doubt that we need to just abolish the twice a year time change because we see acute effects associated with those time changes.

So there are always more heart attacks more strokes, more car accidents. And even for people who don't have really serious consequences, we see less efficiency at work, more cyber loafing which is kind of goofing around on the Internet during the week after daylight saving time. And so we you know, we have to do something. This doesn't make sense for sleep.

And based on all of the evidence that we have so far, you know, the choice seems pretty clear that standard time is the way to go.

DR. KHOSLA: So I was chatting with my husband about this last night, and he's a nurse, and he wondered why we couldn't just split the difference and meet in the middle, you know, shift by 30 minutes and then just stay there.

DR. FLYNN-EVANS: Yeah. I mean, that's a great I would say, you know, maybe slightly unconventional idea but I think that we need to explore every possible solution here. That could be a possibility but on the western edges of the time zone, you would still see pretty big effects. So we would predict that people on the western edge, you know, they're probably going to be off by about 2 hours under normal conditions. And so if you just split the difference, people on the western edge of the time zone would have circadian misalignment of an hour and a half, which is still pretty significant. Now, some people argue that we should just change our time zones altogether. Maybe we don't need time zones that are as big. So that paired with maybe splitting the difference solution might get us there. But of course, again, there are so many stakeholders in these decisions that I think we would have to really take a very comprehensive look to see if this would make sense and to see if it would come with any unintended consequences in other areas.

DR. KHOSLA: So how did they figure out what the time zones should be.

DR. FLYNN-EVANS: Well, that's a great question. I mean, I think that really what it comes down to is just their split into roughly 15 degrees. But it's not perfect because our state lines determine our time zones as well. And some states chose to be in one time zone or another based on connections to, say, major financial hubs within a time zone. So it's not a perfect drawing

because we have several other influences in place. But but roughly, you know, sort of that 15 degree mark is where our time zone lines are drawn.

DR. KHOSLA: But that's a really interesting solution that you proposed, maybe having, you know, smaller time zones and so then, you know, maybe that helps kind of not have such a big disparity between the easternmost edge and the westernmost edge of a particular time zone.

DR. FLYNN-EVANS: Right. It's certainly something to consider. And I think there would be there would be a lot of a lot of conversation that would happen. You know, to your point earlier, making smaller time zones may mean that you disconnect large cities from more rural parts of a state. And so you'd really have to think carefully about the consequences of doing something like that. But but from a purely circadian standpoint, I think it makes a lot of sense.

DR. KHOSLA: But you're right. I mean, this is this is. So, for one, I'm excited that this is getting more traction and people are under you know, for years, everybody's just complained about it. But it seems like now people are actually willing to look at it and have different stakeholders you know, like you suggested. So what can we as sleep clinicians do to support this initiative?

DR. FLYNN-EVANS: Oh, boy. Well, I think that you yeah, we really just we need to get the word out to the general public. You know, going back to your questions earlier about why do we have all these pending legislation for permanent daylight saving time when we know it hasn't been particularly successful in the past? And a state senator once told me that he wouldn't back permanent standard time because it wasn't what the people wanted. And I think to me, that just says that, you know, we're we need to do a better job as sleep experts in communicating why permanent standard time would be a better choice. You know, people just hear they get more light with permanent daylight saving time. They think of summertime and they're on board. We need to talk to our friends, relatives, colleagues, neighbors, patients, students. You know, we need to tell everybody about how sleep is organized, about how sleep is tied to the rotation of the earth and the sunlight and about how daylight saving time has been done before. And it didn't work. I think that once people start to understand that their mornings are going to be really dark

suddenly their position on this topic changes. And so I think the more we can do as ambassadors for sleep in our communities, the more we'll move towards a solution that makes sense.

DR. KHOSLA: And I think you're right. I think it's about meeting people where they are. And really, you know, for me that that idea of it being dark at 8:00 in the morning really resonated. And I imagine that different people will have different things that resonate with them. And so we need to be able to think about all of these ways that this impacts people, right, in their day-to-day and then just highlight that because there is kind of a disconnect, right, between the science and what people sort of perceive.

DR. FLYNN-EVANS: Absolutely. And I think on this particular topic, people just hear soundbites. You know, they just hear about that hour more light and it's appealing. But we can have a quick conversation that goes a little deeper and I think make a lot of progress.

DR. KHOSLA: I will admit, as a kid that really confused me that I didn't understand where this power magically came from.

DR. FLYNN-EVANS: Right. Right. Yeah. It is confusing.

DR. KHOSLA: So any final thoughts?

DR. FLYNN-EVANS: Well, I just like to first, you know, thank you so much for speaking with me about this important topic. And for anybody who's interested in learning more about the evidence supporting the case to abolish daylight-saving, time in favor of standard time if you go to sleep education or you can read the American Academy of Sleep Medicine position statement.

DR. KHOSLA: Well, thank you for helping us understand more about the impact of seasonal time changes. You know, the debate will certainly continue.

To support the AASM's efforts to eliminate seasonal time changes and adopt permanent standard time please visit aasm.org/advocacy and click on current campaigns to send a message to your legislator.

DR. KHOSLA: Thanks for listening to Talking Sleep, brought to you by the American Academy of Sleep Medicine. For more podcast episodes, please visit our website at aasm.org. You can also subscribe through your favorite podcast service. And if you enjoyed this episode, please take a moment to leave a rating or review. For more feedback or suggestions email us at podcast@aasm.org. I hope you'll join us again for more Talking Sleep. Until next time this is Seema Khosla, encouraging you to sleep well so you can live well.