

The XX Brain Transcript

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SPEAKERS

Natalie Morales, Tricia Johnson, Lisa Mosconi

- T** Tricia Johnson 00:10
This is Aspen Ideas to go from the Aspen Institute. I'm Tricia Johnson. Women are far more likely to end up with Alzheimer's disease than men. They also experienced migraines, strokes and other mental health issues more often. neurologist and neuroscientists Lisa Moscone says there's a huge gender gap in brain health research. Women's brain health is overlooked, under diagnosed and under researched. Moscone says this is due to a mindset she calls bikini medicine.
- L** Lisa Mosconi 00:38
What makes a woman a woman from a medical perspective is a reproductive organs, just parts of the body that fit under a bikini. Right? If you think about women's health, it's about their breasts. It's about the ovaries is about our Hornets. We don't talk about the
- T** Tricia Johnson 00:56
Aspen Ideas to go brings you compelling conversations from the Aspen Institute. today's conversation is from Aspen Ideas health. Lisa Moscone directs the women's BRAIN Initiative at Weill Cornell Medical College. Her latest book is the XX brain, she discusses the female brains unique risks and strengths and ways to maximize cognitive health with Natalie Morales of NBC today show.



Natalie Morales 01:17

Here's Natalie mirallas. We're talking about women. And the fact of the matter is that we are two thirds more likely to end up developing Alzheimer's in our lifetime, our women's brains that different than men's. I mean, I know men are from Mars and women are from Venus.



Lisa Mosconi 01:36

But isn't that we are wired so differently. We are we are wired differently. And I also get to live in Mars and Venus, Barbie and Lego questions. But I am a notice scientist and I'm a brain scientist. My background is in neurology in resilience, nuclear medicine. So the way I approach this problem is quite objective. I look at brains in many different ways in many different parameters. And what stands out most clearly is that women's brains age differently than men's brains. And something that we have learned just recently, and that's really a big part of my research is that the way that our hormones change is really key to brain aging in women, which is a connection that's been largely unexplored, pretty much forever. So it's a very new topics, a very in topic, and they think it's worth talking about it because all women go through menopause. Yeah. And that really is quite a thing. And especially for brains,



02:51

it is a thing I'm getting there.



Lisa Mosconi 02:56

At some point, we all will, yes, yes. And we need to understand what happens to our brains during the transition to menopause, and why that's been associated with higher risk of Alzheimer's disease for some women, and also with anxiety with depression, with memory lapses with an increased risk of a number of medical conditions. And I'm sure we'll talk about,



Natalie Morales 03:21

but yeah, we're gonna dive deep into all of those topics, because I think that's what we're also fascinated about is, you know, and how can I, you know, better perhaps, decrease my chances of developing Alzheimer's. So we'll get into that. But let me go back to what you said that the scientific community really only now is starting to understand that women and our hormones may be somewhat linked. But yet,



Lisa Mosconi 03:45

why has gender been removed from the problem and from the equation in the medical community? Yes, that is such a good question. And something that I have personally struggled for a really long time I've been trying to do women's brains for 20 years, in part, because I have a family history of autoimmune disease that really affects the women in my family. And it started asking, as soon as I was 19, I was able to start doing brain scans of work with a Nuclear Medicine Department as a volunteer, of course, because my parents are nuclear physicists, so he kind of runs in my family. Well, yeah, it's really interesting. But the point is, nobody had answers for me. My questions were doesn't matter if you're a woman or a man in terms of your risk of Alzheimer's disease, is it genetic is a lifestyle? Is it something else? And the question, the answer is we're just not there. And they think what the problem is, is that we have a huge gender gap in research, especially as related to brain health. And still today, women's brain health is one of the most overlooked under diagnosed and under researched fields of medicine. And then Really because I would say three things that happened. The first one is that women were actively excluded from research until 1993, especially from clinical trials for a number of reasons, though, then it went to get into, but the point is that there was no research with women in it. And the second thing is done. All this medical research that excluded women, broadly just substantiated is bias. And justified is bias against women's brains that I refer to as bikini medicine. Which is, like saying that what makes a woman a woman from a medical perspective, is a reproductive organs, just parts of the body that fit under a bikini, right? If you think about women's health, it's about their breasts, it's about the ovaries, it's about our hormones, we don't talk about the brain, especially when we talk about women's health. We never talk about women's brains. And so all is contributed to women just being excluded from research and being misdiagnosed under diagnosed. Don't even though



Natalie Morales 06:14

it's fascinating, you talked about your connection to Alzheimer's, and my mother in law was diagnosed in her mid 50s, with early onset Alzheimer's. So it has been a passion of mine as well to try to crack the code and try to figure out what we can be doing better in our lives or lifestyle. Let's go back to the question of hormones and specifically, estrogen with women. What does estrogen have to do with Alzheimer's?



Lisa Mosconi 06:43

It's a really great question and something that we're actively exploring right now. Um, I think what is missing from the conversation is that our brains do not work in isolation, a brain connected with the rest of the body. And especially for women, the interaction between the brain in the reproductive system are really key to brain aging. And that is

because our hormones mediate this communication between the brain and the reproductive system. And we all know that hormones differ between the genders, man who has testosterone and women hormone, estrogen. But what people don't realize is that the hormones that we have in the body are the same hormones we have in our brains, they just have a different function in the brain. We think of these hormones as being involved in reproduction and having children, but in the brain, to really serve a completely different function that is related to having energy. So for women, literally pushes neurons to burn sugar, glucose to make energy. So if estrogen is high, your brain energy is high is like estrogen has some kind of superpowers in the brain. It keeps your brain healthy and young, and so does testosterone for men, but the thing is that testosterone fades very gradually away over time, usually not until old age, whereas women lose the superpowers of estrogen in midlife during menopause, but then we live another 30 years in a cost plus a stage without that protection that the estrogen provides.



Natalie Morales 08:27

So how does that affect the brain then as you start going through menopause, and you start experiencing that loss of estrogen,



Lisa Mosconi 08:35

what we can see on brain scans is that neurons slow down, they make less energy. And that is associated with an accelerated aging process. I think a lot of women report that after menopause, your skin gets a little bit drier, not all women, obviously. But men and women do notice their skin is a little bit drier, their hair is a little bit more fragile. Something very similar happens. In fact, the brain is not a huge, severe problem. But the brain is also starting to age. And we can see that on brain scans. And for some women, the changes are very, very mild. For others, they're quite extremely. We have published studies with hundreds of women at this point. And we do find quite a big drop in energy levels in the brain, which I want to clarify, does not correlate with reduced cognitive performance. Women perform just as well as the men of the same age women going through



09:43

my ex question



Lisa Mosconi 09:47

tend to know that women's brains are compensating and we're trying to find out how we're compensating because we do have brains kind of lose energy, they lose the estrogen, but they're doing their performance. really well. So we want to understand what happens so that we can promote and support that compensatory mechanism.

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Natalie Morales 10:09

So when you write a whole, I mean, there's a couple of chapters in the book, but there's a whole section, particularly that focuses on hormone replacement therapy, and who should think about it? who shouldn't? I'll recommend people read that because there's a lot of different areas where you go through and say, You should or shouldn't. And if you've been, obviously, if you've had cancer or breast cancer survivor, it's you have to approach it differently. But for those who are approaching menopause, or already there already, what do we need to be asking ourselves when it comes to HRT,

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Lisa Mosconi 10:42

do you really need it? And why do you want it? I think there are there are different things that can be achieved safely with a trophy. And I think what's really important to know is your risks in your strength, in a way, and it's a fun thing to discuss with your doctors, there are some women who are just not eligible for HRT. For other women. The best formulation the best though is it really depends on what you're trying to achieve, what kind of symptoms you want to minimize or alleviate, in Sunday, I'm really interested in is what number one I would really like to test for monotherapy for Alzheimer's prevention has been done in some ways, but not in the best possible way, I think we need to start younger, before menopause. And that hasn't been done yet. So I think it's a very important, unexplored area of research that really needs to be done. There are many questions that need to be answered. But I'm also really interesting, interested in things that we can do instead of hormonal therapy, because there are many natural behavioral strategies that can be used it pretty much have the same results for many women, and do not involve a prescription.

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Natalie Morales 12:03

We're going to get into that lifestyle prevention, exercise, sleep, how all of that plays a part. Let me ask you first, though, what about genetics? What is the genetic connection and link? I mean, as I mentioned, my mother in law with early onset Alzheimer's, my husband and I are very much about health and wellness now, because we know perhaps there is a risk for him.



Lisa Mosconi 12:28

Well, I would recommend testing for you. And I, I have a whole chapter in the book about how to approach testing, which really starts with a very detailed family history questionnaire. Because, yes, early onset Alzheimer's, but did he happen to other family members? Are there multiple family members affected? Because it's so speaks to genetics, if it may isolate a case, it doesn't. So there are a number of things that clinically we would like to find out and would better guide the assessment. Basically, on sinus disease comes in two major forms. There's an early onset, genetically determined familial form that is caused by genetic mutations. And that is an aggressive form of Alzheimer's disease. So I'm hoping your husband does not carry any genetic mutations, but he is most likely eligible for testing or actually his mother is first 90 9098 to 99% of all assignments cases do not carry these genetic mutations. And for the majority of Alzheimer's cases, it's really the interplay of genetic risk factors rather than mutations, but also medical history, lifestyle and environment really all together, modulate risk of Alzheimer's disease in my own home.



Natalie Morales 14:05

Let me ask you about that because there are some medical risk factors that could also affect your risks of developing Alzheimer's, heart disease, thyroid disease, metabolic disorders, TBI, traumatic brain injury, as well. Can you talk a little bit about that?



Lisa Mosconi 14:24

Yes, there are many different medical conditions that do not necessarily directly affect the brain or causes Alzheimer's, but they could trigger an initial predisposition, they could promote assignment disease. And these include the ones that you just mentioned, and especially for women, metabolic disorders seem to be really, really important because they do have a hormonal component. So it is really interactive, but I think is really, really important is that there are many different risk factors for Alzheimer's disease that we know of, and they believe in the book I listed over 30. And we're just learning how these three factors affect the genders differently. And it really looks like men and women almost have two separate pathways towards Alzheimer's disease. The men are more cardiovascular in nature. Whereas for women there are more hormonal, metabolic and inflammatory. So there are some things that are at some risk factors that affect an increased risk of Alzheimer's more in women than in men. And the other way around, and I think something is quite funny, you know, ways that many risk factors affect women more than men, or only women and not men in terms of risk of Alzheimer's disease. But the number one risk factor for Alzheimer's disease in men is not being married to a woman. What?



15:58

Why is that?



Lisa Mosconi 16:00

There's so many studies that looked into possibility, different permutations, and the number one factor for men is not being married to a woman in that case. I mean, I don't think it's necessarily be married to a woman as much as being in a supportive, healthy, nurturing relationship, because the studies were done on data that was collected many, many years ago, where same sex marriage was just not allowed in this country's Street. They're two men who are married to women to traditional marriages. But the point is that men, women are really good at taking care of people. Yes, in addition to the wives were in charge of the health of the entire family. Right? The wife, who was scheduled the medical appointments, making sure the husband was taking the pills and making sure the family was eating healthily. So that was, I thought it was really cute when I read, which is a



Natalie Morales 16:58

perfect segue to lifestyle and prevention and some tips, and we have some viewer questions. somebody's asking what is the single most important thing a woman can do for her most post menopausal brain?



Lisa Mosconi 17:10

Ooh, the single most important thing I believe, is to really look at your lifestyle, and find the one part of your lifestyle that is not where it should be or where you would like it to be. Because everybody has different risks. And everybody has different baselines, though, for me, there will be Stress Stress Reduction, because I'm not good at that. either. But for a lot of women is maybe diet, a, they're physically active and intellectually stimulated, you're just not eating healthily. So I think there are eight key steps to a very healthy female brain before and after menopause, really. And they include mental stimulation, intellectual activity, especially when learning is involved. Learning is to your brain with exercises to your muscles, is it really stimulates synaptic growth, it stimulates connections between different brain regions of different neurons. And that's what really keeps the brain plastic, which in biology means young, right? The learning unit, you need to challenge yourself. Like if you like to read a book, don't don't read a novel, read something that is really challenging if you like to watch movies, watch a documentary as well, where you learn something. So you really need to feel engaged in what you're doing.

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Natalie Morales 18:38

My mom plays Mahjong almost four times a week. So that's always keeping her brain young and playing games most of her games. But besides that, I mean, I know that diet has to be in that eight steps, right diet, how important is moderating what you eat, but also what kinds of foods should we be eating as you will also read the book, the brain book,

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Lisa Mosconi 19:07

the brain food. Diet is really important for two reasons. Number one, the nutrients that we eat, have an effect not just on our bodies, but also literally inside our brains. Their brains are made of nutrients for a really big part. And so we really need to replenish those nutrients pretty much on a daily basis to make sure Britain has access and especially for women recommend antioxidants. We found this in brain scans. That is very strong correlation between your intake of antioxidants and a diet which is vitamin A, C and E in your brain energy levels throughout the lifespan but also after menopause. It really looks like the more of these nutrients you consume on a daily basis, the higher your brain energy over time and throughout aging in the second reason is that we eat three, three times a day most people do three times a day, sometimes even more than that. So we literally have three chances every day to make a choice that is supportive of brain health. It's not just about the way we look, it's really about feeding our brains with the right nutrients, their brains could perform so much better for us. So I'm a strong proponent of a healthy diet, and quite specifically my own diet, they really eat for my brain as much as I can. And my research has really influenced the way we eat as a family, even my parents anytime you.

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Natalie Morales 20:38

So that's perfect the Mediterranean diet, which is what you write about in the book being sort of the the diet that most people should follow, right?

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Lisa Mosconi 20:48

I think it's a really good template, because it's a very fresh diet very rich in the nutrients that the brain wants and needs all the time in. It's not a deprivation diet, which I think is also really important for mood. I mean, I can't do the prior to enjoy my food. So I think it's a very sensible diet. And what I like about it is that it didn't come up with somebody thinking about it, and writing a book about it. It's really the result of 1000s of years of women consuming that diet in doing significantly better than women who live in a

Western diet. I think that the contrast is quite clear. But it doesn't have to be Mediterranean, I think it's more, the concept is more of the framework. So plant based or plant centric, with the good amount of vegetable oils, especially unrefined ones and a lot of fiber fiber is really good for you. And it also really helps regulate hormones. And we don't talk that much about and we should fish the goons. So there's this huge study that was done in England with hundreds of 1000s of women showing that the more efficient the group's you eat, they later on in life, you go through menopause. Interesting, I think it's really interesting is fixed through the fiber in the omega three fatty acids, and also complex carbohydrates. And they also show that the more processed foods you have in your diet, the more refined sugar you have in your diet, that earlier in life, you go through menopause, even if you have no genetic reason to do it. So I think that really speaks to diet as an important, not just something we do for fun or for pleasure, but something like food is a function. And it's something that we can actively do. We have control over it.

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Natalie Morales 22:46

Exercise also is an important factor. And I like to write in the book that slow and steady pace, the moderate exercise is the route to go rather than a lot of people are now taking all these you know what we were going to gyms, we could take high intensity classes. Now we're doing the videos at home. Why are slow and steady a better pace for exercise? And how much exercise should we be getting?

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Lisa Mosconi 23:15

I think slow and steady really translates to moderate intensity. And there are studies to really look into that in women, but it's specifically on the women and not men and women together. And they showed a very clear inverted U shape between intensity and gains. So if you have a low intensity or very low intensity, you have no gains. But as the intensity starts going up, so so are the gains until you reach the tip. And that's for moderate intensity exercise. As you go towards higher intensity, your gains start decreasing. And that's the women who are ages four and older. So it looks like as long as their hormones and their physiology is really supportive. In general, you can do it without relying on any any exercise. It's really super helpful. For many women. And these are all average status, right? You have a huge group of people, you look for what works for the average person. For women who are older than 40. And especially post menopause, it looks like in moderate intensity exercise, I believe, is just more sustainable. I think with absense that it gives you enough gains, but you also do it often enough that you can see a benefit. Whereas I think for many people you go very high intensity and then you're tired you just don't do it consistently enough. If you do great. No, I think it's really important is that if you can't if you don't like it, that's okay. There's no reason to feel bad about it just because

it's trendy. Right And what about

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Natalie Morales 24:56

oh sorry about I was gonna ask you about sleep because we're here. says how does poor sleep quality impact women and their brains as they age

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Lisa Mosconi 25:05

does that that's my issue is stress reduction. And so this is from the Science Foundation National Science Foundation, they really show that women sleep worse than men. Pretty much at any age, we had trouble falling asleep, we had trouble staying asleep. And the quality of the sleep and the structure of the sleep is much more easily disrupted as well. And that seems to really overlap with mid midlife, middle age. Many women I don't want to sound like everything is hormonal, but there is a hormonal impact on sleep as well because their hormones are changes. And what happens is that there's a very specific part of the brain is called the brainstem is down here, and it's in charge of sleep and wake. And if your estrogens activate that region correctly, you're asleep. When the estrogen start to go up and down during perimenopause and actually starting at age 35, especially progesterone, then this brain region is not activated correctly. And that's why we have a tendency to wake up in the middle of the night. And stress is the same because melatonin Melatonin is really high throughout the first half of the night until two in the morning. And then it decreases in cortisol and adrenalin go up in a lot of stress, they go out too much. And then you wake up at three in the morning, which is what happens to a lot of women. So it's really important to prioritize sleep. And I know that a lot of us have a really hard time doing that. Do you sleep? Well,

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Natalie Morales 26:44

I don't know I've been struggling with sleeping. Well, I mean, obviously, during the pandemic, it's been worse. I think all of us are feeling stress and anxiety more but I am Peri menopausal. And I do feel like I get hot in the middle of the night or I have to get up and then to go back to sleep is very hard. So I've been taking which is I read in your book as well. balerion. black cohosh, which I wanted to ask you for supplements that women, what are some of the ones that you recommend? And obviously, these are things that you should talk with your doctor about and just make sure that you it's something that you can you know, it reacts well with your body?

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Lisa Mosconi 27:23

Yes, I am a strong believer in testing, before deciding which supplements to take. There are some supplements, I think a lot of people just go for the multivitamin, which makes a lot of sense in principle, but it doesn't really help unless you're deficient in some of the nutrients that are usually included into tablets. So we do, we do a lot of blood testing. So we can measure all the antioxidants, all the essential fatty acids on the B vitamins. And then if there are any deficiencies we we supplement. But first of all, we go through a very thorough diet examination because the best way to supplement is really by changing your diet. Right? That said, in some cases, a healthy diet is not enough. And in that case, I think supplementing is helpful in the supplements that we tend to recommend the most. Especially for women, i omega three fatty acids, especially for those who do not eat fish. Often because if you eat fish enough, then it shouldn't need them. Something I'm very fond of is flaxseed oil. For women who don't eat fish very often or on days that you don't eat fish. flaxseed oil has the highest concentration of omega three fatty acids of any oil relative to omega six, in just one tablespoon is about half of all the omega threes you need for today. Oh wow. So I'm an olive oil. But I switched. So now I'm using that for lunch.



29:06

Fascinating.



Lisa Mosconi 29:07

And what about you know vitamin E, vitamin C? Yes, the antioxidants I find to be really, really important and they would encourage postmenopausal women especially to consider taking them. Vitamin C really helps with sleep. A lot of women especially the combination of a progesterone cream with vitamin C really alleviates the nice sweats in clinical trials. So it isn't something that's been shown to work for many women and it's worth trying because there are no there are no side effects. No worst case it doesn't work.



Natalie Morales 29:44

So an over the counter progesterone cream. Yes.



Lisa Mosconi 29:48

It's always best to ask a doctor for the best possible formulation but that might help in vitamin D is a very strong antioxidant as well. That also stimulate blood flow and oxygen levels to the brain. And that is really important because it keeps your energy high. Another good vitamin to keep in mind and then beta carotene, which is the precursor to vitamin A.

And honestly, antioxidants are really best obtained from Donald Trump and the foods that we eat. So if possible to consume more orange, yellow vegetables and fruits and healthy nuts and seeds, and very dark green leafy vegetables, that's probably the best way to supplement then of course, there's only so much solid one one can take.

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Natalie Morales 30:41

I mean, there's so much information in this book that I encourage everybody to read it again, it's the XX brain. One more question, because you talked about testing. If you were asked, Can you talk about what tests or scans you use to study Alzheimer's and to track the progress of the disease? And is the testing accurate and before we went live, you were saying you yourself are going to have a brain scan, which you haven't done before. And talk about that,

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Lisa Mosconi 31:09

yes, I'm I'm a big fan of brain scans, I strongly believe is the best tool that we have right now to really assess brain health on an individual basis. And it's a very strong diagnostic tool for Alzheimer's disease and is also really good predictive tool. And we're exploring that more now what we do is a lot of brands can basically work with each participant with every patient to really make sure that we address their concerns, and we make them comfortable. So you don't have to do 1000 scans if you don't want to, but most of our participants don't want to. And we look at we do MRI scans, magnetic resonance imaging scans. And then we do that with eila, which is PET scans, pe t Positron Emission Tomography scans, my background is in nuclear medicine. So that's how I've been doing for 20 years at this point, and relook at everything we can we look at the structure of the brain, we look at the anatomy of the brain, we try to see if there's any shrinkage of the brain because that is a big red flag for Alzheimer's risk. We look for inflammation in the brain will look for white matter integrity, which is really how well different parts of your brain communicate with each other. We look at energy levels in the brain really important during menopause. We look of course at Osiris plaques, we can look at tau pathology, which is another molecule that signs disease, we're looking vascular damage, which is also really, really important, especially for women in the brain, it's a bit worse for women. after menopause, we also treat a number of things like brain tumors on reasons. And we're not ology department. So we were looking at a lot of things. And I would I always tell our patients we start working with the youngest at this point is 40. But we just lower the age range to 35. And we tell them come as soon as you can, because it's really helpful to have a good strong baseline, it's helpful to you for life. Because right now you have no problems. And this is your brain. Now, when you have no problems. God forbid, in 10 years, you do have some issues or some concerns, especially during menopause. That happens a

lot. Right, and we do another brain scan. And we can compare. Because if you come to me when you're having trouble, there's only so much unless there's a very clear problem that I can see immediately. I don't know where your brain was before. Race races, the same a baseline



Natalie Morales 33:56

you have a baseline to compare it to,



Lisa Mosconi 33:59

yes, it's always better to be able to check for change, or no change. Because if there is no change, you're just having a heartbeat just you're having a hard time and we need to address the symptoms in different ways. If there is a change, then we need to really address your brain. So it really helps a lot to have as many time points we say as possible. Thank you so much. Thank you for having us. It's such a pleasure to be here today.



Tricia Johnson 34:34

Lisa Moscone is a professor of neuroscience, neurology and radiology at Weill Cornell Medical College and the founder and director of the women's BRAIN Initiative. She focuses on the early detection of Alzheimer's disease in at risk individuals, especially women as well as the prevention of memory loss through medical care, diet, physical and intellectual fitness. Her latest book is the XX brain. Natalie Morales is the West Coast anchor of NBC today show Post of dateline and anchor up behind closed doors with Natalie mirallas unreal channel. Make sure to subscribe to Aspen Ideas to go wherever you listen to podcasts. Follow us on social media at Aspen Ideas. Listen on our website [Aspen ideas.org](https://www.aspenideas.org) and sign up for our newsletter. Today's show is produced by Shauna Lewis. It was programmed by Aspen Ideas help. Our theme music is by wonderly I'm Trisha Johnson. Thanks for listening