WEBVTT

NOTE duration:"01:02:06.8490000"

NOTE recognizability:0.854

NOTE language:en-us

NOTE Confidence: 0.79579986

00:00:00.000 --> 00:00:02.478 Seminar series for the spring semester.

NOTE Confidence: 0.79579986

00:00:02.480 --> 00:00:05.180 My name is Kritika Thapa and I'm an assistant

NOTE Confidence: 0.79579986

00:00:05.180 --> 00:00:07.018 professor at Yale School of Medicine.

NOTE Confidence: 0.79579986

00:00:07.020 --> 00:00:09.001 I'm pleased to be taking over from

NOTE Confidence: 0.79579986

00:00:09.001 --> 00:00:10.783 Doctor Janet Hilbert as course director

NOTE Confidence: 0.79579986

00:00:10.783 --> 00:00:12.834 for this weekly Sleep seminar at Yale,

NOTE Confidence: 0.79579986

00:00:12.840 --> 00:00:15.330 along with Doctor Clara Yagi. First,

NOTE Confidence: 0.79579986

00:00:15.330 --> 00:00:17.680 a brief few housekeeping announcements.

NOTE Confidence: 0.79579986

00:00:17.680 --> 00:00:19.276 Please take a moment to ensure

NOTE Confidence: 0.79579986

00:00:19.276 --> 00:00:21.335 that you are muted in order to

NOTE Confidence: 0.79579986

00:00:21.335 --> 00:00:22.895 receive CME credit for attendance.

NOTE Confidence: 0.79579986

00:00:22.900 --> 00:00:25.119 Please see the chat room for instructions,

NOTE Confidence: 0.79579986

00:00:25.120 --> 00:00:26.793 and if you have any questions or

NOTE Confidence: 0.79579986

00:00:26.793 --> 00:00:28.200 comments during the presentations,

NOTE Confidence: 0.79579986

00:00:28.200 --> 00:00:30.027 please use the chat room or take

NOTE Confidence: 0.79579986

00:00:30.027 --> 00:00:31.679 the opportunity to unmute yourself.

NOTE Confidence: 0.79579986

00:00:31.680 --> 00:00:34.344 At the end of the talk and ask questions,

NOTE Confidence: 0.79579986

00:00:34.350 --> 00:00:36.612 recorded versions of these lectures will

NOTE Confidence: 0.79579986

00:00:36.612 --> 00:00:38.938 be available online within two weeks at

NOTE Confidence: 0.79579986

00:00:38.938 --> 00:00:41.050 the link provided in the chat as well.

NOTE Confidence: 0.79579986

00:00:41.050 --> 00:00:43.386 Now I have the pleasure of introducing Dr.

NOTE Confidence: 0.79579986

00:00:43.390 --> 00:00:44.256 Reena Mehra.

NOTE Confidence: 0.79579986

00:00:44.256 --> 00:00:46.421 Today, Doctor Mehra received her

NOTE Confidence: 0.79579986

00:00:46.421 --> 00:00:48.929 medical degree from Northeastern Ohio

NOTE Confidence: 0.79579986

00:00:48.930 --> 00:00:50.498 University's College of Medicine.

NOTE Confidence: 0.79579986

00:00:50.498 --> 00:00:52.458 She completed her internal medicine

NOTE Confidence: 0.79579986

00:00:52.458 --> 00:00:54.228 residency from Loyola University Medical

NOTE Confidence: 0.79579986

00:00:54.228 --> 00:00:56.220 Center in Illinois and her pulmonary

NOTE Confidence: 0.79579986

00:00:56.275 --> 00:00:58.090 critical care and Sleep Medicine

NOTE Confidence: 0.79579986

00:00:58.090 --> 00:00:59.542 Fellowship from Cleveland Clinic,

NOTE Confidence: 0.79579986

00:00:59.550 --> 00:01:01.090 followed by an advanced training

NOTE Confidence: 0.79579986

00:01:01.090 --> 00:01:02.014 in Sleep Medicine.

NOTE Confidence: 0.79579986

00:01:02.020 --> 00:01:05.576 For biology and epidemiology by an I

NOTE Confidence: 0.79579986

00:01:05.576 --> 00:01:07.506 HT32 National Research Service award,

NOTE Confidence: 0.79579986

00:01:07.510 --> 00:01:10.012 acquiring a Master of Science in

NOTE Confidence: 0.79579986

00:01:10.012 --> 00:01:11.680 Clinical Epidemiology from Case

NOTE Confidence: 0.79579986

00:01:11.748 --> 00:01:14.028 Western Reserve University at Ohio.

NOTE Confidence: 0.79579986

00:01:14.030 --> 00:01:15.605 She's currently a professor of

NOTE Confidence: 0.79579986

00:01:15.605 --> 00:01:17.180 medicine at the Cleveland Clinic,

NOTE Confidence: 0.79579986

00:01:17.180 --> 00:01:19.394 Lerner College of Medicine of Case

NOTE Confidence: 0.79579986

00:01:19.394 --> 00:01:20.870 Western Reserve University and

NOTE Confidence: 0.79579986

00:01:20.928 --> 00:01:22.744 internationally recognized for expertise

NOTE Confidence: 0.79579986

00:01:22.744 --> 00:01:25.468 in sleep disorders and health outcomes,

NOTE Confidence: 0.79579986

00:01:25.470 --> 00:01:27.074 including cardio pulmonary disease.

NOTE Confidence: 0.79579986

00:01:27.074 --> 00:01:28.678 She holds joint appointments

NOTE Confidence: 0.79579986

00:01:28.678 --> 00:01:30.632 in the neurologic, respiratory,

NOTE Confidence: 0.79579986

00:01:30.632 --> 00:01:32.048 Heart and vascular.

NOTE Confidence: 0.79579986

00:01:32.048 --> 00:01:33.936 And Lerner Research Institute.

NOTE Confidence: 0.79579986

00:01:33.940 --> 00:01:36.222 She has also been the director of

NOTE Confidence: 0.79579986

00:01:36.222 --> 00:01:37.987 the Cleveland Clinic Sleep Disorders

NOTE Confidence: 0.79579986

00:01:37.987 --> 00:01:40.521 Research Program since 2013 and has led

NOTE Confidence: 0.79579986

00:01:40.521 --> 00:01:42.761 team based clinical and translational

NOTE Confidence: 0.79579986

00:01:42.761 --> 00:01:45.026 science initiatives and is best

NOTE Confidence: 0.79579986

00:01:45.026 --> 00:01:47.204 recognized for her work identifying

NOTE Confidence: 0.79579986

00:01:47.204 --> 00:01:49.359 the association between sleep apnea

NOTE Confidence: 0.79579986

00:01:49.359 --> 00:01:51.878 and nocturnal cardiac arrhythmias.

NOTE Confidence: 0.79579986

00:01:51.880 --> 00:01:53.704 She has received many awards as

NOTE Confidence: 0.79579986

00:01:53.704 --> 00:01:55.360 the recipient of several grants,

NOTE Confidence: 0.79579986

00:01:55.360 --> 00:01:56.756 including from the NIH,

NOTE Confidence: 0.79579986

00:01:56.756 --> 00:01:58.850 and has authored over 200 publications,

NOTE Confidence: 0.79579986

00:01:58.850 --> 00:02:00.570 including in the New England

NOTE Confidence: 0.79579986

00:02:00.570 --> 00:02:02.780 Journal of Medicine and JAMA Doctor.

NOTE Confidence: 0.79579986

00:02:02.780 --> 00:02:05.075 Mehra has also held leadership

NOTE Confidence: 0.79579986

00:02:05.075 --> 00:02:07.370 position in many national societies

NOTE Confidence: 0.79579986

00:02:07.443 --> 00:02:10.117 and is a strong advocate for women

NOTE Confidence: 0.79579986

00:02:10.117 --> 00:02:11.263 faculty in medicine.

NOTE Confidence: 0.79579986

00:02:11.270 --> 00:02:13.111 She has served on the editorial board

NOTE Confidence: 0.79579986

00:02:13.111 --> 00:02:15.539 of Chest as the author of the Up to

NOTE Confidence: 0.79579986

00:02:15.539 --> 00:02:17.405 date entry of Obstructive Sleep Apnea

NOTE Confidence: 0.79579986

00:02:17.405 --> 00:02:19.285 and Cardiovascular disease in adults.

NOTE Confidence: 0.79579986

00:02:19.290 --> 00:02:20.730 Thank you so much for being

NOTE Confidence: 0.79579986

00:02:20.730 --> 00:02:21.690 with us Doctor Mehra.

NOTE Confidence: 0.79579986

00:02:21.690 --> 00:02:22.622 And without further delay,

NOTE Confidence: 0.79579986

00:02:22.622 --> 00:02:24.518 I would like to hand it over to

NOTE Confidence: 0.79579986

00:02:24.518 --> 00:02:25.862 you to share your expertise on

NOTE Confidence: 0.79579986

00:02:25.862 --> 00:02:27.429 sleep and cardiovascular disease.

NOTE Confidence: 0.79579986

00:02:27.430 --> 00:02:28.438 And thank you again.

NOTE Confidence: 0.893857616666667

00:02:29.300 --> 00:02:30.548 Ohh well thank you so much.

NOTE Confidence: 0.893857616666667

00:02:30.550 --> 00:02:31.933 It's lovely introduction.

NOTE Confidence: 0.893857616666667

00:02:31.933 --> 00:02:35.563 I I really appreciate it and I I'm

NOTE Confidence: 0.893857616666667

00:02:35.563 --> 00:02:38.452 so I'm happy to to be here with all

NOTE Confidence: 0.893857616666667

00:02:38.535 --> 00:02:41.125 of you today and see the friendly

NOTE Confidence: 0.893857616666667

00:02:41.125 --> 00:02:44.070 faces who I know and and some who I

NOTE Confidence: 0.893857616666667

00:02:44.070 --> 00:02:46.569 don't and it's nice to meet everyone.

NOTE Confidence: 0.893857616666667

00:02:46.570 --> 00:02:50.266 Um, so, yes, I thanks for this

NOTE Confidence: 0.893857616666667

00:02:50.266 --> 00:02:53.069 invitation honored to to do this.

NOTE Confidence: 0.893857616666667

00:02:53.070 --> 00:02:57.036 I'll be discussing a bit about.

NOTE Confidence: 0.893857616666667

00:02:57.040 --> 00:02:59.284 Sleep disordered breathing mainly,

NOTE Confidence: 0.893857616666667

00:02:59.284 --> 00:03:02.650 but touching upon some other sleep

NOTE Confidence: 0.893857616666667

00:03:02.733 --> 00:03:05.575 disorders as well as it relates to.

NOTE Confidence: 0.893857616666667

00:03:05.580 --> 00:03:06.656 Cardiac arrhythmias,

NOTE Confidence: 0.893857616666667

00:03:06.656 --> 00:03:10.960 this is kind of been an interest of

NOTE Confidence: 0.893857616666667

00:03:11.061 --> 00:03:14.325 mine over the last 15 years or so.

NOTE Confidence: 0.893857616666667

00:03:14.330 --> 00:03:17.042 And and so we'll we'll kind of delve

NOTE Confidence: 0.893857616666667

00:03:17.042 --> 00:03:19.759 into the different aspects of this.

NOTE Confidence: 0.893857616666667

00:03:19.760 --> 00:03:22.028 I'll see here.

NOTE Confidence: 0.893857616666667

00:03:22.030 --> 00:03:25.726 And here's the requisite CME's

NOTE Confidence: 0.893857616666667

00:03:25.726 --> 00:03:28.054 disclosure and accreditation.

NOTE Confidence: 0.893857616666667

00:03:28.054 --> 00:03:28.830 So.

NOTE Confidence: 0.893857616666667

00:03:28.830 --> 00:03:29.618 It's, uh,

NOTE Confidence: 0.893857616666667

00:03:29.618 --> 00:03:31.194 there's your information for

NOTE Confidence: 0.893857616666667

00:03:31.194 --> 00:03:33.340 to obtain the CME credit.

NOTE Confidence: 0.89673960125

00:03:35.710 --> 00:03:38.446 So you know what what we'll do is,

NOTE Confidence: 0.89673960125

00:03:38.450 --> 00:03:40.316 is, is focus on, you know,

NOTE Confidence: 0.89673960125

00:03:40.320 --> 00:03:44.396 some of the the mechanisms that tie sleep

NOTE Confidence: 0.89673960125

00:03:44.396 --> 00:03:47.210 disorders with the focus on sleep disorder,

NOTE Confidence: 0.89673960125

00:03:47.210 --> 00:03:49.058 breathing and cardiac arrhythmia.

NOTE Confidence: 0.89673960125

00:03:49.058 --> 00:03:52.442 I think this is an area that's

NOTE Confidence: 0.89673960125

00:03:52.442 --> 00:03:54.530 really interesting and there's

NOTE Confidence: 0.89673960125

00:03:54.530 --> 00:03:58.170 actually quite a lot of you know,

NOTE Confidence: 0.89673960125

00:03:58.170 --> 00:04:02.315 biologic experimental data to to

NOTE Confidence: 0.89673960125

00:04:02.315 --> 00:04:06.970 lend credence to this association of.

NOTE Confidence: 0.89673960125

00:04:06.970 --> 00:04:09.436 Of sleep apnea in particular and

NOTE Confidence: 0.89673960125

00:04:09.436 --> 00:04:11.550 and cardiac arrhythmia and then

NOTE Confidence: 0.89673960125

00:04:11.550 --> 00:04:14.329 we'll discuss a bit about you know

NOTE Confidence: 0.89673960125

00:04:14.329 --> 00:04:16.387 the epidemiologic and clinic based

NOTE Confidence: 0.89673960125

00:04:16.387 --> 00:04:18.769 studies that inform our current state

NOTE Confidence: 0.89673960125

00:04:18.769 --> 00:04:22.020 of knowledge in this area and we'll

NOTE Confidence: 0.89673960125

00:04:22.020 --> 00:04:25.769 talk a bit about clinical pathways,

NOTE Confidence: 0.89673960125

00:04:25.770 --> 00:04:28.926 the role of mobile health technology.

NOTE Confidence: 0.89673960125

00:04:28.930 --> 00:04:30.827 We'll touch upon that a little bit

NOTE Confidence: 0.89673960125

00:04:30.827 --> 00:04:33.256 and then you know end with some of

NOTE Confidence: 0.89673960125

00:04:33.256 --> 00:04:34.811 the you know interventional data

NOTE Confidence: 0.89673960125

00:04:34.876 --> 00:04:36.546 and in the future directions.

NOTE Confidence: 0.89673960125

00:04:36.550 --> 00:04:40.276 To address our existing knowledge gaps,

NOTE Confidence: 0.89673960125

00:04:40.280 --> 00:04:42.764 so, so it's been recognized for

NOTE Confidence: 0.89673960125

00:04:42.764 --> 00:04:44.985 several decades that there are

NOTE Confidence: 0.89673960125

00:04:44.985 --> 00:04:47.415 diurnal variations of of cardiac

NOTE Confidence: 0.89673960125

00:04:47.415 --> 00:04:49.359 cardiovascular events such that

NOTE Confidence: 0.89673960125

00:04:49.434 --> 00:04:52.434 in general there is a morning

NOTE Confidence: 0.89673960125

00:04:52.434 --> 00:04:54.434 predisposition to myocardial infarction,

NOTE Confidence: 0.89673960125

00:04:54.440 --> 00:04:55.958 sudden cardiac death,

NOTE Confidence: 0.89673960125

00:04:55.958 --> 00:04:59.965 ischemic stroke and there's you know of a

NOTE Confidence: 0.89673960125

00:04:59.965 --> 00:05:03.394 variety of reasons why this may be the case.

NOTE Confidence: 0.89673960125

00:05:03.400 --> 00:05:05.192 You know the predominance of REM sleep is

NOTE Confidence: 0.89673960125

00:05:05.192 --> 00:05:07.016 during the latter part of the sleep cycle.

NOTE Confidence: 0.89673960125

00:05:07.020 --> 00:05:09.813 So whether there should be some autonomic

NOTE Confidence: 0.89673960125

00:05:09.813 --> 00:05:12.448 influences that are specific to you know,

NOTE Confidence: 0.89673960125

00:05:12.450 --> 00:05:13.925 REM sleep which predominates during

NOTE Confidence: 0.89673960125

00:05:13.925 --> 00:05:16.070 the latter part of the sleep cycle,

NOTE Confidence: 0.89673960125

00:05:16.070 --> 00:05:17.765 blood pressure surges,

NOTE Confidence: 0.89673960125

00:05:17.765 --> 00:05:20.025 increases in cortisol levels,

NOTE Confidence: 0.89673960125

00:05:20.030 --> 00:05:22.495 even diurnal variation of various

NOTE Confidence: 0.89673960125

00:05:22.495 --> 00:05:24.960 biomarkers of inflammation and and

NOTE Confidence: 0.89673960125

00:05:25.041 --> 00:05:27.626 pro thrombosis such as plasminogen

NOTE Confidence: 0.89673960125

00:05:27.626 --> 00:05:29.177 activator inhibitor 1.

NOTE Confidence: 0.89673960125

00:05:29.180 --> 00:05:31.660 And there's also some molecular

NOTE Confidence: 0.89673960125

00:05:31.660 --> 00:05:34.895 evidence as well that links a

NOTE Confidence: 0.89673960125

00:05:34.895 --> 00:05:37.555 circadian rhythm specifically to

NOTE Confidence: 0.89673960125

00:05:37.555 --> 00:05:40.215 the vulnerability of ventricular

NOTE Confidence: 0.89673960125

00:05:40.215 --> 00:05:42.900 arrhythmias with KLF 15 deficiency,

NOTE Confidence: 0.89673960125

00:05:42.900 --> 00:05:46.890 null and gain of function models that

NOTE Confidence: 0.89673960125

00:05:46.890 --> 00:05:48.738 have various arrhythmogenic risk

NOTE Confidence: 0.89673960125

00:05:48.738 --> 00:05:51.294 that has been associated with it,

NOTE Confidence: 0.89673960125

00:05:51.300 --> 00:05:55.059 with QT prolongation noted with the KLF

NOTE Confidence: 0.89673960125

00:05:55.059 --> 00:05:59.120 15 deficiency and gain of function of KALA.

NOTE Confidence: 0.89673960125

00:05:59.120 --> 00:06:01.905 15 associated with some repolarization

NOTE Confidence: 0.89673960125

00:06:01.905 --> 00:06:04.690 abnormalities that are similar to

NOTE Confidence: 0.89673960125

00:06:04.774 --> 00:06:07.330 what is seen in Brugada syndrome,

NOTE Confidence: 0.89673960125

00:06:07.330 --> 00:06:09.000 where there are fatal arrhythmias

NOTE Confidence: 0.89673960125

00:06:09.000 --> 00:06:09.668 during sleep.

NOTE Confidence: 0.89673960125

00:06:09.670 --> 00:06:11.950 So the circadian rhythm actually

NOTE Confidence: 0.89673960125

00:06:11.950 --> 00:06:14.760 may also be tied to that.

NOTE Confidence: 0.89673960125

00:06:14.760 --> 00:06:18.554 And in terms of these diurnal patterning

NOTE Confidence: 0.89673960125

00:06:18.554 --> 00:06:22.970 of cardiovascular events, this is also?

NOTE Confidence: 0.89673960125

00:06:22.970 --> 00:06:25.210 You know, been observed with sleep apnea,

NOTE Confidence: 0.89673960125

00:06:25.210 --> 00:06:28.366 but more so, uh, you know,

NOTE Confidence: 0.89673960125

00:06:28.370 --> 00:06:30.926 rather than the sleep period being,

NOTE Confidence: 0.89673960125

00:06:30.930 --> 00:06:31.914 you know,

NOTE Confidence: 0.89673960125

00:06:31.914 --> 00:06:34.374 cardioprotective as it is normally

NOTE Confidence: 0.89673960125

00:06:34.374 --> 00:06:37.517 and again that's 6:00 to 9:00 AM

NOTE Confidence: 0.89673960125

00:06:37.517 --> 00:06:39.887 morning period being the the time

NOTE Confidence: 0.89673960125

00:06:39.975 --> 00:06:42.442 of predilection for cardiac events

NOTE Confidence: 0.89673960125

00:06:42.442 --> 00:06:43.840 in sleep apnea.

NOTE Confidence: 0.89673960125

00:06:43.840 --> 00:06:46.381 The we know that there are data

NOTE Confidence: 0.89673960125

00:06:46.381 --> 00:06:48.170 showing that there's increased

NOTE Confidence: 0.89673960125

00:06:48.170 --> 00:06:50.250 sudden nocturnal cardiac death

NOTE Confidence: 0.89673960125

00:06:50.250 --> 00:06:53.370 that has been observed in those.

NOTE Confidence: 0.89673960125

00:06:53.370 --> 00:06:53.818 Uh,

NOTE Confidence: 0.89673960125

00:06:53.818 --> 00:06:55.610 with obstructive sleep apnea

NOTE Confidence: 0.89673960125

00:06:55.610 --> 00:06:57.850 compared to those without and

NOTE Confidence: 0.89673960125

00:06:57.928 --> 00:07:00.458 compared to the general population.

NOTE Confidence: 0.89673960125

00:07:00.460 --> 00:07:02.460 And of course you know,

NOTE Confidence: 0.89673960125

00:07:02.460 --> 00:07:04.182 we know that in the sleep Part

NOTE Confidence: 0.89673960125

00:07:04.182 --> 00:07:05.742 health study data as well that

NOTE Confidence: 0.89673960125

00:07:05.742 --> 00:07:07.713 there's these associations with

NOTE Confidence: 0.89673960125

00:07:07.713 --> 00:07:10.568 increasing severity of sleep apnea

NOTE Confidence: 0.89673960125

00:07:10.568 --> 00:07:13.369 and increase all cause mortality

NOTE Confidence: 0.89673960125

00:07:13.369 --> 00:07:15.984 originally seemed to be perhaps

NOTE Confidence: 0.89673960125

00:07:15.984 --> 00:07:18.886 more dominant in men and older men

NOTE Confidence: 0.89673960125

00:07:18.886 --> 00:07:21.502 but as we have observed a certain

NOTE Confidence: 0.89673960125

00:07:21.502 --> 00:07:24.028 sub cohorts age such as the.

NOTE Confidence: 0.820820767647059

00:07:24.030 --> 00:07:26.718 The Mesa study, we're seeing actually

NOTE Confidence: 0.820820767647059

00:07:26.718 --> 00:07:28.510 that cardiovascular risk predominate

NOTE Confidence: 0.820820767647059

00:07:28.571 --> 00:07:30.629 actually more so in women than men

NOTE Confidence: 0.820820767647059

00:07:30.630 --> 00:07:33.416 based upon some of the subcohort data

NOTE Confidence: 0.820820767647059

00:07:33.416 --> 00:07:36.233 and there are certain notable figures

NOTE Confidence: 0.820820767647059

00:07:36.233 --> 00:07:39.860 that have succumbed to you know,

NOTE Confidence: 0.820820767647059

00:07:39.860 --> 00:07:43.100 sleep apnea. As well.

NOTE Confidence: 0.820820767647059

00:07:43.100 --> 00:07:45.470 So we're aware it's, you know,

NOTE Confidence: 0.820820767647059

00:07:45.470 --> 00:07:47.822 obstructive sleep apnea is highly prevalent

NOTE Confidence: 0.820820767647059

00:07:47.822 --> 00:07:50.390 afflicting nearly 1 billion people worldwide,

NOTE Confidence: 0.820820767647059

00:07:50.390 --> 00:07:53.972 you know, still under diagnosed with

NOTE Confidence: 0.820820767647059

00:07:53.972 --> 00:07:56.578 about 85% of individuals estimated

NOTE Confidence: 0.820820767647059

00:07:56.578 --> 00:07:59.280 to be under diagnosed in, you know,

NOTE Confidence: 0.820820767647059

00:07:59.280 --> 00:08:00.890 going back to data in the sleep

NOTE Confidence: 0.820820767647059

00:08:00.944 --> 00:08:02.806 Heart health study and even more a

NOTE Confidence: 0.820820767647059

00:08:02.806 --> 00:08:04.684 bit more recently with the multi

NOTE Confidence: 0.820820767647059

00:08:04.684 --> 00:08:06.056 ethnic study of atherosclerosis.

NOTE Confidence: 0.820820767647059

00:08:06.060 --> 00:08:10.547 And this underdiagnosis appears to be more

NOTE Confidence: 0.820820767647059

00:08:10.547 --> 00:08:13.510 predominant in underrepresented minorities.

NOTE Confidence: 0.820820767647059

00:08:13.510 --> 00:08:15.342 Now having said that,

NOTE Confidence: 0.820820767647059

00:08:15.342 --> 00:08:17.632 these are population based studies

NOTE Confidence: 0.820820767647059

00:08:17.632 --> 00:08:20.677 and when looking at claims data you

NOTE Confidence: 0.820820767647059

00:08:20.677 --> 00:08:22.465 know that particular population

NOTE Confidence: 0.820820767647059

00:08:22.465 --> 00:08:25.246 we're seeing that you know the

NOTE Confidence: 0.820820767647059

00:08:25.246 --> 00:08:27.591 sleep apnea prevalence is increasing

NOTE Confidence: 0.820820767647059

00:08:27.591 --> 00:08:30.190 which is paralleling the increased

NOTE Confidence: 0.820820767647059

00:08:30.190 --> 00:08:31.834 use of diagnostic testing.

NOTE Confidence: 0.820820767647059

00:08:31.834 --> 00:08:33.889 With home sleep apnea testing,

NOTE Confidence: 0.820820767647059

00:08:33.890 --> 00:08:36.630 we're home sleep apnea testing

NOTE Confidence: 0.820820767647059

00:08:36.630 --> 00:08:38.822 doubled and polysomnography declined

NOTE Confidence: 0.820820767647059

00:08:38.822 --> 00:08:41.762 by 10% over over recent years

NOTE Confidence: 0.820820767647059

00:08:41.762 --> 00:08:44.352 and probably even more so.

NOTE Confidence: 0.820820767647059

00:08:44.360 --> 00:08:46.920 As of more recent years,

NOTE Confidence: 0.820820767647059

00:08:46.920 --> 00:08:49.776 so this is one of the first studies

NOTE Confidence: 0.820820767647059

00:08:49.776 --> 00:08:52.829 I had conducted as as a fellow

NOTE Confidence: 0.820820767647059

00:08:52.829 --> 00:08:55.740 during my T32 training in which

NOTE Confidence: 0.820820767647059

00:08:55.740 --> 00:08:59.850 Doctor Stroll and I were examining a

NOTE Confidence: 0.820820767647059

00:08:59.850 --> 00:09:03.715 cohort clinical cohort for adverse

NOTE Confidence: 0.820820767647059

00:09:03.715 --> 00:09:06.034 events during polysomnography.

NOTE Confidence: 0.820820767647059

00:09:06.040 --> 00:09:08.704 And there were about 16,000 patients

NOTE Confidence: 0.820820767647059

00:09:08.704 --> 00:09:11.501 and individuals in this particular study

NOTE Confidence: 0.820820767647059

00:09:11.501 --> 00:09:14.784 where we were looking at adverse events.

NOTE Confidence: 0.820820767647059

00:09:14.790 --> 00:09:17.790 And and and and one of those cases

NOTE Confidence: 0.820820767647059

00:09:17.790 --> 00:09:20.950 there was a 61 year old obese male

NOTE Confidence: 0.820820767647059

00:09:20.950 --> 00:09:23.190 with history of coronary disease

NOTE Confidence: 0.820820767647059

00:09:23.280 --> 00:09:25.920 and cardiomyopathy who came in for

NOTE Confidence: 0.820820767647059

00:09:25.920 --> 00:09:29.016 a split night study at a hospital

NOTE Confidence: 0.820820767647059

00:09:29.016 --> 00:09:31.928 based facility Sleep Lab and had some

NOTE Confidence: 0.820820767647059

00:09:31.930 --> 00:09:34.198 symptoms of snoring and with this

NOTE Confidence: 0.820820767647059

00:09:34.198 --> 00:09:37.131 apneas and had some ectopy during his

NOTE Confidence: 0.820820767647059

00:09:37.131 --> 00:09:39.376 study and some complex ventricular

NOTE Confidence: 0.820820767647059

00:09:39.376 --> 00:09:42.061 ectopy and and then at the end of

NOTE Confidence: 0.820820767647059

00:09:42.061 --> 00:09:45.320 his study had an an episode of

NOTE Confidence: 0.820820767647059

00:09:45.320 --> 00:09:47.120 polymorphic ventricular tachycardia.

NOTE Confidence: 0.820820767647059

00:09:47.120 --> 00:09:49.619 About 45 minutes and then 30 minutes

NOTE Confidence: 0.820820767647059

00:09:49.619 --> 00:09:52.220 prior to the end of this study and

NOTE Confidence: 0.820820767647059

00:09:52.220 --> 00:09:54.933 then at the end of his study had

NOTE Confidence: 0.820820767647059

00:09:54.933 --> 00:09:57.291 this particular event where you can

NOTE Confidence: 0.820820767647059

00:09:57.291 --> 00:10:00.012 also you can see some evidence of

NOTE Confidence: 0.820820767647059

00:10:00.012 --> 00:10:02.621 torsades there at the end of this

NOTE Confidence: 0.820820767647059

00:10:02.621 --> 00:10:04.896 epic and a code was called and

NOTE Confidence: 0.820820767647059

00:10:04.982 --> 00:10:08.178 unfortunately this patient did not

NOTE Confidence: 0.820820767647059

00:10:08.178 --> 00:10:11.460 survive despite the code team coming

NOTE Confidence: 0.820820767647059

00:10:11.558 --> 00:10:15.110 in pretty rapidly and conducting CPR.

NOTE Confidence: 0.820820767647059

00:10:15.110 --> 00:10:17.978 So this really brought to attention

NOTE Confidence: 0.820820767647059

00:10:17.978 --> 00:10:21.410 this whole notion of you know this this

NOTE Confidence: 0.820820767647059

00:10:21.410 --> 00:10:23.310 individual likely had long standing

NOTE Confidence: 0.820820767647059

00:10:23.310 --> 00:10:25.107 sleep apnea remained untreated and

NOTE Confidence: 0.820820767647059

00:10:25.107 --> 00:10:27.909 in and out you know came into the

NOTE Confidence: 0.820820767647059

00:10:27.909 --> 00:10:29.740 lab and was unfortunately succumbed

NOTE Confidence: 0.820820767647059

00:10:29.740 --> 00:10:32.470 to a lethal arrhythmia and and and

NOTE Confidence: 0.820820767647059

00:10:32.470 --> 00:10:35.190 sort of got us thinking about what

NOTE Confidence: 0.820820767647059

00:10:35.190 --> 00:10:37.130 are these relationships with sleep

NOTE Confidence: 0.820820767647059

00:10:37.203 --> 00:10:39.368 apnea and and cardiac arrhythmias.

NOTE Confidence: 0.820820767647059

00:10:39.370 --> 00:10:40.910 Uh, so we, you know,

NOTE Confidence: 0.820820767647059

00:10:40.910 --> 00:10:43.120 as has been postulated with

NOTE Confidence: 0.820820767647059

00:10:43.120 --> 00:10:44.446 many cardiovascular outcomes,

NOTE Confidence: 0.820820767647059

00:10:44.450 --> 00:10:46.610 can can postulate that, you know,

NOTE Confidence: 0.820820767647059

00:10:46.610 --> 00:10:48.390 there's the the intermittent hypoxia,

NOTE Confidence: 0.820820767647059

00:10:48.390 --> 00:10:48.944 hypercapnia,

NOTE Confidence: 0.820820767647059

00:10:48.944 --> 00:10:51.160 intrathoracic pressure swings and

NOTE Confidence: 0.820820767647059

00:10:51.160 --> 00:10:53.930 autonomic fluctuations that can have.

NOTE Confidence: 0.820820767647059

00:10:53.930 --> 00:10:55.733 These direct electrophysiologic

NOTE Confidence: 0.820820767647059

00:10:55.733 --> 00:10:58.738 effects on the effective refractory

NOTE Confidence: 0.820820767647059

00:10:58.738 --> 00:11:01.519 period QT prolongation triggered

NOTE Confidence: 0.820820767647059

00:11:01.519 --> 00:11:03.766 an abnormal automaticity.

NOTE Confidence: 0.820820767647059

00:11:03.770 --> 00:11:06.046 So in this electrophysiologic

NOTE Confidence: 0.820820767647059

00:11:06.046 --> 00:11:09.460 remodeling that can happen over time

NOTE Confidence: 0.860267955384616

00:11:09.547 --> 00:11:12.524 given these repetitive, you know,

NOTE Confidence: 0.860267955384616

00:11:12.524 --> 00:11:15.009 physiologic triggers from sleep disorder

NOTE Confidence: 0.860267955384616

00:11:15.009 --> 00:11:18.196 breathing and then also lead to structural

NOTE Confidence: 0.860267955384616

00:11:18.196 --> 00:11:20.620 remodeling of the heart as well,

NOTE Confidence: 0.860267955384616

00:11:20.620 --> 00:11:22.868 which also can predispose

NOTE Confidence: 0.860267955384616

00:11:22.868 --> 00:11:25.116 to to cardiac arrhythmia.

NOTE Confidence: 0.860267955384616

00:11:25.120 --> 00:11:27.238 And with involvement of some of

NOTE Confidence: 0.860267955384616

00:11:27.238 --> 00:11:28.650 these intermediate pathways as

NOTE Confidence: 0.860267955384616

00:11:28.714 --> 00:11:30.538 well with systemic inflammation,

NOTE Confidence: 0.860267955384616

00:11:30.540 --> 00:11:32.700 oxidative stress which is increased

NOTE Confidence: 0.860267955384616

00:11:32.700 --> 00:11:34.831 in vascular dysfunction and and so

NOTE Confidence: 0.860267955384616

00:11:34.831 --> 00:11:36.770 uh you know we have these immediate

NOTE Confidence: 0.860267955384616

00:11:36.831 --> 00:11:38.696 effects from sleep disorder breathing

NOTE Confidence: 0.860267955384616

00:11:38.696 --> 00:11:41.336 and then these acute and sub acute

NOTE Confidence: 0.860267955384616

00:11:41.336 --> 00:11:43.111 effects and then there's chronicity

NOTE Confidence: 0.860267955384616

00:11:43.111 --> 00:11:45.692 that leads to the remodeling of the

NOTE Confidence: 0.860267955384616

00:11:45.692 --> 00:11:47.582 heart and can increase arrhythmogenic

NOTE Confidence: 0.860267955384616

00:11:47.582 --> 00:11:50.012 city and and we'll we'll now get

NOTE Confidence: 0.860267955384616

00:11:50.012 --> 00:11:52.390 into some of the the experimental

NOTE Confidence: 0.860267955384616

00:11:52.390 --> 00:11:55.186 data and some of these studies.

NOTE Confidence: 0.860267955384616

00:11:55.190 --> 00:11:57.925 Reports on the effective refractory

NOTE Confidence: 0.860267955384616

00:11:57.925 --> 00:12:00.113 period of the Atria.

NOTE Confidence: 0.860267955384616

00:12:00.120 --> 00:12:03.192 And so this is basically a period of

NOTE Confidence: 0.860267955384616

00:12:03.192 --> 00:12:05.692 time where there's relative immunity

NOTE Confidence: 0.860267955384616

00:12:05.692 --> 00:12:09.528 during which the cells cannot be excited.

NOTE Confidence: 0.860267955384616

00:12:09.530 --> 00:12:13.198 And so as the atrial effective refractory

NOTE Confidence: 0.860267955384616

00:12:13.198 --> 00:12:17.426 period is reduced then there is more

NOTE Confidence: 0.860267955384616

00:12:17.426 --> 00:12:19.346 vulnerability or susceptibility

NOTE Confidence: 0.860267955384616

00:12:19.346 --> 00:12:22.558 to arrhythmic Genesis and and so

NOTE Confidence: 0.860267955384616

00:12:22.558 --> 00:12:25.358 one of the studies here looked at.

NOTE Confidence: 0.860267955384616

00:12:25.360 --> 00:12:27.562 Chronic intermittent hypoxia and then how

NOTE Confidence: 0.860267955384616

00:12:27.562 --> 00:12:30.748 that may lead to atrial arrhythmic genesis.

NOTE Confidence: 0.860267955384616

00:12:30.750 --> 00:12:32.941 And I'll just mention that you know

NOTE Confidence: 0.860267955384616

00:12:32.941 --> 00:12:35.660 a lot of the data that have been

NOTE Confidence: 0.860267955384616

00:12:35.660 --> 00:12:38.441 published in in terms of looking at

NOTE Confidence: 0.860267955384616

00:12:38.441 --> 00:12:40.931 mechanism have focused on autonomic

NOTE Confidence: 0.860267955384616

00:12:40.931 --> 00:12:43.522 dysfunction and perhaps you know

NOTE Confidence: 0.860267955384616

00:12:43.522 --> 00:12:46.798 lesser studies that have been looking

NOTE Confidence: 0.860267955384616

00:12:46.798 --> 00:12:49.327 at intermittent hypoxia or even

NOTE Confidence: 0.860267955384616

00:12:49.327 --> 00:12:52.021 hypercapnia and so in this model

NOTE Confidence: 0.860267955384616

00:12:52.021 --> 00:12:55.377 of of chronic intermittent hypoxia.

NOTE Confidence: 0.860267955384616

00:12:55.380 --> 00:12:58.120 And using this post electrical

NOTE Confidence: 0.860267955384616

00:12:58.120 --> 00:13:00.312 stimulation and burst pacing,

NOTE Confidence: 0.860267955384616

00:13:00.320 --> 00:13:03.750 it was identified that in this rat

NOTE Confidence: 0.860267955384616

00:13:03.750 --> 00:13:07.080 model that the arithmos Genesis was

NOTE Confidence: 0.860267955384616

00:13:07.080 --> 00:13:10.164 accentuated by carbachol Colon argic

NOTE Confidence: 0.860267955384616

00:13:10.164 --> 00:13:14.884 agent and abolished by atropine and and

NOTE Confidence: 0.860267955384616

00:13:14.884 --> 00:13:18.569 therefore these promoting effects of

NOTE Confidence: 0.860267955384616

00:13:18.569 --> 00:13:21.523 atrial fibrillation were dependent in

NOTE Confidence: 0.860267955384616

00:13:21.523 --> 00:13:23.978 response to chronic intermittent hypoxia.

NOTE Confidence: 0.860267955384616

00:13:23.980 --> 00:13:25.408 Where were.

NOTE Confidence: 0.860267955384616

00:13:25.408 --> 00:13:29.030 A dependent on parasympathetic activation.

NOTE Confidence: 0.860267955384616

00:13:29.030 --> 00:13:32.426 So there's this interplay of of,

NOTE Confidence: 0.860267955384616

00:13:32.426 --> 00:13:33.210 you know,

NOTE Confidence: 0.860267955384616

00:13:33.210 --> 00:13:34.812 parasympathetic activation with

NOTE Confidence: 0.860267955384616

00:13:34.812 --> 00:13:38.016 intermittent hypoxia that that is likely

NOTE Confidence: 0.860267955384616

00:13:38.016 --> 00:13:41.030 playing a role in atrial arrhythmia genesis.

NOTE Confidence: 0.860267955384616

00:13:41.030 --> 00:13:44.846 And also identified was a reduction in the

NOTE Confidence: 0.860267955384616

00:13:44.846 --> 00:13:47.990 atrial effective refractory period as well.

NOTE Confidence: 0.860267955384616

00:13:47.990 --> 00:13:50.396 So again more and more increased

NOTE Confidence: 0.860267955384616

00:13:50.396 --> 00:13:52.825 vulnerability to the cardiac arrhythmia and

NOTE Confidence: 0.860267955384616

00:13:52.825 --> 00:13:55.825 a higher level of the M2 receptor protein.

NOTE Confidence: 0.860267955384616

00:13:55.830 --> 00:13:58.776 Levels which can be indicative of

NOTE Confidence: 0.860267955384616

00:13:58.776 --> 00:14:00.249 some electrophysiologic changes

NOTE Confidence: 0.860267955384616

00:14:00.249 --> 00:14:02.709 that are happening to the heart.

NOTE Confidence: 0.860267955384616

00:14:02.710 --> 00:14:06.118 So also the repetitive upper airway

NOTE Confidence: 0.860267955384616

00:14:06.118 --> 00:14:09.352 occlusion that occurs with sleep apnea

NOTE Confidence: 0.860267955384616

00:14:09.352 --> 00:14:12.800 we know has direct impact on the on

NOTE Confidence: 0.860267955384616

00:14:12.895 --> 00:14:16.839 the mechanical impact on the heart as well.

NOTE Confidence: 0.860267955384616

00:14:16.840 --> 00:14:19.780 With increased left ventricular afterload,

NOTE Confidence: 0.860267955384616

00:14:19.780 --> 00:14:22.256 increased left ventricular transmural

NOTE Confidence: 0.860267955384616

00:14:22.256 --> 00:14:25.351 pressures and in particular can

NOTE Confidence: 0.860267955384616

00:14:25.351 --> 00:14:28.209 influence and impact the thin walled

NOTE Confidence: 0.860267955384616

00:14:28.209 --> 00:14:31.354 upper chambers the Atria and and be

NOTE Confidence: 0.860267955384616

00:14:31.354 --> 00:14:33.255 associated with atrial arrhythmic

NOTE Confidence: 0.860267955384616

00:14:33.255 --> 00:14:36.465 genesis and and then this particular

NOTE Confidence: 0.860267955384616

00:14:36.465 --> 00:14:40.339 study this was looked at in terms

NOTE Confidence: 0.860267955384616

00:14:40.339 --> 00:14:43.059 of application of negative tracheal

NOTE Confidence: 0.860267955384616

00:14:43.059 --> 00:14:45.912 pressure and how this influenced

NOTE Confidence: 0.860267955384616

00:14:45.912 --> 00:14:47.577 the atrial effective.

NOTE Confidence: 0.860267955384616

00:14:47.580 --> 00:14:49.040 Refractory period.

NOTE Confidence: 0.860267955384616

00:14:49.040 --> 00:14:53.538 So they basically in this animal model

NOTE Confidence: 0.860267955384616

00:14:53.538 --> 00:14:56.082 used 2 minutes of tracheal occlusion

NOTE Confidence: 0.860267955384616

00:14:56.082 --> 00:14:58.680 and then with negative tracheal

NOTE Confidence: 0.860267955384616

00:14:58.680 --> 00:15:01.460 pressure and then tracheal occlusion

NOTE Confidence: 0.860267955384616

00:15:01.460 --> 00:15:03.970 without negative tracheal pressure.

NOTE Confidence: 0.860267955384616

00:15:03.970 --> 00:15:06.777 And it was observed that with the

NOTE Confidence: 0.860267955384616

00:15:06.777 --> 00:15:09.444 application of the neck negative tracheal

NOTE Confidence: 0.860267955384616

00:15:09.444 --> 00:15:12.678 pressure there was a reduction in the

NOTE Confidence: 0.851180208888889

00:15:12.762 --> 00:15:14.514 atrial effective refractory

NOTE Confidence: 0.851180208888889

00:15:14.514 --> 00:15:16.850 period that was observed,

NOTE Confidence: 0.851180208888889

00:15:16.850 --> 00:15:19.088 which goes along the lines of.

NOTE Confidence: 0.851180208888889

00:15:19.090 --> 00:15:22.282 The kind of direct effects of the

NOTE Confidence: 0.851180208888889

00:15:22.282 --> 00:15:23.650 increasingly negative intrathoracic

NOTE Confidence: 0.851180208888889

00:15:23.723 --> 00:15:25.873 pressures and its mechanical influence

NOTE Confidence: 0.851180208888889

00:15:25.873 --> 00:15:28.820 on the heart and therefore influencing

NOTE Confidence: 0.851180208888889

00:15:28.820 --> 00:15:33.340 the atrial effective refractory period,

NOTE Confidence: 0.851180208888889

00:15:33.340 --> 00:15:35.985 and also with the autonomic

NOTE Confidence: 0.851180208888889

00:15:35.985 --> 00:15:38.630 function appearing to play a

NOTE Confidence: 0.851180208888889

00:15:38.729 --> 00:15:41.657 role with this pathway as well.

NOTE Confidence: 0.851180208888889

00:15:41.660 --> 00:15:43.880 And then with autonomic function,

NOTE Confidence: 0.851180208888889

00:15:43.880 --> 00:15:45.992 you know we're aware that there's

NOTE Confidence: 0.851180208888889

00:15:45.992 --> 00:15:48.634 with with sleep apnea and the apnic

NOTE Confidence: 0.851180208888889

00:15:48.634 --> 00:15:50.194 events are sympathetic activation

NOTE Confidence: 0.851180208888889

00:15:50.194 --> 00:15:53.144 that has been nicely shown in doctor

NOTE Confidence: 0.851180208888889

00:15:53.144 --> 00:15:55.284 Summers work with perineal micro

NOTE Confidence: 0.851180208888889

00:15:55.284 --> 00:15:56.851 neurography with increased amplitude

NOTE Confidence: 0.851180208888889

00:15:56.851 --> 00:15:58.736 and frequency of these sympathetic

NOTE Confidence: 0.851180208888889

00:15:58.736 --> 00:16:00.658 bursts that have been identified.

NOTE Confidence: 0.851180208888889

00:16:00.660 --> 00:16:03.509 And so in one of these studies

NOTE Confidence: 0.851180208888889

00:16:03.509 --> 00:16:06.236 in this canine model it was

NOTE Confidence: 0.851180208888889

00:16:06.236 --> 00:16:09.907 observed that prior to ablation.

NOTE Confidence: 0.851180208888889

00:16:09.907 --> 00:16:13.543 Of the right pulmonary

NOTE Confidence: 0.851180208888889

00:16:13.543 --> 00:16:16.270 arterial ganglionic plexus,

NOTE Confidence: 0.851180208888889

00:16:16.270 --> 00:16:18.990 there was apnea induced atrial

NOTE Confidence: 0.851180208888889

00:16:18.990 --> 00:16:21.166 fibrillation that was observed.

NOTE Confidence: 0.851180208888889

00:16:21.170 --> 00:16:21.661 However,

NOTE Confidence: 0.851180208888889

00:16:21.661 --> 00:16:24.116 after ablation of the right

NOTE Confidence: 0.851180208888889

00:16:24.116 --> 00:16:26.080 PA ganglion and Plexus,

NOTE Confidence: 0.851180208888889

00:16:26.080 --> 00:16:29.950 which has been houses both sympathetic

NOTE Confidence: 0.851180208888889

00:16:29.950 --> 00:16:31.885 and parasympathetic neurons,

NOTE Confidence: 0.851180208888889

00:16:31.890 --> 00:16:35.572 they're no longer was apnea induced atrial

NOTE Confidence: 0.851180208888889

00:16:35.572 --> 00:16:38.529 fibrillation as subsequent to this ablation.

NOTE Confidence: 0.851180208888889

00:16:38.530 --> 00:16:41.686 So this really points towards the.

NOTE Confidence: 0.851180208888889

00:16:41.690 --> 00:16:45.197 Role of the autonomic nervous system in

NOTE Confidence: 0.851180208888889

00:16:45.197 --> 00:16:48.747 terms of the generation of arrhythmia

NOTE Confidence: 0.851180208888889

00:16:48.747 --> 00:16:51.997 in response to apneic events.

NOTE Confidence: 0.851180208888889

00:16:52.000 --> 00:16:54.674 And there has been a couple other

NOTE Confidence: 0.851180208888889

00:16:54.674 --> 00:16:56.440 studies that have corroborated

NOTE Confidence: 0.851180208888889

00:16:56.440 --> 00:16:58.600 those findings as well.

NOTE Confidence: 0.851180208888889

00:16:58.600 --> 00:17:01.302 And in talking to some of my

NOTE Confidence: 0.851180208888889

00:17:01.302 --> 00:17:02.074 electrophysiology colleagues,

NOTE Confidence: 0.851180208888889

00:17:02.080 --> 00:17:05.200 some really believe that the,

NOTE Confidence: 0.851180208888889

00:17:05.200 --> 00:17:06.036 you know,

NOTE Confidence: 0.851180208888889

00:17:06.036 --> 00:17:07.708 increased systemic inflammation and

NOTE Confidence: 0.851180208888889

00:17:07.708 --> 00:17:09.749 oxidative stress that this actually

NOTE Confidence: 0.851180208888889

00:17:09.749 --> 00:17:12.173 may be the the the most potent driver.

NOTE Confidence: 0.851180208888889

00:17:12.180 --> 00:17:15.162 And common pathway that is is leading

NOTE Confidence: 0.851180208888889

00:17:15.162 --> 00:17:16.927 to increased cardiac arrhythmia

NOTE Confidence: 0.851180208888889

00:17:16.927 --> 00:17:19.818 Genesis and of course we know that

NOTE Confidence: 0.851180208888889

00:17:19.820 --> 00:17:22.000 there's many studies that have

NOTE Confidence: 0.851180208888889

00:17:22.000 --> 00:17:24.180 shown up regulation of inflammation

NOTE Confidence: 0.851180208888889

00:17:24.252 --> 00:17:26.580 in in sleep apnea and and some of

NOTE Confidence: 0.851180208888889

00:17:26.580 --> 00:17:28.657 these same biomarkers that have

NOTE Confidence: 0.851180208888889

00:17:28.657 --> 00:17:30.945 been implicated in that realm

NOTE Confidence: 0.851180208888889

00:17:30.945 --> 00:17:33.615 have also been identified to be.

NOTE Confidence: 0.829322781428571

00:17:35.980 --> 00:17:38.005 Implicated in the in the

NOTE Confidence: 0.829322781428571

00:17:38.005 --> 00:17:39.625 pathophysiology of atrial fibrillation

NOTE Confidence: 0.829322781428571

00:17:39.625 --> 00:17:41.878 in terms of atrial fibrillation,

NOTE Confidence: 0.829322781428571

00:17:41.880 --> 00:17:44.324 recurrence and longer duration

NOTE Confidence: 0.829322781428571

00:17:44.324 --> 00:17:46.157 of atrial fibrillation,

NOTE Confidence: 0.829322781428571

00:17:46.160 --> 00:17:48.228 recurrence of atrial fibrillation

NOTE Confidence: 0.829322781428571

00:17:48.228 --> 00:17:50.813 and so and so they,

NOTE Confidence: 0.829322781428571

00:17:50.820 --> 00:17:53.898 they may there may be the role of some

NOTE Confidence: 0.829322781428571

00:17:53.898 --> 00:17:56.435 of these biomarkers of inflammation

NOTE Confidence: 0.829322781428571

00:17:56.435 --> 00:17:59.900 and oxidative stress or you know,

NOTE Confidence: 0.829322781428571

00:17:59.900 --> 00:18:02.900 resulting in even direct alteration

NOTE Confidence: 0.829322781428571

00:18:02.900 --> 00:18:05.620 of that electrophysiologic substrate.

NOTE Confidence: 0.829322781428571

00:18:05.620 --> 00:18:09.008 And and structural substrate of the heart

NOTE Confidence: 0.829322781428571

00:18:09.008 --> 00:18:12.878 that that then increases a rhythm genesis.

NOTE Confidence: 0.829322781428571

00:18:12.880 --> 00:18:15.608 We've looked at some of this in in

NOTE Confidence: 0.829322781428571

00:18:15.608 --> 00:18:18.285 sleep apnea and and even as it relates

NOTE Confidence: 0.829322781428571

00:18:18.285 --> 00:18:21.096 to the amount of sleep that folks get

NOTE Confidence: 0.829322781428571

00:18:21.096 --> 00:18:23.749 with you know who have sleep apnea.

NOTE Confidence: 0.829322781428571

00:18:23.749 --> 00:18:27.032 And so we looked at polysomnographic total

NOTE Confidence: 0.829322781428571

00:18:27.032 --> 00:18:30.536 sleep time as well as habitual sleep time

NOTE Confidence: 0.829322781428571

00:18:30.536 --> 00:18:32.915 and sleep duration and interestingly

NOTE Confidence: 0.829322781428571

00:18:32.915 --> 00:18:36.105 found that there were differential.

NOTE Confidence: 0.829322781428571

00:18:36.110 --> 00:18:38.843 Relationships between polysomnographic

NOTE Confidence: 0.829322781428571

00:18:38.843 --> 00:18:44.332 versus more chronic sleep deficiency as it

NOTE Confidence: 0.829322781428571

00:18:44.332 --> 00:18:48.460 relates to myeloperoxidase and oxidized LDL.

NOTE Confidence: 0.829322781428571

00:18:48.460 --> 00:18:51.070 So, so it may be that there are different

NOTE Confidence: 0.829322781428571

00:18:51.070 --> 00:18:53.172 pathways of of inflammation that are

NOTE Confidence: 0.829322781428571

00:18:53.172 --> 00:18:54.917 increased with more acute versus

NOTE Confidence: 0.829322781428571

00:18:54.976 --> 00:18:57.208 more chronic curtailed sleep in the

NOTE Confidence: 0.829322781428571

00:18:57.208 --> 00:18:59.284 setting of obstructive sleep apnea.

NOTE Confidence: 0.829322781428571

00:18:59.284 --> 00:19:01.620 In terms of inflammation,

NOTE Confidence: 0.829322781428571

00:19:01.620 --> 00:19:05.308 we've also found that.

NOTE Confidence: 0.829322781428571

00:19:05.310 --> 00:19:07.385 Overall in this randomized control

NOTE Confidence: 0.829322781428571

00:19:07.385 --> 00:19:09.865 trial of individuals with moderate to

NOTE Confidence: 0.829322781428571

00:19:09.865 --> 00:19:12.224 severe sleep apnea who were randomized to

NOTE Confidence: 0.829322781428571

00:19:12.224 --> 00:19:14.528 CPAP versus sham CPAP that there were,

NOTE Confidence: 0.829322781428571

00:19:14.530 --> 00:19:15.248 you know,

NOTE Confidence: 0.829322781428571

00:19:15.248 --> 00:19:17.761 reductions as has been shown in other

NOTE Confidence: 0.829322781428571

00:19:17.761 --> 00:19:19.751 clinical trials and systolic and

NOTE Confidence: 0.829322781428571

00:19:19.751 --> 00:19:22.097 diastolic blood pressure also in some

NOTE Confidence: 0.829322781428571

00:19:22.164 --> 00:19:24.729 vascular measures of augmentation index.

NOTE Confidence: 0.829322781428571

00:19:24.730 --> 00:19:28.126 But overall in this particular trial

NOTE Confidence: 0.829322781428571

00:19:28.126 --> 00:19:32.530 we did not observe any oxidative

NOTE Confidence: 0.829322781428571

00:19:32.530 --> 00:19:35.230 stress measure improvement.

NOTE Confidence: 0.829322781428571

00:19:35.230 --> 00:19:39.647 There was an improvement in soluble aisle

NOTE Confidence: 0.829322781428571

00:19:39.647 --> 00:19:44.720 6 receptor levels with CPAP versus sham CPAP.

NOTE Confidence: 0.829322781428571

00:19:44.720 --> 00:19:46.695 And interestingly when we delved

NOTE Confidence: 0.829322781428571

00:19:46.695 --> 00:19:49.133 further in post hoc analysis to

NOTE Confidence: 0.829322781428571

00:19:49.133 --> 00:19:51.078 look at sex specific differences,

NOTE Confidence: 0.829322781428571

00:19:51.080 --> 00:19:53.144 we identified that perhaps in women

NOTE Confidence: 0.829322781428571

00:19:53.144 --> 00:19:55.796 there was a a greater response to

NOTE Confidence: 0.829322781428571

00:19:55.796 --> 00:19:58.596 CPAP in terms of improvement and some

NOTE Confidence: 0.829322781428571

00:19:58.674 --> 00:20:00.534 of these oxidative stress markers

NOTE Confidence: 0.829322781428571

00:20:00.534 --> 00:20:03.840 and and and and and and markers of

NOTE Confidence: 0.829322781428571

00:20:03.840 --> 00:20:05.280 a systemic inflammation.

NOTE Confidence: 0.829322781428571

00:20:05.280 --> 00:20:07.730 Now these are post hoc analysis that

NOTE Confidence: 0.829322781428571

00:20:07.730 --> 00:20:10.252 that need to be further validated

NOTE Confidence: 0.829322781428571

00:20:10.252 --> 00:20:12.756 in terms of inflammation.

NOTE Confidence: 0.829322781428571

00:20:12.760 --> 00:20:15.119 We've also in the Safe Beat study.

NOTE Confidence: 0.829322781428571

00:20:15.120 --> 00:20:18.504 Um looked at individuals who have

NOTE Confidence: 0.829322781428571

00:20:18.504 --> 00:20:20.196 paroxysmal atrial fibrillation,

NOTE Confidence: 0.829322781428571

00:20:20.200 --> 00:20:23.176 uh who had and and also compared to

NOTE Confidence: 0.829322781428571

00:20:23.176 --> 00:20:25.444 these individuals to controls without

NOTE Confidence: 0.829322781428571

00:20:25.444 --> 00:20:27.859 atrial fibrillation who are masked,

NOTE Confidence: 0.829322781428571

00:20:27.860 --> 00:20:29.960 matched on age, sex, race,

NOTE Confidence: 0.829322781428571

00:20:29.960 --> 00:20:33.656 and body mass index and found that

NOTE Confidence: 0.829322781428571

00:20:33.656 --> 00:20:35.993 there were differences in proteomic

NOTE Confidence: 0.829322781428571

00:20:35.993 --> 00:20:38.831 profiles and those with proximal atrial

NOTE Confidence: 0.829322781428571

00:20:38.831 --> 00:20:40.820 fibrillation versus those without,

NOTE Confidence: 0.829322781428571

00:20:40.820 --> 00:20:44.060 and that some of these biomarkers

NOTE Confidence: 0.829322781428571

00:20:44.060 --> 00:20:45.680 were actually altered.

NOTE Confidence: 0.829322781428571

00:20:45.680 --> 00:20:47.654 With the treatment of that moderate

NOTE Confidence: 0.829322781428571

00:20:47.654 --> 00:20:48.970 to severe sleep apnea,

NOTE Confidence: 0.829322781428571

00:20:48.970 --> 00:20:50.640 so some of these differential

NOTE Confidence: 0.829322781428571

00:20:50.640 --> 00:20:52.310 biomarkers were actually on altered

NOTE Confidence: 0.829322781428571

00:20:52.366 --> 00:20:53.550 with treatment of CPAP.

NOTE Confidence: 0.829322781428571

00:20:53.550 --> 00:20:56.538 So these may be biomarkers that

NOTE Confidence: 0.829322781428571

00:20:56.538 --> 00:21:00.087 are implicated in the in the this

NOTE Confidence: 0.829322781428571

00:21:00.087 --> 00:21:02.163 inflammatory cascade that that

NOTE Confidence: 0.829322781428571

00:21:02.163 --> 00:21:05.310 that occurs with with sleep apnea.

NOTE Confidence: 0.829322781428571

00:21:05.310 --> 00:21:09.405 So taken together when putting

NOTE Confidence: 0.829322781428571

00:21:09.405 --> 00:21:12.380 together the experimental data that

NOTE Confidence: 0.829322781428571

00:21:12.380 --> 00:21:15.556 have been generated again there are.

NOTE Confidence: 0.829322781428571

00:21:15.556 --> 00:21:17.866 Are there's evidence of structural

NOTE Confidence: 0.829322781428571

00:21:17.866 --> 00:21:20.757 remodeling and I didn't share their there.

NOTE Confidence: 0.829322781428571

00:21:20.760 --> 00:21:23.364 There are data to show that overtime

NOTE Confidence: 0.829322781428571

00:21:23.364 --> 00:21:25.288 that there's actual changes to

NOTE Confidence: 0.829322781428571

00:21:25.288 --> 00:21:27.484 left atrial size that can occur

NOTE Confidence: 0.829322781428571

00:21:27.484 --> 00:21:29.749 increases in left ventricular mass.

NOTE Confidence: 0.8669867625

00:21:29.750 --> 00:21:31.510 These autonomic nervous system

NOTE Confidence: 0.8669867625

00:21:31.510 --> 00:21:34.150 alterations that that can directly lead

NOTE Confidence: 0.8669867625

00:21:34.213 --> 00:21:36.723 to electrophysiologic changes in this

NOTE Confidence: 0.8669867625

00:21:36.723 --> 00:21:41.730 electrical remodeling and and connection and.

NOTE Confidence: 0.8669867625

00:21:41.730 --> 00:21:43.840 Some other biomarkers have been

NOTE Confidence: 0.8669867625

00:21:43.840 --> 00:21:46.942 implicated in this in this biology as

NOTE Confidence: 0.8669867625

00:21:46.942 --> 00:21:50.148 well and and reduction in this atrial

NOTE Confidence: 0.8669867625

00:21:50.148 --> 00:21:52.682 refractoriness which can again increase

NOTE Confidence: 0.8669867625

00:21:52.682 --> 00:21:55.946 that vulnerability to to atrial arrhythmia.

NOTE Confidence: 0.8669867625

00:21:55.950 --> 00:22:00.702 So all of these different pathways are ones

NOTE Confidence: 0.8669867625

00:22:00.702 --> 00:22:04.906 that can then contribute to development

NOTE Confidence: 0.8669867625

00:22:04.906 --> 00:22:09.086 and progression of atrial fibrillation.

NOTE Confidence: 0.8669867625

00:22:09.090 --> 00:22:10.750 So with atrial fibrillation,

NOTE Confidence: 0.8669867625

00:22:10.750 --> 00:22:13.789 this is recognized to be in an

NOTE Confidence: 0.8669867625

00:22:13.789 --> 00:22:16.119 ensuing epidemic with a fivefold

NOTE Confidence: 0.8669867625

00:22:16.119 --> 00:22:19.330 increase in prevalence.

NOTE Confidence: 0.8669867625

00:22:19.330 --> 00:22:21.340 By the year of 2050,

NOTE Confidence: 0.8669867625

00:22:21.340 --> 00:22:23.216 uh from two more than two million

NOTE Confidence: 0.8669867625

00:22:23.216 --> 00:22:25.023 now to more estimated more than

NOTE Confidence: 0.8669867625

00:22:25.023 --> 00:22:27.028 10 million by the year 2050.

NOTE Confidence: 0.8669867625

00:22:27.028 --> 00:22:30.094 And it was recognized in the Framingham

NOTE Confidence: 0.8669867625

00:22:30.094 --> 00:22:33.078 Heart study that this was incompletely

NOTE Confidence: 0.8669867625

00:22:33.078 --> 00:22:36.120 explained by the aging population alone

NOTE Confidence: 0.8669867625

00:22:36.201 --> 00:22:38.733 and established risk factors such as

NOTE Confidence: 0.8669867625

00:22:38.733 --> 00:22:41.768 male sex and again the increased age.

NOTE Confidence: 0.8669867625

00:22:41.768 --> 00:22:44.444 And it is thought that unrecognized

NOTE Confidence: 0.8669867625

00:22:44.444 --> 00:22:45.410 sleep apnea,

NOTE Confidence: 0.8669867625

00:22:45.410 --> 00:22:47.620 as we had discussed earlier

NOTE Confidence: 0.8669867625

00:22:47.620 --> 00:22:49.830 is estimated to be about.

NOTE Confidence: 0.8669867625

00:22:49.830 --> 00:22:53.430 85% maybe partially contributing to this

NOTE Confidence: 0.8669867625

00:22:53.430 --> 00:22:55.830 atrial fibrillation epidemic that's

NOTE Confidence: 0.8669867625

00:22:55.914 --> 00:22:58.479 being observed and it's interesting

NOTE Confidence: 0.8669867625

00:22:58.479 --> 00:23:01.044 to consider the risk factors.

NOTE Confidence: 0.8669867625

00:23:01.050 --> 00:23:03.582 There are many shared risk factors

NOTE Confidence: 0.8669867625

00:23:03.582 --> 00:23:05.893 of obstructive sleep apnea and

NOTE Confidence: 0.8669867625

00:23:05.893 --> 00:23:06.999 atrial fibrillation.

NOTE Confidence: 0.8669867625

00:23:07.000 --> 00:23:09.036 Increasing age,

NOTE Confidence: 0.8669867625

00:23:09.036 --> 00:23:12.090 male predisposition and

NOTE Confidence: 0.8669867625

00:23:12.090 --> 00:23:14.390 interestingly there are some data,

NOTE Confidence: 0.8669867625

00:23:14.390 --> 00:23:15.280 you know,

NOTE Confidence: 0.8669867625

00:23:15.280 --> 00:23:17.505 some pockets of data showing

NOTE Confidence: 0.8669867625

00:23:17.505 --> 00:23:18.840 that sleep apnea.

NOTE Confidence: 0.8669867625

00:23:18.840 --> 00:23:21.696 As defined by the apnea hypopnea index

NOTE Confidence: 0.8669867625

00:23:21.696 --> 00:23:24.335 may be at increased risk for atrial

NOTE Confidence: 0.8669867625

00:23:24.335 --> 00:23:25.787 fibrillation in African American

NOTE Confidence: 0.8669867625

00:23:25.787 --> 00:23:27.654 patients versus the nocturnal hypoxia

NOTE Confidence: 0.8669867625

00:23:27.654 --> 00:23:29.106 perhaps associated with increased

NOTE Confidence: 0.8669867625

00:23:29.106 --> 00:23:31.440 risk of atrial fibrillation in Asians.

NOTE Confidence: 0.8669867625

00:23:31.440 --> 00:23:35.632 So there there may be some race specific

NOTE Confidence: 0.8669867625

00:23:35.632 --> 00:23:38.520 susceptibilities to to consider as well.

NOTE Confidence: 0.8669867625

00:23:38.520 --> 00:23:40.554 And in this particular meta analysis

NOTE Confidence: 0.8669867625

00:23:40.554 --> 00:23:42.594 as it's recognized that obesity of

NOTE Confidence: 0.8669867625

00:23:42.594 --> 00:23:44.460 course is a risk for obstructive

NOTE Confidence: 0.8669867625

00:23:44.460 --> 00:23:46.935 sleep apnea also is a strong risk for

NOTE Confidence: 0.8669867625

00:23:46.935 --> 00:23:48.584 atrial fibrillation and and again.

NOTE Confidence: 0.8669867625

00:23:48.584 --> 00:23:51.248 This is always the challenge and

NOTE Confidence: 0.8669867625

00:23:51.248 --> 00:23:53.815 dissecting these pathways of obesity

NOTE Confidence: 0.8669867625

00:23:53.815 --> 00:23:56.139 dependent and independent relationships,

NOTE Confidence: 0.8669867625

00:23:56.140 --> 00:23:56.816 you know,

NOTE Confidence: 0.8669867625

00:23:56.816 --> 00:23:58.844 this meta analysis you know may

NOTE Confidence: 0.8669867625

00:23:58.844 --> 00:24:01.044 help shed a little bit light of

NOTE Confidence: 0.8669867625

00:24:01.044 --> 00:24:03.541 light on that in terms of a stronger

NOTE Confidence: 0.8669867625

00:24:03.541 --> 00:24:05.848 point estimate of of 2.18 versus

NOTE Confidence: 0.8669867625

00:24:05.848 --> 00:24:08.902 1.67 in terms of a relationship

NOTE Confidence: 0.8669867625

00:24:08.902 --> 00:24:12.660 with atrial fibrillation of sleep

NOTE Confidence: 0.8669867625

00:24:12.660 --> 00:24:15.720 apnea versus obesity respectively.

NOTE Confidence: 0.8669867625

00:24:15.720 --> 00:24:18.268 And I think this,

NOTE Confidence: 0.8669867625

00:24:18.268 --> 00:24:20.816 this interplay with obesity

NOTE Confidence: 0.8669867625

00:24:20.816 --> 00:24:24.164 adiposity is one that likely you

NOTE Confidence: 0.8669867625

00:24:24.164 --> 00:24:26.874 know needs some more attention.

NOTE Confidence: 0.8669867625

00:24:26.880 --> 00:24:30.400 And so we've started to look at epicardial,

NOTE Confidence: 0.8669867625

00:24:30.400 --> 00:24:32.736 adipose tissue and any

NOTE Confidence: 0.8669867625

00:24:32.736 --> 00:24:35.656 synergies that you know we,

NOTE Confidence: 0.8669867625

00:24:35.660 --> 00:24:38.020 you know that we can we can see

NOTE Confidence: 0.8669867625

00:24:38.020 --> 00:24:40.064 even between the sleep apnea and

NOTE Confidence: 0.8669867625

00:24:40.064 --> 00:24:42.430 obesity and in in panel B here

NOTE Confidence: 0.8669867625

00:24:42.430 --> 00:24:45.220 you can see as an individual.

NOTE Confidence: 0.8669867625

00:24:45.220 --> 00:24:48.538 With both obesity and severe obstructive

NOTE Confidence: 0.8669867625

00:24:48.538 --> 00:24:51.530 sleep apnea compared to panel a,

NOTE Confidence: 0.8669867625

00:24:51.530 --> 00:24:54.206 non obese with severe sleep apnea,

NOTE Confidence: 0.8669867625

00:24:54.210 --> 00:24:57.168 panel D obese without sleep apnea,

NOTE Confidence: 0.8669867625

00:24:57.170 --> 00:25:00.670 panel C without either obesity

NOTE Confidence: 0.8669867625

00:25:00.670 --> 00:25:02.598 or nor a sleep apnea.

NOTE Confidence: 0.8669867625

00:25:02.598 --> 00:25:05.330 So you know this is a small end

NOTE Confidence: 0.8669867625

00:25:05.330 --> 00:25:07.766 and we're we're we're continuing to

NOTE Confidence: 0.8669867625

00:25:07.766 --> 00:25:10.444 do just for you know feasibility

NOTE Confidence: 0.8669867625

00:25:10.444 --> 00:25:12.474 data you know in terms of these

NOTE Confidence: 0.8669867625

00:25:12.474 --> 00:25:14.490 cardiac MRI's to to generate this

NOTE Confidence: 0.8669867625

00:25:14.490 --> 00:25:15.890 these epicardial adipose tissue.

NOTE Confidence: 0.8669867625

00:25:15.890 --> 00:25:16.212 Volumes,

NOTE Confidence: 0.8669867625

00:25:16.212 --> 00:25:18.788 but this may allow us to get a

NOTE Confidence: 0.8669867625

00:25:18.788 --> 00:25:21.644 sense of the biology as you know

NOTE Confidence: 0.8669867625

00:25:21.644 --> 00:25:23.280 local that's occurring locally

NOTE Confidence: 0.833444666666667

00:25:23.351 --> 00:25:25.927 at the level of the heart and how

NOTE Confidence: 0.833444666666667

00:25:25.927 --> 00:25:28.096 sleep apnea can intersect with that.

NOTE Confidence: 0.833444666666667

00:25:28.096 --> 00:25:30.370 And then I think also recognizing

NOTE Confidence: 0.833444666666667

00:25:30.435 --> 00:25:32.720 that atrial fibrillation occurs on

NOTE Confidence: 0.833444666666667

00:25:32.720 --> 00:25:35.005 a continuum where there's paroxysms

NOTE Confidence: 0.833444666666667

00:25:35.074 --> 00:25:37.099 of atrial fibrillation and then

NOTE Confidence: 0.833444666666667

00:25:37.100 --> 00:25:40.586 you know this can evolve into.

NOTE Confidence: 0.833444666666667

00:25:40.590 --> 00:25:41.928 Persistent atrial fibrillation

NOTE Confidence: 0.833444666666667

00:25:41.928 --> 00:25:44.158 and then chronic persistent atrial

NOTE Confidence: 0.833444666666667

00:25:44.158 --> 00:25:46.052 fibrillation at which point there's

NOTE Confidence: 0.833444666666667

00:25:46.052 --> 00:25:47.936 more remodeling of the heart that

NOTE Confidence: 0.833444666666667

00:25:47.936 --> 00:25:50.070 may be less likely to be reversible.

NOTE Confidence: 0.833444666666667

00:25:50.070 --> 00:25:53.292 So at what point in the spectrum are we

NOTE Confidence: 0.833444666666667

00:25:53.292 --> 00:25:56.248 likely to make the most difference in

NOTE Confidence: 0.833444666666667

00:25:56.248 --> 00:25:58.688 terms of treatment with of obstructive

NOTE Confidence: 0.833444666666667

00:25:58.688 --> 00:26:00.962 sleep apnea and intervening and I

NOTE Confidence: 0.833444666666667

00:26:00.962 --> 00:26:03.642 think that's that's an area that that

NOTE Confidence: 0.833444666666667

00:26:03.642 --> 00:26:05.502 warrants further attention as well.

NOTE Confidence: 0.833444666666667

00:26:05.510 --> 00:26:07.868 In terms of the epidemiologic data,

NOTE Confidence: 0.833444666666667

00:26:07.870 --> 00:26:08.878 you know this,

NOTE Confidence: 0.833444666666667

00:26:08.878 --> 00:26:10.894 these are you know older data.

NOTE Confidence: 0.833444666666667

00:26:10.900 --> 00:26:13.679 From a separate health study in which

NOTE Confidence: 0.833444666666667

00:26:13.679 --> 00:26:18.994 we examined those who presented for

NOTE Confidence: 0.833444666666667

00:26:18.994 --> 00:26:21.929 this population based study and

NOTE Confidence: 0.833444666666667

00:26:21.929 --> 00:26:24.980 examined the relationship of sleep

NOTE Confidence: 0.833444666666667

00:26:24.980 --> 00:26:27.791 disordered breathing with with the

NOTE Confidence: 0.833444666666667

00:26:27.791 --> 00:26:30.476 cardiac arrhythmias as identified on

NOTE Confidence: 0.833444666666667

00:26:30.476 --> 00:26:32.822 the polysomnogram during their sleep

NOTE Confidence: 0.833444666666667

00:26:32.822 --> 00:26:36.097 studies and found there to be a very

NOTE Confidence: 0.833444666666667

00:26:36.097 --> 00:26:38.232 strong association of anywhere from

NOTE Confidence: 0.833444666666667

00:26:38.232 --> 00:26:41.756 a two to five fold higher odds that.

NOTE Confidence: 0.833444666666667

00:26:41.756 --> 00:26:44.026 These arrhythmias as it relates

NOTE Confidence: 0.833444666666667

00:26:44.026 --> 00:26:46.797 to severe obstructive sleep apnea

NOTE Confidence: 0.833444666666667

00:26:46.797 --> 00:26:49.830 compared to those without even after

NOTE Confidence: 0.833444666666667

00:26:49.830 --> 00:26:52.230 accounting for a range of confounding

NOTE Confidence: 0.833444666666667

00:26:52.230 --> 00:26:54.832 factors and we had group matched

NOTE Confidence: 0.833444666666667

00:26:54.832 --> 00:26:56.997 and statistically adjusted for these

NOTE Confidence: 0.833444666666667

00:26:56.997 --> 00:26:58.666 factors of age, sex, race,

NOTE Confidence: 0.833444666666667

00:26:58.666 --> 00:27:00.406 BMI in addition to cardiovascular

NOTE Confidence: 0.833444666666667

00:27:00.406 --> 00:27:01.450 risk and cardio,

NOTE Confidence: 0.833444666666667

00:27:01.450 --> 00:27:04.684 other cardiovascular disease

NOTE Confidence: 0.833444666666667

00:27:04.684 --> 00:27:07.918 comorbidities as well.

NOTE Confidence: 0.833444666666667

00:27:07.920 --> 00:27:10.279 And in this study with the outcomes

NOTE Confidence: 0.833444666666667

00:27:10.279 --> 00:27:12.199 of sleep disorders in older men

NOTE Confidence: 0.833444666666667

00:27:12.199 --> 00:27:14.016 study as opposed to the sleep Heart

NOTE Confidence: 0.833444666666667

00:27:14.016 --> 00:27:15.714 Health study where we just looked

NOTE Confidence: 0.833444666666667

00:27:15.714 --> 00:27:17.259 at severe versus those without.

NOTE Confidence: 0.833444666666667

00:27:17.260 --> 00:27:21.292 We aimed to look at the spectrum of

NOTE Confidence: 0.833444666666667

00:27:21.292 --> 00:27:24.919 severity of sleep apnea as it relates

NOTE Confidence: 0.833444666666667

00:27:24.919 --> 00:27:26.587 to nocturnal cardiac arrhythmia

NOTE Confidence: 0.833444666666667

00:27:26.587 --> 00:27:29.310 and found there to be these graded

NOTE Confidence: 0.833444666666667

00:27:29.381 --> 00:27:30.773 relationships with increasing

NOTE Confidence: 0.833444666666667

00:27:30.773 --> 00:27:33.557 severity of sleep apnea and increasing

NOTE Confidence: 0.833444666666667

00:27:33.557 --> 00:27:35.761 burden of atrial fibrillation and

NOTE Confidence: 0.833444666666667

00:27:35.761 --> 00:27:37.856 also increasing burden of complex.

NOTE Confidence: 0.833444666666667

00:27:37.860 --> 00:27:38.674 Ventricular ectopy.

NOTE Confidence: 0.833444666666667

00:27:38.674 --> 00:27:41.116 And in this particular study where

NOTE Confidence: 0.833444666666667

00:27:41.116 --> 00:27:43.370 there were all male participants,

NOTE Confidence: 0.833444666666667

00:27:43.370 --> 00:27:45.130 we found the stronger relationship,

NOTE Confidence: 0.833444666666667

00:27:45.130 --> 00:27:45.690 interestingly,

NOTE Confidence: 0.833444666666667

00:27:45.690 --> 00:27:48.490 with obstructive sleep apnea and

NOTE Confidence: 0.833444666666667

00:27:48.490 --> 00:27:50.730 ventricular arrhythmia and central

NOTE Confidence: 0.833444666666667

00:27:50.807 --> 00:27:53.267 sleep apnea and atrial fibrillation.

NOTE Confidence: 0.833444666666667

00:27:53.270 --> 00:27:55.951 That was observed and we also have

NOTE Confidence: 0.833444666666667

00:27:55.951 --> 00:27:58.592 tried to better understand the

NOTE Confidence: 0.833444666666667

00:27:58.592 --> 00:28:01.345 temporal relationships of the discrete

NOTE Confidence: 0.833444666666667

00:28:01.345 --> 00:28:04.015 apnic and hypotonic events as it

NOTE Confidence: 0.833444666666667

00:28:04.015 --> 00:28:06.530 relates to the arrhythmic events.

NOTE Confidence: 0.833444666666667

00:28:06.530 --> 00:28:08.360 So in this case crossover study,

NOTE Confidence: 0.833444666666667

00:28:08.360 --> 00:28:11.664 which is commonly used in air pollution

NOTE Confidence: 0.833444666666667

00:28:11.664 --> 00:28:14.271 studies and lends itself to situations

NOTE Confidence: 0.833444666666667

00:28:14.271 --> 00:28:16.798 where you have a very short lived

NOTE Confidence: 0.833444666666667

00:28:16.798 --> 00:28:18.989 exposure and a short lived outcome,

NOTE Confidence: 0.833444666666667

00:28:18.990 --> 00:28:23.328 we identified a very strong association.

NOTE Confidence: 0.833444666666667

00:28:23.330 --> 00:28:25.370 Of these discrete nocturnal

NOTE Confidence: 0.833444666666667

00:28:25.370 --> 00:28:27.410 arrhythmias within 90 seconds

NOTE Confidence: 0.833444666666667

00:28:27.410 --> 00:28:29.600 following an apnea hypopnea.

NOTE Confidence: 0.833444666666667

00:28:29.600 --> 00:28:31.442 So we used a unidirectional design

NOTE Confidence: 0.833444666666667

00:28:31.442 --> 00:28:33.445 where there was an arrhythmic onset

NOTE Confidence: 0.833444666666667

00:28:33.445 --> 00:28:35.958 of either a discrete episode of non

NOTE Confidence: 0.833444666666667

00:28:35.958 --> 00:28:37.678 sustained ventricular tachycardia or

NOTE Confidence: 0.833444666666667

00:28:37.678 --> 00:28:39.848 a paroxysm of atrial fibrillation

NOTE Confidence: 0.833444666666667

00:28:39.848 --> 00:28:42.228 and proceeding only then looked at

NOTE Confidence: 0.833444666666667

00:28:42.228 --> 00:28:45.023 a hazard period of 90 seconds based

NOTE Confidence: 0.833444666666667

00:28:45.023 --> 00:28:47.747 upon estimated you know apnea related

NOTE Confidence: 0.833444666666667

00:28:47.747 --> 00:28:50.265 hypoxia and and autonomic fluctuations

NOTE Confidence: 0.833444666666667

00:28:50.265 --> 00:28:53.493 that are occurring and then also.

NOTE Confidence: 0.833444666666667

00:28:53.500 --> 00:28:56.025 And selected some normal sinus

NOTE Confidence: 0.833444666666667

00:28:56.025 --> 00:28:58.550 rhythm period control periods as

NOTE Confidence: 0.833444666666667

00:28:58.639 --> 00:29:01.249 reference and and and again found

NOTE Confidence: 0.833444666666667

00:29:01.249 --> 00:29:03.074 this strong relationship and this

NOTE Confidence: 0.833444666666667

00:29:03.074 --> 00:29:05.150 study was borne out of some

NOTE Confidence: 0.855057771333333

00:29:05.217 --> 00:29:07.329 observations as we were looking at

NOTE Confidence: 0.855057771333333

00:29:07.329 --> 00:29:09.733 the sleep studies from the sleep Heart

NOTE Confidence: 0.855057771333333

00:29:09.733 --> 00:29:11.896 Health study that you know some of

NOTE Confidence: 0.855057771333333

00:29:11.900 --> 00:29:14.130 these arrhythmic events appear to

NOTE Confidence: 0.855057771333333

00:29:14.130 --> 00:29:16.978 be aligned with when the respiratory

NOTE Confidence: 0.855057771333333

00:29:16.978 --> 00:29:20.206 events were occurring along with the

NOTE Confidence: 0.855057771333333

00:29:20.206 --> 00:29:22.742 hypoxia associated with these events.

NOTE Confidence: 0.855057771333333

00:29:22.742 --> 00:29:25.232 And and getting even further

NOTE Confidence: 0.855057771333333

00:29:25.232 --> 00:29:27.129 in the temporality,

NOTE Confidence: 0.855057771333333

00:29:27.130 --> 00:29:30.784 Dominic Langlands and his group have

NOTE Confidence: 0.855057771333333

00:29:30.784 --> 00:29:34.681 looked at the continuous monitoring of

NOTE Confidence: 0.855057771333333

00:29:34.681 --> 00:29:38.755 the respiratory events and also atrial

NOTE Confidence: 0.855057771333333

00:29:38.755 --> 00:29:41.953 fibrillation of paroxysms that occur

NOTE Confidence: 0.855057771333333

00:29:41.953 --> 00:29:46.006 over time and and found evidence that

NOTE Confidence: 0.855057771333333

00:29:46.010 --> 00:29:50.108 sleep disorder breathing and these events.

NOTE Confidence: 0.855057771333333

00:29:50.110 --> 00:29:54.046 Detected by this uh cardiac monitor

NOTE Confidence: 0.855057771333333

00:29:54.046 --> 00:29:57.064 uh were more associated direction in

NOTE Confidence: 0.855057771333333

00:29:57.064 --> 00:29:59.194 it from a directionality standpoint

NOTE Confidence: 0.855057771333333

00:29:59.194 --> 00:30:01.424 with subsequent atrial fibrillation

NOTE Confidence: 0.855057771333333

00:30:01.424 --> 00:30:03.744 suggesting sleep disorder breathing

NOTE Confidence: 0.855057771333333

00:30:03.744 --> 00:30:05.484 begets atrial fibrillation.

NOTE Confidence: 0.855057771333333

00:30:05.490 --> 00:30:05.772 However,

NOTE Confidence: 0.855057771333333

00:30:05.772 --> 00:30:08.310 the reverse did not appear to be true in

NOTE Confidence: 0.855057771333333

00:30:08.374 --> 00:30:10.966 terms of atrial fibrillation beginning sleep,

NOTE Confidence: 0.855057771333333

00:30:10.970 --> 00:30:11.914 disordered breathing.

NOTE Confidence: 0.855057771333333

00:30:11.914 --> 00:30:15.218 So I think the case crossover study

NOTE Confidence: 0.855057771333333

00:30:15.218 --> 00:30:18.216 we just reviewed and this study

NOTE Confidence: 0.855057771333333

00:30:18.216 --> 00:30:20.656 really point towards there being.

NOTE Confidence: 0.855057771333333

00:30:20.660 --> 00:30:22.800 You know a causal relationship,

NOTE Confidence: 0.855057771333333

00:30:22.800 --> 00:30:26.286 at least when considering the directionality

NOTE Confidence: 0.855057771333333

00:30:26.286 --> 00:30:29.838 of the respiratory events and the

NOTE Confidence: 0.855057771333333

00:30:29.838 --> 00:30:32.110 paroxysms of atrial fibrillation.

NOTE Confidence: 0.855057771333333

00:30:32.110 --> 00:30:34.426 We've also in the safety study

NOTE Confidence: 0.855057771333333

00:30:34.430 --> 00:30:37.320 when looking again at these.

NOTE Confidence: 0.855057771333333

00:30:37.320 --> 00:30:39.534 The the the patterning of atrial

NOTE Confidence: 0.855057771333333

00:30:39.534 --> 00:30:42.055 fibrillation as we had mainly focused

NOTE Confidence: 0.855057771333333

00:30:42.055 --> 00:30:44.011 on nocturnal cardiac arrhythmias

NOTE Confidence: 0.855057771333333

00:30:44.011 --> 00:30:46.418 identified from the sleep studies

NOTE Confidence: 0.855057771333333

00:30:46.418 --> 00:30:48.668 of the sleep Heart health study

NOTE Confidence: 0.855057771333333

00:30:48.668 --> 00:30:50.571 and the outcomes of sleep disorders

NOTE Confidence: 0.855057771333333

00:30:50.571 --> 00:30:51.599 and older men study.

NOTE Confidence: 0.855057771333333

00:30:51.600 --> 00:30:55.624 We in the safe beat trial had conducted

NOTE Confidence: 0.855057771333333

00:30:55.624 --> 00:30:58.872 continuous ECG monitoring along with

NOTE Confidence: 0.855057771333333

00:30:58.872 --> 00:31:01.902 overnight polysomnography as as well

NOTE Confidence: 0.855057771333333

00:31:01.902 --> 00:31:04.459 as actigraphy monitoring concordant

NOTE Confidence: 0.855057771333333

00:31:04.459 --> 00:31:07.689 with the continuous ECG monitoring.

NOTE Confidence: 0.855057771333333

00:31:07.690 --> 00:31:10.900 And and we're attempting to look

NOTE Confidence: 0.855057771333333

00:31:10.900 --> 00:31:13.727 at diurnal patterning of heart

NOTE Confidence: 0.855057771333333

00:31:13.727 --> 00:31:16.682 rate variability indices and how

NOTE Confidence: 0.855057771333333

00:31:16.682 --> 00:31:19.989 this related to severity of sleep

NOTE Confidence: 0.855057771333333

00:31:19.989 --> 00:31:22.943 apnea defined by the HIV and also

NOTE Confidence: 0.855057771333333

00:31:22.943 --> 00:31:25.194 as defined by hypoxia.

NOTE Confidence: 0.855057771333333

00:31:25.194 --> 00:31:27.626 And interestingly found that

NOTE Confidence: 0.855057771333333

00:31:27.626 --> 00:31:31.369 there were there was a significant

NOTE Confidence: 0.855057771333333

00:31:31.369 --> 00:31:34.409 interaction between sleep wake and

NOTE Confidence: 0.855057771333333

00:31:34.410 --> 00:31:38.586 HIV as well as the hypoxia.

NOTE Confidence: 0.855057771333333

00:31:38.590 --> 00:31:41.386 The level of hypoxia relative to

NOTE Confidence: 0.855057771333333

00:31:41.386 --> 00:31:43.741 these heart rate variability measures

NOTE Confidence: 0.855057771333333

00:31:43.741 --> 00:31:47.037 and there was a subset as well that

NOTE Confidence: 0.855057771333333

00:31:47.037 --> 00:31:50.078 underwent CPAP treatment and there was

NOTE Confidence: 0.855057771333333

00:31:50.078 --> 00:31:52.338 alterations in in these relationships

NOTE Confidence: 0.855057771333333

00:31:52.338 --> 00:31:56.040 also with with CPAP and so and and

NOTE Confidence: 0.855057771333333

00:31:56.040 --> 00:31:59.016 interestingly found that it was the

NOTE Confidence: 0.855057771333333

00:31:59.016 --> 00:32:01.645 the wakefulness that had stronger

NOTE Confidence: 0.855057771333333

00:32:01.645 --> 00:32:05.460 relationships of the HI and the the

NOTE Confidence: 0.855057771333333

00:32:05.570 --> 00:32:09.068 nocturnal HI and the HRV measures.

NOTE Confidence: 0.855057771333333

00:32:09.070 --> 00:32:09.818 Um,

NOTE Confidence: 0.855057771333333

00:32:09.818 --> 00:32:13.558 suggesting that there's some continued.

NOTE Confidence: 0.855057771333333

00:32:13.560 --> 00:32:14.638 You know,

NOTE Confidence: 0.855057771333333

00:32:14.638 --> 00:32:16.794 potential negative consequences of

NOTE Confidence: 0.855057771333333

00:32:16.794 --> 00:32:19.933 that sleep apnea that that maybe

NOTE Confidence: 0.855057771333333

00:32:19.933 --> 00:32:22.178 even more manifest during the

NOTE Confidence: 0.855057771333333

00:32:22.178 --> 00:32:24.526 day compared to the night,

NOTE Confidence: 0.855057771333333

00:32:24.526 --> 00:32:26.896 at least according to these

NOTE Confidence: 0.855057771333333

00:32:26.896 --> 00:32:29.268 data that we've generated.

NOTE Confidence: 0.855057771333333

00:32:29.270 --> 00:32:31.426 Other epidemiologic studies which

NOTE Confidence: 0.855057771333333

00:32:31.426 --> 00:32:34.121 have focused more on longitudinal

NOTE Confidence: 0.855057771333333

00:32:34.121 --> 00:32:35.731 relationships are the sleepout

NOTE Confidence: 0.855057771333333

00:32:35.731 --> 00:32:38.062 heart health study as well as the

NOTE Confidence: 0.855057771333333

00:32:38.129 --> 00:32:40.457 that Mister Ross Sleep study again.

NOTE Confidence: 0.855057771333333

00:32:40.460 --> 00:32:42.412 And in these studies,

NOTE Confidence: 0.855057771333333

00:32:42.412 --> 00:32:44.364 consistent findings were observed

NOTE Confidence: 0.855057771333333

00:32:44.364 --> 00:32:46.470 such that central apnea,

NOTE Confidence: 0.855057771333333

00:32:46.470 --> 00:32:48.560 more so than obstructive apnea,

NOTE Confidence: 0.855057771333333

00:32:48.560 --> 00:32:51.218 appeared to be as more associated

NOTE Confidence: 0.855057771333333

00:32:51.218 --> 00:32:54.340 with incident or new newly diagnosed

NOTE Confidence: 0.855057771333333

00:32:54.340 --> 00:32:56.860 atrial fibrillation over time.

NOTE Confidence: 0.855057771333333

00:32:56.860 --> 00:32:59.238 And so really, you know, very.

NOTE Confidence: 0.855057771333333

00:32:59.238 --> 00:33:01.866 Um, nearly identical findings in in,

NOTE Confidence: 0.855057771333333

00:33:01.870 --> 00:33:04.864 in these two independent cohorts and

NOTE Confidence: 0.855057771333333

00:33:04.864 --> 00:33:07.463 a similar magnitude of association

NOTE Confidence: 0.855057771333333

00:33:07.463 --> 00:33:11.089 with point estimates of two to three.

NOTE Confidence: 0.855057771333333

00:33:11.090 --> 00:33:14.815 And again after consideration of

NOTE Confidence: 0.855057771333333

00:33:14.815 --> 00:33:17.050 of confounding factors,

NOTE Confidence: 0.855057771333333

00:33:17.050 --> 00:33:18.650 subject characteristics,

NOTE Confidence: 0.855057771333333

00:33:18.650 --> 00:33:21.050 cardiovascular risk factors.

NOTE Confidence: 0.872082113333333

00:33:21.050 --> 00:33:22.652 A limitation of both of these

NOTE Confidence: 0.872082113333333

00:33:22.652 --> 00:33:24.584 cohorts is that we did not

NOTE Confidence: 0.872082113333333

00:33:24.584 --> 00:33:25.787 have echocardiographic data,

NOTE Confidence: 0.872082113333333

00:33:25.790 --> 00:33:27.840 so really couldn't in a

NOTE Confidence: 0.872082113333333

00:33:27.840 --> 00:33:29.525 very fine-tuned way adjust.

NOTE Confidence: 0.872082113333333

00:33:29.525 --> 00:33:31.650 For ejection fraction and cardiac

NOTE Confidence: 0.872082113333333

00:33:31.650 --> 00:33:34.047 function and so whether there could

NOTE Confidence: 0.872082113333333

00:33:34.047 --> 00:33:35.897 be some residual confounding there

NOTE Confidence: 0.872082113333333

00:33:35.897 --> 00:33:38.236 is is is something to to consider.

NOTE Confidence: 0.909353575217391

00:33:40.270 --> 00:33:42.664 We also have more recently leveraged

NOTE Confidence: 0.909353575217391

00:33:42.664 --> 00:33:45.873 some of the data from our our clinical

NOTE Confidence: 0.909353575217391

00:33:45.873 --> 00:33:48.756 registry that we have here at the

NOTE Confidence: 0.909353575217391

00:33:48.756 --> 00:33:51.488 Cleveland Clinic and examined and and

NOTE Confidence: 0.909353575217391

00:33:51.488 --> 00:33:54.850 and work led by Katie Heinz Singer

NOTE Confidence: 0.909353575217391

00:33:54.850 --> 00:33:57.550 examined again the relationship

NOTE Confidence: 0.909353575217391

00:33:57.550 --> 00:34:00.925 between sleep disorder breathing and

NOTE Confidence: 0.909353575217391

00:34:01.024 --> 00:34:03.679 an incident atrial fibrillation and

NOTE Confidence: 0.909353575217391

00:34:03.679 --> 00:34:07.116 in this work have found in particular

NOTE Confidence: 0.909353575217391

00:34:07.116 --> 00:34:09.444 that there is a strong relationship.

NOTE Confidence: 0.909353575217391

00:34:09.450 --> 00:34:12.396 Between the degree of hypoxia defined

NOTE Confidence: 0.909353575217391

00:34:12.396 --> 00:34:15.292 by the percentage of time spent

NOTE Confidence: 0.909353575217391

00:34:15.292 --> 00:34:19.060 below 90% as in relation to five

NOTE Confidence: 0.909353575217391

00:34:19.060 --> 00:34:21.396 year incident atrial fibrillation.

NOTE Confidence: 0.909353575217391

00:34:21.400 --> 00:34:24.220 And we also looked at minimum

NOTE Confidence: 0.909353575217391

00:34:24.220 --> 00:34:25.160 oxygen saturation,

NOTE Confidence: 0.909353575217391

00:34:25.160 --> 00:34:28.064 mean oxygen saturation and and found

NOTE Confidence: 0.909353575217391

00:34:28.064 --> 00:34:30.640 consistent findings across these different

NOTE Confidence: 0.909353575217391

00:34:30.640 --> 00:34:33.450 measures of hypoxic nocturnal hypoxia.

NOTE Confidence: 0.909353575217391

00:34:33.450 --> 00:34:37.266 And although the you know there,

NOTE Confidence: 0.909353575217391

00:34:37.270 --> 00:34:38.840 there there may have been,

NOTE Confidence: 0.909353575217391

00:34:38.840 --> 00:34:39.602 you know.

NOTE Confidence: 0.909353575217391

00:34:39.602 --> 00:34:41.126 An association with HIV,

NOTE Confidence: 0.909353575217391

00:34:41.130 --> 00:34:44.826 this was you know much less than in

NOTE Confidence: 0.909353575217391

00:34:44.826 --> 00:34:47.868 magnitude than what was seen with the

NOTE Confidence: 0.909353575217391

00:34:47.868 --> 00:34:49.913 hypoxia measures and we attempted

NOTE Confidence: 0.909353575217391

00:34:49.913 --> 00:34:53.000 to you know address confounding by

NOTE Confidence: 0.909353575217391

00:34:53.000 --> 00:34:55.368 underlying cardio pulmonary disease

NOTE Confidence: 0.909353575217391

00:34:55.368 --> 00:34:59.155 and smoking history as well as we had

NOTE Confidence: 0.909353575217391

00:34:59.155 --> 00:35:01.578 spirometry variables and a subset of

NOTE Confidence: 0.909353575217391

00:35:01.578 --> 00:35:04.018 these individuals and also adjusted

NOTE Confidence: 0.909353575217391

00:35:04.018 --> 00:35:07.534 for you know Fe V1 as well as a forced

NOTE Confidence: 0.909353575217391

00:35:07.534 --> 00:35:10.819 vital capacity and and the associations.

NOTE Confidence: 0.909353575217391

00:35:10.820 --> 00:35:12.404 The significant associations

NOTE Confidence: 0.909353575217391

00:35:12.404 --> 00:35:14.516 persisted Despite that adjustment.

NOTE Confidence: 0.909353575217391

00:35:14.520 --> 00:35:16.720 Interestingly,

NOTE Confidence: 0.909353575217391

00:35:16.720 --> 00:35:17.158 Dr.

NOTE Confidence: 0.909353575217391

00:35:17.158 --> 00:35:20.224 Heisinger has also looked at some of

NOTE Confidence: 0.909353575217391

00:35:20.224 --> 00:35:23.300 the sleep architectural disruption

NOTE Confidence: 0.909353575217391

00:35:23.300 --> 00:35:25.144 and incident atrial fibrillation.

NOTE Confidence: 0.909353575217391

00:35:25.144 --> 00:35:28.826 So there are some data from the Mesa

NOTE Confidence: 0.909353575217391

00:35:28.826 --> 00:35:31.292 study showing relationships with arousal

NOTE Confidence: 0.909353575217391

00:35:31.292 --> 00:35:34.556 index and some in the composition

NOTE Confidence: 0.909353575217391

00:35:34.556 --> 00:35:38.272 of of sleep as it relates to atrial

NOTE Confidence: 0.909353575217391

00:35:38.272 --> 00:35:41.070 fibrillation and a cross-sectional.

NOTE Confidence: 0.909353575217391

00:35:41.070 --> 00:35:43.884 A study in this study where we

NOTE Confidence: 0.909353575217391

00:35:43.884 --> 00:35:47.271 looked at more of the sleep

NOTE Confidence: 0.909353575217391

00:35:47.271 --> 00:35:50.059 architectural measures and incident

NOTE Confidence: 0.909353575217391

00:35:50.059 --> 00:35:52.150 atrial fibrillation overtime,

NOTE Confidence: 0.909353575217391

00:35:52.150 --> 00:35:55.587 we found that a reduction in sleep

NOTE Confidence: 0.909353575217391

00:35:55.590 --> 00:35:59.016 as well as reduction in sleep

NOTE Confidence: 0.909353575217391

00:35:59.016 --> 00:36:01.618 efficiency was associated with

NOTE Confidence: 0.909353575217391

00:36:01.618 --> 00:36:03.646 increased atrial fibrillation.

NOTE Confidence: 0.909353575217391

00:36:03.650 --> 00:36:06.428 And Doctor Patel from UPMC has

NOTE Confidence: 0.909353575217391

00:36:06.428 --> 00:36:09.280 actually also looked at this in

NOTE Confidence: 0.909353575217391

00:36:09.280 --> 00:36:11.108 his clinical cohort and.

NOTE Confidence: 0.909353575217391

00:36:11.110 --> 00:36:11.856 Has found,

NOTE Confidence: 0.909353575217391

00:36:11.856 --> 00:36:14.094 and these findings are somewhat similar,

NOTE Confidence: 0.909353575217391

00:36:14.100 --> 00:36:16.525 in finding that this reduction

NOTE Confidence: 0.909353575217391

00:36:16.525 --> 00:36:19.754 in sleep time is associated with

NOTE Confidence: 0.909353575217391

00:36:19.754 --> 00:36:21.890 incident atrial fibrillation.

NOTE Confidence: 0.909353575217391

00:36:21.890 --> 00:36:24.200 Ohh and and and these are Doctor

NOTE Confidence: 0.909353575217391

00:36:24.200 --> 00:36:25.190 Patel's data here.

NOTE Confidence: 0.909353575217391

00:36:25.190 --> 00:36:28.166 So you can see nicely that with the

NOTE Confidence: 0.909353575217391

00:36:28.166 --> 00:36:30.362 you know progressive reduction in

NOTE Confidence: 0.909353575217391

00:36:30.362 --> 00:36:34.176 sleep time of the the odds of atrial

NOTE Confidence: 0.909353575217391

00:36:34.176 --> 00:36:36.836 fibrillation had increased and and

NOTE Confidence: 0.909353575217391

00:36:36.836 --> 00:36:39.780 so these findings are are similar

NOTE Confidence: 0.909353575217391

00:36:39.780 --> 00:36:42.615 to the ones that we have identified

NOTE Confidence: 0.909353575217391

00:36:42.615 --> 00:36:45.380 in our again clinical registry.

NOTE Confidence: 0.909353575217391

00:36:45.380 --> 00:36:47.774 And this notion of post cardiac atrial

NOTE Confidence: 0.909353575217391

00:36:47.774 --> 00:36:49.687 fibrillation is also something to

NOTE Confidence: 0.909353575217391

00:36:49.687 --> 00:36:52.159 consider as this is associated with

NOTE Confidence: 0.909353575217391

00:36:52.159 --> 00:36:54.318 considerable morbidity after cardiac surgery.

NOTE Confidence: 0.909353575217391

00:36:54.320 --> 00:36:58.177 So Doctor Elsharif chose to examine this

NOTE Confidence: 0.909353575217391

00:36:58.177 --> 00:37:01.857 in our our cardiac surgery population

NOTE Confidence: 0.909353575217391

00:37:01.857 --> 00:37:07.080 and we found that those who were obese,

NOTE Confidence: 0.909353575217391

00:37:07.080 --> 00:37:07.976 you know,

NOTE Confidence: 0.909353575217391

00:37:07.976 --> 00:37:10.216 after dichotomizing on the median

NOTE Confidence: 0.909353575217391

00:37:10.216 --> 00:37:13.239 body mass index appeared to have

NOTE Confidence: 0.909353575217391

00:37:13.239 --> 00:37:15.367 a stronger relationship between.

NOTE Confidence: 0.909353575217391

00:37:15.370 --> 00:37:18.676 Severity of sleep apnea and post

NOTE Confidence: 0.909353575217391

00:37:18.676 --> 00:37:21.290 cardiac surgery atrial fibrillation and,

NOTE Confidence: 0.909353575217391

00:37:21.290 --> 00:37:24.018 and this is perhaps a bit of an

NOTE Confidence: 0.909353575217391

00:37:24.018 --> 00:37:26.394 understudied area in terms of trying

NOTE Confidence: 0.909353575217391

00:37:26.394 --> 00:37:28.010 to understand how intervening

NOTE Confidence: 0.909353575217391

00:37:28.010 --> 00:37:31.085 upon that sleep apnea may improve

NOTE Confidence: 0.909353575217391

00:37:31.085 --> 00:37:32.729 postoperative cardiac outcomes.

NOTE Confidence: 0.896107455

00:37:34.820 --> 00:37:38.436 In terms of you know interventions as well,

NOTE Confidence: 0.896107455

00:37:38.440 --> 00:37:41.233 in the heartbeat study we looked at

NOTE Confidence: 0.896107455

00:37:41.233 --> 00:37:43.592 measures of heart rate variability

NOTE Confidence: 0.896107455

00:37:43.592 --> 00:37:46.302 in this randomized control trial

NOTE Confidence: 0.896107455

00:37:46.302 --> 00:37:49.061 where individuals were randomized to

NOTE Confidence: 0.896107455

00:37:49.061 --> 00:37:51.696 receive CPAP versus a supplemental

NOTE Confidence: 0.896107455

00:37:51.696 --> 00:37:53.676 oxygen versus healthy lifestyle.

NOTE Confidence: 0.896107455

00:37:53.676 --> 00:37:54.864 So the objective,

NOTE Confidence: 0.896107455

00:37:54.864 --> 00:37:57.678 main objective of this study was to

NOTE Confidence: 0.896107455

00:37:57.678 --> 00:37:59.898 see if if using supplemental oxygen

NOTE Confidence: 0.896107455

00:37:59.898 --> 00:38:02.094 would would reduce mean arterial

NOTE Confidence: 0.896107455

00:38:02.094 --> 00:38:04.130 pressure collected by ambulatory.

NOTE Confidence: 0.896107455

00:38:04.130 --> 00:38:07.070 Blood pressure monitoring and it it.

NOTE Confidence: 0.896107455

00:38:07.070 --> 00:38:09.919 Essentially did not and CPAP you know

NOTE Confidence: 0.896107455

00:38:09.919 --> 00:38:12.485 did reduce mean arterial pressure as

NOTE Confidence: 0.896107455

00:38:12.485 --> 00:38:15.439 one would expect and so we elected

NOTE Confidence: 0.896107455

00:38:15.522 --> 00:38:18.354 to look at some measures of heart

NOTE Confidence: 0.896107455

00:38:18.354 --> 00:38:20.934 rate variability and and identified

NOTE Confidence: 0.896107455

00:38:20.934 --> 00:38:23.999 that there with oxygen versus CPAP.

NOTE Confidence: 0.896107455

00:38:24.000 --> 00:38:27.306 There were differences in in in

NOTE Confidence: 0.896107455

00:38:27.306 --> 00:38:29.510 the the Electrophysiologic heart

NOTE Confidence: 0.896107455

00:38:29.597 --> 00:38:32.568 rate variability measures in terms

NOTE Confidence: 0.896107455

00:38:32.568 --> 00:38:35.022 of the the alteration of these

NOTE Confidence: 0.896107455

00:38:35.022 --> 00:38:37.650 measures and it actually suggested.

NOTE Confidence: 0.896107455

00:38:37.650 --> 00:38:41.717 Um, you know that there's more of

NOTE Confidence: 0.896107455

00:38:41.717 --> 00:38:44.863 the the parasympathetic um influence

NOTE Confidence: 0.896107455

00:38:44.863 --> 00:38:48.404 of of supplemental oxygen in terms

NOTE Confidence: 0.896107455

00:38:48.404 --> 00:38:50.789 of that intervention and improving

NOTE Confidence: 0.896107455

00:38:50.789 --> 00:38:52.710 parasympathetic measures more so

NOTE Confidence: 0.896107455

00:38:52.710 --> 00:38:55.110 than than than sympathetic measures.

NOTE Confidence: 0.896107455

00:38:55.110 --> 00:38:57.406 And I think they're this data is

NOTE Confidence: 0.896107455

00:38:57.406 --> 00:38:59.678 is is similar to some data from

NOTE Confidence: 0.896107455

00:38:59.680 --> 00:39:01.428 Peter's doctor Systolic's group

NOTE Confidence: 0.896107455

00:39:01.428 --> 00:39:04.050 that they're they're looking at as

NOTE Confidence: 0.896107455

00:39:04.122 --> 00:39:06.307 well with heart rate variability.

NOTE Confidence: 0.896107455

00:39:06.310 --> 00:39:09.118 Doctor Rahman also looked at some of these

NOTE Confidence: 0.896107455

00:39:09.118 --> 00:39:11.937 heart rate variability measures in the Mr.

NOTE Confidence: 0.896107455

00:39:11.940 --> 00:39:15.083 Ross SLEEP study with the notion of

NOTE Confidence: 0.896107455

00:39:15.083 --> 00:39:18.883 of you know we we were able to collect

NOTE Confidence: 0.896107455

00:39:18.883 --> 00:39:22.802 ECG data in in this cohort and it's

NOTE Confidence: 0.896107455

00:39:22.802 --> 00:39:26.546 ECG is not something that's typically

NOTE Confidence: 0.896107455

00:39:26.550 --> 00:39:29.076 monitored with home sleep apnea testing.

NOTE Confidence: 0.896107455

00:39:29.080 --> 00:39:32.072 So the idea was to see well is

NOTE Confidence: 0.896107455

00:39:32.072 --> 00:39:35.143 there a utility in some of these

NOTE Confidence: 0.896107455

00:39:35.143 --> 00:39:36.376 signatures heart rate.

NOTE Confidence: 0.896107455

00:39:36.380 --> 00:39:40.844 Their ability wise in the ECG that would

NOTE Confidence: 0.896107455

00:39:40.844 --> 00:39:44.094 be informative in terms of of risk

NOTE Confidence: 0.896107455

00:39:44.094 --> 00:39:47.850 down the line and he identified that.

NOTE Confidence: 0.896107455

00:39:47.850 --> 00:39:51.522 LF and LF HF ratio in particular were

NOTE Confidence: 0.896107455

00:39:51.522 --> 00:39:55.149 predictive of incident atrial fibrillation.

NOTE Confidence: 0.896107455

00:39:55.150 --> 00:39:57.634 The the burden of premature atrial

NOTE Confidence: 0.896107455

00:39:57.634 --> 00:39:59.733 contractions was also related to

NOTE Confidence: 0.896107455

00:39:59.733 --> 00:40:01.233 incident atrial fibrillation and

NOTE Confidence: 0.896107455

00:40:01.233 --> 00:40:03.541 that burden of PAC has actually

NOTE Confidence: 0.896107455

00:40:03.541 --> 00:40:06.089 been shown in other studies as well.

NOTE Confidence: 0.896107455

00:40:06.090 --> 00:40:08.547 We were limited in in terms of

NOTE Confidence: 0.896107455

00:40:08.547 --> 00:40:11.085 looking at the SLEEP study ECG

NOTE Confidence: 0.896107455

00:40:11.085 --> 00:40:12.957 for this particular study.

NOTE Confidence: 0.896107455

00:40:12.960 --> 00:40:16.864 And also found there to be a significant

NOTE Confidence: 0.896107455

00:40:16.864 --> 00:40:20.346 interaction of the changes in her

NOTE Confidence: 0.896107455

00:40:20.346 --> 00:40:23.356 availability with obstructive sleep apnea.

NOTE Confidence: 0.896107455

00:40:23.360 --> 00:40:25.934 In terms of incident atrial fibrillation

NOTE Confidence: 0.896107455

00:40:25.934 --> 00:40:28.421 developed down the line and again

NOTE Confidence: 0.896107455

00:40:28.421 --> 00:40:30.864 these data seem to be pointing toward

NOTE Confidence: 0.896107455

00:40:30.864 --> 00:40:33.156 more of the vagal influences and

NOTE Confidence: 0.896107455

00:40:33.156 --> 00:40:35.658 pointing towards the more of this

NOTE Confidence: 0.896107455

00:40:35.658 --> 00:40:38.130 color energic atrial fibrillation

NOTE Confidence: 0.896107455

00:40:38.130 --> 00:40:41.620 that perhaps may be more of,

NOTE Confidence: 0.896107455

00:40:41.620 --> 00:40:44.392 you know related to to obstructive

NOTE Confidence: 0.896107455

00:40:44.392 --> 00:40:45.316 sleep apnea.

NOTE Confidence: 0.86059335

00:40:47.540 --> 00:40:52.136 We've recently been looking at sleep

NOTE Confidence: 0.86059335

00:40:52.136 --> 00:40:54.292 health disparities and cardiovascular

NOTE Confidence: 0.86059335

00:40:54.292 --> 00:40:57.500 outcomes and in this realm, Dr.

NOTE Confidence: 0.86059335

00:40:57.500 --> 00:41:03.288 Pena Orbea has leveraged our registry to

NOTE Confidence: 0.86059335

00:41:03.288 --> 00:41:08.488 to look at you know the the various major

NOTE Confidence: 0.86059335

00:41:08.488 --> 00:41:11.107 adverse cardiovascular outcomes and in

NOTE Confidence: 0.86059335

00:41:11.107 --> 00:41:14.348 this in this case showing the specific

NOTE Confidence: 0.86059335

00:41:14.348 --> 00:41:15.982 relationship with atrial fibrillation

NOTE Confidence: 0.86059335

00:41:15.982 --> 00:41:18.439 and so when looking at the area.

NOTE Confidence: 0.86059335

00:41:18.440 --> 00:41:21.630 Deprivation index which is an

NOTE Confidence: 0.86059335

00:41:21.630 --> 00:41:24.182 indicator of socioeconomic status.

NOTE Confidence: 0.86059335

00:41:24.190 --> 00:41:28.310 There was a significant relationship

NOTE Confidence: 0.86059335

00:41:28.310 --> 00:41:33.522 with a DI and the total time spent

NOTE Confidence: 0.86059335

00:41:33.522 --> 00:41:37.238 below 90% auction saturation as

NOTE Confidence: 0.86059335

00:41:37.238 --> 00:41:42.410 well as associated with you know

NOTE Confidence: 0.86059335

00:41:42.410 --> 00:41:44.090 atrial fibrillation as well.

NOTE Confidence: 0.86059335

00:41:44.090 --> 00:41:48.596 So atrial fibrillation was associated with.

NOTE Confidence: 0.86059335

00:41:48.600 --> 00:41:51.540 Both ADI as well as uh percent

NOTE Confidence: 0.86059335

00:41:51.540 --> 00:41:53.180 stat less than 90.

NOTE Confidence: 0.86059335

00:41:53.180 --> 00:41:57.480 So these this points towards

NOTE Confidence: 0.86059335

00:41:57.480 --> 00:42:00.296 disparities for potentially being

NOTE Confidence: 0.86059335

00:42:00.296 --> 00:42:03.560 exacerbated by you know at least

NOTE Confidence: 0.86059335

00:42:03.560 --> 00:42:06.500 nocturnal hypoxia in particular as as

NOTE Confidence: 0.86059335

00:42:06.591 --> 00:42:09.797 a as a risk for atrial fibrillation.

NOTE Confidence: 0.86059335

00:42:09.800 --> 00:42:12.376 We know that there are studies that

NOTE Confidence: 0.86059335

00:42:12.376 --> 00:42:14.505 have shown that after interventions

NOTE Confidence: 0.86059335

00:42:14.505 --> 00:42:16.885 such as cardioversion and ablation

NOTE Confidence: 0.86059335

00:42:16.885 --> 00:42:19.796 and and and looking at recurrence

NOTE Confidence: 0.86059335

00:42:19.796 --> 00:42:22.141 of atrial fibrillation and those

NOTE Confidence: 0.86059335

00:42:22.141 --> 00:42:24.930 with sleep apnea who are treated for

NOTE Confidence: 0.86059335

00:42:24.930 --> 00:42:27.751 that sleep apnea that there is a

NOTE Confidence: 0.86059335

00:42:27.751 --> 00:42:30.433 reduction in the recurrence of atrial

NOTE Confidence: 0.86059335

00:42:30.433 --> 00:42:32.827 fibrillation compared to those who are

NOTE Confidence: 0.86059335

00:42:32.827 --> 00:42:34.963 not treated for their sleep apnea.

NOTE Confidence: 0.86059335

00:42:34.970 --> 00:42:36.818 And there's these data also suggests

NOTE Confidence: 0.86059335

00:42:36.818 --> 00:42:38.583 that those who have recurrence

NOTE Confidence: 0.86059335

00:42:38.583 --> 00:42:39.990 of atrial fibrillation.

NOTE Confidence: 0.86059335

00:42:39.990 --> 00:42:43.878 Tend to have more um degree of hypoxia as

NOTE Confidence: 0.86059335

00:42:43.878 --> 00:42:47.509 well and so in in the untreated group.

NOTE Confidence: 0.86059335

00:42:47.510 --> 00:42:50.084 So again you know these recurrent

NOTE Confidence: 0.86059335

00:42:50.084 --> 00:42:52.349 themes of of hypoxia potentially

NOTE Confidence: 0.86059335

00:42:52.349 --> 00:42:55.625 you know playing a role here with

NOTE Confidence: 0.86059335

00:42:55.625 --> 00:42:57.534 recurrence of atrial fibrillation

NOTE Confidence: 0.86059335

00:42:57.534 --> 00:43:00.908 and that there may be some triggers

NOTE Confidence: 0.86059335

00:43:00.910 --> 00:43:03.339 you know outside of where you know

NOTE Confidence: 0.86059335

00:43:03.339 --> 00:43:05.650 at least with ablation that that

NOTE Confidence: 0.86059335

00:43:05.650 --> 00:43:08.436 are being targeted and and and could

NOTE Confidence: 0.86059335

00:43:08.508 --> 00:43:10.388 be the reason why there's.

NOTE Confidence: 0.86059335

00:43:10.390 --> 00:43:12.634 Continued the recurrence of

NOTE Confidence: 0.86059335

00:43:12.634 --> 00:43:13.756 atrial fibrillation.

NOTE Confidence: 0.86059335

00:43:13.760 --> 00:43:16.063 This was a you know just share

NOTE Confidence: 0.86059335

00:43:16.063 --> 00:43:17.880 with you some anecdotes.

NOTE Confidence: 0.86059335

00:43:17.880 --> 00:43:19.623 So this was a patient that presented

NOTE Confidence: 0.86059335

00:43:19.623 --> 00:43:21.697 to our lab for a split night study.

NOTE Confidence: 0.86059335

00:43:21.700 --> 00:43:23.849 She had moderate degree of sleep apnea

NOTE Confidence: 0.86059335

00:43:23.849 --> 00:43:26.196 and a very high degree of activity

NOTE Confidence: 0.86059335

00:43:26.196 --> 00:43:28.230 that was noted on the baseline

NOTE Confidence: 0.86059335

00:43:28.294 --> 00:43:30.676 diagnostic portion of her sleep study.

NOTE Confidence: 0.86059335

00:43:30.680 --> 00:43:32.612 And it was pretty striking that

NOTE Confidence: 0.86059335

00:43:32.612 --> 00:43:34.553 with the application of CPAP and

NOTE Confidence: 0.86059335

00:43:34.553 --> 00:43:36.311 resolution of her sleep apnea there

NOTE Confidence: 0.86059335

00:43:36.311 --> 00:43:39.108 was a bit of a dose dependent sort

NOTE Confidence: 0.86059335

00:43:39.108 --> 00:43:40.540 of relationship with increasing.

NOTE Confidence: 0.86059335

00:43:40.540 --> 00:43:43.320 Pressure and the ultimate resolution

NOTE Confidence: 0.86059335

00:43:43.320 --> 00:43:46.918 of her degree of activity and in

NOTE Confidence: 0.86059335

00:43:46.918 --> 00:43:49.372 another patient 53 year old gentleman

NOTE Confidence: 0.86059335

00:43:49.372 --> 00:43:52.004 with atrial fibrillation and dilated

NOTE Confidence: 0.86059335

00:43:52.004 --> 00:43:54.316 cardiomyopathy with known atrial

NOTE Confidence: 0.86059335

00:43:54.316 --> 00:43:56.999 fibrillation with the rate of heart

NOTE Confidence: 0.86059335

00:43:56.999 --> 00:43:59.688 rate of 100 to 1:20 at the baseline

NOTE Confidence: 0.86059335

00:43:59.688 --> 00:44:04.154 was found to have severe sleep apnea.

NOTE Confidence: 0.86059335

00:44:04.160 --> 00:44:05.624 And per this hypnogram,

NOTE Confidence: 0.86059335

00:44:05.624 --> 00:44:08.743 you can see that he was started on

NOTE Confidence: 0.86059335

00:44:08.743 --> 00:44:11.257 CPAP and there was a progressive

NOTE Confidence: 0.86059335

00:44:11.260 --> 00:44:14.020 improvement in his degree of sleep

NOTE Confidence: 0.86059335

00:44:14.020 --> 00:44:17.016 apnea and then he converted to

NOTE Confidence: 0.86059335

00:44:17.016 --> 00:44:20.202 a normal sinus rhythm during the

NOTE Confidence: 0.86059335

00:44:20.202 --> 00:44:21.800 application of CPAP.

NOTE Confidence: 0.86059335

00:44:21.800 --> 00:44:24.320 Now this could be happenstance,

NOTE Confidence: 0.86059335

00:44:24.320 --> 00:44:25.840 this is an anecdotal case,

NOTE Confidence: 0.86059335

00:44:25.840 --> 00:44:29.026 but again this temporally was a

NOTE Confidence: 0.86059335

00:44:29.026 --> 00:44:31.966 pretty striking in terms of the that

NOTE Confidence: 0.86059335

00:44:31.966 --> 00:44:34.410 that kind of conversion to normal.

NOTE Confidence: 0.86059335

00:44:34.410 --> 00:44:36.650 Sinus rhythm.

NOTE Confidence: 0.86059335

00:44:36.650 --> 00:44:41.286 So you know based upon our current knowledge,

NOTE Confidence: 0.86059335

00:44:41.286 --> 00:44:44.746 we attempted to survey cardiologists

NOTE Confidence: 0.86059335

00:44:44.746 --> 00:44:46.130 and electrophysiologists

NOTE Confidence: 0.867980511666667

00:44:46.218 --> 00:44:48.728 internationally to get a sense

NOTE Confidence: 0.867980511666667

00:44:48.728 --> 00:44:51.873 of clinical equipoise in terms of

NOTE Confidence: 0.867980511666667

00:44:51.873 --> 00:44:54.049 randomizing individuals to receive

NOTE Confidence: 0.867980511666667

00:44:54.049 --> 00:44:56.769 CPAP versus you know control

NOTE Confidence: 0.867980511666667

00:44:56.770 --> 00:45:00.319 whether that be sham CPAP or Umm,

NOTE Confidence: 0.867980511666667

00:45:00.320 --> 00:45:03.230 you know medical management of their

NOTE Confidence: 0.867980511666667

00:45:03.230 --> 00:45:06.639 underlying disease and and it was identified.

NOTE Confidence: 0.867980511666667

00:45:06.640 --> 00:45:08.881 Essentially that um,

NOTE Confidence: 0.867980511666667

00:45:08.881 --> 00:45:11.869 most cardiologists and Electrophysiologists

NOTE Confidence: 0.867980511666667

00:45:11.869 --> 00:45:14.929 responded with certainty that that

NOTE Confidence: 0.867980511666667

00:45:14.929 --> 00:45:17.323 there's benefit to treatment of sleep

NOTE Confidence: 0.867980511666667

00:45:17.323 --> 00:45:19.888 apnea in atrial fibrillation and and so

NOTE Confidence: 0.867980511666667

00:45:19.888 --> 00:45:22.730 that that I think is is interesting.

NOTE Confidence: 0.867980511666667

00:45:22.730 --> 00:45:26.552 So despite our our negative clinical

NOTE Confidence: 0.867980511666667

00:45:26.552 --> 00:45:29.530 trials such as SAVE and serve HF,

NOTE Confidence: 0.867980511666667

00:45:29.530 --> 00:45:32.386 they're at least in the from the

NOTE Confidence: 0.867980511666667

00:45:32.386 --> 00:45:34.188 standpoint of atrial fibrillation

NOTE Confidence: 0.867980511666667

00:45:34.188 --> 00:45:36.698 appears to be a general.

NOTE Confidence: 0.867980511666667

00:45:36.698 --> 00:45:39.722 Thinking that there is benefit to

NOTE Confidence: 0.867980511666667

00:45:39.722 --> 00:45:42.388 the treatment of of sleep apnea.

NOTE Confidence: 0.867980511666667

00:45:42.390 --> 00:45:45.134 So in one of the first randomized

NOTE Confidence: 0.867980511666667

00:45:45.134 --> 00:45:47.307 controlled trials to examine the

NOTE Confidence: 0.867980511666667

00:45:47.307 --> 00:45:50.055 impact of CPAP on atrial fibrillation

NOTE Confidence: 0.867980511666667

00:45:50.055 --> 00:45:52.764 recurrence is very you know small

NOTE Confidence: 0.867980511666667

00:45:52.764 --> 00:45:54.909 trial of 25 individuals after

NOTE Confidence: 0.867980511666667

00:45:54.909 --> 00:45:57.104 screening over 1700 individuals in

NOTE Confidence: 0.867980511666667

00:45:57.104 --> 00:45:59.309 clinical equipoise might have been

NOTE Confidence: 0.867980511666667

00:45:59.309 --> 00:46:02.211 playing a role in the ability to to

NOTE Confidence: 0.867980511666667

00:46:02.211 --> 00:46:04.030 recruit participants for this trial.

NOTE Confidence: 0.867980511666667

00:46:04.030 --> 00:46:07.425 Those with an HIV greater than five

NOTE Confidence: 0.867980511666667

00:46:07.425 --> 00:46:10.530 were were randomized and and post

NOTE Confidence: 0.867980511666667

00:46:10.530 --> 00:46:13.130 cardioversion followed in terms of.

NOTE Confidence: 0.867980511666667

00:46:13.130 --> 00:46:14.870 Atrial fibrillation recurrence and

NOTE Confidence: 0.867980511666667

00:46:14.870 --> 00:46:17.480 there was essentially in this small

NOTE Confidence: 0.867980511666667

00:46:17.542 --> 00:46:19.552 trial no difference between the two

NOTE Confidence: 0.867980511666667

00:46:19.552 --> 00:46:21.983 groups in terms of recurrence of

NOTE Confidence: 0.867980511666667

00:46:21.983 --> 00:46:24.294 atrial fibrillation in this trial,

NOTE Confidence: 0.867980511666667

00:46:24.294 --> 00:46:27.290 the A3 study the AF atrial fibrillation

NOTE Confidence: 0.867980511666667

00:46:27.369 --> 00:46:29.784 APTA airway pressure study this

NOTE Confidence: 0.867980511666667

00:46:29.784 --> 00:46:31.554 this was a randomized controlled

NOTE Confidence: 0.867980511666667

00:46:31.554 --> 00:46:33.901 trial of about 100 individuals with

NOTE Confidence: 0.867980511666667

00:46:33.901 --> 00:46:36.066 moderate to severe sleep apnea,

NOTE Confidence: 0.867980511666667

00:46:36.070 --> 00:46:37.972 mainly obstructive events,

NOTE Confidence: 0.867980511666667

00:46:37.972 --> 00:46:41.142 those who were not sleepy

NOTE Confidence: 0.867980511666667

00:46:41.142 --> 00:46:42.814 within upnorth significantly.

NOTE Confidence: 0.867980511666667

00:46:42.814 --> 00:46:44.834 Sleeping with an upward sleepiness

NOTE Confidence: 0.867980511666667

00:46:44.834 --> 00:46:46.979 scale score of less than 15,

NOTE Confidence: 0.867980511666667

00:46:46.980 --> 00:46:49.146 an ejection fraction of more than

NOTE Confidence: 0.867980511666667

00:46:49.150 --> 00:46:52.237 45% who were had a BMI of less than

NOTE Confidence: 0.867980511666667

00:46:52.237 --> 00:46:55.349 forty were eligible to participate in.

NOTE Confidence: 0.867980511666667

00:46:55.350 --> 00:46:58.157 They used a CPAP running period in

NOTE Confidence: 0.867980511666667

00:46:58.157 --> 00:47:00.250 an implantable loop recorder with

NOTE Confidence: 0.867980511666667

00:47:00.250 --> 00:47:03.008 the notion of looking at a three

NOTE Confidence: 0.867980511666667

00:47:03.008 --> 00:47:04.853 month atrial fibrillation a burden

NOTE Confidence: 0.867980511666667

00:47:04.853 --> 00:47:07.364 and those who were randomized to

NOTE Confidence: 0.867980511666667

00:47:07.364 --> 00:47:09.136 CPAP versus supportive care.

NOTE Confidence: 0.867980511666667

00:47:09.140 --> 00:47:12.234 And you know they did not see

NOTE Confidence: 0.867980511666667

00:47:12.234 --> 00:47:14.309 any differences between the two.

NOTE Confidence: 0.867980511666667

00:47:14.310 --> 00:47:16.566 Groups in terms of the atrial

NOTE Confidence: 0.867980511666667

00:47:16.566 --> 00:47:18.014 fibrillation burden but recognize

NOTE Confidence: 0.867980511666667

00:47:18.014 --> 00:47:20.096 that they may have been underpowered

NOTE Confidence: 0.867980511666667

00:47:20.096 --> 00:47:22.068 to observe that, you know,

NOTE Confidence: 0.867980511666667

00:47:22.068 --> 00:47:24.852 change and difference because of the

NOTE Confidence: 0.867980511666667

00:47:24.852 --> 00:47:27.700 lower than anticipated burden of

NOTE Confidence: 0.867980511666667

00:47:27.700 --> 00:47:30.675 atrial fibrillation that was observed.

NOTE Confidence: 0.879805045714286

00:47:32.730 --> 00:47:35.768 In terms of you know causal relationships,

NOTE Confidence: 0.879805045714286

00:47:35.770 --> 00:47:39.538 there's a a Mendelian randomization study

NOTE Confidence: 0.879805045714286

00:47:39.538 --> 00:47:43.389 that was conducted to further better

NOTE Confidence: 0.879805045714286

00:47:43.389 --> 00:47:46.654 understand the these causal relationships

NOTE Confidence: 0.879805045714286

00:47:46.654 --> 00:47:51.822 and it was identified that the risk for of

NOTE Confidence: 0.879805045714286

00:47:51.822 --> 00:47:54.302 atrial fibrillation based upon recognizing

NOTE Confidence: 0.879805045714286

00:47:54.302 --> 00:47:56.910 known genetic markers was genetically

NOTE Confidence: 0.879805045714286

00:47:56.910 --> 00:47:58.554 predicted obstructive sleep apnea.

NOTE Confidence: 0.879805045714286

00:47:58.554 --> 00:48:01.020 And and so there there are

NOTE Confidence: 0.879805045714286

00:48:01.095 --> 00:48:02.850 some data here to suggest.

NOTE Confidence: 0.879805045714286

00:48:02.850 --> 00:48:04.534 Um, you know, potential,

NOTE Confidence: 0.879805045714286

00:48:04.534 --> 00:48:08.640 you know, causal relationship.

NOTE Confidence: 0.879805045714286

00:48:08.640 --> 00:48:11.447 We also know that it is challenging

NOTE Confidence: 0.879805045714286

00:48:11.447 --> 00:48:14.394 to identify sleep apnea and those

NOTE Confidence: 0.879805045714286

00:48:14.394 --> 00:48:16.059 with cardiovascular disease,

NOTE Confidence: 0.879805045714286

00:48:16.060 --> 00:48:18.304 including atrial fibrillation.

NOTE Confidence: 0.879805045714286

00:48:18.304 --> 00:48:23.074 So Doctor May leverage some of the

NOTE Confidence: 0.879805045714286

00:48:23.074 --> 00:48:26.330 safety data to better identify if

NOTE Confidence: 0.879805045714286

00:48:26.330 --> 00:48:28.885 there are enhanced ways that we can

NOTE Confidence: 0.879805045714286

00:48:28.885 --> 00:48:31.220 screen for obstructive sleep apnea.

NOTE Confidence: 0.879805045714286

00:48:31.220 --> 00:48:34.316 So she looked at the upward sleepiness scale.

NOTE Confidence: 0.879805045714286

00:48:34.320 --> 00:48:35.322 Score. Stop.

NOTE Confidence: 0.879805045714286

00:48:35.322 --> 00:48:38.829 Bang, the Berlin and the Nosus and.

NOTE Confidence: 0.879805045714286

00:48:38.830 --> 00:48:43.358 And then um looked at some of the

NOTE Confidence: 0.879805045714286

00:48:43.358 --> 00:48:45.072 individual characteristics and

NOTE Confidence: 0.879805045714286

00:48:45.072 --> 00:48:48.453 symptoms and and found that the nabs.

NOTE Confidence: 0.879805045714286

00:48:48.460 --> 00:48:50.812 Including neck circumference, age,

NOTE Confidence: 0.879805045714286

00:48:50.812 --> 00:48:54.340 BMI may perform better than some

NOTE Confidence: 0.879805045714286

00:48:54.430 --> 00:48:57.000 of these other questionnaires in

NOTE Confidence: 0.879805045714286

00:48:57.000 --> 00:48:59.326 terms of screening for obstructive

NOTE Confidence: 0.879805045714286

00:48:59.326 --> 00:49:01.918 sleep apnea in this population with

NOTE Confidence: 0.879805045714286

00:49:01.918 --> 00:49:03.610 paroxysmal atrial fibrillation.

NOTE Confidence: 0.879805045714286

00:49:03.610 --> 00:49:06.712 So she compared this these the

NOTE Confidence: 0.879805045714286

00:49:06.712 --> 00:49:08.780 performance of these screeners

NOTE Confidence: 0.879805045714286

00:49:08.870 --> 00:49:11.980 in those with paroxysmal atrial

NOTE Confidence: 0.879805045714286

00:49:11.980 --> 00:49:14.468 fibrillation compared to controls.

NOTE Confidence: 0.879805045714286

00:49:14.470 --> 00:49:18.460 So when thinking about sleep apnea and

NOTE Confidence: 0.879805045714286

00:49:18.460 --> 00:49:21.978 atrial fibrillation and elements of of

NOTE Confidence: 0.879805045714286

00:49:21.978 --> 00:49:25.410 the clinical pathway and integrated care,

NOTE Confidence: 0.879805045714286

00:49:25.410 --> 00:49:28.395 certainly there are these sleep

NOTE Confidence: 0.879805045714286

00:49:28.395 --> 00:49:30.783 endophenotypes to be considered

NOTE Confidence: 0.879805045714286

00:49:30.783 --> 00:49:34.060 and what specific endophenotypes.

NOTE Confidence: 0.879805045714286

00:49:34.060 --> 00:49:38.996 And you know maybe most related to even

NOTE Confidence: 0.879805045714286

00:49:39.000 --> 00:49:41.168 atrial fibrillation and understanding

NOTE Confidence: 0.879805045714286

00:49:41.168 --> 00:49:43.878 the key physiologic stressors as

NOTE Confidence: 0.879805045714286

00:49:43.878 --> 00:49:46.557 we've we've reviewed a little bit

NOTE Confidence: 0.879805045714286

00:49:46.557 --> 00:49:49.056 with the with the experimental data

NOTE Confidence: 0.879805045714286

00:49:49.056 --> 00:49:51.536 the role of mobile health monitoring

NOTE Confidence: 0.879805045714286

00:49:51.536 --> 00:49:55.284 for for screening strategies you know

NOTE Confidence: 0.879805045714286

00:49:55.284 --> 00:49:57.694 to to monitor concomitantly these

NOTE Confidence: 0.879805045714286

00:49:57.694 --> 00:50:01.303 sleep and and and and ECG monitoring

NOTE Confidence: 0.879805045714286

00:50:01.303 --> 00:50:03.888 and and understanding better how

NOTE Confidence: 0.879805045714286

00:50:03.888 --> 00:50:06.907 this really impacts our outcomes.

NOTE Confidence: 0.879805045714286

00:50:06.910 --> 00:50:09.626 In terms of burden of atrial fibrillation

NOTE Confidence: 0.879805045714286

00:50:09.626 --> 00:50:12.070 and also patient reported outcomes,

NOTE Confidence: 0.879805045714286

00:50:12.070 --> 00:50:15.270 clinical outcomes in atrial fibrillation.

NOTE Confidence: 0.879805045714286

00:50:15.270 --> 00:50:18.798 And so the various you know paradigms

NOTE Confidence: 0.879805045714286

00:50:18.798 --> 00:50:21.825 have been proposed and I think

NOTE Confidence: 0.879805045714286

00:50:21.825 --> 00:50:24.190 technology is is advancing and

NOTE Confidence: 0.879805045714286

00:50:24.190 --> 00:50:27.198 this is an area I think that is

NOTE Confidence: 0.879805045714286

00:50:27.198 --> 00:50:29.709 of interest in terms of seeing,

NOTE Confidence: 0.879805045714286

00:50:29.710 --> 00:50:33.133 evaluating the the the merits of of

NOTE Confidence: 0.879805045714286

00:50:33.133 --> 00:50:36.238 conducting mobile you know using mobile.

NOTE Confidence: 0.879805045714286

00:50:36.240 --> 00:50:40.146 Technology to be to monitor ECG and

NOTE Confidence: 0.879805045714286

00:50:40.146 --> 00:50:42.594 and sleep data and also telehealth

NOTE Confidence: 0.879805045714286

00:50:42.594 --> 00:50:45.934 and in the management of obstructive

NOTE Confidence: 0.879805045714286

00:50:45.934 --> 00:50:48.984 sleep apnea and atrial fibrillation.

NOTE Confidence: 0.879805045714286

00:50:48.990 --> 00:50:52.798 And so you know the the role of

NOTE Confidence: 0.879805045714286

00:50:52.798 --> 00:50:55.934 apps for example in being able to

NOTE Confidence: 0.879805045714286

00:50:55.934 --> 00:50:57.770 screen for sleep apnea in those

NOTE Confidence: 0.879805045714286

00:50:57.835 --> 00:50:59.428 with atrial fibrillation.

NOTE Confidence: 0.879805045714286

00:50:59.430 --> 00:51:01.959 You know you know looking at some of these

NOTE Confidence: 0.879805045714286

00:51:01.959 --> 00:51:03.832 sleep physiologic variables you know

NOTE Confidence: 0.879805045714286

00:51:03.832 --> 00:51:06.420 home sleep apnea testing versus in lab.

NOTE Confidence: 0.879805045714286

00:51:06.420 --> 00:51:08.845 Only sonography you know better

NOTE Confidence: 0.879805045714286

00:51:08.845 --> 00:51:12.380 in an enhanced pathways to to use

NOTE Confidence: 0.879805045714286

00:51:12.380 --> 00:51:14.945 potentially cloud based platforms to

NOTE Confidence: 0.879805045714286

00:51:14.950 --> 00:51:17.410 communicate even feedback with the

NOTE Confidence: 0.879805045714286

00:51:17.410 --> 00:51:21.190 patient and in in in real time and

NOTE Confidence: 0.879805045714286

00:51:21.190 --> 00:51:24.130 again the ability to do more longer

NOTE Confidence: 0.879805045714286

00:51:24.130 --> 00:51:26.417 term monitoring to understand even

NOTE Confidence: 0.879805045714286

00:51:26.417 --> 00:51:28.986 how the the the impact of treatment

NOTE Confidence: 0.879805045714286

00:51:28.986 --> 00:51:31.471 to sleep disorder breathing on

NOTE Confidence: 0.879805045714286

00:51:31.471 --> 00:51:33.699 burden of atrial fibrillation.

NOTE Confidence: 0.879805045714286

00:51:33.700 --> 00:51:34.040 Um,

NOTE Confidence: 0.879805045714286

00:51:34.040 --> 00:51:36.420 there's a sleep app that has been

NOTE Confidence: 0.879805045714286

00:51:36.420 --> 00:51:38.891 developed by our group that we

NOTE Confidence: 0.879805045714286

00:51:38.891 --> 00:51:40.607 are currently integrating into

NOTE Confidence: 0.879805045714286

00:51:40.607 --> 00:51:42.863 our electronic medical record to

NOTE Confidence: 0.879805045714286

00:51:42.863 --> 00:51:45.073 screen for common sleep disorders,

NOTE Confidence: 0.80890921375

00:51:45.080 --> 00:51:46.220 sleep apnea, insomnia,

NOTE Confidence: 0.80890921375

00:51:46.220 --> 00:51:48.120 sleep duration and shift work.

NOTE Confidence: 0.80890921375

00:51:48.120 --> 00:51:51.011 And this is something that may that

NOTE Confidence: 0.80890921375

00:51:51.011 --> 00:51:53.674 we're using in our heart failure

NOTE Confidence: 0.80890921375

00:51:53.674 --> 00:51:56.350 program and will be launching in

NOTE Confidence: 0.80890921375

00:51:56.350 --> 00:51:58.294 our atrial fibrillation patient

NOTE Confidence: 0.80890921375

00:51:58.294 --> 00:52:01.282 population as well as we have

NOTE Confidence: 0.80890921375

00:52:01.282 --> 00:52:03.879 seen that sleep apnea and and.

NOTE Confidence: 0.80890921375

00:52:03.880 --> 00:52:06.166 Curtailed sleep in particular may be

NOTE Confidence: 0.80890921375

00:52:06.166 --> 00:52:08.639 playing a role in the pathophysiology

NOTE Confidence: 0.80890921375

00:52:08.639 --> 00:52:11.261 of atrial fibrillation and and most

NOTE Confidence: 0.80890921375

00:52:11.261 --> 00:52:13.948 of the the the work that has been

NOTE Confidence: 0.80890921375

00:52:13.948 --> 00:52:16.554 done so far in terms of looking at

NOTE Confidence: 0.80890921375

00:52:16.554 --> 00:52:18.359 interventions is focused on CPAP.

NOTE Confidence: 0.80890921375

00:52:18.360 --> 00:52:20.552 But you know it would be of interest

NOTE Confidence: 0.80890921375

00:52:20.552 --> 00:52:22.888 to know how other interventions such

NOTE Confidence: 0.80890921375

00:52:22.888 --> 00:52:25.038 as hypoglossal nerve stimulation in

NOTE Confidence: 0.80890921375

00:52:25.038 --> 00:52:27.681 this novel continuous negative external

NOTE Confidence: 0.80890921375

00:52:27.681 --> 00:52:30.500 pressure you know and and other

NOTE Confidence: 0.80890921375

00:52:30.500 --> 00:52:33.890 innovative treatments how those influence.

NOTE Confidence: 0.80890921375

00:52:33.890 --> 00:52:36.900 Um atrial fibrillation outcomes and

NOTE Confidence: 0.80890921375

00:52:36.900 --> 00:52:39.910 and would those interventions provide

NOTE Confidence: 0.80890921375

00:52:40.002 --> 00:52:43.070 any benefit for the sake of time I'm

NOTE Confidence: 0.80890921375

00:52:43.070 --> 00:52:45.690 going to skip over these slides.

NOTE Confidence: 0.80890921375

00:52:45.690 --> 00:52:49.658 But you know I think there are opportunities

NOTE Confidence: 0.80890921375

00:52:49.658 --> 00:52:53.718 to to look at you know sleep disruption,

NOTE Confidence: 0.80890921375

00:52:53.718 --> 00:52:56.400 physiologic and symptom based biomarkers

NOTE Confidence: 0.80890921375

00:52:56.400 --> 00:52:59.680 and some of the great work conducted by

NOTE Confidence: 0.80890921375

00:52:59.680 --> 00:53:03.237 Doctor Zinchuk for example and in trying

NOTE Confidence: 0.80890921375

00:53:03.237 --> 00:53:05.281 to understand the interrelationships.

NOTE Confidence: 0.80890921375

00:53:05.290 --> 00:53:08.728 Between these these variables and how,

NOTE Confidence: 0.80890921375

00:53:08.730 --> 00:53:12.168 how this can can help us in a more

NOTE Confidence: 0.80890921375

00:53:12.168 --> 00:53:15.556 refined and better way predict outcomes.

NOTE Confidence: 0.80890921375

00:53:15.560 --> 00:53:18.840 So we are right now working with IBM

NOTE Confidence: 0.80890921375

00:53:18.840 --> 00:53:22.923 on a Discovery Accelerator grant to to

NOTE Confidence: 0.80890921375

00:53:22.923 --> 00:53:26.680 leverage some of our clinical data.

NOTE Confidence: 0.80890921375

00:53:26.680 --> 00:53:27.168 Uh,

NOTE Confidence: 0.80890921375

00:53:27.168 --> 00:53:31.432 from our our registry to be able to to

NOTE Confidence: 0.80890921375

00:53:31.432 --> 00:53:34.600 to see if we can come up with better

NOTE Confidence: 0.80890921375

00:53:34.698 --> 00:53:37.160 ways even using you know these indices,

NOTE Confidence: 0.80890921375

00:53:37.160 --> 00:53:38.756 just hypoxic sleep apnea,

NOTE Confidence: 0.80890921375

00:53:38.756 --> 00:53:40.751 specific hypoxic burden and heart

NOTE Confidence: 0.80890921375

00:53:40.751 --> 00:53:43.584 rate arousal responses that and and

NOTE Confidence: 0.80890921375

00:53:43.584 --> 00:53:45.480 perhaps potentially these integrated

NOTE Confidence: 0.80890921375

00:53:45.480 --> 00:53:47.700 measures to better predict outcomes.

NOTE Confidence: 0.80890921375

00:53:47.700 --> 00:53:50.451 So in terms of our current state

NOTE Confidence: 0.80890921375

00:53:50.451 --> 00:53:51.237 of knowledge,

NOTE Confidence: 0.80890921375

00:53:51.240 --> 00:53:53.370 sleep apnea is associated with

NOTE Confidence: 0.80890921375

00:53:53.370 --> 00:53:55.074 nocturnal incident atrial and

NOTE Confidence: 0.80890921375

00:53:55.074 --> 00:53:57.120 ventricular arrhythmias the unexplained.

NOTE Confidence: 0.80890921375

00:53:57.120 --> 00:53:58.920 Increasing atrial fibrillation epidemic

NOTE Confidence: 0.80890921375

00:53:58.920 --> 00:54:01.530 is at least partially attributable,

NOTE Confidence: 0.80890921375

00:54:01.530 --> 00:54:03.750 most likely to untreated sleep

NOTE Confidence: 0.80890921375

00:54:03.750 --> 00:54:05.970 apnea and unrecognized sleep apnea.

NOTE Confidence: 0.80890921375

00:54:05.970 --> 00:54:08.450 And accruing data really strongly

NOTE Confidence: 0.80890921375

00:54:08.450 --> 00:54:09.938 implicate autonomic dysfunction

NOTE Confidence: 0.80890921375

00:54:09.938 --> 00:54:12.111 as well as other mechanisms.

NOTE Confidence: 0.80890921375

00:54:12.111 --> 00:54:16.038 In terms of culprits in the relationship

NOTE Confidence: 0.80890921375

00:54:16.038 --> 00:54:19.030 between sleep apnea and arrhythmia,

NOTE Confidence: 0.80890921375

00:54:19.030 --> 00:54:21.880 the epidemiologic data data really points

NOTE Confidence: 0.80890921375

00:54:21.880 --> 00:54:24.869 towards the strong magnitude of association,

NOTE Confidence: 0.80890921375

00:54:24.870 --> 00:54:27.284 monotonic relationships,

NOTE Confidence: 0.80890921375

00:54:27.284 --> 00:54:29.698 temporal relationships.

NOTE Confidence: 0.80890921375

00:54:29.700 --> 00:54:31.932 You know in terms of the the relationship

NOTE Confidence: 0.80890921375

00:54:31.932 --> 00:54:33.994 of sleep apnea and atrial fibrillation

NOTE Confidence: 0.80890921375

00:54:33.994 --> 00:54:36.166 and some data pointing more towards

NOTE Confidence: 0.80890921375

00:54:36.229 --> 00:54:37.769 central versus obstructive apnea

NOTE Confidence: 0.80890921375

00:54:37.769 --> 00:54:40.079 and other data also pointing towards

NOTE Confidence: 0.80890921375

00:54:40.080 --> 00:54:43.580 sleep related hypoxia as it relates to

NOTE Confidence: 0.80890921375

00:54:43.580 --> 00:54:46.180 increased incident atrial fibrillation.

NOTE Confidence: 0.80890921375

00:54:46.180 --> 00:54:48.635 Certainly there are you know

NOTE Confidence: 0.80890921375

00:54:48.635 --> 00:54:49.617 retrospective data,

NOTE Confidence: 0.80890921375

00:54:49.620 --> 00:54:51.130 meta analysis of these retrospective

NOTE Confidence: 0.80890921375

00:54:51.130 --> 00:54:52.640 data that suggests that sleep

NOTE Confidence: 0.80890921375

00:54:52.686 --> 00:54:54.202 apnea treatment reduces recurrence

NOTE Confidence: 0.80890921375

00:54:54.202 --> 00:54:55.339 of atrial fibrillation,

NOTE Confidence: 0.80890921375

00:54:55.340 --> 00:54:57.762 findings that have not been borne out

NOTE Confidence: 0.80890921375

00:54:57.762 --> 00:54:59.939 with these recent relatively small.

NOTE Confidence: 0.80890921375

00:54:59.940 --> 00:55:02.460 Clinical trials.

NOTE Confidence: 0.80890921375

00:55:02.460 --> 00:55:03.138 And uh,

NOTE Confidence: 0.80890921375

00:55:03.138 --> 00:55:05.850 you know sleep apnea as we reviewed it,

NOTE Confidence: 0.80890921375

00:55:05.850 --> 00:55:07.768 you know at the beginning is associated

NOTE Confidence: 0.80890921375

00:55:07.768 --> 00:55:09.270 with sudden nocturnal cardiac death,

NOTE Confidence: 0.80890921375

00:55:09.270 --> 00:55:11.778 the potential role for periodic limb

NOTE Confidence: 0.80890921375

00:55:11.778 --> 00:55:14.072 movements during sleep with work done

NOTE Confidence: 0.80890921375

00:55:14.072 --> 00:55:16.264 by Doctor May in in terms of and

NOTE Confidence: 0.80890921375

00:55:16.339 --> 00:55:18.655 those associated with the arousals and

NOTE Confidence: 0.80890921375

00:55:18.655 --> 00:55:21.202 that really you know being related

NOTE Confidence: 0.80890921375

00:55:21.202 --> 00:55:23.707 to cardiac arrhythmia as well.

NOTE Confidence: 0.80890921375

00:55:23.710 --> 00:55:26.006 So there are many you know knowledge

NOTE Confidence: 0.80890921375

00:55:26.006 --> 00:55:26.990 gaps to be

NOTE Confidence: 0.848654967272727

00:55:27.062 --> 00:55:29.504 considered, you know, understanding

NOTE Confidence: 0.848654967272727

00:55:29.504 --> 00:55:31.178 better subgroups susceptibilities

NOTE Confidence: 0.848654967272727

00:55:31.178 --> 00:55:33.410 to specific physiologic triggers.

NOTE Confidence: 0.848654967272727

00:55:33.410 --> 00:55:35.910 Um, designing the clinical trials.

NOTE Confidence: 0.848654967272727

00:55:35.910 --> 00:55:38.080 Uh, you know, clinical equipoise

NOTE Confidence: 0.848654967272727

00:55:38.080 --> 00:55:41.365 being one area that you know to

NOTE Confidence: 0.848654967272727

00:55:41.365 --> 00:55:43.725 consider where on the trajectory of

NOTE Confidence: 0.848654967272727

00:55:43.725 --> 00:55:45.225 atrial fibrillation to intervene.

NOTE Confidence: 0.848654967272727

00:55:45.230 --> 00:55:47.435 How you know to consider those who

NOTE Confidence: 0.848654967272727

00:55:47.435 --> 00:55:49.618 are sleepy versus non sleepy, obese.

NOTE Confidence: 0.848654967272727

00:55:49.618 --> 00:55:53.174 Those are who are potentially more obese

NOTE Confidence: 0.848654967272727

00:55:53.174 --> 00:55:56.356 versus not better identifying prediction

NOTE Confidence: 0.848654967272727

00:55:56.356 --> 00:55:59.966 of arrhythmia development specific to

NOTE Confidence: 0.848654967272727

00:55:59.966 --> 00:56:04.159 sleep apnea development of collaborative.

NOTE Confidence: 0.848654967272727

00:56:04.160 --> 00:56:05.351 Clinical care models.

NOTE Confidence: 0.848654967272727

00:56:05.351 --> 00:56:08.685 So this is being such a sort of

NOTE Confidence: 0.848654967272727

00:56:08.685 --> 00:56:11.065 breathing is now recognized by

NOTE Confidence: 0.848654967272727

00:56:11.065 --> 00:56:13.290 various societies in terms of.

NOTE Confidence: 0.848654967272727

00:56:13.290 --> 00:56:16.080 Serving as a preventative risk

NOTE Confidence: 0.848654967272727

00:56:16.080 --> 00:56:17.754 for sleep apnea,

NOTE Confidence: 0.848654967272727

00:56:17.760 --> 00:56:20.580 the role of the autonomic function

NOTE Confidence: 0.848654967272727

00:56:20.580 --> 00:56:23.668 has been identified in this NIH

NOTE Confidence: 0.848654967272727

00:56:23.668 --> 00:56:28.396 workshop report and and with specific,

NOTE Confidence: 0.848654967272727

00:56:28.400 --> 00:56:29.292 you know,

NOTE Confidence: 0.848654967272727

00:56:29.292 --> 00:56:31.968 comment on sleep apnea in particular

NOTE Confidence: 0.848654967272727

00:56:31.968 --> 00:56:35.635 and a recent American Heart Association

NOTE Confidence: 0.848654967272727

00:56:35.635 --> 00:56:38.051 statement has also provided an

NOTE Confidence: 0.848654967272727

00:56:38.051 --> 00:56:41.171 overview of this and and are also some

NOTE Confidence: 0.848654967272727

00:56:41.171 --> 00:56:43.906 recommendations charting the way forward.

NOTE Confidence: 0.848654967272727

00:56:43.910 --> 00:56:47.004 And uh, a tentative sort of stepped

NOTE Confidence: 0.848654967272727

00:56:47.004 --> 00:56:49.979 care model that can be considered,

NOTE Confidence: 0.848654967272727

00:56:49.980 --> 00:56:52.260 uh, with the identification

NOTE Confidence: 0.848654967272727

00:56:52.260 --> 00:56:55.110 and treatment of sleep apnea.

NOTE Confidence: 0.848654967272727

00:56:55.110 --> 00:56:57.330 In, in, in those with cardiac,

NOTE Confidence: 0.848654967272727

00:56:57.330 --> 00:57:01.470 arrhythmia, atrial, ventricular, and.

NOTE Confidence: 0.848654967272727

00:57:01.470 --> 00:57:03.202 Conduction delay arrhythmias um

NOTE Confidence: 0.848654967272727

00:57:03.202 --> 00:57:07.164 so I will leave it at that and I I

NOTE Confidence: 0.848654967272727

00:57:07.164 --> 00:57:09.570 thank you so much for your time.

NOTE Confidence: 0.861544194444444

00:57:14.150 --> 00:57:16.628 Thank you Doctor Mehra for this

NOTE Confidence: 0.861544194444444

00:57:16.628 --> 00:57:18.887 excellent amazing talk and I would

NOTE Confidence: 0.861544194444444

00:57:18.887 --> 00:57:21.260 like to open the floor for questions.

NOTE Confidence: 0.861544194444444

00:57:21.260 --> 00:57:24.490 And I think we have a question here from SI.

NOTE Confidence: 0.861544194444444

00:57:24.490 --> 00:57:27.080 Is there heart problems such as CVD

NOTE Confidence: 0.861544194444444

00:57:27.080 --> 00:57:29.310 reversely lead to sleep disorder?

NOTE Confidence: 0.861544194444444

00:57:29.310 --> 00:57:31.606 I think there is just a reverse

NOTE Confidence: 0.861544194444444

00:57:31.606 --> 00:57:32.590 association between cardiovascular

NOTE Confidence: 0.861544194444444

00:57:32.646 --> 00:57:33.990 disease and sleep disorder.

NOTE Confidence: 0.828946666

00:57:35.620 --> 00:57:39.825 So, uh, meaning is there getting

NOTE Confidence: 0.828946666

00:57:39.825 --> 00:57:41.850 at the directionality in terms

NOTE Confidence: 0.828946666

00:57:41.850 --> 00:57:43.588 of is, is that the question?

NOTE Confidence: 0.768660766666667

00:57:43.600 --> 00:57:44.980 Yes, I think that's the question.

NOTE Confidence: 0.768660766666667

00:57:44.980 --> 00:57:47.500 Is there a hard problem such as CVD

NOTE Confidence: 0.768660766666667

00:57:47.500 --> 00:57:49.258 reversely leading to sleep disorder?

NOTE Confidence: 0.810163348

00:57:49.860 --> 00:57:51.140 Yeah, I mean I think,

NOTE Confidence: 0.810163348

00:57:51.140 --> 00:57:55.248 you know, there certainly.

NOTE Confidence: 0.810163348

00:57:55.250 --> 00:57:58.130 With what comes to mind is heart failure,

NOTE Confidence: 0.810163348

00:57:58.130 --> 00:58:01.406 right? I think with the compromise left

NOTE Confidence: 0.810163348

00:58:01.406 --> 00:58:03.590 ventricle pulmonary congestion, you know,

NOTE Confidence: 0.810163348

00:58:03.590 --> 00:58:05.600 central sleep disorder breathing, you know,

NOTE Confidence: 0.810163348

00:58:05.600 --> 00:58:07.658 so I think there are and, and you know,

NOTE Confidence: 0.810163348

00:58:07.658 --> 00:58:08.838 central sleep sort of breathing,

NOTE Confidence: 0.810163348

00:58:08.840 --> 00:58:11.576 then you know, leading to to

NOTE Confidence: 0.810163348

00:58:11.576 --> 00:58:13.990 negative influences on the heart.

NOTE Confidence: 0.810163348

00:58:13.990 --> 00:58:17.644 I think that comes to my mind

NOTE Confidence: 0.810163348

00:58:17.644 --> 00:58:20.458 at the forefront when looking

NOTE Confidence: 0.810163348

00:58:20.458 --> 00:58:22.330 at atrial fibrillation.

NOTE Confidence: 0.810163348

00:58:22.330 --> 00:58:25.192 At least you know, a couple of the studies.

NOTE Confidence: 0.810163348

00:58:25.200 --> 00:58:28.180 That we discussed seemed to

NOTE Confidence: 0.810163348

00:58:28.180 --> 00:58:31.160 suggest that it's more the,

NOTE Confidence: 0.810163348

00:58:31.160 --> 00:58:33.308 you know, apnic events,

NOTE Confidence: 0.810163348

00:58:33.308 --> 00:58:36.636 hypotonic events that are you know

NOTE Confidence: 0.810163348

00:58:36.636 --> 00:58:38.400 directionally leading directionality

NOTE Confidence: 0.810163348

00:58:38.400 --> 00:58:41.980 leading to to the arrhythmic events.

NOTE Confidence: 0.810163348

00:58:41.980 --> 00:58:44.044 You know in terms of the

NOTE Confidence: 0.810163348

00:58:44.044 --> 00:58:45.076 case crossover design.

NOTE Confidence: 0.810163348

00:58:45.080 --> 00:58:48.312 And then also in terms of the work

NOTE Confidence: 0.810163348

00:58:48.312 --> 00:58:51.373 with Doctor Linz and his continuous

NOTE Confidence: 0.810163348

00:58:51.373 --> 00:58:53.332 monitoring of respiratory monitoring

NOTE Confidence: 0.810163348

00:58:53.332 --> 00:58:55.948 looking obvious hypopneas as well as.

NOTE Confidence: 0.810163348

00:58:55.950 --> 00:58:57.966 Looking at the arrhythmic events now,

NOTE Confidence: 0.810163348

00:58:57.970 --> 00:59:00.385 how how well validated is that cardiac

NOTE Confidence: 0.810163348

00:59:00.385 --> 00:59:02.910 monitor and picking up the apneas hypopneas,

NOTE Confidence: 0.810163348

00:59:02.910 --> 00:59:04.510 I I don't know,

NOTE Confidence: 0.810163348

00:59:04.510 --> 00:59:05.710 but you know,

NOTE Confidence: 0.810163348

00:59:05.710 --> 00:59:07.750 the the data that we have in hand

NOTE Confidence: 0.810163348

00:59:07.750 --> 00:59:10.082 seems to suggest at least when it

NOTE Confidence: 0.810163348

00:59:10.082 --> 00:59:12.150 comes to atrial fibrillation that Umm,

NOTE Confidence: 0.810163348

00:59:12.150 --> 00:59:12.802 you know,

NOTE Confidence: 0.810163348

00:59:12.802 --> 00:59:15.084 sleep apnea seems to be the driver

NOTE Confidence: 0.810163348

00:59:15.084 --> 00:59:17.633 now there could be some reverse

NOTE Confidence: 0.810163348

00:59:17.633 --> 00:59:19.353 directionality there as well.

NOTE Confidence: 0.810163348

00:59:19.360 --> 00:59:21.800 And you know and I if I had to to guess,

NOTE Confidence: 0.810163348

00:59:21.800 --> 00:59:24.152 I would anticipate there would be some

NOTE Confidence: 0.810163348

00:59:24.152 --> 00:59:25.619 some reverse directionality as well.

NOTE Confidence: 0.810163348

00:59:26.560 --> 00:59:28.860 Thank you.

NOTE Confidence: 0.925957358333333

00:59:28.860 --> 00:59:30.276 I don't see any other questions.

NOTE Confidence: 0.925957358333333

00:59:30.280 --> 00:59:31.616 I have a question.

NOTE Confidence: 0.925957358333333

00:59:31.616 --> 00:59:34.075 So in terms of relation between the

NOTE Confidence: 0.925957358333333

00:59:34.075 --> 00:59:36.367 hypoxia and Afib that you mentioned,

NOTE Confidence: 0.925957358333333

00:59:36.370 --> 00:59:39.338 you know there are many measures for hypoxia,

NOTE Confidence: 0.925957358333333

00:59:39.340 --> 00:59:42.707 you know like means that oxygen saturations

NOTE Confidence: 0.925957358333333

00:59:42.707 --> 00:59:45.579 now their saturation the time below 90.

NOTE Confidence: 0.925957358333333

00:59:45.580 --> 00:59:47.734 Is there anyone that's more predictive

NOTE Confidence: 0.925957358333333

00:59:47.734 --> 00:59:49.905 you know like clinicians perhaps could

NOTE Confidence: 0.925957358333333

00:59:49.905 --> 00:59:51.915 talk to their patient about that,

NOTE Confidence: 0.925957358333333

00:59:51.920 --> 00:59:53.190 could you comment on that?

NOTE Confidence: 0.831904415555556

00:59:54.720 --> 00:59:59.355 Sure. I I think you know what we're seeing.

NOTE Confidence: 0.831904415555556

00:59:59.360 --> 01:00:01.676 Is. You know, in general with

NOTE Confidence: 0.831904415555556

01:00:01.676 --> 01:00:03.220 the epidemiologic work that

NOTE Confidence: 0.831904415555556

01:00:03.297 --> 01:00:05.129 has historically been done,

NOTE Confidence: 0.831904415555556

01:00:05.130 --> 01:00:07.410 percentage of sleep time spent below

NOTE Confidence: 0.831904415555556

01:00:07.410 --> 01:00:10.178 90% has been the measure that has

NOTE Confidence: 0.831904415555556

01:00:10.178 --> 01:00:13.291 been thought to be the one which is

NOTE Confidence: 0.831904415555556

01:00:13.291 --> 01:00:16.090 kind of getting at the maybe more

NOTE Confidence: 0.831904415555556

01:00:16.090 --> 01:00:19.090 cumulative burden of of that hypoxia.

NOTE Confidence: 0.831904415555556

01:00:19.090 --> 01:00:23.358 And now of course with the cutting edge

NOTE Confidence: 0.831904415555556

01:00:23.358 --> 01:00:27.306 work by Doctor Azar Barzan and others,

NOTE Confidence: 0.831904415555556

01:00:27.310 --> 01:00:29.218 you know, are showing that it's,

NOTE Confidence: 0.831904415555556

01:00:29.220 --> 01:00:30.640 you know, this sleep apnea.

NOTE Confidence: 0.831904415555556

01:00:30.640 --> 01:00:33.472 Specific hypoxic burden uh may be

NOTE Confidence: 0.831904415555556

01:00:33.472 --> 01:00:36.623 a more accurate and refined measure

NOTE Confidence: 0.831904415555556

01:00:36.623 --> 01:00:39.558 of that nocturnal hypoxia that's

NOTE Confidence: 0.831904415555556

01:00:39.558 --> 01:00:42.646 specific to sleep apnea in terms

NOTE Confidence: 0.831904415555556

01:00:42.646 --> 01:00:45.397 of getting at that area under the

NOTE Confidence: 0.831904415555556

01:00:45.397 --> 01:00:48.328 curve related to the discrete apnic

NOTE Confidence: 0.831904415555556

01:00:48.328 --> 01:00:51.114 and hypotonic events and maybe a

NOTE Confidence: 0.831904415555556

01:00:51.114 --> 01:00:55.290 more accurate measure of of that and

NOTE Confidence: 0.831904415555556

01:00:55.290 --> 01:00:59.430 but you're right how clinically?

NOTE Confidence: 0.831904415555556

01:00:59.430 --> 01:01:00.129 You know uh,

NOTE Confidence: 0.831904415555556

01:01:00.129 --> 01:01:02.051 can we can we pull that measure out

NOTE Confidence: 0.831904415555556

01:01:02.051 --> 01:01:03.682 and and be able to discuss that

NOTE Confidence: 0.831904415555556

01:01:03.682 --> 01:01:05.635 with our patients and you know it

NOTE Confidence: 0.831904415555556

01:01:05.635 --> 01:01:07.521 doesn't seem that we're there yet,

NOTE Confidence: 0.831904415555556

01:01:07.521 --> 01:01:09.776 but certainly there are very

NOTE Confidence: 0.831904415555556

01:01:09.776 --> 01:01:12.105 compelling data showing that this

NOTE Confidence: 0.831904415555556

01:01:12.105 --> 01:01:14.446 sleep apnea hypoxic burden is,

NOTE Confidence: 0.831904415555556

01:01:14.446 --> 01:01:17.126 is related to cardiovascular outcomes

NOTE Confidence: 0.831904415555556

01:01:17.126 --> 01:01:20.758 and and and and I think I imagine

NOTE Confidence: 0.831904415555556

01:01:20.758 --> 01:01:23.306 we are on the path towards you

NOTE Confidence: 0.831904415555556

01:01:23.306 --> 01:01:27.650 know being able to generate that

NOTE Confidence: 0.831904415555556

01:01:27.650 --> 01:01:30.596 measure clinically so that we can.

NOTE Confidence: 0.831904415555556

01:01:30.600 --> 01:01:31.950 Use that as a guide.

NOTE Confidence: 0.822615618333333

01:01:32.930 --> 01:01:35.570 Alright, thank you.

NOTE Confidence: 0.822615618333333

01:01:35.570 --> 01:01:38.210 Any other questions?

NOTE Confidence: 0.822615618333333

01:01:38.210 --> 01:01:40.570 In the interest of time

NOTE Confidence: 0.822615618333333

01:01:40.570 --> 01:01:43.510 if there's no questions.

NOTE Confidence: 0.822615618333333

01:01:43.510 --> 01:01:45.304 I would like to thank everyone

NOTE Confidence: 0.822615618333333

01:01:45.304 --> 01:01:46.500 and especially Doctor Mehra

NOTE Confidence: 0.822615618333333

01:01:46.552 --> 01:01:47.788 for this excellent talk.

NOTE Confidence: 0.822615618333333

01:01:47.790 --> 01:01:50.280 Learned a lot. Umm.

NOTE Confidence: 0.875020114444445

01:01:50.970 --> 01:01:52.345 A wonderful. Thank you so

NOTE Confidence: 0.875020114444445

01:01:52.345 --> 01:01:53.445 much for the invitation.

NOTE Confidence: 0.875020114444445

01:01:53.450 --> 01:01:55.866 It was lovely to see you all and

NOTE Confidence: 0.875020114444445

01:01:55.866 --> 01:01:58.129 done and I appreciate it and

NOTE Confidence: 0.875020114444445

01:01:58.129 --> 01:02:00.099 happy New Year to everybody.

NOTE Confidence: 0.906552546666667

01:02:00.510 --> 01:02:03.070 Thank you. Happy New Year everyone. Bye, bye.

NOTE Confidence: 0.89447445

01:02:04.100 --> 01:02:04.540 Bye, bye.