The Future of Transplantation: From Ice Buckets to Xenotransplants with Dr. Antonio Di Carlo Transcript

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Podcast Introduction and Guest Background

Welcome to the Doctors Making a Difference podcast, where we help physicians to be empowered with the tools they need to successful in medicine, in finance, and in life.

Join us as we highlight doctors and other professionals around the world who are making a difference. Today I'm really excited to welcome Dr. Antonio DiCarlo.

Dr Di Carlo is a professor of surgery with 25 years of experience in abdominal organ transplantation. He's a board certified general surgeon, as well as a transplant surgeon.

A fellow of the American College of Surgeons, has an MD from McGill University, a certificate of leadership at development from Harvard School of Public Health, and an MBA in healthcare administration.

from Fox School of Business at Temple University. Dr. DiCarlo has given me permission to call Tony, has a tremendous number of advanced experiences and has also recently been author on multiple chapters in an excellent book that we're going to talk a little bit about today.

But I'm excited to welcome Dr Di Carlo to the program. So Dr DeCalo, Tony would you mind introducing yourself to our audience? Hi, yes, I'm Tony the Carl, most of the things that you said and essentially I am an adult and pediatric transplant surgeon.

I've had the privilege of taking care of patients for many years now and it still remains a wonderful thing. Oh no, thank you. Most of the people to listen to the podcast are doctors.

There's some other folks who listen as well, but I just think it's really interesting when you talk to people of all different, doctors of different stripes, most people find that they love some aspect of their job.

And so before we kind of dive into kind what you do now, I want to go back to Tony DiCarlo in your early twenties. How did you decide to become a doctor and then go down the long road of becoming a transplant surgeon?

Yeah, I wish I had an easy answer. Half of the answer probably is I really didn't know how long the road was and I just kept figuring it out. And they'll get so much time.

I'm not going to back out now. No, a lot of it probably just from my family. My family are immigrants from southern Italy. None of them went to school.

So I mean, first generation, everything for them. And a lot of my childhood being the only one that could speak English, forget about read or write, I spent a long time taking my family to doctors.

My grandfather had pretty bad diabetes, all the complications, my grandmother also multiple intestinal issues. And I don't need to do this for my immediate family.

I also did it for neighbors and some relatives. So I spend. quite a few hours a month in different doctors clinics.

Why Tony DiCarlo Chose Medicine

Certainly, I think that within the family, and I guess within simpler folk, there was some esteem, some respect for the medical practice. And I still remember my grandfather telling me many times and saying, listen, for him, he was

a farmer for survival, not industrial.

He had the hoe and he'd tell me, the hole is heavy. I would suggest you learn to write the pens much easier to work with. It's good advice. It was, he kept looking.

He was like, you don't want to do what I've been doing for my life. Find something else. And they always kept saying, listen, I have a good idea. If you became a doctor for them, they had such an esteem respect for the medical profession.

They admire the physician. So there was I guess my grandparents probably had something to with it. Oh, that's good. I can relate. You know, I grew up on a small family farm in Idaho.

It was a big stretch to think about going from that to being a doctor. That seemed like a bigger respected profession. And, but, and I think to, we live in a time where people kind of want to take away the authority of institutions and doctors and everybody else, But still when it's your family and when you need help, when your show up in crisis, you don't want some rookie walking in the room.

you want a Doctor. He wants someone that shows up and what is your, your loved one. That crisis, that moment of need, there's nothing better than someone that just has the experience of doing it for a long time and say, this might be your first rodeo, but it's not mine.

It's just really cool that you were able to recognize even as a young man. It's still funny. I guess society's changing, but I don't look 20 years old.

And it's so funny when I have patients asking me how long have you been doing this? Or, you know, have he done a few of these? Yeah, I think so. It still fun when they ask that.

Yeah. They won't let you out of fellowship until you've done. A lot. More than once. Now just kind of describe a little bit. Again, most of the listeners to this program are physicians or people that have worked in the medical field.

I'm not a transplant surgeon and most people listening are not transplant surgeons. We all have transplant patients in our practice that we come across in different things.

How did you choose that? Because there's patients who come into that and most people are not wanting, they don't start off that road wanting to be a transplant patient, but there they are.

So they end up in some real complex situations. And like we talked a second ago, you're able to really take care of some challenging situations, how did finally decide to say, I'm going to do this for my career?

I think ultimate. So I was supposed to be an internist. And I, I thought that one of the program directors at one hospital that I I going, when he found out I wasn't surgery, he was like, listen, no, it's not a mistake.

I guess I'm gonna shut up as an inter. I had no idea where I was. I, again, I have no ID what medicine was, so I got into med school and I heard this residency thing.

It was like, all right, we're going to keep going. And I think it was meant to ship in was representation. There were the transplant, the two transplant surgeons.

One was from Bulgaria. The other one was a Greek guy. growing up in the city, you know, in Montreal, I guess it was identification. And they looked at me and said, listen, You're going to come do this.

Let's go. Maybe I'm simplifying, but it really is identifying with people finding mentors, finding role models. For me, my first few weeks of internship, these were the people that I identified with.

Somehow it sounded interesting. The concept, it's becoming more protocolized now, not really knowing half the

time what we were doing. We're still not sure why things work, and yet magic happens.

I've done more than one kidney transplant and the kidney's kind of drastic. You start with this thing that's lifeless, bloodless, you release the clamps, out comes the blood flow, and it still is a mullet.

And should the kidneys actually start making urine, I don't care how old I am, it never gets stale. Watching that kidney that was in an ice bucket all of a sudden urinating.

Finding Transplant Surgery and Early Inspiration

I dunno, there's a certain joy in the simple things of what we do, can I say? It's still fun. Well, it's pretty neat to think about that because it lifeless and dead and you put blood through it and now it suddenly filters, blood and produces urine.

That is, that's a unique perspective for sure. It's amazing. Because when you think that we talk about ATN and the kidney, or we talked about shock and all these stuff, and like, let me get this straight, 24 hours in a bucket.

Isn't AT, I mean, what we do without really fully understanding why we'd do it is just sensational. So that's actually really interesting. So over the course of your career, you do most, it sounds like mostly abdominal transplant surgery.

What have you seen change? Because some of that stuff was just like, we tried it and it worked, so that why we're doing it. But over time, the genetics are more understood, there's a lot of different medications, and we just understand the pathophysiology of disease better over just every decade.

I'm curious, what have observed over a course your of career? We are making small strides in understanding the immunology. The technical aspect really has not changed much.

There are two things. One of the things that probably made transplant happen was organ preservation solution. University of Wisconsin solution, but that's probably an eighties thing.

And I remember when we started understanding that there was more than just rejection. Consumer rejection, we really understand for a while. And then we even discovered BK virus, which we didn't even know what that was for awhile.

So there's been some small strides. Interesting, medication, everything hasn't really changed. But I think that's there has been so much happening all at once that we are on the verge of a breakthrough.

We're finally starting to get rumors of new immunosuppressants besides what we've been using. Some of these gene profiling assays are starting give us maybe a bit better insight into rejection.

Now we're at the point where the combination of gene profile and combination assaying organ damage, so what we call cell-free DNA, they're almost going to be able to predict upcoming rejection.

This is quite a time in the immunology. The other side of it that is spectacular is what call normal thermic machine perfusion. A standard to preserve organs, and most of what I do is abdominal, but some of this is translating into the chest as well.

We put stuff in an ice bucket and we run. Half the time when you got your Coleman coolers or whatever, Brad took his picnic cooler. That's what we used to store your organ in it.

I mean, it was sterile bags and everything, but it wasn't your cooler with ice. And we'd run through hospitals with it and then for the kidney, somewhere in the eighties, perfusion.

We actually keep flushing the kidneys with the organ preservation solution. The scene not seen was proved to

have a benefit. But now we're running blood through it, and in liver, liver was a crisis.

You've got Less than 12 hours, you want to get that liver in. And when you took a liver that was done on ice for six, eight hours and started up again, we had the reperfusion syndrome.

There was a bruising until the liver kicked in now. We put it on these pumps, we flush blood and keep it at about 34, 35 degrees, and the liver's working.

It's making bile. We can assess, keep its clearing, lactate. we can test different blood tests on it. And this is also while we're sleeping. This is going on.

You don't have to rush anymore. When you put in the miraculously everything kicks in it's making clotting factors already so that the the whole technology there the first time i saw this is like it just fly like what's changed this isn't a whole new reality whatever technology is there Immunology is understanding and certainly it's not there yet, but we've all heard about it.

Xenotransplantation. So I had the privilege of working with Joe Tector and John Trevenkoff, Peter Matrakos back in the late nineties, when they had a lab looking at Xeno transplantation, of course, I need to include Jack and Fidel amongst the people.

What happened at this point is we started to look at pig organs to keep humans alive. The first up was actually they took patients, humans, in folate liver failure who were too far gone to transplant.

They weren't awake anymore. and put a pig liver on dialysis circuit and use it to wake them up and then give them a human liver. Now, as there are two companies that are out there that actually, so Mass General, I think, has been leading the charge on this.

One of the companies, they've done a few big, now genetically modified pig organs, but they're pink kidneys that they put in humans.

Advances in Transplant Technology and Immunology

Not fully one year survival yet, the fact that we couldn't get hours of survival previously, that there almost not a year spectacular, He's the other one doing the same thing.

And now Joe Tector with his model is supposedly going to come out. We're starting to talk that some of this data may show that in privates, there is two plus years of injection-free survival.

So this now, I think we're on the verge of something spectacular. Can you imagine that there's no shortage of organs and you can schedule your transplant at a convenient time?

So we are on a verge. of my job becoming an elective practice that I can schedule a few months ahead of time. This will change my world as I know it and it will have a huge impact on humanity.

Oh yeah. If you could really get to that level of genetic engineering where you have an organ engineered for your body and scheduled and it's just taken.

It's amazing. We, my, children raise pigs every year for the four H. And so I was trying to teach them this summer. it is not just a pig. we like bacon and we'd like to take care of animals and all that stuff, but realize the organs in this animal, they think I'm weird because I am a doctor, right?

Do you realize the organs in this animal are kind of like the people organs? My kids thought that was fascinating, but to actually take it from the realm of science fiction to real science, to being practically tried in primate trials, human trials.

That is, like you described, it's a huge change just over the course of a few decades from when you started till now. And that's amazing to be in the driver's seat and watch that.

Again, I lived from when there was rejection to understanding that not all rejection is rejection. And now we can take a different animal. I think we're on a virgin explosion.

Wow. What's about to happen? Spectacular. One of the other questions I wanted to think about is maybe talk us through, again, most of people listening aren't transplant surgeons.

How do you have this conversation with patients? Because usually when I talk to people who are experiencing kind of nearing end stage organ damage on liver, kidneys, or sometimes heart, we have discussion.

And it seems like transplantation is almost treated as like the enemy. Like it's this thing you would never ever want to do. Sometimes people, at least that's how my patients sometimes fear it so much.

And I try to say, what we're trying to do is preserve your life in whatever way we can get there. And sometimes that's medications and dialysis and other means to try and preserve function.

Other times it is really to allow yourself to just have function and so I was curious, how do you approach that conversation? Now in 2026, will we have the technology we do and the circumstances that we face?

So the current reality is right now that very few patients have a fortune preemptive transplant. And the way kidney is the easiest one to talk about. The wait time for a kidney's now pushing four plus years.

Some centers will do much shorter, but so four, six, some places like seven, eight, I have transplant someone after 18 years of dialysis. So dialyzes makes my conversation so much easier.

People that are able to survive and maintain some quality of life or functionality on dialysis are superhuman. Dialysis keeps you alive, yeah, it keeps the physiology going, but it beats you up.

So after they'd been on the dialyzes for a while, my conversation gets so easy, they want the transplant. Yes, the fear of the unknown is the theory of being known, but maybe the conversation that you're having with patients is when dialysis is an unknown and transplant is unknown.

When dialyses becomes a very known entity, oh, transplant, they're so attractive. There are professional athletes, there are celebrities, actresses, singers that are now working every day and they've had a transplant.

They're not violating anything. I forgot which teenage singer, not Ariana, who was it? Selena Gomez, right? She had kidney transplant, where was she? I'm going to have to ask my daughter along.

So morning basketball player had a kidney transplant that I know. And there are, you know, uh, what was his name? The comedian. I mean, transplants and everyday thing, and it's becoming easier as a it for patients to accept that they look forward to it.

When it comes to liver, most of the time, like you're going die in a few days, one or two hours. It's not a hard conversation anymore. You can die. or we can get you a liver.

It's rare that the conversation is different. Certainly when patients aren't that sick and we have to talk about a livers transplant, it's scary for patients.

But when you look at the alternatives, I will be dead next time or I could live so many more years. Conversation gets a lot easier. And it'll be interesting if you really do get to the place where you do xenotransplants, and it doesn't have to wait till you are dying tomorrow to do this.

It changes the whole equation. And so it will be to see that develop over, we hope it would develop, over the next

few years where that becomes a reality for people.

Because it's really moved a lot and there's a lots of success stories, but there are a bunch of things on the horizon, like you said, that could be really cool.

Remember, one of the things that I tell my patients all the time is the prooplasm you're going with will determine the outcomes. And if we look at patients, either because they've been on dialysis for so long and all their physiologists have beaten up, they're malnourished, or in liver failure, their in extreme, recovering and bouncing back from that is not easy.

But can you imagine what driving yourself into your liver transplant, parking your car, walking in? still functional, it becomes like a hernia surgery.

A few days in your home kind of thing. Yeah, no, its radical. It's just different. And if we add to this now, and we go going on this with robotic surgery, understanding that we're starting to do liver implants, robotically.

I just read about, that was a few months ago, they've done a heart transplant, so as opposed to a sternotomy. you do a laparotomy, cut the diaphragm, dock the robot, go on bypass, take out the old heart, through that same lapirotum, I don't know, four, five, six inches, push in the new heart.

Push into the chest, sew it in and go. This becomes four-day recovery, no more stenotopy. So yeah, we're on the verge of things being different. It's an exciting time to be a doctor.

You see just all sorts of things you can offer for your patients. One of the questions I wanted to ask you is, and I'm sure you have countless stories, but there are people that come along the way that stick in your memory.

And I can think of dozens of them where something comes along and you're like, I do this every day. but, and it might seem routine, but sometimes you're just blown away by a circumstance.

You're like, because I was here, cause I had this skill set, I made this huge difference in your life. And that's the moments that keep us coming back.

I wondered if you could think of a, gotta be HIPAA protected and make sure we don't do it in any way that reveals any patient identification.

Xenotransplantation and the Future of Organ Supply

But are there, do you have a story or two that you can share with us of something where you specifically were able to help somebody as a transplant surgeon in that kind of way?

Yes. Some of the most drastic things that stay in my mind are the patients that we give them a pancreas transplant. Most of pancreatic transplants that I do are in combination with the kidney.

So this is going to be most time. Now we're doing type two one more, but it mostly initially in the story of Doc was a type one diabetes on dialysis. Understanding that when you're 30 years old or so, And you've had that maybe since you're four.

Regulation's off. You have impaired awareness, impaired glycemic awareness. Urine dialysis, the highs, low, brittle, decay. So this is one of the first patients that I transplanted as an attending surgeon.

My first faculty woman, oddly enough. The family actually knew me from my residency. It was a different country. But anyways, so here we take this young woman and her story is pretty drastic because she kept in touch with me for several years after, lost touch after I left my first job.

She was a medical student. Her diabetes was so poorly controlled that she dropped out of medical school because

she just could not keep up with the decay, the highs, and the lows.

It was just more and she had to throw in dialysis as well. And she was on hemo, so that's 12 hours a week of dialyzes. So med school was not an option.

She started doing clinical trials within the hospital. helping with everything there was. Now, because her diabetes was so hard to control, she essentially, and pumps and sensors would not as function anything like what we're seeing today.

I don't think they were really a reality then. And some of these other patients get a really bad autonomic hypotension. Some of the autonomine neuropathies, gastroparesis, it's debilitating.

We transplant her and the first months you see them routinely, whatever, then follow up spaces out and I get a picture, an email picture about a year later, and there's this young woman, I have no idea who she is, at Disney.

And she writes to me and she says, I am 34 years old. This is the first time I was able to travel on my own. I have never been able. To go anywhere because of fear of my analysis.

She says I might be old to go back to med school, but I'm considering going back. And doing nothing. It, it, still remember that picture. Have it saved somewhere.

Cause I see a lot of patients in a catabolic state and then we see them years later. I had been, I did not recognize, the first few links like, who is this person?

Do I know this? And then when you see the email, like oh my God, it's stories like this that when, you can see it, but it not that I have this impact, But it is what medicine and what society, let's not forget, most of the organs that are usually from the sea stars.

So it was still amazing that in a world in an era where we're so concerned about everything else and the negative that there are still selfless human acts from heroes every day.

So this is what you and I do, this what medicine has done and this unnamed self-less people who are grieving their losses are looking forward to helping someone else.

This conglomerate, this village, was able to change this life around. It still sticks with me. And yet, in the shock of not knowing who she was, and the fact that a 34-year-old saying, This is the first time I traveled on my own.

Talking to Patients About Transplantation

Like, no scribbling. This was the fist time. I'm an atom. Wow. It just gives me the tingles to think about that. Cause you take somebody, cause we all have patients that deal with type one diabetes.

it's such a pervasive disease and it just affects the very young. So many people end up with end stage organ disease a lot earlier than, than people would ever deal.

That's, that's gotta be a really rewarding thing if somebody can get that kind of a transplant. Would you say that is still pretty successful when as time has gone on or do you see as we've got more pumps and sensors?

Do you still see a lot of people seeking kidney transplants in that setting or would you it's gone up or down or what's your sense? It's still there. Technology is improving.

However, it's the human organ, even with the transplant, outperforms most technology for most people. There is eyelid transplantation, which is making slow progress.

And when that becomes more mainstream, I think we will retire pancreas transplantations. You can imagine one

infusion and you're cured is going to beat any laparotomy that could do that.

And I look forward to that. I think the, oddly enough, the role of surgery is to make itself redundant. And so when something, or some of my colleagues, some friends of mine, if I ever figure out the whole island thing and make it more available, that will change everything.

Ficus will then be retired. Still haven't figured out kidney or liver yet in my role, but Ficus is probably a few years away from being retired, yeah.

Oh, thank you for sharing that. That's really good information. The book that you recently wrote some chapters for is called Care of the Older Adult, and you take your years of experience and write.

And so I had two questions I wanted to explore with this. One is, we talk about transplant surgeries in younger patients, like you said, their protoplasm before you initiate the transplant.

which is determined by age and overall health and level. People have a higher success rate with transplantation. So I guess number question was one is when is it appropriate to do transplants in older patients?

Because sometimes that's one of those things that can be a little bit challenging. And then the second question we can kind of get into in a minute is in the age of AI and instant information and…

What's the role of having a really good reference textbook if some, because you can get into open evidence or up to date and a lot of times people can find information, but it's got to be based on something.

And I just wanted to explore those two ideas as we talk about the textbook and your experiences, you share your experience in written form. So first thing is, this book and this version and the previous versions of this pre-previous book, Precedus, is a labor of love and a shout out to Dr.

Kappa. This is his project. I'm just honored that he invited me, included me in this. Wow, the work that is done with this and his vision for this, so kudos.

We need to recognize his effort here. When I was a med student, I had this distinct vision of being on the floor and having to write the HNP as an admission.

So med students, we were able to do all these things on HMP and it was 10 o'clock at night and you hear there's a 72 or a 74 year old being read and this is when your head goes down and I knew that there would be like some trolley of charts coming up and we knew this was your night was done.

This is going to take four hours to figure out what The history was, forget about what's going on now. Your life was done, the charts were there. The 74 year old was the end of the world.

She was a 74-year-old in an education in Germany and she was just not going to go well. I transplanted a kidney an 86- year- old. So this is how the World has changed.

when, what, who, when was right anymore. It'd be great if we'd set some guidance, but I can tell you this much. One of the first transplants that I did as an attending was an octogenarian, I think it was 82 and 83. And when I heard that we, we listed an 80 something, you're all kind of scratching my head.

A Life-Changing Pancreas Transplant Story

I was like, this doesn't differ. But, and I remember it's a Sunday afternoon, it wasn't October. Now walk in to meet this patient again with the image of med school and the 74 year old with a three feet of charts.

At I meet the sky and like It's not the right guy. And he was a retired motorcycle police officer and he's collected them. He says, doctor, you realize you just shortened my season.

I'm like, what are we talking about? I still ride a motorcycle because I was in motorcycle, police, officer. And so I still ride a motorcycle and he's describing how he modified his bike for short.

I don't know anything about motorcycles, but for a kidney transplant, if I'm going to get off dialysis, I am willing to shorten my season this year. So this is an 82 year old that is riding the motorcycle.

Kind of seems like what's wrong with giving him a Kidney transplant. It's changed. The world has changed transplanting lungs into 70 year olds used to be extreme.

It happens all the time. Heart transplant in 70 year olds happens, all time we wish to have it best to see caps on the liver transplants into 70-year olds.

Now I'm part of the Liver Review Board where we grant exceptions for this and stuff. And one reviewing cases from reputable hospitals and sound surgeons, sound programs that are listing 76 year-olds for livers.

I transplanted an 86 year old for kidney and this person ran the details, but he ran a company and he had three plants across the US. And his thing was, he goes, do you know what a production is?

Because I'm on hemodialysis, everything is going to work. He goes do know, what are production it is for me to schedule my visits around dialysis availability?

And so, and his whole thing is, listen, I need a kidney because I didn't think it back to. I got plants that I can't travel to as much. It was that's why I needed kidney.

Now looking like you're making me feel tired. and I'm very younger than you. So I don't know. Let's put it this way, I like the title of the book, not the old adult, it's the older adult.

I do not know what older means anymore, so I think that medicine in and of itself, and despite what we may say about care of people, has changed. Any something is no longer any something.

It's just a number.

Transplanting Older Adults and the Role of Textbooks

I was just thinking, I had an 86 year old patient a couple of years ago and he came in and it was not a guy that would never go to the doctor, but he showed up in my clinic and said, Doc, my hip hurts and I can't get on my horse anymore.

86 years old, 86. So he's out riding the hills and rounding up his animals. And so I did an X-ray and he had a really worn out hip. Sure enough, he got a new hip, went to the surgeon, got him a hip and left the hospital the next day.

The next time I saw him, I was like, how's it going? I got back on my horse. Like, okay. Then he did. He just went on with life and they lived well into his nineties.

It must've been several years ago now that I said a couple, but it's actually been years now. But he lived the life he needed. I just agree with what you're saying.

Old is, looks different on different people. And sometimes age alone is not the determining factor. So when we talk about doing transplants are a little higher and things in the eighth decade of life or the ninth decade.

It kind of depends on the person's their functionality. That's really good insight. I like that. Yeah, I got it. Your patient may have been older. I was like, he's old.

He's riding a horse. Not that old, no. It was very functional. And I don't know if you thought a little bit about my other, the other half of the question is some people I've heard people say, why do we need textbooks anymore?

If we're going to live in the time of AI and I struggle with this a bit with my kids when we were trying to do school homework and often they're sent home.

Oh yeah. Figure out this complicated math equation and there is no textbook. Sometimes they don' even have a specific reference. website. And so if we're getting information from everywhere, sometimes if everybody's in charge, nobody's charged, that kind of concept.

So I've experienced a little bit on my own end, but I wonder what's your perspective on that as far as having reference resources that are in a published book form?

The sarcastic answer is going to be, someone's got a CDI. Yeah, you guys got to learn from someone. That's true. We're PGI. No, but listen, this book is not a simple fact, non-fact.

This book has more of a philosophy. It's a mind frame. I guess if you read my chapters, you're not going to find how do I imagine this or what's this?

It is really more of a philosophy is more about awareness of reactive issues, more awareness, of development. It's not like a step-by-step guide, how to treat pneumonia or CPOPD a 70 year old with aliquist.

It's not that, at least not in my chapters, it's more of a mind frame and a kind of review and coming to current. So this is a book that you'll read. Certainly you could use this for reference and stuff, but it is book you read as a Mind Frame.

It is of course in and of itself. We should call it Geriatric Medicine or something. The older ad, its more about in mind frame. It is getting a different view on things.

And this is not, this just not AI things, there's way more in this, it's not an answer question answer book. This is more of a mindframe, more understanding, changing your philosophy or your approach to some patients.

So books still have value. I totally agree with you. And actually just taking from this conversation, I think I'm going to change the framework of how I talk about my older patients and just take care of the older adult.

Because sometimes I had a guy that came in the other day, he was 76 years old. And he's just as healthy as can be. He just came in, he hadn't seen me for three years, but he just come in just because his wife told him to come.

And I'm like, you don't have high blood pressure. You don' have diabetes. you Don't really even have much arthritis. and he says, I got to get back out because I need to go hunting and hiking and fishing and climbing and all these things he was doing.

We had another guy that I live near the Tetons who took my son on this thing where we went. mountaineering and you take cables and it's called a via ferrata.

That's a, you know, that from your Italian background, but you've take this, the cable and go all over the mountains and clip in and this guy that led us around was almost 70 years old.

We could hardly keep up with him. So I do think that's actually a good framework to say if we, if somebody ages differently than somebody else, we shouldn't just say you're old, it a lot better to.

Let's take, let's match your physiology and your capability with what tools we have available. And I like what you said that the book can provide a framework for how to think about people in that chapter of life, rather than just making previously thought out assignments based just on their chronologic age.

As we kind of get to the end of the time here, I wanted to give people, we'll put in the show notes, an opportunity to see the website where people can purchase that book and check it out.

But folks who may want to follow your work, Tony, where would people be able to, if they say, Hey, guys, want learn more about him or connect with him?

Is there some social media handle or someplace where the people could connect you a little bit? I am on LinkedIn. I'm under my name, Antonio DiCarlo, D-I-S-P-C-A-R, LinkedIn slash Di Carlo MD or something like that.

But I, I typed it when we were getting ready. And you're the only one who came up with that name with an MD. So I was like, that's easy enough on linkedin.

If a fellow professional or somebody wants to follow along or connect, That's a good opportunity.

Closing Thoughts and Podcast Outro

Do you have any other thoughts as we wrap up here and give you the last word on anything else you want to say to our audience? I'd like to thank you for the invitation.

Thank you. For doing this. It is. I've listened to some of your stuff and it is interesting. So thank for doing. And again, I really want to express my gratitude to Dr.

Kaplan for this labor of love that he's tearing on. If I'm not mistaken, he may be working on an entirely different book soon as well. Kudos to dr. Caplan.

thank. You for what you do. Thank you to everyone for those of us that still have the privilege of being in healthcare trying to impact human lives. On the rough days, just remember, we are all collectively making a difference.

Even if we forget it. Yeah. Let's keep going. Man, you're like the tagline for the podcast. Doctors making a difference. Thank you so much. It's true.

And if you are out there working anywhere, just like all of us, if somebody hasn't told you, thank you for what you doing and realizing what a big impact you have, take it from us.

thank You. it really makes a Big difference and I just can't say it better than the way you said it. So thank Thanks for tuning in to the Doctors Making a Difference podcast.

And thank you for what you do to help your patients and your community. Your work truly helps so many people. We produce this content to have the tools you need to stay in medicine and to highlight the amazing work being done by physicians around the world.

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It really helps to spread the message. Finally, if you'd like to be a guest on the podcast, Or if would like nominate someone else to a be guest, Please visit the website or email admin at Doctors Making A Difference dot com.

See you next time.