WEBVTT

00:00:00.000 --> 00:00:03.240 Funding for Yale Cancer Answers is

00:00:03.240 --> 00:00:06.310 provided by Smilow Cancer Hospital.

00:00:06.310 --> 00:00:08.410 Welcome to Yale Cancer Answers

00:00:08.410 --> 00:00:10.090 with Doctor Anees Chagpar.

00:00:10.090 --> 00:00:11.850 Yale Cancer Answers features the

00:00:11.850 --> 00:00:13.550 latest information on cancer care

00:00:13.550 --> 00:00:14.981 by welcoming oncologists and

00:00:14.981 --> 00:00:17.051 specialists who are on the forefront

00:00:17.051 --> 00:00:18.890 of the battle to fight cancer.

00:00:18.890 --> 00:00:21.248 This week it's a conversation about

00:00:21.248 --> 00:00:23.665 theranostics and clinical trials for GI

00:00:23.665 --> 00:00:25.610 cancers with Doctor Gabriella Spilberg.

00:00:25.610 --> 00:00:27.824 Dr. Spilberg is an assistant professor

00:00:27.824 --> 00:00:29.667 of radiology and biomedical imaging

00:00:29.667 --> 00:00:31.509 at the Yale School of Medicine,

1

00:00:31.510 --> 00:00:33.592 where Doctor Chagpar is a professor

NOTE Confidence: 0.815745180909091

00:00:33.592 --> 00:00:34.633 of surgical oncology.

NOTE Confidence: 0.908552914347826

00:00:35.840 --> 00:00:38.072 Gabriella, maybe we can start off by

NOTE Confidence: 0.908552914347826

00:00:38.072 --> 00:00:40.203 you telling us a little bit more about

NOTE Confidence: 0.908552914347826

00:00:40.203 --> 00:00:44.480 yourself and what it is you do.

NOTE Confidence: 0.868197094285714

00:00:44.480 --> 00:00:47.505 I started nuclear medicine basically

NOTE Confidence: 0.868197094285714

00:00:47.505 --> 00:00:50.755 in about 2018 when I went to

NOTE Confidence: 0.868197094285714

00:00:50.755 --> 00:00:53.550 train at Dana Farber in Boston,

NOTE Confidence: 0.868197094285714

00:00:53.550 --> 00:00:57.740 and I didn't know much about it when I first

NOTE Confidence: 0.868197094285714

00:00:57.840 --> 00:01:01.935 got in contact with this interesting field.

NOTE Confidence: 0.868197094285714

00:01:01.940 --> 00:01:05.671 I'm originally from Brazil, and I trained

NOTE Confidence: 0.868197094285714

00:01:05.671 --> 00:01:08.568 previously in Brazil and in Brazil

NOTE Confidence: 0.868197094285714

00:01:08.570 --> 00:01:12.038 this was not something that was

NOTE Confidence: 0.868197094285714

00:01:12.038 --> 00:01:15.204 widely available or

NOTE Confidence: 0.868197094285714

00:01:15.204 --> 00:01:17.990 in practice back then,

NOTE Confidence: 0.868197094285714

00:01:17.990 --> 00:01:20.590 so when I came here and I first

NOTE Confidence: 0.868197094285714

00:01:20.675 --> 00:01:23.874 encountered this field where you were not

NOTE Confidence: 0.868197094285714

00:01:23.874 --> 00:01:26.879 really looking at anatomic structures,

NOTE Confidence: 0.868197094285714

00:01:26.880 --> 00:01:29.694 but you were looking at molecular processes

NOTE Confidence: 0.868197094285714

00:01:29.694 --> 00:01:33.279 and what was happening at the cellular level,

NOTE Confidence: 0.868197094285714

00:01:33.280 --> 00:01:34.944 that really intrigued me.

NOTE Confidence: 0.868197094285714

00:01:34.944 --> 00:01:38.487 And it really changed how you see

NOTE Confidence: 0.868197094285714

00:01:38.487 --> 00:01:41.379 imaging and everything around imaging.

NOTE Confidence: 0.868197094285714

00:01:41.380 --> 00:01:47.275 And then back in 2018 was about when

NOTE Confidence: 0.868197094285714

00:01:47.280 --> 00:01:49.836 one of the big drugs for a neuroendocrine

NOTE Confidence: 0.868197094285714

00:01:49.840 --> 00:01:51.103 cancer was approved.

NOTE Confidence: 0.868197094285714=

00:01:55.500 --> 00:01:58.895 When you see that things are

NOTE Confidence: 0.937813665263158

00:01:58.895 --> 00:02:02.210 not really just a visual structure

NOTE Confidence: 0.937813665263158

00:02:02.210 --> 00:02:05.714 but you can see what's happening,

NOTE Confidence: 0.937813665263158

00:02:05.720 --> 00:02:09.367 it just changed my whole conception about

NOTE Confidence: 0.937813665263158

00:02:09.367 --> 00:02:13.276 what imaging could be and what was happening.

NOTE Confidence: 0.937813665263158

00:02:13.280 --> 00:02:17.627 So that's what got me so interested.

00:02:17.630 --> 00:02:21.850 When I decided that there

00:02:21.850 --> 00:02:24.967 was not really a step back into this

00:02:24.967 --> 00:02:27.795 field because this was just the next

00:02:27.876 --> 00:02:30.564 level and what the future will be,

00:02:30.570 --> 00:02:32.586 it was very clear to me that

00:02:32.586 --> 00:02:33.890 this was my path.

00:02:33.890 --> 00:02:37.850 So I stayed at Dana Farber for about

00:02:37.850 --> 00:02:41.828 two years and that's when I really

00:02:41.828 --> 00:02:45.350 had a very extensive experience and

00:02:45.350 --> 00:02:48.518 deep dive into what was happening

00:02:48.518 --> 00:02:51.650 and how these things were done.

00:02:54.040 --> 00:02:59.180 Basically this is when I acquired

00:02:59.180 --> 00:03:02.990 my foundational knowledge.

00:03:03.750 --> 00:03:06.165 Maybe we can take a step back.

00:03:06.170 --> 00:03:08.900 I mean it sounds like this

00:03:08.900 --> 00:03:11.980 is very futuristic,

NOTE Confidence: 0.880043544444444

00:03:11.980 --> 00:03:13.891 forward-looking career path,

NOTE Confidence: 0.880043544444444

00:03:13.891 --> 00:03:16.439 but for our audience,

NOTE Confidence: 0.880043544444444

00:03:16.440 --> 00:03:18.336 maybe you can tell us a

NOTE Confidence: 0.880043544444444

00:03:18.336 --> 00:03:20.188 little bit more about what

NOTE Confidence: 0.880043544444444

00:03:20.188 --> 00:03:22.450 exactly is theranostics?

NOTE Confidence: 0.807725413636364

00:03:22.540 --> 00:03:25.890 Theranostics is when you take an

NOTE Confidence: 0.807725413636364

00:03:25.890 --> 00:03:30.190 agent which has a specific target.

NOTE Confidence: 0.807725413636364

00:03:30.190 --> 00:03:33.295 So let's say for neuroendocrine

NOTE Confidence: 0.807725413636364

00:03:33.295 --> 00:03:36.400 cancers you're looking to somatostatin

NOTE Confidence: 0.807725413636364

00:03:36.490 --> 00:03:39.948 receptors and when you see this target,

NOTE Confidence: 0.807725413636364

00:03:39.950 --> 00:03:42.884 this agent binds into it and

NOTE Confidence: 0.807725413636364

00:03:42.884 --> 00:03:46.089 sends a signal and the signal

NOTE Confidence: 0.807725413636364

00:03:46.090 --> 00:03:48.250 we were able to see where

NOTE Confidence: 0.807725413636364

00:03:48.250 --> 00:03:50.190 the signal is sent from.

NOTE Confidence: 0.807725413636364

00:03:50.190 --> 00:03:54.467 So when you use the same agent

00:03:54.470 --> 00:03:59.030 that you detect a specific cell

00:03:59.030 --> 00:04:01.809 and then you bind into another agent,

00:04:01.810 --> 00:04:06.186 which now has a different behavior and is

00:04:06.186 --> 00:04:09.654 basically a radiation therapy agent and

00:04:09.654 --> 00:04:14.200 we inject the same agent in your vein.

00:04:14.200 --> 00:04:16.642 It again binds into the tumor

00:04:16.642 --> 00:04:18.715 cell that you're targeting and

00:04:18.715 --> 00:04:20.899 now it destroys the tumor cell.

00:04:20.900 --> 00:04:25.436 So the concept of being able to use a

00:04:25.436 --> 00:04:29.099 diagnostic biomarker and translate that

00:04:29.100 --> 00:04:30.704 into a therapeutic agent,

00:04:30.704 --> 00:04:34.190 that's when you get to the theranostics.

00:04:40.090 --> 00:04:43.336 This theranostics concept when you use the

00:04:43.336 --> 00:04:47.064 exact same molecule to look and to

00:04:47.064 --> 00:04:50.010 treat a certain pathology or disease.

00:04:51.310 --> 00:04:53.758 And so that seems to play

NOTE Confidence: 0.900195413478261

00:04:53.758 --> 00:04:56.109 into this whole concept that we've

NOTE Confidence: 0.900195413478261

00:04:56.109 --> 00:04:58.611 talked about on the show previously

NOTE Confidence: 0.900195413478261

00:04:58.686 --> 00:05:00.902 about you know, targeted therapies.

NOTE Confidence: 0.900195413478261

00:05:00.902 --> 00:05:03.832 Usually we talk about targeted

NOTE Confidence: 0.900195413478261

00:05:03.832 --> 00:05:05.974 therapies for chemotherapy or

NOTE Confidence: 0.900195413478261

00:05:05.974 --> 00:05:07.902 immunotherapy where we're looking

NOTE Confidence: 0.900195413478261

00:05:07.902 --> 00:05:09.830 at a particular biomarker.

NOTE Confidence: 0.900195413478261

00:05:09.830 --> 00:05:12.644 But here it sounds like you're delivering

NOTE Confidence: 0.900195413478261

00:05:12.644 --> 00:05:15.329 radiation with the same kind of concept.

NOTE Confidence: 0.900195413478261

00:05:15.330 --> 00:05:16.068 Is that right?

NOTE Confidence: 0.906002434

00:05:16.510 --> 00:05:18.930 Yes, that is exactly right.

NOTE Confidence: 0.906002434

00:05:18.930 --> 00:05:21.908 So this is a targeted therapy, so you

NOTE Confidence: 0.906002434

00:05:21.908 --> 00:05:24.153 choose your target and there

NOTE Confidence: 0.906002434

00:05:24.153 --> 00:05:27.388 are a lot of these targets

NOTE Confidence: 0.906002434

00:05:27.388 --> 00:05:30.373 being developed in the pipeline,

NOTE Confidence: 0.906002434

00:05:30.380 --> 00:05:35.315 and each specific cancer usually will have

NOTE Confidence: 0.906002434

00:05:35.315 --> 00:05:40.260 a specific target that you want to reach,

NOTE Confidence: 0.906002434

00:05:40.260 --> 00:05:43.530 and the idea is to always

NOTE Confidence: 0.906002434

00:05:43.530 --> 00:05:45.710 hit targets which are

NOTE Confidence: 0.906002434

00:05:45.710 --> 00:05:47.714 present in cancer cells,

NOTE Confidence: 0.906002434

00:05:47.714 --> 00:05:50.720 but not in normal body cells.

NOTE Confidence: 0.906002434

00:05:50.720 --> 00:05:55.130 So as we move forward into more

NOTE Confidence: 0.906002434

00:05:55.130 --> 00:05:57.938 personalized and better precision therapies

NOTE Confidence: 0.906002434

00:05:57.938 --> 00:06:01.550 where when we talk about these words,

NOTE Confidence: 0.906002434

00:06:01.550 --> 00:06:04.125 we're talking about things that

NOTE Confidence: 0.906002434

00:06:04.125 --> 00:06:06.700 will target the diseased cells

NOTE Confidence: 0.906002434

00:06:06.790 --> 00:06:08.870 and not the normal cells.

NOTE Confidence: 0.906002434

00:06:08.870 --> 00:06:12.695 And again then you use this target and you

NOTE Confidence: 0.906002434

00:06:12.695 --> 00:06:16.209 bind into an agent that is capable of

NOTE Confidence: 0.906002434

00:06:16.210 --> 00:06:17.264 delivering radiation,

NOTE Confidence: 0.906002434

00:06:17.264 --> 00:06:20.953 and this radiation goes inside the vein.

NOTE Confidence: 0.906002434

00:06:20.960 --> 00:06:23.704 It doesn't come from outside of your body,

NOTE Confidence: 0.906002434

00:06:23.710 --> 00:06:26.895 as when patients go for radiation therapy.

NOTE Confidence: 0.906002434

00:06:26.900 --> 00:06:29.120 It's really injected into the blood,

NOTE Confidence: 0.906002434

00:06:29.120 --> 00:06:30.800 just like a blood draw.

NOTE Confidence: 0.906002434

00:06:30.800 --> 00:06:33.264 You inject into an IV or when you

NOTE Confidence: 0.906002434

00:06:33.264 --> 00:06:35.909 have an infusion and then this

NOTE Confidence: 0.906002434

00:06:35.909 --> 00:06:37.861 travels throughout your bloodstream

NOTE Confidence: 0.906002434

00:06:37.861 --> 00:06:41.305 and it reaches a target to bind and

NOTE Confidence: 0.906002434

00:06:41.305 --> 00:06:43.826 deliver the radiation in a very

NOTE Confidence: 0.906002434

00:06:43.826 --> 00:06:46.604 precise way and very controlled way.

NOTE Confidence: 0.906002434

00:06:46.610 --> 00:06:49.832 In the exact location that you're

NOTE Confidence: 0.906002434

00:06:49.832 --> 00:06:53.156 targeting and this is really where

NOTE Confidence: 0.906002434

00:06:53.156 --> 00:06:56.378 a lot of things are trending

NOTE Confidence: 0.906002434

00:06:56.378 --> 00:06:59.408 because we're we're looking into

NOTE Confidence: 0.906002434

00:06:59.410 --> 00:07:03.445 disrupting the cancer processes without

NOTE Confidence: 0.906002434

00:07:03.445 --> 00:07:07.480 influencing the normal cellular process.

NOTE Confidence: 0.875798011428571

00:07:08.130 --> 00:07:09.887 And so when we think about that,

NOTE Confidence: 0.875798011428571

00:07:09.890 --> 00:07:12.555 I mean on the one hand you think, gosh,

NOTE Confidence: 0.875798011428571

00:07:12.555 --> 00:07:14.865 this may really reduce side effects

NOTE Confidence: 0.875798011428571

00:07:14.865 --> 00:07:17.378 because you are minimizing the dose

NOTE Confidence: 0.875798011428571

00:07:17.378 --> 00:07:19.946 that you're giving to normal tissues.

NOTE Confidence: 0.875798011428571

00:07:19.950 --> 00:07:23.683 So presumably you will have less of

NOTE Confidence: 0.875798011428571

00:07:23.683 --> 00:07:26.041 the side effects that are associated

NOTE Confidence: 0.875798011428571

00:07:26.041 --> 00:07:27.810 with treating normal tissues.

NOTE Confidence: 0.875798011428571

00:07:27.810 --> 00:07:29.338 On the other hand,

NOTE Confidence: 0.875798011428571

00:07:29.338 --> 00:07:31.628 the concept of delivering

NOTE Confidence: 0.875798011428571

00:07:31.628 --> 00:07:33.536 radiation through a vein,

NOTE Confidence: 0.875798011428571

00:07:33.540 --> 00:07:35.620 albeit in a targeted way,

NOTE Confidence: 0.875798011428571

00:07:35.620 --> 00:07:38.506 may induce some other side effects.

NOTE Confidence: 0.875798011428571

00:07:38.510 --> 00:07:39.191 So can you

NOTE Confidence: 0.875798011428571

00:07:39.191 --> 00:07:41.166 tell us a little bit more

NOTE Confidence: 0.875798011428571

00:07:41.166 --> 00:07:42.776 about the side effect profile

NOTE Confidence: 0.875798011428571

00:07:42.780 --> 00:07:45.210 of this kind of modality?

NOTE Confidence: 0.861270477142857

00:07:45.740 --> 00:07:49.499 Sure, yes, that is exactly the point.

NOTE Confidence: 0.861270477142857

00:07:49.500 --> 00:07:52.279 When you deliver something in the blood,

NOTE Confidence: 0.861270477142857

00:07:52.280 --> 00:07:54.534 you have a target, but not always.

NOTE Confidence: 0.861270477142857

00:07:54.540 --> 00:07:57.055 The target is only expressed

NOTE Confidence: 0.861270477142857

00:07:57.055 --> 00:07:59.570 in tumoral cells

NOTE Confidence: 0.861270477142857

00:07:59.570 --> 00:08:01.795 or only the target ends up

NOTE Confidence: 0.861270477142857

00:08:01.795 --> 00:08:03.575 in only tumorous cells.

NOTE Confidence: 0.861270477142857

00:08:03.580 --> 00:08:07.234 For example, the kidney filtrates the blood.

NOTE Confidence: 0.861270477142857

00:08:07.240 --> 00:08:09.460 So when you deliver these

NOTE Confidence: 0.861270477142857

00:08:09.460 --> 00:08:11.680 radiation therapies in the vein,

NOTE Confidence: 0.861270477142857

00:08:11.680 --> 00:08:14.710 eventually you will have radiation

NOTE Confidence: 0.861270477142857

00:08:14.710 --> 00:08:17.740 agents crossing through your kidneys.

NOTE Confidence: 0.861270477142857

00:08:17.740 --> 00:08:20.710 So there are side effects related

NOTE Confidence: 0.861270477142857

00:08:20.710 --> 00:08:23.937 to where the cells circulate and

NOTE Confidence: 0.861270477142857

00:08:23.937 --> 00:08:26.797 to other locations that also

NOTE Confidence: 0.861270477142857

00:08:26.797 --> 00:08:29.350 express this type of target.

NOTE Confidence: 0.861270477142857

00:08:29.350 --> 00:08:32.100 That is present in whatever

NOTE Confidence: 0.861270477142857

00:08:32.100 --> 00:08:33.750 therapy you're using.

NOTE Confidence: 0.861270477142857

00:08:33.750 --> 00:08:35.217 So for example,

NOTE Confidence: 0.861270477142857

00:08:35.217 --> 00:08:38.151 the bone marrow receives a certain

NOTE Confidence: 0.861270477142857

00:08:38.151 --> 00:08:41.667 dose of radiation and we control that.

NOTE Confidence: 0.861270477142857

00:08:41.670 --> 00:08:44.400 We know the exact dosage which

NOTE Confidence: 0.861270477142857

00:08:44.400 --> 00:08:47.490 is toxic for the bone marrow.

NOTE Confidence: 0.861270477142857

00:08:47.490 --> 00:08:48.744 And we always,

NOTE Confidence: 0.861270477142857

00:08:48.744 --> 00:08:51.252 when we're looking into our patient

NOTE Confidence: 0.861270477142857

00:08:51.252 --> 00:08:54.468 who is a candidate for these therapies,

NOTE Confidence: 0.861270477142857

00:08:54.470 --> 00:08:57.760 we have to make sure that the

NOTE Confidence: 0.861270477142857

00:08:57.760 --> 00:08:59.640 bone marrow is functional

NOTE Confidence: 0.861270477142857

00:08:59.640 --> 00:09:01.520 enough to receive that.

NOTE Confidence: 0.861270477142857

00:09:01.520 --> 00:09:03.845 And the other issue usually

NOTE Confidence: 0.861270477142857

00:09:03.845 --> 00:09:06.472 is kidney function, which

NOTE Confidence: 0.861270477142857

00:09:06.472 --> 00:09:10.200 we know that as the radiation

NOTE Confidence: 0.861270477142857

00:09:10.200 --> 00:09:12.080 circulates into the blood,

NOTE Confidence: 0.861270477142857

00:09:12.080 --> 00:09:16.013 there is a part of it that will

NOTE Confidence: 0.861270477142857

00:09:16.013 --> 00:09:17.178 end up in the kidneys.

NOTE Confidence: 0.861270477142857

00:09:17.180 --> 00:09:18.780 So we control for that.

NOTE Confidence: 0.861270477142857

00:09:18.780 --> 00:09:21.363 We make sure that the function of

NOTE Confidence: 0.861270477142857

00:09:21.363 --> 00:09:24.175 the kidney and the marrow are within

NOTE Confidence: 0.861270477142857

00:09:24.175 --> 00:09:26.617 as normal as possible or within

NOTE Confidence: 0.861270477142857

00:09:26.698 --> 00:09:29.848 acceptable range to have these therapies.

00:09:30.532 --> 00:09:34.624 Usually the side effects are

NOTE Confidence: 0.861270477142857

00:09:34.624 --> 00:09:37.866 really different from traditional

NOTE Confidence: 0.861270477142857

00:09:37.866 --> 00:09:41.439 chemotherapy as I just mentioned.

NOTE Confidence: 0.873045155

00:09:41.800 --> 00:09:43.632 Yeah, and different from

NOTE Confidence: 0.873045155

00:09:43.632 --> 00:09:45.464 traditional radiation therapy as

13

NOTE Confidence: 0.873045155

00:09:45.464 --> 00:09:47.726 well because radiation therapy as

NOTE Confidence: 0.873045155

00:09:47.726 --> 00:09:50.276 you had mentioned previously is

NOTE Confidence: 0.873045155

00:09:50.276 --> 00:09:52.278 generally given from the outside.

NOTE Confidence: 0.873045155

00:09:52.280 --> 00:09:55.923 So oftentimes when we give radiation there

NOTE Confidence: 0.873045155

00:09:55.923 --> 00:09:58.380 are skin changes and so on and so forth.

NOTE Confidence: 0.873045155

00:09:58.380 --> 00:10:00.242 You would think that a lot of

NOTE Confidence: 0.873045155

00:10:00.242 --> 00:10:01.770 that would not be present

NOTE Confidence: 0.873045155

00:10:01.770 --> 00:10:02.934 when delivering radiation

NOTE Confidence: 0.873045155

00:10:02.934 --> 00:10:04.550 from the inside.

NOTE Confidence: 0.827468616153846

00:10:04.760 --> 00:10:06.815 Yes, that's accurate.

NOTE Confidence: 0.827468616153846

00:10:06.815 --> 00:10:10.925 There is a very hypothetical

NOTE Confidence: 0.827468616153846

00:10:10.925 --> 00:10:14.162 risk of you having an infiltration

NOTE Confidence: 0.827468616153846

00:10:14.162 --> 00:10:16.467 as you deliver these therapies.

NOTE Confidence: 0.827468616153846

00:10:16.470 --> 00:10:18.290 So there's a little leakage

NOTE Confidence: 0.827468616153846

00:10:18.290 --> 00:10:20.110 around the vessel that happens

NOTE Confidence: 0.827468616153846

14

00:10:20.176 --> 00:10:22.056 with this high dose radiation.

NOTE Confidence: 0.827468616153846

00:10:22.060 --> 00:10:23.830 But usually we're very careful.

NOTE Confidence: 0.827468616153846

00:10:23.830 --> 00:10:26.539 We always test the veins, we observe

NOTE Confidence: 0.827468616153846

00:10:26.539 --> 00:10:30.101 as the therapy is ongoing to make

NOTE Confidence: 0.827468616153846

00:10:30.101 --> 00:10:32.421 sure there's no fluid extravasation

NOTE Confidence: 0.827468616153846

00:10:32.430 --> 00:10:34.128 from the veins.

NOTE Confidence: 0.827468616153846

00:10:34.128 --> 00:10:36.958 So usually this is

NOTE Confidence: 0.827468616153846

00:10:36.960 --> 00:10:39.746 a very, very rare complication

NOTE Confidence: 0.827468616153846

00:10:39.746 --> 00:10:42.379 to have any cutaneous effect,

NOTE Confidence: 0.827468616153846

00:10:42.380 --> 00:10:44.440 and that would really be

NOTE Confidence: 0.827468616153846

00:10:44.440 --> 00:10:46.500 related to the infusion itself,

NOTE Confidence: 0.827468616153846

00:10:46.500 --> 00:10:48.858 but usually that's not the problem.

NOTE Confidence: 0.827468616153846

00:10:48.860 --> 00:10:51.734 And then for radiation,

NOTE Confidence: 0.827468616153846

00:10:51.734 --> 00:10:52.251 sometimes,

NOTE Confidence: 0.827468616153846

00:10:52.251 --> 00:10:55.870 for example if you're radiating the lungs,

NOTE Confidence: 0.827468616153846

00:10:55.870 --> 00:10:58.103 you can have the heart very close

NOTE Confidence: 0.827468616153846

00:10:58.103 --> 00:11:00.328 to the lungs and you can have

NOTE Confidence: 0.827468616153846

00:11:00.328 --> 00:11:02.610 some kind of damage to the heart.

NOTE Confidence: 0.827468616153846

00:11:02.610 --> 00:11:06.010 Which is for us when we're doing intravenous,

NOTE Confidence: 0.827468616153846

00:11:06.010 --> 00:11:08.632 that's not really a problem of

NOTE Confidence: 0.827468616153846

00:11:08.632 --> 00:11:11.409 the anatomy of where things are.

NOTE Confidence: 0.827468616153846

00:11:11.410 --> 00:11:13.265 The radiation with the liver

NOTE Confidence: 0.827468616153846

00:11:13.265 --> 00:11:14.749 doesn't travel very far.

NOTE Confidence: 0.827468616153846

00:11:14.750 --> 00:11:17.566 These particles travel very,

NOTE Confidence: 0.827468616153846

00:11:17.566 --> 00:11:21.790 very small range and they really

NOTE Confidence: 0.827468616153846

00:11:21.905 --> 00:11:24.790 are from where they bind,

NOTE Confidence: 0.827468616153846

00:11:24.790 --> 00:11:29.308 the effect is really very local.

NOTE Confidence: 0.827468616153846

00:11:29.310 --> 00:11:31.698 So adjacent organs

NOTE Confidence: 0.827468616153846

00:11:31.698 --> 00:11:36.130 are usually not the problem.

NOTE Confidence: 0.85063283

00:11:36.130 --> 00:11:38.506 It sounds like, you know,

NOTE Confidence: 0.85063283

00:11:38.510 --> 00:11:42.532 this is really potentially a wonderful

NOTE Confidence: 0.85063283

00:11:42.532 --> 00:11:44.748 way of delivering radiation.

NOTE Confidence: 0.85063283

00:11:44.750 --> 00:11:47.366 If you can spare adjacent organs,

NOTE Confidence: 0.85063283

00:11:47.370 --> 00:11:49.890 you can spare a lot of the

NOTE Confidence: 0.85063283

00:11:49.890 --> 00:11:51.610 cutaneous side effects that we

NOTE Confidence: 0.85063283

00:11:51.610 --> 00:11:52.970 see with traditional radiation.

NOTE Confidence: 0.85063283

00:11:52.970 --> 00:11:55.826 And as you mentioned,

NOTE Confidence: 0.85063283

00:11:55.830 --> 00:11:58.242 many cancers these days have potential

NOTE Confidence: 0.85063283

00:11:58.242 --> 00:12:01.199 targets and more and more are being

NOTE Confidence: 0.85063283

00:12:01.199 --> 00:12:03.329 discovered and developed every day.

NOTE Confidence: 0.85063283

00:12:03.330 --> 00:12:07.890 But is this really something that is

NOTE Confidence: 0.85063283

00:12:07.890 --> 00:12:10.550 being offered for all kinds of cancers?

NOTE Confidence: 0.85063283

00:12:10.550 --> 00:12:13.322 Does it have a role in particular

NOTE Confidence: 0.85063283

00:12:13.322 --> 00:12:16.058 types of cancers or is this

NOTE Confidence: 0.85063283

00:12:16.058 --> 00:12:18.248 something that is still kind of

NOTE Confidence: 0.85063283

00:12:18.328 --> 00:12:20.668 working its way through clinical

NOTE Confidence: 0.85063283

00:12:20.668 --> 00:12:23.341 trials or is this actually something

NOTE Confidence: 0.85063283

00:12:23.341 --> 00:12:24.996 that's ready for prime time?

NOTE Confidence: 0.830194128125

00:12:26.250 --> 00:12:30.618 So the first therapy that was approved

NOTE Confidence: 0.830194128125

00:12:30.618 --> 00:12:33.618 for neuroendocrine cancers in the

NOTE Confidence: 0.830194128125

00:12:33.618 --> 00:12:36.166 United States happened in 2018.

NOTE Confidence: 0.830194128125

00:12:36.166 --> 00:12:39.142 So this is something that's been

NOTE Confidence: 0.830194128125

00:12:39.142 --> 00:12:41.345 widespread and commercially

NOTE Confidence: 0.830194128125

00:12:41.345 --> 00:12:44.445 available for four years now.

NOTE Confidence: 0.830194128125

00:12:44.450 --> 00:12:47.222 So it's a new technology even

NOTE Confidence: 0.830194128125

00:12:47.222 --> 00:12:49.658 though there has been other

NOTE Confidence: 0.830194128125

00:12:49.658 --> 00:12:53.186 uses in elsewhere in the world,

NOTE Confidence: 0.830194128125

00:12:53.190 --> 00:12:56.162 particularly Europe and Australia.

NOTE Confidence: 0.830194128125

00:12:56.162 --> 00:12:59.660 They have been leading places

NOTE Confidence: 0.830194128125

00:12:59.660 --> 00:13:01.740 for these therapies.

NOTE Confidence: 0.830194128125

00:13:07.752 --> 00:13:11.850 As we move into more knowledge

NOTE Confidence: 0.830194128125

00:13:11.996 --> 00:13:16.592 of this latest therapy we

NOTE Confidence: 0.830194128125

00:13:16.592 --> 00:13:20.340 are just expanding their use.

NOTE Confidence: 0.830194128125

00:13:20.340 --> 00:13:23.148 So usually how these work is

NOTE Confidence: 0.830194128125

00:13:23.148 --> 00:13:25.946 they get approved into the end

NOTE Confidence: 0.830194128125

00:13:25.946 --> 00:13:28.837 of cycle of therapy of a disease

NOTE Confidence: 0.830194128125

00:13:28.837 --> 00:13:31.783 when patients don't have a lot

NOTE Confidence: 0.830194128125

00:13:31.783 --> 00:13:34.630 of therapy options and

NOTE Confidence: 0.830194128125

00:13:34.630 --> 00:13:37.090 then start working the way back

NOTE Confidence: 0.830194128125

00:13:37.090 --> 00:13:39.639 into looking how these therapies

NOTE Confidence: 0.830194128125

00:13:39.640 --> 00:13:43.000 do earlier in the disease cycle and then

NOTE Confidence: 0.830194128125

00:13:43.000 --> 00:13:45.468 by understanding that a little better,

NOTE Confidence: 0.830194128125

00:13:45.470 --> 00:13:49.040 that's how these get more widely spread.

NOTE Confidence: 0.878577676666667

00:13:49.490 --> 00:13:51.710 So we'll pick up this conversation,

NOTE Confidence: 0.878577676666667

00:13:51.710 --> 00:13:53.593 but first we need to take a

NOTE Confidence: 0.878577676666667

00:13:53.593 --> 00:13:55.409 short break for medical minute.

NOTE Confidence: 0.878577676666667

00:13:55.410 --> 00:13:57.293 Please stay tuned to learn more about

NOTE Confidence: 0.878577676666667

00:13:57.293 --> 00:13:59.432 the role of theranostics with my

19

NOTE Confidence: 0.878577676666667

00:13:59.432 --> 00:14:01.128 guest doctor Gabriella Spilberg.

NOTE Confidence: 0.815826406363636

00:14:01.330 --> 00:14:03.526 Funding for Yale Cancer Answers is

NOTE Confidence: 0.815826406363636

00:14:03.526 --> 00:14:05.610 provided by Smilow Cancer Hospital,

NOTE Confidence: 0.815826406363636

00:14:05.610 --> 00:14:07.800 where their survivorship clinic is available

NOTE Confidence: 0.815826406363636

00:14:07.800 --> 00:14:10.119 to educate survivors on the prevention,

NOTE Confidence: 0.815826406363636

00:14:10.120 --> 00:14:12.510 detection, and treatment of complications

NOTE Confidence: 0.815826406363636

00:14:12.510 --> 00:14:14.422 resulting from cancer treatment.

NOTE Confidence: 0.815826406363636

00:14:14.430 --> 00:14:18.460 Smilowcancerhospital.org.

NOTE Confidence: 0.815826406363636

00:14:18.460 --> 00:14:21.328 The American Cancer Society estimates that

NOTE Confidence: 0.815826406363636

00:14:21.328 --> 00:14:23.838 over 200,000 cases of Melanoma will be

NOTE Confidence: 0.815826406363636

00:14:23.838 --> 00:14:26.259 diagnosed in the United States this year,

NOTE Confidence: 0.815826406363636

00:14:26.260 --> 00:14:29.375 with over 1000 patients in Connecticut alone.

NOTE Confidence: 0.815826406363636

00:14:29.380 --> 00:14:31.665 While Melanoma accounts for only

NOTE Confidence: 0.815826406363636

00:14:31.665 --> 00:14:34.164 about 1% of skin cancer cases,

NOTE Confidence: 0.815826406363636

00:14:34.164 --> 00:14:37.160 it causes the most skin cancer deaths,

NOTE Confidence: 0.815826406363636

00:14:37.160 --> 00:14:38.580 but when detected early,

NOTE Confidence: 0.815826406363636

00:14:38.580 --> 00:14:41.280 it is easily treated and highly curable.

NOTE Confidence: 0.815826406363636

00:14:41.280 --> 00:14:43.176 Clinical trials are currently

NOTE Confidence: 0.815826406363636

00:14:43.176 --> 00:14:45.072 underway at federally designated

NOTE Confidence: 0.815826406363636

00:14:45.072 --> 00:14:47.020 Comprehensive cancer centers such as

NOTE Confidence: 0.815826406363636

00:14:47.020 --> 00:14:49.218 Yale Cancer Center and Smilow Cancer

NOTE Confidence: 0.815826406363636

00:14:49.220 --> 00:14:51.220 Hospital to test innovative new

NOTE Confidence: 0.815826406363636

00:14:51.220 --> 00:14:53.688 treatments for Melanoma. The goal of

NOTE Confidence: 0.815826406363636

00:14:53.688 --> 00:14:55.718 the specialized programs of research

NOTE Confidence: 0.815826406363636

00:14:55.718 --> 00:14:58.475 excellence in skin Cancer Grant is to

NOTE Confidence: 0.815826406363636

00:14:58.475 --> 00:15:00.967 better understand the biology of skin cancer,

NOTE Confidence: 0.815826406363636

00:15:00.970 --> 00:15:02.675 where the focus on discovering

NOTE Confidence: 0.815826406363636

00:15:02.675 --> 00:15:04.943 targets that will lead to improved

NOTE Confidence: 0.815826406363636

00:15:04.943 --> 00:15:06.449 diagnosis and treatment.

NOTE Confidence: 0.815826406363636

00:15:06.450 --> 00:15:08.898 More information is available

NOTE Confidence: 0.815826406363636

00:15:08.898 --> 00:15:09.945 at yalecancercenter.org.

NOTE Confidence: 0.815826406363636

00:15:09.945 --> 00:15:12.555 You're listening to Connecticut public radio.

NOTE Confidence: 0.821003795

00:15:14.770 --> 00:15:16.870 Welcome back to Yale Cancer Answers.

NOTE Confidence: 0.821003795

00:15:16.870 --> 00:15:18.470 This is doctor Anees Chagpar,

NOTE Confidence: 0.821003795

00:15:18.470 --> 00:15:20.444 and I'm joined tonight by my guest,

NOTE Confidence: 0.821003795

00:15:20.450 --> 00:15:22.198 Doctor Gabriela Spilberg.

NOTE Confidence: 0.821003795

00:15:22.198 --> 00:15:23.946 We're talking about theranostics

NOTE Confidence: 0.821003795

00:15:23.946 --> 00:15:26.180 and clinical trials for GI cancers.

NOTE Confidence: 0.821003795

00:15:26.180 --> 00:15:28.154 And right before the break, Gabriela,

NOTE Confidence: 0.821003795

00:15:28.154 --> 00:15:32.026 you were starting to tell us about how

NOTE Confidence: 0.821003795

00:15:32.030 --> 00:15:34.580 theranostics and in fact many therapies

NOTE Confidence: 0.821003795

00:15:34.580 --> 00:15:37.649 find their way into clinical practice.

NOTE Confidence: 0.821003795

00:15:37.650 --> 00:15:40.608 So you started by saying that

NOTE Confidence: 0.821003795

00:15:40.608 --> 00:15:42.944 usually these are, you know,

NOTE Confidence: 0.821003795

00:15:42.944 --> 00:15:45.079 looked at in the setting

NOTE Confidence: 0.821003795

00:15:45.080 --> 00:15:48.212 of situations where individuals may

NOTE Confidence: 0.821003795

00:15:48.212 --> 00:15:51.705 not have other options and then gradually

NOTE Confidence: 0.821003795

00:15:51.705 --> 00:15:55.340 they kind of work them their way into

NOTE Confidence: 0.821003795

00:15:55.340 --> 00:15:58.274 not being something of last resort,

NOTE Confidence: 0.821003795

00:15:58.280 --> 00:16:00.788 but being more mainstream

NOTE Confidence: 0.821003795

00:16:00.788 --> 00:16:03.296 in terms of practice.

NOTE Confidence: 0.821003795

00:16:03.300 --> 00:16:05.860 So can you kind of pick up the

NOTE Confidence: 0.821003795

00:16:05.860 --> 00:16:08.001 conversation there and tell us a little

NOTE Confidence: 0.821003795

00:16:08.001 --> 00:16:10.424 bit more about how theranostics is

NOTE Confidence: 0.821003795

00:16:10.424 --> 00:16:12.770 finding its way into clinical practice

NOTE Confidence: 0.821003795

00:16:12.841 --> 00:16:15.079 where it's still in clinical trials?

NOTE Confidence: 0.821003795

00:16:15.080 --> 00:16:17.782 You mentioned prior to the break that

NOTE Confidence: 0.821003795

00:16:17.782 --> 00:16:19.867 this really started with neuroendocrine

NOTE Confidence: 0.821003795

00:16:19.867 --> 00:16:22.870 tumors and was approved back in 2018.

NOTE Confidence: 0.821003795

00:16:22.870 --> 00:16:25.958 So is it now the case that everybody

NOTE Confidence: 0.821003795

00:16:25.958 --> 00:16:27.590 with neuroendocrine tumors are

NOTE Confidence: 0.821003795

00:16:27.590 --> 00:16:29.555 being offered theranostics or is

NOTE Confidence: 0.821003795

00:16:29.555 --> 00:16:31.979 it still kind of a niche thing?

NOTE Confidence: 0.891756647777778

00:16:32.850 --> 00:16:36.290 So one of the things to realize even

NOTE Confidence: 0.891756647777778

00:16:36.290 --> 00:16:39.020 before that is the administration

NOTE Confidence: 0.891756647777778

00:16:39.020 --> 00:16:41.985 of these therapies are complex,

NOTE Confidence: 0.891756647777778

00:16:41.990 --> 00:16:46.428 they require a multi specialty clinical team.

NOTE Confidence: 0.891756647777778

00:16:46.430 --> 00:16:49.450 And not everywhere that's available.

NOTE Confidence: 0.891756647777778

00:16:49.450 --> 00:16:53.794 So whenever you have that available and you

NOTE Confidence: 0.891756647777778

00:16:53.794 --> 00:16:58.088 have cancers that have indication to therapy,

NOTE Confidence: 0.891756647777778

00:16:58.090 --> 00:17:02.114 that's when these usually are more used or

NOTE Confidence: 0.891756647777778

00:17:02.114 --> 00:17:06.012 if patients are referred to cancer centers,

NOTE Confidence: 0.891756647777778

00:17:06.012 --> 00:17:09.722 which have specifically lines of

NOTE Confidence: 0.891756647777778

00:17:09.722 --> 00:17:13.248 therapies at the moment for GI cancers,

NOTE Confidence: 0.891756647777778

00:17:13.250 --> 00:17:16.810 these are available for gastroenterology,

NOTE Confidence: 0.891756647777778

00:17:16.810 --> 00:17:18.224 pancreatic cancers,

NOTE Confidence: 0.891756647777778

00:17:18.224 --> 00:17:22.466 for example for bronchial carcinoid or

NOTE Confidence: 0.891756647777778

00:17:22.466 --> 00:17:27.318 more rare types of neuroendocrine cancers.

NOTE Confidence: 0.891756647777778

00:17:27.320 --> 00:17:31.964 These are not on label FDA

NOTE Confidence: 0.891756647777778

00:17:31.964 --> 00:17:33.340 approved therapies.

NOTE Confidence: 0.891756647777778

00:17:33.340 --> 00:17:36.340 However, there are initial experiences

NOTE Confidence: 0.891756647777778

00:17:36.340 --> 00:17:40.151 of places who have used them on

NOTE Confidence: 0.891756647777778

00:17:40.151 --> 00:17:43.238 clinical trial basis or off label use,

NOTE Confidence: 0.891756647777778

00:17:43.240 --> 00:17:47.332 so every patient is different.

00:17:49.380 --> 00:17:54.192 Different set of findings and exams and

NOTE Confidence: 0.891756647777778

00:17:54.192 --> 00:17:58.360 genetic mutations and information really.

NOTE Confidence: 0.891756647777778

00:17:58.360 --> 00:18:01.036 And each cancer develops in a

NOTE Confidence: 0.891756647777778

00:18:01.036 --> 00:18:02.820 different way from another.

NOTE Confidence: 0.891756647777778

00:18:02.820 --> 00:18:06.004 So you won't find one cancer that has

NOTE Confidence: 0.891756647777778

00:18:06.004 --> 00:18:09.178 the exact genetic profile as another.

NOTE Confidence: 0.891756647777778

00:18:09.180 --> 00:18:12.148 So these have to be looked at in a

NOTE Confidence: 0.891756647777778

00:18:12.148 --> 00:18:14.365 very individualized way and I think

NOTE Confidence: 0.891756647777778

00:18:14.365 --> 00:18:16.459 that's one of the big challenges

NOTE Confidence: 0.891756647777778

00:18:16.540 --> 00:18:19.088 is always to pinpoint who is

NOTE Confidence: 0.891756647777778

00:18:19.090 --> 00:18:21.436 going to really benefit

NOTE Confidence: 0.891756647777778

00:18:21.436 --> 00:18:22.609 from these therapies?

NOTE Confidence: 0.891756647777778

00:18:22.610 --> 00:18:25.907 So patient selection

NOTE Confidence: 0.891756647777778

00:18:25.910 --> 00:18:28.734 plays a very important role and

NOTE Confidence: 0.891756647777778

00:18:28.734 --> 00:18:31.548 who can really get these therapies.

NOTE Confidence: 0.891756647777778

00:18:31.550 --> 00:18:35.240 These are patients that are usually discussed

NOTE Confidence: 0.891756647777778

00:18:35.240 --> 00:18:37.700 in multidisciplinary tumor boards

NOTE Confidence: 0.891756647777778

00:18:37.789 --> 00:18:40.614 which are meetings where multiple

NOTE Confidence: 0.891756647777778

00:18:40.614 --> 00:18:43.439 specialties of doctors come together

NOTE Confidence: 0.891756647777778

00:18:43.530 --> 00:18:46.458 to look at something and come up with

NOTE Confidence: 0.891756647777778

00:18:46.458 --> 00:18:49.326 a team opinion of what is the best

NOTE Confidence: 0.891756647777778

00:18:49.330 --> 00:18:52.590 approach. These are not usually

NOTE Confidence: 0.891756647777778

00:18:52.590 --> 00:18:55.850 patients with very initial staging

NOTE Confidence: 0.891756647777778

00:18:55.952 --> 00:18:58.457 of disease or very early.

NOTE Confidence: 0.891756647777778

00:18:58.460 --> 00:19:00.889 These are patients who have a history,

NOTE Confidence: 0.891756647777778

00:19:00.890 --> 00:19:03.298 who have had disease for a while or

NOTE Confidence: 0.891756647777778

00:19:03.298 --> 00:19:05.779 when they discover they have disease,

NOTE Confidence: 0.891756647777778

00:19:05.780 --> 00:19:08.480 it's not very localized.

NOTE Confidence: 0.891756647777778

00:19:08.480 --> 00:19:15.052 So any type of systemic therapy

NOTE Confidence: 0.891756647777778

00:19:15.052 --> 00:19:17.840 with theranostics at the moment,

NOTE Confidence: 0.891756647777778

00:19:17.840 --> 00:19:20.290 that's how it's been used.

00:19:21.526 --> 00:19:25.852 It's made its way prime time for

NOTE Confidence: 0.891756647777778

00:19:25.852 --> 00:19:28.490 GI specifically,

NOTE Confidence: 0.891756647777778

00:19:28.490 --> 00:19:31.706 but it's not yet widespread for

NOTE Confidence: 0.891756647777778

00:19:31.706 --> 00:19:34.639 every single type of neuroendocrine

NOTE Confidence: 0.891756647777778

00:19:34.639 --> 00:19:38.707 cancer and we're not there yet.

NOTE Confidence: 0.891756647777778

00:19:38.710 --> 00:19:43.126 There's a lot of pipeline development

NOTE Confidence: 0.891756647777778

00:19:43.126 --> 00:19:47.202 into which better receptors or targets

NOTE Confidence: 0.891756647777778

00:19:47.202 --> 00:19:51.274 we should use and as of this year,

NOTE Confidence: 0.891756647777778

00:19:51.280 --> 00:19:53.790 2022, this was recently approved

NOTE Confidence: 0.891756647777778

00:19:53.790 --> 00:19:55.296 for prostate cancer.

NOTE Confidence: 0.891756647777778

00:19:55.300 --> 00:19:58.546 Another agent but the same concept.

NOTE Confidence: 0.849911545714286

00:20:00.400 --> 00:20:04.054 So it sounds like first off,

NOTE Confidence: 0.849911545714286

00:20:04.060 --> 00:20:07.310 there are certain cancers that

NOTE Confidence: 0.849911545714286

00:20:07.310 --> 00:20:10.560 are approved for theranostics and

NOTE Confidence: 0.849911545714286

00:20:10.667 --> 00:20:13.855 others that are not. Why is that?

NOTE Confidence: 0.849911545714286

00:20:13.855 --> 00:20:17.118 I mean if so many cancers have targets

NOTE Confidence: 0.849911545714286

00:20:17.118 --> 00:20:20.934 and as a breast cancer surgeon,

NOTE Confidence: 0.849911545714286

00:20:20.940 --> 00:20:23.538 I'm thinking about certainly breast cancer

NOTE Confidence: 0.849911545714286

00:20:23.538 --> 00:20:26.986 has a number of targets that we use all

NOTE Confidence: 0.849911545714286

00:20:26.986 --> 00:20:30.345 the time in terms of ER and PR and HER II.

NOTE Confidence: 0.849911545714286

00:20:30.350 --> 00:20:32.370 When we think about all

NOTE Confidence: 0.849911545714286

00:20:32.370 --> 00:20:33.986 kinds of other cancers,

NOTE Confidence: 0.849911545714286

00:20:33.990 --> 00:20:36.262 there are similar markers.

NOTE Confidence: 0.849911545714286

00:20:36.262 --> 00:20:39.670 What is it about some markers

NOTE Confidence: 0.849911545714286

00:20:39.777 --> 00:20:42.972 that make them good candidates

NOTE Confidence: 0.849911545714286

00:20:42.972 --> 00:20:46.167 for theranostics and makes other

NOTE Confidence: 0.849911545714286

00:20:46.274 --> 00:20:49.319 markers and other cancers not?

NOTE Confidence: 0.860189331666667

00:20:50.560 --> 00:20:53.656 Well, so specifically for breast cancer,

NOTE Confidence: 0.860189331666667

00:20:53.660 --> 00:20:56.618 I think we will get there,

NOTE Confidence: 0.860189331666667

00:20:56.620 --> 00:20:59.260 we just need a little time.

NOTE Confidence: 0.860189331666667

00:20:59.260 --> 00:21:01.960 So all these processes require

NOTE Confidence: 0.860189331666667

00:21:01.960 --> 00:21:04.120 something called radiolabeling,

NOTE Confidence: 0.860189331666667

00:21:04.120 --> 00:21:07.872 which means you have to attach a

NOTE Confidence: 0.860189331666667

00:21:07.872 --> 00:21:10.815 radioactive particle into these targets

NOTE Confidence: 0.860189331666667

00:21:10.815 --> 00:21:13.915 and radiolabeling is a difficult

NOTE Confidence: 0.860189331666667

00:21:13.920 --> 00:21:16.855 process that not always works

NOTE Confidence: 0.860189331666667

00:21:16.855 --> 00:21:20.770 with any target you need or want,

NOTE Confidence: 0.860189331666667

00:21:20.770 --> 00:21:25.270 but there is a lot of work being done for

NOTE Confidence: 0.860189331666667

00:21:25.380 --> 00:21:29.657 HER 2 targeting and for imaging.

NOTE Confidence: 0.860189331666667

00:21:29.660 --> 00:21:33.044 So it's bringing all these pieces

NOTE Confidence: 0.860189331666667

00:21:33.044 --> 00:21:36.722 of the technology together to make a

29

NOTE Confidence: 0.860189331666667

00:21:36.722 --> 00:21:39.816 specific agent a good candidate for a

NOTE Confidence: 0.860189331666667

00:21:39.910 --> 00:21:43.858 theranostics pair is what's hard.

NOTE Confidence: 0.860189331666667

00:21:43.860 --> 00:21:46.163 Just this technology

NOTE Confidence: 0.860189331666667

00:21:46.163 --> 00:21:48.510 is very new. If you think about it,

NOTE Confidence: 0.860189331666667

00:21:48.510 --> 00:21:51.254 it was first approved in the US four

NOTE Confidence: 0.860189331666667

00:21:51.254 --> 00:21:53.898 years ago and here we are four years

NOTE Confidence: 0.860189331666667

00:21:53.898 --> 00:21:57.282 later we have a second one in the market

NOTE Confidence: 0.860189331666667

00:21:57.282 --> 00:22:00.568 and there's multiple others in the pipeline.

NOTE Confidence: 0.860189331666667

00:22:00.568 --> 00:22:04.252 And I think also molecular imaging

NOTE Confidence: 0.860189331666667

00:22:04.252 --> 00:22:07.567 requires a lot of structure.

NOTE Confidence: 0.860189331666667

00:22:07.570 --> 00:22:09.810 So you have to have a radio chemist,

NOTE Confidence: 0.860189331666667

00:22:09.810 --> 00:22:13.859 you have to have sometimes a cyclotron.

NOTE Confidence: 0.860189331666667

00:22:13.859 --> 00:22:16.874 Which is where you generate

NOTE Confidence: 0.860189331666667

00:22:16.874 --> 00:22:19.060 these radioactive particles.

NOTE Confidence: 0.860189331666667

00:22:19.060 --> 00:22:20.904 They have 1/2 time,

NOTE Confidence: 0.860189331666667

00:22:20.904 --> 00:22:23.670 which means that they decay every

NOTE Confidence: 0.860189331666667

00:22:23.762 --> 00:22:26.499 one hour 5 hours or 10 hours

NOTE Confidence: 0.860189331666667

00:22:26.499 --> 00:22:28.899 6 days depending on the agent.

NOTE Confidence: 0.860189331666667

00:22:28.900 --> 00:22:32.020 Half of what you generated is just gone,

NOTE Confidence: 0.860189331666667

00:22:32.020 --> 00:22:33.860 you don't have it anymore.

NOTE Confidence: 0.860189331666667

00:22:33.860 --> 00:22:37.245 So these technologies are difficult

NOTE Confidence: 0.860189331666667

00:22:37.245 --> 00:22:41.458 to develop and are hard to join

NOTE Confidence: 0.860189331666667

00:22:41.458 --> 00:22:44.804 a big team to work on something.

NOTE Confidence: 0.860189331666667

00:22:44.810 --> 00:22:47.390 So until we get there,

NOTE Confidence: 0.860189331666667

00:22:47.390 --> 00:22:49.350 it's just going to take a while.

NOTE Confidence: 0.860189331666667

00:22:49.350 --> 00:22:51.924 But it doesn't mean that the

NOTE Confidence: 0.860189331666667

00:22:51.924 --> 00:22:53.640 cancers are not suitable.

NOTE Confidence: 0.860189331666667

00:22:53.640 --> 00:22:57.399 It's just the time that the technology

NOTE Confidence: 0.860189331666667

00:22:57.399 --> 00:23:01.223 needs to get to deployment into

NOTE Confidence: 0.860189331666667

00:23:01.223 --> 00:23:04.624 clinical practice and widespread use.

NOTE Confidence: 0.860189331666667

00:23:04.624 --> 00:23:10.624 At the moment we don't have any of

NOTE Confidence: 0.860189331666667

00:23:10.624 --> 00:23:15.503 the newer alpha therapies.

NOTE Confidence: 0.860189331666667

00:23:15.510 --> 00:23:18.282 But the difference between these other

NOTE Confidence: 0.860189331666667

00:23:18.282 --> 00:23:21.174 therapies that we're looking at and

NOTE Confidence: 0.860189331666667

00:23:21.174 --> 00:23:23.106 what's currently approved,

NOTE Confidence: 0.860189331666667

00:23:23.110 --> 00:23:26.141 which is a better meter is basically

NOTE Confidence: 0.860189331666667

00:23:26.141 --> 00:23:28.880 how much damage to the tissues

NOTE Confidence: 0.860189331666667

00:23:28.880 --> 00:23:31.580 surrounding them they can make.

NOTE Confidence: 0.860189331666667

00:23:31.580 --> 00:23:34.868 And alpha therapies are much higher energy,

NOTE Confidence: 0.860189331666667

00:23:34.870 --> 00:23:37.156 which means they have a destruction

NOTE Confidence: 0.860189331666667

00:23:37.156 --> 00:23:39.689 power which is higher than lutetium.

NOTE Confidence: 0.860189331666667

00:23:39.690 --> 00:23:43.008 So these are expected also to

NOTE Confidence: 0.860189331666667

00:23:43.008 --> 00:23:45.220 revolutionize the market and

NOTE Confidence: 0.860189331666667

00:23:45.220 --> 00:23:48.262 how these therapies are used and

NOTE Confidence: 0.860189331666667

00:23:48.262 --> 00:23:50.290 approached because what's currently

NOTE Confidence: 0.860189331666667

00:23:50.373 --> 00:23:51.576 available,

NOTE Confidence: 0.860189331666667

00:23:51.576 --> 00:23:54.312 which is a beta doesn't destroy

NOTE Confidence: 0.860189331666667

00:23:54.312 --> 00:23:57.556 or shrink the tumor as much as we

NOTE Confidence: 0.860189331666667

00:23:57.556 --> 00:23:59.840 were hoping or we would like.

NOTE Confidence: 0.860189331666667

00:23:59.840 --> 00:24:05.023 So there is also this concept

NOTE Confidence: 0.860189331666667

00:24:05.023 --> 00:24:07.638 that is an evolving field.

NOTE Confidence: 0.860189331666667

00:24:07.640 --> 00:24:10.856 This is not a mature field at all.

NOTE Confidence: 0.860189331666667

00:24:10.860 --> 00:24:13.260 There's a lot of knowledge

NOTE Confidence: 0.860189331666667

00:24:13.260 --> 00:24:15.660 that we're still gaining from.

NOTE Confidence: 0.860189331666667

00:24:15.660 --> 00:24:17.620 The deployment of these therapies,

NOTE Confidence: 0.860189331666667

00:24:17.620 --> 00:24:20.384 the prostate cancer therapies

NOTE Confidence: 0.860189331666667

00:24:20.384 --> 00:24:23.148 specifically was initially approved

NOTE Confidence: 0.860189331666667

00:24:23.148 --> 00:24:26.468 for patients who failed a taxane

NOTE Confidence: 0.860189331666667

00:24:26.468 --> 00:24:29.234 based therapy and yet there were

NOTE Confidence: 0.860189331666667

00:24:29.323 --> 00:24:32.068 results published from a trial

NOTE Confidence: 0.860189331666667

00:24:32.068 --> 00:24:35.293 just recently showing that even in

NOTE Confidence: 0.860189331666667

00:24:35.293 --> 00:24:37.658 patients that don't fail therapy

NOTE Confidence: 0.860189331666667

00:24:37.658 --> 00:24:39.550 but have metastatic disease,

NOTE Confidence: 0.860189331666667

00:24:39.550 --> 00:24:42.140 they do have a benefit on them.

NOTE Confidence: 0.860189331666667

00:24:42.140 --> 00:24:46.046 So oncology trials are trials that

NOTE Confidence: 0.860189331666667

00:24:46.050 --> 00:24:48.990 they long for you to gather

NOTE Confidence: 0.860189331666667

00:24:48.990 --> 00:24:50.950 information enough to understand

NOTE Confidence: 0.860189331666667

00:24:51.036 --> 00:24:53.080 what really is happening.

NOTE Confidence: 0.873180475

00:24:53.150 --> 00:24:55.466 And on that point,

NOTE Confidence: 0.873180475

00:24:55.470 --> 00:24:57.770 you know in thinking about

NOTE Confidence: 0.873180475

00:24:57.770 --> 00:24:59.610 the role of theranostics,

NOTE Confidence: 0.873180475

00:24:59.610 --> 00:25:02.592 is it your perception that eventually

NOTE Confidence: 0.873180475

00:25:02.592 --> 00:25:05.810 these will replace external beam radiation?

NOTE Confidence: 0.873180475

00:25:05.810 --> 00:25:09.765 So standard radiation will now be given

NOTE Confidence: 0.873180475

00:25:09.765 --> 00:25:12.602 with the more targeted intravenous

NOTE Confidence: 0.873180475

00:25:12.602 --> 00:25:16.038 radiation of theranostics and

NOTE Confidence: 0.873180475

00:25:16.038 --> 00:25:17.480 if you believe that that's

NOTE Confidence: 0.873180475

00:25:17.480 --> 00:25:18.880 where the field is going,

NOTE Confidence: 0.873180475

00:25:18.880 --> 00:25:21.925 do we have the clinical trial data

NOTE Confidence: 0.873180475

00:25:21.925 --> 00:25:24.562 to suggest that theranostics is

NOTE Confidence: 0.873180475

00:25:24.562 --> 00:25:27.652 equally if not more efficacious

NOTE Confidence: 0.873180475

00:25:27.652 --> 00:25:30.300 than standard radiation therapy?

NOTE Confidence: 0.888789838333333

00:25:31.850 --> 00:25:33.626 I don't think we're there yet.

NOTE Confidence: 0.888789838333333

00:25:33.630 --> 00:25:36.468 I think they have complementary use.

NOTE Confidence: 0.888789838333333

00:25:36.470 --> 00:25:38.890 When you're thinking about radiation,

NOTE Confidence: 0.888789838333333

00:25:38.890 --> 00:25:41.650 you're thinking about

NOTE Confidence: 0.888789838333333

00:25:41.650 --> 00:25:43.306 external traditional radiation,

NOTE Confidence: 0.888789838333333

00:25:43.310 --> 00:25:45.850 you're thinking about local therapy.

NOTE Confidence: 0.888789838333333

00:25:45.850 --> 00:25:48.520 When you're thinking about theranostics,

NOTE Confidence: 0.888789838333333

00:25:48.520 --> 00:25:51.290 you're thinking about systemic therapy,

NOTE Confidence: 0.888789838333333

00:25:51.290 --> 00:25:53.290 which are two different concepts.

NOTE Confidence: 0.888789838333333

00:25:53.290 --> 00:25:57.250 So when someone has a small lung nodule and

NOTE Confidence: 0.888789838333333

00:25:57.250 --> 00:26:01.250 you want to target that one small nodule

NOTE Confidence: 0.888789838333333

00:26:01.250 --> 00:26:04.260 and there is no knowledge

NOTE Confidence: 0.888789838333333

00:26:04.260 --> 00:26:06.066 of widespread disease,

NOTE Confidence: 0.888789838333333

00:26:06.070 --> 00:26:09.916 but it's possible that external radiation

NOTE Confidence: 0.888789838333333

00:26:09.916 --> 00:26:13.908 would still be better than intravenous

NOTE Confidence: 0.888789838333333

00:26:13.908 --> 00:26:17.874 radiation because you have some

NOTE Confidence: 0.888789838333333

00:26:17.880 --> 00:26:20.355 side effects, but they're different

NOTE Confidence: 0.888789838333333

00:26:20.355 --> 00:26:23.374 from when we do intravenous radiation

NOTE Confidence: 0.888789838333333

00:26:23.374 --> 00:26:26.152 and then when patients have disease

NOTE Confidence: 0.888789838333333

00:26:26.152 --> 00:26:29.459 that we know that are not localized,

NOTE Confidence: 0.888789838333333

00:26:29.460 --> 00:26:33.068 that they can't have surgery to remove,

NOTE Confidence: 0.888789838333333

00:26:33.070 --> 00:26:35.094 just targeting one location

NOTE Confidence: 0.888789838333333

00:26:35.094 --> 00:26:38.130 is not going to be enough.

NOTE Confidence: 0.888789838333333

00:26:38.130 --> 00:26:40.640 That's when you do systemic

NOTE Confidence: 0.888789838333333

00:26:40.640 --> 00:26:43.150 therapy and you use theranostics,

NOTE Confidence: 0.888789838333333

00:26:43.150 --> 00:26:46.804 which is the same concept as chemotherapy,

NOTE Confidence: 0.888789838333333

00:26:46.810 --> 00:26:48.766 except now

NOTE Confidence: 0.888789838333333

00:26:48.766 --> 00:26:52.678 we're using radioactive chemotherapy.

NOTE Confidence: 0.888789838333333

00:26:52.680 --> 00:26:56.080 It's another term that's been

NOTE Confidence: 0.888789838333333

00:26:56.080 --> 00:26:58.156 used to treat these patients.

NOTE Confidence: 0.888789838333333

00:26:58.156 --> 00:26:59.901 So you're not really looking

NOTE Confidence: 0.888789838333333

00:26:59.901 --> 00:27:01.538 for a localized disease,

NOTE Confidence: 0.888789838333333

00:27:01.540 --> 00:27:03.840 but you're looking for systemic,

NOTE Confidence: 0.888789838333333

00:27:03.840 --> 00:27:06.870 widespread.

NOTE Confidence: 0.8528385985

00:27:07.400 --> 00:27:08.860 And finally, you know,

NOTE Confidence: 0.8528385985

00:27:08.860 --> 00:27:11.612 you had mentioned that one of the

NOTE Confidence: 0.8528385985

00:27:11.612 --> 00:27:14.037 things that's very important is

NOTE Confidence: 0.8528385985

00:27:14.037 --> 00:27:15.977 thinking about patient selection.

NOTE Confidence: 0.8528385985

00:27:15.980 --> 00:27:18.740 So are there particular patients

NOTE Confidence: 0.8528385985

00:27:18.740 --> 00:27:22.177 that are better suited or not

NOTE Confidence: 0.8528385985

00:27:22.177 --> 00:27:24.554 suited to radioactive chemotherapy

NOTE Confidence: 0.8528385985

00:27:24.554 --> 00:27:26.930 or this intravenous radiation.

NOTE Confidence: 0.881540556666667

00:27:27.680 --> 00:27:32.477 Yes. So one of the key concepts is that

NOTE Confidence: 0.881540556666667

00:27:32.477 --> 00:27:36.019 whatever target you are looking at,

NOTE Confidence: 0.881540556666667

00:27:36.020 --> 00:27:38.432 the patient has to have high

NOTE Confidence: 0.881540556666667

00:27:38.432 --> 00:27:40.040 expression of the target.

NOTE Confidence: 0.881540556666667

00:27:40.040 --> 00:27:43.292 So for example, a neuroendocrine patient

NOTE Confidence: 0.881540556666667

00:27:43.292 --> 00:27:46.621 when we do lutetium dotatate specifically,

NOTE Confidence: 0.881540556666667

00:27:46.621 --> 00:27:50.023 which is the therapy that's approved,

NOTE Confidence: 0.881540556666667

00:27:50.030 --> 00:27:53.050 we are targeting somatostatin

NOTE Confidence: 0.881540556666667

00:27:53.050 --> 00:27:56.825 receptor Type 2.

NOTE Confidence: 0.881540556666667

00:27:56.830 --> 00:28:00.340 So if the disease they have

NOTE Confidence: 0.881540556666667

00:28:00.340 --> 00:28:02.680 doesn't really express significant

NOTE Confidence: 0.881540556666667

00:28:02.780 --> 00:28:05.328 density of those receptors,

NOTE Confidence: 0.881540556666667

00:28:05.330 --> 00:28:10.810 then those patients are not great

NOTE Confidence: 0.881540556666667

00:28:10.810 --> 00:28:12.666 patients for that therapy,

NOTE Confidence: 0.881540556666667

00:28:12.666 --> 00:28:15.450 great candidates because you're not going

NOTE Confidence: 0.881540556666667

00:28:15.521 --> 00:28:17.909 to be targeting whatever they have.

NOTE Confidence: 0.881540556666667

00:28:17.910 --> 00:28:21.294 So having the target overly expressed

NOTE Confidence: 0.881540556666667

00:28:21.294 --> 00:28:25.142 in the disease is really key here

NOTE Confidence: 0.881540556666667

00:28:25.142 --> 00:28:28.600 and that's looked at by using the

NOTE Confidence: 0.881540556666667

00:28:28.704 --> 00:28:31.729 diagnostic agent with PET CT.

NOTE Confidence: 0.896691632222222

00:28:32.490 --> 00:28:34.854 Doctor Gabriela Spilberg is an assistant

NOTE Confidence: 0.896691632222222

00:28:34.854 --> 00:28:36.849 professor of radiology and biomedical

NOTE Confidence: 0.896691632222222

00:28:36.849 --> 00:28:39.348 imaging at the Yale School of Medicine.

NOTE Confidence: 0.896691632222222

00:28:39.350 --> 00:28:41.338 If you have questions,

NOTE Confidence: 0.896691632222222

00:28:41.338 --> 00:28:43.282 the address is canceranswers@yale.edu,

NOTE Confidence: 0.896691632222222

00:28:43.282 --> 00:28:45.994 and past editions of the program

NOTE Confidence: 0.896691632222222

00:28:45.994 --> 00:28:48.349 are available in audio and written

NOTE Confidence: 0.896691632222222

00:28:48.349 --> 00:28:49.267 form at yalecancercenter.org.

NOTE Confidence: 0.896691632222222

00:28:49.267 --> 00:28:51.643 We hope you'll join us next week to

NOTE Confidence: 0.896691632222222

00:28:51.643 --> 00:28:53.452 learn more about the fight against

NOTE Confidence: 0.896691632222222

00:28:53.452 --> 00:28:55.250 cancer here on Connecticut Public Radio.

NOTE Confidence: 0.896691632222222

00:28:55.250 --> 00:28:57.692 Funding for Yale Cancer Answers is

NOTE Confidence: 0.896691632222222

00:28:57.692 --> 00:29:00.000 provided by Smilow Cancer Hospital.