WEBVTT

00:00:00.000 --> 00:00:02.172 Funding for Yale Cancer Answers is

NOTE Confidence: 0.930830130909091

00:00:02.172 --> 00:00:04.240 provided by Smilow Cancer Hospital.

NOTE Confidence: 0.831124283333333

00:00:06.720 --> 00:00:08.875 Welcome to Yale Cancer Answers

NOTE Confidence: 0.831124283333333

00:00:08.875 --> 00:00:10.599 with Doctor Anees Chagpar.

NOTE Confidence: 0.831124283333333

00:00:10.600 --> 00:00:12.430 Yale Cancer Answers features the

NOTE Confidence: 0.831124283333333

00:00:12.430 --> 00:00:14.260 latest information on cancer care

NOTE Confidence: 0.831124283333333

00:00:14.316 --> 00:00:15.756 by welcoming oncologists and

NOTE Confidence: 0.831124283333333

00:00:15.756 --> 00:00:17.916 specialists who are on the forefront

NOTE Confidence: 0.831124283333333

00:00:17.976 --> 00:00:19.638 of the battle to fight cancer.

NOTE Confidence: 0.831124283333333

00:00:19.640 --> 00:00:21.932 This week it's a conversation about

NOTE Confidence: 0.831124283333333

00:00:21.932 --> 00:00:23.966 advances in radiotherapy for cancer

NOTE Confidence: 0.831124283333333

00:00:23.966 --> 00:00:26.156 patients with Doctor Kimberly Johung.

NOTE Confidence: 0.831124283333333

00:00:26.160 --> 00:00:28.404 Doctor Johung is an associate

NOTE Confidence: 0.831124283333333

00:00:28.404 --> 00:00:29.900 professor of therapeutic radiology

NOTE Confidence: 0.831124283333333

00:00:29.961 --> 00:00:31.719 at the Yale School of Medicine,

NOTE Confidence: 0.831124283333333

00:00:31.720 --> 00:00:33.640 where Doctor Chagpar is a

NOTE Confidence: 0.831124283333333

00:00:33.640 --> 00:00:34.920 professor of surgical oncology.

NOTE Confidence: 0.9402159105

00:00:36.200 --> 00:00:38.450 Dr. Johung, let's have you

NOTE Confidence: 0.9402159105

00:00:38.450 --> 00:00:40.998 tell us a little bit about

NOTE Confidence: 0.9402159105

00:00:40.998 --> 00:00:43.273 yourself and what it is you do.

NOTE Confidence: 0.960579148333333

00:00:44.000 --> 00:00:47.240 Absolutely. I'm a radiation oncologist

NOTE Confidence: 0.960579148333333

00:00:47.240 --> 00:00:49.742 and I specialize in the treatment

NOTE Confidence: 0.960579148333333

00:00:49.742 --> 00:00:50.993 of gastrointestinal malignancies.

NOTE Confidence: 0.960579148333333

00:00:51.000 --> 00:00:52.638 I think the first question often is,

NOTE Confidence: 0.960579148333333

00:00:52.640 --> 00:00:54.560 well, what is radiation therapy and

NOTE Confidence: 0.960579148333333

00:00:54.560 --> 00:00:56.520 what is the radiation oncologist,

NOTE Confidence: 0.960579148333333

00:00:56.520 --> 00:00:58.600 so I'll address that first.

NOTE Confidence: 0.960579148333333

00:00:58.600 --> 00:01:01.939 So radiation therapy is the use of

NOTE Confidence: 0.960579148333333

00:01:01.939 --> 00:01:04.960 ionizing radiation to kill cancer cells,

NOTE Confidence: 0.960579148333333

00:01:04.960 --> 00:01:08.240 one of our main modalities for the

NOTE Confidence: 0.960579148333333

00:01:08.240 --> 00:01:09.794 treatment of cancer, along with

NOTE Confidence: 0.960579148333333

00:01:09.794 --> 00:01:11.879 surgery and of course chemotherapy.

NOTE Confidence: 0.960579148333333

00:01:11.880 --> 00:01:13.260 We deliver our radiation

NOTE Confidence: 0.960579148333333

00:01:13.260 --> 00:01:14.640 from a linear accelerator,

NOTE Confidence: 0.960579148333333

00:01:14.640 --> 00:01:16.736 a machine that basically,

NOTE Confidence: 0.960579148333333

00:01:16.736 --> 00:01:20.072 I would say precisely targets high

NOTE Confidence: 0.960579148333333

00:01:20.072 --> 00:01:22.920 energy X-rays towards tumors,

NOTE Confidence: 0.960579148333333

00:01:22.920 --> 00:01:25.212 leading to DNA damage in the

NOTE Confidence: 0.960579148333333

00:01:25.212 --> 00:01:27.280 cancer cells and cell death.

NOTE Confidence: 0.960579148333333

00:01:27.280 --> 00:01:29.793 And so I found myself in radiation

NOTE Confidence: 0.960579148333333

00:01:29.793 --> 00:01:32.279 oncology because I really liked the

NOTE Confidence: 0.960579148333333

00:01:32.279 --> 00:01:34.355 multidisciplinary aspect of care

NOTE Confidence: 0.960579148333333

00:01:34.355 --> 00:01:37.463 both within our department we work

NOTE Confidence: 0.960579148333333

00:01:37.463 --> 00:01:40.055 with physicists who help us devise

NOTE Confidence: 0.960579148333333

00:01:40.055 --> 00:01:43.087 the plans along with the medical

NOTE Confidence: 0.960579148333333

00:01:43.087 --> 00:01:45.698 dosimetrist and also a great team of

NOTE Confidence: 0.960579148333333

00:01:45.698 --> 00:01:47.503 radiation therapists who deliver the

NOTE Confidence: 0.960579148333333

00:01:47.503 --> 00:01:49.358 daily treatments for our patients

NOTE Confidence: 0.960579148333333

00:01:49.360 --> 00:01:51.502 and I found myself specializing in GI

NOTE Confidence: 0.960579148333333

00:01:51.502 --> 00:01:53.299 cancers mostly because the opportunity

NOTE Confidence: 0.960579148333333

00:01:53.299 --> 00:01:55.755 arose when I was early in my career.

NOTE Confidence: 0.935218563

00:01:57.680 --> 00:02:00.650 Tell us a little bit

NOTE Confidence: 0.935218563

00:02:00.735 --> 00:02:03.743 more about what kinds of GI

NOTE Confidence: 0.935218563

00:02:03.743 --> 00:02:06.325 cancers you target in particular and

NOTE Confidence: 0.935218563

00:02:06.325 --> 00:02:09.920 that you work most commonly with and how

NOTE Confidence: 0.935218563

00:02:09.920 --> 00:02:12.800 does radiation therapy really play into

NOTE Confidence: 0.935218563

00:02:12.800 --> 00:02:15.080 those patients treatment algorithm?

NOTE Confidence: 0.925214992631579

00:02:15.520 --> 00:02:18.082 In the GI tract the

NOTE Confidence: 0.925214992631579

00:02:18.082 --> 00:02:20.660 main cancers that we employ radiation

NOTE Confidence: 0.925214992631579

00:02:20.660 --> 00:02:23.474 therapy for would be esophageal cancers,

NOTE Confidence: 0.925214992631579

00:02:23.480 --> 00:02:26.180 pancreatic cancers, colorectal cancers,

NOTE Confidence: 0.925214992631579

00:02:26.180 --> 00:02:29.904 some liver tumors and anal cancers.

NOTE Confidence: 0.925214992631579

00:02:29.904 --> 00:02:32.312 And so for some of these cancers

NOTE Confidence: 0.925214992631579

00:02:32.312 --> 00:02:33.823 the radiation therapy actually

NOTE Confidence: 0.925214992631579

00:02:33.823 --> 00:02:36.079 is critical to cure the cancer.

NOTE Confidence: 0.925214992631579

00:02:36.080 --> 00:02:39.356 We can use radiation therapy in

NOTE Confidence: 0.925214992631579

00:02:39.356 --> 00:02:42.305 conjunction with chemotherapy to cure anal

NOTE Confidence: 0.925214992631579

00:02:42.305 --> 00:02:44.915 cancers as well as esophageal cancers.

NOTE Confidence: 0.925214992631579

00:02:44.920 --> 00:02:47.260 Sometimes surgery is also employed

NOTE Confidence: 0.925214992631579

00:02:47.260 --> 00:02:49.600 for patients with esophageal cancers.

NOTE Confidence: 0.925214992631579

00:02:49.600 --> 00:02:51.076 For the other cancers I mentioned,

NOTE Confidence: 0.925214992631579

00:02:51.080 --> 00:02:52.868 we use radiation therapy as what

NOTE Confidence: 0.925214992631579

00:02:52.868 --> 00:02:55.319 we would call part of a combined

NOTE Confidence: 0.925214992631579

00:02:55.319 --> 00:02:56.516 modality treatment program,

NOTE Confidence: 0.925214992631579

00:02:56.520 --> 00:02:59.004 so along with chemotherapy and surgery

NOTE Confidence: 0.925214992631579

00:02:59.004 --> 00:03:01.720 to give patients the best outcomes.

NOTE Confidence: 0.925214992631579

00:03:01.720 --> 00:03:04.120 So for example, in pancreatic cancer,

NOTE Confidence: 0.925214992631579

00:03:04.120 --> 00:03:06.270 radiation therapy is often employed

NOTE Confidence: 0.925214992631579

00:03:06.270 --> 00:03:09.369 prior to surgery to help improve the

NOTE Confidence: 0.925214992631579

00:03:09.369 --> 00:03:11.554 likelihood of achieving a complete

NOTE Confidence: 0.925214992631579

00:03:11.554 --> 00:03:14.159 resection of a pancreatic tumor.

NOTE Confidence: 0.925214992631579

00:03:14.160 --> 00:03:16.212 And then we also use radiation

NOTE Confidence: 0.925214992631579

00:03:16.212 --> 00:03:18.290 therapy for those patients who may

NOTE Confidence: 0.925214992631579

00:03:18.290 --> 00:03:19.915 not be candidates for surgery.

NOTE Confidence: 0.925214992631579

00:03:19.920 --> 00:03:22.280 And we are trying in that instance to

NOTE Confidence: 0.925214992631579

00:03:22.280 --> 00:03:24.409 provide local control of the tumor and

NOTE Confidence: 0.925214992631579

00:03:24.409 --> 00:03:26.446 often to control the onset of local

NOTE Confidence: 0.925214992631579

00:03:26.446 --> 00:03:28.438 symptoms that may be a result of a

NOTE Confidence: 0.925214992631579

00:03:28.440 --> 00:03:30.396 cancer growing in a particular location.

NOTE Confidence: 0.955351076

00:03:31.320 --> 00:03:33.858 Terrific. So it sounds like radiation

NOTE Confidence: 0.955351076

00:03:33.858 --> 00:03:36.826 therapy has all kinds of utilities for

NOTE Confidence: 0.955351076

00:03:36.826 --> 00:03:39.633 many different cancers in the GI tract.

NOTE Confidence: 0.955351076

00:03:39.640 --> 00:03:41.558 Now at the top of the show,

NOTE Confidence: 0.955351076

00:03:41.560 --> 00:03:43.272 you had mentioned this

NOTE Confidence: 0.955351076

00:03:43.272 --> 00:03:44.556 new technology RefleXion.

NOTE Confidence: 0.955351076

00:03:44.560 --> 00:03:47.376 Can you tell us a little bit more

NOTE Confidence: 0.955351076

00:03:47.376 --> 00:03:50.010 about what exactly that is and how

NOTE Confidence: 0.955351076

00:03:50.010 --> 00:03:52.788 it plays into the workings of

NOTE Confidence: 0.955351076

00:03:52.788 --> 00:03:54.873 radiation therapy for these patients?

NOTE Confidence: 0.95179124625

00:03:55.480 --> 00:03:57.100 Absolutely. So the Reflexion

NOTE Confidence: 0.95179124625

00:03:57.100 --> 00:03:58.720 is a linear accelerator,

NOTE Confidence: 0.95179124625

00:03:58.720 --> 00:04:02.200 which I mentioned is the machine that directs

NOTE Confidence: 0.95179124625

00:04:02.200 --> 00:04:04.599 focused radiation beams towards tumors.

NOTE Confidence: 0.95179124625

00:04:04.600 --> 00:04:07.246 And what's unique about the RefleXion

NOTE Confidence: 0.95179124625

00:04:07.246 --> 00:04:10.263 is that it combines PET imaging

NOTE Confidence: 0.95179124625

00:04:10.263 --> 00:04:12.599 technology with radiation therapy.

NOTE Confidence: 0.95179124625

00:04:12.600 --> 00:04:14.640 So I think to better understand

NOTE Confidence: 0.95179124625

00:04:14.640 --> 00:04:16.408 how the RefleXion is novel

NOTE Confidence: 0.95179124625

00:04:16.408 --> 00:04:18.118 and what the benefits are,

NOTE Confidence: 0.95179124625

00:04:18.120 --> 00:04:19.986 it's best to probably first talk

NOTE Confidence: 0.95179124625

00:04:19.986 --> 00:04:22.568 about what is a PET scan and how

NOTE Confidence: 0.95179124625

00:04:22.568 --> 00:04:24.470 is that used in combination with

NOTE Confidence: 0.95179124625

00:04:24.544 --> 00:04:26.879 radiation therapy on the RefleXion.

NOTE Confidence: 0.95179124625

00:04:26.880 --> 00:04:29.994 So a PET scan is a common imaging technique,

NOTE Confidence: 0.95179124625

00:04:30.000 --> 00:04:32.394 as you know, used in cancer care.

NOTE Confidence: 0.95179124625

00:04:32.400 --> 00:04:34.440 These are scans that are

NOTE Confidence: 0.95179124625

00:04:34.440 --> 00:04:36.480 standard way to image tumors.

NOTE Confidence: 0.95179124625

00:04:36.480 --> 00:04:39.616 I would say screen for sites of metastases

NOTE Confidence: 0.95179124625

00:04:39.616 --> 00:04:42.128 and also monitor response to treatment.

NOTE Confidence: 0.95179124625

00:04:42.128 --> 00:04:46.468 The way a PET scan works is that we first

NOTE Confidence: 0.95179124625

00:04:46.468 --> 00:04:49.680 inject a radioactive tracer into the patient.

NOTE Confidence: 0.95179124625

00:04:49.680 --> 00:04:52.823 The radio tracer can be used for

NOTE Confidence: 0.95179124625

00:04:52.823 --> 00:04:55.022 cancer detection because it's a

NOTE Confidence: 0.95179124625

00:04:55.022 --> 00:04:57.724 glucose or a sugar analog that is

NOTE Confidence: 0.95179124625

00:04:57.724 --> 00:05:00.077 attached to a radioactive marker.

NOTE Confidence: 0.95179124625

00:05:00.080 --> 00:05:02.460 So that means that active cancer cells

NOTE Confidence: 0.95179124625

00:05:02.460 --> 00:05:04.760 will consume more of the radio tracer.

NOTE Confidence: 0.95179124625

00:05:04.760 --> 00:05:07.919 We call it FDG for the most common type

NOTE Confidence: 0.95179124625

00:05:07.919 --> 00:05:11.495 of PET scan and it consumes that FDG at

NOTE Confidence: 0.95179124625

00:05:11.495 --> 00:05:14.120 a greater rate than normal healthy tissues.

NOTE Confidence: 0.95179124625

00:05:14.120 --> 00:05:16.927 So the radioactive signal can be detected

NOTE Confidence: 0.95179124625

00:05:16.927 --> 00:05:19.197 and then reconstructed with a CAT scan.

NOTE Confidence: 0.95179124625

00:05:19.200 --> 00:05:21.672 So you basically get a three-dimensional

NOTE Confidence: 0.95179124625

00:05:21.672 --> 00:05:24.625 image where the amount of tracer uptake

NOTE Confidence: 0.95179124625

00:05:24.625 --> 00:05:26.685 would correlate with the metabolic

NOTE Confidence: 0.95179124625

00:05:26.685 --> 00:05:29.462 activity or I would say that the tumor

NOTE Confidence: 0.95179124625

00:05:29.462 --> 00:05:31.752 activity in that area of the body,

NOTE Confidence: 0.95179124625

00:05:31.752 --> 00:05:34.633 basically a PET scan is a whole body

NOTE Confidence: 0.95179124625

00:05:34.633 --> 00:05:37.370 scan and it shows us where tumors

NOTE Confidence: 0.95179124625

00:05:37.370 --> 00:05:40.250 are located in the body and how much

NOTE Confidence: 0.95179124625

00:05:40.250 --> 00:05:43.200 the areas light up on the PET scan

NOTE Confidence: 0.95179124625

00:05:43.200 --> 00:05:45.200 would correlate with how active

NOTE Confidence: 0.95179124625

00:05:45.200 --> 00:05:47.840 cancer cells are in those areas.

NOTE Confidence: 0.95179124625

00:05:47.840 --> 00:05:50.624 So on the RefleXion

NOTE Confidence: 0.95179124625

00:05:50.624 --> 00:05:52.204 the SCINTIX technology,

NOTE Confidence: 0.95179124625

00:05:52.204 --> 00:05:55.298 which is basically the program

NOTE Confidence: 0.95179124625

00:05:55.298 --> 00:05:58.235 that has been incorporated into this Linac,

NOTE Confidence: 0.95179124625

00:05:58.240 --> 00:06:01.750 tracks the PET tracer emissions from

NOTE Confidence: 0.95179124625

00:06:01.750 --> 00:06:05.176 cancer cells and that is used to determine

NOTE Confidence: 0.95179124625

00:06:05.176 --> 00:06:08.121 where to direct the radiation even if

NOTE Confidence: 0.95179124625

00:06:08.121 --> 00:06:10.833 a tumor is moving during treatment.

NOTE Confidence: 0.95179124625

00:06:10.840 --> 00:06:14.480 So the novel technology is combining the

NOTE Confidence: 0.95179124625

00:06:14.480 --> 00:06:18.740 PET imaging as a means to guide where and

NOTE Confidence: 0.95179124625

00:06:18.740 --> 00:06:21.040 when to deliver the radiation therapy.

NOTE Confidence: 0.93899569

00:06:22.920 --> 00:06:24.165 Well, you know,

NOTE Confidence: 0.93899569

00:06:24.165 --> 00:06:26.240 so that sounds really exciting,

NOTE Confidence: 0.93899569

00:06:26.240 --> 00:06:28.752 but also it seems to kind of make

NOTE Confidence: 0.93899569

00:06:28.752 --> 00:06:30.889 sense that you would have some

NOTE Confidence: 0.93899569

00:06:30.889 --> 00:06:33.031 sort of an imaging modality to

NOTE Confidence: 0.93899569

00:06:33.112 --> 00:06:35.112 direct the radiation therapy to

NOTE Confidence: 0.93899569

00:06:35.112 --> 00:06:37.992 what you wanted to treat prior

NOTE Confidence: 0.93899569

00:06:37.992 --> 00:06:41.480 to this RefleXion technology.

NOTE Confidence: 0.93899569

00:06:41.480 --> 00:06:42.760 How is that being done?

NOTE Confidence: 0.770733589333333

00:06:43.680 --> 00:06:45.717 So what we do for radiation therapy

NOTE Confidence: 0.770733589333333

00:06:45.717 --> 00:06:48.197 is we start with a planning CAT scan.

NOTE Confidence: 0.770733589333333

00:06:48.200 --> 00:06:51.554 This is a three-dimensional image of a

NOTE Confidence: 0.770733589333333

00:06:51.554 --> 00:06:53.918 patient in the position for radiation

NOTE Confidence: 0.770733589333333

00:06:53.918 --> 00:06:56.724 treatment and we use those images to

NOTE Confidence: 0.770733589333333

00:06:56.724 --> 00:06:59.046 define the target volumes being the

NOTE Confidence: 0.770733589333333

00:06:59.121 --> 00:07:01.776 tumor and any at risk areas as well as

NOTE Confidence: 0.770733589333333

00:07:01.776 --> 00:07:04.180 the normal tissues that we want to try

NOTE Confidence: 0.770733589333333

00:07:04.180 --> 00:07:07.400 to minimize radiation dose delivery to.

NOTE Confidence: 0.770733589333333

00:07:07.400 --> 00:07:08.692 With those CAT scans,

NOTE Confidence: 0.770733589333333

00:07:08.692 --> 00:07:11.037 we generate a plan to direct the

NOTE Confidence: 0.770733589333333

00:07:11.037 --> 00:07:13.431 radiation at the sites of interest and

NOTE Confidence: 0.770733589333333

00:07:13.431 --> 00:07:16.159 we deliver that plan on the Linac with

NOTE Confidence: 0.770733589333333

00:07:16.159 --> 00:07:18.042 very focused beams that are shaped

NOTE Confidence: 0.770733589333333

00:07:18.042 --> 00:07:20.290 across the face of the beam to match

NOTE Confidence: 0.770733589333333

00:07:20.352 --> 00:07:22.552 the shape of the tumor from the angle

NOTE Confidence: 0.770733589333333

00:07:22.552 --> 00:07:24.600 that the beam is being delivered.

NOTE Confidence: 0.770733589333333

00:07:24.600 --> 00:07:26.826 We combine that with imaging on

NOTE Confidence: 0.770733589333333

00:07:26.826 --> 00:07:29.319 the machine on a daily basis,

NOTE Confidence: 0.770733589333333

00:07:29.320 --> 00:07:31.858 so we can obtain a CAT scan or X-ray

NOTE Confidence: 0.770733589333333

00:07:31.858 --> 00:07:33.980 imaging to look at the patient anatomy

NOTE Confidence: 0.770733589333333

00:07:33.980 --> 00:07:36.513 on the day that they come in for

NOTE Confidence: 0.770733589333333

00:07:36.513 --> 00:07:38.753 treatment and move the patient on the

NOTE Confidence: 0.770733589333333

00:07:38.753 --> 00:07:40.944 treatment table in order to get the

NOTE Confidence: 0.770733589333333

00:07:40.944 --> 00:07:43.078 patient in position for treatment.

NOTE Confidence: 0.770733589333333

00:07:43.080 --> 00:07:45.304 What this does not help us see is

NOTE Confidence: 0.770733589333333

00:07:45.304 --> 00:07:47.734 motion that occurs during treatment and

NOTE Confidence: 0.770733589333333

00:07:47.734 --> 00:07:49.999 that's where this technology

NOTE Confidence: 0.770733589333333

00:07:50.000 --> 00:07:52.996 really is novel in providing added benefits.

NOTE Confidence: 0.966647116363636

00:07:54.320 --> 00:07:58.128 And it sounds like this

NOTE Confidence: 0.966647116363636

00:07:58.128 --> 00:08:01.036 technology is certainly exciting in the

NOTE Confidence: 0.966647116363636

00:08:01.036 --> 00:08:03.360 sense that it can see tumors moving,

NOTE Confidence: 0.966647116363636

00:08:03.360 --> 00:08:05.304 but it also sounds like it

NOTE Confidence: 0.966647116363636

00:08:05.304 --> 00:08:06.600 might be really expensive.

NOTE Confidence: 0.966647116363636

00:08:06.600 --> 00:08:09.200 So I have just a couple of questions.

NOTE Confidence: 0.966647116363636

00:08:09.200 --> 00:08:11.258 One, how expensive is this and

NOTE Confidence: 0.966647116363636

00:08:11.258 --> 00:08:13.440 is it covered by insurance?

NOTE Confidence: 0.966647116363636

00:08:13.440 --> 00:08:16.440 And two, how often do tumors

NOTE Confidence: 0.966647116363636

00:08:16.440 --> 00:08:18.440 really move during treatment?

NOTE Confidence: 0.966647116363636

00:08:18.440 --> 00:08:19.751 In other words,

NOTE Confidence: 0.966647116363636

00:08:19.751 --> 00:08:22.373 is this really something that's necessary

NOTE Confidence: 0.966647116363636

00:08:22.373 --> 00:08:25.165 for the vast majority of patients or

NOTE Confidence: 0.966647116363636

00:08:25.165 --> 00:08:27.760 could this simply be an added expense?

NOTE Confidence: 0.957489955

00:08:28.560 --> 00:08:31.740 So this is currently approved by

NOTE Confidence: 0.957489955

00:08:31.740 --> 00:08:34.290 insurance companies and the cost to the

NOTE Confidence: 0.957489955

00:08:34.290 --> 00:08:36.475 patient would be no different than the

NOTE Confidence: 0.957489955

00:08:36.475 --> 00:08:38.687 cost of a program of radiation therapy

NOTE Confidence: 0.957489955

00:08:38.687 --> 00:08:40.943 that is approved by your insurance

NOTE Confidence: 0.957489955

00:08:40.943 --> 00:08:42.922 company with the added cost to the

NOTE Confidence: 0.957489955

00:08:42.922 --> 00:08:44.566 insurance company of course of the

NOTE Confidence: 0.957489955

00:08:44.566 --> 00:08:46.400 PET scan that would be delivered for

NOTE Confidence: 0.957489955

00:08:46.400 --> 00:08:48.199 treatment planning and during treatment.

NOTE Confidence: 0.957489955

00:08:48.200 --> 00:08:50.573 But it has been approved by

NOTE Confidence: 0.957489955

00:08:50.573 --> 00:08:52.659 insurance companies and we would of

NOTE Confidence: 0.957489955

00:08:52.659 --> 00:08:54.324 course make sure that's authorized

NOTE Confidence: 0.957489955

00:08:54.324 --> 00:08:56.879 prior to proceeding with any treatment.

NOTE Confidence: 0.957489955

00:08:56.880 --> 00:08:59.701 In regards to the the tumor motion

NOTE Confidence: 0.957489955

00:08:59.701 --> 00:09:02.199 and how this is beneficial,

NOTE Confidence: 0.957489955

00:09:02.200 --> 00:09:04.264 I think it would be interesting

NOTE Confidence: 0.957489955

00:09:04.264 --> 00:09:06.482 to talk about treatment of a lung cancer

NOTE Confidence: 0.957489955

00:09:06.482 --> 00:09:08.808 to try to envision how the RefleXion

NOTE Confidence: 0.957489955

00:09:08.808 --> 00:09:11.225 technology really provides benefits.

NOTE Confidence: 0.957489955

00:09:11.225 --> 00:09:15.275 So how often a patients tumors moves

NOTE Confidence: 0.957489955

00:09:15.280 --> 00:09:17.332 would be very common when we're

NOTE Confidence: 0.957489955

00:09:17.332 --> 00:09:19.480 considering a lung cancer, for example.

NOTE Confidence: 0.957489955

00:09:19.480 --> 00:09:21.424 So this means that when you're

NOTE Confidence: 0.957489955

00:09:21.424 --> 00:09:22.720 targeting a lung cancer,

NOTE Confidence: 0.957489955

00:09:22.720 --> 00:09:24.808 you're basically trying to target a

NOTE Confidence: 0.957489955

00:09:24.808 --> 00:09:26.800 moving target with radiation precisely.

NOTE Confidence: 0.952338

00:09:29.240 --> 00:09:33.485 So typically how we would take this

NOTE Confidence: 0.952338

00:09:33.485 --> 00:09:35.690 into account with radiation therapy

NOTE Confidence: 0.963519623

00:09:35.768 --> 00:09:38.186 is that the radiation field would

NOTE Confidence: 0.963519623

00:09:38.186 --> 00:09:40.808 have to be expanded to encompass the

NOTE Confidence: 0.963519623

00:09:40.808 --> 00:09:43.160 path a lung tumor takes while the

NOTE Confidence: 0.963519623

00:09:43.233 --> 00:09:45.609 patient breathes in order to fully

NOTE Confidence: 0.963519623

00:09:45.609 --> 00:09:49.119 dose the radiation to the tumor.

NOTE Confidence: 0.963519623

00:09:49.120 --> 00:09:51.367 And we also have to take into

NOTE Confidence: 0.963519623

00:09:51.367 --> 00:09:53.521 account not only motion of tumors

NOTE Confidence: 0.963519623

00:09:53.521 --> 00:09:55.753 but also motion of the patient.

NOTE Confidence: 0.963519623

00:09:55.760 --> 00:09:58.739 So a patient may move and even a small

NOTE Confidence: 0.963519623

00:09:58.739 --> 00:10:01.469 amount of motion say millimetres during

NOTE Confidence: 0.963519623

00:10:01.469 --> 00:10:04.307 treatment could move the tumor outside

NOTE Confidence: 0.963519623

00:10:04.307 --> 00:10:06.959 of the high dose radiation region.

NOTE Confidence: 0.963519623

00:10:06.960 --> 00:10:09.132 So we would further expand the

NOTE Confidence: 0.963519623

00:10:09.132 --> 00:10:11.120 radiation field to take into

NOTE Confidence: 0.963519623

00:10:11.120 --> 00:10:12.996 account that potential motion.

NOTE Confidence: 0.963519623

00:10:13.000 --> 00:10:14.920 So with the RefleXion

NOTE Confidence: 0.963519623

00:10:14.920 --> 00:10:17.088 they're calling it biologically

NOTE Confidence: 0.963519623

00:10:17.088 --> 00:10:18.714 guided radiation therapy.

NOTE Confidence: 0.963519623

00:10:18.720 --> 00:10:21.225 So rather than taking into

NOTE Confidence: 0.963519623

00:10:21.225 --> 00:10:24.221 account the natural motion of the

NOTE Confidence: 0.963519623

00:10:24.221 --> 00:10:27.035 tumor or the motion of a patient

NOTE Confidence: 0.963519623

00:10:27.040 --> 00:10:28.772 with larger treatment fields,

NOTE Confidence: 0.963519623

00:10:28.772 --> 00:10:31.774 the field can be smaller because the

NOTE Confidence: 0.963519623

00:10:31.774 --> 00:10:34.070 PET signal from the tumor is tracked

NOTE Confidence: 0.963519623

00:10:34.070 --> 00:10:36.480 by the RefleXion to guide where

NOTE Confidence: 0.963519623

00:10:36.480 --> 00:10:38.994 and when to deliver the radiation.

NOTE Confidence: 0.963519623

00:10:39.000 --> 00:10:41.544 So you can imagine it is as if

NOTE Confidence: 0.963519623

00:10:41.544 --> 00:10:43.503 the radiation treatment plan is

NOTE Confidence: 0.963519623

00:10:43.503 --> 00:10:45.159 moving with the tumor.

NOTE Confidence: 0.963519623

00:10:45.160 --> 00:10:47.040 If the tumor naturally moves,

NOTE Confidence: 0.963519623

00:10:47.040 --> 00:10:49.794 such as a lung cancer or

NOTE Confidence: 0.963519623

00:10:49.800 --> 00:10:51.456 if the patient may wiggle a little bit

NOTE Confidence: 0.963519623

00:10:51.456 --> 00:10:53.439 on the treatment table during treatment.

NOTE Confidence: 0.947075495714286

00:10:53.840 --> 00:10:56.672 And so if you can narrow the radiation

NOTE Confidence: 0.947075495714286

00:10:56.672 --> 00:10:59.261 field to just target the tumor and

NOTE Confidence: 0.947075495714286

00:10:59.261 --> 00:11:01.899 not have to expand the field to

NOTE Confidence: 0.947075495714286

00:11:01.899 --> 00:11:04.155 account for all of this motion,

NOTE Confidence: 0.947075495714286

00:11:04.160 --> 00:11:06.760 you might have fewer side effects too, right?

NOTE Confidence: 0.9650927875

00:11:07.080 --> 00:11:08.105 That's exactly what I was

NOTE Confidence: 0.9650927875

00:11:08.105 --> 00:11:09.522 going to say, Doctor Chagpar.

NOTE Confidence: 0.9650927875

00:11:09.522 --> 00:11:12.730 The main benefit really is that we can

NOTE Confidence: 0.9650927875

00:11:12.809 --> 00:11:15.563 reduce the volume of normal healthy

NOTE Confidence: 0.9650927875

00:11:15.563 --> 00:11:18.068 tissue surrounding the tumor and the

NOTE Confidence: 0.9650927875

00:11:18.068 --> 00:11:20.072 exposure of those tissues to high

NOTE Confidence: 0.9650927875

00:11:20.072 --> 00:11:22.982 doses of radiation and that in turn

NOTE Confidence: 0.9650927875

00:11:22.982 --> 00:11:25.152 can significantly reduce side effects.

NOTE Confidence: 0.963875857272727

00:11:26.080 --> 00:11:28.378 And so it sounds

NOTE Confidence: 0.963875857272727

00:11:28.378 --> 00:11:30.960 like this is novel technology.

NOTE Confidence: 0.963875857272727

00:11:30.960 --> 00:11:33.036 Has that actually been looked at

NOTE Confidence: 0.963875857272727

00:11:33.036 --> 00:11:35.492 in terms of studies where you can

NOTE Confidence: 0.963875857272727

00:11:35.492 --> 00:11:38.466 actually say that there is A-X percent

NOTE Confidence: 0.963875857272727

00:11:38.466 --> 00:11:41.944 difference in terms of the side effects

NOTE Confidence: 0.963875857272727

00:11:41.944 --> 00:11:43.672 that patients may have to face.

NOTE Confidence: 0.963875857272727

00:11:43.680 --> 00:11:46.440 So for example, in the case

NOTE Confidence: 0.963875857272727

00:11:46.440 --> 00:11:49.721 of lung cancer that there might be

NOTE Confidence: 0.963875857272727

00:11:49.721 --> 00:11:52.231 less radiation induced pneumonitis or

NOTE Confidence: 0.963875857272727

00:11:52.312 --> 00:11:55.136 less cardiac toxicity with the use

NOTE Confidence: 0.963875857272727

00:11:55.136 --> 00:11:57.488 of this new technology versus what

NOTE Confidence: 0.963875857272727

00:11:57.488 --> 00:12:00.320 we have historically always used.

NOTE Confidence: 0.963875857272727

00:12:00.320 --> 00:12:01.320 That's a great question.

NOTE Confidence: 0.963875857272727

00:12:01.320 --> 00:12:02.478 So what has

NOTE Confidence: 0.9226482475

00:12:02.480 --> 00:12:05.351 been studied so far since this is such a

NOTE Confidence: 0.9226482475

00:12:05.351 --> 00:12:07.960 novel technology is that with the PET,

NOTE Confidence: 0.9226482475

00:12:07.960 --> 00:12:11.144 with the PET tracking you are in fact

NOTE Confidence: 0.9226482475

00:12:11.144 --> 00:12:13.353 delivering adequate dose to the tumor

NOTE Confidence: 0.9226482475

00:12:13.353 --> 00:12:16.205 and if anything able to better deliver an

NOTE Confidence: 0.9226482475

00:12:16.205 --> 00:12:18.893 ablative dose and full coverage of the

NOTE Confidence: 0.9226482475

00:12:18.893 --> 00:12:21.280 tumor while it moves during treatment.

NOTE Confidence: 0.9226482475

00:12:21.280 --> 00:12:24.144 What we have open right now at Smilow

NOTE Confidence: 0.9226482475

00:12:24.144 --> 00:12:26.456 is a registry trial.

NOTE Confidence: 0.9226482475

00:12:26.456 --> 00:12:29.198 So this is a trial for patients who

NOTE Confidence: 0.9226482475

00:12:29.198 --> 00:12:31.760 are being treated on the RefleXion machine,

NOTE Confidence: 0.9226482475

00:12:31.760 --> 00:12:34.840 we are collecting data prospectively

NOTE Confidence: 0.9226482475

00:12:34.840 --> 00:12:41.200 in terms of their tumor type outcomes,

NOTE Confidence: 0.9226482475

00:12:41.200 --> 00:12:44.278 in terms of response to treatment

NOTE Confidence: 0.9226482475

00:12:44.280 --> 00:12:46.611 and using that data in order to

NOTE Confidence: 0.9226482475

00:12:46.611 --> 00:12:48.320 understand their response to therapy,

NOTE Confidence: 0.9226482475

00:12:48.320 --> 00:12:51.080 how to predict response,

NOTE Confidence: 0.9226482475

00:12:51.080 --> 00:12:56.350 but also being able to quantify how the

NOTE Confidence: 0.9226482475

00:12:56.350 --> 00:12:59.480 delivery of treatment on the RefleXion

NOTE Confidence: 0.9226482475

00:12:59.480 --> 00:13:02.560 might reduce the risk of side effects.

NOTE Confidence: 0.957955866470588

00:13:03.440 --> 00:13:06.520 Fantastic. Well, we are going to talk more

NOTE Confidence: 0.957955866470588

00:13:06.520 --> 00:13:08.504 about these interesting breakthroughs

NOTE Confidence: 0.957955866470588

00:13:08.504 --> 00:13:11.354 in terms of radiation therapy,

NOTE Confidence: 0.957955866470588

00:13:11.360 --> 00:13:13.408 but first we need to take a short

NOTE Confidence: 0.957955866470588

00:13:13.408 --> 00:13:15.000 break for a medical minute.

NOTE Confidence: 0.957955866470588

00:13:15.000 --> 00:13:17.250 Please stay tuned to learn more

NOTE Confidence: 0.957955866470588

00:13:17.250 --> 00:13:18.750 about this breakthrough radiation

NOTE Confidence: 0.957955866470588

00:13:18.810 --> 00:13:20.078 therapy with my guest,

NOTE Confidence: 0.957955866470588

00:13:20.080 --> 00:13:21.478 Doctor Kimberly Johung.

NOTE Confidence: 0.788149961

00:13:22.120 --> 00:13:24.080 Funding for Yale Cancer Answers

NOTE Confidence: 0.788149961

00:13:24.080 --> 00:13:26.040 comes from Smilow Cancer Hospital,

NOTE Confidence: 0.788149961

00:13:26.040 --> 00:13:28.344 where their Prostate and Urologic cancers

NOTE Confidence: 0.788149961

00:13:28.344 --> 00:13:31.028 program is comprised of a team dedicated

NOTE Confidence: 0.788149961

00:13:31.028 --> 00:13:32.993 to managing the diagnosis, evaluation,

NOTE Confidence: 0.788149961

00:13:32.993 --> 00:13:35.558 and treatment of urologic cancers,

NOTE Confidence: 0.788149961

00:13:35.560 --> 00:13:38.470 including testicular cancer.

NOTE Confidence: 0.788149961

00:13:38.470 --> 00:13:42.616 Smilowcancerhospital.org.

NOTE Confidence: 0.788149961

00:13:42.616 --> 00:13:45.121 Genetic testing can be useful for people with certain types of

NOTE Confidence: 0.788149961

00:13:45.121 --> 00:13:47.233 cancer that seem to run in their families.

NOTE Confidence: 0.788149961

00:13:47.240 --> 00:13:49.150 Genetic counseling is a process

NOTE Confidence: 0.788149961

00:13:49.150 --> 00:13:51.060 that includes collecting a detailed

NOTE Confidence: 0.788149961

00:13:51.122 --> 00:13:52.718 personal and family history,

NOTE Confidence: 0.788149961

00:13:52.720 --> 00:13:54.052 a risk assessment,

NOTE Confidence: 0.788149961

00:13:54.052 --> 00:13:57.160 and a discussion of genetic testing options.

NOTE Confidence: 0.788149961

00:13:57.160 --> 00:13:59.786 Only about 5 to 10% of all cancers

NOTE Confidence: 0.788149961

00:13:59.786 --> 00:14:01.496 are inherited and genetic testing

NOTE Confidence: 0.788149961

00:14:01.496 --> 00:14:03.798 is not recommended for everyone.

NOTE Confidence: 0.788149961

00:14:03.800 --> 00:14:05.755 Individuals who have a personal

NOTE Confidence: 0.788149961

00:14:05.755 --> 00:14:08.230 and or family history that includes

NOTE Confidence: 0.788149961

00:14:08.230 --> 00:14:10.475 cancer at unusually early ages,

NOTE Confidence: 0.788149961

00:14:10.480 --> 00:14:12.502 multiple relatives on the same side

NOTE Confidence: 0.788149961

00:14:12.502 --> 00:14:14.918 of the family with the same cancer,

NOTE Confidence: 0.788149961

00:14:14.920 --> 00:14:17.552 more than one diagnosis of cancer in

NOTE Confidence: 0.788149961

00:14:17.552 --> 00:14:19.484 the same individual, rare cancers,

NOTE Confidence: 0.788149961

00:14:19.484 --> 00:14:22.298 or family history of a known altered

NOTE Confidence: 0.788149961

00:14:22.298 --> 00:14:24.828 cancer predisposing gene, could be

NOTE Confidence: 0.788149961

00:14:24.828 --> 00:14:26.876 candidates for genetic testing.

NOTE Confidence: 0.788149961

00:14:26.880 --> 00:14:28.955 Resources for genetic counseling and

NOTE Confidence: 0.788149961

00:14:28.955 --> 00:14:31.030 testing are available at federally

NOTE Confidence: 0.788149961

00:14:31.097 --> 00:14:32.327 designated comprehensive cancer

NOTE Confidence: 0.788149961

00:14:32.327 --> 00:14:34.787 centers such as Yale Cancer Center

NOTE Confidence: 0.788149961

00:14:34.787 --> 00:14:36.720 and Smilow Cancer Hospital.

NOTE Confidence: 0.788149961

00:14:36.720 --> 00:14:39.088 More information is available

NOTE Confidence: 0.788149961

00:14:39.088 --> 00:14:40.114 at yalecancercenter.org.

NOTE Confidence: 0.788149961

00:14:40.114 --> 00:14:42.718 You're listening to Connecticut Public Radio.

NOTE Confidence: 0.963657975

00:14:43.280 --> 00:14:45.278 Welcome back to Yale Cancer Answers.

NOTE Confidence: 0.963657975

00:14:45.280 --> 00:14:47.146 This is Doctor Anees Chagpar and

NOTE Confidence: 0.963657975

00:14:47.146 --> 00:14:48.960 I'm joined tonight by my guest,

NOTE Confidence: 0.963657975

00:14:48.960 --> 00:14:50.804 Doctor Kimberly Johung.

NOTE Confidence: 0.963657975

00:14:50.804 --> 00:14:53.109 We're talking about a new

NOTE Confidence: 0.963657975

00:14:53.109 --> 00:14:54.600 breakthrough radiotherapy.

NOTE Confidence: 0.963657975

00:14:54.600 --> 00:14:57.360 It's actually a technique called RefleXion

NOTE Confidence: 0.963657975

00:14:57.360 --> 00:15:00.380 which kind of pairs radiation

NOTE Confidence: 0.963657975

00:15:00.380 --> 00:15:03.280 therapy delivery with what sounds

NOTE Confidence: 0.963657975

00:15:03.280 --> 00:15:07.199 like real time PET scan techniques,

NOTE Confidence: 0.963657975

00:15:07.200 --> 00:15:08.850 essentially allowing radiation

NOTE Confidence: 0.963657975

00:15:08.850 --> 00:15:11.600 therapists like Doctor Johung to

NOTE Confidence: 0.963657975

00:15:11.600 --> 00:15:15.067 kind of track that tumor as it moves

NOTE Confidence: 0.963657975

00:15:15.067 --> 00:15:17.613 and as a patient moves during therapy

NOTE Confidence: 0.963657975

00:15:17.613 --> 00:15:20.924 with the PET imaging and deliver the

NOTE Confidence: 0.963657975

00:15:20.924 --> 00:15:23.512 radiation therapy more precisely.

NOTE Confidence: 0.963657975

00:15:23.512 --> 00:15:26.980 So Kim, you were talking

NOTE Confidence: 0.963657975

00:15:26.980 --> 00:15:29.040 earlier on about this technology

NOTE Confidence: 0.963657975

00:15:29.113 --> 00:15:31.411 and you were saying that you

NOTE Confidence: 0.963657975

00:15:31.411 --> 00:15:33.520 actually specialize in GI cancer.

00:15:34.584 --> 00:15:36.782 We kind of took a little bit of

NOTE Confidence: 0.963657975

00:15:36.782 --> 00:15:38.910 a detour to kind of get a sense

NOTE Confidence: 0.963657975

00:15:38.980 --> 00:15:41.080 of how this technology might work

NOTE Confidence: 0.963657975

00:15:41.080 --> 00:15:43.466 in terms of lung cancers where

NOTE Confidence: 0.963657975

00:15:43.466 --> 00:15:46.424 you can imagine that as people

NOTE Confidence: 0.963657975

00:15:46.424 --> 00:15:48.672 breathe their tumors might move.

NOTE Confidence: 0.963657975

00:15:48.672 --> 00:15:51.935 Can you talk a little bit more

NOTE Confidence: 0.963657975

00:15:51.935 --> 00:15:54.640 about its particular utility

NOTE Confidence: 0.963657975

00:15:54.640 --> 00:15:56.278 in GI cancers?

NOTE Confidence: 0.863470659285714

00:15:57.000 --> 00:15:58.600 Absolutely.

NOTE Confidence: 0.863470659285714

00:15:58.600 --> 00:16:02.430 We did talk a lot about how the RefleXion

NOTE Confidence: 0.863470659285714

00:16:02.430 --> 00:16:04.800 can optimize the treatment of cancers that

NOTE Confidence: 0.863470659285714

00:16:04.800 --> 00:16:06.832 move during treatment.

NOTE Confidence: 0.863470659285714

00:16:06.832 --> 00:16:09.840 And where this comes into play for GI

NOTE Confidence: 0.863470659285714

00:16:09.909 --> 00:16:12.533 cancers would be in the delivery of what

NOTE Confidence: 0.863470659285714

00:16:12.533 --> 00:16:15.719 we call stereotactic body radiation therapy.

NOTE Confidence: 0.863470659285714

00:16:15.720 --> 00:16:18.120 So stereotactic body radiation therapy,

NOTE Confidence: 0.863470659285714

00:16:18.120 --> 00:16:21.680 that's a mouthful I'll call it SBRT,

NOTE Confidence: 0.863470659285714

00:16:21.680 --> 00:16:24.230 is a specialized type of radiation

NOTE Confidence: 0.863470659285714

00:16:24.230 --> 00:16:26.862 therapy in which very precise high

NOTE Confidence: 0.863470659285714

00:16:26.862 --> 00:16:29.412 doses or ablative doses of radiation

NOTE Confidence: 0.863470659285714

00:16:29.412 --> 00:16:32.320 can be delivered to small tumors.

NOTE Confidence: 0.863470659285714

00:16:32.320 --> 00:16:36.624 So typically between 1-5 treatments

NOTE Confidence: 0.863470659285714

00:16:36.624 --> 00:16:40.128 for tumors that are very localized.

NOTE Confidence: 0.863470659285714

00:16:40.128 --> 00:16:42.810 And in this situation it becomes

NOTE Confidence: 0.863470659285714

00:16:42.810 --> 00:16:44.450 very important to precisely

NOTE Confidence: 0.863470659285714

00:16:44.450 --> 00:16:46.398 be able to track tumors.

NOTE Confidence: 0.863470659285714

00:16:46.400 --> 00:16:48.660 So we know that stereotactic

NOTE Confidence: 0.863470659285714

00:16:48.660 --> 00:16:50.920 radiation can be an effective,

NOTE Confidence: 0.863470659285714

00:16:50.920 --> 00:16:53.164 non invasive way to treat not

NOTE Confidence: 0.863470659285714

00:16:53.164 --> 00:16:55.320 only early stage lung cancers,

NOTE Confidence: 0.863470659285714

00:16:55.320 --> 00:16:57.084 but also liver tumors that may

NOTE Confidence: 0.863470659285714

00:16:57.084 --> 00:16:59.120 not be able to be resected,

NOTE Confidence: 0.863470659285714

00:16:59.120 --> 00:17:01.200 pancreatic tumors that also

NOTE Confidence: 0.863470659285714

00:17:01.200 --> 00:17:02.760 cannot be resected,

NOTE Confidence: 0.863470659285714

00:17:02.760 --> 00:17:04.980 or metastatic sites with these

NOTE Confidence: 0.863470659285714

00:17:04.980 --> 00:17:08.103 ablative doses that can be effective

NOTE Confidence: 0.863470659285714

00:17:08.103 --> 00:17:10.560 without concurrent chemotherapy.

NOTE Confidence: 0.863470659285714

00:17:10.560 --> 00:17:12.520 So I did mention the liver tumors

NOTE Confidence: 0.863470659285714

00:17:12.520 --> 00:17:13.800 and the pancreatic tumors.

NOTE Confidence: 0.863470659285714

00:17:13.800 --> 00:17:15.680 Those would be primary tumors

NOTE Confidence: 0.863470659285714

00:17:15.680 --> 00:17:17.560 that develop in those organs.

NOTE Confidence: 0.863470659285714

00:17:17.560 --> 00:17:20.060 But for metastatic sites,

NOTE Confidence: 0.863470659285714

00:17:20.060 --> 00:17:23.132 one area where SBRT has very

NOTE Confidence: 0.863470659285714

00:17:23.132 --> 00:17:24.848 promising data is in the treatment

NOTE Confidence: 0.863470659285714

00:17:24.848 --> 00:17:26.519 of oligometastatic disease.

NOTE Confidence: 0.923760228571428

00:17:28.160 --> 00:17:29.875 So tell tell us more about that,

NOTE Confidence: 0.923760228571428

00:17:29.880 --> 00:17:33.558 what exactly is oligometastatic disease

NOTE Confidence: 0.923760228571428

00:17:33.560 --> 00:17:37.720 and how does this work in those patients?

NOTE Confidence: 0.864210786666667

00:17:38.160 --> 00:17:41.070 Absolutely. So oligometastatic disease

NOTE Confidence: 0.864210786666667

00:17:41.070 --> 00:17:44.372 would be primary tumors that arise in,

NOTE Confidence: 0.864210786666667

00:17:44.372 --> 00:17:46.640 if we're talking about the GI tract,

NOTE Confidence: 0.864210786666667

00:17:46.640 --> 00:17:47.812 we'll use for example,

NOTE Confidence: 0.864210786666667

00:17:47.812 --> 00:17:50.156 the colon or the anus and then have

NOTE Confidence: 0.864210786666667

00:17:50.156 --> 00:17:52.200 spread to a limited number of sites,

NOTE Confidence: 0.864210786666667

00:17:52.200 --> 00:17:53.640 typically under 5 sites.

NOTE Confidence: 0.864210786666667

00:17:53.640 --> 00:17:57.183 And what we've seen is that this is a

NOTE Confidence: 0.864210786666667

00:17:57.183 --> 00:17:59.363 subtype of metastatic disease where

NOTE Confidence: 0.864210786666667

00:17:59.363 --> 00:18:01.640 patients actually can have very good

NOTE Confidence: 0.864210786666667

00:18:01.640 --> 00:18:04.110 outcomes that we can see long term

NOTE Confidence: 0.864210786666667

00:18:04.110 --> 00:18:06.930 survival and this is achieved with

NOTE Confidence: 0.864210786666667

00:18:06.930 --> 00:18:09.758 definitive treatment of the primary tumor.

NOTE Confidence: 0.864210786666667

00:18:09.760 --> 00:18:11.724 So that would typically

NOTE Confidence: 0.864210786666667

00:18:11.724 --> 00:18:13.197 involve chemotherapy, surgery,

NOTE Confidence: 0.864210786666667

00:18:13.200 --> 00:18:15.100 often radiation therapy to

NOTE Confidence: 0.864210786666667

00:18:15.100 --> 00:18:17.000 address the primary tumor.

NOTE Confidence: 0.864210786666667

00:18:17.000 --> 00:18:20.000 And then if a good response is achieved,

NOTE Confidence: 0.864210786666667

00:18:20.000 --> 00:18:21.800 you can provide local therapy

NOTE Confidence: 0.864210786666667

00:18:21.800 --> 00:18:24.200 to those one to five limited

NOTE Confidence: 0.864210786666667

00:18:24.200 --> 00:18:26.276 sites of metastatic disease.

NOTE Confidence: 0.864210786666667

00:18:26.280 --> 00:18:28.758 So local therapy can be surgical resection,

NOTE Confidence: 0.864210786666667

00:18:28.760 --> 00:18:30.620 but when surgery for these

NOTE Confidence: 0.864210786666667

00:18:30.620 --> 00:18:32.480 metastatic sites is not feasible,

NOTE Confidence: 0.864210786666667

00:18:32.480 --> 00:18:35.130 particularly if we're talking about

NOTE Confidence: 0.864210786666667

00:18:35.130 --> 00:18:38.397 multiple sites of oligometastatic disease,

NOTE Confidence: 0.864210786666667

00:18:38.397 --> 00:18:41.192 then SBRT or the stereotactic

NOTE Confidence: 0.864210786666667

00:18:41.192 --> 00:18:43.818 radiation can provide high load

NOTE Confidence: 0.864210786666667

00:18:43.818 --> 00:18:46.564 rates of local control with minimal

NOTE Confidence: 0.864210786666667

00:18:46.564 --> 00:18:49.518 toxicity in a way that's non invasive.

NOTE Confidence: 0.864210786666667

00:18:49.520 --> 00:18:51.680 And there are other local treatments

NOTE Confidence: 0.864210786666667

00:18:51.680 --> 00:18:54.073 that can be provided for oligo-

NOTE Confidence: 0.864210786666667

00:18:54.073 --> 00:18:56.448 metastatic disease such as ablation

NOTE Confidence: 0.864210786666667

00:18:56.448 --> 00:18:58.432 techniques like microwave ablation

NOTE Confidence: 0.864210786666667

00:18:58.432 --> 00:18:59.920 or radiofrequency ablation.

NOTE Confidence: 0.922873391

00:19:01.240 --> 00:19:04.964 So in terms of of using this

NOTE Confidence: 0.922873391

00:19:04.964 --> 00:19:06.560 technique of RefleXion

NOTE Confidence: 0.922873391

00:19:06.560 --> 00:19:09.980 it sounds like that is really

NOTE Confidence: 0.922873391

00:19:09.980 --> 00:19:13.124 specific to ablating these tumors

NOTE Confidence: 0.922873391

00:19:13.124 --> 00:19:17.800 with SBRT as opposed to microwave or

NOTE Confidence: 0.922873391

00:19:17.800 --> 00:19:20.280 other techniques that you mentioned,

NOTE Confidence: 0.922873391

00:19:20.280 --> 00:19:21.640 is that right?

NOTE Confidence: 0.943815162352941

00:19:21.640 --> 00:19:24.520 Yes, the RefleXion technology with the

NOTE Confidence: 0.943815162352941

00:19:24.520 --> 00:19:26.974 PET tracking or biologically guided

NOTE Confidence: 0.943815162352941

00:19:26.974 --> 00:19:29.716 radiation therapy as we're calling it

NOTE Confidence: 0.943815162352941

00:19:29.720 --> 00:19:33.095 really is to be used in conjunction with

NOTE Confidence: 0.943815162352941

00:19:33.095 --> 00:19:36.005 radiation therapy for the delivery of

NOTE Confidence: 0.943815162352941

00:19:36.005 --> 00:19:38.158 stereotactic body radiation therapy.

NOTE Confidence: 0.943815162352941

00:19:38.160 --> 00:19:41.471 And right now the SBRT is

NOTE Confidence: 0.943815162352941

00:19:41.471 --> 00:19:44.689 approved for the treatment of lung

NOTE Confidence: 0.943815162352941

00:19:44.689 --> 00:19:48.190 tumor sites and bone tumors though we

NOTE Confidence: 0.943815162352941

00:19:48.190 --> 00:19:50.200 expect those disease sites to expand.

NOTE Confidence: 0.943815162352941

00:19:50.200 --> 00:19:52.349 So when we're talking about GI cancers

NOTE Confidence: 0.943815162352941

00:19:52.349 --> 00:19:55.117 and the use of the RefleXion technology,

NOTE Confidence: 0.943815162352941

00:19:55.120 --> 00:19:57.150 where it really would come into play

NOTE Confidence: 0.943815162352941

00:19:57.150 --> 00:19:59.854 right now is for the treatment of all

NOTE Confidence: 0.943815162352941

00:19:59.854 --> 00:20:01.841 oligometastatic disease in the lung

NOTE Confidence: 0.943815162352941

00:20:01.841 --> 00:20:04.600 or the bone from a primary GI cancer.

NOTE Confidence: 0.970962850833333

00:20:05.160 --> 00:20:08.544 You know, one would think that if it was

NOTE Confidence: 0.970962850833333

00:20:08.544 --> 00:20:12.304 good to treat lung cancers where they

NOTE Confidence: 0.970962850833333

00:20:12.304 --> 00:20:15.585 move and perhaps bone oligometastatic

NOTE Confidence: 0.970962850833333

00:20:15.585 --> 00:20:19.160 disease just because of the intensity,

NOTE Confidence: 0.970962850833333

00:20:19.160 --> 00:20:21.956 it sounds like when we're doing

NOTE Confidence: 0.970962850833333

00:20:21.956 --> 00:20:23.354 these ablative therapies,

NOTE Confidence: 0.970962850833333

00:20:23.360 --> 00:20:25.824 it's really a more intense form of

NOTE Confidence: 0.970962850833333

00:20:25.824 --> 00:20:28.119 radiation therapy than standard radiation.

NOTE Confidence: 0.970962850833333

00:20:28.120 --> 00:20:30.645 And so when you're targeting

NOTE Confidence: 0.970962850833333

00:20:30.645 --> 00:20:32.160 these metastatic sites,

NOTE Confidence: 0.970962850833333

00:20:32.160 --> 00:20:34.200 you want to be more precise about it,

NOTE Confidence: 0.970962850833333

00:20:34.200 --> 00:20:34.920 is that right?

NOTE Confidence: 0.935818021818182

00:20:35.360 --> 00:20:37.856 That's correct. So when we're delivering

NOTE Confidence: 0.935818021818182

00:20:37.856 --> 00:20:40.040 the stereotactic body radiation therapy,

NOTE Confidence: 0.935818021818182

00:20:40.040 --> 00:20:42.427 each dose of radiation on a particular

NOTE Confidence: 0.935818021818182

00:20:42.427 --> 00:20:45.355 day can be upwards of 10 times

NOTE Confidence: 0.935818021818182

00:20:45.355 --> 00:20:48.423 the amount that we would give on a

NOTE Confidence: 0.935818021818182

00:20:48.423 --> 00:20:50.195 standard radiation therapy program.

NOTE Confidence: 0.935818021818182

00:20:50.200 --> 00:20:52.360 And so there it becomes extremely

NOTE Confidence: 0.935818021818182

00:20:52.360 --> 00:20:55.145 important to be very precise with where

NOTE Confidence: 0.935818021818182

00:20:55.145 --> 00:20:58.140 that delivery of radiation is and to

NOTE Confidence: 0.935818021818182

00:20:58.140 --> 00:21:00.280 protect the surrounding normal tissues.

NOTE Confidence: 0.935818021818182

00:21:00.280 --> 00:21:02.380 And when we discussed the ability

NOTE Confidence: 0.935818021818182

00:21:02.380 --> 00:21:04.625 to reduce the treatment field with

NOTE Confidence: 0.935818021818182

00:21:04.625 --> 00:21:06.560 the use of RefleXion technology,

NOTE Confidence: 0.935818021818182

00:21:06.560 --> 00:21:09.689 that benefit in terms of decreasing the

NOTE Confidence: 0.935818021818182

00:21:09.689 --> 00:21:12.729 risk of normal tissue exposure really

NOTE Confidence: 0.935818021818182

00:21:12.729 --> 00:21:14.943 is increased when you're delivering the

NOTE Confidence: 0.935818021818182

00:21:14.943 --> 00:21:17.240 higher doses of radiation for SBRT.

00:21:18.160 --> 00:21:20.290 You know, when we think about

NOTE Confidence: 0.961306085

00:21:20.290 --> 00:21:22.280 colorectal cancer, for example,

NOTE Confidence: 0.961306085

00:21:22.280 --> 00:21:24.890 it seems that

NOTE Confidence: 0.961306085

00:21:24.890 --> 00:21:27.305 we would think that the most common

NOTE Confidence: 0.961306085

00:21:27.305 --> 00:21:29.319 place for colorectal cancer to

NOTE Confidence: 0.961306085

00:21:29.319 --> 00:21:31.713 metastasize would be to the liver.

NOTE Confidence: 0.961306085

00:21:31.720 --> 00:21:35.738 And so is there a reason why

NOTE Confidence: 0.961306085

00:21:35.738 --> 00:21:38.399 RefleXion currently isn't used for

NOTE Confidence: 0.961306085

00:21:38.400 --> 00:21:40.494 these oligometastatic sites in the

NOTE Confidence: 0.961306085

00:21:40.494 --> 00:21:43.112 liver or did I misunderstand and it

NOTE Confidence: 0.961306085

00:21:43.112 --> 00:21:45.800 really is being used in the liver?

NOTE Confidence: 0.926946908888889

00:21:46.400 --> 00:21:48.464 We expect that the RefleXion technology

NOTE Confidence: 0.926946908888889

00:21:48.464 --> 00:21:50.715 will be used for oligometastatic in

NOTE Confidence: 0.926946908888889

00:21:50.715 --> 00:21:53.157 the liver because as you mentioned,

NOTE Confidence: 0.926946908888889

00:21:53.160 --> 00:21:54.732 especially for colorectal cancer,

NOTE Confidence: 0.926946908888889

00:21:54.732 --> 00:21:58.049 this is often where we see sites of

NOTE Confidence: 0.926946908888889

00:21:58.049 --> 00:22:00.274 oligometastatic disease and where we've

NOTE Confidence: 0.926946908888889

00:22:00.274 --> 00:22:02.600 seen excellent long term outcomes.

NOTE Confidence: 0.926946908888889

00:22:02.600 --> 00:22:05.204 So what is in development right now

NOTE Confidence: 0.926946908888889

00:22:05.204 --> 00:22:08.606 is being able to detect the PET tracer

NOTE Confidence: 0.926946908888889

00:22:08.606 --> 00:22:10.811 activity from the metastatic site

NOTE Confidence: 0.926946908888889

00:22:10.887 --> 00:22:13.439 or the tumor site in the liver and

NOTE Confidence: 0.926946908888889

00:22:13.439 --> 00:22:15.780 be able to differentiate that from

NOTE Confidence: 0.926946908888889

00:22:15.780 --> 00:22:17.905 the background uptake because there

NOTE Confidence: 0.926946908888889

00:22:17.905 --> 00:22:20.200 is a certain degree of background

NOTE Confidence: 0.926946908888889

00:22:20.200 --> 00:22:22.000 PET uptake in the liver.

NOTE Confidence: 0.926946908888889

00:22:22.000 --> 00:22:24.136 So to be able to precisely

NOTE Confidence: 0.926946908888889

00:22:24.136 --> 00:22:25.560 track a liver tumor,

NOTE Confidence: 0.926946908888889

00:22:25.560 --> 00:22:29.156 one must be able to have a ability to

NOTE Confidence: 0.926946908888889

00:22:29.156 --> 00:22:30.828 differentiate some slight differences

NOTE Confidence: 0.926946908888889

00:22:30.828 --> 00:22:33.644 in PET activity or PET uptake between

NOTE Confidence: 0.926946908888889

00:22:33.644 --> 00:22:35.798 the tumor and the normal tissue.

NOTE Confidence: 0.8978338275

00:22:36.160 --> 00:22:38.878 You really can use this technology

NOTE Confidence: 0.8978338275

00:22:38.878 --> 00:22:42.560 when the the PET scan is able to show

NOTE Confidence: 0.8978338275

00:22:42.560 --> 00:22:44.780 you a spot that lights up that's

NOTE Confidence: 0.8978338275

00:22:44.780 --> 00:22:46.480 very different from normal tissue,

NOTE Confidence: 0.8978338275

00:22:46.480 --> 00:22:48.502 and if that degree of separation

NOTE Confidence: 0.8978338275

00:22:48.502 --> 00:22:50.519 isn't always present in the liver,

NOTE Confidence: 0.8978338275

00:22:50.520 --> 00:22:52.350 then there might be more work

NOTE Confidence: 0.8978338275

00:22:52.350 --> 00:22:54.359 to be done in that area.

NOTE Confidence: 0.8978338275

00:22:54.360 --> 00:22:56.712 I can imagine that another metastatic

NOTE Confidence: 0.8978338275

00:22:56.712 --> 00:22:59.638 sites where it would be really helpful

NOTE Confidence: 0.8978338275

00:22:59.638 --> 00:23:02.200 to be very precise about targeting

NOTE Confidence: 0.8978338275

00:23:02.200 --> 00:23:04.559 radiation therapy would be the brain.

NOTE Confidence: 0.8978338275

00:23:04.560 --> 00:23:07.512 And so is it the same kind

NOTE Confidence: 0.8978338275

00:23:07.512 --> 00:23:09.210 of consideration for using

NOTE Confidence: 0.8978338275

00:23:09.210 --> 00:23:11.400 this technology in the brain,

NOTE Confidence: 0.8978338275

00:23:11.400 --> 00:23:14.256 the idea that there might not be that

NOTE Confidence: 0.8978338275

00:23:14.256 --> 00:23:16.573 difference in terms of resolution

NOTE Confidence: 0.8978338275

00:23:16.573 --> 00:23:19.113 between background and signal exactly.

NOTE Confidence: 0.951349251428572

00:23:19.120 --> 00:23:22.320 So we often don't use PET scans in order

NOTE Confidence: 0.951349251428572

00:23:22.320 --> 00:23:24.560 to detect brain metastases for that very

NOTE Confidence: 0.951349251428572

00:23:24.560 --> 00:23:26.877 reason that you mentioned Doctor Chagpar.

NOTE Confidence: 0.951349251428572

00:23:26.880 --> 00:23:29.540 And thankfully brain metastases

NOTE Confidence: 0.951349251428572

00:23:29.540 --> 00:23:32.704 or primary brain tumors typically

NOTE Confidence: 0.951349251428572

00:23:32.704 --> 00:23:35.382 don't move as much during treatment.

NOTE Confidence: 0.951349251428572

00:23:35.382 --> 00:23:37.699 So we have other ways when we're

NOTE Confidence: 0.951349251428572

00:23:37.699 --> 00:23:39.765 delivering high doses of radiation or

NOTE Confidence: 0.951349251428572

00:23:39.765 --> 00:23:41.445 stereotactic radiation to make sure

NOTE Confidence: 0.951349251428572

00:23:41.504 --> 00:23:43.640 that the patient doesn't move during

NOTE Confidence: 0.951349251428572

00:23:43.640 --> 00:23:46.885 treatment such as immobilizing the patient

NOTE Confidence: 0.951349251428572

00:23:46.885 --> 00:23:49.740 very precisely on a different platform

NOTE Confidence: 0.951349251428572

00:23:49.740 --> 00:23:51.440 for stereotactic radiation delivery,

NOTE Confidence: 0.951349251428572

00:23:51.440 --> 00:23:53.530 which is called the Gamma Knife that

NOTE Confidence: 0.951349251428572

00:23:53.530 --> 00:23:55.000 we do have at our Cancer Center.

NOTE Confidence: 0.919625079230769

00:23:56.040 --> 00:23:59.304 So we've talked a little bit

NOTE Confidence: 0.919625079230769

00:23:59.304 --> 00:24:02.617 about using this technology for targeting

NOTE Confidence: 0.919625079230769

00:24:02.617 --> 00:24:06.235 these oligometastatic sites for ablation

NOTE Confidence: 0.919625079230769

00:24:06.325 --> 00:24:11.040 particularly in the lung and in bone.

NOTE Confidence: 0.919625079230769

00:24:11.040 --> 00:24:13.420 Does it have any utility in the

NOTE Confidence: 0.919625079230769

00:24:13.420 --> 00:24:16.180 GI tract for treating primary

NOTE Confidence: 0.919625079230769

00:24:16.180 --> 00:24:18.880 cancers for example?

NOTE Confidence: 0.975104842

00:24:18.880 --> 00:24:22.248 Currently I think that there are benefits that

NOTE Confidence: 0.975104842

00:24:22.248 --> 00:24:25.872 will be coming into development because

NOTE Confidence: 0.975104842

00:24:25.872 --> 00:24:29.165 GI cancers by nature will move with

NOTE Confidence: 0.975104842

00:24:29.165 --> 00:24:31.606 respiration or with normal movement of

NOTE Confidence: 0.975104842

00:24:31.606 --> 00:24:34.050 the gut or the organs within a patient.

NOTE Confidence: 0.975104842

00:24:34.050 --> 00:24:37.400 And so I think that being able

NOTE Confidence: 0.975104842

00:24:37.400 --> 00:24:40.600 to more precisely differentiate,

NOTE Confidence: 0.975104842

00:24:40.600 --> 00:24:42.903 as you mentioned, the pet uptake or

NOTE Confidence: 0.975104842

00:24:42.903 --> 00:24:45.488 activity from a tumor to those background

NOTE Confidence: 0.975104842

00:24:45.488 --> 00:24:47.774 organs will be critical to moving

NOTE Confidence: 0.975104842

00:24:47.845 --> 00:24:49.880 forward with using this technology

NOTE Confidence: 0.975104842

00:24:49.880 --> 00:24:53.840 to treat primary GI cancers.

NOTE Confidence: 0.86009388

00:24:53.840 --> 00:24:55.760 What about for other tumors?

NOTE Confidence: 0.86009388

00:24:55.760 --> 00:24:58.640 I mean, you mentioned that for lung cancer,

NOTE Confidence: 0.86009388

00:24:58.640 --> 00:25:01.160 it seems to make sense to use this.

NOTE Confidence: 0.86009388

00:25:01.160 --> 00:25:03.253 I would imagine that this is now

NOTE Confidence: 0.86009388

00:25:03.253 --> 00:25:05.559 being used for primary lung cancers.

NOTE Confidence: 0.86009388

00:25:05.560 --> 00:25:07.282 Is that right? And is it being

NOTE Confidence: 0.86009388

00:25:07.282 --> 00:25:08.879 used for any other cancers?

NOTE Confidence: 0.932816983703704

00:25:09.520 --> 00:25:11.830 So currently we're focusing on early

NOTE Confidence: 0.932816983703704

00:25:11.830 --> 00:25:14.169 stage lung cancers for patients who

NOTE Confidence: 0.932816983703704

00:25:14.169 --> 00:25:15.994 are not surgical candidates where

NOTE Confidence: 0.932816983703704

00:25:15.994 --> 00:25:18.838 we do see excellent outcomes with

NOTE Confidence: 0.932816983703704

00:25:18.838 --> 00:25:21.074 stereotactic body radiation therapy.

NOTE Confidence: 0.932816983703704

00:25:21.080 --> 00:25:22.778 And so that would typically be

NOTE Confidence: 0.932816983703704

00:25:22.778 --> 00:25:24.680 3 to 5 treatments to the lung.

NOTE Confidence: 0.932816983703704

00:25:24.680 --> 00:25:25.928 Outside of that,

NOTE Confidence: 0.932816983703704

00:25:25.928 --> 00:25:28.840 the focus is on ogliometastatic disease.

NOTE Confidence: 0.932816983703704

00:25:28.840 --> 00:25:31.180 And right now we are limited

NOTE Confidence: 0.932816983703704

00:25:31.180 --> 00:25:32.520 to treatment of metastatic

NOTE Confidence: 0.932816983703704

00:25:32.520 --> 00:25:34.480 sites in the lung and the bone.

NOTE Confidence: 0.932816983703704

00:25:34.480 --> 00:25:36.810 We can use the RefleXion

NOTE Confidence: 0.932816983703704

00:25:36.810 --> 00:25:38.291 technology to deliver treatment

NOTE Confidence: 0.932816983703704

00:25:38.291 --> 00:25:40.313 without the PET guidance as well.

NOTE Confidence: 0.932816983703704

00:25:40.320 --> 00:25:42.504 And there are benefits to treatment

NOTE Confidence: 0.932816983703704

00:25:42.504 --> 00:25:45.040 on the RefleXion outside of the

NOTE Confidence: 0.932816983703704

00:25:45.040 --> 00:25:46.960 biologically guided radiation therapy.

NOTE Confidence: 0.932816983703704

00:25:46.960 --> 00:25:49.035 So this would include basically

NOTE Confidence: 0.932816983703704

00:25:49.035 --> 00:25:51.888 any tumor site and we can deliver

NOTE Confidence: 0.932816983703704

00:25:51.888 --> 00:25:53.496 intensity modulated radiation therapy

NOTE Confidence: 0.932816983703704

00:25:53.496 --> 00:25:55.520 using the RefleXion machine.

NOTE Confidence: 0.932816983703704

00:25:55.520 --> 00:25:58.125 So intensity modulated radiation therapy

NOTE Confidence: 0.932816983703704

00:25:58.125 --> 00:26:00.730 is different from stereotactic radiation

NOTE Confidence: 0.932816983703704

00:26:00.802 --> 00:26:03.231 in that we are now delivering small

NOTE Confidence: 0.932816983703704

00:26:03.231 --> 00:26:05.437 doses of radiation on a daily basis,

NOTE Confidence: 0.932816983703704

00:26:05.440 --> 00:26:08.236 typically over the course of weeks.

NOTE Confidence: 0.932816983703704

00:26:08.240 --> 00:26:13.118 And the reason for the small doses over days,

NOTE Confidence: 0.932816983703704

00:26:13.120 --> 00:26:15.066 every day over weeks rather is that

NOTE Confidence: 0.932816983703704

00:26:15.066 --> 00:26:16.964 that allows the normal tissues to

NOTE Confidence: 0.932816983703704

00:26:16.964 --> 00:26:18.634 heal in between each treatment.

NOTE Confidence: 0.932816983703704

00:26:18.640 --> 00:26:20.770 So while we are taking into

NOTE Confidence: 0.932816983703704

00:26:20.770 --> 00:26:21.835 account tumor motion,

NOTE Confidence: 0.932816983703704

00:26:21.840 --> 00:26:23.556 it is less critical because we

NOTE Confidence: 0.932816983703704

00:26:23.556 --> 00:26:25.845 do have the time in between each

NOTE Confidence: 0.932816983703704

00:26:25.845 --> 00:26:27.999 treatment for normal tissues to heal.

NOTE Confidence: 0.932816983703704

00:26:28.000 --> 00:26:29.765 The benefit of the RefleXion

NOTE Confidence: 0.932816983703704

00:26:29.765 --> 00:26:32.392 technology is that we do have high

NOTE Confidence: 0.932816983703704

00:26:32.392 --> 00:26:34.382 quality imaging on the RefleXion

NOTE Confidence: 0.932816983703704

00:26:34.382 --> 00:26:36.925 machine such that we can use a CAT

NOTE Confidence: 0.932816983703704

00:26:36.925 --> 00:26:38.778 scan or a high quality CAT scan

NOTE Confidence: 0.932816983703704

00:26:38.778 --> 00:26:41.090 or a pair of X-rays in order to

NOTE Confidence: 0.932816983703704

00:26:41.165 --> 00:26:43.895 align the patient for those daily

NOTE Confidence: 0.932816983703704

00:26:43.895 --> 00:26:45.715 treatments on the RefleXion.

NOTE Confidence: 0.932816983703704

00:26:45.720 --> 00:26:48.360 So not only can the RefleXion

NOTE Confidence: 0.932816983703704

00:26:48.360 --> 00:26:50.120 deliver the biologically guided

NOTE Confidence: 0.932816983703704

00:26:50.200 --> 00:26:52.760 radiation therapy with PET guidance,

NOTE Confidence: 0.932816983703704

00:26:52.760 --> 00:26:55.776 but also can be used to deliver more

NOTE Confidence: 0.932816983703704

00:26:55.776 --> 00:26:58.040 standard radiation therapy such as IMRT.

NOTE Confidence: 0.951354839090909

00:26:59.080 --> 00:27:02.160 And so in terms of using the

NOTE Confidence: 0.951354839090909

00:27:02.160 --> 00:27:05.264 reflection without the PET,

NOTE Confidence: 0.951354839090909

00:27:05.264 --> 00:27:07.952 is that with continuous imaging,

NOTE Confidence: 0.951354839090909

00:27:07.960 --> 00:27:10.480 how is the RefleXion

NOTE Confidence: 0.951354839090909

00:27:10.480 --> 00:27:12.782 without PET any different than

NOTE Confidence: 0.951354839090909

00:27:12.782 --> 00:27:14.958 a standard linear accelerator?

NOTE Confidence: 0.915930785294118

00:27:15.680 --> 00:27:17.948 Well, one of the benefits of the

NOTE Confidence: 0.915930785294118

00:27:17.948 --> 00:27:20.362 RefleXion actually is the ability to treat

NOTE Confidence: 0.915930785294118

00:27:20.362 --> 00:27:23.216 multiple tumor sites at the same time.

NOTE Confidence: 0.915930785294118

00:27:23.216 --> 00:27:26.719 So typically we'll go back to the

NOTE Confidence: 0.915930785294118

00:27:26.720 --> 00:27:29.746 example of the oligometastatic sites, right.

NOTE Confidence: 0.915930785294118

00:27:29.746 --> 00:27:32.194 So if you were not to use biologically

NOTE Confidence: 0.915930785294118

00:27:32.194 --> 00:27:34.278 guided radiation and you are treating

NOTE Confidence: 0.915930785294118

00:27:34.278 --> 00:27:36.640 multiple tumor sites at the same time,

NOTE Confidence: 0.915930785294118

00:27:36.640 --> 00:27:40.150 this would typically require one

NOTE Confidence: 0.915930785294118

00:27:40.150 --> 00:27:42.812 treatment plan for the first site

NOTE Confidence: 0.915930785294118

00:27:42.812 --> 00:27:44.377 and then realigning the patient

NOTE Confidence: 0.915930785294118

00:27:44.377 --> 00:27:46.198 and treating the second site.

NOTE Confidence: 0.915930785294118

00:27:46.200 --> 00:27:48.684 But the RefleXion is able to

NOTE Confidence: 0.915930785294118

00:27:48.684 --> 00:27:50.340 simultaneously deliver treatment to

NOTE Confidence: 0.915930785294118

00:27:50.413 --> 00:27:52.520 those two sites at the same time.

NOTE Confidence: 0.915930785294118

00:27:52.520 --> 00:27:54.352 And if you were to be treating a

NOTE Confidence: 0.915930785294118

00:27:54.352 --> 00:27:56.160 tumor in the lung that's moving,

NOTE Confidence: 0.915930785294118

00:27:56.160 --> 00:27:58.256 it would be able to track and treat

NOTE Confidence: 0.915930785294118

00:27:58.256 --> 00:28:00.236 those two tumors at the same time.

NOTE Confidence: 0.915930785294118

00:28:00.240 --> 00:28:02.648 So the benefits would be the ability

NOTE Confidence: 0.915930785294118

00:28:02.648 --> 00:28:04.560 to treat multiple sites simultaneously

NOTE Confidence: 0.915930785294118

00:28:04.560 --> 00:28:07.409 and also that the while the RefleXion

NOTE Confidence: 0.915930785294118

00:28:07.409 --> 00:28:09.785 does provide the typical radiation

NOTE Confidence: 0.915930785294118

00:28:09.785 --> 00:28:12.155 treatments that other Linacs provide,

NOTE Confidence: 0.915930785294118

00:28:12.160 --> 00:28:14.162 we have found that the quality of

NOTE Confidence: 0.915930785294118

00:28:14.162 --> 00:28:16.560 the imaging that we take before each

NOTE Confidence: 0.915930785294118

00:28:16.560 --> 00:28:19.752 treatment is delivered is of a higher

NOTE Confidence: 0.915930785294118

00:28:19.752 --> 00:28:23.019 quality such that we are bit better

NOTE Confidence: 0.915930785294118

00:28:23.019 --> 00:28:25.606 able to discern borders between normal

NOTE Confidence: 0.915930785294118

00:28:25.606 --> 00:28:27.562 tissue structures and the tumor and

NOTE Confidence: 0.915930785294118

00:28:27.562 --> 00:28:30.197 make sure that the patient is aligned

NOTE Confidence: 0.915930785294118

00:28:30.197 --> 00:28:32.197 with millimeter precision for treatment.

NOTE Confidence: 0.847094583529412

00:28:32.920 --> 00:28:35.573 Doctor Kimberly Joung is an associate

NOTE Confidence: 0.847094583529412

00:28:35.573 --> 00:28:37.118 professor of therapeutic radiology

NOTE Confidence: 0.847094583529412

00:28:37.118 --> 00:28:39.200 at the Yale School of Medicine.

NOTE Confidence: 0.847094583529412

00:28:39.200 --> 00:28:41.232 If you have questions,

NOTE Confidence: 0.847094583529412

00:28:41.232 --> 00:28:43.200 the address is canceranswers@yale.edu

NOTE Confidence: 0.847094583529412

00:28:43.200 --> 00:28:45.840 and past editions of the program

NOTE Confidence: 0.847094583529412

00:28:45.840 --> 00:28:48.147 are available in audio and written

NOTE Confidence: 0.847094583529412

00:28:48.147 --> 00:28:49.065 form at yalecancercenter.org.

NOTE Confidence: 0.847094583529412

00:28:49.065 --> 00:28:51.505 We hope you'll join us next week to

NOTE Confidence: 0.847094583529412

00:28:51.505 --> 00:28:53.359 learn more about the fight against

NOTE Confidence: 0.847094583529412

00:28:53.359 --> 00:28:55.200 cancer here on Connecticut Public Radio.

NOTE Confidence: 0.847094583529412

00:28:55.200 --> 00:28:57.660 Funding for Yale Cancer Answers is

NOTE Confidence: 0.847094583529412

00:28:57.660 --> 00:29:00.000 provided by Smilow Cancer Hospital.