DANNY LENNON: So, here we are. Very welcome to both of you, Carol and Avrum. Thank you so much for taking the time to join me today and discuss this impressive body of work.

CAROL TAVRIS: Thank you for inviting us to talk with you.

AVRUM BLUMING: It's our pleasure.

DANNY LENNON: This has been really interesting for me. I think it was some stage, maybe the middle of last year where I originally reached out to you, Carol. Having read some of your previous books, was going to discuss some of that. And thankfully at that time you mentioned this new book that you've been working on and sent me a copy, which was quite eye-opening. So, we've been able to put this together and discuss some of these concepts. So, before we get into any of the specifics, maybe the best place to start is when we're talking about what happens with estrogen, particularly at menopause and post menopause. What is the best way to frame this for people in terms of number one, what happens during that stage to this hormone? And secondly, on a symptomatic level, what are some of the things that occur?

AVRUM BLUMING: Estrogen is secreted largely by the ovaries. And around the time of menopause, usually

sometime between the ages 47 and 52, estrogen levels plummet. They can fall to 1% of the premenopausal level. And women are aware of this largely as the result of symptoms. The symptoms that we all know are hot flashes and night sweats. Symptoms that we don't often talk about are symptoms of difficulty concentrating, depression, difficulty sleeping, palpitations. There's a whole list of symptoms that we put in our book, Estrogen Matters. And approximately 80% of women, not all, but the majority of women who go through menopause experience these symptoms to some degree. And what we have been told is, well, the symptoms usually last about a year or two and women's role is to suck it up and just continue doing what they do and not complain about the symptoms. What we now know is the symptoms last a mean of about eight and a half years and in some women, they last for more than a decade.

DANNY LENNON: With that, when we think of the standard of care for women who are going through menopause and you've gone through menopause, you mentioned there ... even in cases where they're symptomatic, a lot of the time it can be a case of nothing much gets done, suck it up, move on with it.

CAROL TAVRIS: Let me just interject one thing here, if I may, Danny, which is that precisely because so many of the symptoms that occur with menopause aren't associated with menopause in the public mind, such as heart palpitations or joint and muscle aches or depression and so forth. What happens is that many women go to a rheumatologist to see why their muscles are aching. They go to a psychotherapist to find out why they might be depressed. They go to a cardiologist to find out why they're having heart palpitations. They don't associate these symptoms with menopause. And so, they're often given the wrong treatment for symptoms that could ... that really are occurring because of this plummet of estrogen. And by the way, when you think of hormonal changes in mid-life, you think of a mild decrement, perhaps. I had no

idea. It really was as Avrum just said a plummet to 1% of a woman's estrogen levels. So, I think that's one of the major issues that we wanted to bring to public attention, which is that women can be suffering from a variety of ailments that are misdiagnosed and mistreated. So, that's one thing. The other thing I want to say that I think your listeners need to know is I myself am way past menopause and I am one of those rare women who had no symptoms at menopause. I have no vested interest here in this argument personally because I never did take hormones. Although if I knew then what I knew now, my decision would be quite different.

AVRUM BLUMING: Let's just amplify that a little. Neither Carol nor I have any monetary interest in this. We are not on the salary of any pharmaceutical. We wrote this book really to get the word out to women who we feel require this information to become empowered, not because we are trying to market something. And when we go over the symptoms, just so people are aware of what we're talking about, they include difficulty concentrating, difficulty with decreasing recent memory, decreasing energy reserve, bladder discomfort, painful sexual intercourse, tension, nervousness, mood swings, headaches, swelling of the hands and feet, aching joints as Carol said, thinning hair, even chest pain with exertion. And what we have found and since the book has been published, we've been getting letters from all over the world, is women are rarely given hormones for these symptoms, largely because neither the women nor their physicians attribute the symptoms to menopause. The drug most often prescribed for these women is some antidepressant and we even give some anecdotal stories. One is Katie Taylor in England who went several times to physicians, and she was told to stop her job because there was too much pressure. That didn't help at all. She was told to take antidepressants. That made it worse. Fortunately, Katie Taylor is the daughter of Michael Bauman in England, one of the most honored breast cancer researchers in the world. And she called her father who suggested that

this could be menopause. And it was Katie started on hormones and she was back to her usual chipper self.

DANNY LENNON: When we hear some of those statistics in terms of just how rapid a decline we see in estrogen levels at this time and how not only going down to like 1% like you said, but that in such a short period of time compared to maybe ... particularly, if we think of males as they age and we see gradual declines in something like testosterone, this kind of mild, slow decrease is at least at an intuitive level going to be very different to what someone might experience if all of a sudden they see this massive drop down to 1% of a circulating hormone that they had. So, I think that's ... again on an intuitive level. It makes sense that there's going to be such a high rate of symptoms from such a dramatic change in someone's endocrinology. So, so far, we've discussed this difficulty in first understanding what the problem even is. So, people have these certain symptoms. They may go to a doctor to see ... to get help. And maybe there's, again, a missing piece of not understanding this could be down to these hormonal changes due to menopause as opposed to looking at these different symptoms in isolation. Beyond that, even if something is attributed to a change in hormones, one of the big pieces of the book that both of you have discussed is this, at least hesitancy and maybe in some cases outright detachment from wanting to place a patient on a HRT. So maybe a good place to jump in here is what is that kind of conventional view of hormone replacement therapy right now? And where did this all start that this has become something that many people aren't going to be able to get access to because their doctor maybe doesn't want to put them on hormones even if they are experiencing symptoms?

AVRUM BLUMING: We can certainly talk about all the benefits of estrogen, and as you correctly point out, before those are even considered the gorilla in the room is the fear of breast cancer. And most women and many physicians believe that

estrogen causes breast cancer. A belief that is not valid, but because they believe that every time hormones are brought up, they are immediately thrown off the table because of the fear of estrogen. And there were several points that should be made just to make this as clear as possible. The first is when we talk about hormone replacement therapy, we're talking about estrogen replacement therapy in a woman usually within 10 years of her starting menopause. And we have found in the 1970s that when women who still have a uterus are given estrogen alone, there is a significant increase in the risk of uterine cancer and estrogen therapy was dramatically curtailed in the 1970s because of that concern. Toward the end of the 1970s, we found that when progesterone, another female hormone is added to estrogen, as part of hormone replacement therapy, that increased risk of uterine cancer not only disappears, women taking the combination have a lower risk of uterine cancer than women who take no hormones at all. Most of the benefits that we'll be talking about are benefits due to estrogen and the progesterone is used largely to prevent this risk. The use of estrogen, as I mentioned, has been curtailed because of the fear of breast cancer. And let me just quickly review several points that we know. The largest study that came out against hormone replacement therapy, including estrogen alone, was the women's health initiative - a $1 billion study that was published first in July of 2002 and that was performed in the United States. And that study which was supposed to show whether estrogen helps women who are menopausal was stopped prematurely because of a headline statement that there was an unacceptable increased risk of breast cancer. In point of fact, there was no increased risk of breast cancer among women who were taking estrogen alone. The increased risk that was very small and that was seen among women taking the combination of estrogen and progesterone was not statistically significant, which means that conventionally that change could have been due to chance.

What was found is in 2006, four years later, even that small increased risk had disappeared and yet the fear of breast cancer persists. What they found even after eight or nine years, is women who had been taking estrogen alone, if anything had a decreased risk of breast cancer, a decrease that in at least one of their papers was a 30% decreased risk and that decreased risk in that paper was statistically significant. We know that women who give birth to many children and therefore have frequent spikes in their circulating estrogen levels have a lower risk of breast cancer than women who never gave birth. If a woman is pregnant before the age of 20, her lifetime risk of breast cancer is reduced by 75%. We are not advising women to get pregnant before the age of 20, but we can learn from those data. If a woman gets pregnant after a diagnosis of breast cancer, there was no increased risk of recurrence and in at least one study, there was a decreased risk of recurrence. And all of these studies are referenced in the book so that when a woman speaks about these issues with her physician, she could ask the physician to look at the articles. We don't claim that this is truth, but these are the best conclusions that we can come up with based on the available already published information. One other point, when a woman who is pregnant was diagnosed with breast cancer, we used to advise her to get an abortion for fear that the very elevated levels of estrogen in her body because she was pregnant, would spur the growth of the breast cancer. I was guilty of doing that myself based on limited information. We now know that aborting a pregnant woman with newly diagnosed breast cancer does not in any way improve her prognosis and in at least one study it actually worsened her prognosis. And if pregnancy after breast cancer, which has been shown not to be associated with an increased risk of recurrence is looked at, one should wonder why giving hormones after a diagnosis even of breast cancer would be associated with an increased risk of recurrence and we spend a whole chapter reviewing all the studies we could find on hormones given after a diagnosis of breast

cancer coming up with a majority conclusion that even there was no increased risk of recurrent breast cancer.

DANNY LENNON: I think it's worth spending some time looking at the breast cancer risk and also specifically the women's health initiative just because that does tend to be the one that is pointed to most often for obvious reasons. As you say, this huge large-scale study, I think it was ... had like a follow up of 15 years-ish. Is that correct?

AVRUM BLUMING: Their most recent publication was that, yes.

DANNY LENNON: And so, we have this, again, on paper a lot of people would look at and say, well, this is our gold standard of kind of study - that large number of subjects, randomized, placebo controlled, all that type of good stuff. And then when something like that is used as some sort of evidence that you're going to increase breast cancer risk, I think that makes a very real concern for a lot of people in both medical professionals, as well as people seeing this reported in mainstream media, as well. So, just a couple of questions on that to clarify. First, you mentioned that there was the increased risk in one of those groups, but it didn't reach statistical significance. So, just from my own curiosity, how did it come that this conclusion from this paper was taken that you see this increased risk when the result was not statistically significant because that just seems like something we don't do in science, or at least we shouldn't do most of the time when we're trying to look for conclusions.

AVRUM BLUMING: Jacques Rousseau was the principal investigator of the women's health initiative, a cardiologist, and what he and the other investigators had said is, we went into this thinking we would find benefit from the use of estrogen and we're incredibly surprised to find harm. Well, in fact, four years before the women's health initiative was published, Jacques Rousseau published an article talking about the bandwagon of estrogen use that should be stopped and he was able to

stop it with the women's health initiative. Second, it first came out as a press release. Well, Danny, we rarely see medical studies concluding with a press release before the published paper is at the office of your physician, so that the physician can go over the paper. They did it with a press release to get maximum exposure and the press release included a headline in the New York Times saying women's health initiatives stopped before it was supposed to be stopped because of an increased risk of breast cancer. You see that headline? That imprints itself in women's minds, on the minds of their physicians. And it's that headline that is largely responsible for this myth that persists.

CAROL TAVRIS: Danny, you know, you were kind enough to invite me to come do a podcast because of my book with Elliot Aronson, Mistakes Were Made but Not by Me. Well, Estrogen Matters could be a chapter in that book because it's really about so widespread, so widely believed is the notion that estrogen is harmful and particularly harmful in causing breast cancer. Then it becomes very difficult for scientists and physicians to see their own data. This is the fascinating thing. We have no idea why the women's health initiative bent over backwards as they have been doing for years to produce negative headlines, scare headlines, and bury the news from their own study of the good news about HRT for women. But they have been doing this systematically and we can't attribute motives to them. We have no idea. But it is certainly apparent that the belief that estrogen is harmful was driving this study from the beginning. And by the way, what we have learned over the years is how ... when I say bending over backwards, that's what they did. The contortions they went to eek out alarmist findings that were not supported by their own data are really quite scandalous. For example, you alluded to how wonderful this random league randomized controlled study was. That's been its great claim to fame. Here it is. The gold standard medical research. Well, no, the average age of women in this study was 63. The

great majority of them were smokers, overweight or obese. They were hardly representative of healthy women beginning menopause and yet they had no compunctions about generalizing from this sample of women with hypertension and other medical concerns to women just beginning menopause. In one of the funniest findings, that was really quite a funny finding, is they even announced that hormone replacement therapy does not alleviate menopausal symptoms to which everybody reading that said, hello? I mean, because it was preposterous. And how did they find that? By looking at women who were 10 years post menopause and didn't have any symptoms to report in the first place. You know, you read this, and you think: What? What? How can they possibly come up with these kinds of contortions to make hormone replacement therapy look as bad as it possibly can and to suppress the evidence of estrogens benefits.

AVRUM BLUMING: 13 years after they published that study, Robert Langer, one of the principal investigators wrote an article talking about how when the investigators were all brought together in 2002 to review the study, they were surprised by the announcement that the study was being prematurely halted and was being written up and what these investigators said, wait a minute, we're not sure we agree with your conclusions. You have our name on this manuscript. We've never seen the manuscript. And so, the three people who wrote the paper said, okay, here's the manuscript. The article has not really been published yet, although it was submitted to the Journal of the American Medical Association and we happen to be in Chicago. So why don't you go over the manuscript, put in the points you think should be made, and then go down the block to the office of the Journal of the American Medical Association and let's see if we can include those changes? Well, they did that and when they got to the office of the Journal, they were told that it's already been printed and it's in the warehouse ready to be shipped.

CAROL TAVRIS: The scandal of this, that only a very few of the 40 principal investigators were involved in that initial report. This is not the way a scientific paper should be written. This is not the way a scientific paper should be disseminated. There were so many violations of scientific convention from the statistics done to the question of peer review and publication that we can only assume that they felt somehow the bad news was going to get attention. Jacques Rousseau, the leading investigator, said, well we just wanted to make a dent in that noisy news cycle. You know, we had to call a press conference and get everybody's attention. And as in my field of social psychology, we know that negative news gets attention. People aren't so interested in positive news. So that it may be that they thought we've spent $1 billion and now we're going to report that HRT is safe. Go ahead, women, and take it. Maybe I, you know, who can say? But it's as others have commented; the women's health initiative had a different standard for bad HRT findings than it did for good HRT findings. And, you know, Avrum invited one of the principle investigators to speak at his continuing medical education lunch events at Tarzana Hospital. I mean, this is a story I've been telling forever because it shocks me so much. So, here this guy gets up and he gives his talk. Here's a finding that's not statistically significant. Here's another finding that wasn't statistically significant. Here's a finding that was narrowly significant, but of course nearly means it wasn't. And I love that one of the doctors in the audience said, forgive me, I'm just a regular doctor here. But if it wasn't statistically significant, what is all the fuss about? And this investigator replied, when you do a study this big that costs this much and you know you're never going to be able to do it again, and I'm interpolating here, you know, in your heart of hearts than you think estrogen is dangerous, we ask the statistical police to leave the room. This is not how science should be done.

DANNY LENNON: I'm glad you bring that all up because that was the thing that struck me as I was reading

through. It just seems like this is not how research should be carried out and I think even if we don't look at the results and no matter what way it would come out like that just I think irks people, right? Who are in science like this isn't how it should be?

AVRUM BLUMING: The other point that should be made is we are not lone voices in the wilderness. Estrogen Matters, the book we wrote, has been endorsed by Vince DeVita, who is the former director of the National Cancer Institute in the U.S.; by Jerome Casera, who's the former editor and chief of the New England Journal of Medicine; by Michael Baum, whom I've already mentioned is one of the leading breast cancer investigators in the world; by Phyllis Greenberger; by people who are both sophisticated and knowledgeable saying that nobody has a monopoly on truth, but the arguments we are raising should be debated.

DANNY LENNON: Obviously there has surely been push back against not only this particular study, but this whole idea of estrogen being inherently tied to increased breast cancer risk. And like you said, there's more voices apart from yours that have been mentioning this. So, for those that have come from either putting their faith in the women's health initiative or just are on that camp of estrogen is dangerous, has there been any walk back from any of those? Has there been any kind of reconsideration of that position? What has been the discussion in more recent times between camps of slightly differing opinions or in some cases dramatically different?

AVRUM BLUMING: Well, you want to read, as you did, Mistakes Were Made but Not by Me, Carol's book before this one. This book ... this study originally stated that not only did estrogen increase the risk of breast cancer, it increased the risk of heart disease, strokes, Alzheimer's disease, didn't help symptoms. All of those conclusions we contest in the book. In subsequent studies, they had backtracked a little, they have said, well, actually the incidents of death now that we followed

patients for a long time, it's certainly no greater among the women who are randomized to take hormones compared to women who were randomized to take a placebo. They said the absence of symptom benefit is probably due to our choice of an asymptomatic population. We generalized from women who as Carol said were a median age of 63, many were over 70, to the general female population and that was probably an error on our part. But every time they backtrack a little, you get the sense it's done begrudgingly. That they feel that estrogen is really bad and they're constantly looking for ways to show that. Not that in fact, women who take hormones will live a median of three years longer than women who don't take hormones. And we haven't gotten into all the other benefits of estrogen, visa vi, heart disease and hip fractures and Alzheimer's disease. But all of those are real and confirmed and reproduced and are not even being considered because of this monumental study that came to erroneous conclusions.

CAROL TAVRIS: The other hand, the National Menopause Societies of 31 nations around the world have all signed on to a position paper that hormone replacement therapy is beneficial for women during menopause and that there is no empirical that is data driven reason for women to discontinue hormones after that window of opportunity, meaning that a woman who ... especially a woman at risk of osteoporosis or Alzheimer's, can safely take HRT for the rest of her life. 31 Menopause Societies have agreed with this statement and I think that's an indication of a reassessment of the impact of the women's health initiative. I want to say one other thing, Danny. There's another huge constituency that has opposed the use of HRT for women. And this is the world of some, not all, but many feminist activists who feel that the whole idea that women should be taking some, you know, supplemental hormones is unnatural and unnecessary and harmful and is an idea fed by the pharmaceutical industry to sell medicines for women that they don't need. Now, I will tell

you, I myself was once a believer in that point of view, wrote a book many, many years ago when I was young and smug and was not in menopause. And thought, well, you know, yeah, as Avrum said earlier, you suck it up, ladies. You know, okay. So, sex hurts. So, what? Yeah, so you're having hot sweats. Yeah, so you can't remember so much. Never mind. You'll get through menopause. And then you'll hit what Margaret Mead said was post-menopausal zest? Okay, fine. And I want your listeners to know, as well, that I have been a vocal critic of the pharmaceutical industries in the United States. It's corruption, it's sales, it's marketing of medicines that many people don't need. But the point I want to make is that while this is an understandable and important critique, I certainly have changed my mind because if the bottom-line question is: What is best for women? What will make women healthier and live longer? Than to me there is simply no question that HRT is the answer for many women. Not for all. We're not saying every woman needs to take this forever, but no question that this evidence is really crucial for women who want to improve their health and longevity.

DANNY LENNON: One thing before we get into HRT specifically and the benefits for those, just to round off this discussion around estrogen and breast cancer risk, just to make it really clear for listeners not only in relation to that critique of the women's health initiative but from all the evidence we have in this area looking at estrogen, breast cancer risk and so on. Is your current position that the use of HRT and using estrogen therapy doesn't have any impact on breast cancer risk at all or is it that the risk just isn't as great as some people have previously thought it to be or is it only increasing risk in certain individuals? What's the best way to characterize relationship there?

AVRUM BLUMING: I think we have to say first that we don't know for sure, Danny, and this isn't an M&M that we're saying that everybody should take and in

fact we are trying to empower women so that they can get into active discussions with their physicians and together with their physicians decide whether for them this is a reasonable course of action to follow. The fact that the incidence of breast cancer is a hundred times more common in women than it is in men. Although it does affect men suggests that there was something about female hood that predisposes to estrogen and clearly hormones remain an area of active study. But the reason we wrote the book is we try to as exhaustively as we could go over all the data and the data simply do not show that estrogen causes breast cancer.

CAROL TAVRIS: I'd like to add one thing to that. Many women, of course, fear breast cancer and think of it somehow as a death sentence. The fact that more than 90% of the women diagnosed with breast cancer will be cured of breast cancer is an astonishing statistic that many people don't understand. Just as they don't know the statistic that seven times as many women die of heart disease than of breast cancer every year, seven times as many. One of the revelations to be in this book is that precisely because so many women are surviving breast cancer, they develop a risk of dying of cardiovascular disease. And if taking HRT can reduce the risk of heart disease by, Avrum, what is it? 30 to 50%? That's an astonishingly important piece of information for women to know, including especially women who have been treated for breast cancer.

AVRUM BLUMING: The leading cause of death among breast cancer patients is heart disease and the 25 to 50% reduction in the incidence of heart disease among women who take estrogen was reported over 25 years ago. And estrogen was encouraged in a 1991 editorial in the New England Journal of Medicine to help ward off heart disease. And that has simply been obliterated by studies, especially the women's health initiative, which when they spoke about an increased risk of heart disease, as Carol pointed out in the beginning, they were talking about women at increased risk of heart disease, median age 63,

not 50, heavy smoking history, overweight or obese, many were hypertensive and that was generalized to the general postmenopausal female population. When we talk about a 25 to 50% decreased risk of heart disease, we're talking about hormones started within a 10-year window of menopause.

DANNY LENNON: So, the statistics around heart disease risk are pretty incredible that you've just laid out. And that is something that jumped straight out at me when I was reading the book. And so, it seems that there's these two ends of the spectrum that there's potential benefit for. There's one on this long-term chronic disease risk that we see these massive reductions in risk by. And then on the more short-term acute side, we see these impacts on those menopausal symptoms. What is the kind of, again, we won't have time to get into everything, but from an overview level, what do we see that as being we have, can be pretty confident that HRT can improve or have benefits for?

AVRUM BLUMING: The first statement is there's a mantra that many people have heard, which is, well, if you must take hormones, take the lowest dose for the shortest period of time. There are no data to support that mantra.

CAROL TAVRIS: Well, Danny, the idea of taking the lowest dose for the shortest time, this is a ridiculous compromise, if you will, between ... no, it's beneficial, but we secretly think it's dangerous. So, if it's dangerous, don't take it. If it's helpful, do take it. It represented a compromise, but it's not one that is supported by any evidence. The most available evidence that we report in estrogen matters is that when women begin taking HRT or estrogen alone, if they do not have a uterus, that the benefits will continue long past the menopausal years. Of course, estrogen isn't candy. I mean, we get a lot of questions from women saying, gee, I never took it in that decade following menopause. Can I take it now that I'm 65 or 70? Can I start now? And for women who have not taken HRT at the

start ... at the onset of menopause and for the decade after that, it's generally speaking, not something that they can start in their later years.

AVRUM BLUMING: You know, we prescribed statins for people to prevent initial heart attacks and in fact, many women and many men are on statins and in men statins do in fact reduce the risk of an initial heart attack, but they do not reduce the risk in women. And estrogen does.

DANNY LENNON: That's pretty powerful when we think of the impacts on heart disease just due to the point you raised earlier, Carol, of how that is the main threat, right? That is the big thing that is killing more women than pretty much anything else.

CAROL TAVRIS: As with Alzheimer's. All of the efforts to find something, something, something that we can take in our middle years that will stave off dementia and Alzheimer's, which of course as you know, are increasing worldwide with the aging of populations everywhere in the world. There's one thing, one thing that reduces the risk of dementia and Alzheimer's in women and that is estrogen. Not any of the other things, not even those cute mind games and puzzles, you know. Estrogen is the one factor that seems to preserve cognitive function.

DANNY LENNON: So, if we're talking about trying to get who this may be for and who it may be not, what is a kind of good way to conceptualize whether that this is a doctor listening who wants to learn more or this is an individual who is thinking about whether they should bring this up with their doctor? In what cases is HRT likely something that should be very much considered? And in what cases, if any, are there contra indications? I know we've just mentioned one, if someone in their later years hasn't previously been on HRT, maybe could be contra indicated there? Maybe people with underlying atherosclerosis. Is there ... who should be viewing this and who may be at much more of a risk for? What's the best way to think this through?

AVRUM BLUMING: Let's start simply. In a symptomatic woman who is approaching menopause, this should be discussed with her physician. Everything that you read about for the treatment of menopausal symptoms doesn't touch hormone replacement therapy, which helps eliminate them in over 80% of patients. In women who are in that 10-year window that we spoke about, they can discuss it with their physicians because of the risk of heart disease that everybody is exposed to. And when Carol said seven times as many women die of heart disease as die of breast cancer, the answer we usually get is, well, old women die of heart disease and young women die of breast cancer. And the answer to that is in every decade of a woman's life, her risk of dying of heart disease is greater than her risk of dying of breast cancer. And the total risk over the duration of a woman's life is seven times as many women will die of heart disease as die of breast cancer. In every year, the number of women who die within six months of having a hip fracture due to osteoporosis is approximately the same as the risk of dying from breast cancer. And estrogen decreases the risk of osteoporotic hip fracture by up to 50%. It is better even than the medicines that are routinely used to prevent osteoporosis. The bisphosphonates and calcium and vitamin D, which are widely prescribed, have no effect in preventing hip fracture when given to postmenopausal women who are not on hormones. For every woman diagnosed with breast cancer, two women will be diagnosed with Alzheimer's disease and as Carol already said the cure rate for newly diagnosed breast cancer is now 90%. The cure rate for Alzheimer's disease is zero. The effective treatment for Alzheimer's disease is close to zero. Estrogen can prevent Alzheimer's disease depending upon the study in between 20 and 70% of women. The data when you go over all of them as we've done in estrogen matters are overwhelming.

DANNY LENNON: I think that one of the big things when you start to look how it impacts some of these issues is

that typically people think of this kind of false dichotomy of something that may be can improve quality of life, but has this downside for years of life and vice versa. Something that extends life, but maybe your quality isn't so good. It seems that for a lot of women that can be ... take this to eradicate some of those symptoms to improve quality of life in that kind of short-term window, they're actually getting better longevity because of these impacts on chronic disease risk, like heart disease. So, it's interesting to see that this best of both worlds' scenario in a way.

AVRUM BLUMING: Having said that, isn't it hard to understand why these data are not more widely known?

DANNY LENNON: And that was going to bring me to my question that I wanted to put to you both because this is certainly not a position that every single physician holds and every person within research in this area holds. What is the main pushback that you receive when you bring these points to their attention or if you were to try and steal a man their position, what are the best points that are being made as to why this is not more of a bigger conversation between doctors and patients? Why it's not more readily done than it typically is? And why there's still this massive concern about breast cancer risk when there is this evidence that you've presented to the contrary?

CAROL TAVRIS: So, as you well know, Danny, once a professional in any profession comes to believe something strongly and implicitly it takes a hell of a lot to knock them off that belief. They're going to search for every evidence to confirm the wisdom and rightness of their belief and they're going to dismiss and discredit and discount any information that is a dissonant or discrepant with that belief. Most physicians, except for Avrum, who is so scientifically minded, many physicians don't have the time or inclination to question what the guidelines are of their given profession. They don't have the time to read the journals of JAMA or the New England Journal

of Medicine and so forth. My own gynecologist, when the women's health initiative came out, and I went to see him, he said, I read that study in JAMA; it was complete nonsense. But most physicians got their information about breast cancer risk on HRT from the headlines and from the newest reports just like the rest of the public, and then once you are committed to that belief, once you think ... once you have accepted that paradigm that estrogen causes breast cancer, you're going to be really worried about taking any step away from that belief. Avrum talked in the book about the last doctors to perform radical mastectomies after it was known that they were no more beneficial to women than lumpectomies. Imagine you've been performing radical mastectomies all your professional life and now someone says, hey, you've been disfiguring your patients and you really didn't need to do that. What's that doctor going to say to you? Oh, sod off and take your stupid ideas with you, right? Until there's enough evidence building up to cause you to say, you know what, I really have to change my mind. And by the time that happens, you figure we've known it all along. You know, I've known this all my life. It's a long process to get people to give up a paradigm that has been so widely accepted and endorsed.

AVRUM BLUMING: Carol, who is both articulate and easy to understand, was explaining to a woman with recently diagnosed breast cancer that it was not the estrogen that caused her breast cancer. And the woman's response was, don't tell me that. If I believe that it's estrogen and I just stay away from estrogen, I'm safe and you are ripping away that security by telling me that it wasn't estrogen.

DANNY LENNON: As you mentioned, a lot of doctors are going to be getting their recommendations from guidelines and rightly so given some of the time demands, some of them are under. And I think a lot probably are open minded to this but just probably aren't getting presented with the opportunity to really dig into it. So, my kind of

final question will be on two fronts. First, if you were to talk to women who have come across this information, because we've only been able to really touch the tip of the iceberg compared to what's in the book and that gives a lot more detail, but just to start that conversation with their doctor, if they think they're in this position, what kind of advice would you give? But then secondly, for doctors who are listening in the audience, what would your message beyond where to start to kind of dig through and navigate some of this and what way to kind of reframe things?

AVRUM BLUMING: I think the first step has to be education. And the reason we wrote the book and its written both for the women, the men who love them and for the physicians, and it can be read by all of them at whatever level they're comfortable with. They have to recognize that this does require a paradigm shift in thinking. And as Carol mentioned, that's very difficult. But education is the first step. Reading the book is the first step I can think of.

CAROL TAVRIS: The last chapter, in fact, lists ... see many physicians say, well, I don't have to think about this because this was a randomized controlled trial and it's the gold standard of research. Blah, blah. And we have a very succinct summary for them of the major flaws in the women's health initiative that most physicians, indeed, most researchers are simply not aware of. So, as Avrum said, we really made a concerted effort to make this book readable for general audiences. You can look at the drum beat of studies that we cite. You can read them if you want to or you can jump to the conclusions. Physicians, we think, will be really impressed by the astonishing detail, the number of studies that support this fight. And I want to say because we're absolutely aware of the problem of confirmation bias, we were at pains to look for studies that disputed our conclusions, And what we did when we found them, and there are a couple of, you know, big ones that got lots of national attention to, and we looked at them and looked at each other

and said, what in the world? Look once again at how flawed and distorted this study was. But I do think it's important for your listeners to know that we looked for the evidence that we were wrong, as well as the evidence that we were right and we repeatedly, Avrum, bless his heart, writes to his colleagues, writes to his opponents, writes to the physicians he knows have taken a strong stance against HRT and has said to them, just look at this book, tell us where we're wrong, please, and the response is then silence.

DANNY LENNON: For people, number one, who want to look at the book more in detail; but, number two, want to find you guys online, whether that's website, social media, anything like that, where on the Internet can you direct their attention?

CAROL TAVRIS: EstrogenMatters.com.

DANNY LENNON: And for everyone listening, I will link up to that in the show notes to this episode if you also are there or go directly to the site and you can get all of that. And in the outro, I'm sure I'll discuss a bit more about my reading through of it. So, with that, I want to say both to you, Carol, and to you, Avrum, thank you so much number one for coming and talking to me today and giving your time up to come and discuss some of these ideas. But more so than that for the undoubted amount of work that you've put into such an important topic. Your passion from that comes across and it's no doubtedly doing a lot of good in the world. So, I want to thank you on behalf of everyone else for that and for the work you continue to do.

CAROL TAVRIS: Ah, thank you, Danny. It's been a pleasure.

AVRUM BLUMING: Thank you so much, Danny.