



Season 7, Episode 10

The End of One-Size-Fits-All Medicine

[Teaser Clip]

Dr. Dina Ben Yehuda:

Let's say I have two patients with lymphoma. They're the same age. They have the same disease. If somebody would have exchanged the slides in pathology, I wouldn't have known who is whose. They have the same stage. We give them both the same treatment. One of them is cured, and the other, after four years, we're still fighting for her life.

[Intro Music]

Maayan Hoffman:

Hello, and welcome to Hadassah on Call: New Frontiers in Medicine. I'm your host, Maayan Hoffman. Every once in a while, I have a conversation that makes me stop and think, "This is the future of medicine?" This episode is gonna be one of those. We're diving into the world of precision medicine, a field that's completely transforming how doctors diagnose and treat patients.

It's the idea that instead of giving everyone the same pill or treatment, medicine can now be tailored precisely to each person's genetic makeup, lifestyle, and even environment. It sounds futuristic, but it's happening right now. And at the forefront of this revolution is Professor Dina Ben Yehuda, the first woman to head the Hebrew University Faculty of Medicine, and one of Israel's leading experts in hematology and molecular diagnostics.

In this episode of Hadassah on Call: New Frontiers in Medicine, Professor Ben Yehuda walks through what precision medicine really means, how genetics and AI are reshaping treatment, and why the next decade could change everything we know about patient care. We'll talk about cancer therapies that didn't exist 10 years ago, nanoparticles that can target tumors, and how Israel, and Hadassah in particular, are leading global innovation in this space to help us tackle what the future of healing looks like.

Maayan Hoffman:

Welcome, Professor Ben-Yehuda. So I wanna get started by, you know, noting that you have been really at the forefront of so many medical revolutions. Can you start by explaining today what precision medicine really means, and how that definition has evolved over the years?

Dr. Dina Ben Yehuda:

I'm happy for the way that you are asking it, because, whenever people are talking about precision medicine, I say that, we are doing personalized medicine for many years.

When I'm, as a hematologist, see in my clinic, another patient with lymphoma or myeloma or leukemia, the most important thing for me to do as a physician is to understand what the uniqueness or what the difference between this patient and thousands of other patients with lymphoma, for example.

Knowing this, difference or uniqueness, is, the most important thing as for giving him treatment, him and not the disease, because, every patient is unique. So personalized medicine is something that we are doing all the years. We are now aiming for precision medicine. When we're talking about precision medicine, this is a new era where it's not just understanding the person, how he fits to a group of other patients.

Now we are going deeper. So what do we need for precision medicine? First of all, we need translational research, because if I wanna know how to, aim treatment for a given patient, I need to understand what went wrong in his disease, right? Where translational medicine is something that, we are aiming many physicians to be a research physician, and the reason for it is because, as a research physician, I know that I always bring to the lab, two things that the basic researchers, do not have.

First of all, I bring the understanding of the disease because I touched it, because I looked at the X-rays, because I saw the pathology, because I saw what it does in the body of my patients. This is one thing, and the second thing is the compassion. Each research that I brought into the lab, I can tell you who was the patient or group of patients with unmet need that I wanted to investigate.

So this is the translational research. And then if I want to understand what the difference or the uniqueness of my patient with lymphoma among thousands of patients, other patients with lymphoma, I need first of all big data, right? I need a lot of information about a lot of patients with lymphoma. I'm using lymphoma, but you understand that it's, the same for every disease.

Now, this big data, if I want to evaluate it, the b- the human brain can't do it, so we need the machine learning and the AI, the artificial intelligence. And then we can't forget,

Dr. Dina Ben Yehuda:

when we're talking about precision medicine, environment. We know that exposures, we are talking a lot about, the global warming and so forth, but also the microbiome, the bacteria that are in our body dictates protein expression.

So this is another thing that we have to understand in a given patient, because each and every patient has a different microbiome. And then in the end of the day, I need somebody that, will have, the wisdom to do some, new... to develop new technology and new therapeutic agents, because if not, I'll know everything, but I d- won't have w- what to give my patients, right? So innovation and entrepreneur- trepre- treurship, I can't say this word,

Maayan Hoffman:

Entrepreneurship.

Dr. Dina Ben Yehuda:

Okay. It's also a very important thing.-Now, for me, I understand today that, When I finished medical school and, I knew the basic of medicine, I was a very good physician. I spoke the medical, language, but, I know that, it's not enough today.

Physicians will have to talk more than one language. So I was very fortunate to do my fellowship as a young, physician in Memorial Sloan Kettering in New York, where I studied molecular biology of, malignant malignancies. So I'm going on doing my own, translational research.-But, as a dean of the faculty of medicine here, I understood that, if we won't have, students that will learn computational, science, then we'll have the technology, we'll have the AI, and we have the, big data, but, physicians will be confused, and they won't understand this language.

So we started with, the smartest students, that studied together medicine and computational science. The first course, just completed, and they are now in the departments as residents. Amazing thing.

[Commercial Break – Hadassah's Impact Report]

(Hadassah Announcer):

The most powerful stories are stories of transformation. Lifechanging stories.

A devastating diagnosis becomes a doorway to innovation.

A crisis is met with courage.

And a young life is given purpose.

(Hadassah Announcer):

In 2025, Hadassah hospitals treated more than one million patients, performed nearly 52,000 surgeries, and was named Israel's number one hospital for scientific output by *Nature*, a leading journal.

Our medical teams achieved groundbreaking Israeli firsts—turning what once seemed impossible into reality and changing people's stories in profound ways. Behind every one of these stories is you: our listeners, viewers, and donors, who help us make a difference.

Your support makes breakthroughs possible, transforms lives, and carries Hadassah's mission forward—from Israel to communities across the United States and around the world.

Now, you can download **Hadassah's 2025 Impact Report** and see what life-changing looks like in action. Visit go.hadassah.org/impactreport25 to discover the stories and see the impact.

Now back to our program, The **The End of One-Size-Fits-All Medicine** featuring **Dr. Dina Ben Yehuda**.

[Commercial Break Ends]

Maayan Hoffman:

Wow, that is- Yeah ... absolutely fascinating. Yes. And, you know, you mentioned these buzzwords, machine learning, AI or artificial intelligence.

Are those the core technologies that we're talking about, or are there other technologies as well that we need to be looking at?

Dr. Dina Ben Yehuda:

Excellent question. You see, the thing is that, we gave a lot of hope to the, the genetic code, and it was, justified because, understanding the DNA and the genes, had a very important role in the progression of medicine. But we know today that it's not enough, and I'll try to explain by giving you an example. Let's say I have two patients with lymphoma. They're the same age. They have the same disease. If somebody would have, exchanged the slides in pathology, I wouldn't have known who is whose. They have the same stage. We give them both the same treatment.

One of them is cured, and the other, after four years, we're still fighting for her life with the most advanced treatment. So when we're talking about precision medicine, the main role is to understand what's the difference between these two patients, not only because if I would have known, I would have given the patient that did n- ne- didn't respond better treatment. But think about how much suffering I would have saved from her. Bone marrow transplantation, heavy chemotherapy, all the immune, therapies and so forth. So-- And for example, in these two patients, when we looked at genetics, it wasn't enough. They looked the same. So the new thing is what's called omics.

Maayan Hoffman:

Okay.

Dr. Dina Ben Yehuda:

Now, can I tell you a joke in the middle.

Maayan Hoffman:

Yeah, sure.

Dr. Dina Ben Yehuda:

Okay. When I was a medical student, we had a patient in the department. Nobody knew why he has fever. Nobody. The students, of course, but not, the residents, and not the senior residents, and not the seniors. Nobody knew.—And then the head of the department, the big professor, came in to the ground-- to the grand round, and he says, "This is a simple case of PUO."

Now, we-- In those days, I didn't have my cell phone to look at the-- Google what it is. I had to wait late at night when I came home to look what's a PUO, and I was so amazed that only the professor knew what it is. When I came home, I was surprised to find that PUO is fever of unknown origin. So I'm, why I'm telling you?

Because the first time I sat in a big lecture, and the lecturer talked about omics, I was I looked, around, and I said, "Everybody knows but me." So I looked at the, at Google, and I remembered what happened with me with the PUO of the professor. Because omics, take everything you know in biology and end omics in the end.

So don't say genetic anymore, say genomics. Don't say epigenetic, say epigenomics, and the same for proteomics and transcriptomics and immunolomics, and so forth. The idea is that we understand that it's not enough to look only in the genetic, because you have to look at the whole picture, not only of the cell, but of the environment.

Because we know, for example, that immunology has a lot to do with diseases, with all the diseases, by the way. And then it's not just the omics itself. We have all the, electronic files with a lot of information. Think about the, our cellular phone. You know that by the cellular phone, we can now diagnose dementia, and even we can diagnose which is, which type of dementia. And then we have half the world is walking with wearable monitors, right? On the watch, in the...

Every night I have a call on my cell phone that I didn't do enough, physically, that I didn't reach what I had to reach. And we have the, the, all the imaging today is AI. And, you know, we talked about the, the microbiomics and the whenever I finish my clinic and I think to myself, "Which were the two subjects that I heard the most from my patients?" So there are two subjects that I, I can mention. One is, bowel movement. "I have constipation, I have diarrhea, I don't have the..." And the second is sleeping. "I sleep too

Dr. Dina Ben Yehuda:

much. I sleep... I don't sleep. I wake at night." Think how many sleeping laboratories are in Israel. They are all computerized. How much information we have there-

About sleeping problem. How many, data can be extracted f- from there? But this will not be enough. The next technology would be what's called inter-omics. We have now to understand the interaction between all these omics, and the electronic files, and all the clinical data that we can collect from patients, and to put it together in order to understand exactly, not just about the disease, but also about the patient hi- himself, and this will be the way to give precision medicine.

And the next step would be what c- what's called hyper-precision medicine. The hyper-precision medicine, it's not just looking at the point, but also using it as patient care monitor. You give a drug, now you have to do all these studies while he's on the drug, and how to, let's say, dose the drug and so forth.

Maayan Hoffman:

How are we gonna get to that stage? What will it look like? And are we talking about something that's gonna be relevant in the next year or in the next 10 years?

Dr. Dina Ben Yehuda:

It's, it's a, it's a very good question. I don't think that I know. I can tell you that it's a, it's very rap- rapid process. And, with your permission, I want to use now my head- hat as a, the chairman of the national, uh, drug, uh, uh, basket- health basket. I want to take you to this time when we'll have all the information about each and every patient. Imagine what will happen there. Even the most common diseases will become many rare diseases.

Maayan Hoffman:

Because you understand the personalization of each disease per, for the person.

Dr. Dina Ben Yehuda:

Yeah. Now, for each such a rare disease, you need a drug. Who will pay for it? Who will pay for the evaluation, and who will pay for the drug? When we're dealing about which drug to reimburse and which not in this committee, the... I think that if I have to summarize, the most important ethical question is whether to give a lot to little, or little to many patients.

Maayan Hoffman:

Will there not be buckets, though? For example, if you're talking about lymphoma, that we know a certain number of treatments will work, and it's more about selecting the right one, or it'll be so different per patient ... that you won't recognize them?

Dr. Dina Ben Yehuda:

I can give you examples from the last ...

Maayan Hoffman:

Give me one example.

Dr. Dina Ben Yehuda:

let's talk about pan- pancreatic,

Maayan Hoffman:

cancer.

Dr. Dina Ben Yehuda:

Pancreatic cancer, we have, each year, around 560 patients in Israel. Okay. Three of them will have a change in a gene which is called RET3.

Maayan Hoffman:

Okay.

Dr. Dina Ben Yehuda:

Okay? Have you ever heard about a treatment in pancreatic cancer that we are talking about overall survival, that patients are being cured from the disease?

Maayan Hoffman:

Yeah.

Dr. Dina Ben Yehuda:

No.

Maayan Hoffman:

A cure from the disease, no?

Dr. Dina Ben Yehuda:

From pancreatic cancer, no.

Maayan Hoffman:

No. Okay.

Dr. Dina Ben Yehuda:

But patients with this RET3 mutation has good chances. But now you have to check 557 patients for RET3, and each patient that will get this drug, it will be hundred of thousands of shekels to each one of them, for three patients. Wow. And the basket is limited right now. So we are running forward with the technology, but I think that we are very much behind in two things. First, budget, and the second is ethics.

Dr. Dina Ben Yehuda:

We need new kind of ethics for this, era. And if you want me to, elaborate on it I'll do it happily, because we just started now. I got a, a very generous, donation from, Karin Azrieli, and we established a second degree in ethics in the era of, AI and CRISPR, where you can, edit DNA. And, I think that, we are behind.

Maayan Hoffman:

The world's behind, not just Israel, correct?

Dr. Dina Ben Yehuda:

No, I'm not... of course.

[Commercial Break – Previous Episode]

(Hadassah Announcer):

If you're enjoying this episode, you'll love our previous episode: What We Carry: Guidance for Small Voices, Big Feelings.

Drawing on two new guidebooks created by Hadassah International's Young Hadassah Without Borders Program, our host joins guests Karen Azoulay and Dr. Shiri Ben-David to share strategies for meaningful conversations, resilience, and empowering the next generation.

(Audio Clip from What We Carry: Guidance for Small Voices, Big Feelings.)

Karen Azoulay (Guest):

And one day I receive a text message. She was 13 and, uh, she just sent me a text message, "Please, mom, can I change school?" Without any excuses, without any explanation and I trust her because we have a good relationship and the day after ...

Visit our podcast page at hadassah.org/hadassahoncall to check out this episode or wherever you listen to your favorite podcast.

Now back to The End of One-Size-Fits-All Medicine featuring Dr. Dina Ben Yehuda.

[Commercial Break Ends]

Maayan Hoffman:

Yeah, 100%. Now, I mean, it's interesting because, we are in this age, as you said, where we're moving so fast with technology, the algorithms, AI, and all of this, but you've also talked a lot about, as we need to embrace the new technology, that the doctor can't be replaced, that there's still gonna be a need for the human touch. So how are we gonna be able to balance also that, the high tech and the human touch, in this new era?

Dr. Dina Ben Yehuda:

So this is also not a, not a simple question. First of all, I'm sure that in the d- digital era, patients will need a smile. A patient will need the compassion. Patient will need the touch. During the corona, I couldn't see my patients in the clinic because we didn't want them to come to the hospital, and I used to do my clinic at Z- in Zoom or telephone. And I was afraid because I felt that it's not a good medicine, and I was afraid that they won't come back. The-- Because I said that it's very easy. They're coming from all over the country. It's very easy to sit at home, uh, and to talk with me on the phone or, uh, with Zoom They all came back.

And I think that there will not be a replacement for a physician that, check, uh, the patient's abdomen, and while pressing, looks at his face to see when it hurts. And, when I'm putting the stethoscope on the heart of my patient, and I'm touching his hand to palpate his pulse, the student will tell me, "There is an application in the cellphone. You don't need to touch the patient anymore." And I'm telling them that when I'm putting the stethoscope and touching the heart, and I'm not just, uh, listening to murmurs and heartbeats, I'm listening to his heart.

And at this intimate, mo- moment, many patient tell me things that they haven't told me before. And I think that from this, I'm not afraid. I think that where compassion will be needed, where, uh, we need some, uh, new strategy, humanities will prevail.

But having said so- I'm very concerned about the ChatGPT, because, um, when patients used the internet, Google, Dr. Google, it was very easy for me, because I used to tell them, "Why do you use Google? You can't talk with the written word. Talk with me. You'll ask me a question, and I will answer. You ask me a question, I will answer." But the ChatGPT-

Maayan Hoffman:

Yeah ...

Dr. Dina Ben Yehuda:

is a computational program that is aimed to talk with humans.

Maayan Hoffman:

Yeah.

Dr. Dina Ben Yehuda:

And I had to prepare a lecture to patients where I asked him which are the five most common question that a patient with this disease ask you?" And he gave me the five questions, and I asked him the five questions, and I was amazed from the compassion The way that he answers. And I'll tell you a story.

Dr. Dina Ben Yehuda:

In September, 2023, a month before the war, I have to give a, a lecture to patients with chronic myeloid leukemia. I ask for the five, questions, and I ask, but when you start talking with somebody, you ask him, "How are you?" So I asked the ChatGPT, "How are you?" And he ans- he answered, "I am a computational program. I have no feelings. How can I assist you today?" And I was very happy. I said, "It's, just computational program."

A year later, I did it for other group of patients, and I asked him, "How are you?" And he said, "I'm here. I'm ready to help you. How can I help you today?" This is the way that I'm talking with my patients.

Maayan Hoffman:

So the computer's learning.

Dr. Dina Ben Yehuda:

Yes. And take a subject like, sexual, problems. Patients are not talking with their physicians about it. But when you sit at night, and you have there somebody talking to you in your language, nobody knows what you ask him. And one of the questions that patients are asking is about sexual intercourse, and I heard what the GPT said and it was amazing.

Maayan Hoffman:

Wow. So why does it worry you?

Dr. Dina Ben Yehuda:

What?

Maayan Hoffman:

So why does it worry you?

Dr. Dina Ben Yehuda:

Because I still think that, we have to keep humanity as for, compassion. And, I did, like, an adjustment of, Dr. Seuss?

Maayan Hoffman:

The book?

Dr. Dina Ben Yehuda:

Yes.

Maayan Hoffman:

Yeah, of course.

Dr. Dina Ben Yehuda:

The Author Who So I did, I did an adjustment of, uh, one of, uh... I will treat you, in your home. I will treat you in a Zoom. Green Eggs and Ham. I will treat you with a mouse. I will treat you here and there. I will treat you because I care. Ah. And I think that computers will know how ... better than us. Now, the AI is not wise yet.

Maayan Hoffman:

But it will be.

Dr. Dina Ben Yehuda:

It will be. But the why, this will be with the physicians. And I think that precision medicine is not written in the four letters of DNA It's written in the gaze of one person to another. I think that the computer will know how to treat very well, but they will not embrace the patient. And I think that, one of my patients told me once, after sitting in my room for a very long time, and he was treated with the most advanced treatment that exists. And he said, "From all the very sophisticated drugs that you gave me, I understand now that sometimes the physician is the drug." In Hebrew, It sounds (Harofa he Hatrofa)

Maayan Hoffman:

So Professor Ben Yehuda, what about lifestyle factors as well? We're talking about new medicines, new technologies, DNA, and how all of this fits together, and one of the things we didn't talk about is just the way that we live.

Do you eat right? Do you exercise? how do you spend your days? Do you walk enough steps? And could it be that as we talk about precision medicine, these things become medicines as well, and that we can precisely prescribe how many steps or what food to eat that will be not a drug or an application, but in fact, something old school, let's call it, that will actually impact your health?

Dr. Dina Ben Yehuda:

There is no one multi-variant analysis about any disease in the world that physical exercise and eating right is not a factor, a good factor. So no question-and for that, I also understand that, I also believe that precision medicine will be a better way for preventive medicine, and I'll explain.

Maayan Hoffman:

Okay.

Dr. Dina Ben Yehuda:

If I will tell a patient, "Now, you have to smoke s- stop smoking," he tell you, "You know, my father and my grandfather, they smoked until they were 89." But if I will come to him and I will said, "According to your omics and your precision lifestyle, you will develop, cancer, lung cancer.

Dr. Dina Ben Yehuda:

Not lung cancer, chronic obstructive lung disease. This, these are the percentage," he will be... He will understand that it's not a general advice that I'm giving him. It's his body that I'm talking about. And I think that this is something that, one of the thing that I'm always telling, myself and the students, that it's true that, a lot is wr- is written in our genes, but we still have the possibility to do it better. In Hebrew, it sounds better because we have this say, "Hakol Katov Bagenim-"

In the genes. "Aval Hareshot netuna." Okay?

Maayan Hoffman:

Yeah.

Dr. Dina Ben Yehuda:

You still have the possibility to change it.

Maayan Hoffman:

In Judaism, we have that also, right? That's- It's the idea of hishtadlot,

Dr. Dina Ben Yehuda:

Right ...

Maayan Hoffman:

that we can- affect change.

Dr. Dina Ben Yehuda:

Right.

Maayan Hoffman:

100%.

Dr. Dina Ben Yehuda:

Right.

Maayan Hoffman:

Interesting. You know, we're gonna run out of time, and I wanna look a little bit ahead into the next breakthroughs. What do you envision, if you and I were sitting here in 10 years, we would be talking about? You know, as you said, we've always had personalized medicine. Now we have precision. We're getting ready for hyper precision. In 10 years, what are we gonna be talking about then? What is precision medicine gonna look like then?

Dr. Dina Ben Yehuda:

I think that, people will... First of all, um, I'm not sure that, it will, be a generalized medicine in the world.

Maayan Hoffman:

Yeah.

Dr. Dina Ben Yehuda:

Because, uh, we didn't talk about ethics, but one of the big problem with precision medicine is that it's, not equal medicine anymore.

Maayan Hoffman:

Right.

Dr. Dina Ben Yehuda:

Not equal medicine. Take things like, an AI program that can, eh, diagnose the melanoma. But if all the data is from white people, then you won't be able to find melanoma in Black skin.

Maayan Hoffman:

Right.

Dr. Dina Ben Yehuda:

And I spoke about the money, which we have to take into account. And, I think that this will be something that, wouldn't give, the whole world to get a better, health.

Maayan Hoffman:

And there'll also be the question, I would think, when you talk about the money and the insurance, if we know too much about people's genetics, et cetera, maybe you can't be covered anymore because we know that you have a predisposition for. And won't that also cause an ability for people to get access to care in some ways?

Dr. Dina Ben Yehuda:

This, you're talking now about, the big data and how the big data is, available to anybody, everything. Everything that we are... You know, whenever somebody tell me that he's doing research and the, names of the patients are hidden and you can't, You always can go back to there.

Maayan Hoffman:

Wow.

Dr. Dina Ben Yehuda:

And you also have to think about, I just heard that in the Silicon Valley, millionaires now are, talking about, engineering babies.

Maayan Hoffman:

Right

Dr. Dina Ben Yehuda:

Because we can, because we have the CRISPR, where we can take out DNA and put new DNA. So I think that ethics will have a lot to do with how we will look at 10 years from now. But I believe that if we will do right, 10 years from now, the emphasis will be prevention, and you wisely touched it. Because I think that, and the next step is to avoid the disease before, using a lot of technologies. But to prevent the disease before, starting treatment before.

Maayan Hoffman:

Yeah.

Dr. Dina Ben Yehuda:

Engineering treatments that will prevent, not just treat when it's there. And I think that this how I foresee 10 years from now. But we have to be wise, and we have to be ethics. And I can't even start to explain how much it's important, because let me tell you something. Sitting with a patient and telling him, "I'm sorry, your disease is progressing, and I have no solution for you," it's one thing. But to tell him, today I had a patient, not mine, a wife of my patient with a metastatic, uh, gastric, uh, carcinoma, and she said, "And there is a drug," and she can't buy it, and it's not in the basket, and she doesn't have private insurance. And this, I can tell you, it's incompatible for me with being physician, and it will be more and more.

Maayan Hoffman:

Yeah.

Dr. Dina Ben Yehuda:

I think that we have to, not to stop research. We have to run forward with the research, but we have to run after it with our ethics and regulation so drugs will be available for patients. Yeah. Because if not, what we did, what did we do?

Maayan Hoffman:

What's the point of having the drug?

Dr. Dina Ben Yehuda:

Yes.

Maayan Hoffman:

100%. Well, Professor Ben-Hur, this has been absolutely fascinating. Thank you. Thank you so much.

Dr. Dina Ben Yehuda:

Thank you. I enjoyed it a lot.

Maayan Hoffman:

Thank you.

Maayan Hoffman:

Hadassah on call, New Frontiers in Medicine is a production of Hadassah, the Women's Zionist Organization of America. Hadassah enhances the health of people around the world through medical education, care, and research innovations at Hadassah Medical Organization.

For more information on the latest advances in medicine, please head on over to hadassah.org/news. Extra notes and a transcript of today's episode can be found at hadassah.org/hadassahoncall. When you're there, you can also sign up to receive an email and be the first to know when new episodes of the show are released, subscribe to our show on Apple Podcast, Google Play, or your favorite podcast app.

If you haven't already, please leave us a review on the Apple Podcast store. It only takes a minute, and when you do, it helps others discover Hadassah On Call. This show is produced by the team at the Hadassah offices in both New York and Israel. I'm your host, Maayan Hoffman, and thanks again for joining us today. We'll see you next month.