



Transcript:
Season 4, Episode 2: Kids, Cancer & Genes

Maayan Hoffman:

Hello and welcome to another edition of Hadassah on call podcast. Today, we're talking with Dr. Gal Goldstein, director of the department of pediatric hemato-oncology at Hadassah Medical Center. Dr. Gal Goldstein is an expert in blood diseases and cancer and his department works with patients suffering from both diseases. He says blood cancer is the most common pediatric cancer. Many parents fear that their children could develop cancer and maybe they wouldn't know it. Dr. Gal Goldstein will tell us when to get worried, he'll also answer questions like whether cancer is genetic, what the long-term impact of cancer is on children and how cancer doctors make it through the day, welcome Dr. Goldstein.

Maayan Hoffman:

So, we're very fortunate to have with us today, Dr. Gal Goldstein, head of the Dyna & Fala Weinstock pediatric hemato-oncology department at Hadassah Hospital Ein Kerem. Now hemato-oncology. That's a unwieldy name for a department. What does that mean? And how did you end up in charge of it?

Dr. Gal Goldstein:

It's a company It's a combination of two fields hematology, which is the field of blood diseases, not benign diseases like anemia, thrombocytopenia and other problem in the blood and oncology. Since the most prevalent cancer in children is a blood cancer; leukemia, it was merged as to some as two fields throughout the world and also in Israel. So, we're experts also in blood diseases and benign diseases without any relation to cancer and oncology. We treat all types of cancer and children.

It's a little bit a bit different than in adult in adults. They have their oncology department and the hematology department when they treat the blood cancer over there so we're a combination and it's a very, very diverse and heterogenic field, I think.

Maayan Hoffman:

So, give me a little background on yourself. You know, how did you end up at Hadassah?

Dr. Gal Goldstein:

Well, I go. I went to the medical school at Tel Aviv. I live in the Tel Aviv area. And then I had my residency in pediatric in Assaf Harofeh, which is also in the Tel Aviv vicinity and then I went to Tel HaShomer to practice and to do my fellowship in a matter oncology pediatric oncology. And for 15 years, I was in Tel HaShomer and then in 2017. I came to Hadassah to direct the Pediatric Oncology Department.

Maayan Hoffman:

Are you enjoying being in Jerusalem?

Dr. Gal Goldstein:

I like Jerusalem. It's a completely different atmosphere, completely different place from Tel Aviv. Everyone said that Tel Aviv and Jerusalem are completely different states. I think it's amazing. It's a mixture of cultures that I you don't see in other places in Israel and it's different even, you know, even people told me that Arab from the north are very different from the Arab in Jerusalem and culturally people who are either secular or Jewish Orthodox are different in Jerusalem. And even in Jerusalem the vast heterogeneity of cultures is amazing, each time. I'm still learning. I'm still learning.

Maayan Hoffman:

So, you know, Dr. Goldstein I'm actually a mother of seven children a blended family of seven children and my children range from six all the way to 19. And one of the biggest fears that I have is that you know, one of my children could actually develop cancer themselves. So, your child, he says he has pains in his knees having stomach aches. Something's bothering him. Do you just assume it's average, you know childhood pain or when do you start to worry? What are the signs and symptoms that your child is suffering from cancer?

Dr. Gal Goldstein:

I've been asked this question may be hundreds of times and I don't have an answer. No one has an answer. You know they say a pediatrician that works in the community like in Kupat Holim in Israel, or I don't know in an office in the states. He would encounter, he would see only two patients with cancer throughout his professional life throughout his career. So, it gives you an essence of you know. It's so rare. I see a lot of them every day. I see many of them and people are so afraid of it. But it's very rare and it's very difficult for the family and for the pediatrician to pick the right moment to say this is, this might be cancer.

We have algorithm in medicine. You have red flags, for example, most of children have abdominal pain, knee pain. Sometimes they look pale. Sometimes they have fever for a week or so, all these signs could be signs of cancer. But usually, they are not. So, it's very, very delicate job. I will tell you from my perspective. Maybe this is a good example, when I was maybe four or five years of into my fellowship in Tel HaShomer. I was an experienced pediatrician in hemato-oncology. I knew it is rare, but still when my daughter she was I think eight years old when she came to me and say hey father. I have this blue and spot on my knee and every doctor know that blue spot underneath might be a problem with the with the platelet, with the coagulation system, which might be in very, very rare cases leukemia.

But most children and have blue spotted on the knee. Maybe they had a bump on and from the table or something and I remember me doing my jogging in the evening and thinking where should I treat her for leukemia? Because as parents we are completely illogical you cannot escape from the fear, but again if I'm trying to be rational. Getting out my role as a parent and being a professional oncologist. It's so rare. Only when signs I think are much not regular and taking too much time to go away and maybe when the pain is so severe then you have to worry, I think, but if you get a good pediatrician, usually he'll do the work he will do to find the red flags and not to worry about too much.

Maayan Hoffman:

Wow, did you take your daughter in to get her checked for leukemia?

Dr. Gal Goldstein:

Yeah, we did a blood test, and it was okay and I was thinking why did I jog and think about this leukemia because I'm a parent also and you can you cannot escape from it, I think.

Maayan Hoffman:

100%, you know, it's interesting because I would think also that as a parent and as an oncologist working with children that it must be extremely emotional to be in the department. One of the hardest places. I would think for a doctor to work. Can you talk a little bit about that and how you detach or attach to your patients and their families?

Dr. Gal Goldstein:

Yeah, I think about it all the time, maybe every day. I look at my team. I think the thing that are going through every day, whether they are nurses, doctors, physiotherapists, psychotherapist even the office crew. It's very difficult. We go to work as any other people who go to the factory or to the offices, but we deal with the tremendous, where people are undergoing huge turmoil, I think. It's very easy to be empathic I think and if people are not empathic and not have compassion for the children and their families, they will not be able to survive this very horrid place to work in.

And but on the other hand, you have to draw a line when and when the agony and the pain and the sorrow that if there, you cannot penetrate your personal life, we had people who could not

do it who left, very few of them, but some people finding it very hard to distinct between the private life and professional life, but I think if you don't have this I think everyone has it. Everyone has compassion for people, but because we're people but when you work in such a place and if you can't there, you'll see. I think it takes out of you from people the good thing, the good qualities, the need to be compassionate the need to.

For example, we have arabs and jews, and we have Ultra-Orthodox, and we have secular, and this is a bubble. The hospital is a bubble, pediatric department is a bubble, but they think this is a more extreme bubble the oncology.

We almost, almost don't have any conflicts not between nurses and doctors not between doctors and families. They all live in such a helmet because the amount of I think the word is amount the amount of compassionate the amount of humanity is amazing in that place. You need to work with it every day, you know, you don't just today, today it's gonna be a special day, every day they come there no matter what their role is, again could be the secretary and it's very easy to be human there.

Maayan Hoffman:

It's incredible. There must be a lot of differences between pediatric and adult oncology in that way. I mean maybe talk, you mentioned a little bit at the beginning, maybe talk a little bit about that from a practical perspective.

Dr. Gal Goldstein:

The first issue is the amount. There are 50 to 60 times more cancer in adults than in children. For example, in Israel we have 30,000 of new cases of cancer each year and in children only 500. So, as I said before it's not an easy task to pick the patients from the community to say hey, he may have cancer, he or she may have cancer. This is one point.

The other point that the cancers in children are very different from the ones in adults almost completely and that's almost no overlapping. Most of the cancer or many of the cancer in adults have some relation to environment, for example smoking and food, nutrition, sun. Some say the several forms but no one really sure. It's type of cancer or hormone even the internal environment. There is a relation for example between breast cancer and the amount of children that a woman had during her life, children it's not like that. We don't find almost any relation to environment.

Maayan Hoffman:

Do you mean that they just develop cancer, and we don't know why?

Dr. Gal Goldstein:

Exactly.

We still don't know why. Maybe if we did this podcast 20 years from now, we would have more information more because we think it's genetics. We think that some, at some point of

development the maybe a mutation that is being caused by them. We don't know why. Mutations are consistently happening in our body and for we don't know why but at some point, there's a mutation that is causing cancer, until now we can identify by 10% of the cases that we find mutations. Hey, this is the mutation that causes cancer 90% we don't find, I think but we in the middle of, during a revolution a genetic revolution and we're doing more and more genetic test for the children who have cancer, and we will find out I think more during the next few years.

When another point is, when I say when I'm saying genetic, it doesn't say that it was inherited usually the genes and got the mutation, or the mutation happened in the cells after the conception, after, after the it didn't get it from their parents, mostly.

Maayan Hoffman:

When we return Dr. Goldstein discusses other genetic factors related to cancer how the use of artificial intelligence can now be involved and much, much more.

If you are enjoying this episode, you'll want to check out our previous episode with Dr. Allon Moses, the immediate past head of Hadassah's department of clinical microbiology and infectious diseases. He puts the monkeypox virus into perspective.

Dr. Allon Moses:

It appears that with monkey pox, transmission is only in a patient who has symptoms so that you know the time of spread when someone doesn't have symptoms is not relevant to this disease.

Maayan Hoffman:

Dr. Allon Moses answering questions like; are pregnant women at risk for severe disease, is post exposure or vaccination effective and telling us what Hadassah is doing to help protect the population, specifically he talks about transmission of the virus. A virus that is spread differently than COVID-19 or even the flu.

Should we push the panic button over monkey pox?

If you want to know what Dr. Moses thinks you can find that episode of Hadassah on Call on apple podcast, Google Play or wherever you get your podcast, or on the web at hadassah.org/hadassahoncall that's hadassah.org/hadassahoncall

And now back to our conversation with childhood cancer expert Dr. Gal Goldstein.

Maayan Hoffman:

I was going to actually ask you about that with genetics. I mean, let's say God forbid a mother has breast cancer is that indicative that a child will have a cancer as well?

Dr. Gal Goldstein:

We have algorithm. We have certain tables that they're saying if we have decent, this is that amount of cancer in the family mainly cancer in young people meaning young people before the age of 40 45. This is cancer in young people.

Maayan Hoffman:

45 is no longer considered young when it comes to cancer?

Dr. Gal Goldstein:

Yeah, we don't, if the grandmother's or the grandfather had cancer, we usually don't take it as a responsible for the children to have what we call a cancer predisposition syndrome. But if they have a typical story, a familiar story that many people had cancer during the 40 until there were 40 or 45, usually we regard it as a suspected cancer predisposition and today the genetic technique are so developed, so we just send the genetic test and we find when we speaking about cancer predisposition, it's very interesting because we at Hadassah we had a research that was we started about a year ago that we're using artificial intelligence, A.I. computers to find we are collaborating with our adult oncologist colleagues Dr. Shai Rosenberg from the Hadassah oncology department and he and our doctor Dr. Hodaya Cohen and from our department. They're making doing Joint research they are taking blood from all the people all the all the children who has cancer who develop cancer and we're doing a genetic test and we're trying to use computers. They are the AI what we call it and to find him and the mutation that until now are not known to the science and hopefully when this research will be over we will have more we will have more information about this genetic cancer predisposition, which is I think well, it will grow or grow again in at Hadassah, we have a very, very good infrastructure for this scientific project.

Maayan Hoffman:

Incredible, I mean we're talking now about diagnosis, but what about treatments? There's many more treatments out there today. Can you talk a little bit about that? And how what Hadassah is doing to treat patients and also in general what some of the new treatments are looking like?

Dr. Gal Goldstein:

First of all, I think we should pay contribute to the history. To the to the people who were and pioneers in pediatric oncology that most people do not know. That in the 60s about 80% of the children died from cancer. I mean 1960.

Maayan Hoffman:

It's not so long ago.

Dr. Gal Goldstein:

Yeah not so long ago. It was it was only 20 to 30% of the children recovered from cancer. And then within 15 to 20 years, I mean not 2020, 1980. 1985 about 85% of the children recovered away around 80% in the 80s meaning they, they huge escalation to use the growth of in survival rate happened from the 60 to 80s.

Maayan Hoffman:

Is that from chemotherapy?

Dr. Gal Goldstein:

This is from chemotherapy. The first revolution, we are in the second or the third revolution now, but the first revolution was the chemotherapy, the invention of chemotherapy or the knowing how to use it in the correct way and another thing and to give them the correct supportive care because if you give care of therapy in persons, who are not capable of the treating infections, for example, or other thing that happened when you give chemotherapy to children and the level of the intensity of the protocols in pediatric oncology is much harder than in adults. One of the reasons we think we look at children as a little cute and delicate creatures, but they're stronger than us.

When I give chemotherapy to a girl at Hadassah for example, a girl with leukemia she's two years old and I give the same regiment to a 15-year-old guy who is very muscular and he's an adolescent, she's taking it better than him because our body is it's having his let's say he's getting old even during our childhood.

So, the children take the regiment, the intensive regiment quite well, and we keep them very hard the chemotherapy regiments because the odds of recovering are very high and because they can take it and its proved. This is what makes them for example, leukemia the most prevalent one all acute lymphoblastic leukemia (A.L.L.), this is the more prevalent cancer, in children in the 60's, no one recovered, in the 80s, 80% and growing from 80% to hopefully 100%. I don't know when, but today we're reaching 90% recovering rates in A.L.L., in leukemia. This is the second in the third revolutions I think, this is the molecular and the targeted molecular drugs that are getting into pediatric oncology these days.

Maayan Hoffman:

Is that like Precision medicine?

Dr. Gal Goldstein:

The Precision medicine. It is built on the pills of the genetic revolution, except doing the what we call germline, the genetic test in the blood, we do genetic test in the tumor itself the genes in the tumor are different from the genes and the whole, in the other parts of the body.

And we're doing at Hadassah, to all the children who has no matter what type of cancer they have. Sometimes we do few genetic tests. We're still not in a place that we use it as much as we would like. We still use a lot of chemotherapy because it's very hard these days but I think progress will come it's very hard these days to find what we call actionable mutations meaning hey, this is the medication you need for this cancer. Usually, we have stories that were very big success without giving chemotherapy to children most children still even in 2022 still get chemotherapy.

Maayan Hoffman:

What about about immunotherapy? Isn't that the newest phenomenon?

Dr. Gal Goldstein:

Another thing in immunotherapy in the last 10 to 15 years with it but very big revolution, even a Nobel prizes were given for people who developed these techniques using the immune system to fight the cancer in many ways.

We also use it in pediatric oncology. Maybe a little bit like Precision medicine. I think the adult oncology still have more cases that can they can use the immunotherapy. We are looking at the, at our adult colleagues, adult patient colleagues. We look at them maybe a little bit envy that they can give so much immunotherapy. We try to give immunotherapy to children in certain cases. We use it in leukemia, for example, or now tumors that we call neuroblastoma, which are mostly in the abdomen, and hopefully with research many of the researchers the studies are doing at Hadassah, and we will be able to use more immunotherapy in children. For example, bone marrow transplantation is a type of immunotherapy. It's also a type of immunotherapy some children do need bone marrow transplantation. Many leukemia patients and some patients who are not cancer patient, they have genetic diseases that we should replace the bone marrow with a healthy one from a donor.

Maayan Hoffman:

Hadassah was a pioneer in bone marrow transplantation?

Dr. Gal Goldstein:

Hadassah with a Pioneer in Israel. Also, when you look at it globally Professor Shimon Slavin established the first bone marrow transplantation department in Israel at Hadassah. And he was a pioneer. He was developing a novel techniques of bone marrow transportation and these days Professor Stepensky, Polina Stepensky is heading this bone marrow department and we're very proud of this department.

Maayan Hoffman:

When we return Dr. Goldstein discusses Hadassah's research that is seeking to ensure the compassionate care of children, the use of the liquid biopsy and much more.

These days we're all looking to practice gratitude and count the blessings in our lives. Good health is a blessing. So are the incredible medical advances that we cover on the Hadassah on call podcast. Then there are blessings like community, friendship, and the power to have an impact and make a difference about issues you care about. These are the many blessings of Hadassah. And being a member brings all of them into your life. I should know because I'm a third-generation member myself! Join me and our powerful community of women at [Hadassah.org/blessingsjoin](https://www.hadassah.org/blessingsjoin). That's [Hadassah.org/blessingsjoin](https://www.hadassah.org/blessingsjoin).

And now back to our conversation with childhood cancer expert, Dr. Gal Goldstein.

Maayan Hoffman:

You know and let me ask you this, you brought up before how there are Arabs and Jews and inside the ward, religious, non-religious, it's incredibly diverse ward. But there's also a lot of languages. You know when you come in the ward that you can hear people coming from abroad to get treated at Hadassah. Talk a little bit about that, why would someone come to Israel to get treated?

Dr. Gal Goldstein:

Resources, I think. They know that they get a very high standard cutting edge treatment at Hadassah. Not in all the countries throughout the world do they have the opportunity to have this type of treatment. I don't think there is a treatment that is giving today the pediatric oncology field that we don't give; we're connected to the best centers in the world. We are connected of course to the literature, and we know what's happening and we didn't ever have any problem in getting any medication and also, we're very experienced in the most prevalent cancer in children's oncology, but we also very capable in treating the most scarce that's of cancers.

For example, we're doing it Hadassah as a trial for treating neuroblastoma, which is one of the prevalent cancers in childhood. But when in very, very hard cases when the disease is metastatic and there's no way of treating children. We're doing a trial of giving radio isotope a nuclear substance throughout the veins, and its special molecular weight, it will traffic its way to the cancer cells and kill them and this is a clinical trial that we are doing at Hadassah.

And many other examples in the next few years, we will be able to do, not to need to do biopsies at all. If a person, if he or she's an adult or a child, would have God forbid a mass somewhere in the body today we have to puncture it, under anesthesia, maybe in the next few years we will be able to locate fragments of DNA that coming from the dead cells of the tumor and find it in the blood during a liquid biopsy.

Maayan Hoffman:

And you're thinking even in the next five years though we could see something?

Dr. Gal Goldstein:

I don't know five years, but I know, for example in some for in colon cancer and adults they already and following the people with the blood test to see if there are and metastasis if there are tiny and focuses of cancer that it's still there in children throughout the world at the very big research in that field we're also trying together with scientists in the in the Hebrew University, we're trying to find clues for this tumor cells in the blood and it's not easy. It's not that easy because the lot of what we call white noise in the blood many types of cells many types of DNA, but each time there's another step for doing liquid biopsies in cancer children.

Maayan Hoffman:

Amazing. We always used to talk about going into remission rather than a cure for cancer that you're not cured. Do you think today we're at the stage where we can actually be cured at least from some cancers specifically with children in any capacity or even in general.

Dr. Gal Goldstein:

Of course, when I when I'm speaking about survival of 80 to 85% in children, we're speaking about overall survival we're not speaking about the remission. Unfortunately, in some areas in pediatric oncology, we still, we're still experiencing relapses which means the cancer recurs after months or years usually after a few years, there's no risk of recurrence. Usually, they the line was set as five years, but some sometimes we have light relapses, but cancer is, the main point is that cancer is curable in children. It's curable. and when we're not speaking about remission when we're sitting with parents in the maybe the hardest day of the life, they're always asking about percentage about chances, and we always tell them your child is not a statistic you child, we're going to try to cure him or her. And we're not speaking about temporary cure we're speaking about him or her being an adult with normal life. And this is another issue, the late effect. The late effect issue of the chemotherapy and in previous years we used more radiotherapy. Today we use it less and less. The issue of late effect is getting more and more and happy to say it's getting more and more, and we emphasize more and more on that issue and we at Hadassah are establishing these days a survivorship clinic we're following all the cancer survivors in this department as what we call a One-Stop shop. They will have a nutritionist we have and of course a physician a social worker psychologist and physicist therapies and occupation therapies.

We will have we will have them all in one spot because we acknowledge these days that it's not enough to just cure the child, he needs to have normal life he needs to go to the Shiva or the university or a getting children getting married and children and doing all the physical tasks that an adult should be able to do. And this survivorship clinic will be hopefully tackling this this main issue that we're dealing with because it's not enough just to say hey, goodbye, you're cured. We need to take care of this children, adolescents, young adults in the years after they recovered.

Maayan Hoffman:

In general, you find that children who do have a feel recovery are able to have led normal lives and have their own children and carry on like they should be able to.

Dr. Gal Goldstein:

The answer is mostly yes, but we should emphasize the mostly because it's not always like that. When you give chemotherapy, when you're doing surgeries when doing radiotherapy, and even if you do the height of cutting edge in technology, like a Precision medicine and immunotherapy, they all have the potential risks. One of the main issues, especially in Israel, especially in Jerusalem area is the fertility issue. We take it very seriously. We have a very experienced staff at Hadassah from our gynecology department and also urology we're doing, let's separate it to girls and boys. If a girls come with cancer, we try to estimate the chances that the treatment that were we are planning for her will harm her a fertility ability in the

future. If we think the risk is high, we do, not we the gynecology surgeon they do what we call oophorectomy. They take out the ovary and they freeze it in slices in case they sometimes, she will not be able to have children and then they return it if she will not be able to have children when she's an adult woman and all already many cases of children who are born and in throughout the world or also at Hadassah that were born in that way.

Of course, it's invasive and we have to consider well yeah, it depends in many factors. How old is the child? How big is the risk for infertility and how fast should we should try oncology treatment? Sometimes we don't have enough time. But this is the treatment and we also do it for boys, of course boys who are over pubertal aged are able to freeze sperm but even prepubertal and little boys we can today we do it and our urologist team the very special operation that and resecting a very small part of the testicle and as they do in ovaries the freeze it and they try to get sperm from it if the boys is an adult will not be able to have children.

Maayan Hoffman:

Amazing.

So, um, you know, let's just conclude with an idea about what we see in the future. Five years, ten years from now, how will everything we're talking about today? How will it look different?

Dr. Gal Goldstein:

Well, hopefully when I'm on my maybe the people who come after me and hopefully to have higher rates of overall survival because we're around 90%. So, it's getting a near hundred. And we will use less chemotherapy and more Precision medicine medication more immunotherapy.

We will, we will do less anesthesia. We'll do more liquid biopsies; we will be able to find cancer when it recurs a faster and more accurate with special techniques in the blood with special samples that we take from the blood.

And we will have more emphasis of preventing up front preventing the late effects. The heart, the lungs, the ovaries, the testicles, we will be able to have less late effect than we see today. And we will be able also to locate more condition where we have cancer predisposition and to locate and to identify the cancer before it happens.

Maayan Hoffman:

To predict the cancer

Dr. Gal Goldstein:

Yes, to predict it exactly.

Maayan Hoffman:

Well, thank you so much Dr. Goldstein for being with us on the Hadassah podcast today. It has been such a pleasure to speak to you and I think that all of our listeners have learned a lot as well as I have to thank you very much.

Dr. Gal Goldstein:

My pleasure.

Maayan Hoffman:

Hadassah on Call, New Frontiers in Medicine is a production of Hadassah, the Women 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 e-mail and be the first to know when new episodes of this show are released. Subscribe to our show on apple podcast, Google Play or at your favorite podcast app. If you haven't already, please leave us 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, will see you next month!