The Impact Of Vitamin C On Your Cancer Journey Transcript

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Introduction and Dr. Hunninghakeu2019s Background

Well Dr. Ron Hunninghake is such an honor and pleasure to have you on this segment of cancer breakthroughs. Thank you so much for joining me. Well, thank you, Michael, for inviting me.

It's a pleasure to be on with such auspicious guests that you have in this summit. So I'm honored. Well, thank you so much, and for everyone out there.

Dr. Ron Hunninghake. He joined the Riordan Clinic in 1989 as its medical doctor. He currently serves as the chairma nof the board at the Riordan clinic.

In addition to his full time practice as a holistic medical doctor at the Riordan clinic, Dr. Ron has made multiple trips to several countries like Japan, Spain, Ecuador, Colombia, New Zealand, Canada, South Korea to lecture on the Riordan IBC Protocol for Cancer.

He is a past chairman of the International Schizophrenia Foundation, has been a regular presenter at their author Molecular Medicine Today Conference that has been held annually in Canada for the past 30 yea.

For many, many decades. Here at the Riordan clinic, he has presented more than 300 lectures dealing with all facets of nutrition, lifestyle and optimal health.

He has coauthored three books on subjects including inflammation, energy, boosting supplements and How to Stop Pre-diabetes. So this I'm really excited because vitamin C is something that I mean, that is like the standard when when you talk about cancer and patients come and say, what is the one thing that I need to do than, you know, vitamin C I. V.

becomes the one thing. So so talk to me a little bit about your fascination at Riordan clinic. You know, why vitamin C, why? Why did that become such a big thing there?

It's a fascinating story because Dr. Riordan is or was a psychiatrist.

How Vitamin C Became Central at Riordan Clinic

He died in 2005, but he was he did a lot of functional medicine conferences at 15 international conferences. So in the process of trying to find out how he could take better care of his patients, he got into or through molecular medicine, large doses of medicine and developed a number of friendships.

And one was Linus Pauling. He was a good friend of Linus Pauling. And of course, Pauling, we have to go back to him and give him credit for really making the world aware of the value of high dose vitamin C and Pauling's wife had developed cancer and he was giving her is either ten or 12 grams of oral vitamin C a day with very good results.

And that led him to initiate a study in Scotland. And there they they studied over 134 hospice patients. And back in the seventies, there was, you know, not much you could do for cancer at all.

And other then when it got bad pain relief and hospice care. And so that's the type of patient stage three and stage four patients in this hospital. And he gave he developed controls.

He was 435. He had about 800 controls matching them up. And so he gave ten grams of IV vitamin C continuously for ten days, ten grams a day, and then switched the patients over to 2.5 grams four times a day in a liquid vitamin C form that was very palatable.

And he found that comparing these patients to the controls, they lived 4 to 9 times longer during the course of the study. And so he published this, but no one believed him.

They thought, how could just the low vitamin C make such a big difference in the quality of life of these patients? And in some of the patients, they they lived much longer than that.

And so when he published it, there was criticism. And one of the major institutions in the United States, so-called, replicated the study, but they did not give any IV, vitamin C, they just gave oral C and they did not get the same results.

And when they published their their findings, Mayo Clinic, everyone decided to get behind Mayo Clinic and say, well, see, Vitamin C doesn't work. And Pauling fought that vigorously, but died in the process.

And so after that, Dr. Riordan decided he would take up the flag and pursue this research on vitamin C because he had been using vitamin C for all kinds of things, spider bites and chronic fatigue and schizophrenia and whatnot.

And sure, why not look into the whole cancer situation? And so he was able to generate several million dollars of research money and he recruited 5 a.m.

NIH researchers to come to Wichita for a total of ten years and did very deep studies into vitamin C. And probably one of the most important was to develop a method of determining the ideal dose for each patient.

Patients weigh differently. They have different degrees of severity of illness. And so the Riordan Protocol centers around the titration dosing of vitamin C so that you get a dose that you can expect to be significant.

Vitamin C Mechanisms and Cancer Treatment Synergy

What a lot of people forget about is that we were able or he was able to show there was a very significant improvement in quality of life when patients did high doses of vitamin C, both I. V.

and or at the molecular or oral doses as well. And so so basically people think in terms of, yeah, I'm going to start IV vitamin C because I want to live longer, but I've got a list here of 16 quality of life benefits from using high dose vitamin C that's been accumulated over 12 international studies and so that's what I think we're going to talk about today, Michael, is just the whole idea of how quality of life, how important is that when you get that that that diagnosis the big C and patients they their hope seems to plummet and they start feeling depressed.

And and then of course if they go into chemo and various conventional therapies, they have all kinds of side effects. And so Dr. Riordan was able to show that without interfering, actually improving outcomes with conventional therapy, he was also able to show that these patients were significantly, significantly improved in their quality of life.

And so I think that's something that today I wanted to get that word out because everyone that's looking at a cancer diagnosis and a cancer treatment program, no matter what you do, if you add vitamin C into the program, you'll you'll feel much better.

You'll have anywhere from a 40 to 50% better outcome, at least it depends on how aggressive you are with treating the other ten terrains of the body. But but vitamin C by itself stands out as a foundational therapy for cancer patients.

So as we go through, you know, the different benefits of vitamin C, what are some of the mechanism items that are kind of the foundational component that will then translate into all these different benefits?

Well, vitamin C is nature's premier antioxidant. And my good friend, Dr. Thomas Levy would say that the whole foundation of chronic illness is oxidative stress.

And in in the natural world, most creatures, when they're stressed, injured, fatigued, poisoned, they start making more vitamin C. And that was Dr. Pauling's initial thought is that when he heard that Goats when they they normally make 2 to 3 grams of vitamin C a day just for routine maintenance, but if they're seriously ill or injured, they'll make as high as 15 to 20 grams per day.

And that was his initial insight that there must be a mechanism here in terms of why nature allows this to happen. Now, we humans, we have the gene, but it's currently turned off and we're looking into ways to turn it back on, by the way. But but we we we do not we've lost that ability.

And so by using high doses of vitamin C, we reduce oxidative stress. And really, oxidative stress is what makes people depressed, tired, achy pain. All the all the kinds of things that don't feel very good are due to oxidative stress.

So that's the fundamental toll mechanism. I'm sure there are other factors such as improvement in the immune system, reduction in inflammation. It does enhance endorphin production.

So there's a there's a number of other mechanisms that vitamin C does. But this is all part of its role in creating a concert type effect where the the body braces itself and readies itself to deal with huge threats.

Will be they psychological, physical, biochemical, toxicological. The vitamin C works great for all those things. And and the question always is, you know, we're talking about cancer patients now and and they frequently look at how can I combine things with the traditional oncology treatments that I'm getting, like, you know, obviously chemo, radiation are two common ones.

How does should they wait with vitamin C until they're done with like the chemo rounds or is vitamin C a crucial part through that whole process? Well, our our oncology colleagues have been still very slow to accept IV vitamin C because they still think of high dose vitamin C as an anti oxidant.

And certainly it does have antioxidant properties. But in terms of cancers, our vitamin C's ability to slow or stop cancer, that's because it has a pro oxidant effect.

And we can just briefly touch on that, namely, that when cancer cells lose their oxygen supply, they basically become hypoxic, driven. And and so what what happens is they shift into glycolysis and actually that and many times they're still in anaerobic environment.

But even still these they shift into glycolysis for a number of reasons that we won't get into. But in glycolysis they are craving sugar. That's the main driver for cancer is sugar.

And the vitamin C molecule and the sugar molecule, glucose molecule are very, very similar in nature for the simple reason that the enzyme we lack converts glucose into vitamin C and in nature, where we have the the enzyme, they are able to boost their own vitamin C production, but we don't have that.

Research Evidence and Quality-of-Life Benefits

So but when we give high doses of vitamin C to A cancer, patients whose cells who at least the area of the cancer, those cells have shifted into glycolysis, there's a strong uptake of vitamin C that through different mechanisms, which I won't go into.

But and so once inside the cell in high levels, the vitamin C will take the excess iron in cancer cells and reduce it. And then the reduced state of iron, it generates the production of more and more hydrogen peroxide in the cell.

So hydrogen peroxide is a significant pro oxidant, obviously, and it's that pro oxidant effect of the buildup of hydrogen peroxide that causes the cell to to either die or to sometimes the cells will return back to more normal functioning.

But more often than not, cancer cells, because they lack catalase, they cannot handle the hydrogen peroxide. And so then they they'll they'll they'll die.

So there's, there's all other mechanisms that that we look at. We look at. But I think that's the primary mechanism of how vitamin C kills cancer cells.

So most oncologists don't know this. They're still thinking vitamin C is an antioxidant. It's going to interfere with their you know, with their chemo and radiation and other treatments.

And yet the University of Iowa now has two major studies out showing how Ivy Vitamin C is effective. Of course, much research has been done at the Reardon Clinic under rec back, which is cancer spelled backwards.

It was the ten year research project that Dr. Reardon undertook. We've got a number of, I think, 40 different publications. And then I think those I'm just thinking right now, those oh, there's there's just there's University of Kansas, Jeanie Driscoll did a very interesting study.

That's actually what's going to be on my list. But let's just real quickly jump to that, because most of the time we advise patients just so that they don't get into conflict with their oncologist to just do their I. V.

Vitamin C a day or two before their chemo or a day or so after the chemo so that they don't ruffle any feathers. But. Dr. Driscoll at the University of Kansas studying ovarian cancer and she had, I believe, 27 patients diagnosed stage three or stage four, they were they were randomized.

That means that the patients didn't know, the doctors didn't know. They were randomized into two groups. They were all diagnosed by conventional oncologist and were given their treatment plan.

They they followed the treatment plan. But part of that was, is they got a pre chemo hydration IV half of them had vitamin C in the in anywhere from 75 to 105 grams in the pre hydration IV.

The doctors didn't know that. No one knew it was not until the study was over that they they knew who got what. And so the group that got the IB vitamin C and then it was followed with the chemotherapy, they had a much better outcome and much improved quality of life, fewer side effects.

So this is a direct study showing that vitamin C does not interfere with chemotherapy. But on the other hand, because in the minds of most oncologists it does, we kind of advise patients you'll still get benefits if you do your IVC a day or two before or a day or two after that.

That's how we kind of advise patients along that line. And from my understanding. So yeah, please correct me if I'm wrong, is that the benefit also with doing it kind of right after chemo, not on the day, is also that you kind of enhance that oxidative stress and you kind of prolong the the the kill of the chemo using vitamin C at a higher dose.

The pro oxygen effect of vitamin C? Absolutely. So, you know, obviously, when they're getting I. V. Vitamin C, it it runs in over depends on how much they're getting anywhere from a half an hour to two or 3 hours in the early stages, they're get an antioxidant effect.

And then as the vitamin C level is is excreted, they're getting an antioxidant effect there. So they're getting both antioxidant and pro oxidant benefits by using high dose vitamin C.

And so, of course, the antioxidant effects can reduce symptoms. And just in Dr. Driscoll's study alone, she was able to show improvements of neurologic symptoms, less bone marrow suppression, better liver and pancreas functioning, better kidney and genital urinary functioning, less incidence of infection in the lungs, better gastrointestinal feelings.

So overall, in addition to showing a dramatic improvement in over in survival and in this quality of life, the patient actually felt better if they got the vitamin C along with their chemotherapy.

And in regards to quality of life, you know, like like we mentioned, it's such an important component because a lot of times when when people come to an oncologist and they have a stage four type cancer and there's the oncologist can only offer palliative care, you know, saying that if we do this chemo, we can maybe prolong your life a few months or maybe half a year.

But then obviously that comes with a huge cost and quality of life. So what what can vitamin C, ABC, then help these patients in regards to quality of life?

Because that becomes so important to them and also the people around them. I mean, they the people, you know, the family members, they want to spend as much time, quality time with their, you know, with their loved one and also make sure that they are as comfortable as possible.

Well, in preparation for our our discussion today, I was able to pick out 12 published studies on the use of vitamin C in various types of cancer, in various situations.

And from that, we extracted that there are 16 quality of life benefits that vitamin C can offer patients. And so I'm going to just give that in terms of general terms.

But if our studies highlighted different parts of this, but if you put the studies all together, I've Vitamin C helped reduce pain in patients. That's a big one. And that's what shows up.

Cancer patients may have pain from their cancer, but they may also have pain from the treatment. And so there was much less pain, sometimes completely the deviation of pain.

And at the end of our presentation, remind me, I have a case that I want to go over that highlights this point. There's less fever, less bleeding, easier to breathe, better overall sense of well-being and functioning, better sleep, less fatigue, less dizziness.

You know, there can be the the the brain oftentimes gets affected by strong chemo and that can lead to some dizziness, better appetite. Of course, that's a major issue with cancer patients, less nausea and vomiting, better bowel functioning because the bowel really takes it on the chin with a lot of the standard therapies.

A better sense of well-being overall, a sense of hope, improved mood, less anxiety, and a better cognitive sense. The brain thinking seems to be clearer as a result of doing vitamin C.

So in my books, you know, we could sit and argue, okay, should we use vitamin C? Is it going to prolong life? Is that how much better? I mean, that's all important information that needs to be worked out, but just on the benefit of quality of life alone, I think I b vitamin C more than pays for itself.

It's it's it's a cost. It's the the difficulties of finding it and achieving a regular intake of vitamin C and also the the opposition that patients will face when they mention to their doctors that they want to use IV vitamin C as part of their program.

Oftentimes they are ridiculed and downright thrown out of the office. More and more, though, I think the vitamin C is is kind of gradually finding its place.

There's more of an acceptance than there was when Dr. Reardon did his research in the nineties. He did a ten year that research was a ten year study. It ended in 2000.

He died in 2005. But in my experience, we we find more people getting support from their oncologists, especially as we have a stronger integrative oncology movement afoot.

And thank goodness for the the integrative oncologists that are working now and there I think there's over over 100 of of registered oncologists that are naturopathic oncologists that are doing a fantastic job of making convention, are helping conventional oncologists to see that if they use some of this use of vitamin C and some of the other

interventions, it makes the oncologists look better because the patient feels better, better quality of life.

So overall, that's also going to result in better outcomes. When people feel better, they have the will to live. Whereas I know a lot of cancer patients when they get into the depths of pain and agony and despair, they lose their their hope, they lose their will to live.

And so I think vitamin C can give that back to people.

Clinical Use, Dosing, and Treatment Guidelines

And I agree with you, I see that locally quite a bit. When the local oncologists see the difference or the patients that are receiving the type, this type of care receiving vitamin C, I. V.

and other integrative care, and how their look better, their energy is better, how they're handling the medical treatment better. You know, one of the challenges is always, you know, you with chemo, you want to find that sweet spot where you don't do too much, where you kill the patient and you don't do too little, you know, so that you don't have impact on the tumor or enough impact.

And so and that is a hard place. I mean, they over time, they have refined dosages and timing, but that's it's still a challenge. So to to be able then support the individual that's receiving than traditional oncology as so that they are able to fulfill the recommended dosage is is very important and told to the oncologists.

So for us to be there alongside to strengthen the patient so that they can fully do what they need to do to reduce the tumor burden is it's important.

I see that the local oncologists appreciate that. More and more it's happening. There's still a lot of oncology holdouts out there. But nevertheless, if they would take a look at this and this is kind of why I think the summit is such a great idea, because it gives hopefully some of them are going to listen in because like I say, this can make their outcomes better.

So we're working for the same thing, the survival and quality of life in the cancer patients. So we're all on the same page. I think in the past I think a lot of oncologists were concerned that patients were either going to go one way or the other and and and that certainly is the patient's prerogative.

We certainly help patients no matter which way they decide to go. But if they do look a complementary and integrative approach, I think both sides feel better.

I certainly when I was when people would come to me saying, okay, I'm going to get my vitamin C and this is going to fix my cancer, I'd say, well, you know, yes, it'll help a lot, but there's a lot more to overcoming this illness.

This is a this is a tough disease. And so we really need all hands on deck and all of, you know, the best blend of the best approaches. And the nice thing is some of the problems of conventional chemotherapy and radiation therapy can be ameliorated through the use of vitamin C.

So so you can use the best of both worlds and have less side effects and better outcomes. Yeah. And like you mentioned with the 16 different benefits, you know, in regards to just the benefit of the issue of sexy with weight loss and loss of appetite.

And that is that is a big, big one. When you are undergoing traditional oncology care. So just that alone is a huge reason. Absolutely. Yeah. And these studies that I'm quoting here come from all over the world, like I've got one from Germany where they looked at 53 breast cancer patients with 72 controls and they found just giving I get this 7.5 grams once a week, not a big dose, but giving it.

I've you can boost if they give it a push we know from our pharmacokinetic studies that will bring the blood level which is normally 1 to 2 milligrams per deciliter up to as high as 100 milligrams per deciliter.

Now normally we shoot for 350 to 400, but even bringing it up that much, they had decreased nausea, fatigue, depression, dizziness, bleeding and general complaints and their overall quality of life scores doubled and they had a better appetite and they rested better.

So that's that's in 53 patients that got I. V. Vitamin C over in Germany, breast cancer patients. And so that was back in 2011. And so if you can if you can get that kind of results with 7.5, you're going to get, I think, better results when you go to the higher doses.

And what have you been part of the reward in clinic now for? You can see here it's more than three decades. 35 years, 30. Five years, so a while. So during that time, you've had the opportunity to obviously observe a lot of people through this process.

And so what are some of the the stories or observations that you that you've made in regards to all of this? Because obviously, just your life is a study in itself.

Yeah. So Dr. Levy made me calculate the number of patients that we've got, not just cancer patients, but the number of patients for which we've given I. V.

Vitamin C at the Reardon Clinic or set them up to do home IV. Vitamin C is. So we're in the 150,000 range right now. And so what I see is consistently people feeling better and and I don't hardly ever get a complaint.

There's not complaints about vitamin C. One of one of the things that helped me to really understand how powerful this was was when my own wife was diagnosed with breast cancer about 22 years ago.

And so for and she she underwent radiation therapy. And so she had a lumpectomy and then radiation. And so three nights a week when she was a busy teacher, she she came.

And by the way, in that case, the radiation oncologist was not wanting her to do the IV vitamin C, and we invited him. This was still during the time that the redneck process was going on.

I invited him for lunch along with the five special s. The researchers chose to come in and talk to him about the mechanism. And it wasn't, you know, a pushy thing.

It was just like, let's here's the research, here's what we know. We think this will help. And he agreed to go ahead and have my wife get the IIB vitamin C three times a week.

He did six weeks of radiation and she had almost no side effects. She was able to teach second grade during that whole time. And so the fascinating thing with that story, though, is that later on he would not allow other patients.

And I think it was more pressure from his colleagues. You know, there's again, a lot of doctors don't want to stand out as someone different in their in their realm.

And so but he he saw and he knew that she did very well. And so and he and I recently saw him with his wife, came to the clinic and he acknowledged that he said, Yeah, your wife really did well, but we didn't go into any further than that know.

So that's a good example of how people can change their thinking. They can open their mind and say, Ah, and, and realize that here is a nontoxic, effective strategy for helping patients not only have a better outcome, but feel better along the way.

And what are there other times and Vitamin C should not be done while undergoing anti traditional oncology care. Well, there there you know, Mike, Dr.

Michael Gonzalez has a chart. And I think there's one key. There's one. And I think it's I'm trying to remember what it is, but there's only one drug that is an absolute contraindication.

Otherwise, we think that it could be used with just about any other treatment. It's just that it's not for the most part. So to my knowledge, there's not a big worry if if the patient wants to come in the same day or if they want to do a pre IV vitamin C, just like Dr.

Driscoll's study, I don't think there's a big contraindications, just that you want to try to maintain a good relationship with the oncologist, give him the information.

Like I say this, what the the information that I'm using is part of a handout that we've we're in the process of writing a book on I. V. Vitamin C, and this is an appendix that we will have in the book.

It's basically a quality of life survey. I sent a copy of it to you, but I think if patients would give this to their doctors to where they saw that there really is research to back this up, it'd be it'd be much more effective and the doctor would be more likely to say yes if he has some data.

You know, the oncologists want to see the data. And so I think this this may be a useful tool of patients. Want to use this? Yeah, absolutely. And what would a what is the kind of the optimum frequency and I know the the dosage depends a lot know that that is what you have really worked hard on depending on the severity of the the case and also depending on the size of the individual and so many different factors.

But what is a common frequency and length of time of treatment and what are some general guidelines for people out there? So have our new cancer patients come to the Reardon Clinic for what we call IVC titration?

And so the first day we use just a 15 gram vitamin C so that we can also draw ag6 PD, because that's a very, very infrequent issue that if they're low and G6 PD, their red blood cell membranes are more fragile and the oxidative stress of high dose vitamin C could cause hemolysis.

In my 35 years, I've probably seen maybe eight or nine cases where they had borderline g six PD. We've never had that happen at our clinic, but we're very cautious in doing the G6.

PD So we do a 15 gram that first day, and if it's good the second day, we do a 50 gram. If they're an advanced cancer patient, sometimes we'll do just a 25.

But the 50 gram is what we're more typically doing now. Then we do a post IVC saturation level in order to find out whether or not they're hitting that 350 to 400 range.

Patient Stories and End-of-Life Support

Then we also, if if that doesn't do it, we go to a 75 the next day and do a post C and then more and more now we're going a third a fourth day, actually a 100.

If if they don't hit the 350 to 400 range and we do a vitamin C immediately, within about 5 minutes after the infusion in the opposite arm from the opposite arm. And in the past, that's been a problem for people to get laboratory vitamin C levels.

A lot of people use the glucometer method, which unfortunately is not all that accurate, but it's it's the only thing that's available for a lot of people because they had trouble getting a specimen to us.

We now it had to be centrifuge in most offices don't have a centrifuge. We now have kits now that do not require a centrifuge. So if someone wants to do post IVC saturation testing, it can now be done just about anywhere in the country and they can send it in to us.

Our lab will run it and give a very specific post IVC level. So then once we have that level, then we start patients on either a twice a week or sometimes three times a week infusion of vitamin C, and we have an interval between that.

You can do it on sequential day. But I, but I, I think it's better to have a gap in between the IVs to get the most

benefit from it. And, and then we continue that for gosh, it depends on the case.

Anywhere from 3 to 6 to maybe even six months, nine months, a year. It depends on what status the patient has, how, how they're doing. We have a number of patients that come in once a month.

They're cancer patients that are gone into remission, but they still come in once a month for an IV, vitamin C, just to kind of as a give their immune system a boost, a detoxification effect, and to have there are any lingering cancer cells to try to shoot those down.

Yeah, that's great. Well, and there was something that I was supposed to remind you at the end of the I think there was a case that you wanted to discuss at the end of the.

Oh, again class. Okay. Yeah, yeah. So I have all these case studies that have been published. I have one that's not published, but it's a very compelling story that I wanted to just to maybe end up with.

This was probably about, I would say five or six months ago that we had a woman from, I think Georgia. She had stage four rectal cancer. And she had been radiated, she had been chemo, she had been everything had been done and nothing was working.

And she had a large fungating mass at the rectal anal opening. And she was very anemic hemoglobin around six, very tired. But she had heard about vitamin C and her goal was to make it to her daughter's wedding, which was going to be like two and a half months down the road. So.

So she came to our center, not so much looking for a cure because she had tried all the various things, but just to get well and oh, by the way, she was on six OxyContin tablets a day throughout the day to help with her pain.

So she was in pretty desperate state, but she had heard that vitamin C could possibly help her stabilize and slow the progression of the tumor. And so so we were doing 75 gram I. V.

Vitamin C three times a week. We were watching her hemoglobin really close. It got very low. But as time went on, the number of opioids that she had to take decreased and decreased.

And finally, when she left at the end of a month of of of staying with us, she was completely off of her pain medicine and feeling much better, feeling more hopeful.

She made it to her doctor's wedding, ah, to her daughter's wedding. And she called us to thank us for helping her to achieve that. And it was probably within a week or two after that that she passed.

And so I just feel, hey, this is this this is kind of what vitamin C is all about. We had one other case where a lady was her, her she was on her deathbed and was in a coma.

And the family asked that we with a couple of our nurses drive out and give her a vitamin C, and they did. And by golly, she woke up during the I. V. Vitamin C and talked with her family and and then said goodbye.

And then later that day she died. So there's some really compelling stories in terms of how vitamin C can help with quality of life, because ultimately that's all we really are asking for of this world is quality of life.

No one knows how long we're going to live. You know, it doesn't matter what you're dealing with. Anything can happen anymore. But if you can enjoy life better, have better energy, a sense of well-being, reduced pain, those kinds of things, that's a lot.

So that's why I think this is something that is sometimes overlooked in terms of why I view vitamin C can be very special and precious for people. So thank you for allowing me to be on the program so I could kind of get this message out.

Well Dr. Hunninghake. This is Michael for all you're doing well. Thank you so much. This this is I mean, these stories are so powerful and just kind of recognizing that and the value.

I mean. Yes, you know, maybe, you know, these people didn't survive and get rid of their cancer. But the value of that last moment in life, you know, how important that is to be able to communicate with your family, to be able to be there for your daughter's wedding.

I mean, these are these these are so important. So thank you so much, Dr. Hunninghake.