

WEBVTT

NOTE duration:"00:56:38"

NOTE recognizability:0.861

NOTE language:en-us

NOTE Confidence: 0.833060248

00:00:00.000 --> 00:00:02.905 My name is Andrea Zentrack and I'm

NOTE Confidence: 0.833060248

00:00:02.905 --> 00:00:05.151 an assistant professor at Yale

NOTE Confidence: 0.833060248

00:00:05.151 --> 00:00:06.995 University School of Medicine.

NOTE Confidence: 0.833060248

00:00:07.000 --> 00:00:10.395 And welcome to yet another edition of

NOTE Confidence: 0.833060248

00:00:10.395 --> 00:00:13.600 the Joint Sleep Conference between

NOTE Confidence: 0.833060248

00:00:13.600 --> 00:00:15.220 our programs in the Northeast.

NOTE Confidence: 0.833060248

00:00:15.220 --> 00:00:18.100 I think we've grown from 2.

NOTE Confidence: 0.833060248

00:00:18.100 --> 00:00:22.178 Two programs to 6. And I don't know.

NOTE Confidence: 0.833060248

00:00:22.178 --> 00:00:23.900 Just say that we have an

NOTE Confidence: 0.833060248

00:00:23.971 --> 00:00:25.750 outstanding speaker today,

NOTE Confidence: 0.833060248

00:00:25.750 --> 00:00:27.675 and so during the talk I'll ask

NOTE Confidence: 0.833060248

00:00:27.675 --> 00:00:29.570 you that you mute yourselves.

NOTE Confidence: 0.833060248

00:00:29.570 --> 00:00:32.291 If you have a question or

NOTE Confidence: 0.833060248

00:00:32.291 --> 00:00:33.546 wanted to make him comment,
NOTE Confidence: 0.833060248

00:00:33.550 --> 00:00:37.078 please do so in the chat.
NOTE Confidence: 0.833060248

00:00:37.080 --> 00:00:40.002 In the chat is where also
NOTE Confidence: 0.833060248

00:00:40.002 --> 00:00:41.950 instructions for obtaining CME
NOTE Confidence: 0.833060248

00:00:42.045 --> 00:00:45.177 credit for today's talk will appear.
NOTE Confidence: 0.833060248

00:00:45.180 --> 00:00:46.632 And so if you are not
NOTE Confidence: 0.833060248

00:00:46.632 --> 00:00:47.600 registered with the LCM,
NOTE Confidence: 0.833060248

00:00:47.600 --> 00:00:50.029 you would have to do that first.
NOTE Confidence: 0.833060248

00:00:50.030 --> 00:00:52.724 And you can receive credit for
NOTE Confidence: 0.833060248

00:00:52.724 --> 00:00:55.047 attending the session 15 minutes
NOTE Confidence: 0.833060248

00:00:55.047 --> 00:00:56.960 prior to the end or 15 minutes
NOTE Confidence: 0.833060248

00:00:56.960 --> 00:00:58.450 after the end of the session.
NOTE Confidence: 0.871507492

00:01:00.800 --> 00:01:03.260 And so, without further ado,
NOTE Confidence: 0.871507492

00:01:03.260 --> 00:01:04.880 I wanted to introduce the
NOTE Confidence: 0.871507492

00:01:04.880 --> 00:01:06.176 very special speaker today.
NOTE Confidence: 0.871604843333333

00:01:08.190 --> 00:01:10.787 A friend of mine and a colleague

NOTE Confidence: 0.871604843333333
00:01:10.787 --> 00:01:12.865 of mine doctor Sabera Abbott,
NOTE Confidence: 0.871604843333333
00:01:12.865 --> 00:01:15.535 and so Doctor Abbott is an
NOTE Confidence: 0.871604843333333
00:01:15.535 --> 00:01:17.769 assistant professor of neurology
NOTE Confidence: 0.871604843333333
00:01:17.769 --> 00:01:20.049 at the Northwestern Medicine.
NOTE Confidence: 0.871604843333333
00:01:20.050 --> 00:01:22.948 And in Chicago, and I know Sabra,
NOTE Confidence: 0.871604843333333
00:01:22.950 --> 00:01:25.698 since our residency times and neurology
NOTE Confidence: 0.871604843333333
00:01:25.698 --> 00:01:28.545 back in Beth Israel Deaconess when
NOTE Confidence: 0.871604843333333
00:01:28.545 --> 00:01:29.955 I did my detour through neurology
NOTE Confidence: 0.871604843333333
00:01:29.955 --> 00:01:31.823 before I went to a pulmonary critical
NOTE Confidence: 0.871604843333333
00:01:31.823 --> 00:01:33.208 care and then eventually sleep,
NOTE Confidence: 0.871604843333333
00:01:33.210 --> 00:01:33.987 and so little,
NOTE Confidence: 0.871604843333333
00:01:33.987 --> 00:01:36.140 did we know we started in the same
NOTE Confidence: 0.871604843333333
00:01:36.140 --> 00:01:38.388 place and ended up in the same domain?
NOTE Confidence: 0.871604843333333
00:01:38.390 --> 00:01:40.945 And so I'm really excited to have
NOTE Confidence: 0.871604843333333
00:01:40.945 --> 00:01:43.226 her talk to us today because
NOTE Confidence: 0.871604843333333

00:01:43.226 --> 00:01:45.506 she is an outstanding physician,
NOTE Confidence: 0.8716048433333333

00:01:45.510 --> 00:01:46.380 incredible scientist,
NOTE Confidence: 0.8716048433333333

00:01:46.380 --> 00:01:49.520 and the and a a great clinician
NOTE Confidence: 0.8716048433333333

00:01:49.520 --> 00:01:52.170 who cares about her patients.
NOTE Confidence: 0.8716048433333333

00:01:52.170 --> 00:01:53.918 But aside from that,
NOTE Confidence: 0.8716048433333333

00:01:53.918 --> 00:01:56.103 she started her academic career
NOTE Confidence: 0.8716048433333333

00:01:56.103 --> 00:01:57.979 at Carleton College,
NOTE Confidence: 0.8716048433333333

00:01:57.980 --> 00:02:00.647 where she received the BA in Psychology
NOTE Confidence: 0.8716048433333333

00:02:00.650 --> 00:02:02.204 and then moved on to University
NOTE Confidence: 0.8716048433333333

00:02:02.204 --> 00:02:03.780 of Illinois at Urbana Champaign,
NOTE Confidence: 0.8716048433333333

00:02:03.780 --> 00:02:05.780 where she got her masters,
NOTE Confidence: 0.8716048433333333

00:02:05.780 --> 00:02:08.276 followed by a PhD in Molecular
NOTE Confidence: 0.8716048433333333

00:02:08.276 --> 00:02:09.524 and integrative Physiology,
NOTE Confidence: 0.8716048433333333

00:02:09.530 --> 00:02:11.777 and then got her MD there before
NOTE Confidence: 0.8716048433333333

00:02:11.777 --> 00:02:14.309 moving on to Beth Israel Deaconess
NOTE Confidence: 0.8716048433333333

00:02:14.310 --> 00:02:16.278 Medical Center with Harvard,

NOTE Confidence: 0.871604843333333

00:02:16.278 --> 00:02:18.246 where she got her.

NOTE Confidence: 0.871604843333333

00:02:18.250 --> 00:02:18.898 Neurology residency,

NOTE Confidence: 0.871604843333333

00:02:18.898 --> 00:02:21.166 where she was also a chief resident,

NOTE Confidence: 0.871604843333333

00:02:21.170 --> 00:02:21.751 and.

NOTE Confidence: 0.871604843333333

00:02:21.751 --> 00:02:24.656 Completed her clinical sleep fellowship

NOTE Confidence: 0.871604843333333

00:02:24.656 --> 00:02:29.158 back in Chicago at Northwestern and

NOTE Confidence: 0.871604843333333

00:02:29.158 --> 00:02:35.026 so Sabra is a prolific academician.

NOTE Confidence: 0.871604843333333

00:02:35.030 --> 00:02:38.068 She does research and has ROI and

NOTE Confidence: 0.871604843333333

00:02:38.068 --> 00:02:40.929 program grants that she is a Co

NOTE Confidence: 0.871604843333333

00:02:40.929 --> 00:02:45.138 investigator on and she's old so

NOTE Confidence: 0.871604843333333

00:02:45.138 --> 00:02:49.473 published dozens of papers and.

NOTE Confidence: 0.871604843333333

00:02:49.480 --> 00:02:53.146 Chapters that are read throughout the

NOTE Confidence: 0.871604843333333

00:02:53.146 --> 00:02:57.850 world and are also appear in doctor

NOTE Confidence: 0.871604843333333

00:02:57.850 --> 00:03:00.174 Kriegers principles and practice,

NOTE Confidence: 0.871604843333333

00:03:00.174 --> 00:03:00.950 Sleep Medicine,

NOTE Confidence: 0.871604843333333

00:03:00.950 --> 00:03:03.830 and so just looking at her first publication,
NOTE Confidence: 0.8716048433333333

00:03:03.830 --> 00:03:05.839 it sort of gives it away of
NOTE Confidence: 0.8716048433333333

00:03:05.839 --> 00:03:07.774 what her passion is and her
NOTE Confidence: 0.8716048433333333

00:03:07.774 --> 00:03:09.510 first publication back in 2003,
NOTE Confidence: 0.8716048433333333

00:03:09.510 --> 00:03:11.070 and journal Neuroscience is
NOTE Confidence: 0.8716048433333333

00:03:11.070 --> 00:03:12.240 circadian clock controlled
NOTE Confidence: 0.8716048433333333

00:03:12.240 --> 00:03:13.959 regulation of cyclic GMP protein
NOTE Confidence: 0.8716048433333333

00:03:13.959 --> 00:03:15.717 kinase G in an external domain,
NOTE Confidence: 0.8716048433333333

00:03:15.720 --> 00:03:19.140 and so she is a.
NOTE Confidence: 0.81877606945

00:03:21.490 --> 00:03:22.922 Aficionado of circadian clock.
NOTE Confidence: 0.81877606945

00:03:22.922 --> 00:03:26.012 And that's what she's going to talk to us
NOTE Confidence: 0.81877606945

00:03:26.012 --> 00:03:28.063 today about keeping time in the clinic.
NOTE Confidence: 0.81877606945

00:03:28.070 --> 00:03:30.018 Understanding and managing the
NOTE Confidence: 0.81877606945

00:03:30.018 --> 00:03:31.966 circadian patient from bedside
NOTE Confidence: 0.81877606945

00:03:31.970 --> 00:03:34.730 to from bench to bedside. And so.
NOTE Confidence: 0.81877606945

00:03:34.730 --> 00:03:36.950 I'm looking forward to the stock.

NOTE Confidence: 0.81877606945

00:03:36.950 --> 00:03:38.868 Thank you so much for being with

NOTE Confidence: 0.81877606945

00:03:38.868 --> 00:03:40.727 us Zebra and let's get to it.

NOTE Confidence: 0.875420375833334

00:03:41.750 --> 00:03:43.850 Great, well thank you Andre for

NOTE Confidence: 0.875420375833334

00:03:43.850 --> 00:03:45.726 that very very kind introduction

NOTE Confidence: 0.875420375833334

00:03:45.726 --> 00:03:48.519 and I too am very pleased that

NOTE Confidence: 0.875420375833334

00:03:48.519 --> 00:03:50.829 despite losing you as a neurologist,

NOTE Confidence: 0.875420375833334

00:03:50.830 --> 00:03:55.694 our paths continued across along the way so.

NOTE Confidence: 0.875420375833334

00:03:55.700 --> 00:03:57.564 It was in one of our discussions that

NOTE Confidence: 0.875420375833334

00:03:57.564 --> 00:03:59.289 Andre and I actually had about this

NOTE Confidence: 0.875420375833334

00:03:59.289 --> 00:04:01.123 talk where he made what I thought

NOTE Confidence: 0.875420375833334

00:04:01.123 --> 00:04:02.538 was a very insightful comment.

NOTE Confidence: 0.875420375833334

00:04:02.540 --> 00:04:03.730 Which and I don't know if you

NOTE Confidence: 0.875420375833334

00:04:03.730 --> 00:04:04.240 even remember this,

NOTE Confidence: 0.875420375833334

00:04:04.240 --> 00:04:06.676 but you said that circadian rhythms are

NOTE Confidence: 0.875420375833334

00:04:06.676 --> 00:04:08.860 like the neurology of Sleep Medicine,

NOTE Confidence: 0.875420375833334

00:04:08.860 --> 00:04:11.016 and I think that is very true
NOTE Confidence: 0.875420375833334

00:04:11.016 --> 00:04:11.940 in some respects.
NOTE Confidence: 0.875420375833334

00:04:11.940 --> 00:04:13.806 I think that circadian rhythms and
NOTE Confidence: 0.875420375833334

00:04:13.806 --> 00:04:16.240 neurology are both a little intimidating.
NOTE Confidence: 0.875420375833334

00:04:16.240 --> 00:04:17.584 When you first experience
NOTE Confidence: 0.875420375833334

00:04:17.584 --> 00:04:19.264 them and 1st approach them.
NOTE Confidence: 0.875420375833334

00:04:19.270 --> 00:04:20.920 But once you actually understand
NOTE Confidence: 0.875420375833334

00:04:20.920 --> 00:04:22.240 the logic behind them,
NOTE Confidence: 0.875420375833334

00:04:22.240 --> 00:04:24.410 they can be incredibly gratifying.
NOTE Confidence: 0.875420375833334

00:04:24.410 --> 00:04:26.986 And really a great field to be in.
NOTE Confidence: 0.875420375833334

00:04:26.990 --> 00:04:27.262 Granted,
NOTE Confidence: 0.875420375833334

00:04:27.262 --> 00:04:29.710 I have the bias that I am a neurologist
NOTE Confidence: 0.875420375833334

00:04:29.770 --> 00:04:31.870 who specializes in circadian rhythms,
NOTE Confidence: 0.875420375833334

00:04:31.870 --> 00:04:33.514 so maybe I am taking that
NOTE Confidence: 0.875420375833334

00:04:33.514 --> 00:04:34.336 a little personally,
NOTE Confidence: 0.875420375833334

00:04:34.340 --> 00:04:36.032 but my overall goal today is

NOTE Confidence: 0.875420375833334
00:04:36.032 --> 00:04:38.056 really to try to make circadian
NOTE Confidence: 0.875420375833334
00:04:38.056 --> 00:04:40.126 biology a little less intimidating
NOTE Confidence: 0.875420375833334
00:04:40.126 --> 00:04:42.250 for everybody in the audience,
NOTE Confidence: 0.875420375833334
00:04:42.250 --> 00:04:44.090 and I know we've got a wide range
NOTE Confidence: 0.875420375833334
00:04:44.090 --> 00:04:45.726 of experience just based on some of
NOTE Confidence: 0.875420375833334
00:04:45.726 --> 00:04:47.400 the names that I've seen coming in
NOTE Confidence: 0.875420375833334
00:04:47.400 --> 00:04:48.894 in terms of how comfortable people
NOTE Confidence: 0.875420375833334
00:04:48.894 --> 00:04:50.528 may be with circadian biology,
NOTE Confidence: 0.875420375833334
00:04:50.528 --> 00:04:52.032 but hopefully everybody will
NOTE Confidence: 0.875420375833334
00:04:52.032 --> 00:04:54.152 walk away just feeling a little
NOTE Confidence: 0.875420375833334
00:04:54.152 --> 00:04:55.697 bit better about the topic.
NOTE Confidence: 0.875420375833334
00:04:55.700 --> 00:04:57.180 I'm gonna start off.
NOTE Confidence: 0.875420375833334
00:04:57.180 --> 00:04:59.030 With just a general overview
NOTE Confidence: 0.875420375833334
00:04:59.030 --> 00:05:00.759 of circadian rhythms,
NOTE Confidence: 0.875420375833334
00:05:00.760 --> 00:05:02.134 just to make sure everybody is
NOTE Confidence: 0.875420375833334

00:05:02.134 --> 00:05:03.780 starting off on the same page and
NOTE Confidence: 0.875420375833334

00:05:03.780 --> 00:05:05.355 then gonna walk through a couple of
NOTE Confidence: 0.875420375833334

00:05:05.405 --> 00:05:06.920 case examples of patients who've
NOTE Confidence: 0.875420375833334

00:05:06.920 --> 00:05:08.435 come through the circadian clinic
NOTE Confidence: 0.875420375833334

00:05:08.440 --> 00:05:10.760 with me both going through them as an
NOTE Confidence: 0.875420375833334

00:05:10.760 --> 00:05:12.818 illustration of sort of how to manage
NOTE Confidence: 0.875420375833334

00:05:12.818 --> 00:05:14.740 the bread and butter circadian patient,
NOTE Confidence: 0.875420375833334

00:05:14.740 --> 00:05:16.707 but also some tips and tricks that
NOTE Confidence: 0.875420375833334

00:05:16.707 --> 00:05:18.189 we've taken from the research
NOTE Confidence: 0.875420375833334

00:05:18.189 --> 00:05:20.205 domain to try to help manage them.
NOTE Confidence: 0.875420375833334

00:05:20.210 --> 00:05:21.161 And then lastly,
NOTE Confidence: 0.875420375833334

00:05:21.161 --> 00:05:23.380 I'll wrap up with a summary of
NOTE Confidence: 0.875420375833334

00:05:23.452 --> 00:05:25.542 a research project we recently
NOTE Confidence: 0.875420375833334

00:05:25.542 --> 00:05:27.910 completed that was really based on.
NOTE Confidence: 0.875420375833334

00:05:27.910 --> 00:05:29.320 Some of the insights that we
NOTE Confidence: 0.875420375833334

00:05:29.320 --> 00:05:30.730 had from seeing these patients.

NOTE Confidence: 0.875420375833334
00:05:30.730 --> 00:05:33.718 So without further ado.
NOTE Confidence: 0.875420375833334
00:05:33.720 --> 00:05:35.736 First step is to get the slides to advance.
NOTE Confidence: 0.875420375833334
00:05:35.740 --> 00:05:38.980 There we go, so I have no disclosures.
NOTE Confidence: 0.875420375833334
00:05:38.980 --> 00:05:40.160 And as Andre said,
NOTE Confidence: 0.875420375833334
00:05:40.160 --> 00:05:41.930 the CME information is also gonna
NOTE Confidence: 0.875420375833334
00:05:41.993 --> 00:05:43.295 be in the chat for you,
NOTE Confidence: 0.875420375833334
00:05:43.300 --> 00:05:45.610 but it's on the screen here.
NOTE Confidence: 0.875420375833334
00:05:45.610 --> 00:05:47.386 So just to get things started,
NOTE Confidence: 0.875420375833334
00:05:47.390 --> 00:05:49.086 I always want to make sure that we
NOTE Confidence: 0.875420375833334
00:05:49.086 --> 00:05:50.593 kind of talk through the general
NOTE Confidence: 0.875420375833334
00:05:50.593 --> 00:05:52.507 concept of what do we even mean
NOTE Confidence: 0.875420375833334
00:05:52.507 --> 00:05:54.072 when we're talking about circadian
NOTE Confidence: 0.875420375833334
00:05:54.072 --> 00:05:56.312 rhythms and they're in general all
NOTE Confidence: 0.875420375833334
00:05:56.312 --> 00:05:58.767 of the physiological processes that
NOTE Confidence: 0.875420375833334
00:05:58.767 --> 00:06:02.089 we have that have a near 24 hour
NOTE Confidence: 0.875420375833334

00:06:02.089 --> 00:06:04.590 or about a day property to them.
NOTE Confidence: 0.875420375833334

00:06:04.590 --> 00:06:06.886 And I think it's easiest to understand
NOTE Confidence: 0.875420375833334

00:06:06.886 --> 00:06:09.203 these if we think about them from
NOTE Confidence: 0.875420375833334

00:06:09.203 --> 00:06:11.690 the idea of our sleep wake rhythms,
NOTE Confidence: 0.875420375833334

00:06:11.690 --> 00:06:13.982 because those definitely have a daily
NOTE Confidence: 0.875420375833334

00:06:13.982 --> 00:06:16.537 occurrence to them, and so I've.
NOTE Confidence: 0.875420375833334

00:06:16.537 --> 00:06:19.820 Plotted out here just a very idealized
NOTE Confidence: 0.875420375833334

00:06:19.919 --> 00:06:21.626 sleep wake schedule of somebody,
NOTE Confidence: 0.875420375833334

00:06:21.626 --> 00:06:23.460 and so we've got daytime over here.
NOTE Confidence: 0.875420375833334

00:06:23.460 --> 00:06:24.255 On the left.
NOTE Confidence: 0.875420375833334

00:06:24.255 --> 00:06:25.580 We've got night time here,
NOTE Confidence: 0.864063417692308

00:06:25.580 --> 00:06:27.309 and these black bars are the sleep
NOTE Confidence: 0.864063417692308

00:06:27.309 --> 00:06:29.119 periods for each of these individuals,
NOTE Confidence: 0.864063417692308

00:06:29.120 --> 00:06:30.680 or for this one individual.
NOTE Confidence: 0.864063417692308

00:06:30.680 --> 00:06:33.560 And you can see that in this 24 hour
NOTE Confidence: 0.864063417692308

00:06:33.560 --> 00:06:35.160 environment every day they go to bed at

NOTE Confidence: 0.864063417692308
00:06:35.207 --> 00:06:36.863 the same time wake up at the same time,
NOTE Confidence: 0.864063417692308
00:06:36.870 --> 00:06:39.110 and they're generally sleeping when
NOTE Confidence: 0.864063417692308
00:06:39.110 --> 00:06:41.354 it's dark out, but the question?
NOTE Confidence: 0.864063417692308
00:06:41.354 --> 00:06:43.440 The first one that comes up is,
NOTE Confidence: 0.864063417692308
00:06:43.440 --> 00:06:45.114 is this something that is simply
NOTE Confidence: 0.864063417692308
00:06:45.114 --> 00:06:46.960 a response to the environment?
NOTE Confidence: 0.864063417692308
00:06:46.960 --> 00:06:48.090 So the sun goes down.
NOTE Confidence: 0.864063417692308
00:06:48.090 --> 00:06:49.666 So we decide maybe we'll go to sleep.
NOTE Confidence: 0.864063417692308
00:06:49.670 --> 00:06:51.476 The sun comes up, we wake up.
NOTE Confidence: 0.864063417692308
00:06:51.480 --> 00:06:53.125 Or is this something that's
NOTE Confidence: 0.864063417692308
00:06:53.125 --> 00:06:54.770 actually intrinsic to your biology?
NOTE Confidence: 0.864063417692308
00:06:54.770 --> 00:06:56.890 Is this something that would
NOTE Confidence: 0.864063417692308
00:06:56.890 --> 00:06:59.010 happen even outside of that?
NOTE Confidence: 0.864063417692308
00:06:59.010 --> 00:07:00.630 Twenty that light,
NOTE Confidence: 0.864063417692308
00:07:00.630 --> 00:07:01.710 dark environment,
NOTE Confidence: 0.864063417692308

00:07:01.710 --> 00:07:03.726 and so several researchers set out
NOTE Confidence: 0.864063417692308

00:07:03.726 --> 00:07:06.069 to try to answer this question.
NOTE Confidence: 0.864063417692308

00:07:06.070 --> 00:07:08.324 One of them was the pair of
NOTE Confidence: 0.864063417692308

00:07:08.324 --> 00:07:09.849 Nathaniel Kleitman and his
NOTE Confidence: 0.864063417692308

00:07:09.849 --> 00:07:11.809 graduate student Bruce Richardson.
NOTE Confidence: 0.864063417692308

00:07:11.810 --> 00:07:13.574 And they did an experiment where
NOTE Confidence: 0.864063417692308

00:07:13.574 --> 00:07:15.464 they went into Mammoth Cave in
NOTE Confidence: 0.864063417692308

00:07:15.464 --> 00:07:17.104 Kentucky and monitored their sleep.
NOTE Confidence: 0.864063417692308

00:07:17.110 --> 00:07:19.460 Behaviors in the absence of
NOTE Confidence: 0.864063417692308

00:07:19.460 --> 00:07:21.810 those light dark time cues,
NOTE Confidence: 0.864063417692308

00:07:21.810 --> 00:07:22.704 and then similarly,
NOTE Confidence: 0.864063417692308

00:07:22.704 --> 00:07:24.790 you're going to ask off who is
NOTE Confidence: 0.864063417692308

00:07:24.852 --> 00:07:26.757 really considered kind of the
NOTE Confidence: 0.864063417692308

00:07:26.757 --> 00:07:28.662 father of human circadian biology,
NOTE Confidence: 0.864063417692308

00:07:28.670 --> 00:07:30.962 underwent a series of bunker experiments
NOTE Confidence: 0.864063417692308

00:07:30.962 --> 00:07:33.221 in Germany where he took subjects

NOTE Confidence: 0.864063417692308
00:07:33.221 --> 00:07:35.538 and put them into this bunker here
NOTE Confidence: 0.864063417692308
00:07:35.538 --> 00:07:37.913 and then monitored their behavior in
NOTE Confidence: 0.864063417692308
00:07:37.913 --> 00:07:40.526 the absence of those external time cues,
NOTE Confidence: 0.864063417692308
00:07:40.526 --> 00:07:42.434 I encourage you to go read
NOTE Confidence: 0.864063417692308
00:07:42.434 --> 00:07:43.570 these original papers,
NOTE Confidence: 0.864063417692308
00:07:43.570 --> 00:07:45.786 but I just took a small excerpt from
NOTE Confidence: 0.864063417692308
00:07:45.786 --> 00:07:48.148 them here and you can see he describes.
NOTE Confidence: 0.864063417692308
00:07:48.150 --> 00:07:50.246 There's a locked double door at the entrance
NOTE Confidence: 0.864063417692308
00:07:50.246 --> 00:07:52.515 in the small room between the two doors.
NOTE Confidence: 0.864063417692308
00:07:52.520 --> 00:07:55.121 An ice box serves for a first storage of
NOTE Confidence: 0.864063417692308
00:07:55.121 --> 00:07:57.556 urine samples through the same channel.
NOTE Confidence: 0.864063417692308
00:07:57.560 --> 00:07:59.552 We supply the subject with fresh
NOTE Confidence: 0.864063417692308
00:07:59.552 --> 00:08:01.216 food and other necessities such
NOTE Confidence: 0.864063417692308
00:08:01.216 --> 00:08:03.134 as one bottle of endex beer daily.
NOTE Confidence: 0.864063417692308
00:08:03.140 --> 00:08:05.100 So remember that when you're
NOTE Confidence: 0.864063417692308

00:08:05.100 --> 00:08:07.060 writing your Irbs include beer.
NOTE Confidence: 0.864063417692308

00:08:07.060 --> 00:08:09.856 If you're doing German research studies,
NOTE Confidence: 0.864063417692308

00:08:09.860 --> 00:08:11.768 but what I thought was really
NOTE Confidence: 0.864063417692308

00:08:11.768 --> 00:08:13.389 insightful about this was that
NOTE Confidence: 0.864063417692308

00:08:13.389 --> 00:08:15.093 he also participated in his own
NOTE Confidence: 0.864063417692308

00:08:15.093 --> 00:08:17.219 studies as a research participant,
NOTE Confidence: 0.864063417692308

00:08:17.220 --> 00:08:20.020 and so this is actually a plot of his own.
NOTE Confidence: 0.864063417692308

00:08:20.020 --> 00:08:22.610 Sleep wake rhythms when he was in
NOTE Confidence: 0.864063417692308

00:08:22.610 --> 00:08:24.838 that bunker and so you can see these
NOTE Confidence: 0.864063417692308

00:08:24.838 --> 00:08:26.598 black lines here are when he was
NOTE Confidence: 0.864063417692308

00:08:26.598 --> 00:08:28.588 going to bed and waking up each night
NOTE Confidence: 0.864063417692308

00:08:28.588 --> 00:08:30.513 as well as plotting the rhythms of
NOTE Confidence: 0.864063417692308

00:08:30.513 --> 00:08:34.698 his urine output during that time.
NOTE Confidence: 0.864063417692308

00:08:34.700 --> 00:08:36.842 He included in the paper this
NOTE Confidence: 0.864063417692308

00:08:36.842 --> 00:08:38.900 comment that from the knowledge
NOTE Confidence: 0.864063417692308

00:08:38.900 --> 00:08:40.580 of animal experiments,

NOTE Confidence: 0.864063417692308
00:08:40.580 --> 00:08:42.673 I was convinced that I had a
NOTE Confidence: 0.864063417692308
00:08:42.673 --> 00:08:44.200 period shorter than 24 hours,
NOTE Confidence: 0.864063417692308
00:08:44.200 --> 00:08:46.865 which had previously been seen
NOTE Confidence: 0.864063417692308
00:08:46.865 --> 00:08:48.997 in many nocturnal animals,
NOTE Confidence: 0.864063417692308
00:08:49.000 --> 00:08:51.000 such as mice for example.
NOTE Confidence: 0.864063417692308
00:08:51.000 --> 00:08:53.020 But he said when I was released on day 10,
NOTE Confidence: 0.864063417692308
00:08:53.020 --> 00:08:54.791 I was therefore highly surprised to be
NOTE Confidence: 0.864063417692308
00:08:54.791 --> 00:08:57.197 told that my last waking up time was 3:00 PM,
NOTE Confidence: 0.864063417692308
00:08:57.200 --> 00:08:59.120 and so again an example that even the
NOTE Confidence: 0.864063417692308
00:08:59.120 --> 00:09:01.003 best minds in the world sometimes are
NOTE Confidence: 0.864063417692308
00:09:01.003 --> 00:09:02.951 hypothesis are wrong and we have to
NOTE Confidence: 0.864063417692308
00:09:02.951 --> 00:09:04.855 sort of change our thinking about things.
NOTE Confidence: 0.864063417692308
00:09:04.860 --> 00:09:07.396 But I think also just a very interesting,
NOTE Confidence: 0.864063417692308
00:09:07.400 --> 00:09:09.630 interesting description of these first
NOTE Confidence: 0.864063417692308
00:09:09.630 --> 00:09:11.860 experiments trying to figure out
NOTE Confidence: 0.913842297272727

00:09:11.929 --> 00:09:13.654 what actually happens to humans
NOTE Confidence: 0.913842297272727

00:09:13.654 --> 00:09:16.079 in the absence of these time cues.
NOTE Confidence: 0.913842297272727

00:09:16.080 --> 00:09:17.478 So as you can see here,
NOTE Confidence: 0.913842297272727

00:09:17.480 --> 00:09:19.895 if we took our idealized human here,
NOTE Confidence: 0.913842297272727

00:09:19.900 --> 00:09:21.875 put them in an environment
NOTE Confidence: 0.913842297272727

00:09:21.875 --> 00:09:24.240 devoid of time cues each day,
NOTE Confidence: 0.913842297272727

00:09:24.240 --> 00:09:26.893 most humans get a little bit later
NOTE Confidence: 0.913842297272727

00:09:26.893 --> 00:09:29.648 and a little bit later each day.
NOTE Confidence: 0.913842297272727

00:09:29.650 --> 00:09:32.020 These behaviors are primarily regulated
NOTE Confidence: 0.913842297272727

00:09:32.020 --> 00:09:34.390 by the Super cosmetic nucleus,
NOTE Confidence: 0.913842297272727

00:09:34.390 --> 00:09:36.318 and so I have a cross section here.
NOTE Confidence: 0.913842297272727

00:09:36.320 --> 00:09:39.528 This is a coronal section through a human
NOTE Confidence: 0.913842297272727

00:09:39.528 --> 00:09:42.267 hypothalamus and you can see basically here.
NOTE Confidence: 0.913842297272727

00:09:42.270 --> 00:09:44.010 We've got our optic chiasm,
NOTE Confidence: 0.913842297272727

00:09:44.010 --> 00:09:46.140 the Super chiasmatic nucleus are these
NOTE Confidence: 0.913842297272727

00:09:46.140 --> 00:09:48.449 two little areas outlined in yellow here.

NOTE Confidence: 0.913842297272727

00:09:48.450 --> 00:09:50.345 They're directly above the optic

NOTE Confidence: 0.913842297272727

00:09:50.345 --> 00:09:52.240 chiasm and within the hypothalamus,

NOTE Confidence: 0.913842297272727

00:09:52.240 --> 00:09:54.045 so they can receive light

NOTE Confidence: 0.913842297272727

00:09:54.045 --> 00:09:55.489 information from the environment,

NOTE Confidence: 0.913842297272727

00:09:55.490 --> 00:09:57.906 and then they can also take that information

NOTE Confidence: 0.913842297272727

00:09:57.906 --> 00:10:00.168 and send signals to the hypothalamus.

NOTE Confidence: 0.913842297272727

00:10:00.170 --> 00:10:01.780 Where they can regulate things like sleep,

NOTE Confidence: 0.913842297272727

00:10:01.780 --> 00:10:03.940 wake behavior, feeding behavior,

NOTE Confidence: 0.913842297272727

00:10:03.940 --> 00:10:05.560 core body temperature,

NOTE Confidence: 0.913842297272727

00:10:05.560 --> 00:10:06.706 rhythmic hormone release,

NOTE Confidence: 0.913842297272727

00:10:06.706 --> 00:10:08.234 everything else that has

NOTE Confidence: 0.913842297272727

00:10:08.234 --> 00:10:09.780 that daily rhythm to it.

NOTE Confidence: 0.913842297272727

00:10:09.780 --> 00:10:12.790 Now we know that it's not just the SCN it

NOTE Confidence: 0.913842297272727

00:10:12.870 --> 00:10:15.958 seems to be sort of the primary pacemaker,

NOTE Confidence: 0.913842297272727

00:10:15.960 --> 00:10:17.784 but every other cell and tissue

NOTE Confidence: 0.913842297272727

00:10:17.784 --> 00:10:20.024 in our body also has a clock in
NOTE Confidence: 0.913842297272727

00:10:20.024 --> 00:10:21.883 it and the SCN we think serves
NOTE Confidence: 0.913842297272727

00:10:21.883 --> 00:10:23.971 to help coordinate and keep those
NOTE Confidence: 0.913842297272727

00:10:23.971 --> 00:10:27.369 clocks In Sync with each other.
NOTE Confidence: 0.913842297272727

00:10:27.370 --> 00:10:29.440 So I think one of the things that I
NOTE Confidence: 0.913842297272727

00:10:29.440 --> 00:10:31.114 find most fascinating about circadian
NOTE Confidence: 0.913842297272727

00:10:31.114 --> 00:10:34.077 biology is not only that we have this
NOTE Confidence: 0.913842297272727

00:10:34.077 --> 00:10:35.729 intrinsic time keeping mechanism,
NOTE Confidence: 0.913842297272727

00:10:35.730 --> 00:10:39.816 but it's also dynamic and it can be reset
NOTE Confidence: 0.913842297272727

00:10:39.816 --> 00:10:43.724 like a clock or a watch with time cues,
NOTE Confidence: 0.913842297272727

00:10:43.730 --> 00:10:46.568 and that resetting is both stimulus
NOTE Confidence: 0.913842297272727

00:10:46.568 --> 00:10:49.649 specific and time of day specific.
NOTE Confidence: 0.913842297272727

00:10:49.650 --> 00:10:52.089 So if we go back to our human example,
NOTE Confidence: 0.913842297272727

00:10:52.090 --> 00:10:53.690 so now we've put them in a cave,
NOTE Confidence: 0.913842297272727

00:10:53.690 --> 00:10:56.186 they have no light, dark exposure.
NOTE Confidence: 0.913842297272727

00:10:56.190 --> 00:10:57.390 Each day, they're going to bed.

NOTE Confidence: 0.913842297272727

00:10:57.390 --> 00:10:59.154 A little bit later and a little bit later,

NOTE Confidence: 0.913842297272727

00:10:59.160 --> 00:11:01.608 and if we come in at some point

NOTE Confidence: 0.913842297272727

00:11:01.608 --> 00:11:03.620 during their biological daytime,

NOTE Confidence: 0.913842297272727

00:11:03.620 --> 00:11:05.666 the time when they'd normally be

NOTE Confidence: 0.913842297272727

00:11:05.666 --> 00:11:07.635 awake normally be expecting to see

NOTE Confidence: 0.913842297272727

00:11:07.635 --> 00:11:09.255 light and expose them to light.

NOTE Confidence: 0.913842297272727

00:11:09.260 --> 00:11:10.639 You can see that the following day,

NOTE Confidence: 0.913842297272727

00:11:10.640 --> 00:11:14.175 it really doesn't change that daily rhythm,

NOTE Confidence: 0.913842297272727

00:11:14.180 --> 00:11:16.679 but if instead we came in shortly

NOTE Confidence: 0.913842297272727

00:11:16.679 --> 00:11:19.460 after the time that they fell asleep,

NOTE Confidence: 0.913842297272727

00:11:19.460 --> 00:11:21.210 so during a time when they normally

NOTE Confidence: 0.913842297272727

00:11:21.210 --> 00:11:22.689 wouldn't expect to be seen light

NOTE Confidence: 0.913842297272727

00:11:22.689 --> 00:11:23.819 and expose them to light,

NOTE Confidence: 0.913842297272727

00:11:23.820 --> 00:11:25.976 you can see that the following day

NOTE Confidence: 0.913842297272727

00:11:25.980 --> 00:11:28.470 that whole behavior gets later.

NOTE Confidence: 0.913842297272727

00:11:28.470 --> 00:11:30.366 And you can interpret that as
NOTE Confidence: 0.913842297272727

00:11:30.366 --> 00:11:31.630 almost an error signal.
NOTE Confidence: 0.913842297272727

00:11:31.630 --> 00:11:34.306 So perhaps the signal that day
NOTE Confidence: 0.913842297272727

00:11:34.306 --> 00:11:36.950 length is longer than expected,
NOTE Confidence: 0.913842297272727

00:11:36.950 --> 00:11:38.408 so we should push everything later.
NOTE Confidence: 0.913842297272727

00:11:38.410 --> 00:11:39.030 So again,
NOTE Confidence: 0.913842297272727

00:11:39.030 --> 00:11:40.580 we're sleeping when it's dark
NOTE Confidence: 0.913842297272727

00:11:40.580 --> 00:11:42.149 and we're awakening it's light.
NOTE Confidence: 0.913842297272727

00:11:42.150 --> 00:11:44.310 And then on the other end of the spectrum,
NOTE Confidence: 0.913842297272727

00:11:44.310 --> 00:11:46.284 if you take them and expose them
NOTE Confidence: 0.913842297272727

00:11:46.284 --> 00:11:48.348 to light in the early morning.
NOTE Confidence: 0.913842297272727

00:11:48.350 --> 00:11:50.380 So shortly before they were gonna wake
NOTE Confidence: 0.913842297272727

00:11:50.380 --> 00:11:52.647 up shortly before dawn would normally occur,
NOTE Confidence: 0.913842297272727

00:11:52.650 --> 00:11:54.060 you can see that the following
NOTE Confidence: 0.913842297272727

00:11:54.060 --> 00:11:55.410 day they actually get earlier,
NOTE Confidence: 0.913842297272727

00:11:55.410 --> 00:11:57.531 and so again a stimulus that daylight

NOTE Confidence: 0.913842297272727
00:11:57.531 --> 00:11:59.810 is showing up earlier than expected.
NOTE Confidence: 0.913842297272727
00:11:59.810 --> 00:12:01.190 We should move everything earlier,
NOTE Confidence: 0.913842297272727
00:12:01.190 --> 00:12:04.940 so again, we're appropriately aligned.
NOTE Confidence: 0.87452492
00:12:04.940 --> 00:12:07.019 In order to actually plot these results,
NOTE Confidence: 0.87452492
00:12:07.020 --> 00:12:08.440 we use something called a
NOTE Confidence: 0.87452492
00:12:08.440 --> 00:12:09.860 phase response curve and we'll
NOTE Confidence: 0.87452492
00:12:09.916 --> 00:12:11.440 show some more of these later.
NOTE Confidence: 0.87452492
00:12:11.440 --> 00:12:15.220 But basically this is just a 24
NOTE Confidence: 0.87452492
00:12:15.220 --> 00:12:18.072 hour plot here and our stimulus
NOTE Confidence: 0.87452492
00:12:18.072 --> 00:12:20.358 during the daytime has no effect,
NOTE Confidence: 0.87452492
00:12:20.360 --> 00:12:21.837 so it's not causing a phase shift,
NOTE Confidence: 0.87452492
00:12:21.840 --> 00:12:23.220 whereas our early evening
NOTE Confidence: 0.87452492
00:12:23.220 --> 00:12:24.945 stimulus is causing a delay
NOTE Confidence: 0.87452492
00:12:24.945 --> 00:12:27.019 or a negative deflection here,
NOTE Confidence: 0.87452492
00:12:27.020 --> 00:12:28.595 and our stimulus at the end of
NOTE Confidence: 0.87452492

00:12:28.595 --> 00:12:30.292 the night is causing an advance
NOTE Confidence: 0.87452492

00:12:30.292 --> 00:12:31.897 or a positive deflection here.
NOTE Confidence: 0.87452492

00:12:31.900 --> 00:12:33.080 Now that was a cartoon.
NOTE Confidence: 0.87452492

00:12:33.080 --> 00:12:34.250 This is what it actually looks
NOTE Confidence: 0.87452492

00:12:34.250 --> 00:12:35.030 like in real life.
NOTE Confidence: 0.87452492

00:12:35.030 --> 00:12:37.534 This is an example of a light phase
NOTE Confidence: 0.87452492

00:12:37.534 --> 00:12:39.260 response curve obtained from humans
NOTE Confidence: 0.87452492

00:12:39.260 --> 00:12:41.668 and one of the important things to
NOTE Confidence: 0.87452492

00:12:41.740 --> 00:12:43.960 keep in mind when you're managing
NOTE Confidence: 0.87452492

00:12:43.960 --> 00:12:46.120 circadian patients is the switch point,
NOTE Confidence: 0.87452492

00:12:46.120 --> 00:12:46.800 right here,
NOTE Confidence: 0.87452492

00:12:46.800 --> 00:12:49.319 and so we know that this occurs
NOTE Confidence: 0.87452492

00:12:49.319 --> 00:12:51.731 about the point of the core
NOTE Confidence: 0.87452492

00:12:51.731 --> 00:12:52.937 body temperature nature,
NOTE Confidence: 0.87452492

00:12:52.940 --> 00:12:55.145 which for most people occurs about 2
NOTE Confidence: 0.87452492

00:12:55.145 --> 00:12:57.178 hours before their natural wait time.

NOTE Confidence: 0.87452492

00:12:57.180 --> 00:12:59.392 So if you're trying to time light

NOTE Confidence: 0.87452492

00:12:59.392 --> 00:13:01.008 to appropriately shift a patient

NOTE Confidence: 0.87452492

00:13:01.008 --> 00:13:02.538 in One Direction or another,

NOTE Confidence: 0.87452492

00:13:02.540 --> 00:13:03.985 it's really important that your

NOTE Confidence: 0.87452492

00:13:03.985 --> 00:13:05.780 timing that light based on their.

NOTE Confidence: 0.87452492

00:13:05.780 --> 00:13:07.650 Biological time and not based

NOTE Confidence: 0.87452492

00:13:07.650 --> 00:13:09.900 on the external clock time just

NOTE Confidence: 0.87452492

00:13:09.900 --> 00:13:11.455 to give you an example,

NOTE Confidence: 0.87452492

00:13:11.460 --> 00:13:13.595 many of my patients don't fall asleep

NOTE Confidence: 0.87452492

00:13:13.595 --> 00:13:15.428 till 345 in the morning and so if I

NOTE Confidence: 0.87452492

00:13:15.428 --> 00:13:17.319 were to give them light in the quote,

NOTE Confidence: 0.87452492

00:13:17.320 --> 00:13:18.166 UN quote morning,

NOTE Confidence: 0.87452492

00:13:18.166 --> 00:13:19.858 so at 7:00 or 8:00 AM,

NOTE Confidence: 0.87452492

00:13:19.860 --> 00:13:21.210 I'd actually still be hitting

NOTE Confidence: 0.87452492

00:13:21.210 --> 00:13:22.924 them on the spades delay portion

NOTE Confidence: 0.87452492

00:13:22.924 --> 00:13:24.784 of the phase response curve and
NOTE Confidence: 0.87452492

00:13:24.784 --> 00:13:26.324 could potentially make them even
NOTE Confidence: 0.87452492

00:13:26.324 --> 00:13:27.714 worse by shifting them later.
NOTE Confidence: 0.87452492

00:13:27.720 --> 00:13:30.296 So making sure that you keep this in
NOTE Confidence: 0.87452492

00:13:30.296 --> 00:13:32.745 mind when you're trying to determine
NOTE Confidence: 0.87452492

00:13:32.745 --> 00:13:34.870 treatment timing for your patients.
NOTE Confidence: 0.87452492

00:13:34.870 --> 00:13:37.910 Now one of the other.
NOTE Confidence: 0.87452492

00:13:37.910 --> 00:13:39.917 Stimuli that we make use of in the clinic.
NOTE Confidence: 0.87452492

00:13:39.920 --> 00:13:41.114 Like I mentioned,
NOTE Confidence: 0.87452492

00:13:41.114 --> 00:13:43.502 each response is both time of
NOTE Confidence: 0.87452492

00:13:43.502 --> 00:13:45.780 day and stimulus dependent,
NOTE Confidence: 0.87452492

00:13:45.780 --> 00:13:47.383 and so one of the other tools
NOTE Confidence: 0.87452492

00:13:47.383 --> 00:13:48.720 we use is melatonin,
NOTE Confidence: 0.87452492

00:13:48.720 --> 00:13:52.380 so our bodies naturally produce melatonin,
NOTE Confidence: 0.87452492

00:13:52.380 --> 00:13:54.648 typically with levels rising a few hours
NOTE Confidence: 0.87452492

00:13:54.648 --> 00:13:56.798 before you naturally fall asleep at night.

NOTE Confidence: 0.87452492

00:13:56.800 --> 00:13:57.876 As you can see,

NOTE Confidence: 0.87452492

00:13:57.876 --> 00:13:59.490 indicated by the up arrow here

NOTE Confidence: 0.87452492

00:13:59.552 --> 00:14:01.477 and then dropping off as we fall

NOTE Confidence: 0.87452492

00:14:01.477 --> 00:14:03.221 asleep and the proposed sleep

NOTE Confidence: 0.87452492

00:14:03.221 --> 00:14:04.937 window is approximately here.

NOTE Confidence: 0.87452492

00:14:04.940 --> 00:14:07.916 With these, these upright lines here.

NOTE Confidence: 0.87452492

00:14:07.920 --> 00:14:09.528 And so with melatonin.

NOTE Confidence: 0.87452492

00:14:09.528 --> 00:14:11.890 Again, think of it like an error signal.

NOTE Confidence: 0.87452492

00:14:11.890 --> 00:14:15.026 So if you give someone melatonin before

NOTE Confidence: 0.87452492

00:14:15.026 --> 00:14:17.650 they would naturally be producing it,

NOTE Confidence: 0.87452492

00:14:17.650 --> 00:14:19.650 you end up pulling them

NOTE Confidence: 0.87452492

00:14:19.650 --> 00:14:21.250 earlier or advancing them.

NOTE Confidence: 0.87452492

00:14:21.250 --> 00:14:23.260 Whereas if you give them melatonin

NOTE Confidence: 0.87452492

00:14:23.260 --> 00:14:24.830 after they stop producing it,

NOTE Confidence: 0.87452492

00:14:24.830 --> 00:14:26.160 you end up delaying them

NOTE Confidence: 0.87452492

00:14:26.160 --> 00:14:27.224 or pulling them later.
NOTE Confidence: 0.87452492

00:14:27.230 --> 00:14:28.061 And so again,
NOTE Confidence: 0.87452492

00:14:28.061 --> 00:14:30.633 tools that we can make use of in the
NOTE Confidence: 0.87452492

00:14:30.633 --> 00:14:32.614 clinic to try to help shift people
NOTE Confidence: 0.87452492

00:14:32.614 --> 00:14:34.709 in One Direction or the other.
NOTE Confidence: 0.87452492

00:14:34.710 --> 00:14:36.660 But keeping in mind that if
NOTE Confidence: 0.87452492

00:14:36.660 --> 00:14:37.960 you give somebody melatonin.
NOTE Confidence: 0.87452492

00:14:37.960 --> 00:14:39.958 You want to make sure that if
NOTE Confidence: 0.87452492

00:14:39.958 --> 00:14:41.310 you're giving them melatonin
NOTE Confidence: 0.87452492

00:14:41.310 --> 00:14:43.360 with the goal of advancing them,
NOTE Confidence: 0.87452492

00:14:43.360 --> 00:14:45.592 you wanna make sure that you're
NOTE Confidence: 0.87452492

00:14:45.592 --> 00:14:47.460 having the melatonin present here,
NOTE Confidence: 0.87452492

00:14:47.460 --> 00:14:49.840 but no longer having it present here,
NOTE Confidence: 0.87452492

00:14:49.840 --> 00:14:51.772 which is why we care so much
NOTE Confidence: 0.87452492

00:14:51.772 --> 00:14:52.600 about dosing of
NOTE Confidence: 0.923717357272727

00:14:52.671 --> 00:14:54.510 melatonin, because we want to make

NOTE Confidence: 0.923717357272727

00:14:54.510 --> 00:14:56.317 sure we don't give them a really

NOTE Confidence: 0.923717357272727

00:14:56.317 --> 00:14:57.677 high dose of melatonin here,

NOTE Confidence: 0.923717357272727

00:14:57.680 --> 00:15:00.180 so it may help advance.

NOTE Confidence: 0.923717357272727

00:15:00.180 --> 00:15:01.480 But then it's still sitting

NOTE Confidence: 0.923717357272727

00:15:01.480 --> 00:15:03.080 around in the system out here,

NOTE Confidence: 0.923717357272727

00:15:03.080 --> 00:15:04.600 where then it's delaying and

NOTE Confidence: 0.923717357272727

00:15:04.600 --> 00:15:05.816 then working against us.

NOTE Confidence: 0.879968076666667

00:15:10.490 --> 00:15:12.560 So with that as the introduction,

NOTE Confidence: 0.879968076666667

00:15:12.560 --> 00:15:14.728 I now want to move on to talking

NOTE Confidence: 0.879968076666667

00:15:14.728 --> 00:15:16.740 about how we actually put this

NOTE Confidence: 0.879968076666667

00:15:16.740 --> 00:15:18.495 into practice in the clinic,

NOTE Confidence: 0.879968076666667

00:15:18.500 --> 00:15:21.932 and we think of primarily these four main

NOTE Confidence: 0.879968076666667

00:15:21.932 --> 00:15:24.479 intrinsic circadian rhythm sleep disorders,

NOTE Confidence: 0.879968076666667

00:15:24.480 --> 00:15:26.802 advanced delayed non 24 in your

NOTE Confidence: 0.879968076666667

00:15:26.802 --> 00:15:29.040 regular sleep wake rhythm disorder.

NOTE Confidence: 0.879968076666667

00:15:29.040 --> 00:15:32.576 We also do see some shift work disorder.
NOTE Confidence: 0.879968076666667

00:15:32.580 --> 00:15:36.639 Excuse me and then very rarely some jet lag.
NOTE Confidence: 0.879968076666667

00:15:36.640 --> 00:15:37.650 Starting to come back now,
NOTE Confidence: 0.879968076666667

00:15:37.650 --> 00:15:39.914 but had a two year hiatus from that.
NOTE Confidence: 0.879968076666667

00:15:39.920 --> 00:15:42.770 With the Payam pandemic certainly,
NOTE Confidence: 0.879968076666667

00:15:42.770 --> 00:15:44.688 but for today what I really wanna
NOTE Confidence: 0.879968076666667

00:15:44.688 --> 00:15:46.415 focus on are the two disorders
NOTE Confidence: 0.879968076666667

00:15:46.415 --> 00:15:48.375 I tend to see most in clinic.
NOTE Confidence: 0.879968076666667

00:15:48.380 --> 00:15:49.865 Specifically, delayed sleep,
NOTE Confidence: 0.879968076666667

00:15:49.865 --> 00:15:53.034 wake phase disorder and non 24 and
NOTE Confidence: 0.879968076666667

00:15:53.034 --> 00:15:54.586 we're going to start off with the case.
NOTE Confidence: 0.903201377894737

00:15:58.380 --> 00:16:01.286 So we have a patient who is a 34 year old
NOTE Confidence: 0.903201377894737

00:16:01.286 --> 00:16:03.990 woman and she comes into clinic and says,
NOTE Confidence: 0.903201377894737

00:16:03.990 --> 00:16:05.166 you know I used to be a quote
NOTE Confidence: 0.903201377894737

00:16:05.166 --> 00:16:06.079 UN quote normal sleeper.
NOTE Confidence: 0.903201377894737

00:16:06.080 --> 00:16:07.718 I'd go to bed around 11.

NOTE Confidence: 0.903201377894737
00:16:07.720 --> 00:16:10.216 I'd have no trouble falling asleep
NOTE Confidence: 0.903201377894737
00:16:10.220 --> 00:16:11.956 sleep through the night. I was fine.
NOTE Confidence: 0.903201377894737
00:16:11.960 --> 00:16:13.538 She got into a car accident,
NOTE Confidence: 0.903201377894737
00:16:13.540 --> 00:16:15.040 had a whiplash injury.
NOTE Confidence: 0.903201377894737
00:16:15.040 --> 00:16:16.915 And really since that point,
NOTE Confidence: 0.903201377894737
00:16:16.920 --> 00:16:19.258 her bedtime moved around to the point
NOTE Confidence: 0.903201377894737
00:16:19.258 --> 00:16:21.936 where by the time she came to see me,
NOTE Confidence: 0.903201377894737
00:16:21.940 --> 00:16:24.220 she was often not falling asleep till 3:30.
NOTE Confidence: 0.903201377894737
00:16:24.220 --> 00:16:25.380 Sometimes as late as nine.
NOTE Confidence: 0.903201377894737
00:16:25.380 --> 00:16:27.865 AM. And so as a first step,
NOTE Confidence: 0.903201377894737
00:16:27.870 --> 00:16:29.300 when evaluating these patients really
NOTE Confidence: 0.903201377894737
00:16:29.300 --> 00:16:32.012 what we want to do is get a sense of
NOTE Confidence: 0.903201377894737
00:16:32.012 --> 00:16:33.550 what are their patterns really like,
NOTE Confidence: 0.903201377894737
00:16:33.550 --> 00:16:35.122 and to do that,
NOTE Confidence: 0.903201377894737
00:16:35.122 --> 00:16:37.087 we use something called actigraphy.
NOTE Confidence: 0.903201377894737

00:16:37.090 --> 00:16:39.151 So this is just an example of one of
NOTE Confidence: 0.903201377894737

00:16:39.151 --> 00:16:41.508 the actigraphy watches we use in clinic,
NOTE Confidence: 0.903201377894737

00:16:41.510 --> 00:16:42.782 and an example of what the
NOTE Confidence: 0.903201377894737

00:16:42.782 --> 00:16:43.630 data might look like.
NOTE Confidence: 0.903201377894737

00:16:43.630 --> 00:16:45.310 This is not from this patient,
NOTE Confidence: 0.903201377894737

00:16:45.310 --> 00:16:47.710 as you'll quickly figure out,
NOTE Confidence: 0.903201377894737

00:16:47.710 --> 00:16:49.902 but basically general activity.
NOTE Confidence: 0.903201377894737

00:16:49.902 --> 00:16:51.850 Again, we plot in 24 hours,
NOTE Confidence: 0.903201377894737

00:16:51.850 --> 00:16:54.286 so we're going from noon to noon.
NOTE Confidence: 0.903201377894737

00:16:54.290 --> 00:16:56.030 Activity is indicated by
NOTE Confidence: 0.903201377894737

00:16:56.030 --> 00:16:57.770 these black bars here.
NOTE Confidence: 0.903201377894737

00:16:57.770 --> 00:16:59.640 Light exposure by the yellow
NOTE Confidence: 0.903201377894737

00:16:59.640 --> 00:17:01.136 line that's running through
NOTE Confidence: 0.903201377894737

00:17:01.136 --> 00:17:02.782 here and then we've highlighted
NOTE Confidence: 0.903201377894737

00:17:02.782 --> 00:17:04.690 the sleep window here in blue,
NOTE Confidence: 0.903201377894737

00:17:04.690 --> 00:17:06.748 and so this is actually for myself.

NOTE Confidence: 0.903201377894737
00:17:06.750 --> 00:17:07.842 When I was testing.
NOTE Confidence: 0.903201377894737
00:17:07.842 --> 00:17:08.934 One of these watches,
NOTE Confidence: 0.903201377894737
00:17:08.940 --> 00:17:11.005 and you'll see why I didn't use
NOTE Confidence: 0.903201377894737
00:17:11.005 --> 00:17:12.980 the patient as an example here,
NOTE Confidence: 0.903201377894737
00:17:12.980 --> 00:17:15.380 because it gets much messier
NOTE Confidence: 0.903201377894737
00:17:15.380 --> 00:17:17.300 in the clinical environment.
NOTE Confidence: 0.903201377894737
00:17:17.300 --> 00:17:20.244 And so these dark blue bars here are
NOTE Confidence: 0.903201377894737
00:17:20.244 --> 00:17:23.337 actually when the patient took the watch off.
NOTE Confidence: 0.903201377894737
00:17:23.340 --> 00:17:25.540 So you can see the first problem is
NOTE Confidence: 0.903201377894737
00:17:25.540 --> 00:17:27.162 simply getting patients to wear the
NOTE Confidence: 0.903201377894737
00:17:27.162 --> 00:17:29.616 watch for the full one to two or three
NOTE Confidence: 0.903201377894737
00:17:29.616 --> 00:17:31.660 weeks that you're having them wear them.
NOTE Confidence: 0.903201377894737
00:17:31.660 --> 00:17:33.668 But the other thing is that you can
NOTE Confidence: 0.903201377894737
00:17:33.668 --> 00:17:35.540 see from this recording are one.
NOTE Confidence: 0.903201377894737
00:17:35.540 --> 00:17:36.900 The overall activity thresholds
NOTE Confidence: 0.903201377894737

00:17:36.900 --> 00:17:39.283 were sent the set the same on
NOTE Confidence: 0.903201377894737

00:17:39.283 --> 00:17:40.698 both of those actor grams,
NOTE Confidence: 0.903201377894737

00:17:40.700 --> 00:17:42.878 but you can see this patient
NOTE Confidence: 0.903201377894737

00:17:42.878 --> 00:17:44.330 is quite inactive overall.
NOTE Confidence: 0.903201377894737

00:17:44.330 --> 00:17:46.493 And then you can also see overall
NOTE Confidence: 0.903201377894737

00:17:46.493 --> 00:17:48.112 her sleep patterns are quite
NOTE Confidence: 0.903201377894737

00:17:48.112 --> 00:17:49.984 irregular in terms of wait time.
NOTE Confidence: 0.903201377894737

00:17:49.990 --> 00:17:52.748 Often this is set by other obligations,
NOTE Confidence: 0.903201377894737

00:17:52.750 --> 00:17:54.050 for example like having to
NOTE Confidence: 0.903201377894737

00:17:54.050 --> 00:17:55.350 get to work on time,
NOTE Confidence: 0.903201377894737

00:17:55.350 --> 00:17:57.090 but on average she's typically
NOTE Confidence: 0.903201377894737

00:17:57.090 --> 00:17:59.169 falling asleep somewhere on one to
NOTE Confidence: 0.903201377894737

00:17:59.169 --> 00:18:01.094 two in the morning during this time
NOTE Confidence: 0.903201377894737

00:18:01.094 --> 00:18:03.610 frame and getting up anywhere from
NOTE Confidence: 0.903201377894737

00:18:03.610 --> 00:18:06.650 8 to noon depending on the day.
NOTE Confidence: 0.903201377894737

00:18:06.650 --> 00:18:08.538 So one of the other tools that we

NOTE Confidence: 0.903201377894737
00:18:08.538 --> 00:18:10.606 can make use of to try to get a
NOTE Confidence: 0.903201377894737
00:18:10.606 --> 00:18:12.543 sense of whether a patient has a
NOTE Confidence: 0.903201377894737
00:18:12.543 --> 00:18:14.652 circadian disorder and what exactly it is,
NOTE Confidence: 0.903201377894737
00:18:14.652 --> 00:18:16.908 is to get a sense of what time
NOTE Confidence: 0.903201377894737
00:18:16.908 --> 00:18:18.610 they're naturally producing.
NOTE Confidence: 0.903201377894737
00:18:18.610 --> 00:18:18.967 Melatonin.
NOTE Confidence: 0.903201377894737
00:18:18.967 --> 00:18:20.038 Like I said,
NOTE Confidence: 0.903201377894737
00:18:20.038 --> 00:18:22.180 for most people that typically starts
NOTE Confidence: 0.903201377894737
00:18:22.244 --> 00:18:24.492 an hour or about two to three hours
NOTE Confidence: 0.903201377894737
00:18:24.492 --> 00:18:26.229 before their natural sleep time.
NOTE Confidence: 0.903201377894737
00:18:26.230 --> 00:18:28.694 And so in clinic we've set up these
NOTE Confidence: 0.903201377894737
00:18:28.694 --> 00:18:31.172 kits where we can actually collect
NOTE Confidence: 0.903201377894737
00:18:31.172 --> 00:18:33.407 melatonin from an individual saliva.
NOTE Confidence: 0.903201377894737
00:18:33.410 --> 00:18:35.167 So over here we've got these tubes.
NOTE Confidence: 0.903201377894737
00:18:35.170 --> 00:18:37.106 They have a little cotton swabs in them.
NOTE Confidence: 0.866837005

00:18:37.110 --> 00:18:39.174 They can go through these in
NOTE Confidence: 0.866837005

00:18:39.174 --> 00:18:41.169 order every half hour to hour.
NOTE Confidence: 0.866837005

00:18:41.170 --> 00:18:43.090 During that time point before bedtime,
NOTE Confidence: 0.866837005

00:18:43.090 --> 00:18:45.127 we have them wear these blue blocking
NOTE Confidence: 0.866837005

00:18:45.127 --> 00:18:46.869 glasses and dim the lights during
NOTE Confidence: 0.866837005

00:18:46.869 --> 00:18:48.752 that time and using that we can
NOTE Confidence: 0.866837005

00:18:48.813 --> 00:18:51.158 then obtain a profile of what their
NOTE Confidence: 0.866837005

00:18:51.158 --> 00:18:52.882 normal melatonin profiles look like.
NOTE Confidence: 0.866837005

00:18:52.882 --> 00:18:55.018 So in this particular patient you
NOTE Confidence: 0.866837005

00:18:55.018 --> 00:18:57.579 can see her saliva melatonin here,
NOTE Confidence: 0.866837005

00:18:57.580 --> 00:18:59.215 so she started collecting around
NOTE Confidence: 0.866837005

00:18:59.215 --> 00:19:01.917 7:30 and you can see that the point
NOTE Confidence: 0.866837005

00:19:01.917 --> 00:19:03.582 at which your melatonin started
NOTE Confidence: 0.866837005

00:19:03.582 --> 00:19:05.738 to rise is just after midnight,
NOTE Confidence: 0.866837005

00:19:05.740 --> 00:19:07.988 and so this fits with her report when
NOTE Confidence: 0.866837005

00:19:07.988 --> 00:19:10.020 she came in of often not falling

NOTE Confidence: 0.866837005

00:19:10.020 --> 00:19:11.980 asleep till 2-3 in the morning,

NOTE Confidence: 0.866837005

00:19:11.980 --> 00:19:14.969 and so all of this data together.

NOTE Confidence: 0.866837005

00:19:14.970 --> 00:19:17.928 Really supports the diagnosis of delayed

NOTE Confidence: 0.866837005

00:19:17.928 --> 00:19:20.802 sleep wake phase disorder and I've

NOTE Confidence: 0.866837005

00:19:20.802 --> 00:19:23.268 included here the ICCSD 3 criteria.

NOTE Confidence: 0.866837005

00:19:23.270 --> 00:19:23.548 Basically,

NOTE Confidence: 0.866837005

00:19:23.548 --> 00:19:25.494 you need a significant delay in the

NOTE Confidence: 0.866837005

00:19:25.494 --> 00:19:27.444 phase of the major sleep episode in

NOTE Confidence: 0.866837005

00:19:27.444 --> 00:19:29.104 relation to the desired or required

NOTE Confidence: 0.866837005

00:19:29.104 --> 00:19:30.706 sleep time and wake up time.

NOTE Confidence: 0.866837005

00:19:30.710 --> 00:19:32.276 Symptoms have to be present for

NOTE Confidence: 0.866837005

00:19:32.276 --> 00:19:33.320 at least three months,

NOTE Confidence: 0.866837005

00:19:33.320 --> 00:19:34.990 but if they're allowed to

NOTE Confidence: 0.866837005

00:19:34.990 --> 00:19:36.326 choose their own schedule,

NOTE Confidence: 0.866837005

00:19:36.330 --> 00:19:39.110 they actually sleep better.

NOTE Confidence: 0.866837005

00:19:39.110 --> 00:19:41.766 It look like to diagnose this with either
NOTE Confidence: 0.866837005

00:19:41.766 --> 00:19:44.735 a sleep log or actigraphy for at least 7,
NOTE Confidence: 0.866837005

00:19:44.740 --> 00:19:45.721 preferably 14 days.
NOTE Confidence: 0.866837005

00:19:45.721 --> 00:19:47.683 To show this delay in the
NOTE Confidence: 0.866837005

00:19:47.683 --> 00:19:49.459 timing of their sleep period,
NOTE Confidence: 0.866837005

00:19:49.460 --> 00:19:51.090 and then obviously you want
NOTE Confidence: 0.866837005

00:19:51.090 --> 00:19:53.584 to make sure that you rule out
NOTE Confidence: 0.866837005

00:19:53.584 --> 00:19:55.579 other sleep disorders that could
NOTE Confidence: 0.866837005

00:19:55.579 --> 00:19:57.310 be explaining this better.
NOTE Confidence: 0.866837005

00:19:57.310 --> 00:19:59.074 In terms of what causes delayed
NOTE Confidence: 0.866837005

00:19:59.074 --> 00:20:00.250 sleep wake phase disorder,
NOTE Confidence: 0.866837005

00:20:00.250 --> 00:20:02.310 there are many potential theories,
NOTE Confidence: 0.866837005

00:20:02.310 --> 00:20:05.124 so there are familial cases of this,
NOTE Confidence: 0.866837005

00:20:05.130 --> 00:20:06.942 and so there's been a description
NOTE Confidence: 0.866837005

00:20:06.942 --> 00:20:08.556 of a cryptochrome 1 mutation
NOTE Confidence: 0.866837005

00:20:08.556 --> 00:20:10.266 in some families with this.

NOTE Confidence: 0.866837005
00:20:10.270 --> 00:20:11.990 This is one of the core clock genes,
NOTE Confidence: 0.866837005
00:20:11.990 --> 00:20:13.550 and I didn't go into this
NOTE Confidence: 0.866837005
00:20:13.550 --> 00:20:14.330 in the introduction,
NOTE Confidence: 0.866837005
00:20:14.330 --> 00:20:17.445 but we have within each of ourselves
NOTE Confidence: 0.866837005
00:20:17.450 --> 00:20:20.938 a core set of clock genes and that
NOTE Confidence: 0.866837005
00:20:20.938 --> 00:20:22.805 transcription translation feedback loop
NOTE Confidence: 0.866837005
00:20:22.805 --> 00:20:26.025 typically takes about 24 hours to complete,
NOTE Confidence: 0.866837005
00:20:26.030 --> 00:20:26.648 but mutations?
NOTE Confidence: 0.866837005
00:20:26.648 --> 00:20:29.120 Could be their speed that up or slow
NOTE Confidence: 0.866837005
00:20:29.190 --> 00:20:31.311 that down can either make you advanced
NOTE Confidence: 0.866837005
00:20:31.311 --> 00:20:33.534 in the case of speeding it up or
NOTE Confidence: 0.866837005
00:20:33.534 --> 00:20:35.752 delay in the case of slowing it down.
NOTE Confidence: 0.866837005
00:20:35.752 --> 00:20:38.020 So you can think of these patients
NOTE Confidence: 0.866837005
00:20:38.090 --> 00:20:40.155 as simply just persistently running
NOTE Confidence: 0.866837005
00:20:40.155 --> 00:20:42.610 a little bit behind everybody else.
NOTE Confidence: 0.866837005

00:20:42.610 --> 00:20:44.878 And that goes along with demonstrations

NOTE Confidence: 0.866837005

00:20:44.878 --> 00:20:47.187 from several labs that these patients

NOTE Confidence: 0.866837005

00:20:47.187 --> 00:20:49.749 tend to have a longer circadian period.

NOTE Confidence: 0.866837005

00:20:49.750 --> 00:20:52.039 So left to their own devices they

NOTE Confidence: 0.866837005

00:20:52.039 --> 00:20:54.634 get later and later each day much

NOTE Confidence: 0.866837005

00:20:54.634 --> 00:20:56.564 later than the average person.

NOTE Confidence: 0.866837005

00:20:56.570 --> 00:20:58.412 And there have been several reported

NOTE Confidence: 0.866837005

00:20:58.412 --> 00:21:00.450 cases of people with head injuries,

NOTE Confidence: 0.866837005

00:21:00.450 --> 00:21:02.790 and we think that this may be due to

NOTE Confidence: 0.866837005

00:21:02.790 --> 00:21:05.354 either a delay and or decrease in the

NOTE Confidence: 0.866837005

00:21:05.354 --> 00:21:07.050 amplitude of melatonin production.

NOTE Confidence: 0.866837005

00:21:07.050 --> 00:21:08.541 And then we'll get into this a

NOTE Confidence: 0.866837005

00:21:08.541 --> 00:21:09.510 little bit more later,

NOTE Confidence: 0.866837005

00:21:09.510 --> 00:21:11.652 but there does also seem to be a role

NOTE Confidence: 0.866837005

00:21:11.652 --> 00:21:14.000 for both timing of exposure as well

NOTE Confidence: 0.866837005

00:21:14.000 --> 00:21:15.780 as responsiveness to bright light.

NOTE Confidence: 0.93661724

00:21:18.070 --> 00:21:20.350 So we've made the diagnosis.

NOTE Confidence: 0.93661724

00:21:20.350 --> 00:21:22.254 Now what do we do as far

NOTE Confidence: 0.93661724

00:21:22.254 --> 00:21:23.670 as treating this patient?

NOTE Confidence: 0.93661724

00:21:23.670 --> 00:21:25.980 And I've put up two things.

NOTE Confidence: 0.93661724

00:21:25.980 --> 00:21:27.186 We'll get to the next one,

NOTE Confidence: 0.93661724

00:21:27.190 --> 00:21:29.062 so I've included here.

NOTE Confidence: 0.93661724

00:21:29.062 --> 00:21:30.934 The current published 2015

NOTE Confidence: 0.93661724

00:21:30.934 --> 00:21:32.770 ASM treatment guidelines,

NOTE Confidence: 0.93661724

00:21:32.770 --> 00:21:34.455 which basically say that in

NOTE Confidence: 0.93661724

00:21:34.455 --> 00:21:35.803 both adults and children,

NOTE Confidence: 0.93661724

00:21:35.810 --> 00:21:37.988 we recommend using

NOTE Confidence: 0.93661724

00:21:37.988 --> 00:21:40.166 strategically timed melatonin.

NOTE Confidence: 0.93661724

00:21:40.170 --> 00:21:42.266 Now I will say that I don't actually

NOTE Confidence: 0.93661724

00:21:42.266 --> 00:21:44.317 follow what's currently in the guidelines,

NOTE Confidence: 0.93661724

00:21:44.320 --> 00:21:46.896 so the one reference that they cite

NOTE Confidence: 0.93661724

00:21:46.896 --> 00:21:49.663 actually was a study that used 5
NOTE Confidence: 0.93661724

00:21:49.663 --> 00:21:52.045 milligrams between 7:00 and 9:00 PM.
NOTE Confidence: 0.93661724

00:21:52.050 --> 00:21:53.922 And So what I've put here is actually
NOTE Confidence: 0.93661724

00:21:53.922 --> 00:21:55.620 what I tend to do clinically,
NOTE Confidence: 0.93661724

00:21:55.620 --> 00:21:57.438 and we're starting to work together
NOTE Confidence: 0.93661724

00:21:57.438 --> 00:21:59.055 with several other circadian clinics
NOTE Confidence: 0.93661724

00:21:59.055 --> 00:22:00.459 on some consensus guidelines.
NOTE Confidence: 0.93661724

00:22:00.460 --> 00:22:02.672 And I think we're all in agreement
NOTE Confidence: 0.93661724

00:22:02.672 --> 00:22:05.148 that we typically now tend to go lower
NOTE Confidence: 0.93661724

00:22:05.148 --> 00:22:07.220 and have changed the timing slightly.
NOTE Confidence: 0.93661724

00:22:07.220 --> 00:22:09.558 So if I'm managing a patient with
NOTE Confidence: 0.93661724

00:22:09.558 --> 00:22:11.600 delayed sleep wake phase disorder.
NOTE Confidence: 0.93661724

00:22:11.600 --> 00:22:13.370 I will typically give them
NOTE Confidence: 0.93661724

00:22:13.370 --> 00:22:15.140 half a milligram of melatonin.
NOTE Confidence: 0.93661724

00:22:15.140 --> 00:22:15.423 Again,
NOTE Confidence: 0.93661724

00:22:15.423 --> 00:22:17.121 with that idea of keeping that

NOTE Confidence: 0.93661724
00:22:17.121 --> 00:22:18.986 dose low so it's that strategic
NOTE Confidence: 0.93661724
00:22:18.986 --> 00:22:20.576 pulse that's there when you
NOTE Confidence: 0.93661724
00:22:20.576 --> 00:22:22.657 need it and gone when you don't.
NOTE Confidence: 0.93661724
00:22:22.660 --> 00:22:24.052 And based on that phase response
NOTE Confidence: 0.93661724
00:22:24.052 --> 00:22:25.559 curve that I showed you earlier,
NOTE Confidence: 0.93661724
00:22:25.560 --> 00:22:27.215 it's about five hours prior
NOTE Confidence: 0.93661724
00:22:27.215 --> 00:22:28.539 to their current bedtime,
NOTE Confidence: 0.93661724
00:22:28.540 --> 00:22:31.246 so if they biologically were allowed
NOTE Confidence: 0.93661724
00:22:31.246 --> 00:22:33.959 to sleep when they prefer to,
NOTE Confidence: 0.93661724
00:22:33.960 --> 00:22:35.976 or if they're not that delayed,
NOTE Confidence: 0.93661724
00:22:35.980 --> 00:22:36.930 we're just trying to shift
NOTE Confidence: 0.93661724
00:22:36.930 --> 00:22:37.880 them an hour or two.
NOTE Confidence: 0.93661724
00:22:37.880 --> 00:22:39.651 I will sometimes just give it an
NOTE Confidence: 0.93661724
00:22:39.651 --> 00:22:41.680 hour prior to their desired bedtime,
NOTE Confidence: 0.93661724
00:22:41.680 --> 00:22:42.919 and we'll go through some of that.
NOTE Confidence: 0.93661724

00:22:42.920 --> 00:22:46.007 Data for that in the next slide.
NOTE Confidence: 0.93661724

00:22:46.010 --> 00:22:48.074 It's key for all of these patients to
NOTE Confidence: 0.93661724

00:22:48.074 --> 00:22:49.827 avoid bright light prior to bedtime,
NOTE Confidence: 0.93661724

00:22:49.830 --> 00:22:51.804 we'll talk about some of the
NOTE Confidence: 0.93661724

00:22:51.804 --> 00:22:53.120 data supporting that later.
NOTE Confidence: 0.93661724

00:22:53.120 --> 00:22:55.528 And then we also make sure that they
NOTE Confidence: 0.93661724

00:22:55.528 --> 00:22:57.531 get bright light after their wake
NOTE Confidence: 0.93661724

00:22:57.531 --> 00:23:00.224 time and that can be anywhere from 30
NOTE Confidence: 0.93661724

00:23:00.224 --> 00:23:02.415 minutes to two hours of light total.
NOTE Confidence: 0.93661724

00:23:02.420 --> 00:23:03.860 I usually spread that out over
NOTE Confidence: 0.93661724

00:23:03.860 --> 00:23:04.820 4 hours and again,
NOTE Confidence: 0.93661724

00:23:04.820 --> 00:23:07.004 like I emphasized if they're having to
NOTE Confidence: 0.93661724

00:23:07.004 --> 00:23:09.538 get up earlier than they naturally would,
NOTE Confidence: 0.93661724

00:23:09.540 --> 00:23:11.130 I actually have them wear dark
NOTE Confidence: 0.93661724

00:23:11.130 --> 00:23:12.808 glasses until that time when they
NOTE Confidence: 0.93661724

00:23:12.808 --> 00:23:14.768 would be waking up so they're not

NOTE Confidence: 0.93661724

00:23:14.768 --> 00:23:15.959 inadvertently getting bright light

NOTE Confidence: 0.93661724

00:23:15.959 --> 00:23:17.954 during the phase delay portion of the

NOTE Confidence: 0.93661724

00:23:17.960 --> 00:23:19.586 phase response curve instead of the

NOTE Confidence: 0.93661724

00:23:19.586 --> 00:23:21.179 phase advanced portion where we want it.

NOTE Confidence: 0.89183024

00:23:23.230 --> 00:23:25.624 So I told you I'd go through the rationale

NOTE Confidence: 0.89183024

00:23:25.624 --> 00:23:28.154 for the one hour prior to desired bedtime.

NOTE Confidence: 0.89183024

00:23:28.160 --> 00:23:29.972 So after the ASM guidelines came

NOTE Confidence: 0.89183024

00:23:29.972 --> 00:23:32.059 out this this study was published,

NOTE Confidence: 0.89183024

00:23:32.060 --> 00:23:35.282 which basically was looking at the

NOTE Confidence: 0.89183024

00:23:35.282 --> 00:23:38.020 use of melatonin in the treatment of

NOTE Confidence: 0.89183024

00:23:38.020 --> 00:23:39.420 delayed sleep wake phase disorder.

NOTE Confidence: 0.89183024

00:23:39.420 --> 00:23:41.500 They took 116 participants with

NOTE Confidence: 0.89183024

00:23:41.500 --> 00:23:43.580 delayed sleep wake phase disorder.

NOTE Confidence: 0.89183024

00:23:43.580 --> 00:23:46.073 They define that as the delmo had to either

NOTE Confidence: 0.89183024

00:23:46.073 --> 00:23:48.394 occur less than 30 minutes before or at

NOTE Confidence: 0.89183024

00:23:48.394 --> 00:23:50.548 some point after their desired bedtime.
NOTE Confidence: 0.89183024

00:23:50.550 --> 00:23:52.460 So there was a mismatch
NOTE Confidence: 0.89183024

00:23:52.460 --> 00:23:53.606 between their biological.
NOTE Confidence: 0.89183024

00:23:53.610 --> 00:23:56.718 Timing and when they wanted to sleep.
NOTE Confidence: 0.89183024

00:23:56.720 --> 00:23:58.780 In, on average, these patients
NOTE Confidence: 0.89183024

00:23:58.780 --> 00:24:01.820 had a sleep onset of about 1:30.
NOTE Confidence: 0.89183024

00:24:01.820 --> 00:24:05.084 Their sleep offset was at about 9:00 AM.
NOTE Confidence: 0.89183024

00:24:05.090 --> 00:24:06.956 And they were randomized to either
NOTE Confidence: 0.89183024

00:24:06.956 --> 00:24:08.875 four weeks of placebo or half
NOTE Confidence: 0.89183024

00:24:08.875 --> 00:24:10.099 a milligram of melatonin,
NOTE Confidence: 0.89183024

00:24:10.100 --> 00:24:11.964 and they were told to take it one
NOTE Confidence: 0.89183024

00:24:11.964 --> 00:24:13.521 hour prior to their desired bedtime
NOTE Confidence: 0.89183024

00:24:13.521 --> 00:24:15.684 and then to get into bed at that
NOTE Confidence: 0.89183024

00:24:15.684 --> 00:24:17.334 desired bedtime and on average for
NOTE Confidence: 0.89183024

00:24:17.334 --> 00:24:18.655 the study population they wanted
NOTE Confidence: 0.89183024

00:24:18.655 --> 00:24:20.440 to go to bed at about 10:30.

NOTE Confidence: 0.823465209130435
00:24:22.930 --> 00:24:24.070 After that four weeks,
NOTE Confidence: 0.823465209130435
00:24:24.070 --> 00:24:25.780 they found that the melatonin group
NOTE Confidence: 0.823465209130435
00:24:25.838 --> 00:24:27.595 had an onset sleep onset time that
NOTE Confidence: 0.823465209130435
00:24:27.595 --> 00:24:29.190 moved about half an hour earlier.
NOTE Confidence: 0.823465209130435
00:24:29.190 --> 00:24:31.310 Their sleep efficiency also improved.
NOTE Confidence: 0.823465209130435
00:24:31.310 --> 00:24:33.290 They did do a subgroup analysis
NOTE Confidence: 0.823465209130435
00:24:33.290 --> 00:24:34.995 where they didn't actually find
NOTE Confidence: 0.823465209130435
00:24:34.995 --> 00:24:36.610 a significant change in Dino,
NOTE Confidence: 0.823465209130435
00:24:36.610 --> 00:24:38.570 and to go back to the point
NOTE Confidence: 0.823465209130435
00:24:38.570 --> 00:24:41.156 that I made earlier that I do
NOTE Confidence: 0.823465209130435
00:24:41.156 --> 00:24:43.241 differentiate between the milder and
NOTE Confidence: 0.823465209130435
00:24:43.241 --> 00:24:45.817 the more severe delayed patients.
NOTE Confidence: 0.823465209130435
00:24:45.820 --> 00:24:47.428 This tends to work pretty well,
NOTE Confidence: 0.823465209130435
00:24:47.430 --> 00:24:49.686 for example, if it's a patient
NOTE Confidence: 0.823465209130435
00:24:49.686 --> 00:24:51.696 who's falling asleep at 12:31.
NOTE Confidence: 0.823465209130435

00:24:51.696 --> 00:24:55.238 They wanna fall asleep at 1111 thirty.
NOTE Confidence: 0.823465209130435

00:24:55.240 --> 00:24:57.337 It tends to help them shift at that point,
NOTE Confidence: 0.823465209130435

00:24:57.340 --> 00:24:59.626 and they're not spending a tremendous
NOTE Confidence: 0.823465209130435

00:24:59.626 --> 00:25:02.749 amount of time in bed not able to sleep.
NOTE Confidence: 0.823465209130435

00:25:02.750 --> 00:25:04.973 But take for example if I have one of
NOTE Confidence: 0.823465209130435

00:25:04.973 --> 00:25:06.892 my patients who doesn't fall asleep
NOTE Confidence: 0.823465209130435

00:25:06.892 --> 00:25:09.309 till 3-4 or five in the morning,
NOTE Confidence: 0.823465209130435

00:25:09.310 --> 00:25:11.726 but they'd like to fall asleep at 11.
NOTE Confidence: 0.823465209130435

00:25:11.730 --> 00:25:13.938 Now I'm telling them take this
NOTE Confidence: 0.823465209130435

00:25:13.938 --> 00:25:17.282 melatonin at 10:00 PM. Get into bed 11.
NOTE Confidence: 0.823465209130435

00:25:17.282 --> 00:25:20.090 And lay there for five hours.
NOTE Confidence: 0.823465209130435

00:25:20.090 --> 00:25:22.010 Obviously that's just going to feed
NOTE Confidence: 0.823465209130435

00:25:22.010 --> 00:25:23.716 into some of their frustrations
NOTE Confidence: 0.823465209130435

00:25:23.716 --> 00:25:25.888 that they've been dealing with for
NOTE Confidence: 0.823465209130435

00:25:25.888 --> 00:25:28.774 most of their life, and we do see.
NOTE Confidence: 0.823465209130435

00:25:28.774 --> 00:25:32.259 A lot of comorbid insomnia in these patients,

NOTE Confidence: 0.823465209130435
00:25:32.260 --> 00:25:34.227 and so that's why if we're trying
NOTE Confidence: 0.823465209130435
00:25:34.227 --> 00:25:35.480 to make larger moves,
NOTE Confidence: 0.823465209130435
00:25:35.480 --> 00:25:36.468 there's a larger mismatch.
NOTE Confidence: 0.823465209130435
00:25:36.468 --> 00:25:38.341 We tend to do this more targeted
NOTE Confidence: 0.823465209130435
00:25:38.341 --> 00:25:40.046 treatment where we really inch
NOTE Confidence: 0.823465209130435
00:25:40.046 --> 00:25:41.410 their rhythm earlier instead.
NOTE Confidence: 0.8523694
00:25:43.510 --> 00:25:45.841 So going back to case one so we treated
NOTE Confidence: 0.8523694
00:25:45.841 --> 00:25:48.458 her with that timed melatonin timed light.
NOTE Confidence: 0.8523694
00:25:48.460 --> 00:25:49.905 She responded really well and
NOTE Confidence: 0.8523694
00:25:49.905 --> 00:25:51.678 she actually was able to shift
NOTE Confidence: 0.8523694
00:25:51.678 --> 00:25:53.328 her bedtime to about 10:00 PM.
NOTE Confidence: 0.8523694
00:25:53.330 --> 00:25:55.626 Her sleep latency decreased about 10 minutes,
NOTE Confidence: 0.8523694
00:25:55.630 --> 00:25:57.508 which was great and she actually
NOTE Confidence: 0.8523694
00:25:57.508 --> 00:25:59.788 did really well for about two years.
NOTE Confidence: 0.8523694
00:25:59.790 --> 00:26:01.764 But then she started having several
NOTE Confidence: 0.8523694

00:26:01.764 --> 00:26:04.148 days per week where she started drifting

NOTE Confidence: 0.8523694

00:26:04.148 --> 00:26:06.493 later so she was falling asleep and

NOTE Confidence: 0.8523694

00:26:06.556 --> 00:26:08.756 waking up later and ended up having to

NOTE Confidence: 0.8523694

00:26:08.756 --> 00:26:11.389 miss or be late to several days of work.

NOTE Confidence: 0.8523694

00:26:11.390 --> 00:26:13.270 She was at the point where she was about to.

NOTE Confidence: 0.8523694

00:26:13.270 --> 00:26:14.494 Trust or sick days.

NOTE Confidence: 0.8523694

00:26:14.494 --> 00:26:16.024 She was potentially gonna lose

NOTE Confidence: 0.8523694

00:26:16.024 --> 00:26:18.413 her job and so we really needed to

NOTE Confidence: 0.8523694

00:26:18.413 --> 00:26:19.680 figure out something to do.

NOTE Confidence: 0.8523694

00:26:19.680 --> 00:26:21.808 And it was actually right around this

NOTE Confidence: 0.8523694

00:26:21.808 --> 00:26:23.833 time that Ken writes group published

NOTE Confidence: 0.8523694

00:26:23.833 --> 00:26:25.939 this study and so another one.

NOTE Confidence: 0.8523694

00:26:25.940 --> 00:26:26.820 If you haven't read it,

NOTE Confidence: 0.8523694

00:26:26.820 --> 00:26:28.098 definitely take a look at this,

NOTE Confidence: 0.8523694

00:26:28.100 --> 00:26:30.977 but this was his infamous camping study

NOTE Confidence: 0.8523694

00:26:30.980 --> 00:26:33.255 where he took a group of individuals

NOTE Confidence: 0.8523694

00:26:33.255 --> 00:26:36.292 and you could see indicated over here

NOTE Confidence: 0.8523694

00:26:36.292 --> 00:26:38.280 under electrical lighting conditions.

NOTE Confidence: 0.8523694

00:26:38.280 --> 00:26:40.140 Their melatonin onset was

NOTE Confidence: 0.8523694

00:26:40.140 --> 00:26:42.000 occurring sometime after sunset.

NOTE Confidence: 0.8523694

00:26:42.000 --> 00:26:43.364 They're offset was occurring.

NOTE Confidence: 0.8523694

00:26:43.364 --> 00:26:44.046 After sunrise,

NOTE Confidence: 0.8523694

00:26:44.050 --> 00:26:46.180 so they were delayed with

NOTE Confidence: 0.8523694

00:26:46.180 --> 00:26:47.884 respect to the environment.

NOTE Confidence: 0.8523694

00:26:47.890 --> 00:26:49.858 He took them camping in Colorado

NOTE Confidence: 0.8523694

00:26:49.858 --> 00:26:52.545 for a week and with that natural

NOTE Confidence: 0.8523694

00:26:52.545 --> 00:26:55.143 light exposure he managed to shift

NOTE Confidence: 0.8523694

00:26:55.143 --> 00:26:57.188 everybody earlier and better in,

NOTE Confidence: 0.8523694

00:26:57.190 --> 00:26:59.280 train them with the environment.

NOTE Confidence: 0.8523694

00:26:59.280 --> 00:27:01.860 You can see melatonin onset and

NOTE Confidence: 0.8523694

00:27:01.860 --> 00:27:04.499 offset are now better matched with

NOTE Confidence: 0.8523694

00:27:04.499 --> 00:27:06.983 sunset and sunrise and so this
NOTE Confidence: 0.8523694

00:27:06.983 --> 00:27:09.847 made it into the general public.
NOTE Confidence: 0.8523694

00:27:09.850 --> 00:27:11.740 News had a lot of publicity
NOTE Confidence: 0.8523694

00:27:11.740 --> 00:27:13.860 around it and so my patient.
NOTE Confidence: 0.8523694

00:27:13.860 --> 00:27:16.308 All this and her question for me at
NOTE Confidence: 0.8523694

00:27:16.308 --> 00:27:18.585 first was should I go to Colorado
NOTE Confidence: 0.8523694

00:27:18.585 --> 00:27:21.615 and go camping and it turns out that
NOTE Confidence: 0.8523694

00:27:21.615 --> 00:27:23.945 she is somebody who likes to camp.
NOTE Confidence: 0.8523694

00:27:23.945 --> 00:27:25.590 She will often go camping in the
NOTE Confidence: 0.8523694

00:27:25.647 --> 00:27:26.947 area in Illinois and Wisconsin
NOTE Confidence: 0.8523694

00:27:26.947 --> 00:27:28.956 and we sort of talked through the
NOTE Confidence: 0.8523694

00:27:28.956 --> 00:27:30.260 rationale behind the study.
NOTE Confidence: 0.8523694

00:27:30.260 --> 00:27:32.150 And so there's really nothing magical
NOTE Confidence: 0.8523694

00:27:32.150 --> 00:27:34.277 about the Rockies as far as we know.
NOTE Confidence: 0.8523694

00:27:34.280 --> 00:27:36.434 It's really just that elimination of
NOTE Confidence: 0.8523694

00:27:36.434 --> 00:27:38.740 electrical lighting that made the difference,

NOTE Confidence: 0.8523694

00:27:38.740 --> 00:27:40.210 and so she actually was able to

NOTE Confidence: 0.8523694

00:27:40.210 --> 00:27:42.000 set up a tent in her backyard.

NOTE Confidence: 0.8523694

00:27:42.000 --> 00:27:43.460 This is not her tent,

NOTE Confidence: 0.8523694

00:27:43.460 --> 00:27:45.188 it's a Google image of tent.

NOTE Confidence: 0.8523694

00:27:45.190 --> 00:27:45.521 Backyard,

NOTE Confidence: 0.8523694

00:27:45.521 --> 00:27:48.169 but she was able to set up a

NOTE Confidence: 0.8523694

00:27:48.169 --> 00:27:49.808 tent in her backyard.

NOTE Confidence: 0.8523694

00:27:49.810 --> 00:27:51.986 Really could follow that schedule for a week.

NOTE Confidence: 0.8523694

00:27:51.990 --> 00:27:53.886 She turned off all electrical lights,

NOTE Confidence: 0.8523694

00:27:53.890 --> 00:27:56.170 all lights in her yard.

NOTE Confidence: 0.8523694

00:27:56.170 --> 00:27:57.878 The only thing that kind of failed

NOTE Confidence: 0.8523694

00:27:57.878 --> 00:27:59.803 us along the way is one night a

NOTE Confidence: 0.8523694

00:27:59.803 --> 00:28:01.260 skunk did come in sprayer tent,

NOTE Confidence: 0.8523694

00:28:01.260 --> 00:28:02.875 but because we had talked

NOTE Confidence: 0.8523694

00:28:02.875 --> 00:28:04.490 through what the principle was,

NOTE Confidence: 0.8523694

00:28:04.490 --> 00:28:06.050 that one night she went into her house

NOTE Confidence: 0.8523694

00:28:06.050 --> 00:28:07.470 trying to make sure she turned on.

NOTE Confidence: 0.8523694

00:28:07.470 --> 00:28:08.042 No lights,

NOTE Confidence: 0.8523694

00:28:08.042 --> 00:28:10.044 washed her tent the next day and

NOTE Confidence: 0.8523694

00:28:10.044 --> 00:28:11.719 went back to it and it actually

NOTE Confidence: 0.8523694

00:28:11.719 --> 00:28:12.448 worked really well.

NOTE Confidence: 0.8523694

00:28:12.450 --> 00:28:14.526 So after a week of camping

NOTE Confidence: 0.8523694

00:28:14.530 --> 00:28:15.710 we got our schedule.

NOTE Confidence: 0.8523694

00:28:15.710 --> 00:28:17.480 Advanced and then she will sometimes

NOTE Confidence: 0.8523694

00:28:17.541 --> 00:28:19.781 now go back and re entrain with these

NOTE Confidence: 0.8523694

00:28:19.781 --> 00:28:21.242 electricity free weekends to kind

NOTE Confidence: 0.8523694

00:28:21.242 --> 00:28:22.934 of get herself back on schedule.

NOTE Confidence: 0.854828793888889

00:28:22.940 --> 00:28:24.896 And I think from a logistics

NOTE Confidence: 0.854828793888889

00:28:24.896 --> 00:28:26.544 standpoint probably the thing I'm

NOTE Confidence: 0.854828793888889

00:28:26.544 --> 00:28:28.560 most satisfied about is we could get.

NOTE Confidence: 0.854828793888889

00:28:28.560 --> 00:28:31.192 We got her a week of short term

NOTE Confidence: 0.854828793888889
00:28:31.192 --> 00:28:33.680 disability to do this camping as well.
NOTE Confidence: 0.854828793888889
00:28:33.680 --> 00:28:35.542 So we got our employer to cover
NOTE Confidence: 0.854828793888889
00:28:35.542 --> 00:28:37.480 it as part of her treatment.
NOTE Confidence: 0.854828793888889
00:28:37.480 --> 00:28:39.440 So that was just a nice insight
NOTE Confidence: 0.854828793888889
00:28:39.440 --> 00:28:41.659 into both how to manage the basic
NOTE Confidence: 0.854828793888889
00:28:41.659 --> 00:28:43.304 circadian disorder as well as
NOTE Confidence: 0.854828793888889
00:28:43.304 --> 00:28:45.789 how we make use of some of the
NOTE Confidence: 0.854828793888889
00:28:45.789 --> 00:28:47.350 published data that's out there.
NOTE Confidence: 0.854828793888889
00:28:47.350 --> 00:28:50.456 And now I'd like to move on to my
NOTE Confidence: 0.854828793888889
00:28:50.456 --> 00:28:53.064 second case so this is another one of
NOTE Confidence: 0.854828793888889
00:28:53.064 --> 00:28:55.102 my favorite patients who I've been
NOTE Confidence: 0.854828793888889
00:28:55.102 --> 00:28:57.692 following pretty much from the bright after.
NOTE Confidence: 0.854828793888889
00:28:57.700 --> 00:28:59.340 I think he may have been one of the first
NOTE Confidence: 0.854828793888889
00:28:59.380 --> 00:29:00.980 patients I had as a brand new attending,
NOTE Confidence: 0.854828793888889
00:29:00.980 --> 00:29:03.339 and I've been following him ever since.
NOTE Confidence: 0.854828793888889

00:29:03.340 --> 00:29:05.538 At the time I first saw him,
NOTE Confidence: 0.854828793888889

00:29:05.540 --> 00:29:06.515 he was 35.
NOTE Confidence: 0.854828793888889

00:29:06.515 --> 00:29:09.779 He was somebody who like many of my patients,
NOTE Confidence: 0.854828793888889

00:29:09.780 --> 00:29:11.565 said he's always been a night owl,
NOTE Confidence: 0.854828793888889

00:29:11.570 --> 00:29:13.954 but he came in because at some point
NOTE Confidence: 0.854828793888889

00:29:13.954 --> 00:29:16.044 things got worse and he could no
NOTE Confidence: 0.854828793888889

00:29:16.044 --> 00:29:18.050 longer follow a 24 hour schedule
NOTE Confidence: 0.854828793888889

00:29:18.050 --> 00:29:19.352 I've dubbed in the Martian because
NOTE Confidence: 0.854828793888889

00:29:19.352 --> 00:29:21.122 a lot of my patients with this
NOTE Confidence: 0.854828793888889

00:29:21.122 --> 00:29:22.537 disorder will refer to themselves
NOTE Confidence: 0.854828793888889

00:29:22.537 --> 00:29:24.521 as that because the Mars day is a
NOTE Confidence: 0.854828793888889

00:29:24.521 --> 00:29:27.629 little bit longer than the Earth Day.
NOTE Confidence: 0.854828793888889

00:29:27.630 --> 00:29:29.730 So, like many of my patients,
NOTE Confidence: 0.854828793888889

00:29:29.730 --> 00:29:31.595 he had kept meticulously blogs
NOTE Confidence: 0.854828793888889

00:29:31.595 --> 00:29:33.750 before he came to see me,
NOTE Confidence: 0.854828793888889

00:29:33.750 --> 00:29:36.095 and this is just an example of

NOTE Confidence: 0.854828793888889
00:29:36.095 --> 00:29:38.467 what his sleep looked like before
NOTE Confidence: 0.854828793888889
00:29:38.467 --> 00:29:41.047 things started to get even worse.
NOTE Confidence: 0.854828793888889
00:29:41.050 --> 00:29:43.010 What I have here is a double plot,
NOTE Confidence: 0.854828793888889
00:29:43.010 --> 00:29:45.327 and so we've got this sleep period.
NOTE Confidence: 0.854828793888889
00:29:45.330 --> 00:29:47.148 Up here is replatted down here.
NOTE Confidence: 0.854828793888889
00:29:47.150 --> 00:29:48.790 This is 48 hours and you'll see why
NOTE Confidence: 0.854828793888889
00:29:48.790 --> 00:29:50.513 in the next slides it's a little
NOTE Confidence: 0.854828793888889
00:29:50.513 --> 00:29:52.030 easier to plot things this way,
NOTE Confidence: 0.854828793888889
00:29:52.030 --> 00:29:53.353 but if you wanted to just focus
NOTE Confidence: 0.854828793888889
00:29:53.353 --> 00:29:54.787 on the right side to begin with.
NOTE Confidence: 0.854828793888889
00:29:54.790 --> 00:29:56.494 What we have is kind of what we
NOTE Confidence: 0.854828793888889
00:29:56.494 --> 00:29:57.870 typically see with these delayed.
NOTE Confidence: 0.854828793888889
00:29:57.870 --> 00:30:00.072 Emotions that they sort of force
NOTE Confidence: 0.854828793888889
00:30:00.072 --> 00:30:02.576 themselves into a midnight to 8:00 AM
NOTE Confidence: 0.854828793888889
00:30:02.576 --> 00:30:04.514 scheduled during the week they delayed
NOTE Confidence: 0.854828793888889

00:30:04.514 --> 00:30:07.398 to their preferred schedule on the weekend,
NOTE Confidence: 0.854828793888889

00:30:07.400 --> 00:30:08.918 and then they go back and
NOTE Confidence: 0.854828793888889

00:30:08.918 --> 00:30:10.340 forth and back and forth.
NOTE Confidence: 0.854828793888889

00:30:10.340 --> 00:30:14.480 It's not great, but they can live with it.
NOTE Confidence: 0.854828793888889

00:30:14.480 --> 00:30:16.503 He saw a very well meaning sleep
NOTE Confidence: 0.854828793888889

00:30:16.503 --> 00:30:18.412 provider who was trying to treat
NOTE Confidence: 0.854828793888889

00:30:18.412 --> 00:30:20.362 him initially by giving him some
NOTE Confidence: 0.854828793888889

00:30:20.362 --> 00:30:21.988 bright light in the morning,
NOTE Confidence: 0.854828793888889

00:30:21.990 --> 00:30:25.370 which you can see here and then he was
NOTE Confidence: 0.854828793888889

00:30:25.370 --> 00:30:27.110 instructed to follow Chronotherapy.
NOTE Confidence: 0.854828793888889

00:30:27.110 --> 00:30:29.282 So that idea of gradually delaying
NOTE Confidence: 0.854828793888889

00:30:29.282 --> 00:30:31.809 your sleep wake period until you reach
NOTE Confidence: 0.854828793888889

00:30:31.809 --> 00:30:34.168 the point where you're going to sleep
NOTE Confidence: 0.854828793888889

00:30:34.231 --> 00:30:36.248 and waking up when you prefer to.
NOTE Confidence: 0.854828793888889

00:30:36.248 --> 00:30:38.102 And at that point you're supposed
NOTE Confidence: 0.854828793888889

00:30:38.102 --> 00:30:40.380 to try to put the brakes on it

NOTE Confidence: 0.854828793888889
00:30:40.380 --> 00:30:42.060 and keep things from delaying.
NOTE Confidence: 0.854828793888889
00:30:42.060 --> 00:30:43.836 And with that he was supposed
NOTE Confidence: 0.854828793888889
00:30:43.836 --> 00:30:45.020 to start taking melatonin.
NOTE Confidence: 0.854828793888889
00:30:45.020 --> 00:30:49.260 As indicated in green and using bright light.
NOTE Confidence: 0.854828793888889
00:30:49.260 --> 00:30:49.870 Unfortunately,
NOTE Confidence: 0.854828793888889
00:30:49.870 --> 00:30:54.140 he started drifting and just kept going,
NOTE Confidence: 0.854828793888889
00:30:54.140 --> 00:30:55.344 and so by the time he came
NOTE Confidence: 0.854828793888889
00:30:55.344 --> 00:30:56.579 to see me in the office,
NOTE Confidence: 0.854828793888889
00:30:56.580 --> 00:30:58.918 this is what his actigraphy looked like,
NOTE Confidence: 0.854828793888889
00:30:58.920 --> 00:31:02.016 and you can barely make out his activity.
NOTE Confidence: 0.919239327777778
00:31:02.020 --> 00:31:04.148 He overall tends to be a fairly
NOTE Confidence: 0.919239327777778
00:31:04.148 --> 00:31:05.760 inactive person, but if you kind
NOTE Confidence: 0.919239327777778
00:31:05.760 --> 00:31:07.750 of lean back and squint a little,
NOTE Confidence: 0.919239327777778
00:31:07.750 --> 00:31:09.862 you can see that his onset of activity
NOTE Confidence: 0.919239327777778
00:31:09.862 --> 00:31:11.791 every day gets a little later and
NOTE Confidence: 0.919239327777778

00:31:11.791 --> 00:31:13.688 a little later, and a little later.
NOTE Confidence: 0.919239327777778

00:31:13.688 --> 00:31:15.320 This is an outlier here because
NOTE Confidence: 0.919239327777778

00:31:15.378 --> 00:31:16.978 he had a doctor's appointment.
NOTE Confidence: 0.919239327777778

00:31:16.980 --> 00:31:18.786 The other thing that's noteworthy about him,
NOTE Confidence: 0.919239327777778

00:31:18.790 --> 00:31:20.980 and we'll get to this later.
NOTE Confidence: 0.919239327777778

00:31:20.980 --> 00:31:23.348 He really doesn't have a lot of light
NOTE Confidence: 0.919239327777778

00:31:23.348 --> 00:31:25.596 exposure and so you can see that that
NOTE Confidence: 0.919239327777778

00:31:25.596 --> 00:31:27.486 yellow line here has very low amplitude
NOTE Confidence: 0.919239327777778

00:31:27.486 --> 00:31:30.206 to it and if you talk to him about this,
NOTE Confidence: 0.919239327777778

00:31:30.206 --> 00:31:31.766 he really prefers to spend
NOTE Confidence: 0.919239327777778

00:31:31.766 --> 00:31:33.620 his time in dimly lit rooms.
NOTE Confidence: 0.919239327777778

00:31:33.620 --> 00:31:35.540 He finds bright light,
NOTE Confidence: 0.919239327777778

00:31:35.540 --> 00:31:37.940 kind of irritating and just
NOTE Confidence: 0.919239327777778

00:31:37.940 --> 00:31:39.858 really doesn't like it.
NOTE Confidence: 0.919239327777778

00:31:39.860 --> 00:31:41.756 So he fits the criteria for non 24
NOTE Confidence: 0.919239327777778

00:31:41.756 --> 00:31:43.206 hour sleep break rhythm disorder

NOTE Confidence: 0.919239327777778
00:31:43.206 --> 00:31:45.348 and if I didn't mention this before,
NOTE Confidence: 0.919239327777778
00:31:45.350 --> 00:31:47.394 he does have normal image forming vision.
NOTE Confidence: 0.919239327777778
00:31:47.400 --> 00:31:50.550 So this is not a blind patient.
NOTE Confidence: 0.919239327777778
00:31:50.550 --> 00:31:52.622 So for non 24 they can come in
NOTE Confidence: 0.919239327777778
00:31:52.622 --> 00:31:54.769 with lots of different complaints.
NOTE Confidence: 0.919239327777778
00:31:54.770 --> 00:31:56.950 They can either have insomnia,
NOTE Confidence: 0.919239327777778
00:31:56.950 --> 00:31:58.685 excessive daytime sleepiness or maybe
NOTE Confidence: 0.919239327777778
00:31:58.685 --> 00:32:01.088 both depending on where you hit them
NOTE Confidence: 0.919239327777778
00:32:01.088 --> 00:32:02.930 within that constant delay and cycle.
NOTE Confidence: 0.919239327777778
00:32:02.930 --> 00:32:04.298 Some of them have figured out
NOTE Confidence: 0.919239327777778
00:32:04.298 --> 00:32:04.982 what's going on,
NOTE Confidence: 0.919239327777778
00:32:04.990 --> 00:32:06.488 but it's something to keep in mind
NOTE Confidence: 0.919239327777778
00:32:06.488 --> 00:32:08.331 if you have somebody who just cannot
NOTE Confidence: 0.919239327777778
00:32:08.331 --> 00:32:10.300 describe their sleep wake schedule to you.
NOTE Confidence: 0.919239327777778
00:32:10.300 --> 00:32:11.492 Investigating a little bit
NOTE Confidence: 0.919239327777778

00:32:11.492 --> 00:32:12.684 further with that trigger.
NOTE Confidence: 0.919239327777778

00:32:12.690 --> 00:32:15.687 Fear sleep logs to really get a sense of
NOTE Confidence: 0.919239327777778

00:32:15.687 --> 00:32:18.700 what the pattern is can be very helpful.
NOTE Confidence: 0.919239327777778

00:32:18.700 --> 00:32:20.218 In terms of what causes this,
NOTE Confidence: 0.919239327777778

00:32:20.220 --> 00:32:22.220 so this was first described
NOTE Confidence: 0.919239327777778

00:32:22.220 --> 00:32:23.420 in blind individuals.
NOTE Confidence: 0.919239327777778

00:32:23.420 --> 00:32:24.500 We're going to get into this
NOTE Confidence: 0.919239327777778

00:32:24.500 --> 00:32:25.500 a little bit more later,
NOTE Confidence: 0.919239327777778

00:32:25.500 --> 00:32:27.642 but really it makes sense if
NOTE Confidence: 0.919239327777778

00:32:27.642 --> 00:32:29.580 you lose that photic input.
NOTE Confidence: 0.919239327777778

00:32:29.580 --> 00:32:32.415 If you lose that light signal to the SDN,
NOTE Confidence: 0.919239327777778

00:32:32.420 --> 00:32:34.160 telling the SDN when it's
NOTE Confidence: 0.919239327777778

00:32:34.160 --> 00:32:35.900 night and when it's daytime,
NOTE Confidence: 0.919239327777778

00:32:35.900 --> 00:32:37.682 you're then going to follow that
NOTE Confidence: 0.919239327777778

00:32:37.682 --> 00:32:39.497 intrinsic rhythm and get later and
NOTE Confidence: 0.919239327777778

00:32:39.497 --> 00:32:41.213 later and so in blind individuals.

NOTE Confidence: 0.919239327777778

00:32:41.220 --> 00:32:42.740 This has been previously described,

NOTE Confidence: 0.919239327777778

00:32:42.740 --> 00:32:43.988 although not everybody who's

NOTE Confidence: 0.919239327777778

00:32:43.988 --> 00:32:45.236 blind has this disorder.

NOTE Confidence: 0.919239327777778

00:32:45.240 --> 00:32:46.940 To keep that in mind.

NOTE Confidence: 0.919239327777778

00:32:46.940 --> 00:32:49.190 And then in our patient here we do see

NOTE Confidence: 0.919239327777778

00:32:49.190 --> 00:32:51.575 a lot of these in sighted patients.

NOTE Confidence: 0.919239327777778

00:32:51.580 --> 00:32:52.978 It's likely multifactorial.

NOTE Confidence: 0.919239327777778

00:32:52.978 --> 00:32:55.774 A combination of minimal social cues,

NOTE Confidence: 0.919239327777778

00:32:55.780 --> 00:32:57.259 potentially a prolonged

NOTE Confidence: 0.919239327777778

00:32:57.259 --> 00:32:58.738 intrinsic circadian period,

NOTE Confidence: 0.919239327777778

00:32:58.740 --> 00:33:01.348 and what I most often see is that

NOTE Confidence: 0.919239327777778

00:33:01.348 --> 00:33:03.240 these individuals will start as what

NOTE Confidence: 0.919239327777778

00:33:03.240 --> 00:33:05.580 we call sort of the extreme delayed,

NOTE Confidence: 0.919239327777778

00:33:05.580 --> 00:33:07.116 and then eventually they just sort

NOTE Confidence: 0.919239327777778

00:33:07.116 --> 00:33:08.918 of fall off and become non 24,

NOTE Confidence: 0.919239327777778

00:33:08.920 --> 00:33:11.678 and they may alternate and go back
NOTE Confidence: 0.919239327777778

00:33:11.678 --> 00:33:14.131 and forth between the semi stable
NOTE Confidence: 0.919239327777778

00:33:14.131 --> 00:33:16.507 and trainment and being non 24.
NOTE Confidence: 0.919239327777778

00:33:16.510 --> 00:33:18.634 So going through the task force
NOTE Confidence: 0.919239327777778

00:33:18.634 --> 00:33:20.050 guidelines on basically there
NOTE Confidence: 0.919239327777778

00:33:20.109 --> 00:33:22.083 is a recommendation for the use
NOTE Confidence: 0.919239327777778

00:33:22.083 --> 00:33:23.070 of timed melatonin.
NOTE Confidence: 0.919239327777778

00:33:23.070 --> 00:33:26.002 Clinically, what we tend to do in blind,
NOTE Confidence: 0.919239327777778

00:33:26.002 --> 00:33:27.186 we'll still follow that,
NOTE Confidence: 0.919239327777778

00:33:27.190 --> 00:33:29.365 so typically using half a
NOTE Confidence: 0.919239327777778

00:33:29.365 --> 00:33:31.105 milligram to 3 milligrams,
NOTE Confidence: 0.919239327777778

00:33:31.110 --> 00:33:33.270 taking an hour before desired bedtime,
NOTE Confidence: 0.919239327777778

00:33:33.270 --> 00:33:35.240 they're also is the approved
NOTE Confidence: 0.919239327777778

00:33:35.240 --> 00:33:36.028 medication tasimelteon,
NOTE Confidence: 0.919239327777778

00:33:36.030 --> 00:33:38.550 which we'll talk about in the next slide.
NOTE Confidence: 0.919239327777778

00:33:38.550 --> 00:33:39.378 In sighted individuals,

NOTE Confidence: 0.91923932777778

00:33:39.378 --> 00:33:41.990 it tends to get a little more complicated,

NOTE Confidence: 0.91923932777778

00:33:41.990 --> 00:33:44.748 and so we have a number of

NOTE Confidence: 0.91923932777778

00:33:44.748 --> 00:33:45.930 different protocols we've

NOTE Confidence: 0.878777485

00:33:46.010 --> 00:33:49.302 been trying. We will often do half a

NOTE Confidence: 0.878777485

00:33:49.302 --> 00:33:51.556 milligram of melatonin, about five

NOTE Confidence: 0.878777485

00:33:51.556 --> 00:33:54.196 hours before their desired bedtime,

NOTE Confidence: 0.878777485

00:33:54.200 --> 00:33:56.538 as more of the phase shifting dose,

NOTE Confidence: 0.878777485

00:33:56.540 --> 00:33:58.563 and then an additional 1 milligram of

NOTE Confidence: 0.878777485

00:33:58.563 --> 00:34:00.375 melatonin an hour before their desired

NOTE Confidence: 0.878777485

00:34:00.375 --> 00:34:02.440 bedtime is more of a hypnotic dose.

NOTE Confidence: 0.878777485

00:34:02.440 --> 00:34:04.336 Once they're close to their desired

NOTE Confidence: 0.878777485

00:34:04.336 --> 00:34:06.739 bedtime to try to anchor them there,

NOTE Confidence: 0.878777485

00:34:06.740 --> 00:34:08.960 we'll use very strict sleep schedules,

NOTE Confidence: 0.878777485

00:34:08.960 --> 00:34:11.060 timed light exposure when they wake up,

NOTE Confidence: 0.878777485

00:34:11.060 --> 00:34:13.068 and then we'll talk a little bit more

NOTE Confidence: 0.878777485

00:34:13.068 --> 00:34:15.090 about some of these other things we've

NOTE Confidence: 0.878777485

00:34:15.090 --> 00:34:16.870 used feeding and activity as well.

NOTE Confidence: 0.878777485

00:34:16.870 --> 00:34:19.229 Just to go through has a meltdown,

NOTE Confidence: 0.878777485

00:34:19.230 --> 00:34:21.246 so this is a melatonin agonist.

NOTE Confidence: 0.878777485

00:34:21.250 --> 00:34:23.635 This is the data from the set and reset

NOTE Confidence: 0.878777485

00:34:23.635 --> 00:34:25.668 trial indicating its effectiveness,

NOTE Confidence: 0.878777485

00:34:25.670 --> 00:34:27.637 and in this trial they were just

NOTE Confidence: 0.878777485

00:34:27.637 --> 00:34:29.615 looking at blind individuals and they

NOTE Confidence: 0.878777485

00:34:29.615 --> 00:34:32.412 found that 20% of the patients in the

NOTE Confidence: 0.878777485

00:34:32.412 --> 00:34:33.962 tasimelteon group met their criteria

NOTE Confidence: 0.878777485

00:34:33.962 --> 00:34:35.950 for in treatment at one month compared

NOTE Confidence: 0.878777485

00:34:36.001 --> 00:34:38.212 to only 3% in the placebo group.

NOTE Confidence: 0.878777485

00:34:38.212 --> 00:34:39.924 So this is approved.

NOTE Confidence: 0.878777485

00:34:39.930 --> 00:34:40.364 Technically,

NOTE Confidence: 0.878777485

00:34:40.364 --> 00:34:42.968 the FDA indications do not specify

NOTE Confidence: 0.878777485

00:34:42.968 --> 00:34:45.990 that you have to be blind or sighted,

NOTE Confidence: 0.878777485

00:34:45.990 --> 00:34:47.206 just that you're not.

NOTE Confidence: 0.878777485

00:34:47.206 --> 00:34:48.726 24 although sometimes you will

NOTE Confidence: 0.878777485

00:34:48.726 --> 00:34:50.548 run into issues with insurance,

NOTE Confidence: 0.878777485

00:34:50.550 --> 00:34:52.061 trying to say that oh, they're not blind,

NOTE Confidence: 0.878777485

00:34:52.061 --> 00:34:53.146 we're not gonna cover this.

NOTE Confidence: 0.878777485

00:34:53.150 --> 00:34:54.670 Usually that can be addressed

NOTE Confidence: 0.878777485

00:34:54.670 --> 00:34:56.190 in a peer to peer.

NOTE Confidence: 0.878777485

00:34:56.190 --> 00:34:58.188 The main reason I don't use this more though,

NOTE Confidence: 0.878777485

00:34:58.190 --> 00:34:59.968 is that if you look down here,

NOTE Confidence: 0.878777485

00:34:59.970 --> 00:35:02.980 the price of one month supply of

NOTE Confidence: 0.878777485

00:35:02.980 --> 00:35:05.692 tasimelteon is about \$23,000 compared to

NOTE Confidence: 0.878777485

00:35:05.692 --> 00:35:09.010 \$3.00 for one month supply of melatonin.

NOTE Confidence: 0.878777485

00:35:09.010 --> 00:35:10.610 I don't have anything personally

NOTE Confidence: 0.878777485

00:35:10.610 --> 00:35:11.570 against hazing Melton.

NOTE Confidence: 0.878777485

00:35:11.570 --> 00:35:12.872 I think I've gotten a reputation

NOTE Confidence: 0.878777485

00:35:12.872 --> 00:35:14.090 as somebody who doesn't like it.
NOTE Confidence: 0.878777485

00:35:14.090 --> 00:35:14.867 It does work.
NOTE Confidence: 0.878777485

00:35:14.867 --> 00:35:17.160 I just like to try the cheaper option.
NOTE Confidence: 0.878777485

00:35:17.160 --> 00:35:18.810 1st and then move to tasimelteon.
NOTE Confidence: 0.878777485

00:35:18.810 --> 00:35:23.108 If I can't reach success with melatonin.
NOTE Confidence: 0.878777485

00:35:23.110 --> 00:35:25.258 So we started treating that individual
NOTE Confidence: 0.878777485

00:35:25.258 --> 00:35:28.549 and he got back to me after we got his
NOTE Confidence: 0.878777485

00:35:28.549 --> 00:35:31.007 sleep wake schedule on track and he said,
NOTE Confidence: 0.878777485

00:35:31.010 --> 00:35:31.264 well.
NOTE Confidence: 0.878777485

00:35:31.264 --> 00:35:32.788 I'm going to bed and waking
NOTE Confidence: 0.878777485

00:35:32.788 --> 00:35:34.090 up when I want to,
NOTE Confidence: 0.878777485

00:35:34.090 --> 00:35:35.623 but now it really feels like my
NOTE Confidence: 0.878777485

00:35:35.623 --> 00:35:37.280 body has three different schedules.
NOTE Confidence: 0.878777485

00:35:37.280 --> 00:35:38.954 My physical self now seems to
NOTE Confidence: 0.878777485

00:35:38.954 --> 00:35:40.630 follow a more normal schedule.
NOTE Confidence: 0.878777485

00:35:40.630 --> 00:35:42.814 My mental self seems to be highly

NOTE Confidence: 0.878777485

00:35:42.814 --> 00:35:44.559 nocturnal and my metabolism has

NOTE Confidence: 0.878777485

00:35:44.559 --> 00:35:47.142 changed to require only one small meal

NOTE Confidence: 0.878777485

00:35:47.142 --> 00:35:49.387 every 24 hours instead of 12 hours.

NOTE Confidence: 0.878777485

00:35:49.390 --> 00:35:51.982 And for me this was really

NOTE Confidence: 0.878777485

00:35:51.982 --> 00:35:54.263 interesting because this to me

NOTE Confidence: 0.878777485

00:35:54.263 --> 00:35:56.598 said we have desynchronized him,

NOTE Confidence: 0.878777485

00:35:56.600 --> 00:35:58.707 so I mentioned that we have clocks

NOTE Confidence: 0.878777485

00:35:58.707 --> 00:36:00.750 throughout our all throughout our body

NOTE Confidence: 0.878777485

00:36:00.750 --> 00:36:02.717 and it seemed like we had gotten.

NOTE Confidence: 0.878777485

00:36:02.720 --> 00:36:05.320 Sleep wake schedule on track.

NOTE Confidence: 0.878777485

00:36:05.320 --> 00:36:07.660 But for example, his peripheral clocks.

NOTE Confidence: 0.878777485

00:36:07.660 --> 00:36:10.796 His metabolism was not in line with that,

NOTE Confidence: 0.878777485

00:36:10.800 --> 00:36:12.944 so we got some sleep or some food

NOTE Confidence: 0.878777485

00:36:12.944 --> 00:36:15.273 logs from him and you can see just

NOTE Confidence: 0.878777485

00:36:15.273 --> 00:36:17.789 listed here his meals and I did some

NOTE Confidence: 0.878777485

00:36:17.789 --> 00:36:19.414 estimated calories and it really
NOTE Confidence: 0.878777485

00:36:19.414 --> 00:36:21.610 like you said he's just eating
NOTE Confidence: 0.878777485

00:36:21.610 --> 00:36:23.873 one meal encompassing most of his
NOTE Confidence: 0.878777485

00:36:23.873 --> 00:36:26.078 calories for the day at one time.
NOTE Confidence: 0.878777485

00:36:26.080 --> 00:36:28.768 And so we started to do some additional
NOTE Confidence: 0.878777485

00:36:28.768 --> 00:36:31.116 work with him on adjusting food timing.
NOTE Confidence: 0.878777485

00:36:31.116 --> 00:36:33.210 Really coming up with the skeleton.
NOTE Confidence: 0.847453348181818

00:36:33.210 --> 00:36:36.050 Eating period to be in alignment with his
NOTE Confidence: 0.847453348181818

00:36:36.050 --> 00:36:38.460 sleep wake timing and we managed to get
NOTE Confidence: 0.847453348181818

00:36:38.460 --> 00:36:40.598 him in trained and so now here he is.
NOTE Confidence: 0.847453348181818

00:36:40.600 --> 00:36:42.904 He's still diligently and if this is now
NOTE Confidence: 0.847453348181818

00:36:42.904 --> 00:36:45.311 10 years later I think almost he continues
NOTE Confidence: 0.847453348181818

00:36:45.311 --> 00:36:47.454 to send me these monthly sleep Diaries
NOTE Confidence: 0.847453348181818

00:36:47.454 --> 00:36:49.904 just to show me he's still on track.
NOTE Confidence: 0.847453348181818

00:36:49.904 --> 00:36:51.280 He's still in trained.
NOTE Confidence: 0.847453348181818

00:36:51.280 --> 00:36:52.927 We were able to get him back to work.

NOTE Confidence: 0.847453348181818

00:36:52.930 --> 00:36:55.082 He's on a flexible schedule now so he

NOTE Confidence: 0.847453348181818

00:36:55.082 --> 00:36:57.257 works more of like a second shift hour,

NOTE Confidence: 0.847453348181818

00:36:57.260 --> 00:36:59.703 but he's going to work everyday and

NOTE Confidence: 0.847453348181818

00:36:59.703 --> 00:37:02.048 is pretty happy with the schedule.

NOTE Confidence: 0.847453348181818

00:37:02.050 --> 00:37:04.150 So that leads to the final question,

NOTE Confidence: 0.847453348181818

00:37:04.150 --> 00:37:06.340 which is why do patients develop

NOTE Confidence: 0.847453348181818

00:37:06.340 --> 00:37:08.240 delayed sleep, wake phase disorder,

NOTE Confidence: 0.847453348181818

00:37:08.240 --> 00:37:09.410 and more importantly,

NOTE Confidence: 0.847453348181818

00:37:09.410 --> 00:37:11.880 why do sighted patients develop

NOTE Confidence: 0.847453348181818

00:37:11.880 --> 00:37:14.510 non 24 and we think about this

NOTE Confidence: 0.847453348181818

00:37:14.510 --> 00:37:16.850 first in terms of light exposure.

NOTE Confidence: 0.847453348181818

00:37:16.850 --> 00:37:18.810 So if we go back to that idea

NOTE Confidence: 0.847453348181818

00:37:18.810 --> 00:37:20.070 of in treatment,

NOTE Confidence: 0.847453348181818

00:37:20.070 --> 00:37:23.750 so how do the rest of us without

NOTE Confidence: 0.847453348181818

00:37:23.750 --> 00:37:25.615 circulating disorders sleep when it's

NOTE Confidence: 0.847453348181818

00:37:25.615 --> 00:37:27.820 dark and be awake during the daytime?

NOTE Confidence: 0.847453348181818

00:37:27.820 --> 00:37:30.025 And we think a lot of that comes from

NOTE Confidence: 0.847453348181818

00:37:30.025 --> 00:37:31.908 that daily exposure to sunshine.

NOTE Confidence: 0.847453348181818

00:37:31.910 --> 00:37:34.235 Giving us that morning advancing

NOTE Confidence: 0.847453348181818

00:37:34.235 --> 00:37:36.513 signal to keep us in line so that

NOTE Confidence: 0.847453348181818

00:37:36.513 --> 00:37:37.939 we're asleep when it's dark.

NOTE Confidence: 0.847453348181818

00:37:37.940 --> 00:37:39.668 So one theory for delayed sleep,

NOTE Confidence: 0.847453348181818

00:37:39.670 --> 00:37:40.519 wake phase disorders.

NOTE Confidence: 0.847453348181818

00:37:40.519 --> 00:37:42.500 Oh these are people who are just

NOTE Confidence: 0.847453348181818

00:37:42.557 --> 00:37:44.496 staying up later and waking up later,

NOTE Confidence: 0.847453348181818

00:37:44.500 --> 00:37:45.982 so maybe they're getting too much

NOTE Confidence: 0.847453348181818

00:37:45.982 --> 00:37:47.553 light at night and it's pushing

NOTE Confidence: 0.847453348181818

00:37:47.553 --> 00:37:49.149 them even later and they're getting

NOTE Confidence: 0.847453348181818

00:37:49.149 --> 00:37:50.350 less of that morning.

NOTE Confidence: 0.847453348181818

00:37:50.350 --> 00:37:51.778 Advancing signal because they're

NOTE Confidence: 0.847453348181818

00:37:51.778 --> 00:37:53.920 just not waking up in time.

NOTE Confidence: 0.847453348181818

00:37:53.920 --> 00:37:55.750 So we did one study trying to look at that,

NOTE Confidence: 0.847453348181818

00:37:55.750 --> 00:37:57.298 and there are several of these

NOTE Confidence: 0.847453348181818

00:37:57.298 --> 00:37:58.072 out there published,

NOTE Confidence: 0.847453348181818

00:37:58.080 --> 00:38:00.460 and certainly if you look on the

NOTE Confidence: 0.847453348181818

00:38:00.460 --> 00:38:02.746 left hand panel here at light

NOTE Confidence: 0.847453348181818

00:38:02.746 --> 00:38:04.736 exposure related to clock time,

NOTE Confidence: 0.847453348181818

00:38:04.740 --> 00:38:06.672 our delayed patients are here in blue

NOTE Confidence: 0.847453348181818

00:38:06.672 --> 00:38:08.852 and you can see that midnight is over

NOTE Confidence: 0.847453348181818

00:38:08.852 --> 00:38:10.800 here on the left and really anywhere

NOTE Confidence: 0.847453348181818

00:38:10.800 --> 00:38:13.184 from about 10:00 PM to about 4:00 AM.

NOTE Confidence: 0.847453348181818

00:38:13.190 --> 00:38:14.590 They're definitely getting more

NOTE Confidence: 0.847453348181818

00:38:14.590 --> 00:38:16.340 light exposure than our controls,

NOTE Confidence: 0.847453348181818

00:38:16.340 --> 00:38:18.254 getting much less light first thing

NOTE Confidence: 0.847453348181818

00:38:18.254 --> 00:38:20.618 in the morning up until about noon.

NOTE Confidence: 0.847453348181818

00:38:20.620 --> 00:38:21.424 But interestingly,

NOTE Confidence: 0.847453348181818

00:38:21.424 --> 00:38:24.238 if you align that based on their.
NOTE Confidence: 0.847453348181818

00:38:24.240 --> 00:38:26.328 Clock time so their internal time,
NOTE Confidence: 0.847453348181818

00:38:26.330 --> 00:38:29.000 so using dim light melatonin onset
NOTE Confidence: 0.847453348181818

00:38:29.000 --> 00:38:32.707 you can see that actually on this end.
NOTE Confidence: 0.847453348181818

00:38:32.710 --> 00:38:35.391 So in that region of fades delay
NOTE Confidence: 0.847453348181818

00:38:35.391 --> 00:38:37.630 there's really no difference in
NOTE Confidence: 0.847453348181818

00:38:37.630 --> 00:38:40.150 that first early morning region.
NOTE Confidence: 0.847453348181818

00:38:40.150 --> 00:38:41.390 There's really no difference.
NOTE Confidence: 0.847453348181818

00:38:41.390 --> 00:38:43.623 We're only seeing a bit of a
NOTE Confidence: 0.847453348181818

00:38:43.623 --> 00:38:45.198 difference in what we're terming
NOTE Confidence: 0.847453348181818

00:38:45.198 --> 00:38:46.910 the late phase advance window,
NOTE Confidence: 0.847453348181818

00:38:46.910 --> 00:38:49.829 so sort of later in the morning.
NOTE Confidence: 0.847453348181818

00:38:49.830 --> 00:38:52.080 The delayed are getting a little
NOTE Confidence: 0.847453348181818

00:38:52.080 --> 00:38:54.260 bit less light exposure than the.
NOTE Confidence: 0.847453348181818

00:38:54.260 --> 00:38:55.022 Controls are getting,
NOTE Confidence: 0.847453348181818

00:38:55.022 --> 00:38:57.100 and so we think they may be missing

NOTE Confidence: 0.847453348181818

00:38:57.100 --> 00:38:59.036 out on a little bit of that phase.

NOTE Confidence: 0.847453348181818

00:38:59.040 --> 00:38:59.996 Advancing signal,

NOTE Confidence: 0.847453348181818

00:38:59.996 --> 00:39:02.386 but maybe not necessarily enough

NOTE Confidence: 0.847453348181818

00:39:02.386 --> 00:39:04.809 to fully explain the phenotype

NOTE Confidence: 0.847453348181818

00:39:04.809 --> 00:39:06.180 that we're seeing.

NOTE Confidence: 0.847453348181818

00:39:06.180 --> 00:39:08.217 And So what are some other theories?

NOTE Confidence: 0.847453348181818

00:39:08.220 --> 00:39:08.574 So,

NOTE Confidence: 0.847453348181818

00:39:08.574 --> 00:39:10.698 another idea is that you get

NOTE Confidence: 0.847453348181818

00:39:10.698 --> 00:39:12.520 the same light exposure,

NOTE Confidence: 0.847453348181818

00:39:12.520 --> 00:39:15.049 but you have more of a response to it,

NOTE Confidence: 0.847453348181818

00:39:15.050 --> 00:39:17.180 so maybe you're overly sensitive

NOTE Confidence: 0.847453348181818

00:39:17.180 --> 00:39:19.310 to evening light or under

NOTE Confidence: 0.859899833571429

00:39:19.386 --> 00:39:21.370 sensitive to morning light.

NOTE Confidence: 0.859899833571429

00:39:21.370 --> 00:39:24.072 Sean Kane's group in Australia has done

NOTE Confidence: 0.859899833571429

00:39:24.072 --> 00:39:26.827 some work looking at this and they did

NOTE Confidence: 0.859899833571429

00:39:26.827 --> 00:39:29.165 find that with the exact same light
NOTE Confidence: 0.859899833571429

00:39:29.165 --> 00:39:31.769 pulse patients who were delayed had a
NOTE Confidence: 0.859899833571429

00:39:31.769 --> 00:39:33.836 larger phase delay and I don't like
NOTE Confidence: 0.859899833571429

00:39:33.836 --> 00:39:36.632 how this graph is because the delay is
NOTE Confidence: 0.859899833571429

00:39:36.632 --> 00:39:38.637 actually positive instead of negative,
NOTE Confidence: 0.859899833571429

00:39:38.640 --> 00:39:41.733 but they have a larger fades delay as
NOTE Confidence: 0.859899833571429

00:39:41.733 --> 00:39:43.911 well as greater suppression of melatonin
NOTE Confidence: 0.859899833571429

00:39:43.911 --> 00:39:46.508 in response to an evening light pulse.
NOTE Confidence: 0.859899833571429

00:39:46.510 --> 00:39:48.726 So there does seem to be some excess
NOTE Confidence: 0.859899833571429

00:39:48.726 --> 00:39:50.749 sensitivity in some of these individuals.
NOTE Confidence: 0.859899833571429

00:39:50.750 --> 00:39:51.830 But then what?
NOTE Confidence: 0.859899833571429

00:39:51.830 --> 00:39:53.270 About the other question,
NOTE Confidence: 0.859899833571429

00:39:53.270 --> 00:39:56.648 what about this morning light sensitivity?
NOTE Confidence: 0.859899833571429

00:39:56.650 --> 00:39:59.306 So getting back to what I was touching
NOTE Confidence: 0.859899833571429

00:39:59.306 --> 00:40:01.987 on before our eyes do a lot of things.
NOTE Confidence: 0.859899833571429

00:40:01.990 --> 00:40:03.814 We have what we most commonly

NOTE Confidence: 0.859899833571429
00:40:03.814 --> 00:40:05.030 think about this image,
NOTE Confidence: 0.859899833571429
00:40:05.030 --> 00:40:06.830 forming visions that we look at an apple.
NOTE Confidence: 0.859899833571429
00:40:06.830 --> 00:40:08.390 We see an apple,
NOTE Confidence: 0.859899833571429
00:40:08.390 --> 00:40:11.350 but there's also non image forming vision.
NOTE Confidence: 0.859899833571429
00:40:11.350 --> 00:40:13.474 So these are things like these
NOTE Confidence: 0.859899833571429
00:40:13.474 --> 00:40:14.536 circadian light response.
NOTE Confidence: 0.859899833571429
00:40:14.540 --> 00:40:15.885 The alerting effects of light
NOTE Confidence: 0.859899833571429
00:40:15.885 --> 00:40:17.230 and that sort of thing.
NOTE Confidence: 0.859899833571429
00:40:17.230 --> 00:40:18.680 So the image forming vision.
NOTE Confidence: 0.859899833571429
00:40:18.680 --> 00:40:21.320 This is a an image of the retina
NOTE Confidence: 0.859899833571429
00:40:21.320 --> 00:40:23.487 here image forming visions mediated
NOTE Confidence: 0.859899833571429
00:40:23.487 --> 00:40:26.819 primarily by our rods and cones here.
NOTE Confidence: 0.859899833571429
00:40:26.820 --> 00:40:28.555 That non image forming vision
NOTE Confidence: 0.859899833571429
00:40:28.555 --> 00:40:30.290 is primarily mediated by these
NOTE Confidence: 0.859899833571429
00:40:30.349 --> 00:40:32.119 intrinsically photosensitive retinal
NOTE Confidence: 0.859899833571429

00:40:32.119 --> 00:40:34.533 ganglion cells that contain a
NOTE Confidence: 0.859899833571429

00:40:34.533 --> 00:40:36.177 photo pigment called melanopsin,
NOTE Confidence: 0.859899833571429

00:40:36.180 --> 00:40:38.568 and the nice thing about these
NOTE Confidence: 0.859899833571429

00:40:38.568 --> 00:40:41.471 cells is that they not only project
NOTE Confidence: 0.859899833571429

00:40:41.471 --> 00:40:44.320 to the SCN where they can mediate
NOTE Confidence: 0.859899833571429

00:40:44.402 --> 00:40:46.645 the circadian signal of light,
NOTE Confidence: 0.859899833571429

00:40:46.645 --> 00:40:49.015 but there's also a projection from
NOTE Confidence: 0.859899833571429

00:40:49.015 --> 00:40:51.710 these cells into the brainstem to
NOTE Confidence: 0.859899833571429

00:40:51.710 --> 00:40:53.494 the olivary pretectal nucleus,
NOTE Confidence: 0.859899833571429

00:40:53.500 --> 00:40:55.708 which goes to the Edinger Westphal
NOTE Confidence: 0.859899833571429

00:40:55.708 --> 00:40:57.180 nucleus which controls pupil.
NOTE Confidence: 0.859899833571429

00:40:57.180 --> 00:40:59.427 Diameter so we can use that pathway
NOTE Confidence: 0.859899833571429

00:40:59.427 --> 00:41:02.283 as a way of measuring how well
NOTE Confidence: 0.859899833571429

00:41:02.283 --> 00:41:04.103 these cells are functioning.
NOTE Confidence: 0.859899833571429

00:41:04.110 --> 00:41:06.366 We can do that in the clinic using
NOTE Confidence: 0.859899833571429

00:41:06.366 --> 00:41:07.625 something called a pupillometer

NOTE Confidence: 0.859899833571429
00:41:07.625 --> 00:41:09.205 as we have pictured here,
NOTE Confidence: 0.859899833571429
00:41:09.210 --> 00:41:11.037 so there's a set of binoculars that
NOTE Confidence: 0.859899833571429
00:41:11.037 --> 00:41:12.869 the subject is going to look into,
NOTE Confidence: 0.859899833571429
00:41:12.870 --> 00:41:15.204 and then there's an infrared camera
NOTE Confidence: 0.859899833571429
00:41:15.204 --> 00:41:17.171 that actually outlines the pupil
NOTE Confidence: 0.859899833571429
00:41:17.171 --> 00:41:20.026 diameter as seen here and then you can
NOTE Confidence: 0.859899833571429
00:41:20.026 --> 00:41:21.896 provide different light stimuli and
NOTE Confidence: 0.859899833571429
00:41:21.896 --> 00:41:24.695 then measure the pupil response to light.
NOTE Confidence: 0.859899833571429
00:41:24.700 --> 00:41:26.640 When we're looking at melanopsin,
NOTE Confidence: 0.859899833571429
00:41:26.640 --> 00:41:30.056 these cells really give you a sense of
NOTE Confidence: 0.859899833571429
00:41:30.056 --> 00:41:33.557 the overall light tone of the environment,
NOTE Confidence: 0.859899833571429
00:41:33.560 --> 00:41:36.208 and so rather than being a second by
NOTE Confidence: 0.859899833571429
00:41:36.208 --> 00:41:38.596 second response to the light that's there,
NOTE Confidence: 0.859899833571429
00:41:38.600 --> 00:41:41.015 they hold sort of a static response,
NOTE Confidence: 0.859899833571429
00:41:41.020 --> 00:41:42.520 and this is illustrated here.
NOTE Confidence: 0.859899833571429

00:41:42.520 --> 00:41:44.296 If you look at the dotted blue line,
NOTE Confidence: 0.859899833571429

00:41:44.300 --> 00:41:46.568 so we've got pupil diameter here.
NOTE Confidence: 0.859899833571429

00:41:46.570 --> 00:41:48.908 If you provide a blue light stimulus,
NOTE Confidence: 0.859899833571429

00:41:48.910 --> 00:41:50.158 the people constrict.
NOTE Confidence: 0.859899833571429

00:41:50.158 --> 00:41:52.238 You turn off the stimulus,
NOTE Confidence: 0.859899833571429

00:41:52.240 --> 00:41:54.160 and if those melanopsin cells are
NOTE Confidence: 0.859899833571429

00:41:54.160 --> 00:41:56.129 functioning the way they're supposed to.
NOTE Confidence: 0.859899833571429

00:41:56.130 --> 00:41:58.734 That pupil will read dilate but not
NOTE Confidence: 0.859899833571429

00:41:58.734 --> 00:42:01.747 fully back to the baseline right away.
NOTE Confidence: 0.859899833571429

00:42:01.750 --> 00:42:04.486 Compare that to somebody who doesn't
NOTE Confidence: 0.859899833571429

00:42:04.486 --> 00:42:06.780 have well functioning melanopsin cells.
NOTE Confidence: 0.859899833571429

00:42:06.780 --> 00:42:08.658 You can see the pupil diameter
NOTE Confidence: 0.859899833571429

00:42:08.658 --> 00:42:10.629 here in the solid blue line,
NOTE Confidence: 0.859899833571429

00:42:10.630 --> 00:42:11.416 they constrict,
NOTE Confidence: 0.859899833571429

00:42:11.416 --> 00:42:13.381 and then they radiate essentially
NOTE Confidence: 0.859899833571429

00:42:13.381 --> 00:42:15.690 back to where they were before,

NOTE Confidence: 0.859899833571429
00:42:15.690 --> 00:42:17.958 and so we can use a measurement
NOTE Confidence: 0.859899833571429
00:42:17.958 --> 00:42:18.972 called the PIPR,
NOTE Confidence: 0.859899833571429
00:42:18.972 --> 00:42:20.782 which is literally just that
NOTE Confidence: 0.859899833571429
00:42:20.782 --> 00:42:22.230 difference between the post
NOTE Confidence: 0.841117626666667
00:42:22.288 --> 00:42:24.388 stimulation and the pre stimulation.
NOTE Confidence: 0.841117626666667
00:42:24.390 --> 00:42:26.050 So the larger that is.
NOTE Confidence: 0.841117626666667
00:42:26.050 --> 00:42:27.740 The better the melanopsin cells
NOTE Confidence: 0.841117626666667
00:42:27.740 --> 00:42:30.040 are functioning, the smaller it is,
NOTE Confidence: 0.841117626666667
00:42:30.040 --> 00:42:31.660 the worse they're functioning.
NOTE Confidence: 0.841117626666667
00:42:31.660 --> 00:42:33.760 So our simple question was,
NOTE Confidence: 0.841117626666667
00:42:33.760 --> 00:42:36.084 is the PIR impaired in patients with
NOTE Confidence: 0.841117626666667
00:42:36.084 --> 00:42:37.732 delayed sleep wake phase disorder
NOTE Confidence: 0.841117626666667
00:42:37.732 --> 00:42:40.092 non 24 and part of this comes back
NOTE Confidence: 0.841117626666667
00:42:40.161 --> 00:42:41.967 to I mentioned before that patient
NOTE Confidence: 0.841117626666667
00:42:41.967 --> 00:42:43.930 with non 24 had minimal light
NOTE Confidence: 0.841117626666667

00:42:43.930 --> 00:42:46.555 exposure that tends to be a common
NOTE Confidence: 0.841117626666667

00:42:46.555 --> 00:42:48.127 phenotype with these individuals
NOTE Confidence: 0.841117626666667

00:42:48.127 --> 00:42:50.320 they tend to not like bright light.
NOTE Confidence: 0.841117626666667

00:42:50.320 --> 00:42:51.910 They've kind of like your migraine
NOTE Confidence: 0.841117626666667

00:42:51.956 --> 00:42:53.186 or they've turned down the
NOTE Confidence: 0.841117626666667

00:42:53.186 --> 00:42:54.416 lights in the clinic room.
NOTE Confidence: 0.841117626666667

00:42:54.420 --> 00:42:56.499 If they have the option to they
NOTE Confidence: 0.841117626666667

00:42:56.499 --> 00:42:58.943 tend to spend more time in dimly
NOTE Confidence: 0.841117626666667

00:42:58.943 --> 00:43:00.423 lit environments because the
NOTE Confidence: 0.841117626666667

00:43:00.423 --> 00:43:02.490 light is irritating to them.
NOTE Confidence: 0.841117626666667

00:43:02.490 --> 00:43:04.410 So these are our study participants.
NOTE Confidence: 0.841117626666667

00:43:04.410 --> 00:43:06.610 We broke this down so we have our
NOTE Confidence: 0.841117626666667

00:43:06.610 --> 00:43:08.155 control individuals here and then
NOTE Confidence: 0.841117626666667

00:43:08.155 --> 00:43:09.403 within our clinical population
NOTE Confidence: 0.841117626666667

00:43:09.403 --> 00:43:11.239 we had patients who came in
NOTE Confidence: 0.841117626666667

00:43:11.239 --> 00:43:12.367 with purely delayed sleep,

NOTE Confidence: 0.841117626666667
00:43:12.370 --> 00:43:13.240 wake phase disorder,
NOTE Confidence: 0.841117626666667
00:43:13.240 --> 00:43:15.652 and I say that they just had a
NOTE Confidence: 0.841117626666667
00:43:15.652 --> 00:43:17.850 problem based on ICSD 3 criteria that
NOTE Confidence: 0.841117626666667
00:43:17.850 --> 00:43:19.787 they're sleep like timing was late,
NOTE Confidence: 0.841117626666667
00:43:19.790 --> 00:43:21.428 but they never had a time period
NOTE Confidence: 0.841117626666667
00:43:21.428 --> 00:43:22.894 where it actually got later and
NOTE Confidence: 0.841117626666667
00:43:22.894 --> 00:43:24.328 later and went around the clock.
NOTE Confidence: 0.841117626666667
00:43:24.330 --> 00:43:27.250 We had twelve of those and then we had 12
NOTE Confidence: 0.841117626666667
00:43:27.329 --> 00:43:30.395 patients who had symptoms of delayed sleep,
NOTE Confidence: 0.841117626666667
00:43:30.400 --> 00:43:31.033 wake phase disorder.
NOTE Confidence: 0.841117626666667
00:43:31.033 --> 00:43:32.299 But if you asked them that.
NOTE Confidence: 0.841117626666667
00:43:32.300 --> 00:43:32.555 Question,
NOTE Confidence: 0.841117626666667
00:43:32.555 --> 00:43:34.340 have you ever actually gotten so late
NOTE Confidence: 0.841117626666667
00:43:34.340 --> 00:43:35.850 that you've gone around the clock?
NOTE Confidence: 0.841117626666667
00:43:35.850 --> 00:43:37.290 Do you go back and forth
NOTE Confidence: 0.841117626666667

00:43:37.290 --> 00:43:38.250 between those two states?
NOTE Confidence: 0.841117626666667

00:43:38.250 --> 00:43:41.746 We had 17 patients who had that phenotype.
NOTE Confidence: 0.841117626666667

00:43:41.750 --> 00:43:43.256 Overall, similar age.
NOTE Confidence: 0.841117626666667

00:43:43.256 --> 00:43:45.766 Obviously lower scores on the
NOTE Confidence: 0.841117626666667

00:43:45.766 --> 00:43:48.207 Horn osberg indicating more
NOTE Confidence: 0.841117626666667

00:43:48.207 --> 00:43:50.915 eveningness within this population.
NOTE Confidence: 0.841117626666667

00:43:50.920 --> 00:43:52.436 Worst scores on PSQI,
NOTE Confidence: 0.841117626666667

00:43:52.436 --> 00:43:53.952 which is previously been
NOTE Confidence: 0.841117626666667

00:43:53.952 --> 00:43:55.679 described in DSPD patients,
NOTE Confidence: 0.841117626666667

00:43:55.680 --> 00:43:58.837 but not any sleepier than our controls,
NOTE Confidence: 0.841117626666667

00:43:58.840 --> 00:44:00.580 and then the average sleep onset,
NOTE Confidence: 0.841117626666667

00:44:00.580 --> 00:44:02.384 offset and sleep midpoint,
NOTE Confidence: 0.841117626666667

00:44:02.384 --> 00:44:05.495 was significantly later in our delayed and
NOTE Confidence: 0.841117626666667

00:44:05.495 --> 00:44:08.143 even later in our non 24 overlap group,
NOTE Confidence: 0.841117626666667

00:44:08.150 --> 00:44:10.313 but total sleep time was the same
NOTE Confidence: 0.841117626666667

00:44:10.313 --> 00:44:12.404 across all groups and then lastly

NOTE Confidence: 0.841117626666667
00:44:12.404 --> 00:44:15.120 the people on the tree testing in
NOTE Confidence: 0.841117626666667
00:44:15.206 --> 00:44:18.258 relation to time since they woke up
NOTE Confidence: 0.841117626666667
00:44:18.258 --> 00:44:20.678 was slightly closer to wake time.
NOTE Confidence: 0.841117626666667
00:44:20.680 --> 00:44:22.750 And our delayed and non 24
NOTE Confidence: 0.841117626666667
00:44:22.750 --> 00:44:24.830 overlap compared to our controls.
NOTE Confidence: 0.841117626666667
00:44:24.830 --> 00:44:26.990 But we know that from previously
NOTE Confidence: 0.841117626666667
00:44:26.990 --> 00:44:29.105 published studies the PIPR only tends
NOTE Confidence: 0.841117626666667
00:44:29.105 --> 00:44:31.545 to change around the time of dim light,
NOTE Confidence: 0.841117626666667
00:44:31.550 --> 00:44:33.440 melatonin onset and otherwise remains
NOTE Confidence: 0.841117626666667
00:44:33.440 --> 00:44:35.330 fairly stable throughout the day,
NOTE Confidence: 0.841117626666667
00:44:35.330 --> 00:44:38.264 and so we were well away from the Duomo
NOTE Confidence: 0.841117626666667
00:44:38.264 --> 00:44:40.718 window for all of these individuals.
NOTE Confidence: 0.841117626666667
00:44:40.720 --> 00:44:42.964 This is data from one control
NOTE Confidence: 0.841117626666667
00:44:42.964 --> 00:44:44.460 and one delayed subject.
NOTE Confidence: 0.841117626666667
00:44:44.460 --> 00:44:46.819 Just showing an example of the tracing.
NOTE Confidence: 0.841117626666667

00:44:46.820 --> 00:44:48.926 And as you can see here,
NOTE Confidence: 0.841117626666667

00:44:48.930 --> 00:44:53.088 our delayed patient in the solid blue,
NOTE Confidence: 0.841117626666667

00:44:53.090 --> 00:44:54.322 there's their pupil diameter.
NOTE Confidence: 0.841117626666667

00:44:54.322 --> 00:44:55.862 You provide the light stimulus,
NOTE Confidence: 0.841117626666667

00:44:55.870 --> 00:44:57.073 the pupil constricts.
NOTE Confidence: 0.841117626666667

00:44:57.073 --> 00:44:59.078 They radiate almost to exactly
NOTE Confidence: 0.841117626666667

00:44:59.078 --> 00:45:01.098 where they were pre stimulus
NOTE Confidence: 0.841117626666667

00:45:01.098 --> 00:45:02.626 compared to our control,
NOTE Confidence: 0.841117626666667

00:45:02.630 --> 00:45:05.400 who constricts and then maintains
NOTE Confidence: 0.841117626666667

00:45:05.400 --> 00:45:08.714 that constriction post stimulus so you
NOTE Confidence: 0.841117626666667

00:45:08.714 --> 00:45:11.906 can see smaller pipr in our delayed
NOTE Confidence: 0.841117626666667

00:45:11.906 --> 00:45:14.128 patient compared to our control.
NOTE Confidence: 0.841117626666667

00:45:14.130 --> 00:45:15.924 This is just quantifying it here
NOTE Confidence: 0.841117626666667

00:45:15.924 --> 00:45:18.009 and so you can see controls.
NOTE Confidence: 0.841117626666667

00:45:18.010 --> 00:45:20.764 Overall have a larger Pi PR
NOTE Confidence: 0.841117626666667

00:45:20.764 --> 00:45:22.600 significantly greater than the

NOTE Confidence: 0.845463685

00:45:22.685 --> 00:45:24.269 non 24 hour overlap,

NOTE Confidence: 0.845463685

00:45:24.270 --> 00:45:26.542 and then there's kind of a range within

NOTE Confidence: 0.845463685

00:45:26.542 --> 00:45:28.643 that just delayed group which we think

NOTE Confidence: 0.845463685

00:45:28.643 --> 00:45:30.978 may come from the fact that there

NOTE Confidence: 0.845463685

00:45:30.978 --> 00:45:33.366 are several different phenotypes of delayed.

NOTE Confidence: 0.845463685

00:45:33.370 --> 00:45:34.578 There's sort of this.

NOTE Confidence: 0.845463685

00:45:34.578 --> 00:45:36.088 We're still working on terminology,

NOTE Confidence: 0.845463685

00:45:36.090 --> 00:45:38.282 but some of them have a mismatch between

NOTE Confidence: 0.845463685

00:45:38.282 --> 00:45:40.708 their demo timing and their preferred timing,

NOTE Confidence: 0.845463685

00:45:40.710 --> 00:45:42.383 and some of them are both their

NOTE Confidence: 0.845463685

00:45:42.383 --> 00:45:43.729 demo and their sleep wake.

NOTE Confidence: 0.845463685

00:45:43.730 --> 00:45:44.766 I mean it's delayed,

NOTE Confidence: 0.845463685

00:45:44.766 --> 00:45:46.878 so I think that we're capturing that with

NOTE Confidence: 0.845463685

00:45:46.878 --> 00:45:48.910 some of the variability that we see here.

NOTE Confidence: 0.845463685

00:45:48.910 --> 00:45:51.164 But essentially this is a first pass,

NOTE Confidence: 0.845463685

00:45:51.170 --> 00:45:53.480 telling us that we think that we
NOTE Confidence: 0.845463685

00:45:53.480 --> 00:45:55.345 may have found a subpopulation
NOTE Confidence: 0.845463685

00:45:55.345 --> 00:45:57.745 of individuals who have at least
NOTE Confidence: 0.845463685

00:45:57.745 --> 00:46:00.307 based on bedside and office exam,
NOTE Confidence: 0.845463685

00:46:00.310 --> 00:46:02.490 have normal image forming vision,
NOTE Confidence: 0.845463685

00:46:02.490 --> 00:46:04.030 but they're non image forming.
NOTE Confidence: 0.845463685

00:46:04.030 --> 00:46:05.920 Vision may have some impairment and
NOTE Confidence: 0.845463685

00:46:05.920 --> 00:46:08.824 this may be part of why they end up
NOTE Confidence: 0.845463685

00:46:08.824 --> 00:46:10.820 either delayed or developing this non
NOTE Confidence: 0.845463685

00:46:10.820 --> 00:46:12.932 24 hour phenotype because they're just
NOTE Confidence: 0.845463685

00:46:12.932 --> 00:46:16.098 simply not able to respond normally to
NOTE Confidence: 0.845463685

00:46:16.098 --> 00:46:18.733 that morning advancing light signal.
NOTE Confidence: 0.845463685

00:46:18.740 --> 00:46:19.624 And so with that,
NOTE Confidence: 0.845463685

00:46:19.624 --> 00:46:21.247 I'd just like to acknowledge the people
NOTE Confidence: 0.845463685

00:46:21.247 --> 00:46:22.983 who helped me out with this project
NOTE Confidence: 0.845463685

00:46:22.983 --> 00:46:24.318 and elsewhere within the clinic.

NOTE Confidence: 0.845463685

00:46:24.320 --> 00:46:25.880 Uh, the funding sources for this,

NOTE Confidence: 0.845463685

00:46:25.880 --> 00:46:27.368 as well as their clinical staff

NOTE Confidence: 0.845463685

00:46:27.368 --> 00:46:28.931 who conducted some of the people

NOTE Confidence: 0.845463685

00:46:28.931 --> 00:46:30.765 on the tree measures and have been

NOTE Confidence: 0.845463685

00:46:30.765 --> 00:46:32.193 phenomenal at helping to manage

NOTE Confidence: 0.845463685

00:46:32.193 --> 00:46:33.593 these circadian patients as well.

NOTE Confidence: 0.845463685

00:46:33.600 --> 00:46:34.395 And with that,

NOTE Confidence: 0.845463685

00:46:34.395 --> 00:46:35.985 I believe I did allow some

NOTE Confidence: 0.845463685

00:46:35.985 --> 00:46:37.379 extra time for questions.

NOTE Confidence: 0.89194022

00:46:41.390 --> 00:46:43.226 Fantastic thank you.

NOTE Confidence: 0.89194022

00:46:43.226 --> 00:46:46.286 Thank you very much Sabra.

NOTE Confidence: 0.89194022

00:46:46.290 --> 00:46:49.258 A great great journey from the basics to

NOTE Confidence: 0.89194022

00:46:49.258 --> 00:46:52.260 clinic and over to the field of research.

NOTE Confidence: 0.89194022

00:46:52.260 --> 00:46:55.286 And so the question the the

NOTE Confidence: 0.89194022

00:46:55.286 --> 00:46:58.800 pupil is a amazing thing.

NOTE Confidence: 0.89194022

00:46:58.800 --> 00:47:02.335 And So what happens to the people
NOTE Confidence: 0.89194022

00:47:02.335 --> 00:47:07.830 and people who may not have sort of?
NOTE Confidence: 0.89194022

00:47:07.830 --> 00:47:09.210 May not be healthy otherwise,
NOTE Confidence: 0.89194022

00:47:09.210 --> 00:47:11.592 so like it is our comorbidities
NOTE Confidence: 0.89194022

00:47:11.592 --> 00:47:13.878 such as you know, diabetes,
NOTE Confidence: 0.89194022

00:47:13.878 --> 00:47:14.870 hypertension, etcetera.
NOTE Confidence: 0.89194022

00:47:14.870 --> 00:47:16.370 Obesity, for example,
NOTE Confidence: 0.89194022

00:47:16.370 --> 00:47:18.870 affect people that are responses.
NOTE Confidence: 0.865773047368421

00:47:19.730 --> 00:47:22.354 Absolutely. And So what I left out in
NOTE Confidence: 0.865773047368421

00:47:22.354 --> 00:47:25.105 the abbreviated summary is that we took
NOTE Confidence: 0.865773047368421

00:47:25.105 --> 00:47:26.729 very otherwise healthy individuals,
NOTE Confidence: 0.865773047368421

00:47:26.730 --> 00:47:30.027 and so the pupil does so many
NOTE Confidence: 0.865773047368421

00:47:30.027 --> 00:47:32.250 different things. It gives you an
NOTE Confidence: 0.865773047368421

00:47:32.250 --> 00:47:33.530 insight into autonomic function,
NOTE Confidence: 0.865773047368421

00:47:33.530 --> 00:47:34.994 and so that's often where we
NOTE Confidence: 0.865773047368421

00:47:34.994 --> 00:47:35.970 tend to use pupillometry,

NOTE Confidence: 0.865773047368421
00:47:35.970 --> 00:47:37.454 particularly in the ICU,
NOTE Confidence: 0.865773047368421
00:47:37.454 --> 00:47:38.938 in the diabetes realm.
NOTE Confidence: 0.865773047368421
00:47:38.940 --> 00:47:41.469 And so it can give you a sense of
NOTE Confidence: 0.865773047368421
00:47:41.469 --> 00:47:42.952 parasympathetic sympathetic balance that
NOTE Confidence: 0.865773047368421
00:47:42.952 --> 00:47:45.605 tends to be that more immediate response.
NOTE Confidence: 0.865773047368421
00:47:45.610 --> 00:47:47.882 And we do see some differences in these
NOTE Confidence: 0.865773047368421
00:47:47.882 --> 00:47:49.679 patients in that autonomic realm.
NOTE Confidence: 0.865773047368421
00:47:49.680 --> 00:47:53.586 As well, and then the PIPR that we were
NOTE Confidence: 0.865773047368421
00:47:53.586 --> 00:47:56.062 looking at tends to do more of that
NOTE Confidence: 0.865773047368421
00:47:56.062 --> 00:47:57.710 retinal ganglion cell measurement,
NOTE Confidence: 0.865773047368421
00:47:57.710 --> 00:47:59.398 but you can see a loss of those
NOTE Confidence: 0.865773047368421
00:47:59.398 --> 00:48:01.597 and lots of other disorders besides
NOTE Confidence: 0.865773047368421
00:48:01.597 --> 00:48:02.887 delayed suppurates disorders,
NOTE Confidence: 0.865773047368421
00:48:02.890 --> 00:48:05.110 so it's been reported there's been
NOTE Confidence: 0.865773047368421
00:48:05.110 --> 00:48:07.150 impairment in seasonal affective disorder.
NOTE Confidence: 0.865773047368421

00:48:07.150 --> 00:48:08.598 We think that there may be some drop
NOTE Confidence: 0.865773047368421

00:48:08.598 --> 00:48:10.436 out of this in patients with Parkinson's,
NOTE Confidence: 0.865773047368421

00:48:10.440 --> 00:48:11.571 and so absolutely,
NOTE Confidence: 0.865773047368421

00:48:11.571 --> 00:48:13.833 I think you just examining the
NOTE Confidence: 0.865773047368421

00:48:13.833 --> 00:48:16.299 people alone could find you know
NOTE Confidence: 0.865773047368421

00:48:16.299 --> 00:48:18.319 problems in almost every disorder.
NOTE Confidence: 0.78916932

00:48:19.650 --> 00:48:25.060 Cool well if you into the soul all right.
NOTE Confidence: 0.78916932

00:48:25.060 --> 00:48:26.444 All right, so so we have some other
NOTE Confidence: 0.78916932

00:48:26.444 --> 00:48:27.568 questions and I have a couple more,
NOTE Confidence: 0.78916932

00:48:27.570 --> 00:48:29.146 but I want to make sure I address
NOTE Confidence: 0.78916932

00:48:29.146 --> 00:48:30.750 the the folks in the Chancellor.
NOTE Confidence: 0.78916932

00:48:30.750 --> 00:48:32.415 Doctor Cohen is asking does
NOTE Confidence: 0.78916932

00:48:32.415 --> 00:48:34.080 the use of chronic exogenous
NOTE Confidence: 0.78916932

00:48:34.144 --> 00:48:38.034 melatonin have any impact on ones
NOTE Confidence: 0.78916932

00:48:38.034 --> 00:48:39.036 endogenous melatonin secretion?
NOTE Confidence: 0.78916932

00:48:39.036 --> 00:48:40.706 So does it suppress it?

NOTE Confidence: 0.852926717777778
00:48:42.170 --> 00:48:43.766 As we know, and certainly not
NOTE Confidence: 0.852926717777778
00:48:43.766 --> 00:48:45.781 at the doses that we tend to
NOTE Confidence: 0.852926717777778
00:48:45.781 --> 00:48:47.266 use for our circadian patients,
NOTE Confidence: 0.852926717777778
00:48:47.270 --> 00:48:49.583 and so I will see a lot of patients
NOTE Confidence: 0.852926717777778
00:48:49.583 --> 00:48:52.012 who show up in clinic, and I think
NOTE Confidence: 0.852926717777778
00:48:52.012 --> 00:48:53.836 our typical response is always well.
NOTE Confidence: 0.852926717777778
00:48:53.840 --> 00:48:54.716 If something doesn't work,
NOTE Confidence: 0.852926717777778
00:48:54.716 --> 00:48:56.916 let me take more of it and so I think
NOTE Confidence: 0.852926717777778
00:48:56.916 --> 00:48:58.400 the record I've seen is somebody who
NOTE Confidence: 0.852926717777778
00:48:58.400 --> 00:49:00.316 came in by the time they came to see me.
NOTE Confidence: 0.852926717777778
00:49:00.316 --> 00:49:01.846 They were taking 80 milligrams
NOTE Confidence: 0.852926717777778
00:49:01.846 --> 00:49:03.070 of melatonin at night.
NOTE Confidence: 0.852926717777778
00:49:03.070 --> 00:49:04.680 I was surprised that they were actually
NOTE Confidence: 0.852926717777778
00:49:04.680 --> 00:49:06.570 still awake in time for their appointment,
NOTE Confidence: 0.852926717777778
00:49:06.570 --> 00:49:10.634 but in those doses I might be
NOTE Confidence: 0.852926717777778

00:49:10.634 --> 00:49:12.330 more concerned about this.
NOTE Confidence: 0.852926717777778

00:49:12.330 --> 00:49:13.860 But using half a milligram,
NOTE Confidence: 0.852926717777778

00:49:13.860 --> 00:49:15.876 just trying to mimic physiological doses.
NOTE Confidence: 0.852926717777778

00:49:15.880 --> 00:49:17.444 We haven't noticed any.
NOTE Confidence: 0.852926717777778

00:49:17.444 --> 00:49:19.790 Inability to produce your own melatonin.
NOTE Confidence: 0.852926717777778

00:49:19.790 --> 00:49:21.410 Know sort of negative feedback loop.
NOTE Confidence: 0.852926717777778

00:49:21.410 --> 00:49:22.259 Anything like that,
NOTE Confidence: 0.761386507777778

00:49:22.550 --> 00:49:24.320 right? Cool? Yeah, because I think
NOTE Confidence: 0.761386507777778

00:49:24.320 --> 00:49:26.619 you know a lot of people use
NOTE Confidence: 0.761386507777778

00:49:26.619 --> 00:49:28.384 melatonin for induction of sleep,
NOTE Confidence: 0.761386507777778

00:49:28.390 --> 00:49:29.470 and some of them go up,
NOTE Confidence: 0.761386507777778

00:49:29.470 --> 00:49:32.356 you know, 1012 etcetera and so,
NOTE Confidence: 0.761386507777778

00:49:32.360 --> 00:49:35.088 and so that that always that's the cross.
NOTE Confidence: 0.761386507777778

00:49:35.088 --> 00:49:36.810 Our mind as we think about this.
NOTE Confidence: 0.761386507777778

00:49:36.810 --> 00:49:38.630 And so, doctor Ahn says,
NOTE Confidence: 0.761386507777778

00:49:38.630 --> 00:49:41.534 and have you found that there are any

NOTE Confidence: 0.761386507777778
00:49:41.534 --> 00:49:43.768 dietary effects on melatonin testing?
NOTE Confidence: 0.761386507777778
00:49:43.770 --> 00:49:47.070 So I have read that nuts,
NOTE Confidence: 0.761386507777778
00:49:47.070 --> 00:49:47.938 fruits, alcohol?
NOTE Confidence: 0.761386507777778
00:49:47.938 --> 00:49:50.108 Rice can increase melatonin levels,
NOTE Confidence: 0.761386507777778
00:49:50.110 --> 00:49:51.664 and you instruct patients to avoid
NOTE Confidence: 0.761386507777778
00:49:51.664 --> 00:49:53.259 these substances and the night when
NOTE Confidence: 0.761386507777778
00:49:53.259 --> 00:49:54.777 they do their military and testing.
NOTE Confidence: 0.8047696925
00:49:55.290 --> 00:49:56.837 So we have a whole set of
NOTE Confidence: 0.8047696925
00:49:56.837 --> 00:49:58.229 instructions that we give patients,
NOTE Confidence: 0.8047696925
00:49:58.230 --> 00:49:59.946 so there's a bunch of things
NOTE Confidence: 0.8047696925
00:49:59.946 --> 00:50:01.090 that can affect melatonin.
NOTE Confidence: 0.8047696925
00:50:01.090 --> 00:50:03.322 I think one of the most important things
NOTE Confidence: 0.8047696925
00:50:03.322 --> 00:50:06.384 to keep in mind is beta blockers actually
NOTE Confidence: 0.8047696925
00:50:06.384 --> 00:50:09.590 inhibit melatonin production, so.
NOTE Confidence: 0.8047696925
00:50:09.590 --> 00:50:11.378 Keeping that in mind when you're
NOTE Confidence: 0.8047696925

00:50:11.378 --> 00:50:12.815 testing your patients bananas,
NOTE Confidence: 0.8047696925

00:50:12.815 --> 00:50:16.560 ibuprofen other things can also influence it,
NOTE Confidence: 0.8047696925

00:50:16.560 --> 00:50:19.472 and so we in general instruct
NOTE Confidence: 0.8047696925

00:50:19.472 --> 00:50:21.404 patients do as much as possible,
NOTE Confidence: 0.8047696925

00:50:21.410 --> 00:50:24.074 don't eat anything within 15 minutes
NOTE Confidence: 0.8047696925

00:50:24.074 --> 00:50:27.200 of doing the saliva testing as well.
NOTE Confidence: 0.8047696925

00:50:27.200 --> 00:50:29.657 But yeah, there's lots of things that
NOTE Confidence: 0.8047696925

00:50:29.657 --> 00:50:31.400 can influence melatonin production,
NOTE Confidence: 0.8047696925

00:50:31.400 --> 00:50:33.269 so we do try to instruct subjects
NOTE Confidence: 0.8047696925

00:50:33.269 --> 00:50:34.699 to be careful with them.
NOTE Confidence: 0.839260074

00:50:37.190 --> 00:50:40.900 So from a practical standpoint.
NOTE Confidence: 0.839260074

00:50:40.900 --> 00:50:43.798 How do you order the milestone testing?
NOTE Confidence: 0.839260074

00:50:43.800 --> 00:50:45.780 Who passed for it? Is that a pocket?
NOTE Confidence: 0.839260074

00:50:45.780 --> 00:50:48.052 Because I I want to do it with
NOTE Confidence: 0.839260074

00:50:48.052 --> 00:50:49.380 my patience and so how do I?
NOTE Confidence: 0.839260074

00:50:49.380 --> 00:50:50.796 How do I? How do I do that?

NOTE Confidence: 0.839260074

00:50:50.800 --> 00:50:51.736 I mean, I've done it before,

NOTE Confidence: 0.839260074

00:50:51.740 --> 00:50:53.620 but it was, you know,

NOTE Confidence: 0.839260074

00:50:53.620 --> 00:50:54.910 it took a little legwork

NOTE Confidence: 0.682369663333333

00:50:55.300 --> 00:50:57.556 right now. Our kids are homegrown,

NOTE Confidence: 0.682369663333333

00:50:57.560 --> 00:50:59.303 so we put them together ourselves and

NOTE Confidence: 0.682369663333333

00:50:59.303 --> 00:51:01.487 had to go through a whole process of

NOTE Confidence: 0.682369663333333

00:51:01.487 --> 00:51:03.472 making our own epic order and everything

NOTE Confidence: 0.682369663333333

00:51:03.472 --> 00:51:05.404 else to be able to implement and

NOTE Confidence: 0.682369663333333

00:51:05.404 --> 00:51:08.640 them implement them in the clinic.

NOTE Confidence: 0.682369663333333

00:51:08.640 --> 00:51:10.985 There is at least one commercial testing

NOTE Confidence: 0.682369663333333

00:51:10.985 --> 00:51:13.150 group available that I've seen out there.

NOTE Confidence: 0.682369663333333

00:51:13.150 --> 00:51:16.327 Their prices tended to be a little bit higher

NOTE Confidence: 0.682369663333333

00:51:16.330 --> 00:51:21.209 and I would interpret the data yourself.

NOTE Confidence: 0.682369663333333

00:51:21.210 --> 00:51:24.586 But the right now I think the biggest

NOTE Confidence: 0.682369663333333

00:51:24.586 --> 00:51:27.164 downside to melatonin testing is

NOTE Confidence: 0.682369663333333

00:51:27.164 --> 00:51:29.909 it's not covered by insurance.
NOTE Confidence: 0.6823696633333333

00:51:29.910 --> 00:51:32.126 We are working as a sort of consortium
NOTE Confidence: 0.6823696633333333

00:51:32.126 --> 00:51:33.801 of people interested in circulating
NOTE Confidence: 0.6823696633333333

00:51:33.801 --> 00:51:36.265 disorders on putting out a paper on
NOTE Confidence: 0.6823696633333333

00:51:36.332 --> 00:51:38.306 melatonin testing and sort of the
NOTE Confidence: 0.6823696633333333

00:51:38.306 --> 00:51:40.198 clinical benefits of it and continuing
NOTE Confidence: 0.6823696633333333

00:51:40.198 --> 00:51:42.186 to work to try to get insurance
NOTE Confidence: 0.6823696633333333

00:51:42.186 --> 00:51:43.420 companies to routinely reimburse
NOTE Confidence: 0.6823696633333333

00:51:43.420 --> 00:51:45.513 for both demo testing and you didn't
NOTE Confidence: 0.6823696633333333

00:51:45.569 --> 00:51:46.985 open the other can of worms,
NOTE Confidence: 0.6823696633333333

00:51:46.990 --> 00:51:48.458 which is getting reimbursed
NOTE Confidence: 0.6823696633333333

00:51:48.458 --> 00:51:49.559 for actigraphy testing,
NOTE Confidence: 0.6823696633333333

00:51:49.560 --> 00:51:50.740 which we're also working on.
NOTE Confidence: 0.807889908

00:51:52.080 --> 00:51:53.620 Well, thank you and I'm
NOTE Confidence: 0.807889908

00:51:53.620 --> 00:51:55.160 doing it on both sides.
NOTE Confidence: 0.807889908

00:51:55.160 --> 00:51:56.918 That doctor Hilbert has a question.

NOTE Confidence: 0.807889908

00:51:56.920 --> 00:51:59.005 Given the variability and over

NOTE Confidence: 0.807889908

00:51:59.005 --> 00:52:00.948 the counter melatonin branch of

NOTE Confidence: 0.807889908

00:52:00.948 --> 00:52:03.356 brand or locked a lot even what

NOTE Confidence: 0.807889908

00:52:03.356 --> 00:52:06.049 do you recommend from melatonin

NOTE Confidence: 0.807889908

00:52:06.049 --> 00:52:08.317 prescription or or purchases?

NOTE Confidence: 0.807889908

00:52:08.320 --> 00:52:10.224 It has to be USB grade or.

NOTE Confidence: 0.70069379375

00:52:11.270 --> 00:52:13.950 So I I wear two hats on this.

NOTE Confidence: 0.70069379375

00:52:13.950 --> 00:52:16.713 UM, my clinical hat is really what I care

NOTE Confidence: 0.70069379375

00:52:16.713 --> 00:52:19.444 about more is that they get a low dose

NOTE Confidence: 0.70069379375

00:52:19.444 --> 00:52:21.868 and whatever they're able to track down,

NOTE Confidence: 0.70069379375

00:52:21.870 --> 00:52:23.809 as long as it's half a milligram.

NOTE Confidence: 0.70069379375

00:52:23.810 --> 00:52:25.420 I'm actually fine with that.

NOTE Confidence: 0.70069379375

00:52:25.420 --> 00:52:27.891 We do have some specific melatonin that

NOTE Confidence: 0.70069379375

00:52:27.891 --> 00:52:31.266 we use for research studies and tend to be

NOTE Confidence: 0.70069379375

00:52:31.266 --> 00:52:33.290 a little bit more consistent with that,

NOTE Confidence: 0.70069379375

00:52:33.290 --> 00:52:35.804 but it's you know it's the
NOTE Confidence: 0.70069379375

00:52:35.804 --> 00:52:37.954 practicalities and medicine of trying
NOTE Confidence: 0.70069379375

00:52:37.954 --> 00:52:40.348 to get patients what they need.
NOTE Confidence: 0.70069379375

00:52:40.350 --> 00:52:41.426 One of my odd.
NOTE Confidence: 0.70069379375

00:52:41.426 --> 00:52:43.040 Of odd hobbies Prepandemic was I
NOTE Confidence: 0.70069379375

00:52:43.102 --> 00:52:44.920 would wander around drug stores in
NOTE Confidence: 0.70069379375

00:52:44.920 --> 00:52:47.092 the area and start looking at their
NOTE Confidence: 0.70069379375

00:52:47.092 --> 00:52:49.178 melatonin Isles and I would sort of
NOTE Confidence: 0.70069379375

00:52:49.180 --> 00:52:50.888 keep my running list of where within
NOTE Confidence: 0.70069379375

00:52:50.888 --> 00:52:52.762 walking area of the hospital you could
NOTE Confidence: 0.70069379375

00:52:52.762 --> 00:52:54.394 actually find low dose melatonin so
NOTE Confidence: 0.70069379375

00:52:54.450 --> 00:52:56.046 I could direct patients there too.
NOTE Confidence: 0.807972516666667

00:52:57.480 --> 00:53:01.410 Nice OK great. And and
NOTE Confidence: 0.807972516666667

00:53:01.410 --> 00:53:03.760 so I I think so. So the.
NOTE Confidence: 0.819050285

00:53:06.090 --> 00:53:09.280 I guess one of the other questions I had was.
NOTE Confidence: 0.96429574125

00:53:11.670 --> 00:53:16.118 Do you use any other technology other than?

NOTE Confidence: 0.96429574125
00:53:16.120 --> 00:53:18.586 Actigraphy is there anything else out
NOTE Confidence: 0.96429574125
00:53:18.586 --> 00:53:22.603 there that is close enough to actigraphy to
NOTE Confidence: 0.96429574125
00:53:22.603 --> 00:53:26.329 be used to understand activity patterns?
NOTE Confidence: 0.901769031111111
00:53:27.360 --> 00:53:29.583 So, are you referring to things like like a
NOTE Confidence: 0.5177398325
00:53:29.600 --> 00:53:32.248 wearable personal wearables? Yeah,
NOTE Confidence: 0.849884599764706
00:53:32.300 --> 00:53:34.372 I will take whatever data I can get
NOTE Confidence: 0.849884599764706
00:53:34.372 --> 00:53:36.979 and I don't want to mess up my camera,
NOTE Confidence: 0.849884599764706
00:53:36.980 --> 00:53:39.381 but the bulletin board that I have
NOTE Confidence: 0.849884599764706
00:53:39.381 --> 00:53:42.043 right behind me in my office here
NOTE Confidence: 0.849884599764706
00:53:42.043 --> 00:53:44.389 actually has examples of many different
NOTE Confidence: 0.849884599764706
00:53:44.458 --> 00:53:46.762 types of sleep logs and reportable
NOTE Confidence: 0.849884599764706
00:53:46.762 --> 00:53:49.176 data that I've gotten from patients.
NOTE Confidence: 0.849884599764706
00:53:49.176 --> 00:53:51.790 Like I said, they tend to track
NOTE Confidence: 0.849884599764706
00:53:51.790 --> 00:53:53.740 their data before they come in,
NOTE Confidence: 0.849884599764706
00:53:53.740 --> 00:53:55.452 and so if all you have access to
NOTE Confidence: 0.849884599764706

00:53:55.452 --> 00:53:57.518 and I think we also got much more.
NOTE Confidence: 0.849884599764706

00:53:57.520 --> 00:53:59.140 Creative with this in the pandemic
NOTE Confidence: 0.849884599764706

00:53:59.140 --> 00:54:01.268 when we had times where we couldn't
NOTE Confidence: 0.849884599764706

00:54:01.268 --> 00:54:02.255 send out actigraphy,
NOTE Confidence: 0.849884599764706

00:54:02.260 --> 00:54:03.898 we couldn't get all the data on
NOTE Confidence: 0.849884599764706

00:54:03.898 --> 00:54:05.510 the way that we normally did.
NOTE Confidence: 0.849884599764706

00:54:05.510 --> 00:54:07.934 If they wanna send me Fitbit data with
NOTE Confidence: 0.849884599764706

00:54:07.934 --> 00:54:10.716 all the caveats of how accurate that is,
NOTE Confidence: 0.849884599764706

00:54:10.720 --> 00:54:12.025 whatever data they have available
NOTE Confidence: 0.849884599764706

00:54:12.025 --> 00:54:14.030 and can send me, that's great.
NOTE Confidence: 0.849884599764706

00:54:14.030 --> 00:54:15.950 The downside to those,
NOTE Confidence: 0.849884599764706

00:54:15.950 --> 00:54:17.854 and where I can get some insight
NOTE Confidence: 0.849884599764706

00:54:17.854 --> 00:54:19.767 with that tiger fee that I can't
NOTE Confidence: 0.849884599764706

00:54:19.767 --> 00:54:21.327 get from some of the consumer
NOTE Confidence: 0.849884599764706

00:54:21.390 --> 00:54:23.124 wearables is light exposure data and
NOTE Confidence: 0.849884599764706

00:54:23.124 --> 00:54:25.312 that is a tool that we often use,

NOTE Confidence: 0.849884599764706
00:54:25.312 --> 00:54:26.602 and so we'll often find,
NOTE Confidence: 0.849884599764706
00:54:26.610 --> 00:54:27.960 for example, in these delayed.
NOTE Confidence: 0.849884599764706
00:54:27.960 --> 00:54:29.616 Since we can get a sense of ohh
NOTE Confidence: 0.849884599764706
00:54:29.616 --> 00:54:31.162 you actually get a ton of light
NOTE Confidence: 0.849884599764706
00:54:31.162 --> 00:54:32.576 right before bedtime or you have
NOTE Confidence: 0.849884599764706
00:54:32.576 --> 00:54:33.966 horrible curtains in your bedroom
NOTE Confidence: 0.849884599764706
00:54:33.966 --> 00:54:35.776 and you're getting a bunch of morning
NOTE Confidence: 0.849884599764706
00:54:35.776 --> 00:54:36.936 light before you're waking up.
NOTE Confidence: 0.849884599764706
00:54:36.940 --> 00:54:39.356 And so that's some insight that I can't
NOTE Confidence: 0.849884599764706
00:54:39.356 --> 00:54:41.560 necessarily get from the consumer wearables.
NOTE Confidence: 0.849884599764706
00:54:41.560 --> 00:54:43.426 But if we're just getting a
NOTE Confidence: 0.849884599764706
00:54:43.426 --> 00:54:44.670 sense of overall patterns,
NOTE Confidence: 0.849884599764706
00:54:44.670 --> 00:54:46.314 we're trying to get a sense
NOTE Confidence: 0.849884599764706
00:54:46.314 --> 00:54:47.136 of treatment response.
NOTE Confidence: 0.849884599764706
00:54:47.140 --> 00:54:48.946 They're great and we've been trying to
NOTE Confidence: 0.849884599764706

00:54:48.946 --> 00:54:51.100 find ways to more easily get that data.
NOTE Confidence: 0.728532820833333

00:54:52.480 --> 00:54:53.992 Like not knowing the ends when
NOTE Confidence: 0.728532820833333

00:54:53.992 --> 00:54:57.380 you need to know the house, right?
NOTE Confidence: 0.728532820833333

00:54:57.380 --> 00:54:58.876 You gotta have both sides of the equation.
NOTE Confidence: 0.728532820833333

00:54:58.880 --> 00:55:01.460 OK wonderful, so so Sabra.
NOTE Confidence: 0.728532820833333

00:55:01.460 --> 00:55:03.972 This is really great and so if you
NOTE Confidence: 0.728532820833333

00:55:03.972 --> 00:55:06.812 were to give you know two bullets
NOTE Confidence: 0.728532820833333

00:55:06.812 --> 00:55:09.560 of advice for somebody who is
NOTE Confidence: 0.728532820833333

00:55:09.655 --> 00:55:12.680 managing a delayed phase patient,
NOTE Confidence: 0.728532820833333

00:55:12.680 --> 00:55:15.150 what would be the one thing you have to do?
NOTE Confidence: 0.728532820833333

00:55:15.150 --> 00:55:16.690 And one thing you should never do.
NOTE Confidence: 0.7680442225

00:55:18.180 --> 00:55:21.740 Never give light at 8:00 AM unless that's
NOTE Confidence: 0.7680442225

00:55:21.740 --> 00:55:24.679 their natural wake time and you have
NOTE Confidence: 0.6736409773

00:55:24.690 --> 00:55:26.820 to. Why is that? Why don't you give let Adam
NOTE Confidence: 0.74570581125

00:55:26.830 --> 00:55:28.230 why don't you give light at 8:00 AM?
NOTE Confidence: 0.74570581125

00:55:28.230 --> 00:55:29.765 Because at that point you're

NOTE Confidence: 0.74570581125

00:55:29.765 --> 00:55:31.300 probably gonna end up delaying

NOTE Confidence: 0.74570581125

00:55:31.358 --> 00:55:33.044 them and making them even worse

NOTE Confidence: 0.74570581125

00:55:33.044 --> 00:55:34.590 instead of making them better.

NOTE Confidence: 0.74570581125

00:55:34.590 --> 00:55:36.599 And the one thing you should do

NOTE Confidence: 0.74570581125

00:55:36.599 --> 00:55:38.768 is keep that melatonin dose low.

NOTE Confidence: 0.74570581125

00:55:38.770 --> 00:55:40.930 So like I said, typically half

NOTE Confidence: 0.74570581125

00:55:40.930 --> 00:55:43.356 a milligram no more than half a

NOTE Confidence: 0.74570581125

00:55:43.356 --> 00:55:44.896 milligram to 3 milligrams don't

NOTE Confidence: 0.74570581125

00:55:44.896 --> 00:55:47.119 get up into ten 2080 milligrams,

NOTE Confidence: 0.74769282

00:55:47.670 --> 00:55:49.434 OK? Perfect excellent,

NOTE Confidence: 0.74769282

00:55:49.434 --> 00:55:53.306 so early and low and then late

NOTE Confidence: 0.74769282

00:55:53.306 --> 00:55:57.090 and bright I guess is the.

NOTE Confidence: 0.74769282

00:55:57.090 --> 00:55:58.342 Cool awesome well great.

NOTE Confidence: 0.74769282

00:55:58.342 --> 00:55:59.594 Thank you very much.

NOTE Confidence: 0.74769282

00:55:59.600 --> 00:56:01.784 And so if anybody else has any other

NOTE Confidence: 0.74769282

00:56:01.784 --> 00:56:03.499 questions we could probably well.
NOTE Confidence: 0.74769282

00:56:03.500 --> 00:56:05.698 Actually, it's 259 so we're we're just
NOTE Confidence: 0.74769282

00:56:05.698 --> 00:56:08.227 out of time and so thank you so much, Sabra.
NOTE Confidence: 0.74769282

00:56:08.227 --> 00:56:09.762 This was wonderful and thank
NOTE Confidence: 0.74769282

00:56:09.762 --> 00:56:11.352 you everyone for attending yet
NOTE Confidence: 0.74769282

00:56:11.352 --> 00:56:12.916 another edition of our conference.
NOTE Confidence: 0.74769282

00:56:12.916 --> 00:56:15.100 Please if you wanted to have your
NOTE Confidence: 0.74769282

00:56:15.160 --> 00:56:17.380 credit for attending this conference,
NOTE Confidence: 0.74769282

00:56:17.380 --> 00:56:19.540 you can go ahead and use the CME
NOTE Confidence: 0.74769282

00:56:19.540 --> 00:56:21.770 code and we will see you guys in
NOTE Confidence: 0.74769282

00:56:21.770 --> 00:56:24.038 May in the second Wednesday of May.
NOTE Confidence: 0.74769282

00:56:24.040 --> 00:56:25.190 Thank you so much everybody.
NOTE Confidence: 0.64021515

00:56:28.220 --> 00:56:28.850 My favorite.
NOTE Confidence: 0.772661446666667

00:56:30.400 --> 00:56:31.198 For having me.