NEUROENDOCRINE
CANCER FOUNDATION

PRRT Nurse's Perspective: What to Expect with PRRT

Virtual Event

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"PRRT Nurse's Perspective: What to Expect with PRRT" • Linda Gardner, MSN, RN, VA-BC • Mar 7, 2025

Transcript

0:26

Welcome to the March 2025 educational event. I'm Kavya Velagapudi, Executive Director of the Neuroendocrine Cancer Foundation. And I'm Lisa Yen director of programs and Outreach. I'm Heather Davis the Associate Director of Advocacy and Outreach. Today's presentation is on “PRRT Nurse’s Perspective: What to Expect with PRRT.”

0:50
A special thank you to our supporters: Novartis, Ipsen, Curium, Exelixis, and ITM.

We're pleased to share that LACNETS is now the Neuroendocrine Cancer Foundation.
This rebranding signifies the strides we have made in reaching more patients and caregivers and also, in offering more educational and support programs. Even though our name has changed, our commitment to the neuroendocrine cancer community remains the same, and in fact, reaffirms our commitment to reach more patients with quality educational programs and support.

1:26
You will see our new branding being rolled out on our website, social media, and all Communications. We appreciate your patience during this transition. Our team remains the same. Our team remains the same. Our staff includes Lisa Yen and Heather Davis. Our board includes Donna Gavin who is the sister of our founder, Giovanna Joyce Imbesi and NET patient Mary Donlevy.

Neuroendocrine Cancer Foundation will continue to collaborate with the coronoid Cancer Foundation to provide its programs including the Luncheon with the Experts and Support Line. Now I'll hand it over to Heather.

2:00
Thank you, Kavya. Our YouTube Channel features over 400 educational and wellness videos testimonials and podcasts. Click videos or playlists to find patient and caregiver stories information on types of treatments such as PRRT, liver directed and targeted

There is information on imaging, nutrition, and our annual conferences. And you can also find our educational videos by topic or in our video library on our homepage: NCF.net

As we transition from LACNETS to Neuroendocrine Cancer Foundation, you can still find us on social media: Facebook, X, and Instagram with the handle @LACNETS.

And be sure to add us to your safe sender email list.

I'd like to remind our audience that our webinars are created for educational purposes only and do not substitute for medical advice.

The views shared in this webinar are from the expert’s experience and insights. Please contact your medical team with questions or concerns about your individual care treatment. And now I'll hand it over to Lisa.

3:06

Thank you. Heather. I've been supporting my husband who was diagnosed with neuroendocrine cancer in 2015 and together we aim to stay informed and engaged with clinical trials as possible treatment options throughout our 10-year Journey.

03:24

We understand that one of the challenges is finding and understanding clinical trials that are right for you. And this is why we created a clinical trials guide, an easy-to-use educational resource that features several key clinical trials for neuroendocrine cancers. You can browse a site by the type of neuroendocrine cancer such as GI, pancreas, or lung, or the types of treatments such as PRRT. On the website, you can find brief patient-friendly videos and information about each trial.

We hope our clinical trials guide can help you better understand clinical trials that might be available for you.

4:01
I'm pleased to introduce our speaker for today, Linda Gardner, known by friends and colleagues as Lindy.

Lindy is the lead nurse in the Department of Nuclear Medicine at UCLA Health. She trained as a Registered Nurse at John Moore's University of Liverpool in the United Kingdom and is also a graduate from the University of Dundee, Scotland where she received her Bachelor's and Master's of Science in Nursing.

She has over two decades of Interventional Radiology experience prior to transitioning over to Nuclear Medicine in March of 2017.

In her nuclear medicine role, Lindy is the lead nurse for the UCLA Peptide Receptor Radionuclide Therapy (or PRRT) program, which she has led for several years from the expanded access program (prior to FDA approval) through to the FDA approved commercial program. She has presented to national and international audiences.

Her skills are utilized as an expert liaison for institutions starting a new PRRT program and she focuses on the patient experience, education, and therapy administration. Lindy is the nursing pillar lead for The International Center for Precision Oncology foundation (ICPO), with her focus on education, support and navigation for the NET patient journey.

She is also the lead nurse for Radioligand Therapy (RLT) for prostate cancer at UCLA, covering both clinical application and research.

She is a member of the Association for Radiologic and Imaging Nursing (ARIN), and the Association for Vascular Access (AVA), holding her board certification in vascular access (VACC). She sits as a member on The Healing NET Scientific Advisory Committee and the LACNETS, now known Neuroendocrine Cancer Foundation, Medical Advisory Board.

We are welcome for her contributions to the neuroendocrine cancer community.

Welcome Lindy!

5:56

And thank you, Lisa. My name is uh Linda Gardner. I’m known as Lindy. I've worked in nuclear medicine now for um seven years um, since the inception of PRRT under um and from 2017. So I've worked with a lot of patients, and I'm going to try and answer some of your questions and ease your confidence into this treatment.

6:19
My overview for today is basically we're going to go over what is PRRT, who gets PRRT, an overview of the therapy, your expectations to therapy, some of the side effects, big old question of radiation, just a wee slide on what's next, and just addressing some questions that come up quite a few times so we can answer those for you today in the presentation.

6:42
So, what is PRRT? Basically, it's a targeted treatment that targets cancer cells with certain receptors. It's a new treatment.

6:53
It's called PRRT, Peptide Receptor Radionuclide Therapy, and it comes in liquid form and it's given intravenously and it goes all over the body. And it was approved in January 2018 for GEP-NETs.

7:08
And we've been treating, our hospital currently, um many, many patients, so we have a lot of experience um with that also.

7:15
This is a very nice slide, just to um show you um how it kind of works. When you get imaging done in nuclear medicine, we normally image with the imaging agent to a target to image those cells that have something wrong with them. If you've been diagnosed with, obviously, neuroendocrine tumors. And what's nice about this is, is if we can see what we image, then moving forward in the future then we can treat what we see. And currently neuroendocrine tumors is, one of those, as with some prostate cancers.

So, if we can image it and see it, then we can attach what we image to that with something that can treat it to get it inside the cell to cause cell death.

And we are specifically look at the targeting imaging of SSTR2 receptors.

8:06
So, who can receive PRRT? Under the current guidelines, it's patients with advanced, metastatic,
progressive somatostatin-receptor-positive neuroendocrine tumors that are well differentiated grade 1 to 2 with a ki67 of less than 20% and positive SSTR imaging, and I'll get to the imaging a little later on.

8:24
And if you want more of this information, it can be available on the site and it has been discussed in great detail by previous um Physicians um doing these presentations

8:37
I also wanted to just do a shout out because I've said PRRT, and then I mentioned Lutathera on the vial. And this was one of the things that came up is the confusion about what the name is of the treatment.

This is just a few of what I pulled off the web: Lutetium 177. We've got DOTATATE, PRRT, radioligand therapy, RLT. It's all over the spectrum, but it all is the same thing, and you'll hear different physicians, different people mentioning different names, but it is still all the same treatment.

9:13
The commercial name obviously is Lutathera. That is how we receive the dose and that's um how we get it, and it's labeled. But PRRT is something to we refer to a lot because that was one of the original names that came out in the beginning, but you'll hear um it used under radioligand therapy as well, which is RLT. But I just wanted to let you know that there is multiple names for this treatment, and that's okay.

9:36
So how is it given?
It comes in a solution form. It's given as an infusion therapy, so you'll require an IV to be placed.
It can be given by a peripheral IV, a central line, a PICC line.
And it's given with adjunct medications that help protect the kidneys.

9:55
Today I'm going to be talking about how it is given. It's an infusion therapy given by a peripheral IV or a central line or a PICC line with concomitant medications um with that treatment.

10:09
I will be reviewing different ways of giving it um and what the differences can be because it every institution is a little different and there is no right or wrong way as long as it's given under the correct processes, and we'll be going over that as well.

10:26
So, a really good place to start is the outline of your treatments. This is given in four infusions. The intervals are at 8 weeks apart, usually plus or minus a week. It's given in coordination with your somatostatin analog injections. Um, you'll have heard that they like to give the injections 28 days before we treat. And then you receive it every four weeks after that.

If you look at the diagram it kind of marches it out, however, I do want to just address this at one point. There is no right or wrong way with this there's been a lot of play with the somatostatin analogues. Some physicians have taken off those during treatment. Some patients have taken them off a few months beforehand and then they start again after treatment. Sometimes the wash out isn't 28 days; sometimes it can be taken down to two weeks. Sometimes you can see the injection up to four hours after the infusion or you can receive it the next week.

11:21
There is some variation. I just don't want you to be stuck on that this is the exact date and this is the exact time when I should take it. There is a cushion either side of that and as I said some nuclear medicine physicians and the oncologists sometimes do take patients off.

The NETTER-1 trial which is based on how the Lutathera was given, the results were given with the injections consistently given with the treatment, but there is some small variations to that and I just want you to be aware, and this will be discussed at your appointment and how they're going to schedule those injections with your treatments.

11:58
So, what to expect…
Once you've been scheduled to see a nuclear medicine physician, you'll go and consult with the physician. You'll also have imaging done. Now the imaging can be a gallium 68 scan, which is a NETSPOT that you may have heard of. It could also be a copper-64 scan, which is a DETECTNET. We'll have to have the image in to make sure that you're the right candidate to receive the treatment. Also, the7 will review from your oncology notes the other aspects as well if you're well differentiated, what your ki67 is, if you're grade one or grade two. We can treat grade three if there is well-differentiation there and the k67 is somewhere near the 20% or below. But these are conversations that the oncologist the nuclear medicine physician will go over and they'll decide whether this is a good treatment for you to move forward with your treatment journey.

This isn't an end treatment. It can be brought up sooner within your treatment journey, or it can be held off to be part of your treatment journey at a later date. And this is what's nice we can fit the treatment into your treatment landscape for you.

13:02
At the consultation, you'll receive a lot of information and there's a lot of information available there also on the web. I just want to let you know that the institution where you go to should provide you with the information that you need, but if not, there is amazing patient networks out there including um, the Neuroendocrine Cancer Foundation, LACNETS. There's also um Healing NETS that has information and um Novartis website has it. Also, there's some international sites as well that you can go in and try and find information about what you're going in for. But I want to try and keep it succinct and just down to what you really need to know, and what's comfortable with you.

13:46

You'll hopefully receive a packet from the institution where you're going to be treated. Also, a copy of the consent and discharge instructions. If you receive this upfront, it gives you time to read those and really digest it and also for your family to do that.

The authorization is, is now very quick and very expeditious. We can receive it within a week to two weeks. Some um other insurance can take a little bit longer but we're pretty quick at getting authorizations through now.

14:15
But what you need to know when you do go to your institution, if they decide to give you the treatment, is just knowing what's offered at that institution and what you need to bring with you, and I'll discuss that a little later on.

But what do you need from your institution and what they offer. And that's always a good place to start and always have a pen and piece of paper ready to make any notes that you may forget about.

Because there's a lot of information and you'll need to take some notes down too.

14:41
So, schedule of events..
When your referring provider schedules you for the consult, and we get you through that and We're going to treat you with PRRT, a copy of the letter for your schedule will go to yourself and it'll also go to your referring provider we work side by side with your oncologists. We do not take over the care from your oncologist, we work with them.

We follow your blood work with them, your blood draws, and we let them know what the results are. Normally everything is seen through the chart in Epic, so they can see everything as it goes but if we're concerned or we need more information, we reach directly out to the referring provider.

15:23
So, there's never any misinformation or no knowledge of where you are in the treatment process.

We also meet weekly with our Board of Physicians and radiation specialists here at the hospital in our institution to make sure that we're doing the right course of treatment and path for you moving forward.

15:40
You may see on this scheduling letter also, there is a dosimetry imaging schedule. After the treatments now, we are doing dosimetry imaging 24, usually at 48, the window's 48 hours afterwards where you come back into the hospital to receive an imaging, based on the therapy

dose you received, and this is part of the schedule documentation. Some institutions do it. Some don't. This is new for us moving forward.

16:09
Just so you know that there's these differences in there. So, you'll have your treatment, possible dosimetry scans following up. Again, this is institutional-dependent, but this is becoming the new standard moving forward.

16:19
You'll also receive a pre-call from the nurses to go over a lot of the questions. And also, we like to give a 24-hour call back number or email, so you have access points to be able to reach out to follow up with questions that you've brought forward.

Again, each institution does vary. So make sure that you ask these questions moving forward: Is this somebody you can contact? What does that look like? How do you get hold of them? And what would be the call back, um time for call back?

16:47
Blood draws…
This is scheduled into the treatment. We monitor you during the treatment, just like your oncologist monitors you when you get your SSAs. Your blood draws for that or if you're if you've been on any other previous treatment. And you know what? Blood draws, it's part and parcel of the process.

17:05
We do the regular CBC and chemistry panel. We do not do chromogranin A levels. We do not use those as markers for this treatment and I know that is used as markers for a lot of you in your disease process, but we don't follow the chromogranin A levels.

17:20
But your oncologists may draw them and continue to draw them, but nuclear medicine is usually drawing the blood drawers to watch for your **marrow productivity**, and to make sure that you're not getting any toxicity in the marrow from the treatment. This can happen, but we monitor it and we look at the trends of your blood work, not that it goes down a little bit or comes is a little bit low on one side and high on the other.

We're looking at the trends and how well you're tolerating the treatment.

17:51
nd like in chemo there is what's called a **nadir**, a low point after treatment where we will expect to see drops in the blood work, but we expect to see that come back up as well.

17:59

There is a lot of question about, can we have a diet that can enhance um certain factors like hemoglobin, platelets um and other things. We don't recommend a specific diet we just want you to eat, and eat well, and eat what agrees with you. And if something is healthy then it's healthy for you and your body.

18:21
um there was a studied in 2022 about sea papaya leaf, and it has some very good information about trying to help any um t**hrombocytopenia**, which is low platelets. However, the best way to improve your platelets is to take away the cause of the um thrombocytopenia, which would be the treatment. So if you wanted to stop the platelets going down you'd stop the treatment that's cause and effect, but we do expect sometimes that to happen.

18:56
However, there has been some promising results with the the um, sea papaya, that it does help and aid. it cannot be bad for you it can only be good for you, so if you need to take that then we don't discourage you from doing that.

19:11
Anything that's good for the body and healthy from the body, we want you to do that for you as well. Will it change your platelets there's not enough information back to know this and there's more research and studies needed. But whatever you think or believe will help you, we will not refuse that until tell you not to do it we'll encourage it.

19:32
So, before treatment…
The main thing you need to know before your treatment is: Know where you're going, which you
should have received in the information. Have a good night's rest. That's what you ever need to do whatever you need to do to try and relax and to try and destress do that.

19:49
The first treatment is always the most stressful regardless of whatever treatment you come into because it's the unknown. And we know that, and we want to try and make it as seamless as possible but however the nerves and the anxiety going in it is always somebody's first time. It is your first time.
And we know that, but you can reach out to our institution there's always somebody there. Find out if there's somebody you could reach out to in another institution also, just so you have a contact. Knowing you have a contact can mean the difference between a restful night and a non-restful night.

20:20
Also, family can drop you off and collect you. Or you can drive down yourself. If you believe that you're going to be okay, you may want your family member to come with you on your first treatment just because you don't know how you're going to feel.

Is lunch going to be provided?
I know we don't provide lunch at our institution, but other institutions may, but if not, make sure you've got your own lunch what you want to eat, what you want to drink.

20:44
There is no eating and drinking instructions beforehand. Some
institutions say, “Have a light meal.” Some institutions just say have fluids we just want you to eat and drink what makes you feel comfortable. Bring something to um abide your time with if you want to read a book or if you want to play on your phone or watch a movie, you can do that as well.

21:16
Just whatever you need to know. Bring any pain medications with you that you might have because the institution may not have them. If you have any depends, please bring those with you because the institutions may not provide those also.

21:15
Does the institution require you to bring an extra set of clothes in case there's a spill or an issue with urine leakage or something like that. It's always good to be prepared and bring those things

21:28
And if you have a pre-call before treatment with the nursing staff, then this will all be addresse. If not, then you can ask these questions uh at your treatment or call up and ask back on the information line that you have.

So, it's just whatever makes you feel comfortable.

21:43
I've got a few images here too because you're going to um wonder what it looks like when you go in for treatment. Now this is a couple of the images from our institution. It may look different in other institutions. It may look like wow this is set up a lot for spillage and leakage and pads and everything like that. I don't want you to be put off by that.

We set this up because of licensing purposes we have multiple patients in, and we have to make sure that it's interchangeable, it's clean, and we can clean up afterwards. So, this is part of our regulatory process. This is why we have it set up like this. So, if we weren't an institution and we're just treating you once in your home, it would not look like this.

But because we see multiple patients, our setup has to be a certain way. So, please don't be discouraged when you see this, and you think, “Whoa this is bad. It's not; it's just how we have to set the room up.

22:36
So, your timeline of the day once you arrive and check in.
You'll check in. An IV will be replaced into one arm. Again, this may vary. You may have one arm for one IV. An institution may place two: one arm for the amino acids which I'll speak of in a minute, and then one line for the um infusion of the PRRT, the Lutathera.

22:58
We also can use PICC lines or we can use ports, which is a central line. Other institutions may not do that. So, you can always ask, if they can use the port, if there's one IV or two IVs. Just want to give you there' s a little variation on that. Now, when you arrive, the IV will be replaced, you'll sign consent on your first treatment and that's good for all treatments following. And then we'll give you an antiemetic. An antiemetic is an anti-nausea drug, and we give that um different places give different kinds of nausea medication, and I know some places don't give nausea medication. We do give nausea medication. We give something that protect you for 72 hours. We just want you to be comfortable and we don't want there to be any issues there.

23:40
So, we give an IV medication.
And then we start the amino acid. Now, this is what keeps you at the institution for about 4 hours. The amino acid we give you the whole time as we give you the treatment amino acid is basically, we could call it a kidney bath. It bathes the kidneys and protects the kidneys when we give you the treatment, and the duration of that infusion is 4 hours. So, that's why you stay with us for that period of time. It's just so we can make sure that the amino acids run in, protect those kidneys while we give the treatment, and that's where you'll stay for 4 hours because of that.

So that's what your timeline looks like.

24:17

The premedications for 30 minutes and then we start the 4 hours of the renal protectant. After the renal protectant, the amino acid, has been going for half an hour, then we will start the PRRT treatment, the Lutathera.

24:34
And this is what it looks like. Um, this is an old picture. I'm try to pull up something that was kind of relevant. Um it's an infusion where in the background you'll see there's two IVs. One will be the amino acid and then one will be the um lutathera which is that tiny little green thing on that uh roller that you'll see. We use one IV and we do the infusion of the amino acid and the Lutathera together but as again I said you could have one IV for the amino acid and one IV for the Lutathera depending on where you go.

25:04

While this is running, it'll take, I'd say 45 minutes to an hour. We infuse it slowly because we don't want you to have any kind of um hormonal rush at the time. We've had some patients that have um a NETSPOT or a DETECTNET image, and where they receive an injection they can feel a little flushed, and they feel it going in. So, we gently infuse the Lutathera because we don't want to create any flushing or any raising blood pressure or make you feeling uncomfortable.

So, we infuse it over 30 to 45 minutes sometimes it's a little longer and we just make sure that you're okay during that infusion. We can tailor it to you we can speed it up or slow it down depending on how you feel. Other institutions may have something similar to that during that time as well. And we'll take a couple of Vital Signs, some blood pressure and heart rate and pulse oximeter, and temperature. And I think that's pretty universal, also.

So, that's kind of what the infusion looks like.

26:03
So, you'll be with us for a good five hours, I'd say, from beginning to end to discharge. May a little quicker if you get out in four, but I'd say best guesstimate is five hours.

So, after you've received the PRRT, which is the radioactive part of the infusion, we will continue with the amino acids infusing. And that's going to be another 2 to 3 hours if because we've had the radioactive part infused and then we've got the remaining amino acids going on.

What will we do at this point? Well, we want you to rest, but we want to encourage you to drink fluids. And we want you to use the restroom because you can get up and go to the restroom now after you've had your infusion. We want you to sit in a seated position for men, and obviously the women, seated position. And we'll ask you to flush the toilet, wash your hands with soap and water we won't have you use alcohol rubs, and I'll get to that a little later in the radiation safety training, but we want you to use soap and water

If you have any um pads or in continent needs, we'll have you change them in the restroom frequently. And then we'll monitor you to make sure that you understand going to the restroom what that hygiene looks like for safe radiation practices. Very simple. And I'll go over it a little later on.

27:22
After the end of the infusion, when the amino acid is complete, we've at the wrap-up. ow the wrap-up is, you'll get a discharge sheet with all the discharge instructions on there, which we will go into a little later. And also, you'll have your schedule with your date for coming back. You'll have your lab draw schedule when we need them to draw. And then your dosimetry visit, if you're at an institution where the dosimetry scan is done after the treatment. And your oncologist will receive you a copy of this as well.

We also give you a discharge read, which is as you can see. There it's a meter stick um which is 3 ft, and we'll measure you with a little dosimeter reading and that comes up and it gives us what's called millirem an hour (mrem/hr or mR/h). And that lets us know how much radiation you're giving off. Now according to the NRC if you're below 7 millirem an hour, you can safely be discharged into the public.

At UCLA we have a reading of 5 millirem an hour for you to be safely discharged. And that means that you safe to go into the public and be around people because your reading is less than 5 millirem an hour. Just to give you our average number of our reading, it's normally two and below. So, it's pretty low. It doesn't mean to say that the higher the reading you have the more radiation you absorb. That is not correct, just if you're thinking that. If you got a reading that was seven when you were discharged, you're like thinking, “Whoa, I didn't get enough. My reading wasn't high enough.” It doesn't work like that. As long as you're giving off some radiation know that the dose is in the body.

29:00
If you require a zofran script, we'll give you one of those also, um for any breakthrough nausea you may have. And then we will, um you will have your oncologist schedule your SSA injections to follow your treatment. And they can be given up to 4 hours after the injection, um or up to 72 hours. Because we want to then march your four-weekly um SSA injections, somatostatin analog injections like lanreotide, octreotide. We want them to be given every four weeks, but we want to be given after your treatment and not before because we'd like that washout, as on the previous diagram.

29:38
So, I've mentioned dosimetry imaging, and I just wanted to circle back to this. Dosimetry imaging is not a diagnostic study uh or imaging. You will not receive another injection for this.

29:52
We are imaging the dose you have already received at a 48-hour interval after you received it. It gives us additional information about what's called the absorbed dose. It's the absorbed dose into the tumor or the cancer that we are treating, where those SST2 receptors are. So, we're imaging the amount of activity within that area. And that can give us a lot of information moving forward and dosimetry is a large thing; there could be a whole um discussion on just this topic alone. Some institutions dosimetry after every um therapy. Some don't some do it after two. So, there is variations. As I said UCLA didn't have this. We started this a couple of months ago. So this is something we're now doing moving forward, and you'll see this more so becoming more prominent with the imaging afterwards.

But it really is a great way to look at the radiation energy that has been deposited into the tissue. And that's what we're looking at. But we don't use it for diagnostic we just use it for um absorb dose into the area that we're treating with those receptors.

31:02

Okay, so now let's look at side effects.
And side effects are very unique to each individual. Everybody will feel side effects differently. There is um information out there of the percentage of what this happens to each patient. That's a great way to look at things, but as every human being is individual so are the side effects.

You can feel um fatigue and aches, maybe for 24 48 hours. Or you can feel them for 7 days or you can even feel them for 14 days. It's very varied.

31:37
Nausea and vomiting. That's normally short-lived. However, I have had a couple of patients that have had nausea on and off for two to three weeks where they haven't been able to eat a great deal. They've taken little bits of diet on board, but they've been able to keep hydrated, but they felt very nauseous which isn't their normal.

And these are things where you if you have a 24-hour call, or at least a time period where you can check in with somebody to follow up, this will give you that peace of mind knowing that there's somebody to reach out to and you can follow up on these. Because at some point it's not like you need to go to the emergency department. It's like it's not that bad, however it's creating anxiety in you because you're not following the maybe 3 to 7 days. Maybe it's been going on a week or two and you just want affirmation or confirmation or to talk it through with somebody. Is this normal? Do I need to follow up?

So having a contact at the institution where you go for your treatment it's very important and you can also reach out to other patients within different groups. They'll all have different experiences, but if you have a contact point at your treating center, that helps tremendously.

32:44
There could be abdominal discomfort which could be um pain flare from the dose absorbed into the tumor which is creating a little bit of pseudo-inflammation that's causing a little bit of pain. If you have some peritoneal disease, you may be given a steroid just to help with the area to reduce the inflammation in the bowel so there's no obstructions.

There so many different things, and these are conversations that you'll have with a physician. I don't want to go into it too much because I just want to know it's individual based on your disease process especially if you got peritoneal disease. And also, what you're going to feel can last maybe 3 days, or it could last 7 to 10 days. So it is individual for you.

And there's a lot of questions about carcinoid crisis, and that is a, it's less than 1%. And since 2017, I have not seen a true carcinoid crisis case, if that shows you. We are prepared for it. We have the medications we need to give it, if it happened on site. And we also would keep you in overnight if you did have one of these episodes but we are equipped, knowing that that 1% of patients can have carcinoid crisis and we have our medication ready available ready for the day for every single patient that comes in in case that happens and we also have uh standby admission privileges to admit into the hospital for that.

34:09
The pain flare, as I stated, could be from inflammatory processes from radioedema that can be caused from the dose that we give, which is basically an inflammatory process from the radioisotope being deposited into the tumor cell, and that can happen. Very rare but it can happen.

34:28
If you have mets in the bone, sometimes you can feel some bone pain from that also. But you may not. So, just to let you know. You could feel it. You may not feel it. Just because you have some mets in your bone does it mean to say that you will feel bone flare. No, it does not everybody is very, very different, and I just can't stress that enough.

34:52
Um, we monitor, obviously, for myelosuppression. Um, for cytopenias, which is low hemoglobin, low white cells, low platelets, and that can be a side effect too from the medication. Also, we know that this can happen. That's why we monitor bloodwork and we look at the trending of your blood. We do expect to see sometimes a dip um 10 to 14 days after the administration, but we do expect that to come back up again, where the um marrow and the suppression is building back up after the treatment. And that's very similar to chemotherapy as well.

35:25
Um and sometimes you can have discomfort in the injection site, and that is because the amino acid is a compound that can cause a little irritation to the vein and some patients have had a little bit of um tenderness at that site and that can happen. And during the infusion sometimes tenderness can happen or a little swelling because of the amino acid. There is possibilities that we may need to replace your IV again if you have swelling during the amino acid infusion. And these it just depends on what the vein is like, how the infusion runs, and how you tolerate that infusion. But we could start the IV on the day a second time if we need to. Or you can also feel a little pain afterwards which is kind of common as long as you can call and let us know. We just, we look at if it's not too painful, too red, and too hot. We just want to make sure it's okay but some discomfort can be there, but again you should call up your um healthc care provider or the contact number you have so we can follow up also.

36:28
Okay so now waiting…
Um you've received your treatment and now what should you do?
Well, first of all rest. You can go back to work when you feel comfortable for that. Normally we'll say in 24-48 Hours um we do have a 3-day window where it's um 3 ft distance for 3 days. However, a lot of people work at a desk where they can accommodate that.

As I stated earlier, there is no special diet or vitamins or anything that we formally recommend. However, if it's healthy and it works for you please do it it's always good to be healthy and try and work with your body to what your body needs.

And also, hydration we want you to hydrate because we want you to urinate and we want you to urinate so you can get rid of um any radiation that's floating around the body and I've got another slide that will address that as we move forward.

37:19
There is no diagnostic imaging we do in between scanning apart from our dosimetry scans post infusion, however, if it's clinically indicated, they could do a diagnostic image which would be an MRI, a CT, or possibly a NETSPORT or a DETECTNET, but it's not recommended in between treatment because we like to give a certain period of time before we do that after treatment. But if there's issues where you feel increased pain, or something is not right, or the oncologist/nuclear medicine physician want you to do some kind of dynamic imaging that could be scheduled between treatments too. But it's a case-by-case basis. And the same with monitoring your blood for toxicity.

So, once you've finished your treatment you will go and get your SSA injection the next day or so then you'll come back you'll have a dosimetry scan.

And then you're just going to relax and just enjoy the downtime if you're working. And call your providers if you have any questions. And that's all they do in that part of the uh scenario there.

38:20
Next, the topic that everybody likes the best.
And that's um Radioactive. And I wanted to address this after going over your date because there's so many questions about this and there's so much misinformation. And there's so many places to find the information. All I want you to know is that this is not dangerous. This is a treatment. And please, don't be scared of radiation. Radiation phobia is we real, and we know that but don't be scared of this. We wouldn't give you anything that could damage anybody and we do it in a safe environment all right. And we just ask you to be respectful of radiation.

39:07
So, how radioactive am I?
Well, I'm going to wear one of these suits when I treat you, so you just know how bad it is, which is a very… It's a joke that I send out because people expect to see people like that treating them. We don't wear hazmat suits. We do not do that. We're regular women and gentlemen and we treat you and we are around this all the time. And if it was dangerous the technologists wouldn't be administering this, and we wouldn't be helping you with your treatment. It's a safe procedure when done correctly and it's just being respectful, as I said to the radiation.

39:46

You will admit low levels for several days. You won't glow. You won't have any special powers. And you're not going to harm anybody being around them.

39:55
I get questions about um oh I accidentally picked up my 2-year-old um grandchild and I completely forgot about it. And I had a text about this, and they said, "Are they going to be okay?" And I'm like, "Yes, they're going to be fine. You did not damage your 2-year-old grandchild by picking them up and then quickly putting them back down because you forgot." And I'll go into that um in the next slides,

40:21
So, radiation…We follow the principle of ALARA, which means to keep as low as reasonably achievable. So, I am not going to stand by a patient the whole of the shift while the PRRT/Lutathera/Lutetium-177 isotope, all of those names I mentioned before. I'm not going to be standing by you the whole time you're getting that infused because, is that as low as reasonably achievable? It's not. It's like I'm actually maximizing my not as low as reasonably achievable. So, it's stepping back once I've done what I need to do or when the nurse what the nurse needs to do. They step away. The same as the technologist. They'll do what they need to do and then step away. So that's as low as reasonably achievable.

We want to minimize our time at the source. Now when you're in the hospital receiving your treatment, you're at the highest source possible because you're just receiving your treatment but after you gone to the toilet a couple of times some of that has come out, you're not as hot as you
are at the initial infusion.

So, we look at those kind of things when we're working with you. It's like we do want to be safe working around you, and we want to keep everybody safe because we see multiple patients on multiple days receiving different treatments, and some treatments that we treat with a lot more higher energy than what you're receiving so it is safe to be around. We want to make sure that we just stay with you for the time that we need to be there, and then we move away. We can stand at the door and talk to you all day long as long, as we're three feet away, we're fine. It's just I'm not going to sit on your lap and do it.

42:00
So, Lutathera, PRRT, lu177, it's a radioactive compound. Now, it has a half-life of 6.7 days, which means after 6.7 days it's reduced to half of its activity. And there is biological decay, there's physical decay, and basically what that means is, is if I left a tub of radiation on the top of a counter it would decay itself away over time.

However, when it's in the system it's been flushed out also at the same time it's decaying because you're drinking fluid you're passing out in your urine, so we're also getting rid of it inside the body as well as it decaying on its own. So, it's sort of twofold in a way.

42:41
There's a little bit here about the **cumulative excretion**. So, you lose 44% of your cumulative excretion in the urine in 5 hours, 58% within 24 hours, and 65% within 48 hours. So that's why we go with a three-day window.

However, if you are incontinent and you use pads on your heavily incontinent not just little dribbles, but if you're totally incontinent and you do wear a diaper, we do not want you to throw that into the trash because the Municipal Services, when something is thrown into the trash and it's radioactive, they scan radiation in the trash, and it can come back no matter how low the reading is they can find out that something's been thrown into the trash if it's highly radioactive which is like a heavily soiled diaper of urine. So, we won't want you to throw those into the trash.

Um, we have increased it to seven days um from three days, and this was just recently because um they're picking up low detection rates in the trash, and we've had a couple of patients that have had a call from Municipal Services where they've detected radiation in the trash. And we're asking patients to hold it for 7 days and double bag them and hold on to them for a maximum of 60 days before throwing them in the trash.

So, we have separate instructions and very detailed instructions for anybody that has incontinence, foley catheters, urethrostomies, anything like that, and that'll go into an additional education platform. But if you're just a little stress incontinent, a little bit of urine, that's absolutely fine to follow the 3-day rule that we have.

Now, each institution, they may have variations on this. I think there is a standard across the board for the first three days because of the excretion in the urine, um and that's how we base it from. But we just want to be safe and give you as much information as we can. You can't see it you can't feel it you don't know it's there. So we have to have this guideline that we go on to.

44:48
And we want men to sit on the toilet and not stand and that's just to help reduce splash.
We want um everybody to wipe after urination with um toilet paper, men also, so there's no urine on the glands’ uh skin, around the head of the penis, so there's no irritation that could possibly be caused.

We want you to do a daily shower, and that's not because you're sweating it out of every orifice. It's because we don't have “B days,” and we just think a daily shower helps clean the perineal area so if there is any contamination from the urine that can be addressed.

We do have separate instructions for people that are wheelchair bound or cannot get into a shower, and we go into extra teaching for that, especially if somebody's in a rehabilitation center. These are all questions that come up, but we do have dedicated guidelines for those also.

Encouraging hydration because we want to make sure that you are urinating um any additional isotope that's not been taken on by the tumor out of the body. We do want you to have a daily BM. I know this isn't a problem for most patients but if you do suffer constipation then we do want you to have a daily BM, just to keep the tract moving.

We want you to avoid intimate contact we do not want you to obviously actively try and participate in making a baby or planning a family, at this point in time. There is guidelines on that. you need to finish your treatment and make sure that there's three months after that before you do that. And these are other questions that come up especially if you're being treated when you're younger. Um, there's been questions about egg donation and uh sperm donation to if you wanted to do that beforehand for a family that these are great questions to ask your oncologist if you're being treated when you're very young and you are looking at wanting to have a family.

The general rule is distancing guidelines no closer than 3 feet uh for 3 days, but as I say you can return to work. And that's anything that's uh, if you feel that you can do that, and you're sitting at a desk on your own, and you don't have any side effects, and you feel great that you want to go ahead and run a marathon the next day or you want to go to work, then you absolutely can do that.

You may take public transportation. You may fly we get people that fly in, and we we will have them, they can fly out on the same day, but other institutions may say you need to have 24 hours. You can be in a car with your driver, and you can sit in the back catty corner to the driver that it's okay to do that as well.

It's just being respectful, and also, we just want you to be sort of understanding of what it is. The damage isn't caused. You won't hurt anybody. Um, these are guidelines for you to follow and if you have any questions about it, and no questions small. It's…every question can create anxiety for everybody. Please call up. Just ask us. We try and give as much information as we can but it's easily forgotten, and there's too much information out there. So having somebody that you can call and ask questions too, that's a best way to relieve your anxiety and get an answer. And I just can't stress that enough.

47:49
So, follow-up considerations.
What do you do after you finish all your four treatments. Um, well, you'll be clinically evaluated um by uh the nuclear medicine physician and the oncologist. The guidelines are normally um around 3, 6 and 12 months.

You won't have any dynamic imaging done. We like to leave it about 3 months after to receive another NETSPOT or DETECTNET image because there could be **pseudoprogression** which means that we could see a little bit of an increase in your tumor burden on those kind of imaging studies, the DETECTNECT and NETSPOT, because of the swelling of the tissue. And that's in about 10% of the patients.

So, we really would like to do imaging way past three months. And sometimes when we've done imaging at 3 months and then again at 6 months, we've seen a reduction of um progression free um survival on those images as well. It can continue to work up to a period of 6 to 12 months after the last treatment.

48:48
So, there is lots of different things looking at um moving forward. Some patients don't finish all four treatments as well. I just like to mention that sometimes that they do two treatments, and the marrow didn't recover where we wanted it to do. So, we hold off and then give the additional two. but these are all variations in treatment that will be discussed with your nuclear medicine physician and your oncologist, but you are part of this process. Your nuclear medicine um attending is, your oncologists is also.

So, this isn't a one size fits all, even though the treatments are every eight weeks for four treatments and the dose is a standard dose, which I failed to mention earlier it's a 200 millicurie dose. Everybody does get a standard dose currently.

49:30
So, there are the things that are standard. But it is a case-by-case basis, and we do follow you through. And we will follow up based on your clinical signs and your symptoms and when the imaging comes in, after three months. You'll probably be scheduled for a repeat SSTR imaging, which could be the DETECTNET or the gallium. Or they could do some dynamic imaging also as well, which would be a CT and MRI. But that will be discussed um at the close of your treatment and then the next steps will follow that.

50:04
I could speak about this topic all day. I have so much I'd like to share. It never surprises me the questions that come up. There is a lot of the same kinds of questions, and there are a lot of new questions and some of the questions that we don't have answers too, such as a lot of them dietary knowing how to move forward with that. But at this point I'd like to thank you very much, and I think we'll go on to some questions.

50:32
Thank you so much Lindy for that incredibly informative presentation.
This is a reminder to the audience that this question-and-answer session is for educational purposes only and do not substitute for medical advice. Please talk to your medical team with questions and concerns about your individual care or treatment. Now, we have over 35 questions. We will try to get to as many as possible. They're going to be general questions on this topic in the area of Lindy's expertise. And for today's program, we're really focusing on the PRRT nurse’s perspective. As Lindy mentioned, there are many other educational programs with NET physicians covering the more medical aspects of PRRT. Please note, we will address general questions only and Lindy will also be answering the questions generally. She cannot provide specific feedback on your specific situation.

So, Lindy, welcome to the question-and-answer session. Thank you so much for giving us so much of your time and your expertise with both the presentation and now the question-and-answer session.

You are so welcome and thank you for having me, Lisa.

We're so grateful for you. So, we will jump into it.

51:40
[Lisa] The first question I'll ask is a really common one, and I know you touched on this already. But really, how strict is the timing and what does it mean if I delay the treatments? Can I delay the treatments for longer than an 8-week interval to schedule around, say a vacation or special event?

51:59
[Linda Gardner] Okay, well this is a great question because people have lives and four treatments at 8 weeks apart is a large part of your life. In the guidelines, it is stated that it's um every eight weeks, one to two weeks apart. So, we can do it every seven weeks or every nine weeks. If there is a certain or special circumstance that's going to be a question with your oncologist and your nuclear medicine physician. There is always adjustments to the schedule that can be made I can't speak for all institutions, but I know if there's something that's pressing for you, it's always good to bring it up with the physicians first. Be very open and be very honest with them, that if you can't complete your treatment within the given time, is there a time frame maybe you can work around. But you don't want to delay too much in there. You can push a week or two, but it is a conversation that you need to have and it's not written in stone but again try and give as much information as you can to your um provider and the nuclear medicine team and I'm sure that they can come up with something um to assist you on that.

53:10
Okay, thank you for that. And this is a follow-up question, and you did already answer, address this a little bit: at your center, do you ever vary from the protocol of getting the four treatments every eight weeks, and if so, what's the consideration? And what's the longest people can go between cycles? And I think especially because some sometimes have to have it delayed say based on blood counts and they're worrying that um they're not going to be it's not going to be as effective if they don't do it every eight weeks.

53:39
Now, that's a great question, and again there is guidelines set out, prescribing guidelines and also what's presented with what's FDA-approved and also the cancer guidelines as well. If you receive two treatments and then you hit certain blood levels, Lisa, and they're not coming up, they can delay for eight weeks before they give the third treatment but it would be a reduced dose it would be from 200 to 100. But again, there is variations to this and it's nothing's written in stone because if your marrow is suppressed but it is responding in it's coming back then they

may just want to push it out a couple of weeks to just see if it responds a little bit more um and then treat you at week 10. But it's a question—I am not a prescriber—it is a question that you have with your team. But there's always a conversation to be had. Some patients may receive three treatments. and they may never get the final one because they're not happy with the marrow reserve and they may just leave it at three treatments. But they may have such a good response from those three they may not have needed the fourth. But it's always an open and ongoing conversation and it's something that um you need to discuss with the provider and the oncologist. But there is variations to it.

And I will say we have treated patients on varying schedules again, but this is a conversation with the patient oncologist in the nuclear medicine uh treating physician.

55:11
Okay, it's helpful to know it's not set in stone. Okay, there's another practical question, Lindy: If I get the flu or a cold do I need to cancel or reschedule my PRRT infusion?

55:23
Well, the hospital is where you're treated. Because they treat multiple cancer patients and some of those are um compromised because of the cancer, most institutions won't have you come in if you have a cold or a flu. And it's the same with staff members as well. We don't want to create an unsafe environment for um our workflow and the other patients there. If you've got over that cold and flu, and we believe you're not shedding any virus, you may not feel great, but you don't have a temperature your aches and pains have gone, then we will bring you in for treatment that will be okay. But give the team a heads up and let them know and then we can discuss when it would be best to bring you in or are you safe to bring in um depending on when your symptoms started.

56:08
Okay thank you for that. And a follow-up to that is it okay to get the flu shot, like the flu vaccine covid vaccines other vaccines like pneumonia or shingles while getting PRRT treatments?

56:23
Well, that's actually a great question, and we have had no physicians that have said no that um the patients can't receive the vaccines and shots. However, knowing what the shingle shot feels like myself, that was a very bad shot and I felt terrible for days. So, I would know what shot you're getting in and if you have a scheduled infusion, maybe day two or day three, when the side effects are meant to kick in, you may not want to come in for treatment. So, it would be better to do it either a good few days before, so you know the symptoms, if you're going to get any response from that injection. Because the shingle shot was a is a really bad one, and if you have it and you're scheduled to come in for treatment two or three days after. If that was me, I wouldn't have been able to walk in to receive it because it was um bad side effects for me. So, knowing what the side effects are and taking that into consideration for your treatment schedule as well would be a good thing.

57:23
That's helpful. That's helpful to know. You mentioned the different lines, the different ways people can receive it. Do people need a PICC line or port placed for the PRRT treatments?

57:35
No, you just need a vein, a good vein. We can use PICC lines, and we can access ports. I believe most institutions do that too, but again, it is very dependent on the place where you're getting treated if they will access a port for you. But there is no contraindication for infusing through a port. Because you've got a consistent flow of amino acids going through that.

A peripheral line is an intravenous catheter that goes in either the antecubital area, which is the elbow area, or we can put it in the hand or the forearm but we may need to replace that IV because sometimes the amino acid can cause a little bit of irritation there so you could have it replaced. Or you may have two placed: one for the actual initial compound the Lutathera itself and one for the amino acids.

So, there is variations on that but we can use all those lines you express, explained there Lisa.

58:40
Well, what if I'm someone who has a really hard, the nurses have a hard time getting an IV in? Would you, I mean what happens with that situation?

58:51
We've had patients with very difficult veins a lot of these patients have been through different chemotherapies and different treatments. And yes, we do have that. That is a problem um we are very fortunate that we have um nurses with excellent IV skills, but it has been known that sometimes we've maybe placed a third or a fourth IV because we've we've hit such a small IV, but it's still enough to work for the treatment but it wasn't able to last the treatment. so we've replaced another one or it started to swell but that does happen. If we could not get the vein to finish the treatment which I don't it's not happened with us, but we would um we have an ultrasound based uh system where we would do an ultrasound guided IV if we needed to finish those um uh amino acids but there is options that way. We would never just give the treatment and then say, “Oh we can't get an IV, we're not giving the amino acids.” There is follow-up processes within hospitals how we would initiate vascular access.

59:57
Okay, so that's helpful to know. And if I'm a patient and I'm having a hard time, the nurse or the hospital is having a hard time, is there something I should know to ask for?

1:00
We have patients that come in for imaging studies all the time, and they say they are a hard stick. We have uh vein finders, which are infrared light machines where we can hover over the skin and look. As I said, we're very skilled in vascular access. I've done vascular access for 25

years of my career, so I um I'm always a backup or a go-to for that, but we do have pieces um of equipment onsite where we can assist with that.

The good thing is to let the scheduler know and that would be on the pre-call if you have a pre-call before your treatment, then that can be discussed there. Or if you really if it's something that really causes you a lot of anxiety, this vascular access, it would be good to bring it up at consult. And then maybe you can be reviewed at consult. If it's in person, a nurse can come and see you we can assess you and see what you look like and maybe go from there, but we don't want it to be anxiety provoking and IV starts can be across the spectrum for adults and for children.

So, it's sort of like, if you can give us as much information ahead of time then we have time to work with that, but that is one of, other than a magic wand, we have things in place. And we would like you to hydrate we can use um um assist devices and ultrasound guided or if it is so much of a concern, we could refer you to get a PICC line placed if that is something that would make you uncomfortable and uh your treatment easier for you that would be a question for the oncologist nuclear medicine physician, and we go from there.

1:01:49
Lots of helpful tips. And I think the biggest thing that you mentioned is, that I wasn't even aware of, is having a pre-call I mean even asking for that. Thank you for that.

1:02:02
So, you mentioned the medication pretty much being the same. I wanted to go back to that. Is the actual treatment, is the actual drug different at different institutions or is it the same?

1:02:14
Well, where we order our drug from, it's the company, Novartis, and it's provided by Novartis. It is Lutetium DOTATATE that we receive it's 200 millicuries, and it's by the trade name, Lutathera. I do know in different countries they make their own they label their own dotatate on site, but as far as I'm aware in North America the drugs come from the same place, so the drug is the same. It's just got many different names as we uh showed on the slide that it can be called many different things but the trade name of the drug that is administered in North America is the Lutathera.

1:02:52
That's helpful to know. I think sometimes people are wondering if I drive to this institution versus my local hospital will this drug vary? And you're saying it's the same drug.

1:03:01
It's the same drug.

1:03:03

Okay, okay. I'm wondering what is the maximum number of PRRT treatments, and I think in this question is meaning the Lutathera treatments you've seen given at your institution?

1:03:14
That's a great question. And it can vary because we have received people that have had treatments outside of the country, which has given them an accumulation of a large amount of treatments than what's, more than what the FDA has approved because it's been given elsewhere

Currently as you know or as you may not know, you get four treatments prescribed 8 weeks apart. And then, if after 12 months you've had progression-free survival, then you can qualify for another two to be paid for by your insurance. Ao that would give you a total of six treatments

However, you asked at my institution at my institution we treat treated patients under the expanded access, so they received four treatments under the expanded access. Then when it became FDA approved, they then got four treatments under the FDA approval process, and then they were progression free for 12 months, they got an additional two. So, if you want to tally that up that is treatments.

However, we have had an individual that has received more than those treatments because of being treated in a different state and under a different access point and they've
had over 10.

1:04:31
Wow so it's possible.

It varies.

And can you explain what the Expanded Access Program is, and what Expanded Access means? Some people might not have been around during that time.

1:04:41
Yeah, so the expanded access was when the NETTER-1 trial finished, and it showed favorable results for this treatment. And when they wait to get FDA approval once the research is finished, there is a time where this drug isn't available to patients and that's very disheartening because we know it works but they can't receive it because it's not approved.

So, what happens is the company will release a certain amount of doses to be paid for by the company under what's called an Expanded Access system. So, there is doses that we can give to patients that are not being paid for by the insurance company but they're under an independent IRB where it's sort of treated as research but it's an access system for them to get it before it's on the market. I think that's the best way I can explain it.

So, they received it when it wasn't FDA-approved, and it wasn't paid for by the insurance um and they received it under sort of as a research gateway, in a way, until that drug became available.

1:05:51
Yeah, that was a really wonderful way to give access to people who needed the treatment before it was widely available. Thank you. Thanks for explaining that.

1:06:03
There was another word that you used during your presentation, pseudoprogression. Can you explain that a little bit more? Is that a good or a bad thing?

1:06:11
Well, it's a very long word for one thing. And pseudoprogression, the best way I can um explain it is, it's an inflammatory response to the medication. So, once the medication gets inside the cell and it causes cell death and it starts to break down, the cell can enlarge as it swells. As this process is taking place, it's called apoptosis. It's like the death of the cell but before the cell starts to crumble and die on itself. It can have like an inflammation process, so it looks like it's actually bigger than what it really is. And it isn't. But if you were to image it the cell would larger than what it will be once the death inside that cell the inflammation has stopped. So pseudoprogression, you don't want it to progress. So, it's like a false progression in a way. It it it swells before it closes on itself and dies. And that happens in about 10% of patients receiving the medication. So that's why we wouldn't image straight away because we probably see something that um doesn't seem to look as favorable as what it should, but it is down to the inflammation response is the best way to sort of say it.

That's how it…

1:07:37
So, what you're saying is this the scans might be looking worse when it's not really worse.

1:07:44
Yeah.

1:07:45
Okay thanks for clarifying.

1:07:47
You know, this question comes up frequently: Can I experience a carcinoid crisis with the treatments? Do I need to take octreotide before or during the infusion to prevent carcinoid symptoms?

1:07:58

So, carcinoid crisis, it's something that's well written about and well documented. As I stated in the slides, I have not actually seen a true carcinoid crisis in all the time that we have treated patients. However, we do have octreotide IV available on hand and we would administer that if we saw somebody going into what we believe to be a carcinoid crisis which is flushing, bronchospasm, blood pressure changes. Then we'd stabilize with octreotide. We don't have patients take octreotide beforehand. That is something that even if you went in for anesthesia and you're having anesthesia, they will give you octreotide normally prophylactically for surgery. We don't give it prophylactically for PRRT. We monitor you during the infusion. That's why we give it slowly, obviously, you're on your somotastatin analogues and they're normally for um uh patients that have functional tumors and to try and control those symptoms, but we wouldn't have anybody take any additional octreotide. You'd come in, we'd do a slow infusion as we do with all patients. We'd monitor you during that. If we saw the beginning of a carcinoid crisis, then we would step in and then initiate our protocol to give um octreotide um IV bolus and then a drip, and then you'd be admitted overnight for monitoring and that's how we would do it at our institution, and I believe it's set up very similar in other institutions too, Lisa.

1:09:30
Okay it's helpful to know you have put some thought in it and there's a protocol in place.

1:09:36
So, speaking of these shots, how long do I need to be off somatostatin analogues like octreotide or lanreotide, I'm assuming the monthly ones before starting Lutathera PRRT?

1:09:46
Okay so this is a great question and there's multiple ways to answer it. If we have you scheduled and we can get you in in two weeks for your treatment and you just had your shot, we would maybe push you out a couple of weeks until we got you into that sort of four-week cycle. Or if you if you're due your shot but we get we've got your authorization to be scheduled to do your treatment in two weeks, we might ask you not to take your next shot because we want you to stay washed out until we treat you.

So the first part of that, to answer that question is that we want to get you to receive your treatment as soon as we can get you in so we'll see where the shot landed before your treatment so we may ask you to omit the next one so we can get you in sooner without having to wait an additional four weeks to schedule you. Or we if you got the shot in two weeks then that gives us a two-week window to schedule that. So, it's that scheduling point, we'd have to work with you.

And as I stated earlier, some doctors I have seen the patient comes off their octreotide during the PRRT, the Lutathera treatments. We have had patients that have been taken off by their oncologist and then they go back on it after the treatment finishes.

So, there's variations to a lot of it, but regardless of how they want you to schedule those shots. We do…within the NETTER-1 trial, the responses were taken with a 28-day washout, which would mean that you don't have your shot 28 days before the Lutathera treatment and then you would take your shot right after the Lutathera treatment. You can take it as soon as 4 hours

1:11:31
And and that's um the guidelines that were um brought out in the results based from the NETTER-1 trial. However, there is variations to that um some patients have been treated where they've had the shot 10 days before we treat. And there's also another school of thought on that thing that it may help the receptors. There's a lot more research that's needed in that area I don't think there's a a line to be drawn on this and I think it is something that could be brought up in future research to see exactly how those receptors respond with you know the timing of those shots. But usually, 28 days wash out and then you can take it after the treatment, but there is variations. And I just want people to know that those variations are not wrong, but more research is needed, and it may change in the future.

1:12:22
Yeah, yeah thank you. So, you know, there's a range and there's more to be learned.

1:12:30
So, speaking of variation, you mentioned that the shot this medicine analog is given four hours after and some people will give it 24 hours after or the next day. Can you explain why again there's a range on the backend of it, of people getting shots after and, and how that might affect anything?

1:12:48
That's and that's another great question as well because even though we treat with PRRT and we're targeting the SSTR2 receptors, there could still be receptors open to receive the SSA injection. There's thousands of receptors on every every cell.

So you can give it up to four hours after the treatment or you can give it a week after treatment it just depends how it falls in uh the patient schedule.

But there's also another important part to that too is that some patients. It's the reimbursement of that shot as well. They can only get that shot every um I think it's as soon as every 28 days. It's how it's paid for it's a very expensive shot that they get, and that has to be taken into consideration also, Lisa. So, if they don't want to get it straight after they want to leave it a few days so it cycles with the next one within their billing cycle, that's that's also an important point because patients can't afford for these shots outside. If we're having them get them sooner than the cycle that they have it monthly. So there other considerations to come into. Does it change anything? I think there's more research needed there because it's it's not very clear. But as long as you're on the shots and we keep the regular cycle going that's that's the main thing.

1:14:04
Okay, thank you. Thanks for uh clarifying that.

1:14:08
I know you touched on this a little bit. The question of diet comes up frequently. What diet should I be on? Is there a particular diet that can help PRRT work better?

1:14:19
Gosh, if there was I would uh I would tell everybody to take it. I really would. I mean, the only thing I can tell patients to do is eat what makes you feel good, especially if you have absorption issues. And also, eat healthy foods. A lot of people say how can I improve my hemoglobin, which is the red cells? And I'll say you know cruciferous, you know, dark green vegetables, red meats. But then we have some patients that are vegan. So, you just find out the protein where you can and what you can eat. I mean diet is it's with something we eat. It's sustains us and we are what we put into our bodies. So, the best diet that works for you and as long as it's nourishing you and you feel good on your diet. I think that's the most important thing because a lot of people can have absorption issues. They can lose a lot through having functional tumors where they're having a lot of diarrhea. It's like, I really believe you focus on you, and you eat what helps you, and to encourage your intake if you're not taking much.

I know a lot of discussion on on diet within this patient population. Nothing you can do can improve PRRT Lutathera will work regardlessly well with whatever's on board. We want you to be healthy to receive it so the days afterwards. If you're one of the people that doesn't feel great afterwards, you have something on board beforehand to sustain you over that period. And I think that's the most important point.

1:15:53
That's helpful.
Is there anything in particular I should not eat with PRRT, any foods to avoid?

1:16:00
Anything that makes you feel bad. Anything that makes you go to the toilet more. I don't think there's anything that you can eat that will inhibit the way that this treatment works.

1:16:12
Okay, thank you. What about alcohol? Do I need to avoid alcohol with PRRT treatments?

1:16:18
I have not heard that you do. A lot of people do enjoy a glass of wine. We tell them into enjoy the glass of wine and to do that. Obviously drink safely is my main message there, but it doesn't inhibit how you feel or how it works, but obviously we want you to drink plenty of fluids because we want you to urinate, and um drinking plenty of alcohol isn't really the most beneficial way to make sure that you're urinating. I'd go with less of that but you can enjoy an occasional drink but as long as you do it safely.

1:16:55

Lindy, this question comes up quite frequently. What can you tell us about avoiding antioxidants before, during, and after PRRT treatments? And is this just with antioxidant supplements or also foods included in this?

1:17:10
Well, that's a great question, also, because we want to promote our well-being and make sure we're healthy and what we're on boarding with. I know there's no research in this area, Lisa. So I mean, take your regular dose of antioxidants. That can only help the system but high dosing or um going above and beyond that, there's no actual research based on this. So I wouldn't encourage going for that but taking your regular doses.

1:17:40
Okay thanks. That's helpful because I know some people have asked about high dose of certain vitamins and antioxidants. Thanks.

1:17:47
What about the sun? Is it safe to be out in the sun with PRRT treatments?

1:17:53
You think that you shouldn't cuz you already had your dose of radiation. I actually like the thought methodology behind this question, but it's not going to change how you absorb in the sun. Obviously, if you go in the sun make sure you wear sunscreen. Just be protective. Wear a hat. All of the regular things. You're not going to get extra radiation from the sun because of the internal radiation that you have. If you want to be out in the sun, go ahead and be outside it's the best feeling to be outside. It makes you feel relaxed. It distresses you, but just be safe and use sun care.

1:18:30
Well, so Lindy a follow-up question is with this is, that some people may be told to avoid the sun with other types of treatments, chemos, other types of radiation, so does it cause extra sensitivity um being out in the sun?

1:18:45
Okay. So, direct beam radiation obviously, that would you'd have instructions not to be in the sun with that because of the external beam on the skin and it causing sensitivity to the skin. PRRT is in a systemic treatment which means it's internalized into the body. It doesn't cause sensitivity to the sun when you're outing it. Obviously, we will tell you to wear sunscreen and hats and have safe sun practices while you're outside. But do go outside. It is great for mental well-being and reducing anxiety, and it's one of the best ways to recuperate is if you can sit and read a book and be outside.

1:19:25

Yeah, I think it was really helpful, Lindy, that you clarify the difference between external direct beam radiation and then this type of PRRT and how the side effects might be different and the instructions. Thank you for that.

1:19:38
What about taking Tylenol or Ibuprofen?
Sometimes people have pain or headaches and other things. Do I need to avoid taking Tylenol or Ibuprofen with PRRT?

1:19:48
No, we'd actually like you to take what you normally do. Over the counter medications are obviously better. But if you do have prescription medications, if it's your regular pain, please go ahead and take it. Take whatever schedule of medications you need to take that makes you comfortable. We do recommend that you do take some Tylenol if you have a little discomfort or something coming over. Over the counter medication is good unless you've been advised otherwise. If you have um liver issues and there's a question that you can't take it because of certain issues that way. Obviously, that's a question that you're going to have with your oncologists, but we recommend taking over the counter medications if you do have any pain or discomfort after treatment there is no need to avoid taking those medications unless you've been told otherwise by other physicians.

1:20:40
Yeah. Okay, so even if people have tumors in the liver, it's okay to take
Tylenol?

1:20:46
With PRRT, it doesn't make any difference if you want to take Tylenol or ibuprofen, but obviously if you have other information from your physicians that follow your liver, and they tell you that you can't take them then you should follow that advice, but PRRT does not void you from taking those medications.

1:21:05
Okay, thank you. Speaking of pain, I've heard some people complain of pain after PRT treatments can you speak to that?

1:21:12
Yeah. We can. We've had there's lots of variations on this. And that's why it's always good to have somebody you can call up and follow up with, because you want to know if it's a pain a good pain, a bad pain, a pain you need to follow up on emergently. Is there something that caused the pain beforehand that we may have to have given you steroids for? So, it's not just a simple yes or no question it's um something that needs to be discussed with you and your team but there can be some pain afterwards. And that can be from the um medication working in the tumor cells that causes some slight inflammatory response, that can give you some discomfort and some pain. However, that pain shouldn't be anything wildly outside of what is normal for

you. If it is a pain that is very disconcerting to you and it doesn't feel right then obviously you'll be expected to go to the ED and follow-up. But if it's something that it's like, it's just a bit of a discomfort you can feel something, because a lot of patients say can feel um pain within the abdomen—they know where the tumors are and sometimes we can irritate that in a way we can sort of cause a little inflammatory response and it can go away with over-the-counter pain meds or pain medications you have at home. However, if it's prolonged or it doesn't feel right to you follow-up is always the best intervention after that. And I'll reach out to your contact person that's available while you're being treated.

1:22:46
The importance of open communication. Thank you.

I can't stress that enough.

Thank you, thank you. Especially with someone like you.

Yeah, thank you.

1:22:56
Talk about fatigue. This comes up often. How tired will I feel and what is normal? How long is normal to feel tired and how long does it generally last? Why does fatigue vary from person to person?

1:23:14
That's such a loaded question. There's so many responses there. As I said everybody is so individual. Sometimes it's like if they felt fatigued after chemo, if they felt fatigued after certain treatments. If they felt nauseous after chemo, they could feel nauseous after this. It's very difficult to say. From the research that's back about the fatigue it's I think it's a kind, it's a good percentage of patients. I think between 35 and 40% that the fatigue is there, and it can last anywhere from 3 to seven days. However, it can last longer I've had patients that haven't wanted to get up off the couch for two weeks and they just feel so drained after the treatment. And is this is this normal? Well, it's normal to them. As long as they're eating, they're hydrating. and you know we're monitoring them, and we've got the blood results back, the blood results are okay, everything looks fine. We try and do it based person to person. And that open communication is is hugely important.

The other thing that actually just came up which I didn't mention in the slides, Lisa, is that there's an accumulation effect with treatment. Sometimes if you think the treatment was pretty not too great but you think, “Oh the next time will be better because I've experienced it this time. I know what I'm going to experience the next time.” That may not be the case. It could be the same or it could be a little bit worse. You know the symptoms could be a little bit more enhanced the next time. And then on the third time, it could be the same more enhanced, but you're already ready for them you can take more nausea medication more pain medication. Just, the first time, it could be worse on cycle two, cycle three, and cycle four until

you finished. So, the trajectory that way it's very different for each patient too. It's not going to get easier if it's been pretty mixed on the first one, we will try and make it better on the second one. If you're more nauseous or you know, you had a little extra pain, then we'll try and work and pre-med that so it doesn't feel as bad on
the second or third time.

1:25:26
Okay, thank you. Actually, there was a question here about that, so thank you for addressing that as well.

What about hair loss? Some people that was another thing .
Yes, I didn't mention that in my slides.

How common? and how common or severe is this?

1:25:41
It's not very common. It's, I think, it's like less than 5%, but it does happen. At
first, we thought it was due to the amino acids in the beginning but then we found out it was to the radiation properties that it can happen. It seems from my experience with who we've treated. Men don't seem to notice the hair loss, it's the women. I think it's because the hair is longer and fuller and it comes out. It's like they can brush the hair or wash the hair, and they find it coming out um we had one lady that was younger, and she actually shaved her head because her hair was beautiful. And she just couldn't stand it coming out, so she shaved it. And she was very upset about that. But we know that there's no permanent hair loss afterwards. But saying that hair loss during the treatment. It's a huge thing for patients to start losing their hair during treatment. And there's nothing we can do to prevent it. I know in some chemos they put cold packs on the head and things like that with the chemo that they receive. It's not common. It does happen. Thinning of the hair does happen, but it does come back. But I have had one severe case on a lady, and she did shave her head, and it that was very hard for her, but it's a low percentage and I don't know why it happens to some people and not others.

1:27:10
Okay thank you for addressing that.
What about kidney damage can people have kidney damage with PRRT? And what are the signs? What can be done to prevent it and also to treat it?

1:27:21
Okay. So, yes there is a percentage of patients that, especially if the kidney function isn't great to begin with when you go in for treatment. So, if you have issues or you've had prolonged treatment chemo or your medications and the kidney function is borderline, we don't expect to see it um deteriorate because we do give the amino acids during the infusion. So, we do have a kidney protectant running. Very, very few patients I have seen that it actually has made the kidney function worse. But if you did want to protect your kidneys, it would be hydration after the treatment and also, to pre-hydrate, to drink before the treatment so your body's got plenty

of fluid on board. Hydration is a good thing. Obviously, if you have any cardiac issues you're not going to drink too much because you already have an issue with the heart. So, we'd have to look at you independently if we wanted to increase the fluid intake. Would it match okay with the cardiac function? So, I can't just tell you to drink a lot. There's more factors to look at, but to pre-hydrate and post hydrate would be the main thing but also monitoring your blood work. We monitor your blood work so we can look at the trends of how the kidneys are working, and we can get a basis from that also.

1:28:40
Thank you. You mentioned hydration a couple times. How much water is suggested to consume after treatment to flush the radiation from your system?

1:28:51
Now that's a great question. I know that I don't even drink what I should drink on a regular basis, and sometimes if you don't feel great it's hard to drink water. But we always like to say like a cup of water, which would be like a 250-milliliter cup—I think that's a regular cup size, like once every hour until you go to bed. That's a nice way to do it. Or if you've got a couple of the bottles—I think the half liter drinking bottles, if you could have a couple of those. Some patients are very good and they drink religiously on the hour every hour. Some patients don't. It's just to be aware that you need to hydrate. And if you could drink at least a cup every hour of water or something that's maybe about 200 CC's, which is like a regular cup. And just make sure that you drink that every hour on the hour, but it's just being cognizant.

And we don't want you to over drink if you do have a heart condition because that brings us into another area where we've got to be very careful too. So, based on your disease process and no heart conditions, I'd drink a cup every hour before you go to bed and have a glass beside your bed for when you wake up.

1:30:02
Yeah, yeah. So, it needs to be personalized. And these practical tips are also really helpful.

1:30:08
Okay. Well, I know that when my husband had PRRT, he was given a card or a letter talking about the radiation exposure. Will I set, or my husband, or someone else who has NET…will I set off airport scanners after treatments? And if so, how long could this be possible? And what could I do about it?

1:30:27
Okay this is a this is a very good question and very, very poignant. I remember back when Lutathera was very, very new and patients were traveling internationally or interstate, sorry, to receive treatments were setting off these radiation detectors everywhere at airports. Airports calculated and specifically programmed to pick up isotopes and know what they are. And I know that Josh Mailman of one of the other patient advocacy groups, he's very big on this. And

he had a lot of information regarding this about how that they're now trained, that they pick up the Lutetium177 and it's now in their database.

So, if something's triggered, they understand it's a treatment. But it's highly unlikely it will be picked up by a detector at the airport. And it can be picked up for 30 days after the infusion because it can pick up extremely low amounts. But it will register at the airport what it is that they pick up. So, it will pick up Lutetium-177, which is the Lutathera, the PRRT that you've had. So, it'll be a non-threat because it's programmed into their systems.

However, the discharge information that you receive from an institution, either a wallet card or a discharge letter that states what you've had presenting that to them. If they do pull you over, it will match what has been picked up on their detectors. They don't just pick up radiation; they pick up specific radiations and they can catalog it to what they are picking up. So, as long as you have that information on you when you travel, you shouldn't be pulled aside. You shouldn't be…it shouldn't disrupt your travel, it should be…I'm not a patient, I've not been through it, so I can't personally speak to a journey apart from the feedback that I've had from patients. Is that, if you have the information with you and present it and also the date when you travel. If you can schedule travel, you know, a few weeks after your treatment, then it's a lot easier and it won't be picked up as much.

And Veterans buildings, I think, is another one where sometimes it can be detected because they have those detectors there as well. So. I think Federal buildings, the VA, and airports is some is some places. I've never had a patient um be um have been picked up at a federal building but I'm sure there is patients out there that have been.

1:32:57
Yeah, 30 days after. It's helpful to know it could be a long time afterwards.

Yeah.

Even the smallest amount.

1:33:06
Yeah, um, so this question, I imagine you may have gotten these questions or comments, “If I'm advised to stay away from my kids for three days would five to seven days be even better just to be safe?” Because of course no one wants to expose their kids.

1:33:20
Well, as low as reasonably achievable with on that slide. Um, and after day three, we've already got rid of uh 68%. We're already nearly to half of our half-life. So, it's dropped down considerably. But three days…would five to seven days be even better? Yes, I mean if you're taking the time to extend it out, but would it make any difference with the actual amount of radiation that they're receiving with it? It would be very discretionary within those extra 2 to 4 days it would be very, very low anywhere anyway.

But when you say “even better,” it's how you um pull that apart. “Even better” meaning a lower amount, then yes. It would be low, but it's already extremely low at that point. But if you wanted to do that and that makes you feel comfortable, then I would do that. Nobody's saying that “No you can't”. We're giving guidelines three days is good but an extra five to seven days. Absolutely.

1:34:24
What about pets? Can I hold my dog or cat if I've had PRRT? And is there risk to the pet?

1:34:30
So, Lisa this is a really good question. It's asked a lot, and I know that there is multiple answers to this question um from different institutions and from online. There has been no research studied in animals about being on the lap of somebody that's had PRRT and what that can cause to the animal. We don't know whether the animals receiving that transmitted radiation the same. And also the lifespan of the animal is as a lot more shorter than any child or baby in the womb. If the animal makes you feel comfortable and you want the animal on your lap, let that animal be there for you. You don't have to have it on your lap for hours and hours. Just have it jump up 10 15 minutes if that's what you want. Let it sleep beside you on the bed. That is okay. You're not going to damage the animal. You're not going to cause this animal any damage from the radiation. We don't know that it's proof that it does, but if it makes you feel comfortable please do that. Don't think you're going to hurt them. You're not.

However, if you don't want your pet on your lap and you want it to be off and you want to do the five to seven days like for children or the three days, then do that. If that makes you feel that you are protecting your animal in that way, then please do that. But as I said, there is no research on this. We don't believe animals take it up the same, and you're not going to cause the animal any damage. It's not being injected into the animal. It's just been closer to the fire; it's a little bit warmer. But will it cause any damage? Probably not in that cat or that dog. And that's the best way I can answer it. And I just don't want you to have think you're going to cause your pet any harm because there's probably not going to be any harm to that animal. But if you want to follow the guidelines and do it longer, like some people say. Whatever makes you feel comfortable. It really is, it's up to your comfort level.

1:36:24
Thanks for that Lindy. I think that's reassuring because people um comment on that because you can't really control if a dog or cat sometimes jumps in your lap or comes near you. So, thank you for that.

1:36:35
What about this question: can radiation be transferred? For example, if my pet goes from my lap to someone else's lap? Will that put someone else at risk for radiation?

1:36:45

No, radiation that you've received, the PRRT, the Lutathera, it doesn't work like that. It's in your body and it emits around you at very low doses. So if the cat's on your lap and then it jumps to your partner's lap or your child's lap or your wife or husband's lap, it will not transfer radiation over to you over to the other person.

1:37:08
Thank you for that. That's very helpful to understand.

1:37:10
I know you talked a bit about this in terms of safety tips with the bathroom. And I guess just to clarify is it okay for people to share a bathroom. And this question goes into when someone must share a bathroom in the home with others what sanitary and other precautions should be taken after using the bathroom within the first few days. And I know you touched on this, but is it okay to share bathroom?

1:37:34
It is. Some people don't have two bathrooms. They only have one bathroom. Some people are in a hotel and they they've got one bathroom. So yes, there is um small things that we can do to assist here. It's like, if you're going to have a shower, let your um spouse or partner shower first and then you shower after them. That would be a way and the water as it's dripping over you is running everything away down the drain. So that's good. And also, as long as you're not urinating in the shower. That's great. Because urination is a very different thing.

If you're going to the toilet, as long as you sit down and you're not splashing. And there's nothing, there's no urine on the seat because when somebody sits on top of the seat and they sit on the urine that has activity in it, then it's going to go onto their skin. Is it going to cause them damage? Probably probably not, because it's just a low dose. But it's just the contamination aspect. It's going to spread it around. And we don't want to do that.

So, if you did go to the toilet and you forgot to sit down and you urinated on the toilet lid then…I mean on the toilet seat, then we'd ask you to take some tissue paper, not wipe the seat but dab it up and then drop it in the toilet and flush the toilet. So, then the seat is then dry. And then wash your hands.

People have asked if, you know, wiping the toilet with bleach or disinfectant, will that help? It doesn't. Bleach or disinfectant is not going to get rid of the radioactivity. What gets rid of the contamination on the seat is, you want to absorb it up from where it is and not spread it around. And then when it's absorbed up, then you throw it away and you're good. You can clean it with bleach if you want to, but it's not going to take away the contamination aspect. But it'll take away if there's I don't know any infection in the urine or something like that. It'll kill germs, but it won't take away way activity.

So, it's just having safe practices in the bathroom, which is being respectful of your hygiene around the people that you share with. And making sure that there's no no urine splatter is is the biggest thing. You just don't want it to be contaminated anywhere and track it anywhere else. You want to keep it in the toilet and flush that toilet twice so it keeps it all all together. But you can share a restroom as long as you have safe practices afterwards.

1:39:51
Yeah and a follow-up question to that.
What about public bathrooms is it okay to use public bathrooms?

1:39:57
You can use public bathrooms as well as long as you follow the same things. It's like you're sitting down you're going to flush twice. And you're not going to make sure that you've done anything on the seat. Obviously, it's better to use your home bathroom, but I know when you've got to go, you've got to go. So as long as you use safe practices while you're using a public bathroom and be respectful of anybody else that's following you.

1:40:20
Okay, I know you did an amazing job explaining radiation safety, and I think that uh a big concern is really understanding the duration of exposure and the distance of exposure and how there's a variance. And um, there's a concern, and with this question it says some people need assistance with their care. And therefore, their caretakers have breath periods of being within that six-feet distance guidelines, which then concerns them is it okay then to be having to be in close contact—having to hug them, assist them, for brief periods.

1:40:53
Yeah, so the three-foot guideline, the one0meter distance for 3 days. Yeah, it's like the…it's the time. If I can explain it, like, it's like a fire. If you're putting, you're standing close to a fire, you're warming your hands on it and it's lovely and warm. But you take a step back, it's cooler. And then you take another step back, and then it's you don't feel the heat. It's cool, it's cold. So that's kind of the principle of radiation, that you're giving off.

Now, if I want up to a fire and I had my hands there for a little while, it may feel good. And then I'd walk away I'd be fine. But I wouldn't stand there because my hands are going to get warmer and warmer and warmer, and they'll burn. So, if a caretaker's there with, looking after a person that needs assistance, they're fine to go in. Just make sure you've got everything before you go in so you can limit your time while you're with the patient. And then step away.

If you need to be with them for 15 minutes while, I don't know, if you're doing a bed bath or you're doing something that's kind of involved, or you're showering them in the in the toilet. It's a 15-minute, but you're not right over the patient you'll be in stepping to the side getting what you need and going back, that's all fine. The amount of exposure at that point from that patient is very small, but we just want you to be respectful of it to try and maintain it as low as reasonably achievable.

1:42:12

Yeah okay. Thank you. That analogy of the fire is really helpful to at least understand the distance and how that matters. Kind of like that game where you might play as kid, of getting hot and cold and closer to something, and how that exposure when you're closer is more. But you're you're just wanting to be respectful.

Okay thank you.

1:42:34
We'll end with a couple questions. And this one comes up frequently. People want to get rid of the radiation right they want to move on with their lives, and…

So, what advice do you have, if any, post-infusion to get the radiation out of my body and recover quickly?

1:42:53
Great question. Other than what we've been talking about today, Lisa, the radiation decays on its own and it'll be processed out of the body on its own. It goes through…I don't think you can increase it apart from, just you know, sensibly hydrating. And going to the bathroom um excretion process. And the timing is pretty much set the way it is as long as you drink plenty it'll help flush it out but within a certain period of time. Then it's going to be out of the system after a few days.

To help you recover quickly after the radiation, I think it's like anything. It's like as long as you have a a healthy, as healthy as possible you do what's good and feels right for you and what feels right for your body to recover from any kind of treatment that you have. You're going to do what works for you. I mean if somebody wants to, I don't know, do a one mile walk every day to help them you know recover from something. But somebody else wants to sit and read a book and just eat fruit and hydrate on water. It's whatever process works for you.

Yeah thank you.

1:44:04
That's helpful.

We're just going to end with this last question. I know that you travel and speak nationally and internationally, and you collaborate with many experts in this field. What advances in this field are you most optimistic about?

1:44:20
Oh, so much. In this field for neuroendocrine tumors, it's um finding different isotopes to go for those markers, the SSTR-2 receptors. And that would mean instead of the lutetium, which is a beta emitter, going to the alpha admitter, which we're going on to right now. We're in um trials with that, which is a different isotope that hits in a different way to the beta. That's very exciting.

There's also different markers that they're looking at in different fields outside of neuroendocrine tumor, but that can open the gateway for other things coming in. And also, there's a lot of combination treatments to be studied with oral medications as well, as doing um PRRT and lutathera. We need some more data back and research from that. I know there's been, you know, discussion on radio sensitizers, which is medications that help the PRRT work. And also, combination, maybe with different chemotherapy and this treatment together. So we're hitting the cancer harder and faster and from different angles.

I mean there's so much out there. We just need to get the trials going and see you know how the the disease process responds to those treatments.

1:45:48
Yeah. Wow. You just brought up a lot of things, and maybe for people who are just getting their first doses, they're not aware that there's so many different options. Next level options. So, you mentioned new isotopes, new things like alpha, radiosensitizers, so combination things to make it work better. And then, of course, you were talking about dosimetry and other things. And just learning and understanding, right? Understanding about sequencing and such. So, there's a lot to be hopeful for. And what I hear you saying is, just because you're completed with these treat four treatments it doesn't mean that you've used up this tool. That there's, this is just the beginning.

1:46:31
Yeah exactly. It's a very exciting time now um because there's so much research going on in this area, which is really great for this disease process. And it gives so many people so many different options. And it's great to have this treatment available because it works beautifully. It is tolerated really kind of well. And you meet the nicest people, and just, I just don't know what to say. I mean, just the wealth that I've learned from the patient population here, and all the patients that I I meet it. It just, it's just overwhelming. It really is.

1:47:13
Well, we're really grateful for these nice people—like you, who are so dedicated to this field who really help provide these options that give us hope. Thank you so much, Lindy.

Thank you for all you do. Thank you for being here today for all your hard work, your care of patients, and all you're doing to move the field forward.

1:47:394
Thank you.

Thank you so much. Thank you to you too. Lisa. Thank you.

1:47:39
And now I'm going to hand it back to Heather in the studio.

Thank you again Lindy for your illuminating presentation and for answering so many questions on all aspects of receiving PRRT.

We appreciate our supporters, Novartis, Ipsen, Crinetics, Curium, Exelixis, and ITM.
Educational programs like today's are also made possible by donors like you.
And special thanks to our technical director, Rich Tamayo from TVP Live for this high-quality broadcast production.

Again, today's presentation and Q&A session have been recorded and can be viewed on our website video library and YouTube channel shortly after this broadcast. If you registered for today's webinar, you may receive a survey via email. We greatly appreciate you completing this survey as it helps us improve our content and with fundraising efforts. Again, follow us on social media to stay up to date on our upcoming events. Our handle is @NCFcancer. And now, I'll turn it back over to Lisa.

Thank you, Heather. LACNETS, which is now known as the Neuroendocrine Cancer Foundation, is a community of support and resources. We recognize that you are more than your disease and we aim to support you as a whole person. To this end we offer many resources and programs. Find out more on our new website NCF.net.

We offer a monthly podcast featuring experts who offer the top 10 questions in their field. Go to our podcast page to check out the episode transcript, resources, and the 10 questions we ask the expert.

Thanks again for joining us for today's educational event. Goodbye and we look forward to seeing you at our next event.