Sleep, Fatigue and Circadian Rhythms in Cancer: Their Effect on Quality of Life

With Dr. Sonia Ancoli-Israel

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Jenna Fields:

Welcome everyone. Thank you so much for joining us today for our Sharsheret webinar, Sleep, Fatigue and Circadian Rhythms in Cancer: Their effect on quality of life, with our incredible speaker, Dr. Sonia Ancoli-Israel. I'm Jenna Fields, I'm the Chief Regional Officer at Sharsheret.

And for those of you who don't know about Sharsheret, we are a national nonprofit organization that provides free support for women and families facing breast and ovarian cancer, as well as those at elevated genetic risk for those cancers. Our support is confidential and personalized just for you, and we also provide health education throughout the country, including our virtual programs, like the one that you're attending. Today we have a full catalog of virtual programming, so please take a look at our website for prior recordings. Over the past couple of years, we have some incredible topics.

And we have two wonderful webinars coming up that I want you to know about. Please save the date for our Sharsheret in the Kitchen Nutrition webinar, 6 Minute Dishes with Karen Nochimowski, on March 22nd at 2:00 PM Eastern, and Sharsheret's 4th Annual UNSeder on March 30th at 8:00 PM Eastern. And my colleagues are going to be putting registration for both of those webinars in the chat.

Before we begin, a few housekeeping items just to share. Today's webinar is being recorded. Participant's faces and names will not be in the recording that we send out as long, as you remain muted. So please keep yourself on mute and we will be sending out the recording and the transcript within the next week or two, so please check your email for that. If you'd like to remain private today, you could just turn off your video and rename yourself or you can call into the webinar and instructions for that are in the chat box. And if you have any questions for Dr. Ancoli-Israel as she's talking, please put them in the chat box. Feel free to do that during the webinar. But we are not going to do Q&A until the end of her presentation. So I will save them. You can also private message me directly. I'm the Sharsheret account in the chat box, and we will try to get to as many questions as we can, even though it is a full presentation, so I know we won't be able to get to everything.

I want to thank our incredible sponsors, Merck, Gilead, and the Cooperative Agreement from the Centers for Disease Control and Prevention DP19-1906. And just a short medical disclaimer for all of you. Sharsheret is a national not-for-profit cancer support and education organization and does not provide any medical advice or perform any medical procedures. The information provided by Sharsheret and today's speaker is not a substitute for medical advice or treatment for specific medical conditions. You should not use this information to diagnose or treat a health problem. Always seek the advice of your physician or qualified healthcare provider with any questions you may have regarding a medical condition.

Now I'm going to introduce Dr. Ancoli-Israel in just a moment. We are going to have her presentation and then we will end promptly at 3:00 PM Eastern after our Q&A and then immediately following our presentation, we are going to have a special bonus breakout program for our Embrace community, those facing metastatic breast or advanced ovarian cancer. Anyone facing advanced cancer is invited to stay on for this intimate breakout session with Dr. Ancoli-Israel and with our Director of Support Services at Sharsheret, Bonnie Beckoff.

We are really, really thrilled to bring this topic to you today. This is one of the issues that Sharsheret hears time and again from the women who contact us. Sleep is an issue. We know that and we really want to help provide tools for you to improve your sleep during treatment and beyond.

So now it's my pleasure to welcome Dr. Sonia Ancoli-Israel. She's a Professor Emeritus and Professor of Research in the Department of Psychiatry and the Center of Circadian Biology at the University of California San Diego School of Medicine, out here in California. Dr. Ancoli-

Israel's expertise is in the field of sleep disorders and circadian rhythms, particularly in normal aging and neurogenerative disease and in cancer. Her research has included studies on the longitudinal effect of sleep disorders on aging, therapeutic interventions for sleep problems in dementia and in the relationship between sleep, fatigue and circadian rhythms in cancer. Her full bio is on our website when you registered. Feel free to go back and take a look.

But I just wanted to highlight the thing that just struck me most and why I'm so thrilled that we have her here today, which is that she had been published in 525 publications in the field and was named one of the best female scientists in the world in 2022, having been cited by others 62,616 times, resulting in a world ranking of 161 and a national ranking of 107 and a ranking of number one at UCSD. So that is quite incredible. So now, without further ado, it's my pleasure to welcome Dr. Ancoli-Israel.

Dr. Sonia Ancoli-Israel:

Thank you, Jenna. I have to say it's almost embarrassing. I was shocked when I heard those rankings, but proud of my legacy. So I'm thrilled and honored to have been invited to speak with this group, with all of you today. I'm going to share my screen. Okay, so I hope you're all seeing. Whoops, but it's the wrong slide. There we go. You're all seeing my title slide.

Jenna Fields:

It looks good, Sonia.

Dr. Sonia Ancoli-Israel:

Great.

Jenna Fields:

Perfect.

Dr. Sonia Ancoli-Israel:

So as you heard, I've been studying sleep fatigue rhythms in cancer for I don't know, about 20, 30 years now, and it's certainly a very important area. So what I'm going to do for the next 45 minutes-ish is review for you what the relationship is between fatigue and sleep, both before, during and after chemotherapy. I should say that all my research has been in breast cancer, but I'll show you some data from mixed cancers as well.

When I retired almost 10 years ago, many of my colleagues around the world really have continued this line of research and it kept me involved in it, which has really been quite an honor. So I'll show you some of that data as well. We're going to talk about the effect of light treatment on sleep and fatigue. We're going to talk about circadian rhythms and of course, I'll explain what that is. We're going to talk about what happens to all these things over time. And then I have it in parentheses because I wasn't sure if we're going to have time for it, but I'm going to get it in somehow, we're going to talk about cognition and what happens to brain function with chemotherapy, with cancer and how it relates to sleep and fatigue.

So I'm sure you all know this, but just to make sure we're all on the same page here, fatigue is one of the most frequent complaints of patients with cancer with over 75% who are undergoing chemo or radiation therapy reporting feeling tired and weak. And often, this symptom is so difficult that there are women that stop their cancer treatment because they can't handle the fatigue. And of course, there are all sorts of ramifications to that. And cancer related fatigue is different than other types of fatigue in that cancer related fatigue is a much more distressing, persistent sense of being tired or exhausted, and it is related to the cancer or the cancer

treatment and is not related or proportional to activity or rest. So it differs that way from the fatigue of everyday life because the fatigue of everyday life is temporary and when you rest gets better. And that's not the case with cancer related fatigue. It's much more severe, more distressing, and rest just doesn't make it better. There are obviously lots of things that are related, and let me get my pointer going here so that you can see that.

Okay. There are lots of things that probably are related to cancer related fatigue. There's physiological factors such as the pain or anemia. There's psychological factors that can affect it. There's socioeconomic factors. But for me, because of my interests, what I studied and was particularly interested in, was the chronological factors, that is sleep and our circadian rhythms, our biological rhythms, and how those are related to the cancer related fatigue.

So let's look first at some data about insomnia. Insomnia of course, is difficulty falling asleep or staying asleep. These data were collected in part by one of my colleagues, José Savard, in Canada who's done a lot of work in sleep and cancer. And she asked patients, these were patients with all different kinds of cancers, "When did your problems sleeping begin?" And you can see that for two-thirds of them, the problem sleeping started before their cancer diagnosis. Now obviously, the cancer is there before the diagnosis. We don't know when the cells start mutating. Nevertheless, even before the diagnosis, two-thirds of these patients, these people said, "I was already having sleep problems." Having said that, for over half of them once they had after their diagnosis, the sleep got worse. So there's clearly a relationship there. But it's important to remember that some of these symptoms might start before the cancer even appears.

We looked at sleep and cancer in a different way than other people ever had in that we started looking at it before the start of chemotherapy. Many of the studies that had been done have been looking at survivors or during chemotherapy, and my feeling was how can you tell what's happening during chemotherapy or after if you don't know what's happening before the treatment? So we started all our studies before treatment began, which made recruitment of our participants a little difficult, but we managed to do it.

And so what we're looking at here is the amount of sleep before the start of chemotherapy. We're looking at the data during the night and during the day. And what we see is that for most of these women, they were only asleep for about 75% of the night. We like to see people asleep for closer to 90% of the night. Everybody wakes up once or twice during the night. Everybody takes a certain amount of minutes to fall asleep. So we like to see about 90% of the night asleep. For these women with breast cancer, they were sleeping only 75% of the night and they were spending about two hours awake. That's not one two-hour block, that's if we look at throughout the night, all the different awakenings, they added up to two hours.

During the day, these women were napping for about an hour and a half. And again, it's not a one hour and a half block. You can see what they were doing is they were sort of dozing off for about just under 10 minutes. And if you add those all up, it comes out to the hour and a half, which is about 10% of the day. So there's some daytime sleepiness going on and there's poor sleep going on during the night, even before chemotherapy began.

So the other thing we looked at then was what was that relationship then between these symptoms before chemotherapy and during chemotherapy? And the three symptoms we were particularly interested in was the sleep quality, how well people were sleeping, how much fatigue there was and how much depression. And what we found was that during chemotherapy, all those symptoms got worse. But those women that had all three of the symptoms before chemotherapy got significantly worse than the groups that had fewer symptoms. Now that was sort of the punchline, and these are the data. So this is sleep quality that we're looking at. What we have here is the week pre-treatment. At the time I was doing this study, the chemotherapy regimen was a three-week regimen. So we have cycle one, week one,

which is as you know, is when women got their chemotherapy. We have cycle one, week two and week three, which are sort of the recovery weeks. We did not collect any data during cycle two or cycle three. But then during cycle four, again we have week one chemotherapy and week two and week three sort of recovery.

And what we're looking at here, the pink are those women that didn't have any of those three symptoms before chemotherapy. The yellow are those women that had one to two of those symptoms. So again, the symptoms were poor sleep, fatigue and depression. And the blue are those women that had all three symptoms before chemotherapy. So this is before chemo. Up is worse, down is better. And what you see is everybody gets worse, especially during the week of chemo. But those women that started out with all three symptoms before chemotherapy were worse throughout chemotherapy. And the same data he held true for fatigue.

Now, the reason for me that this was important is that meant that when we think about treating fatigue or treating sleep in patients who are going to be undergoing chemotherapy, that treatment should really start back here. It should start before they start the chemo and not during or after. My thought was if we could target treatment here, perhaps these symptoms would not get worse during chemotherapy. I have to say that the last grant I wrote before I retired was to look at that and it got a great score but didn't get funded. And I've had colleagues ever since trying to get this study funded. We just put another grant in. We still want to find out if we begin treatment here, what does it do? But so far that study has not been done.

So circadian rhythms are really important. Circadian rhythms are our 24-hour biological clock. Many things in our body have a 24-hour rhythm. For example, blood pressure has a 24-hour rhythm. Blood pressure dips at night and comes up again in the morning. Obviously, sleep-wake is a 24-hour rhythm. Many of our hormones have 24-hour rhythms. Core body temperature has a 24-hour rhythm. And prior studies have shown that patients with cancer have a sleep-wake activity rhythm that shows very little difference between day and night because the circadian rhythms have become disrupted. And so one of my goals in my research was to look at that longitudinal course of sleep-wake circadian rhythm before an end during chemotherapy.

And again, I'm going to give you the punchline first and then I'll show you the data. What we found was compared to baseline, which was the pre chemotherapy, all our circadian rhythm activities got worse during that first week of cycle one and cycle four, which again is the week that chemotherapy was being administered. During cycle one, the circadian rhythm got better during the recovery weeks or tried to get better. During the last cycle, everything remained impaired.

So what we see here, again, this is baseline, so this is where the rhythm is starting up, and up is better here. So you can see during cycle one, the first week, the rhythm became very disrupted. But the women were able to recover back to baseline levels during the two recovery weeks. By the time we got to cycle four, and I have to say this was one of the first times I was really sorry I didn't have cycle two and cycle three data to see what happens in the middle. But during cycle four, during the week of chemotherapy administration, again, the rhythms got worse. But, during the recovery weeks, although they tried to recover, they were still significantly worse than during baseline. And what these data suggest is that that first administration of chemotherapy is associated with a transient circadian disruption, but repeated administration of chemotherapy results in progressively worse and more enduring rhythm impairments.

And the question you should be asking is, well, why is this important? Why do we care? And the reason we care, the reason this is important, is there are consequences to disrupted circadian rhythm. We know that in patients with dementia, in patients with metastatic colorectal cancer, in older men and older women, there's increased risk of mortality with disrupted rhythms. There's also increased risk of cardiovascular events, cardiovascular disease related mortality, and all cause mortality. So circadian rhythms it turns out are really important. There's so much data

now showing that disrupted rhythms increases risk of all these negative factors, and yet we know how to fix circadian rhythms. We fix rhythms with bright light. Light is the strongest cue that our body has, first of all to know when to go to sleep and when to wake up, but also for strengthening our circadian rhythm.

We also know that bright light has an alerting effect. We know that bright light has been used as a very successful treatment for seasonal effective and non-seasonal depression, for circadian disruptions. And we also know that fatigue has been associated with all these same disorders. But until I started this work, we knew nothing about the association between bright light and fatigue. So I decided it was time to study that and to see would bright light treatment improve fatigue at the same time that it improves the circadian rhythms? Which would then hopefully help in terms of the long-term consequences. But before I could do a bright light treatment study, I had to know how much light are these women being exposed to. The device that we use to study both sleep and light is called an ActiGraph. It looks not that different from an iWatch, maybe a little bigger back then. And it records wrist movement. From that wrist movement, we can estimate wake and sleep and we can also record how much light women, or whoever's wearing it, is being exposed to.

We like to see a bright light exposure of at least what we call 1,000 lux, something very, very bright. And what we found was that in these women in the baseline, so pre-chemo, they were being exposed to an average of under 500 lux a day, which is pretty dark. To give you an example, since we're not all in the same room, it's hard to say, but generally, room light is going to be at around 500 lux. If you go outside on a clear day, which I don't have today, even in southern California it's pouring rain outside. But if you go out on a clear sunny day at noon and look at the horizon, that would be a 100,000 lux, really bright.

So 500 is pretty dark. And you can see that during week one, so the chemo administration week of cycle one and cycle four, their average light exposure was only around 300 lux. They were essentially sitting in the dark. And if we look at the number of minutes above 1,000 lux, it was under an hour before treatment began and about 30 minutes during treatment. So again, dark, they're sitting in the dark. And what we saw was that during the treatment, more fatigue was associated with less light. So the less light there was, the more fatigue the women reported. So that meant the treatment might work. My hypothesis was that because of the side effects of chemotherapy, there was lots of fatigue, more disrupted rhythms. Because women were so fatigued, they spent less time outdoors. Because they were spending less time outdoors. They had less slight exposure, which led to more fatigue and more disrupted rhythms.

And you got into the cycle of less light and more fatigue. And my hypothesis was if we added light, could we break that cycle? Could we improve the fatigue and the rhythms? We were able to study 40 women. You can see the mean age here. They were all diagnosed with stage one to three breast cancer and scheduled to receive at least four cycles of chemotherapy. And they were randomized into either a bright white light group or a dim red light group as our comparison. And they sat in front of the box for 30 minutes every morning upon awakening. So here is one of our participants. Here you see the bright light box that she's sitting in front of. And here you see she's wearing the ActiGraph, which as I said, measures both light and wrist movement for which we could tell wake and sleep.

So what did we find? So these are the fatigue data. Let me explain what you're looking at. The yellow are the women that were exposed to bright white light. The pink are those women that were exposed to dim red light. And we're looking again at cycle one, week one. We're not looking at the baseline here, we're looking at a change from baseline. So this is cycle one, week one, cycle one last week. So in the middle of this study, everyone started out with a regimen of three week cycles. In the middle of the study, the recommendation changed to two week cycles. So we had some women that had two-week cycles and some women that had three-week

cycles. So what I'm showing you here is the last week of whatever their cycle was. So again, cycle one, week one, cycle one, last week, cycle four, week one, cycle four, last week.

And what you see here is again, up is worse, down is better. So during the first week of chemotherapy administration, there was some fatigue. For both groups, it got better during the last week of cycle one. During cycle four, week one, it got even worse for the group getting dim red light, but stayed the same for the bright white light group. And then during the recovery week, it was back to low levels for both groups. So during the chemotherapy administration, the white light group was able to keep the fatigue from getting worse. It didn't get better. My hope was that it would get better, but I thought, you know what? If I can keep fatigue from getting worse, I'll buy that. I'm good with that. And that's what happened. The bright light kept fatigue from getting worse during chemotherapy.

What about its effect on circadian rhythms? Never mind looking at the plot. Basically, what it's saying here is again, during the weeks of chemotherapy, the rhythms got worse in both groups. But for the group being exposed to the bright white light, they were able to return to their baseline levels both during cycle one and cycle four. So again, it didn't help during the chemotherapy administration, but it helped them recover to their normal levels during the other parts of the cycles during the recovery weeks. And again, that was good, I was going to buy that.

So what does a bad rhythm mean? What do I mean? What are we talking about? What does it look like when we talk about good rhythms and bad rhythms? These are the data from one patient who was exposed to dim red light. This is pre chemotherapy. And what you see is a lot of dark little dots means a lot of activity. Very little dots means very little activity. And what you see here is a real rhythm where you see lots of activity during the day, very little activity at night. That's what you want to see. Look what happens during treatment week one, cycle one. And you can see there's much less activity during the day, much more activity at night. And you can see the rhythm here itself is blunted. So this is starting to be a disrupted rhythm. It gets a little better in the recovery week of cycle one. During the treatment week of cycle four, it's even worse than the treatment week of cycle one. And here's during recovery week. Again, a little better but not as good as baseline.

Now I want you to sort of keep these pictures in mind because the next slide is going to show you what it looked like with a bright white light treatment. So again, baseline, treatment week one, you can see the rhythm is much more robust with the light treatment during all these different time periods. So that's what we mean when we talk about a good strong rhythm versus a weak rhythm. Now, as I mentioned, some of my colleagues continued this work and in one of the studies, they looked at survivors with all different types of cancers. It's a small group, it was only 31. Nevertheless, they did the same kind of thing. Here we have baseline, that is the week before they began light treatment. This is a two weeks of light treatment. Four weeks of light treatment, which was the end of intervention. And then three weeks after the end of treatment, what happened? The yellow is the bright white light, the red is the dim red light. Up is better, down is worse.

And you can see again, similar, well, not just similar to what happened during chemo. During chemo, we didn't improve fatigue, we kept it from getting worse. In the survivors here, it actually improved. There was less fatigue at the end of four weeks of treatment and it actually continued a little more and stabilized even after the end of light treatment.

So this suggests that bright white light will prevent deterioration during chemotherapy and results in improvements in survivors, in fatigue, in sleep, in mood. I didn't show you all these data, but we have them, in quality of life and in circadian rhythm disruption. So light's easy, light's cheap, all you have to do is go outside. The best source of bright light is the sun. So what I recommend to all patients with cancer, whether they're experiencing fatigue or not, is go

outside early in the morning and get that bright light exposure. The key here is to not wear sunglasses because the mechanism of the light helping our rhythms is through the eyes. If you wear sunglasses, you're blocking all that bright light. Wear a hat, wear sunscreen, sit in the shade. If you can go for a walk, go for a walk. But get out there.

It's easier in warmer climates where you can sit in your backyard or on your terrace and have your morning tea or coffee outside. But whenever possible, going outside is the best way to get bright light. There are bright light boxes that one can buy. One of the questions that came is, "Do you need a prescription?" You don't. You can get them on Amazon. Although, it's always good to talk to your physician before you start anything and make sure they're following you that everything's okay. But light is easy and cheap. Just go outside.

Now, the other question I had was what happens over time? These first studies only followed women through the end of four cycles of chemotherapy. And the next set of studies that I did, we actually followed them for a year because we know that poor sleep and fatigue will often continue way after the end of chemotherapy. So what are we looking at here? So this is nap time, this is fatigue, this is sleep, and this is depression. The blue is pre chemotherapy, the pink is at the end of cycle four and the yellow is one year later. And basically, the pattern is the same for everything. Oh, I'm sorry. And in this study, not only did we study women with breast cancer, we also studied age matched non-cancer women. And interestingly, the way I matched them is I asked the patients for names of friends that might want volunteer.

And I was really sad when many of the women didn't want to give their friend’s names. Either their friends didn't know that they had breast cancer or they didn't have friends they could volunteer. I thought there's something about the support system here that's missing, which is why Sharsheret is such a wonderful program because it gives women this support. So when the women didn't volunteer names, we found volunteers to age-match them. But anyway, here's the pattern. First of all, before chemotherapy, in all the different symptoms that we looked at, the patients with cancer had worse everything than the non-cancer women. So even before treatment, sleep was worse, fatigue was worse, depression was worse, everything was worse.

At the end of cycle four, everything got worse from baseline for the patients. Obviously, for the non-patients, it stayed the same. So here the non-patients, everything's the same. But for the patients, everything got worse. Nap time is worse, fatigue is worse, depression is worse, sleep is worse. One year later, everything for the patients returned pretty much to baseline levels. But even then, they're still worse than the non-patients because they started out worse. So no matter what time point you look at, patients are still having worse symptoms. And although it gets worse during chemotherapy, it continues to be at bad levels even a year later. And the same was true, same pattern was true for our circadian rhythms. This is showing exactly the same thing.

So to summarize that part of it, circadian activity rhythms become more desynchronized during chemotherapy and repeated administration of chemo results in progressively worse and more enduring rhythm impairments. During chemotherapy, women had very little bright light exposure, which was related to increased fatigue. But increasing the amount of light exposure helped fatigue from getting worse during chemo and rhythm, sleep, quality of life, everything improved both in the patients and in the survivors.

So, light. Light is the strongest, best thing you can do is get lots of light exposure. Now, I'm going to quickly say a little bit about the effect of sleep and fatigue on cognition. Many of you may be aware, back in the early 2000s, the cartoon strip, Funky Winkerbean, did a whole series on breast cancer. And this one it says, "Thanks again for coming with me, Holly. If there's one thing I hate, it's trying to find your car in a parking garage on a chemo brain." We don't use the term chemo brain anymore, but at the time that was being used. And this was sort of exactly what was going on. You probably know this, I don't know that I have to read these things to you.

But these are actual quotes from people. "It's a fuzzy feeling like trying to think through a fog. Seven years out of chemo treatments. I've been telling my oncologist for years that I'm still foggy." And one husband said, "Having just surpassed my 38-year-old wife's two-year anniversary of discovering her cancer, we found that her chemo brain actually worsened." So this is a real phenomenon. Not everybody has it, but there's some women. And it's not just with breast cancer, we know it's now in other cancers. It's not just women, it's also men. But it's this brain fog that makes it hard to think clearly.

And for me, these symptoms are very similar to the symptoms we hear of people that have a lot of sleep deprivation, whether it's because of insomnia or because they're just not spending enough time in bed sleeping. So I wanted to know what happens to these things and how are they related to sleep? So what we're looking at here is this is that same study. Remember baseline, cycle four one year later. This is a questionnaire that is called patient's assessment of own function, and it asks about things like language, fatigue, all different types of how are you doing in your life? And what you see is it's the same pattern. Before chemo, was actually about the same, but between the patients and the non-patients, but it got worse during chemo and it stayed worse even one year later in terms of their ability to function. I'm going to skip this one. Well, maybe not. Let's see.

This is looking at actual neuropsychological testing of their cognition. So how are they doing? And you can see that the patients were doing worse on their neuropsychological test scores than the non-patients. So basically, what these results showed was that at baseline, there was no difference between patients and non-patients, whether we tested them or asked them how they were doing. But in cycle four, the patients reported more deterioration of language and overall cognitive function, and it was worse both compared to their pre-chemo levels and compared to the non-patients, who of course had change. The objective scores at cycle four were no different than during baseline. But, and this is a really important but, the non-patients got better. You expect there to be a learning effect when you test people on their cognition. And the patients didn't show that learning effect, which suggested there is indeed something going on. Even though we didn't see them get worse, they weren't able to have that learning. So it's a real, real thing. And then a year later, the patients continue to report deterioration, but the objective scores match those in the non-patients.

One of the most interesting things I found is we looked to see what was predicting the change in cognition. I thought it was going to be the fatigue and it wasn't. The best predictor of whether someone was going to have cognitive problems was how robust their circadian rhythms were. It all seems to come back down to circadian rhythms. And as I said, that morning light is going to improve your circadian rhythms. What we weren't able to study is whether cognition actually got better with light exposure, that's another study that still needs to be done. But it's certainly these data certainly suggested that that might make a big difference.

So to summarize, women with breast cancer experience fatigue and poor sleep even before they begin their treatment. Poor sleep is related to the fatigue, both before and during chemotherapy. I didn't show you those data, but it's there. All symptoms get worse during chemotherapy, but the more symptoms you start out with, the worse the symptoms are during chemotherapy. And at one year, they return. Those symptoms all returned to pre-chemotherapy levels, but are still worse than in non-patients.

And obviously, this kind of work can't be done without lots of collaborators. I had a lot of funding from NIH, which was wonderful. And mostly, I am most grateful to the women with breast cancer who volunteered their time to be in these studies. Now, that's the end of the official presentation. I just want to throw this up and maybe can we leave this up while we do our questions? Jenna, how do you want to... You want me to just review this?

Jenna Fields:

We are going to send this whole slide deck to everybody you generously offered. So it might be nice to see your face.

Dr. Sonia Ancoli-Israel:

All right. Let me just quickly go through these then because I know there were a lot of questions about insomnia and how do I improve my sleep, and this will answer it. These are like the four cardinal rules for good sleep. And these rules are for people that have trouble sleeping. If you don't have trouble sleeping, none of this applies to you. But the rules are, first of all, reduce your time in bed. You should not be in bed more than about 30 minutes from the amount of time you want to sleep. Most adults need seven to eight hours of sleep, which means you should be in bed at most, eight and a half hours. What many people with insomnia do is they go, "Oh my God, I didn't get any sleep last night. I'm going to go to bed earlier to try to get more sleep."

The more time you spend in bed, the more fragmented your sleep is. The less time you spend in bed, the more consolidated. So eight hours of sleep out of eight and a half hours in bed is much more efficient than eight hours of sleep out of nine or 10 hours in bed. So reduce your time in bed. Rule two, get up at the same time every day. Doesn't matter how much or how little sleep you had, you got to get up at the same time every day. And this has all got to do with our circadian rhythms. Our rhythms need one stable point around which to fluctuate. You can't control what time you fall asleep. You can only control what time you wake up. So you got to get up at the same time every day.

Rule number three: don't go to bed unless you're sleeping. Many people will say, "It's 10 o'clock, I should go to bed." But they're not really ready to go to sleep yet. If you go to bed when you're not sleepy, all that's going to happen is you're going to toss and turn and get frustrated that you're not falling asleep. Listen to your body. When your body says, "I'm sleepy," that's when it's time to go to bed. It doesn't matter what the clock says. And sleepy is different than tired. Tired is, "Ugh." It's like that fatigue. I have no energy. Sleepy is my eyes are closing. That's when you go to bed, when you're feeling sleepy. And if you are in bed and you're not asleep and you're tossing and turning and getting all tense and upset about going to sleep, whether it's the beginning of the night or the middle of the night, get out of bed.

You should never be in bed if you're not asleep. What that means is you don't read in bed, you don't watch TV in bed, you don't have your phone in bed, you don't play on your computer or your phone in bed. You don't pay bills, et cetera, et cetera, et cetera. The bed is only for sleep and sex. And even then I say, if that's not satisfying, don't do that in bed either. I don't care where you do it, but not in bed. So the bed is for only things that are conducive to sleep or actual sleep.

So four cardinal rules. If you follow those rules, your sleep will get better. It's not immediate, a magic bullet. It takes time, but it will get better. If you have questions about this, I can answer more during the question and answer, but I'll stop sharing now, and I hope I left enough time for questions because I think that part's really important for me to be able to answer your questions.

Jenna Fields:

I'm so thrilled you added the cognitive concerns at the end. Thank you so much, Dr. Ancoli-Israel. Really so incredible. And I'm in particular very excited to Google Funky Winkerbean, I don't know about anyone else.

Dr. Sonia Ancoli-Israel:

Oh my God, it went on forever. It was a whole series all about it. It was really wonderful.

Jenna Fields:

Maybe we'll Google it for everybody and send it out with our follow up. So okay, I'm going to dive into questions. We received numerous questions specifically around, we know your research was specific to chemotherapy. But how does it differ for people who had radiation only or surgery only, people who are taking oral chemo, people who don't have chemo breaks? All of that came in and we'd love to hear a little bit about if there's any difference.

Dr. Sonia Ancoli-Israel:

So the studies haven't been done in radiology or any of these other. They've primarily been done with chemotherapy. Just as an aside, the first grant, the very, very first grant I wrote was actually to look at all the stuff during radiation therapy because you have to work with an oncologist to do this work. And the oncologist that was interested in working with me was a radiation oncologist. She left UCSD, I was stuck. I went looking and I found another oncologist who did chemotherapy. And this is how research ends up. But the other studies haven't been done. Nevertheless, it makes no difference. If you have poor sleep, if you have fatigue, it's going to be the same. We now know that even in multiple sclerosis or other disorders where fatigue is an issue, light helps. So although the data were collected with breast cancer and chemotherapy, I think we can generalize pretty much to all cancers and to all types of therapies.

Jenna Fields:

Okay. So for everyone who messaged me, I want to make sure that everybody heard that, that the research that you discussed today, even though it was specific to chemotherapy, can be applied to all different kinds of treatment that each individual has gone through on this webinar. So specifically, we also got some questions around people who have sleep apnea and if it's also the same thing, and I just wanted to bring that up because we got a few questions.

Dr. Sonia Ancoli-Israel:

So sleep apnea, for those who don't know, is a condition where people stop breathing in their sleep. What happens when you fall asleep, is that the airway collapses and they're still trying to breathe but the air just can't get in or out? And then they wake up, the airway opens, they go back to sleep, the airway closes. The gold standard treatment for sleep apnea is something called positive airway pressure. It's a mask connected by hose to a machine that pushes positive pressure through the airway, which acts as a splint to keep the airway open during the night. Patients with sleep apnea clearly have poor sleep.

I see a question just popped up, "Can it get worse during chemo?" It doesn't get worse during chemo. If it's there, it's there and it needs to be treated. What we do think, and this again is a study I try to do, but it was too hard. Chemotherapy pushes women into menopause. Sleep apnea becomes much more common post-menopause. We see it in women, but we see it much more in women who are post-menopausal.

So I think sleep apnea may in fact become more prevalent in cancer patients who have been in women with cancer who have been through chemotherapy. I don't know that for a fact. I tried to do the study by doing a complete sleep study before chemotherapy and then again after. So we could look at that, but we couldn't get the women to agree to have sleep studies before they started their chemotherapy. So I couldn't do that study. So I think that's possible. I think if your bed partner has noticed that you stop breathing, if you snore or if you just suspect this might be an issue, talk to your doctor, get your sleep recorded and get it treated. Because sleep apnea has its own set of negative consequences. Makes sleep much worse, makes you sleepy and fatigued during the day. But if you already had it, having cancer or being treated for cancer won't make it worse. It might start it, but it won't make it worse.

Jenna Fields:

And we actually also received some questions around menopause induced by their treatment. So all of this is interconnected to what you're saying. So that helps answer those questions as well, thank you. We did get a lot of follow up questions around sun exposure, so I'm going to try to get to all of that specifically. So in the morning is the best time. How long? 30 minutes?

Dr. Sonia Ancoli-Israel:

I would say about 30 minutes, yeah. If you're going to use a light box, also 30 minutes. We don't know what the magic number is. Our study was 30 minutes, and so we're going to say 30 minutes. If you did every day for 20 minutes, it might also be okay, but aim for 30 minutes.

Jenna Fields:

Okay. So where does someone get a light box?

Dr. Sonia Ancoli-Israel:

So Amazon sells them. They're all different kinds. At 30 minutes for a light box, the light box should be rated at 10,000 lux. That's what you want to look for. In the olden days, the light boxes were 2,500 lux. That's how bright they are. And then you had to sit in front of them for two hours. But with the 10,000 lux, 30 minutes is enough. But again, please talk to your physician about it first. There's no negative consequence to it. If you have cataracts, it might not work as effectively because remember, the mechanism is through the eyes. Always good, before you start any kind of therapy, even over the counter, is to talk to your doctor about it. But yes, you can buy the boxes on Amazon.

Jenna Fields:

Are you saying this is also a lifelong commitment? We got a lot of questions about duration after treatment, people who are still experiencing that fatigue many years out. What is the commitment to this?

Dr. Sonia Ancoli-Israel:

I'd say as long as you're experiencing the fatigue, you should do it. The point is that if you get the light, the fatigue should get better and then you shouldn't have to keep doing it. And then if your sleep gets worse suddenly, or you suddenly begin feeling fatigued again, you go back to it. But having said that, in general, even for people with no fatigue and no sleep problems, light exposure is really important, just for our general health, having strong rhythms, which is related to good health. This is why there's this big discussion now about standard time versus daylight savings time. Because standard time, you get your morning light. With daylight savings, you don't. And so morning light exposure is important no matter what symptoms or no symptoms you have.

Jenna Fields:

This is so fascinating. And the clouds just parted. It's sunny in LA right now. Am I getting light exposure by sitting here? That was another question.

Dr. Sonia Ancoli-Israel:

That is good a question. If you're sitting by the window, it's not the same. You really have to go outside. Sitting by the window, if there's a lot of sunlight pouring in, is probably better than

nothing, but it's not as good as going outside. And as I said, the sun doesn't even have to be shining. There's much more light even on a cloudy day outside than there is inside.

Jenna Fields:

Okay. So we got a lot of questions around glasses. So a few people did comment that their eyesight has actually worsened because of chemotherapy and they need to wear sunglasses outside. It sounds like you might not be familiar or have seen that before.

Dr. Sonia Ancoli-Israel:

Yeah. Is it that their eyes are more sensitive to light?

Jenna Fields:

That was my understanding from the chat. This came in through the chat box.

Dr. Sonia Ancoli-Israel:

Okay. Yeah, I have not heard that before. All I can say is if you're wearing, yeah, I see someone said, "Way sensitive to light." If you're wearing sunglasses, you're blocking all that morning lights. So if you could go in the shade, wear a really big hat. I don't need you to be looking up at the sun, I just need you to be outside. And even with a big brimmed hat and being in the shade, you're getting that increased light exposure. So do whatever you can to tolerate being outside with no sunglasses.

Jenna Fields:

So someone asked about their prescription glasses-

Dr. Sonia Ancoli-Israel:

That's fine, it's just you don't want them dark. The glasses that get darker, I forget what they're called. When you go outside in your glasses automatically get darker, that's not going to work.

Jenna Fields:

The transition glasses.

Dr. Sonia Ancoli-Israel:

The transition, right. That's going to block-

Jenna Fields:

And blue light glasses.

Dr. Sonia Ancoli-Israel:

I think that's fine. As long as you're not blocking that light.

Jenna Fields:

Okay, okay. And someone asked about a HappyLight as an option. Never heard of it.

Dr. Sonia Ancoli-Israel:

A happy light?

Jenna Fields:

Yeah.

Dr. Sonia Ancoli-Israel:

I have no idea what... Light makes you happy. I don't know what a happy light means. If by that they mean the same type of light boxes that are used for seasonal affective disorder, which is a type of depression, then yes, the light is the exact same light box. And much of our work is based on the work that was done with seasonal... I see. It must be a brand. HappyLight is a light box.

Jenna Fields:

Okay, it's a brand.

Dr. Sonia Ancoli-Israel:

It must be a brand.

Jenna Fields:

Great.

Dr. Sonia Ancoli-Israel:

I'm not going to speak to brands of boxes.

Jenna Fields:

That's fair. Yeah, no endorsement here. And there were some comments also just about other side effects from the chemotherapy playing a role. So churning stomach in the middle of the night causing loss of sleeplessness too. So I don't know if there's any comment you can make about sort of the intersection of other side effects disrupting sleep.

Dr. Sonia Ancoli-Israel:

Yeah. So we didn't study other side effects, but in terms of general good sleep, I think those four cardinal rules still apply. You need to be comfortable. You need a dark sleep environment, has to do with our endogenous melatonin production. And the key is, if you're not sleeping, no matter what the reason, try to get out of bed and leave the bedroom. Induce something that makes you feel more comfortable, that helps you relax, that helps you become sleepy again. And only when you become sleepy again, do you go back to bed. I don't know much else to say about that.

Jenna Fields:

Well, we are actually about to run out of time. So I got through all the questions that came in through the chat, I believe. So really, Dr. Ancoli-Israel, what an incredible presentation. So many tangible takeaways for all of us. I'm thrilled that we were able to do this today.

So I just want to thank everyone for coming. We are going to put the survey for today's webinar in the chat box now. So please fill it out. This is how we come up with topics in the future. So please fill it out, let us know what worked, how we can do more topics like this and what you're interested in. As a reminder, we are going to do our special bonus breakout for our Embrace community in just a minute for people who are facing metastatic breast and advanced ovarian cancer. So stay on, hang tight, we'll be with you in a second.

Never forget that Sharsheret social workers and genetic counselor are here for you and your loved ones, for free support and to navigate this journey. So please don't hesitate to contact us. We are putting that information in the chat. And I want to thank our incredible sponsors, Merck, Gilead, and the Cooperative Agreement, DP19-1906, from the Centers for Disease Control and Prevention. And please save the date for our next two webinars that are coming up. Sharsheret in the kitchen's, 6 Minute Dishes with Karen Nochimowski, and Sharsheret's 4th Annual UNSeder in preparation for Passover, on March 30th. Thank you, everybody, again.

Dr. Sonia Ancoli-Israel:

Before everyone goes, I just want to say, I see there are a lot of questions that I didn't get to about sleep in general. I am happy to come back if you want me to, not to talk about cancer and sleep, but just to talk about sleep, to talk about insomnia, to talk about treatments, to talk about what we can do, which would get at many of those questions. So you and I can talk offline, but I would be delighted to come back again someday if you would like me to.

Jenna Fields:

We will absolutely make that happen. I can guarantee it. So thank you so much Dr. Ancoli-Israel for that offer. And again, in our survey evaluation, please put any specific questions that you have about sleep that maybe can help guide that future presentation.

Okay, I'm going to just ask everybody who is still on, it looks like we have about 68 participants that are still on the webinar. I'm going to kindly ask anyone who is not a part of the Embrace community, people who are facing metastatic breast and advanced ovarian cancer to log off so that we can-

Dr. Sonia Ancoli-Israel:

I will be right back.

Jenna Fields:

Absolutely. Feel free to take a break. Thank you so much for everybody.

About Sharsheret

Sharsheret, Hebrew for “chain”, is a national non-profit organization, improves the lives of Jewish women and families living with or at increased genetic risk for breast or ovarian cancer through personalized support and saves lives through educational outreach.

With four offices (California, Florida, Illinois, and New Jersey), Sharsheret serves 150,000 women, families, health care professionals, community leaders, and students, in all 50 states. Sharsheret creates a safe community for women facing breast cancer and ovarian cancer and their families at every stage of life and at every stage of cancer - from before diagnosis, during treatment and into the survivorship years. While our expertise is focused on young women and Jewish families, more than 15% of those we serve are not Jewish. All Sharsheret programs serve all women and men.

As a premier organization for psychosocial support, Sharsheret’s Executive Director chairs the Federal Advisory Committee on Breast Cancer in Young Women, Sharsheret works closely with

the Centers for Disease Control and Prevention (CDC), and participates in psychosocial research studies and evaluations with major cancer centers, including Georgetown University Lombardi Comprehensive Cancer Center. Sharsheret is accredited by the Better Business Bureau and has earned a 4-star rating from Charity Navigator for four consecutive years.

Sharsheret offers the following national programs:

The Link Program

Peer Support Network, connecting women newly diagnosed or at high risk of developing breast cancer one-on-one with others who share similar diagnoses and experiences

- Embrace™, supporting women living with advanced breast cancer
- Genetics for Life®, addressing hereditary breast and ovarian cancer
- Thriving Again®, providing individualized support, education, and survivorship plans for young breast cancer survivors
- Busy Box®, for young parents facing breast cancer
- Best Face Forward®, addressing the cosmetic side effects of treatment
- Family Focus®, providing resources and support for caregivers and family members
- Ovarian Cancer Program, tailored resources and support for young Jewish women and families facing ovarian cancer
- Sharsheret Supports™, developing local support groups and programs

Education and Outreach Programs

- Health Care Symposia, on issues unique to younger women facing breast cancer
- Sharsheret on Campus, outreach and education to students on campus
- Sharsheret Educational Resource Booklet Series, culturally-relevant publications for Jewish women and their families and healthcare Professionals

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