ADVISORY
COUNCIL ON
RADIATION PROTECTION

CERTIFIED TRANSCRIPT

Bureau of Radiation Control

Hampton Inn & Suites

Tampa Airport Avion Park Westshore

Tampa, Florida 33607

Thursday, September 22, 2022

12:10 p.m. - 3:40 p.m.

Reported by
Rita G. Meyer, RDR, CRR, CRC
Realtime Reporter and Notary Public
State of Florida at Large

ADVISORY COUNCIL MEMBERS PRESENT:

Randy Schenkman, M.D., Retired (Chairman)
Mark S. Seddon, M.P., DABR, DABMP (Vice-Chairman)
Nicholas Plaxton, M.D.
Adam Weaver, MS, CHP
Mark Wroblewski
Chantel Corbett, AS, CNMT, RT (N), RSO
George Gilbride, R.R.A, R.T.(R)(CT)(ARRT)
William "Bill" Atherton, DC, DACBR, CCSP
Joseph Danek, CHP
Jennifer L. Peterson, M.D.
Kathleen Drotar, Ph.D., M.Ed., RT. (R)(N)(T)
Albert Tineo, MS, CNMT

FLORIDA DEPARTMENT OF HEALTH STAFF
BUREAU OF RADIATION CONTROL:

Cindy Becker, Chief
James Futch, Administrator
Clark Eldredge, Environmental Administrator
Giovanna Manning, Environmental Specialist
Brenda Andrews, Business Consultant

AGENDA

(Reporter Joined Meeting Already in Progress)

CLARK ELDREDGE: So they want to do this to look at lead in bone. So they want to line up people and shoot their shins with the XRF so they can determine who gets what ranking in a lawsuit. So the goal here, their goal is to -- it's like, one other thing, they're saying it's nonmedical x-ray, of course. This has no concern with a person's health care or anything else. We're looking at the lead concentration in their bones to try to estimate the lead exposure in a lawsuit against a lead smelting plant.

NICHOLAS PLAXTON: That's still radiation.

CLARK ELDREDGE: So we issued a denial for that request back on July 27th. Florida Statutes Section 404.22, Paragraph 8 states, the human being may be exposed to the useful beam of a radiation only under the following conditions. So there's, (A), for the purpose of medical or health care if a licensed health care practitioner operating within the scope of his or her practice has determined that the exposure provides a medical or health benefit greater than the health risk posed by the exposure and the health care practitioner uses the results of the exposure in the medical or health care of the

exposed individual. Okay?

And the other one is for the purpose of providing security for facilities or other venues. So this is basically where they use whole body scans looking at things in --

ADAM WEAVER: Prisons.

CLARK ELDREDGE: -- prisons, right?

ADAM WEAVER: Yep.

CLARK ELDREDGE: So there's that. So those are our two cases and we can say, well, you're saying it's not secure, you're saying it's not health care so obviously, the statutes don't permit it.

ADAM WEAVER: Can't do it, right.

CLARK ELDREDGE: So that was a denial on the 27th. However shortly, a couple days after we found in our que of applications to be processed, they had moved it from -- they submitted an application, virtually they applied for their office in downtown Tampa, and now they've applied to have the x-ray tube in a private home in Plant City is where their registration location is. So we're currently under communications.

ADAM WEAVER: That's where Smelter was or is.

CLARK ELDREDGE: So they're under communications right now. We've had one request for

additional information. For the usual application asking, you know, well, is there any sort of radiation protection program, any other documentation you want us to consider with this type thing. And they basically resubmitted what they submitted before and now we're mailing out a letter today asking for additional information after that one.

Rule progress, mentioning the security screening, we are -- did publish those rule development for that. Have not made a whole lot of headway on that. I did try to reach out to -- let me back up.

So in the statutes, for the purpose of providing security screening, if the exposure determined to again, provide a life safety benefit to the individual exposed which is greater than the health risk posed by the exposure, such determination must be made by the individual trained in evaluating and calculating the mortality morbidity risks according to the standards set by the department. To be valid, the calculation method making the determination must be submitted to and accepted by the department and limits to annual total exposure for security purposes must be adopted

department rule based on nationally recognized limits or relevant consensus standards, so --

ADAM WEAVER: What did you guys select, 100 millirem or 10 millirem?

CLARK ELDREDGE: Well, we've got there's the 100 millirem and there's also the ANSI.

ADAM WEAVER: So the ANSI is lower.

CLARK ELDREDGE: The ANSI standard is actually for security scanning.

ADAM WEAVER: Right.

CLARK ELDREDGE: So we've got that. But then there's the issue of procedures out, you know, how to actually do these determinations and that's --

ADAM WEAVER: Yeah, who's using it.

CLARK ELDREDGE: -- a little bit of a roadblock right now because we've already adopted the ANSI standards in our rules for security screening. But I tried to find how to come up with who should be doing these evaluations. And I've reached out to state epidemiologists, to researchers, around, you know, to professors around the state about universities, about folks who do comparative risk assessments and things like that. And didn't really get a whole lot of, well, I don't even know where to start with that type comments.

ADAM WEAVER: Yeah.

CLARK ELDREDGE: So the current outline that I'd like to discuss with you or the direction of, these are the goals that the codes should be addressing. All right? And then we, at least we can get that framework set up.

So the exposure must only cover the area of interest. So what are you trying to look at? Where do you think again, whole body scans, if you're doing the whole body, that's fine, but if there's some other reason or something, you know, just like any other medical procedure, you're not going to x-ray the whole body to look for a broken wrist or something, right? So, you know, while --

JAMES FUTCH: They're looking for contraband.

CLARK ELDREDGE: Right. What is it. You have to really understand it.

Let me go back. This is not in any really good order for these things. But the registrant, they must actually tell us what it is the risk or hazard is supposed to be they're involving. What do you think the problem is. And therefore, what part of the body should be involved in any x-ray type thing. So is the exposure targeted towards whatever risk or hazard you're trying to avoid. How are the people

you're x-raying, how are they part of the risk, right? So one of the -- there was the request from the jails.

JAMES FUTCH: Family members, visitors to the prisons.

CLARK ELDREDGE: So we did get the request from the visitors to the prisons and they wanted to put them through the same whole body scanners.

ADAM WEAVER: Oh. That kind of goes against the ANSI standard.

CLARK ELDREDGE: Right. But, you know, but the point there was, you're giving a whole body internal organ dose to somebody when --

ADAM WEAVER: You don't know actually know where the contraband might be.

CLARK ELDREDGE: No, but somebody walking into to visit the prison and going to a day room or something like that, how are they supposed to be transferring something that's internal to their body to somebody else? Versus something on their clothes or outside of their body, you know? So you might have a wire, some other material, something hidden on your body and there are well documented cases of transferring stuff between visitors who give a hug whatever, if it's a day room, and they slip stuff

back and forth. So that's a well, supposedly a well documented -- I haven't actually read the reports, but people have explained to me that's a real problem.

And if you're giving somebody an exam that's to examine things in their colon or their digestive tract, how are they supposed to remove those items in the day room and pass it to somebody else to then hide in their colon or their digestive tract.

ADAM WEAVER: Well, that's -- I mean, it could, it could argue orally, too, they could have it in their mouths.

CLARK ELDREDGE: Anyway. But, well, then you would necessarily, still why would you be giving them a torso organ dose.

ADAM WEAVER: Right.

CLARK ELDREDGE: You know. All right. So -- so anyway, so that's, you know, explain what it is, you know, what mechanisms you're trying to -- and by the way, give us data on the risks. I mean, of course, as I said before, you've got to give us the data based on, you know, either based on the total population, do a total population risk analysis or you can do it in units of per individual, right? Either way. But it's got to be a consistent set

of -- the analysis, itself, has to be consistent so you're not going to somehow come up with an individual risk value and try to compare it to whole body value.

ADAM WEAVER: I imagine the dose is going to depend on the size of the individual you're screening.

CLARK ELDREDGE: Screening, okay. You know when -- at least with the radiation part, of course, we do have -- there are risk coefficients from USKER and NCRP and ICRP and folks like that. I didn't say it right. Anyway. Use those, the recent dose, risk calculation, the most recent risk coefficients from them per dose. But I'm not sure if that would actually work in Florida's rules. I might actually have to establish and select one and publish that because historically, there was at one point where you couldn't say a thing, like, use the most recent. You had to adopt a specific thing and you're stuck with that, even when things update until you get another.

ADAM WEAVER: Yeah. The Byrd reports and things like that.

CLARK ELDREDGE: Use LNT for the risk, radiation risk calculation. And then at this point,

the individuals with experience in statistics, epidemiology, comparative risk analysis, inapplicable numerical methods should be used somehow in doing this work, you know.

ADAM WEAVER: Sounds like some university needs to get a Ph.D. student to, or candidate perhaps, to maybe consider doing this. But I don't know if you -- that would require money.

CLARK ELDREDGE: I mean, you know, you can certainly see economics, economists who actually do this type of work. So there are, there are folks out there that are saying, okay. So many events occur. Because, you know, they do have data.

ADAM WEAVER: Yeah. The non-radiation related.

CLARK ELDREDGE: The non-radiation side. We've got members out there for the radiation side and risk, but it's the non-radiation side.

ADAM WEAVER: Yeah. Each prison population may be different. Visitors and --

CLARK ELDREDGE: Yeah. But they've got -- so that is, um, I think it for the updates.

I do have one thing to talk about, but I was going to do that during the emergency issues. Emerging issues. It's more in line with that.

Any questions? Discussion? Anything in the

note, anything in the concepts I've laid out for trying to come up with the --

ADAM WEAVER: I'm interested with the lead, the lead analysis. On legs. I mean I know they're using an XRF but is it x-ray produced or is it a cobalt?

CLARK ELDREDGE: They're using x-ray ones so --

ADAM WEAVER: They're not use the Cobalt 57.

CLARK ELDREDGE: Giovanna.

ADAM WEAVER: So the radioactive materials wouldn't get involved.

CLARK ELDREDGE: Right. These are all tube based.

ADAM WEAVER: Okay.

CLARK ELDREDGE: And at -- I was at the HPS meeting in Spokane, representing the CRCPD. And actually, there were presentations there from, I can't remember the California school, on doing XRF analysis for composition errors looking at strontium. Sheep bones, sheep skins. And then tested, so they had the bone exposed and they put over different types of tanned skin to simulate, you know, human skin and whatnot, over bone.

ADAM WEAVER: Okay.

CLARK ELDREDGE: And looking to see how it

change the sensitivity and the response.

ADAM WEAVER: Yeah. Different thicknesses of skin. Densities.

CLARK ELDREDGE: Yeah. What I got out of that little presentation was, you still see it, but it kind of levels out the, you know -- the filtering of the skin actually kind of reduces the sense, the response to the concentrations. It didn't --

ADAM WEAVER: Some of the characteristics x-rays are low, very low.

CLARK ELDREDGE: Yeah, very. So they -- yeah. So -- All right. That was --

RANDY SCHENKMAN: Anyone have anything else to ask him? Okay. Thank you.

NICHOLAS PLAXTON: Question. You got those applications like, you know, you're talking about, why not do it digitally so you don't have to, like, have this, like, massive mail surge?

CLARK ELDREDGE: This is --

JAMES FUTCH: Why do you do this?

NICHOLAS PLAXTON: I'm putting it out there just giving you an idea.

CLARK ELDREDGE: That's a goal we've been working on for many, many years.

NICHOLAS PLAXTON: Okay. Twenty years.

CLARK ELDREDGE: I don't know if you, we're not a red headed stepchild, but we're not the right size for the state agency. This is my best interpretation. In that if we were MQA with all their people, with all that, you know, that's one thing. But some of the solutions that have been suggested at times was, like, oh, why don't we just stick you in the MQA system? Why don't we stick you in the environmental health section with their permitting and licensing, the county health departments, and you can -- but then again, we were doubting that the quality of the service that we would be able to provide our registrants and licensees, when we would not be anything but a appendage on someone else would necessarily be.

JAMES FUTCH: I think certain council members have experienced --

CLARK ELDREDGE: I think there are council members would certainly with that. Again, at the same time, again, the size we are with the resources we have, by the time, how to say this nicely.

JAMES FUTCH: The court reporter is here.

CLARK ELDREDGE: The court reporter is here. Um, that the, um, that things happen with your own bureaucracy and agency where we set everything up

within current rules and all of a sudden somebody leaves and things get delayed a while and then the rules change. There was one time where they were going to require us to basically spend something like 120, 140K, on a consultant to oversee our projects. We were going to have to hire a outside.

ADAM WEAVER: To get money in.

CLARK ELDREDGE: Yeah.

NICHOLAS PLAXTON: Just to watch it.

CLARK ELDREDGE: To watch it. To verify we were following certain development standards and, you know, how we were doing our program writing and things like that. So that was, I think that was just based on the hourly rate that these people got, it was like 125 bucks an hour for however many. That was the contracted rate for the people they were saying we were going to have to hire to oversee it.

So we now did, James did a range to hire someone, get another position, and that's one of this person's primary things and the first thing is to get all of our data systems from 19 -- excuse me, a 2008 based PC back end database back into Sequel. And, you know, so from a 16 bit database to a -- so that's where we're at.

JAMES FUTCH: So we have, we have looked over several things over the years. The big systems that are out there would probably cost us 150 to $200,000 extra per year because of the number of -- they assign licenses based on the number of widgets, licenses and stuff like that. We actually have many pieces. We hope to have some of this in place by next year. So the database has been converted to Sequel. All the tables to the Sequels tables.

CLARK ELDREDGE: Actually, they've been successfully done yesterday, the day before.

JAMES FUTCH: The screens are built for in house. It's to connect all different parts of the screens to feed and pull data from the right part of the database.

ADAM WEAVER: I hope your character spacing is good.

JAMES FUTCH: We're actually using tools that dynamically assign that it. Trying to stay somewhat --

CLARK ELDREDGE: I guess I -- one more thing to add for the court reporter is that my -- there's no "I" in my last name. My spelling of my name is E-L-D-R-E-D-G-E, so if you'll make it that way in the next transcript.

RANDY SCHENKMAN: Okay. Is everybody ready for lunch?

JAMES FUTCH: 12:30.

RANDY SCHENKMAN: Yes?

ADAM WEAVER: So what time is it now? 12:30? Be back at 1:30?

RANDY SCHENKMAN: Yeah. So we'll be back at 1:30.

ADAM WEAVER: If possible.

GEORGE GILBRIDE: As long as lunch isn't on I-4, I'm all for it.

CHANTAL CORBETT: Huh?

GEORGE GILBRIDE: As long as lunch isn't on I-4, I'm all for it.

BRENDA ANDREWS: How about right across over to the Hilton if anybody wants to go there. Same as what we usually do.

(Proceedings Recessed at 12:29 p.m.)

(Proceedings Resumed at 1:40 p.m.)

(Mark Seddon Joins Meeting)

RANDY SCHENKMAN: Okay. So we now have Members/Emerging Issues.

JAMES FUTCH: And with your permission. I have a little detour that we were going to do this morning, but we waited until everyone was here so

that Cindy would be a little more on the nervous hot seat. So let me just stand up and speak for just a second. You all watch the time; don't have me talking for forever.

So those of you who got here late, Ms. Becker is retiring the end of next month after 35 years, six seconds, four microseconds. I'm not sure.

CINDY BECKER: Something like that.

JAMES FUTCH: From Florida, having started in another state and come to us. So we're going to do the official send off retirement in the end of October in Tallahassee and all the rest of that. But we had a little mini, a little mini snippet of things that we would like to share, beginning with me talking, which is always a problem.

We've had several bureau chiefs in my tenure. Clark and I have been here for, I forget, 34 --

CLARK ELDREDGE: Thirty-four years.

JAMES FUTCH: We've had a few folks in front of us who have been there even longer. So I started in '88; Clark in --

CLARK ELDREDGE: '88.

JAMES FUTCH: Cindy '87. And we had bureau chiefs who have come and gone. Ph.D.'s in biology, excellent managers for a little while. Nuclear

physicists, I guess, right, Mary for a little bit. The nuclear med tech, and then Cindy, which is mostly from the inspection side. Heavy background in inspections and, in fact, when she came to Florida, became eventually the administrator for the inspection section and then bureau chief in 2011, if I remember right. She doesn't know. So I'm making most of this up. No, just kidding. I just went back and looked at this.

So the very first council meeting she attended as a bureau chief was in 2012, May of 2012 I think. And I had meant to pull that up there and go through some of the subjects, but we talk about a lot of the same things. Things change a little bit, new technology here and there, but it's the same kind of issues and problems.

So I wanted to show you a little bit of slides first and then I wanted to make a presentation. There's no music unfortunately, unless somebody wants to stand up and start dancing.

BRENDA ANDREWS: Cindy and I will.

JAMES FUTCH: This is actually Cindy in her role as inspections manager. This is a field training exercise.

ADAM WEAVER: A radium source.

JAMES FUTCH: Actually, she's holding a Ken Behr InSpector 1000. Like one of the very first handheld cup in physicist inspector device that could tell what material it is that you're getting gamma radiation from.

And let's see if this works. Yay, it works. This is us. Cindy is there holding the sign. It's a storage --

CLARK ELDREDGE: Bellefond.

JAMES FUTCH: Is that what it is?

CLARK ELDREDGE: That's Bellefond.

JAMES FUTCH: Bellefond. Mike Phillips to the left and then Clark and then me. We were all there anyway. So this is the nuclear power plant that almost was up in Alabama. If you've never been there, excellent place for training. I mean, every single thing for the plant is really there. Just never loaded the fuel.

So this is kind of the side of, you know, hands on in the field, not the bureau chief position necessarily.

This is -- there's some stuff here from earlier in the career, which we included mainly for, you know, fun value and I think you'll see why in a second.

This is Cindy carrying, I'm not sure which one.

CINDY BECKER: David.

JAMES FUTCH: David. You get a better shot there. I should probably expand it, but you get the idea.

She was also very popular. This is her Simpson's character alterego. I don't know where that came from but it was in the files someplace with --

CINDY BECKER: Okay.

JAMES FUTCH: -- your name on it.

CINDY BECKER: That's not good. Somebody made that up.

JAMES FUTCH: And then we have a fair number of pictures and various trainings and probably some retirements in here.

This is Nancy Houston, who worked in the division for inspections for a while.

BRENDA ANDREWS: Is that ugly sweater day?

JAMES FUTCH: This one is kind of interesting. This is my predecessor who ran the Rad Tech program almost from its inception, Barry Chomchesky. You can't tell. This is Cindy. You get a better shot of this hairdo later on.

BRENDA ANDREWS: That's her?

CINDY BECKER: It's the 80s hairdo.

JAMES FUTCH: This is Dr. Jarrett. He was the bureau chief when we first started. I can't see, is that Mike Gilly? Manager.

CLARK ELDREDGE: That's Gilly.

JAMES FUTCH: Harlon Keaton, who was the environmental for many, many, many years. Is that Mary?

CLARK ELDREDGE: That's Mary Clark.

JAMES FUTCH: Mary Clark. The reason I'm at the Bureau of Radiation Control. That's the nuclear physicist whose husband, John Fox, was a major professor at FSU when I was going through. So when it came time to find a job, he said, there's one over here at this radiation control my wife works.

CLARK ELDREDGE: I guess I'll be really spiteful at this point. Mary Clark offered me a job.

JAMES FUTCH: Oh, wait a minute. I gotcha.

CLARK ELDREDGE: And then about three days later or four days later, she tells me that Walt Kline really needs you to work for him.

JAMES FUTCH: Okay. John Fox was a very, cool guy. They named the linear accelerator building after him, after he passed away many years ago.

Here's some of our Department of Energy partners. Gerald Walsh from Rapt 3 in Savannah River our back up in case anything blows up in the State of Florida radiologically. Eric Kerr is one of our inspectors. And you can see it's not all work all the time.

This is, this is Debbie Gilly, who went to IEA and worked over there for many years.

KATHLEEN DROTAR: Is that Debbie?

ADAM WEAVER: That's Debbie.

JAMES FUTCH: This is the one I like right here. You can't ever get enough of this hairdo.

CINDY BECKER: I know. Never.

JAMES FUTCH: Somebody has conveniently told us what year it was.

BRENDA ANDREWS: '88 or '89.

JAMES FUTCH: You might remember some of these managers. This is Ray Gill.

ADAM WEAVER: There's Ray. Young Ray.

JAMES FUTCH: That's Art Glen, who's another great long time inspections manager from the Orlando area.

KATHLEEN DROTAR: Didn't he used to bring you cookies?

JAMES FUTCH: Yeah, Mississippi Mud Pie. And

this, of course, is Clark.

CLARK ELDREDGE: That's me.

JAMES FUTCH: We didn't feel good having only Cindy showing up here with the ancient photos, the embarrassing photos. This is Clark, we think running dose assessment at one of the nuclear power exercises with the aforementioned Walt Kline who took the job -- whom you took the job with. And another one of our former x-ray people, Dan, I can't remember his last name.

CINDY BECKER: Cannon.

JAMES FUTCH: Yeah. But Clark and I were talking before you see my pictures. He looks so mature in this picture and he's not. But he had a beard. It was a very much a different color back then.

CLARK ELDREDGE: Yeah.

JAMES FUTCH: And then in case you haven't -- anyway. I got to close my eyes for this one. Ready? There you go.

(Laughter)

BRENDA ANDREWS: Shut up!

CINDY BECKER: He was 12 when he came.

JAMES FUTCH: That's my twin brother.

BRENDA ANDREWS: He looks 15.

JAMES FUTCH: See what I mean now about the beard?

CHANTAL CORBETT: They hired minors back then.

CLARK ELDREDGE: I would've looked younger than him without the beard.

CHANTAL CORBETT: Without the beard. That's true.

JAMES FUTCH: That's Mike Gillan, one of our tutors, again with dose assessment because I'm standing in front of a computer.

BRENDA ANDREWS: Look at that old computer.

JAMES FUTCH: Yep. It's probably got green on it or amber.

CLARK ELDREDGE: I will explain. The reason you see James and I running the computers is because back then, we were one of the few people who knew how to turn one on.

JAMES FUTCH: That's like now when the young people, you go how do you make this phone work? Would you make this work, please? Back then it was us.

So there's some other additional views from different goodbyes and hellos and so forth and so on.

This one has, here's Cindy over here in this

corner. This is George. We can do this later. This is our former bureau chief just before Cindy. This is Bill Kasetti over here. This is Dennis Mitchell, an inspection manager in Fort Myers region I think.

ADAM WEAVER: Tampa.

JAMES FUTCH: Tampa. And there's Ray again. Ray Gillan. Let's see what else we got.

This is Dr. Jose Quatics, who was the manager in the Miami office for inspections for many years. Wesley Knoll from Polk County and several of the other ones. Current manager, I think that is, is that -- Dan?

That's Dan Boric. He's the manager of the inspection office in Fort Myers and Tampa. And Paul Pavlick, he's retired, but was the Jacksonville manager.

This is one of our long-time staff, Janet Cooksey, who passed away earlier this year, after a long time. She was kind of like the administrative memory and the person whom everybody went to to make things work smoothly inside the system, so to speak. A very sweet person.

Cindy is way in the back here. This is an HVS meeting, various other staff, former staff. Mike

Phillips here, still with us.

And that's Cindy. And I like this one. Variation on a theme. Another one of our former accounting staff, Tommy Dalmore, who's passed away.

I think it's some of the same folks. Phillip Thomas, maybe some of you guys remember him. Long time employee in the x-ray office. Back here in this corner is Richard Parm, who was another bulwark of the inspections group until he --

CLARK ELDREDGE: Mike Stevens in the middle there, middle of the back.

JAMES FUTCH: Mike Stevens still working for the, down the hall from Giovanna. Actually right next door.

GIOVANNA MANNING: I need to take pictures.

JAMES FUTCH: And I think this might be -- might be the last one. I'm not sure. Cindy over here on this side. Some of the same folks you just saw.

We'll end with this one. You can tell what era this was from. Men In Black was popular. Here's Cindy in the middle and the rest of the staff.

And we have a physical thing some place.

And this is -- I'll read this. It's not actually from me. This is from the Advisory Council

on Radiation Protection. And it says, Certificate of Appreciation is hereby awarded by the Bureau to Cindy Becker for over ten years of excellent service to the Advisory Council Radiation Protection and its members. And it's got all your names individually on it below here and it's got the Chair and Vice-chair who signed it and I think will make the presentation to her.

CINDY BECKER: Oh, boy.

JAMES FUTCH: Picture.

BRENDA ANDREWS: I'll take a picture with her afterwards.

CINDY BECKER: Thank you, guys.

(Applause)

GEORGE GILBRIDE: Speech, speech.

JAMES FUTCH: If you would like to individually sign that before Cindy gives her prepared speech, you can sign next to your names if you want to. You can pull it out of there. She'll have all your individual --

GEORGE GILBRIDE: Speech, speech, speech. You're done.

CINDY BECKER: Thank you all. This is my first official retirement thing. But, no. Thanks. I'm going to start crying already.

This is a wonderful group. I'm glad you all have been a part of, many of you, of course for many years. But if you could, you know, say anything about this group, it's the teamwork. Back to what Jennifer was saying. And this group has contributed so much as far as learning. I've learned so much being part of you all and your amazing talents and just sharing that with us is -- I know James and Clark, it's just, we couldn't do this without this group here. Because we don't, we don't have all the expertise here and the training, Mark.

Mark providing training for us and our staff, as many of you have also offered. It's just a wonderful group. I'm going to miss all of this and all the learning, but I can come back and -- participate, right.

RANDY SCHENKMAN: Please do.

CINDY BECKER: I'll show up, and like, who's that? But thank you all for being part of this group and thank you.

(Applause)

RANDY SCHENKMAN: We thank you for everything you've done.

KATHLEEN DROTAR: Yes.

JAMES FUTCH: Oh, yeah. Everybody, if we can

hang around because, I went back looking for pictures. We have almost no pictures of council members. I think this would be a great time to do one before everybody departs, whenever this meeting is over today. We'll take a group picture some place, maybe the front of the room, with Cindy in the center.

GIOVANNA MANNING: In front of the Beatles.

JAMES FUTCH: In front of the Beatles.

RANDY SCHENKMAN: Member/Emerging Issues.

JAMES FUTCH: So we have a little block of time. That was the intention, I think, 15 minutes, to talk about any member issues or emerging issues that may have happened.

Kathy actually had one which was brought up before the meeting, which is kind of, I had a discussion with MQA staff about the licensure process and they promised to be here at the next meeting so that we can do that.

And Mark and I and Clark had been talking offline, sequentially and serially, about the issue we started, I think the end of the last meeting about speech-language pathology and the role of general radiographer and the radiologist in that.

Mark has gathered a bunch of documents at my

request.

MARK SEDDON: Too many.

JAMES FUTCH: And also input from some different societies, which is probably far too much for doing much with today except to maybe say that we'll have that as a topic for the early part of the next meeting.

But there's a -- just a, just so as a background on this, so the speech -- we would appreciate when you go back to your facilities, any information you can provide about how modified barium swallows are conducted in your facilities or maybe not your facilities, ones which you're aware of, you have someone that you know that can provide that. It seems as if it is sometimes done with three radiologists present and speech-language pathologist and the Rad tech. And then in other places, it's just the two. It's just the SLP and the general radiographer.

Clark and I have a regulation, but Phillip Tom wrote it many years ago, which touches on fluoroscopy and the people and the criteria for doing that in kind of a tangential way. From my standpoint, there's a requirement for general supervision for the radiographer, which does --

cannot be provided by the SLP because they don't fit in the statutory definition of licensed practitioner, which is not necessary because the other physicians who are part of that, can provide that general supervision which does not have to be personal at the site. It's general supervision by that statute, which means could be the availability, including by telephonic means. And I think that's it.

CLARK ELDREDGE: And then in my case, it's the exposure must be authorized by a licensed practitioner, which the SLP is not one under our codes. So that's, in that case, there's the piece of how the guidance and the interaction between people work and how that authority can be transferred, you know. How the speech-language pathologist can actually provide any sort of interaction at that level as a delegate of a licensed practitioner.

JAMES FUTCH: So in that case --

CLARK ELDREDGE: What's needed in that case.

JAMES FUTCH: So in that case where there's just two, the SLP and the general radiographer, we would envision, this is what I postulated, is that there is the facility radiologist, other physician

who is providing general supervision at the facility, perhaps has written protocol for the modified barium swallow. It would be nice if the written protocol envisioned the use of the SLP for providing what their expertise allows them to provide in the course of that procedure. And then the radiographer is recording according to that. And the whole thing gets packaged back up and goes to the radiologist or whoever the interpreting physician is for diagnosis and treatment.

And if you, during the course of talking amongst your facilities, anything that's involved in that, anything that verifies or rebuts that, perhaps let us know at the next meeting.

And note to Becky, who's not here, you also, please.

CLARK ELDREDGE: Okay. Another emerging issue thing is, I was selected, I'm not sure why, to attend a workshop in DC on updates to NCRP 184 or -- which is the dose to the public. 184 updated 160. And this is for getting -- tracking and updating the medical exposure data. And it's being attended -- apparently it's been funded by CDC. It's being -- they'll be two members each from, if I can remember everybody, CDC, NCRP, AAPM, ACR -- I'm missing

somebody at the moment.

Anyway. Several groups. And to discuss this. So if you all have something that -- this is in November -- 14th I think.

Getting data from medical procedures, exposure data from medical procedures, for medical practices to be able to feed back up to CDC, NCRP so that they can use that information to update what's happening and provide guidance back to them. And so that's what they're looking -- that's what they -- this is supposed to be some sort of brainstorming session of how, if there's something up there. Apparently, they did one, I was told, 12 years ago or something like that and threw up their hands because they couldn't think of anything. And so, I don't know that there's a lot of hardware out there these days that tracks all that as you take x-rays, but it's not like it's being combined into a central database anywhere, you know, but --

JAMES FUTCH: This was dose in general, not just therapy.

CLARK ELDREDGE: Yeah. This is all diagnostic, all -- any and all procedures that are using, involving radiation.

MARK SEDDON: So there's a lot of dose

management check software out there that's currently available, but as far as accumulating it across facilities, and you're going to have gaps, especially in physicians office, dental; other areas like that. That's where you're going to have your gaps. In a hospital setting, I think almost every hospital setting has some type of dose management.

ADAM WEAVER: And if they're joint commissioned.

MARK SEDDON: If they're joint commissioned for accreditation services, you're required to do that.

CHANTAL CORBETT: You're required to have records for dose management. That doesn't mean they have software. The problem is the older equipment, they can't tie in to some of those softwares because of the software, the age of the equipment.

MARK SEDDON: Like for fluoro, every fluoro has a dose sheet. Even the old software systems use OCR to do character recognition to go ahead and scan in, even if you don't have the dose report being submitted by the equipment, yeah, through packs, it will still capture that and analyze it.

CHANTAL CORBETT: Yeah. Just filtering out that data is --

MARK SEDDON: But how to get all that into one

index is a challenge. I mean, they have a national data registry for CT.

ADAM WEAVER: How do you do dental? How do you podiatrists?

MARK SEDDON: Those are the gaps you're going to have.

ADAM WEAVER: Chiropractors.

MARK SEDDON: Yeah, chiropractors, yeah.

RANDY SCHENKMAN: Anything else? Okay.

KATHLEEN DROTAR: I don't know if this would be the right time, but could you just tell us a little bit about how your department is working with ARRT for approval of, for CE approval?

JAMES FUTCH: Sure. There's a -- well, we're in the middle of a rule change to change our CE rules in Florida to conform to the national CE consensus standards which is an ARRT hosted process. They use an acronym called RCEEM. Recognized continuing education.

KATHLEEN DROTAR: Evaluation.

JAMES FUTCH: Mechanisms. That can be a state like us, that can be a professional society like Society of Nuclear Medicine. ASRT. And there's a set of standards. So for example, if you, if you read textual material, how long does that take?

There's a standard in there for, I think it's 140 words is like a minute's worth or something like that, worth of CE. How many test questions should you have if it's a two CE course. It's X number of test questions per credit hour.

And the idea is by using the standardization document, and we meet every year, CE staff from my office travel, including through the pandemic remotely, and meet with the other RCEEMs annually to discuss any of the changes in that process.

So the bottom line is that, including standards for what you put on the certificate to show, minimum documentation to show it's approved.

And by doing all that, a technologist in Florida, so a nuclear med tech takes a course here, a radiographer takes a course here, it's three CE hours, Florida approved. I don't want to use this to renew my national license with ARRT. I want to use it to renew my license with one of the other states. It's accepted.

So you don't -- it's an advantage to the technologists. You're not buying, you know, 12 or 24 hours of CE in every place you're certified. It's one set of CE and you can use it essentially anywhere.

KATHLEEN DROTAR: Right now, if it's Florida DOH approved, it's only for people licensed in Florida.

JAMES FUTCH: Well --

CHANTAL CORBETT: For FNMT, for our speaker CEUs, for FNMT, for the VA techs, it doesn't work. If they don't have a Florida license. So we would have to go and pay the other societies to get them to approve it, so that they be could use it for another state.

KATHLEEN DROTAR: Yeah. So we have to get things approved, it's through DOH and then ASRT, and then there's that national acceptance. So that being a RCEEM would probably take care of that extra step.

CHANTAL CORBETT: Yeah.

KATHLEEN DROTAR: The Department of Health doesn't charge.

JAMES FUTCH: Yeah. ARRT has got its own way of doing things.

CHANTAL CORBETT: NMTB is the same way.

JAMES FUTCH: The big dogs.

CLARK ELDREDGE: That would be an economic advantage to Florida educational providers?

KATHLEEN DROTAR: Yes.

JAMES FUTCH: I would think so.

KATHLEEN DROTAR: Yes.

JAMES FUTCH: That was the theory behind it.

CLARK ELDREDGE: That may answer that question.

JAMES FUTCH: The idea was one set of rules. You develop a product you can sell it anywhere. It's the argument I've used trying to get a rule approved.

CLARK ELDREDGE: Yes, that's what I was saying, yeah.

JAMES FUTCH: All right.

RANDY SCHENKMAN: Anybody else have any questions? Anything?

Okay. Nicholas.

JAMES FUTCH: I'm going to ask, Nick, if you don't mind. One more thing.

NICHOLAS PLAXTON: Sure.

JAMES FUTCH: I'm supposed to go after you with the Rad Tech update.

RANDY SCHENKMAN: Right.

JAMES FUTCH: Would you mind terribly if I took five minutes and did it real quick? That way they can ride out with you, so to speak.

NICHOLAS PLAXTON: Go ahead. Ride it out.

CLARK ELDREDGE: Ride out to the sunset.

JAMES FUTCH: We have -- let's see if can find the right list. So we have, on the HR side, we have one vacant position right now. And that's basically an IT position. It falls underneath me and we hope to have that one filed some time in the next month, HR permitting. We're actually sitting in on doing interviews for the division almost exactly the same position, so we're interviewing a whole bunch of candidates that aren't going to work for us but for you.

CHANTAL CORBETT: On site or remote?

JAMES FUTCH: No. On site. We did one remote for the guy in Columbia. He was super educated. Highly experienced, former Motorolla employee. IT engineer manager. And the conditions are such that he's willing to work for roughly $50,000 a year and move to Tallahassee. So that's how bad the job market is.

CHANTAL CORBETT: That sounds better than -- it's on the high side.

JAMES FUTCH: I usually give, there's an MQA person here doing an MQA update. I'll slip this in. We crossed the threshold. We 30,175 Rad techs currently active in the State of Florida.

I don't know how this happened. 45 registered

assistants according to MQAs numbers. I don't add it up.

KATHLEEN DROTAR: Really? That's the most in any state I think.

JAMES FUTCH: I know. That's what they came up and that's what they say.

This past quarter, they received approximately 750 new applications. In that same quarter, approximately, just under 500 folks were licensed. That's not a one-to-one correlation because the people who are coming in are not going to get licensed until another, possibly another quarter.

We have two applications that have come in that we're -- we've given to legal that we believe will be denied if they agree with it. I just want to give you a snippet of this.

One particular gentleman applied. He's been revoked by New York. He has committed the crime of unlawful surveillance with an electronic device.

GEORGE GILBRIDE: Voyeurism.

JAMES FUTCH: Some states call that video voyeurism. Unfortunately for him, he did it in a bar in a women's restroom. Over the top of a stall or maybe under a stall. I'm not sure which. I didn't want to read too much.

We felt that was grounds for denial. We have the ability with our statute, to deny someone who has committed an offense that would've been a disciplinary offense had they been certified by us at the time. So that's acted against by another certification authority and we have a crime against a person. And I would also argue a crime that directly relates to the ability to practice. I want to kind of throw this one out.

These -- this particular, particular offense is hard for lawyers to use. They don't like to use it too much because it's a little swishy. It's not a piece of paper like, yes, you committed this crime. Here it is. It's, you have to tie it to the practice.

I would argue, and correct me if I'm wrong, but I would argue that the radiography profession certainly has very similar situations where the technologist is in close proximity to someone who is disrobing, putting things on and off in an area that they believe to be private. And also the physicality of maneuvering for procedures and also where you might be out of the line of sight of the person, allows you to do lots of things that would be very similar to what this particular person did.

So I always argue that it directly relates to the practice.

KATHLEEN DROTAR: I think that would be covered somewhere in practice standards.

JAMES FUTCH: Yeah. It's the direct part of it that's tough.

KATHLEEN DROTAR: And ARRT, if they were a radiography person, the ARRT would have revoked or put them on probation at a minimum.

JAMES FUTCH: It might still happen.

KATHLEEN DROTAR: Yeah.

CHANTAL CORBETT: I guess that is the other question, because if they're coming in by endorsement because they've been already revoked by a state, who are they still registered by?

JAMES FUTCH: ARRT.

CHANTAL CORBETT: Yeah, so they probably haven't renewed to be able to -- either they've lied and said they weren't been convicted or, you know.

GEORGE GILBRIDE: Or they haven't come up with renewal yet.

JAMES FUTCH: They haven't been up for renewal yet. It may just be a time factor.

CHANTAL CORBETT: Right. Or they haven't been up for renewal yet, yeah.

JAMES FUTCH: I don't think they're aware of the revocation in New York.

KATHLEEN DROTAR: ARRT won't act until a charge has actually been, if there's actually a judgment against that person, too.

CHANTAL CORBETT: Right.

JAMES FUTCH: What -- it doesn't have to be now, but I would be very interested in opinions, perhaps in a future council, maybe trying and say it is the council's opinion that these certain types of things are directly related to the practice of radiologic technology.

CHANTAL CORBETT: Are we -- have they been convicted of said things?

JAMES FUTCH: Oh, yeah.

CHANTAL CORBETT: That's what she was, along those lines.

JAMES FUTCH: Relatively recent in time. Three years, four years. Something like that.

CHANTAL CORBETT: I have known other techs who have had other issues, have been arrested and in the end, they weren't convicted.

JAMES FUTCH: That one should be pretty straightforward.

The other one is a little bit odd. It's a

military person who was in a different profession. Had access to the pharmacy; stole a number of pills, none of which were controlled substances and was discharged other than honorably from the military relatively close in time. Not that long ago. The military lists that as a misdemeanor, but our folks look at the number of pills and the particular substances and we go by Florida law and how they would treat that. Even though it happened in Florida in the military, military base. And it would be a felony in Florida.

And this one, we're also seeking denial because the -- because of the, the kind of crime that was committed and the proximity to controlled substances and other things like that --

KATHLEEN DROTAR: Yeah.

JAMES FUTCH: -- we would argue is, it's pretty close to a practice of, specifically nuclear medicine technology, which is what this person is.

CHANTAL CORBETT: You've got control, yeah. For sure.

KATHLEEN DROTAR: Yeah.

CHANTAL CORBETT: Morphine and everything else, yeah.

KATHLEEN DROTAR: Well, even applications to

ARRT and I'm sure, NMTCB, they look at military records as well.

CHANTAL CORBETT: But the questions on renewal of felony. And so, if it wasn't considered that, when they were in the military, they could still technically answer that as a no.

JAMES FUTCH: The ARRT angle is unique so far in this one because the military listed it as a misdemeanor. Also, the reason for discharge was drug abuse.

KATHLEEN DROTAR: That's a different story.

JAMES FUTCH: When you fall into that category with ARRT, you fall into the category of a disability and they look at it that way. So this person may continue to be licensed by ARRT. So I'm not sure how that one is going to turn out but that's what we argued for. Anyway, I just wanted to give you an update.

Speaking of the discipline issues, different cases, we usually have between 50 and 70 discipline cases open on the Rad tech profession, including the Rad tech assistants at any given point in time. And fiscal year '21, '22, we actually closed 50 cases, which we closed cases either by successfully prosecuting them or losing your argument with the

lawyers who can't find enough legal justification to go forward and you close it, sometimes with a letter of guidance.

So we started out the year with approximately 60 or so. We closed 50 during the fiscal year; unfortunately, opened 56. So we're net plus six there. And currently, we stand at 65. That's probably just the way it's always going to be.

The distribution, in case you're interested in how that plays out, there's a number of statutes, you know, 30 or some odd individual statutes, and the unprofessional conduct one can have umpteen subparts depending on the kind of conduct you conduct. So a group like this, about one third of the cases involve action by national registry or another state. In other words, they're taking action against them in another jurisdiction. And under Florida law, whenever that happens, we will take, more than likely, the same action or at least suspend them until the action in the other jurisdiction is lifted. So about a third fall into that category.

About a third are unprofessional conduct, which you might expect. And the third are follow-up cases, follow-up complaints because the person

didn't comply with the final order that was issued in the initial discipline case. And that usually means they didn't pay a fine, they didn't do some sort of treatment or they didn't do some sort of follow up. So a third, a third, a third.

And I think that's it for the -- that's it for the Rad tech update.

I guess one update on the regulations. We've come across an additional little road bump with the regulations. It appears that we may have to add a Sunset clause to future regulations. We may have to add a Sunset clause to future regulations, including the CE one, where the statute is does not provide a shall. It's permissive.

So the Florida Statute for CE is permissive. It says you may require CE for technologists and we have since 1980 something. And what it means is that if you want to proceed with the rule making, you put in the sentence that says, words to the effect that, you know, within five years, there will be a review of the effectiveness of this regulation. Including some sub parts. But basically, they want you to look at it to see if you really need this.

We usually encounter Sunset with statutes that are enacted. A lot of times, the legislature used

to put in a ten-year period to let the law run and then ten years come back and decide if you want to keep the law. If you don't vote to do that, then it's repealed. So that's the only down side to this if we're forced to proceed with this and put this language in.

Five years from now, if whoever is here at the regulatory level and the general counsel's office and our office, if they determine that the review says it's not usable or more likely, if the review doesn't get conducted in a timely fashion, the regulation goes away by operation of the language, itself.

So I don't know which way it's going to go, but that's what we're dealing with.

CHANTAL CORBETT: So if that goes into play, could you not do a policy where it's, like, reviewed the year before it's actually going to expire on a routine basis so that you have a year to get it done?

JAMES FUTCH: The bear is going back through the rule making process in less than two years.

CHANTAL CORBETT: Right. Yeah, I know. It's going to be a nightmare.

JAMES FUTCH: It takes at least a year to get

through rules.

CHANTAL CORBETT: Yeah.

JAMES FUTCH: That's if all the parts work. So that's it for the update. Thanks, Dr. Plaxton, for letting me do that beforehand. And unless there's any questions, we're going to get on to the talk with nuclear medicine.

RANDY SCHENKMAN: Yes. This is our nuclear medicine discussion.

NICHOLAS PLAXTON: Do you want to take five-minute break or something?

JAMES FUTCH: If you want to.

(Proceedings are recessed at 2:23 p.m.)

(Proceedings resumed at 2:30 p.m.)

RANDY SCHENKMAN: Okay.

NICHOLAS PLAXTON: So I put this talk together for the Florida Radiation -- try again. The Nurse Practitioners of Florida. They have a network and I did this talk for them.

So the idea is, like, to just kind of give an overview of what nuclear medicine does for primary care doctors. So it's, like, it's not encompassing all of nuclear medicine, but it's kind of like what does the primary care provider kind of, like, need to know in their wheelhouse to do nuclear medicine

things that can help them out.

So that's kind of what this -- that's where this kind of goes. I figured, you know, since we have some nonmedical background people that this may kind of, you know, at least fall in your wheel -- you'll be able to understand some of this.

So, you know, we're all familiar with the radiation symbol. This is basically, like, saying we get a bad rap and you all know this because anybody in radiation, everyone always is like fearful of radiation. And that even happens in our own hospital. I know, like, there's even oncologists that won't see our patients after PET scans because they're scared of the radiation from a PET scan. Which is, you know, a highly educated person that we work with every day and we get PET scans all the time.

GEORGE GILBRIDE: That's debatable sometimes.

NICHOLAS PLAXTON: Yeah, exactly. But so, that's kind of the thing you deal with, even in the hospital setting, you know, like, people are afraid of -- they see this sign and I noticed that, too, when they have those inspectors that come around, they try to kind of like breeze through real fast, not even stay in our department because they see

these signs on the wall.

And of course, this is -- we're all familiar with this. This is the atom symbol in the center with the three types of radiation.

And then, of course, people think of, like, nuclear power plants, which some of our earlier, like, I131 or 123, these came from that era. People also think that, you know, the principle of $E=mc^2$ that Einstein came up with. He never actually, you know, developed the atomic bomb but he actually asked, you know, requested to -- for our president to, FDR to actually, you know, develop it. So he was against making, he was against the atomic bomb, like, working on it, but he said we should do it. So some people kind of associate that. But he never actually worked on it, himself. He did write a letter, though.

This is kind of saying radiation -- you guys know a lot of this stuff. The radon around us, this is the high exposure, highest exposure we get as humans is from radon. And so this is kind of a map of the United States of where you get the highest amounts. Kind of the Appalachians, the Great Plains.

JAMES FUTCH: I love your colors.

CHANTAL CORBETT: Very fiery.

NICHOLAS PLAXTON: Yeah. Not too bad down here in Florida.

A lot of these places up here, like in the Great Plains, now you have to build houses with the venting systems for your basement so that you don't have a build up of radon.

Of course, the sun. We get exposed all the time.

Even the stuff we eat has radiation in it. We all know that, you know, potassium, you can't exist without it. Radiation potassium 40. So we can always explain, you know, the amount of radiation you get exposed, 40 bananas equals one radiograph.

JAMES FUTCH: If you boil you down to your constituent isotopes, that's one of the big ones.

GEORGE GILBRIDE: What kind of radiograph? Is it a chest or abdominal one to get this exposure?

CHANTAL CORBETT: Is it PDA or --

NICHOLAS PLAXTON: Yeah. I think it's a chest radiograph.

GEORGE GILBRIDE: I eat a lot of bananas. Not anymore.

ADAM WEAVER: Just a chest x-ray. It's always a single view, too.

NICHOLAS PLAXTON: So medical radiation is a big chunk of what we get in the United States. You know, more developed. We love our imaging and so, about 20 percent of your annual exposure in the United States comes from imaging using ionizing radiation. So either CT or x-ray or nuclear medicine imaging.

In the diagnostic imaging, this is the CT x-ray, not MRI or ultrasound because it doesn't involve ionization, so that's 15 percent exposure. And then five percent comes from nuclear medicine. And these numbers are a little off. Our imaging gives the same amount of radiation as, like, CT does, it's just that we don't do as much as diagnostic imaging does.

RANDY SCHENKMAN: So the rest comes from bananas?

NICHOLAS PLAXTON: Could be like the --

JAMES FUTCH: Radon.

NICHOLAS PLAXTON: Yeah. Most of our radiation comes from natural sources. Can't exist without it. If we didn't have the sun, we wouldn't live here. So it goes hand in hand.

So anyhow, review nuclear medicine. Go over kind of the, basically, where, you know, using

unstable isotopes that, you know, from the periodic table that are to our advantage for imaging or treatment. Basically kind of your atomic structure. You kind of have unstable, either electrons or protons are unequal so that you have an unstable element and one that would work best for us.

In primary care, these are kind of the areas that, that nuclear medicine can help out. There's a big chunk in cardiac with myocardial perfusion which allows to see if you have coronary problems. I'll think I'll go through these, I guess, in more detail, but there's cardiac imaging that we do. Then there's oncology agents that we use. And then there's, like, neurology imaging that we do that you really can't do with diagnostic imaging.

And then, you know, the bone scans have been around quite a while and they give a lot of different information.

Pulmonary. The VQ scans, which has been mainly replaced by CTA, but there's several people that can't get CTAs. And then thyroid and hepatobiliary. So these are bread and butter for primary care providers. These are the kind of carriers we're talking about.

Cardiac imaging, again, the perfusion agents,

which is the MPI. This evaluates with the coronary blockage or infarctions in the heart. Viability is when you do have an infarction, you want to see if there's hibernating myocardium. Can you bring it back if you go in and do some treatment.

And then a MUGA scan, which is a fancy way to look at the ejection fracture. How your heart is pumping. You can do this with echocardiogram, which is the preferred way. But like, in certain cases, you want to do the MUGA when they have very low EFs, or if it's like, like a lot of clinical studies will require a MUGA instead of an echo because there's a lot of variability in echos.

Sarcoid is kind of a newer area where we're realizing a lot of people have sarcoid involved with the heart and never realized it. That kind of goes in hand with this congestive heart failure. Now that we're fixing the perfusion problems, now people are having congestive heart problems. And the other thing that goes along with that is amyloid deposits as well in the heart.

And then so, I'll talk about the main thing that we do is like, is the myocardial infusion imaging. This is kind of the intermediate risk people for coronary artery disease. If they have

high risk, they're going to go straight to cath. If they're low risk, you shouldn't be getting the study. So if it's a low risk, you don't use it for screening. Because if you do, you're going to have, end up with too many false positives. It has to have an intermediate risk clinical picture.

And so, patients should be -- this is another thing. You'll get people like, you'll read CTs with a lot of calcium in their arteries and they'll order an MPI. So they should have symptoms involved with it, too, like chest pain or dyspnea or, you know, unexplained elevated troponin.

These are the different tracers that we use. The most common today is Technetium 99M, which is a single photon that 140, that's kind of like the main tracer that you use in nuclear medicine today. Although that's going to change, we hear shortly. Rubidium 82 is like the big PET tracer that people use. It has a very short half-life of, like, a minute and a half, so you have to have the generator next to the scanner. And so that prevents you from running on the treadmill. But they give great images.

The ammonium is a similar -- it's a PET tracer. It has a little bit longer half-life, which is ten

minutes, you can actually do a treadmill on these patients, but you need a cyclotron here where you're doing your imaging. So this is good at big institutions that have cyclotrons, like at universities.

This is one that's just coming out now. I think they just announced they finally went to this Flurpiridaz, F-18. This is a perfusion agent that's used with the F-18. That's the fluorene that we use for our oncology patients, but it's attached to this molecule. It allows perfusion imaging.

So the great thing about this is you have a long half-life. So you can -- the radio pharmacy for us over in Bay Pines is on the other side of the bay, but we get all our radio pharmacy stuff delivered from Tampa. So this one could be shipped from the bay and still do treadmill on the patients. This will eliminate Technetium 99, which we've been doing for years. So this is probably going to be on board in the next year. It's, like, finishing its Phase III trials as we speak.

And this kind of a gamma camera with a photo multiplier tube, which senses the photons. That's how we get our images. We inject the radio tracer and then it decays, giving off the photons. Which

is opposite of diagnostic imaging where the, you know, your radio pharmacist, or the element is inside the machine and then the photons cross through the patient. So we're actually injecting into the patient.

This is kind of the newer set up. So it's, like, a lot easier for the patient. They just sit upright. And then it's much smaller. You can see here the patient is kind of, like, smashed down in there.

This is dedicated just for cardiac, so it just images the heart.

And this is our typical imaging we get from a heart. And the radio tracer's perfused through the heart. And, you know, there's three main coronaries that feed it. If any of those are blocked, it will have decreased radio tracer in that area.

And so if it has normal perfusion, then you get this -- you can picture a heart that's been, like, sliced like a bread loaf. And so you have, like, this is apical views and this is going to be, like, you have rest compared -- stress compared to rest. And those, like, apical views, cross section. This is, like, horizontal and vertical -- or vertical and horizontal. So you can have different views of the

heart.

But basically, if you look -- imagine a heart, you just kind of bread loaf it. So it allows you to look through the whole -- this is what you're supposed to see, a nice perfusion throughout it.

And then you can take that information and, like, squish it down into a little plot and that's what this is here. So this is the stress on top. And you can see it's all the same color. That means it's all being perfused equally. And then the rest. It's like a cheat sheet. Not as easy as that, but that's the easy way to read it. So this means when you're stressing patients, they have equal perfusion. And then same thing with rest. So this is a normal patient.

And then this is -- I don't have a motion in here, but this imaging allows us to actually watch the heart beat. And this tells you about the gait and it will tell you the size of the ventricle. That's what these numbers are here. And then EF, which should be, you know, above 50 percent for people.

So this is a case where you have the stress/rest. And you can see here, this is like one of the coronary arteries is blocked in this case.

It's the, you know, left circumflex that's over here. Basically, there's no flow going over here. So this would be consistent with an infarct where the patient had a heart attack and now this is no longer viable tissue.

And then, this is the same, same thing on the slices. This is actually ischemia. So you can see here, so on the stress images, which are on top compared to the bottom, it fills in at rest. It means it's getting perfused at rest. Then the patient is stressed and it goes -- it gets blocked. So that means that it's not able to compensate. So basically, this is an at-risk coronary artery. This is what we want to find so they can go and put a stent or do a cabbage before the patient has a heart attack.

So this is what it looks like on the imaging. Instead of two matched spots, now you have the normal rest and then when the person goes and does exercise, it blocks that artery. So now we indirectly have been able to figure out that that artery is blocked. And they can go in now go to cath and take care of it.

So then going to viability radio tracers. There's Thallium, which is one of the older tracers

and has a lot of poor quality to it actually for -- from the physics standpoint. And then there's FDG PET, which is a PET tracer, which you can think of like a -- so the single photon imaging agents are, like, your low def TV and the PET agent imaging is like your high def. That's kind of across the board.

In the future, everything is going to go to PET. But anyhow, so --

(Cell phone rings)

NICHOLAS PLAXTON: I was going to say, but anyhow, just leave it at that.

So here, basically, you have two studies. The one on the left here is your perfusion imaging and it kind of shows, like, a fixed defect. So you consider this as an infarct. And so the question is, is it truly an infarct or not. So then you can do a viability study in this case. And then when you find out that it fills in, then you know that that tissue is viable. Whether you do FDG or thallium. Because thallium can only get across if the sodium potassium pumps are still working because it thinks it's potassium, so it brings it in.

Then with glucose, the FDG, that the -- your heart normally burns fatty acids and switches to

sugar when it's in distress. So, like, when the dark area would turn bright. So this is a, a thallium study.

Anyhow, you can see the area is much smaller than we're seeing on the MPI. So this would be worth going after and trying to recover some of that muscle.

So MUGA scan, this is where we tag red blood cells, which there's a couple different ways you can do it with our Technetium 99. And this just assesses how the ejection fraction. Like, the two main reasons they do this is for very low cardiomyopathy to get an accurate EF.

And then in -- when you're doing chemotherapy patients, which is the other big reason they want to make sure that the EF is above 50 before they start with a cardiotoxic agent. If it's not above 50, then they'll drop that out of the -- usually there's, like, four or five agents and they'll drop that one that's cardiotoxic and just do the other ones. Then they will monitor them during the therapy to make sure it doesn't drop five percent from their baseline.

This is kind of what it looks like. Again, I don't have motion, so it's a little harder to see.

But we do -- this would actually be moving. And you can see the heart that, you know, when it beats and it measures. There is other information you get from there.

So this is then going to, kind of shifting gears a little bit. This is cardiac sarcoid. And basically, what you do with this is you use our normal FDG PET tracer. FDG is just like radioactive glucose. And so, in this case, the patient with cardiac sarcoid, what they're having is, they tend to have -- they're starting to have congestive heart failure, but without a reason for it. So the idea is that maybe, if they have other signs of sarcoid involvement, you can look into the heart and that's what this patient had. So, basically, there's like, very -- the cardiac walls are involved and they become very inflamed.

You can see on here, it is very avid for the FDG. So that kind of is like, confirms that they have sarcoid. Then they can go in and biopsy just to confirm. Obviously, biopsying of the heart has its risks. This kind of confirms that they probably should go biopsy it.

And then, like I said before, once we fix the plumbing with the coronary arteries, then a lot of

people are having congestive heart failure problems. And that's dramatically increased recently. And so, they've come up with different ways to treat it. They used to have implantable devices that would basically bring you back from, you know, arrhythmias. Now they have these devices, the CRT ones, which resynchronizes. So not only does it -- if you have an arrhythmia where you can have -- it's not compatible. It doesn't just shock you back. Actually it will re-sync your heart rate to a normal, like, you know, efficient rhythm is the way to think of it.

And so, like when you -- this is looking down the left ventricle. And you have contractility and kind of all squeezed, you can imagine like squeezing a towel out. You like ring it. It should ring equally. This is what a normal heart does. Your left ventricle squeezes at once and then it comes down, so you have a nice -- it empties very well, efficiently.

So in a patient that has this congestive heart failure, you end up with -- you can have this, what's called left ventricular dyssynchrony. Where the heart is -- again, I don't have motion here, but you can see there's, like, instead of a nice, sharp

peak, like different parts of the muscle are contracting at different times. So this is very inefficient and then hence, leads to their congestive heart failure.

So this is important because those CRT devices will mainly work with patients that have this type of congestive heart failure. So before, they didn't really know that. You can put the CRT in. They would find out only afterwards whether it worked or not. Now you can kind of, like, assess it ahead of time. And this is actually using the same software you use for MPI.

Amyloid heart failure is kind of like similar to sarcoid. But instead of, the sarcoid involvement, now you have the amyloidosis, which is like the amyloid proteins being deposited in the heart cells.

So there's more interest in this now because they have new medications that came out that can treat these. And again, like sarcoid, they probably -- this is probably under diagnosed because they just treat the congestive heart failure and don't look for the cause. So now with these new agents, we can kind of look for it.

On an echo, you can see the kind of, like, what

they used to call for a cardiac amyloid is like a starry sky. It probably looks blurry to most of you people. But this is the heart muscle here and anyhow, it will give you, like, a starry sky appearance. So you can tell it's very -- you have to, like, people, diagnose using that echo is not the best.

So anyhow, the -- one of our older tracers, this technetium pyrophosphate, which was used for bones initially and then it switched over to infarcts. So they kind of -- it was an old tracer. Then they realized that it does work well for this amyloid because it attaches to the amyloid. So basically, in a patient without the amyloid deposition, there's no uptake in the heart. These are kind of the grades. You can see the person in the far right, the grade three has really tense uptake. That means they have amyloid in their heart.

And this is just different ways of quantifying it. You can do it with planar images or spec images.

So then we kind of shift gears to the kind of primary care oncology imaging that you can think of for their patients.

Again, PET camera. For oncology, mainly it's the PET camera because that's what most of our agents are used for. The main one that's been around for the longest time and most radiologists are comfortable reading is this radioactive glucose, which is FDG, which is the F-18. It has a half-life of, like, an hour and ten minutes, which is good because you can transport it around town.

The way it works is that when you inject radioactive glucose, the body doesn't recognize it as, like, a foreign type thing except for the kidneys and the kidneys clear it, which is good because it gets rid of the background noise.

But the way it works is that most of your aggressive cancers rely on the glycolysis process because it doesn't do the higher end energy sources, so it burns the glucose much higher than the background tissue. It's, like, ten times more than the background.

So in these, like, the very aggressive cancers like lung, colon, breast, pancreatic, you know, head and neck, melanoma, these one burn glucose at a very height rate. So wherever the disease is, you can stage the primary as well as the metastatic disease very easy.

And so you can see this is like a -- so this is an example of a patient with a right lung cancer, so it's very hot in the lung. And then, you know, in this case, you can see there's multiple bone metastases.

The nice thing about it, you can scroll through the entire body. We take our image and fuse it to a CT. So you always get a PET with a CT now. They originally didn't back in the day, but now you can't do one without the other.

Anyhow, there's like, this patient had lymph nodes as well. You can see how it stands out very, very bright, so it's hard to miss.

These are just some other examples. This is a head and neck cancer where you get, like, the structures start getting much smaller in the neck, but it stands out really well with the glucose.

Again, there's several cases of these. You can see these are lymph nodes. Base of tongue cancer. You can see the brain activity. Your brain burns glucose almost exclusively, so it's always hot. Whereas that's why they're developing the fluciclovine, the tracer that you were interested in because it doesn't cross -- it's not utilized by the brain at all. So that -- on the Axumin that we do

for prostate cancer, there's no activity in the brain. If you do see activity, then you have to be concerned.

Anyhow, these are other cases. Head and neck. This guy has bilateral lymph nodes with necrosis in them. Some of these are obvious. You'll be able to see it on CT. If they are smaller, it's harder to tell.

This is, like, some of the newer agents that we have. This is NetSpot, that kind of goes to, I think you were referring to this, the Lutetium 177. So this is a Gallium-68 that's attached to a neuroendocrine. Somatostatin receptor it attaches to. So the Gallium-68 or F-18 could be used for this. You can image neuroendocrine tumors. So once you see that it lights up with this tracer, then you can switch it out either with Lutetium 177 or Yttrium-90. And those are betas and they actually burn off the tumor wherever it's at, whether the primary or metastatic disease.

So this is kind of a real breakthrough in neuroendocrine tumors. Both in imaging standpoint and treatment for that matter. Before, you just kind of suppressed it with some anti statin, but now you can actually treat them.

So this is a patient that has -- had an neuroendocrine tumor in his small bowel. You can see there's multiple. This is an actual primary, which is very small, which would be hard to see this without our tracer. But you can see there's also, you know, he has, he has multiple liver metastases as well as a lung metastasis. This is definitely an advanced stage, so this is one where there's not a good treatment for it. But now being able to use lutecium, you can treat for this. If you see it, you can then treat it.

Prostate imaging is, like, recently been developed. So Axumin is the one they were talking about. This is the artificial amino acid, that was the one you were talking about for brain imaging. It got approved, I didn't put the date in here, it was probably about ten years ago. But it was approved for -- like I said, they found out it worked really well because prostate cancer is not as aggressive as the other tumors, so it doesn't use glucose like the other ones do. But it does have this amino acid up regulation, so it actually lights up really well. That's when they realized we can use this for prostate cancer. So that really changed the treatment of prostate cancer patients.

The newer agent that just came out recently, this is prostate specific membrane antigen that it binds to. So this is, you know, little -- even though this Axumin is really amazing for prostate cancer, this one is probably even a little better. So it's like -- this came out just in the last few years. And so, the same thing here is like the Gallium-68, you can switch that out with lutetium. Then you can treat the prostate cancer even if it's metastatic. And those are currently undergoing investigation.

And then these are kind of some of the examples. So what ends up happening in prostate cancer is that, like, you know, once it leaves the prostate, it tends to go to the lymph nodes and bone. The thing is, like, in this case, you can see a lot of these lymph nodes are, if you read it with CT, it's not abnormally enlarged, so they wouldn't call it metastatic disease. But here you can see it lights up very well with Axumin, so you know that's metastatic disease.

JENNIFER PETERSON: Do you still offer that now that PSMA is available?

NICHOLAS PLAXTON: We do, actually. We still have it available just in case, because there's a

study that's ongoing right now that if you treat the prostate cancer initially with radiation, in the prostate gland, itself, it recurs locally. There's the -- people are thinking that the Axumin actually is able to detect it better than the PSMA. But for metastatic disease, the PSMA is probably better. It has a -- yeah. So we kind of have both available right now. We'll see as time goes. They're both amazing agents and they both do really well, so --

And the nice thing about the PSMA is that, unlike the Axumin, if it lights up on the PSMA, then you know you can use the lutetium 177 to go back and treat it. Because if it lights up hot, then it's going to be eradiated with the beta.

Anyhow, so you can see these are very tiny lymph nodes. Like I said, if you're reading these, you would -- they're sub centimeter and you wouldn't call these metastatic disease. But on our imaging, we can confirm that these are metastatic disease. So this has really kind of changed the, you know, how they treat these. And if there's, like, a cluster of nodes, like, they can actually radiate these individually, like, and then, you know, it can stop the recurrence from spreading. So it's really changed the way they treat patients now.

And you can see this kind of like the whole body again. You can see how the -- this little lymph node stands out really well.

Here's a node that's way up in the chest in this patient, which you wouldn't expect in prostate cancer, but it definitely was. It lit up in the -- that's what it ended up being.

It also is good for bone metastasis. You tend to have sclerotic, in prostate cancer, so you can see this little white spot in the CT. But it lights up really hot on the Axumin. You still want to do some -- your bone scans with these, because bone scans are still more sensitive than both these agents. But we usually PET most of them.

Again, here's the CT. You can see there's like this subtle sclerotic lesion right here, then it lights up really hot. So it's hard to miss.

And then this is the, so the other one was Axumin we were looking at. This is PSMA Gallium. Similar, different distribution, because of the type of tracer we're using. The stuff up in the head and neck is just physiologic uptake in the salivary glands and whatnot. But it doesn't usually interfere with our imaging because prostate cancer to be up in the head is very unlikely. If it's that

level, you really don't need our imaging anymore.

So usually it's down in the abdomen. Sometimes up in the chest. But pelvic and abdomen is kind of where you're looking. So, again, has a really small lymph node, but this is very, very hot.

We're going to shift gears again to the lung. And for, like, primary care doctors, that usually means getting a V2 scan, which is a ventilation perfusion. This is looking for pulmonary emboli. And so, you know, the risk factors are if you have recent surgery or if you have long hours of immobility, like long flights or drives, people will get these deep vein thrombosis in their legs and that throws a clot to their lungs and either it is -- it could be fatal. So -- but if they survive the initial one, you want to treat them so they don't keep throwing clots.

And they usually have an elevated D-dimer. Like I said a lot of times now, they do this with CT contrast. So -- which is very quick to give. You come in the ER, you can get that -- it only takes a minute to get that scan. So they can get the diagnosis pretty quick. But there's several people that can't get the CTA they have an allergy to the contrast that they have to use or if they have renal

failure. So that's a significant portion of people because this is a very common problem. So those people still get DQ scans done.

This is kind of what it looks like. So you can imagine, so the person, you actually usually do the ventilation first, which is in this case, we use Xenon. There's a couple different agents you can use, but Xenon is nice because it's a gas.

You can hook it up to their mouth and they breathe it in and you get it to be clear and you start removing it from them, their lungs and they breathe it back out. Xenon has a long half-life, but they end up breathing it out, so it's not a radiation exposure to the patient.

And you can see this is a -- the one thing with this, you can only take one view unless you do it multiple times and you don't want to do that. So usually we do the posterior imaging.

And then, this is the technetium agent that we do, we inject, which will go through their arterial system and then get, basically throws little -- these are molecules that get stuck in the capillaries of the lungs. It doesn't affect their physiology. It's not harmful to them. But eventually, it's cleared over time. But it embeds

in there for a long enough time and that we can image them in multiple views. So this is a pair of lungs in, like, rotating the view. You take, like, several views in different angles.

Basically, what you're looking for is defects. Because if you have a clot that's in your lung that prevents the blood from flowing there, so you'll see a defect on the perfusion, but you won't see a defect on the ventilation.

And then, there's, like, segments in your lung that you can kind of pinpoint where it is.

So this would be a case of a patient that has a lower -- you can see there's this wedge here. So that's where the blood is not flowing. So that would be a pulmonary embolus that's landed there. And the ventilation image would show no defect. So this is a positive for a pulmonary emboli.

You can see a lot of people do present with multiple pulmonary emboli, not just one, as in this case, you can see there's multiple, like, kind of moth eaten bites out of it and the ventilation looks pretty smooth.

So this is a patient that's thrown multiple clots. So they're treated the same way, but this is what you tend to see.

We're going to shift gears to bone imaging. You can see, what our bone imaging agents do is like detect any -- because your bones are constantly rebuilding themselves on a daily basis. So we're looking for areas of increased or decreased bone activity. And this is kind of mainly for, either for trauma, for infection, tumors, metastatic or metabolic disorders.

This is kind of what a normal bone scan looks like. You can kind of see the skeleton there. You do see some soft tissue. It's clear. The renal system. That's why you see the bladder and the kidneys.

This is a normal patient. Looks pretty uniform throughout.

This is a normal kid. And they -- you can see their growth plates so they're still growing. And so these will be hot. It does cause a little bit of problem if they have a fracture right at the growth plate.

This is kind of a typical, like, prostate cancer. Again, it tends to go to the bone. So this is used frequently for prostate cancer patients. And so, the idea is like if the PSA, like when to get it. You don't get it for all the prostate

cancer patients, but if it's a PSA that's greater than 20, meaning it's like, they do it in the high-risk patients to get bone mets.

If it's below ten and the Gleason score is below seven, then you wouldn't get it. But if it's in a high-risk patient, the chances of them having bone mets are much higher.

You can see this patient, they have bone mets up their spine and pelvis. That's typically where it ends up going.

We do three phase bone scans, which is we inject, watch the flow and then we do a vascular phase and then the delayed, which is like what you saw in the last imaging. We basically do this for different conditions. One is, one of the most common ones we do it for is osteomyelitis or infection of the bone. So if a person has an open wound or after, like, a surgery and it's not healing, then they can use our imaging to confirm that it's in the bone. MRI is good at this as well, but in the post-surgical state, sometimes it's hard to tell on an MRI.

Another one we do it for is complex regional pain syndrome, which has had different names over the years. But, like, if people get trauma, for

some reason, it basically alters the nervous system and so the body no longer is able to shut off the inflammation process and it causes, like, significant pain to the patient.

We can do it for -- it's very sensitive for shin splints and stress fractures. Whereas, like, other imaging, diagnostic imaging is hit or miss. Sometimes it's well, but other times it will miss it.

And then avascular necrosis, and we can also do it for loosening of any type of hardware.

This is a case of osteomyelitis. This is a diabetic patient and you can see on the flow images that, you know, where I think this patient in particular had his toe amputated prior and, you know, due to his diabetic condition. But he -- you know, it wasn't healing after the surgery. And so, with a continued ulcer like that, you worry about infections start to go into the bone and that's what this demonstrates because he has, like, an increased uptake in that area on the flow. And then as well as in the immediate and then you can confirm it on the delayed images that it locates to his metatarsal bone. So that basically confirms that it's osteomyelitis. So they probably will either have to

do very long term antibiotics or amputate further up.

This is another case of osteomyelitis, which can happen in the spine.

This is an example of stress fractures. You can get kind of the clinical case, long-distance runners. They're having this pain in their shins. And on x-ray, it shows you, like, 80 percent of the stress fractures are missed. So he's complaining, comes in and gets the regular x-ray and it doesn't show anything. Then when you get the bone scan, three phase, you can see that there's uptake on the borders of the tibia. So this is a stress fracture.

JENNIFER PETERSON: Is that better than an MRI to diagnose a stress fracture?

NICHOLAS PLAXTON: I believe so, because I think the MRI is, like, it's a matter of a time table of when it will pick it up. So it depends on how bad it probably is, too. If it's, like, a pretty significant stress fracture, it will probably pick it up on MRI. But I don't know the numbers off the top of my head.

This is a case of the, again, it had different names. Reflex sympathetic dystrophy or the complex regional pain syndrome. And this is the one that

like, you know people, you'll get patients that are, like, completely frustrated because they go through the system for several years with this, like, chronic problem of pain and nothing can really be found. And so eventually, one of the doctors, again, that's why we're telling the primary care doctors, they realize that, you know, the patient has a history of some kind of trauma or something or even surgery to an area. And then when you do our imaging, it confirms that basically, they have this kind of syndrome. And you can see on the flow, there's increased uptake in this person's ankle. And then on the same, on the venus or the blood flow and then on the delayed imaging, which is a couple hours later. It has this kind of periarticular activity to it.

This patient, in particular, was a -- he was a paratrooper that had multiple hard landings. One in particular where his parachute didn't even open. He was in the hospital for months. And so he healed from all those. And, you know, according to all the imaging, he was fine. But he's broke both these ankles several times.

But he started having these crazy symptoms and it literally is like you have swelling, it looks

like you just broke your foot. Like you know how when you sprain your ankle and it swells up and it's red. That's what they'll have. So all the imaging comes back negative until you get this three phase and it confirms that during the healing process somewhere, the nervous system went haywire and there's not a good -- unfortunately, there's not a good way to fix this.

I can remember when I was in the military, there was a guy, he had a pinkie that he had this happen to. He kept, for several years, he kept dealing with it. He finally told them, he said, just cut it off and that's what they did. Because he was like, he couldn't deal with the pain. Because this is pretty significant, actually.

Paget's Disease is another one you get, which you can usually pick up on CT. It has a classic look to it. They usually get our imaging because even though CT can pick it up, they don't know if it's active or not and ours will be hot. This one is kind of like, sometimes it's real blazing hot and it's easy to see. You can see that it's really easy to identify.

This is not like, like a cancer or anything, but it can cause discomfort and can cause --

accelerate arthritis and things of that nature. You can see he has multiple bones involved.

And this is a newer agent that we use. I wouldn't say -- I guess it's not really new, but this is actually developed for PET scanners, sodium fluoride, F-18 sodium fluoride. They didn't have PET scanners back then, so they couldn't image these well. But now that we have PET scanners, the tracers come back and it's much more detailed than a regular bone scan we get with technetium. You can see here, the skeleton lights up really well. You can see all the detail because the CT fuses with it.

Xofigo is another thing to keep in mind that we do, which is Radium 223. Alpha radiation. So this has very little penetration, but on the, on the human body, because it's alpha. But if you inject it, it can go to the bone metastases and burn them. It's very effective at decreasing the metastatic burden for -- at least temporary. It's not a cure. It is expensive, though. But it provides, it does provide extended life and some pain relief.

So I think this is, I think this is our last topic, if you guys aren't fully asleep yet. This is brain imaging. And the one that's been around a while is FDG brain is kind of like, again, the brain

almost exclusively burns glucose. And you can kind of diagnose multiple different diseases from this depending on what the pattern of the uptake is.

And so, different things that you can determine is Alzheimer's disease, because there's a very classic decrease in certain areas of the brain. And there's other dementia disorders that you can differentiate using the FDG. This one is a little bit more -- you have to use the -- you have to be used to reading this because you have to know which locations go down. Obviously, neurologists are familiar with the different areas. So FDG is kind of like the first imaging you get to see where things are down and then that kind of directs them where they want to go to do further imaging.

This is kind of like a map showing that has nice normal uptake in this patient.

And this is a patient that's abnormal. It's kind of hard to see without the movement. But anyhow, there's, like, decreased areas where the arrows are pointing. And this is classic for an Alzheimer's patient.

And you find other -- there's other things that show up, like again, this is probably a PET patient for, probably another cancer of some sort. We just

happened to see, just by -- you see this area of the brain. It ends up being an arachnoid cyst. These are just things that pop up. When you read a PET scan, even if it's for lung cancer, you have to look through everything.

This is another patient, again, probably found incidentally on another work up of another cancer that we were doing imaging for, but you can see there's this pituitary tumor here. And it's actually eroding -- this one is eroding the actual skull base, which is not good. So they need to -- this is something they need to go after and work up. You can see here on the MRI image, it's quite large.

These are brain metastases that can show up. The brain metastases tend to have higher FDG uptake than the background brain, but if you don't window your FDG, you'll probably miss it. This is where you have to increase the -- you have to scale -- change your scaling so that you can see the brain mets. It's not used for screening for brain mets, but you can pick them up.

MARK SEDDON: How important are you guys using these? I mean are you --

NICHOLAS PLAXTON: The actual numbers?

MARK SEDDON: Right. Are you normalizing? Do

you have a normalization process to make sure that -- because if you're doing tracking over time or, you know, between different types of equipment you're using --

NICHOLAS PLAXTON: So we still have, at least at my place, we only have one PET camera right now, so that's kind of fixed. Although we were getting a second one put in.

But it depends on the cancer. For, like, lymphomas, there's the -- you lay out SUVs and then do a response to see if they've gone down or not.

MARK SEDDON: Okay. Yeah. I was curious. You said it's not really applicable. If you have multiples cameras, you want to have some type of assurances that it's on camera A versus camera B. That your SUV value is actually a meaningful number.

CHANTAL CORBETT: I was going to say all of our clients that have multiple scanners, we use the ACR panel standard. So if you're doing them at the same time on a routine basis on those systems, you'll know the differences.

MARK SEDDON: But that's just for one aspect of it. But a lot of times, they are using a set type of scan, acquisition. But there's a lot of other things that go into standardizing how you prep a

patient, how you initiate the dose.

CHANTAL CORBETT: I mean, typically, the protocol part of it is standard across the department.

NICHOLAS PLAXTON: Yeah, we try to keep it close. But you're right, there's a little bit --

MARK SEDDON: There's variation on --

NICHOLAS PLAXTON: Exactly -- even the patient prep. Because the time from injection to when they're scanned, what their blood sugar was that day. So the idea with the SUV is to try to decrease some of those factors. So it's supposed to be, like, a unitless. But we don't use it as, like, a very absolute number.

MARK SEDDON: That's why I was curious. How important it falls for you guys.

NICHOLAS PLAXTON: Yeah. For the most part, like, I would say we more -- we definitely report them in our reports, but it's more of a, kind of a, instead of quantitative, it's more of, like assessment of the overall.

MARK SEDDON: Because I mean, like radio oncologists have tracking over time for treatment response. Might be more important.

CHANTAL CORBETT: I mean, like even what you

were saying, with one scanner, you have two different techs, they can, you know, change the prep up enough that it would be different. So it's not really the SUV end of it, but more sort of prepping.

NICHOLAS PLAXTON: All right. So there's, you know, some newer tracers that we use for the brain. This one is called Amyvid, which basically, it attaches to the little amyloid aggregates. Basically the little things that maybe should be called, like little trash that fills up in peoples' heads when they get Alzheimer's. And the more they have -- it's not guaranteed they have it, but the more you have of these tangles, the higher chance of Alzheimer's you have.

And so, basically, you know, that's the idea is like, so like a normal brain up here, you can see the difference between the white matter and the gray matter. So there's, like, delineation between the two. Meaning there's very little of those tangles in the brain.

Whereas if you go down here, you can't tell the difference between the two. So this person has a very heavy burden of those tangles and so that this patient is, you know, these down here are consistent with Alzheimer's.

There's no really other way to image Alzheimer's. So this is kind of -- and there's different agents that you can use, but this is the most -- FDA approved one. There's a couple other ones, but this is the -- like I said, FDG patterns of glucose can also kind of confirm Alzheimer's as well.

You can see here's an abnormal one where it's the white matter and gray matter. You can't tell the difference between them.

And this is just comparing it to an FDG PET, which is not easy to see. But there's decreased activity in the parietal lobes. The occipital lobes are where your vision is, and those are all preserved in Alzheimer's. Their motor strip, which is the middle. That's why people with Alzheimer's have motor function and vision is not affected, but their memory is, so --

GEORGE GILBRIDE: That's why you have all the silver lungs and stuff like because they take off.

NICHOLAS PLAXTON: They keep on going. They don't lose any motor function, but they do -- you know, the various areas of memory are gone.

So this is just more patterns. This is another one that came out. Probably about, I don't know,

ten, fifteen years ago.

This one is really big because it's DaTscan, which attaches to the center, like, of your brain that controls your movements. So people with Parkinson's will have abnormal uptake of this tracer. So basically, it can diagnose people with Parkinson's disease. And then that will be able to allow you to figure out is it truly Parkinson's? Because before, it was a clinical diagnosis and you would just try medications and see if something works. But now this can confirm that they have Parkinson's disease or not. And so that way, you can, you know, apply the right medications. Because just natural tremors can be similar to Parkinson's and whatnot.

So this was actually a really big breakthrough because otherwise, you would have no idea that the patient, other than clinical symptoms.

And this is kind of how it attaches. This is the nuclei in the brain that lights up. This is the normal patient, the cross section of the brain. So it looks like commas. You can see in this patient, it's significantly down and the background is increased. So this is a patient with Parkinson's.

And if a patient has drug-induced Parkinson's

syndrome, it actually will still have a normal uptake. So that will confirm that the patient, because they know they're on psychotic drugs that cause Parkinson's and if you do the imaging, it will confirm that, yes, it is the drugs that's doing it and they can stop taking those drugs.

Again, healthy versus abnormal.

And then this is, you've got more -- cross sectional through the brain. And then you can actually do quantitative analysis here. You can, you know, based on their age, it will compare it to normal data files and then give you a standard deviation from normal. It's like an easy cheat sheet.

You have to be carful, though, because there's always artifacts that will get in these. That's probably what this is. I'll talk about a couple of these. Abnormal DaTscan. This is obviously very severe. This patient has, it's no doubt that it's Parkinson's.

We usually have them drink like a, like a Lugol solution or potassium iodine to, theoretically, protect their thyroid gland because we're using, the agent uses an iodine agent. So you want to try to protect it. If they don't, we still will treat

without giving them the protection or image without the protection.

There's a lot of drugs that interfere with this, so we have to make -- we have to really kind of watch what they're on and stop certain medications over a period of time so it doesn't interfere with the thing.

Lewy Body Disease is kind of a -- it's a cross between Alzheimer's and Parkinson's. So these patients have both memory problems and movement problems. And it tends to be more debilitating. And so anyhow, they'll -- and these people have -- they do -- they have hallucinations because the big thing on this is the occipital lobe is also affected. So they have visual problems and memory problems. So now they start hallucinating, which, this is a very debilitating disease.

GEORGE GILBRIDE: Didn't Robin Williams have Lewy Disease?

NICHOLAS PLAXTON: He may have. Yeah. I don't know.

Anyhow, this -- they tend to have abnormal DaTscans and, you know, FDG scans. This is a patient that had Lewy Body Dementia. You can see here the occipital lobe is down. You usually only

see that in Lewy Body Disease. Usually the visual cortex stays intact.

Oh, thyroid. Going over my time now. Let's see here. Try to go through this pretty quick. This has been around for a long time. This is what nuclear medicine started back in probably in the 1960s I think, or 1950s. And so, you know, basically imaging the thyroid because you can inject radioactive iodine. They use I123 now. They used to use I131, but I131 has beta. So we use that exclusively for treatment and I123 is gamma. So we use that for imaging. It has better characteristics for imaging. And you usually take an uptake after 24 hours after injection. And there's a normal range. So you can see if they're hypo functioning or hyperfunctioning.

And so anyhow, this is what a normal scan looks like. Nothing else takes up the iodine, so it's, you know, you see this thyroid gland floating in space.

And this is a Grave's Disease patient where it has increased uptake and the gland is enlarged and you can't read the percentages here, but it's over 30 percent. So this one is probably, like, 60 percent. These people have -- eventually, they have

hyperthyroidism until it burns itself out. Usually, you don't wait for that. You just treat it. Put it to zero and give them Synthroid for the rest of their life because there's all kinds of complications with it.

This is a toxic autonomous nodule. So you have a nodule on your thyroid. This one is on the left side in your ultrasound. When you do the imaging, the rest of the gland is suppressed because this one gland is just sending out hormones without any regulation.

And then when we also do our imaging, if the patient has multiple nodules, if it's a cold nodule, it has a ten percent chance of being a thyroid malignancy. So you usually have to do a biopsy to figure that out.

This is a patient where the patient has thyroiditis, so they have hyperfunctioning -- it looks like a hyperfunctioning thyroid, but when you do the imaging, it has very low uptake. This is usually transient. That means the patient has some kind of infection and it's dumping its thyroid hormones that's stored up, which is kind of like the metabolism for your body. So that resolves on its own.

I131 we use for treatment of hyperactive thyroids as well as for cancer. You usually see different levels of it all the way up to, like, 250 millicuries of I131.

Patibulary. Pick up some speed here. This is basically looking for when people have acute colicystitis or chronic -- let's see the images. Here, the tracer is uptake into the liver and then goes into the gallbladder if it's functioning correctly. So this is a normal scan. And once it fills up the gallbladder, you can give them a fatty meal. And then you can measure how fast it dumps the gallbladder into the small bowel. This allows you to dissolve fats. And, you know, we probably all know someone that has had gallbladder taken out because it becomes dysfunctioned.

Chronic is like where it takes up normally, but then it doesn't squeeze correctly. So you give it a fatty meal, it doesn't release it. This will cause pain just as -- and problems with patients. So, you know, they end up getting it taken out.

Here's acute colicystitis. It never fills the gallbladder. It just stays, you know, without activity going in. And then that confirms, like, usually they figure it out on ultrasound or

sometimes, you know, ultrasounds and CT, they can, you know, they actually -- I think it is actually pretty high. I think they can, they can usually kind of call acute colicystitis, I want to say only 60 percent of the time. So this kind of confirms it if that's the suspicion.

This is a high-grade obstruction. This is from a patient where they took out the gallbladder. But they actually ligated the common bile duct. This is a big problem because now they have to do a big surgery to get function back.

This is a pancreatic mass on FDG that was -- this can cause a high grade obstruction as well. Putting mass effect on the bile duct.

This is the one. Maybe it's backward. This is the guy that had post op surgery. This is the one they tied off. Same thing. High-grade obstruction. That very rarely happens, actually, by the way.

This is a biliary leak. This happens more often than, you know, this is a common problem. So they didn't quite tie everything off and now you have leakage of bile into the -- where the gallbladder used to be. And they can go in and fix this pretty easily, but they got to recognize that it's leaking.

And this is in newborns, if they -- if you don't have a biliary tree altogether, for the bile to go down, it basically confirms that, it gets taken up by the liver in this newborn, but it never goes anywhere. So this baby doesn't have a biliary tree; hence, they need surgery.

All right. That's kind of it. So I guess that was probably more information to cover than I thought. But, you know, the main thing is, you know, is like, a lot of -- even, like, primary care people are, like, scared of radiation and, like, everything we do in nuclear medicine, so the idea is that, hey, what we do in nuclear medicine is safe and it's all regulated. So it's like a, just like all, everything we always do, you know, on top of the radiation.

So -- and like, our imaging is, like, more of a functional imaging versus the radiology where it's more of a, an anatomical. That's changing more with the different MRIs and things. They can do more functional imaging now. But that's kind of like -- ours is mainly to deal with functioning.

And there's a lot more, you know, this is like a, like I said, kind of the bread and butter for primary care doctors, but there's a lot of new

cutting edge radio tracers coming out and treatments that are available that is, like, nuclear medicine is kind of really exploding into, like, new ways of treatments and imaging.

So that's it. Anybody have any questions? I know it's a lot of information about it.

(Applause)

ADAM WEAVER: What does that slide represent?

NICHOLAS PLAXTON: That's just regular Gallium.

ADAM WEAVER: I figured it was one of the metals.

NICHOLAS PLAXTON: Yeah, that's Gallium. Its natural state. This is what happens when you put it in your hand. It melts.

MARK SEDDON: I have a question. So as you're seeing more of the newer radiological particles coming out or newer imaging applications --

NICHOLAS PLAXTON: Yeah.

MARK SEDDON: -- how often do you have to -- because the physicians sometimes aren't aware of what options are available. Do you have the orders changed where they go back to the radiologist or they come in and say actually, you know, a bone scan, a PET bone scan would be better for you.

NICHOLAS PLAXTON: Yeah. So I mean, so we're

constantly involved in, like, our tumor boards and chest conferences. So usually when we get something, like, sometimes, like, we're announcing to them that there's, like, something available. Or it's vice versa. Somebody has already like, like the oncologists are already, like in particular, I think there's one of our radiographers, he's involved in a prostate imaging research that they're doing. And he specifically wanted the Gallium-68 PSMA. So he was, like, calling me all the time. Hey, yeah, you got that on board? I was like, well, we're still going through the process of getting the VA to get it approved. Even though it has already been FDA approved, we have to get it on board in house.

But, yeah, we kind of like keep up and, like, we do call them every now and then if we feel we need to change it to a different radio tracer or isotope or something. And then just, you know, they eventually kind of pick it up and then, you know, start doing the new tracer.

MARK SEDDON: But they order something and your standard is changed, would you change it without -- would you consult them before changing it or you would change it based upon the --

NICHOLAS PLAXTON: Yeah. I wouldn't change -- if it's a, if it's, like, for instance, like if it was the Axumin, which is for prostate cancer, and now we have the PSMA available. I still wouldn't just change it because I think it's like, I know they're like, hey, this is better. I would still call them and say, hey, you ordered the Axumin, but we do have the PSMA, because they may not be aware of it. Or they specifically want the Axumin because they will be like, well, he had multiple images with Axumin. I don't want to change it now. It would be different sensitivity and specificity, so they want to stay with the same thing with that patient.

So, yeah, we try to kind of contact them as much as we can to kind of, you know, have the dialogue open so that we're not just changing things on our own. Then they get back something that they didn't expect.

MARK SEDDON: Okay.

NICHOLAS PLAXTON: Usually.

CHANTAL CORBETT: I would say that would only be a hospital system that would ever happen. Outpatient would never ever do that.

NICHOLAS PLAXTON: Try to contact someone?

CHANTAL CORBETT: They're not going to change

it without calling them. They'll do what's ordered. If they come back with another order, they'll do that, too.

NICHOLAS PLAXTON: We do have a little bit of that. I know --

CHANTAL CORBETT: Hospitals, it easier because more interactions between doctors and the staff and counsel.

MARK SEDDON: As they're transitioning to new tracers, it's like there is an education lag.

NICHOLAS PLAXTON: Yeah. Yeah. There is. Or somebody is used to a certain tracer, we have to tell them, hey, there's this better one now. But I do like, on our day-to-day stuff, I know we have the main hospital and then there's all these, like, satellite clinics that we read that are ordering and then we're doing stuff for them. And like, whenever you try to call someone that's in one of these out clinics, they're either part time, they don't have pagers and they're never at the number that's listed, so you're like, it's like sending a smoke signal. At that point you just do, what you think is best, but --

MARK SEDDON: Technically, it's under your -- you're the authorized user for the procedure, so

it's what the radiologist feels is the appropriate.

CHANTAL CORBETT: It's hard to convince them, though, they're actually the final say on some of the things. Because I think it's the liability and the, everything else in today's society that they don't want to change things.

MARK SEDDON: Very good.

RANDY SCHENKMAN: Okay. I guess we should move on to other business. Anyone have other business?

(No Response)

RANDY SCHENKMAN: Okay. Next meeting.

BRENDA ANDREWS: I forgot to give the calendars.

JAMES FUTCH: Thursdays in May. May 4th through May 25th. CRCPD meeting, usually earlier.

CLARK ELDREDGE: Mid May? Mid May.

JAMES FUTCH: So probably not the 11th then?

CLARK ELDREDGE: I can look it up. Cut me off on my phone.

BRENDA ANDREWS: So you said CRCPD is in May?

JAMES FUTCH: Any other competing society meetings?

KATHLEEN DROTAR: Mine would be on a Friday starting anyway.

BRENDA ANDREWS: So the 11th?

JAMES FUTCH: Clark is looking up CRCPD.

CLARK ELDREDGE: It will be, starts Monday, May 8th. Houston, Texas.

JAMES FUTCH: Not the 11th.

CLARK ELDREDGE: So it will be that week.

JAMES FUTCH: Yeah. So the 4th, 18th or 25th.

CHANTAL CORBETT: I want to say the 14th, I have an -- FNMT is the 14th. I'm trying to verify the dates.

JAMES FUTCH: Okay. Would you still be -- would the 18th be a conflict for that? That's usually the weekend --

CHANTAL CORBETT: Thursday through Sunday.

JAMES FUTCH: So that's the -- is it the 11th through the 14th?

CHANTAL CORBETT: That's what I was trying to figure out.

JAMES FUTCH: Okay. I think the 4th, 18th or the 25th.

CLARK ELDREDGE: For CRCPD, it would be, I mean, the first, second, third type thing. The first three days of May because whoever goes, generally may have to be traveling on that Thursday or Friday to get out there for pre-meetings.

JAMES FUTCH: So you prefer the 18th?

CLARK ELDREDGE: Yeah, the 18th would be better for CRCPD.

JAMES FUTCH: Anybody got any issues with the 18th?

BRENDA ANDREWS: It's a Thursday?

JAMES FUTCH: Yeah, it's a Thursday. We can always start looking at other days.

CHANTAL CORBETT: Or go to Tuesday.

JAMES FUTCH: Does anybody have a real problem with Thursday? Historically, this has been one of the better days. Except for maybe Becky. I'm not sure.

BRENDA ANDREWS: So the 18th of May?

KATHLEEN DROTAR: Sounds good.

RANDY SCHENKMAN: Yeah. That's a Thursday.

JAMES FUTCH: Anybody else, speak up now, please.

RANDY SCHENKMAN: Okay.

BRENDA ANDREWS: The only other thing is if anybody -- you all turn your travel papers in to me. I think I'm missing a few. They need to be signed and turned in to me right now. Right now.

KATHLEEN DROTAR: Don't mess with Brenda.

JAMES FUTCH: Time for a picture.

RANDY SCHENKMAN: That's right. We need to do

a picture.

THE COURT REPORTER: Are we adjourned?

RANDY SCHENKMAN: The meeting's adjourned. Sorry about that.

(Proceedings concluded at 3:40 p.m.)

CERTIFICATE OF REPORTER

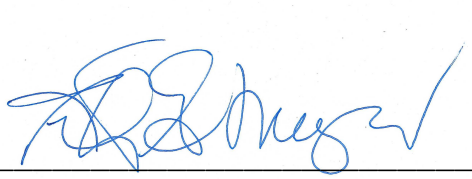
STATE OF FLORIDA:

COUNTY OF ORANGE:

I, RITA G. MEYER, RDR, CRR, CRC, do hereby certify that I was authorized to and did stenographically report the foregoing proceedings and that the foregoing transcript is a true and correct record of my stenographic notes.

I FURTHER CERTIFY that I am not a relative, employee, attorney or counsel of any of the parties, nor am I a relative or employee of any of the parties, attorneys or counsel connected with the action, nor am I financially interested in the outcome of the action.

DATED this 21st day of October, 2022.



RITA G. MEYER, RDR, CRR, CRC