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NUCLEAR REGULATORY COMMISSION

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ADVISORY COMMITTEE ON THE MEDICAL USES OF ISOTOPES

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TELECONFERENCE

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TUESDAY,

OCTOBER 18, 2011

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The meeting was convened in room T-03C1 of Two White Flint North, 11545 Rockville Pike, Rockville, Maryland, at 12:00 p.m., Leon S. Malmud, M.D., ACMUI Chairman, presiding.

MEMBERS PRESENT:

LEON S. MALMUD, M.D., Chairman

BRUCE THOMADSEN, Ph.D., Vice Chairman

MILTON GUIBERTEAU, M.D., Member

SUSAN LANGHORST, Ph.D., Member

STEVE MATTMULLER, Member

CHRISTOPHER PALESTRO, M.D., Member

JOHN SUH, M.D., Member

ORHAN SULEIMAN, Ph.D., Member

WILLIAM VAN DECKER, M.D., Member

LAURA WEIL, Member

JAMES S. WELSH, M.D., Member

PAT ZANZONICO, Ph.D., Member

NRC STAFF PRESENT:

CYNTHIA CARPENTER, Acting Director, Office of Federal and State Materials and Environmental Management Programs

BRIAN McDERMOTT, Director, Division of Materials Safety and State Agreements

CHRISTIAN EINBERG - Designated Federal Officer

MICHAEL FULLER - Alternate Designated Federal Officer

ASHLEY COCKERHAM - Alternate Designated Federal Officer/ACMUI Coordinator

NEELAM BALLA

SUSAN CHIDAKEL

SAID DAIBES, Ph.D.

DONNA BETH HOWE, Ph.D.

ED LOHR

GRETCHEN RIVER-CAPELLA

RONALD ZELAC, Ph.D.

ALSO PRESENT:

DARICE BAILEY, TX Dept of State Health Services

KEITH BROWN, Univ of Penn

JOSEPH BUCKLES, Hays Companies

ROBERT DANSEREAU, New York State Dept of Health

WILLIAM DAVIDSON, Univ of Penn

LYNNE FAIROBENT, AAPM

MICHAEL HAGAN, Veterans Health Admin

THOMAS HUSTON, Veterans Health Admin

JOHN KENT, Indiana Univ-Purdue Univ Indianapolis

KAREN LANGLEY, Univ of Utah

RALPH LIETO, St. Joseph Mercy Hospital

JANETTE MERRIL, SNM

RAY POSTON, Kentucky Dept of Public Health

MACK RICHARD, Indiana Univ-Purdue Univ Indianapolis

JOSEPH RODGERS, Theragenics Corp

GLORIA ROMANELLI, ACR

CINDY TOMLINSON, ASTRO

P R O C E E D I N G S

(12:06:31 p.m.)

MR. EINBERG: Okay. I think we can go ahead and get started then. Okay. I'll go ahead and open the meeting.

CHAIRMAN MALMUD: Thank you. Someone else just joined us. Would you introduce yourself, please.

MR. KENT: John Kent.

MEMBER ZANZONICO: Hello?

CHAIRMAN MALMUD: Yes?

MEMBER ZANZONICO: Yes, this is Pat Zanzonico. I just joined.

CHAIRMAN MALMUD: Dr. Zanzonico, welcome aboard.

MEMBER ZANZONICO: Thank you.

MR. EINBERG: Okay. We're going to go ahead and get started then. Good afternoon.

As the Designated Federal Officer for this meeting, I am pleased to welcome you to this public meeting of the Advisory Committee on the Medical Uses of Isotopes. My name is Chris Einberg. I am the Chief of the Radioactive Material Safety Branch, and

have been designated as the Federal Officer for this Advisory Committee in accordance with 10 CFR Part 7.11.

Present today as the Alternate Designated Federal Officers are Mike Fuller, Team Leader for the Medical Radiation Safety Team, and Ashley Cockerham, who is the ACMUI Coordinator.

This is an announced meeting of the Committee. It is being held in accordance with the rules and regulations of the Federal Advisory Committee Act and the Nuclear Regulatory Commission. The meeting was announced in the September 30th, 2011 edition of the Federal Register, Volume 76, page 60938.

The function of the Committee is to advise the Staff on issues and questions that arise on the medical use of byproduct material. The Committee provides counsel to the Staff, but does not determine or direct the actual decisions of the Staff or the Commission. The NRC solicits the views of the Committee and values their opinions.

I would request that whenever possible we try to reach consensus on the procedural issues that we will discuss today, but I also recognize there may be minority or dissenting opinions. If you have such

opinions, please allow them to be read into the record.

At this point, I would like to perform a roll call of the ACMUI Members participating today. Dr. Leon Malmud, ACMUI Chairman.

CHAIRMAN MALMUD: Present.

MR. EINBERG: Dr. Bruce Thomadsen, Vice Chairman, Therapy Medical Physicist.

VICE CHAIRMAN THOMADSEN: Present.

MR. EINBERG: Ms. Laura Weil, Patient's Rights Advocate.

MEMBER WEIL: Present.

MR. EINBERG: Dr. Mickey Guiberteau, Diagnostic Radiologist.

MEMBER GUIBERTEAU: Present.

MR. EINBERG: Dr. Sue Langhorst, Radiation Safety Officer.

MEMBER LANGHORST: Present.

MR. EINBERG: Mr. Steve Mattmuller, Nuclear Pharmacist.

MEMBER MATTMULLER: Present.

MR. EINBERG: Dr. Christopher Palestro, Nuclear Medicine Physician.

MEMBER PALESTRO: Present.

MR. EINBERG: Dr. John Suh, Radiation

Oncologist.

MEMBER SUH: Present.

MR. EINBERG: Dr. Orhan Suleiman, FDA Representative.

MEMBER SULEIMAN: Present.

MR. EINBERG: Dr. William Van Decker, Nuclear Cardiologist. Okay. It doesn't seem like Dr. Van Decker is present.

Dr. James Welsh, Radiation Oncologist.

MEMBER WELSH: Present.

MR. EINBERG: Dr. Pat Zanzonico, Nuclear Medicine Physicist.

MEMBER ZANZONICO: Present.

MR. EINBERG: Okay. We do have a quorum of at least seven members.

I would also like to add Ms. Darice Bailey is speaking on behalf of the Agreement States for this teleconference, since the Agreement State Representative position is currently vacant on the Committee.

I now ask that the NRC Staff Members who are present to identify themselves. I'll start with the individuals in the room here at headquarters, and next we'll go to the phone for the NRC Staff and other stakeholders. So, we'll go around here.

PARTICIPANT: With the Medical Team.

MS. CHIDAKEL: Susan Chidakel, Senior Attorney, OGC.

DR. HOWE: Donna Beth Howe, Medical Team.

MR. LOHR: Ed Lohr, Rulemaking.

MS. BALLA: Neelam Balla, Rulemaking.

MR. McDERMOTT: Brian McDermott, Director for the Division of Materials Safety and State Agreements.

MR. FULLER: Mike Fuller, Team Leader, Medical Team.

MR. EINBERG: Okay. That's everybody from here in headquarters in this room here. Anybody on the phone from headquarters as well?

DR. ZELAC: Yes, Ronald Zelac, Medical Team.

MS. COCKERHAM: Ashley Cockerham, Medical Team.

MS. CARPENTER: Cindy Carpenter, FSME.

MR. EINBERG: Okay, thank you. Now, I'll go to the Regions. Region I, do we have anybody on the phone? Once again, Region I, is there anybody on the phone call? Hearing none, we'll move to Region III. Anybody on the phone? Okay. Nobody from Region III. And lastly, Region IV, anybody on the phone?

Okay.

Let me now go to members of the public who had registered for the phone call. Once again, I mentioned that Darice Bailey, Texas Department of State Health Services is on the call. Keith Brown, University of Pennsylvania, are you on the call?

MR. BROWN: Yes.

MR. EINBERG: Joseph Buckles, Hays Companies.

MR. BUCKLES: Yes, I'm here.

MR. EINBERG: Robert Dansereau, New York State Department of Health.

MR. DANSEREAU: Here.

MR. EINBERG: Michael Erdman, Penn State Hershey Medical Center. Lynne Fairobent, American Association of Physicists in Medicine.

MS. FAIROBENT: Yes.

MR. EINBERG: William Davidson, University of Pennsylvania.

MR. DAVIDSON: Present.

MR. EINBERG: Michael Hagan, Veterans Health Administration.

MR. HUSTON: Could you repeat the name?

MR. EINBERG: Yes. Dr. Michael Hagan.

MR. HUSTON: Oh, okay. I'm Tom Huston with

the VHA.

MR. EINBERG: Okay. Next on the list was Dr. Tom Huston. John Kent, Indiana University of Purdue, University of Indianapolis.

MR. KENT: Present.

MR. EINBERG: Karen Langley, University of Utah.

MS. LANGLEY: Here.

MR. EINBERG: Ralph Lieto, St. Joseph Mercy Hospital.

MR. LIETO: Present.

MR. EINBERG: Michael Peters, American College of Radiology.

MR. PETERS: Who was that?

MR. EINBERG: Michael Peters.

MR. PETERS: Oh, that's me. I'm here.

MR. EINBERG: Okay. Richard Piccolo, Varian Brachytherapy. Mack Richard, Indiana University of Purdue, University of Indianapolis.

MR. RICHARD: Present.

MR. EINBERG: Joseph Rodgers, Theragenics Corporation.

MR. RODGERS: Present.

MR. EINBERG: Daniel Snyder, Geisinger Health System. Daniel Snyder, Geisinger Health System.

Cindy Tomlinson, American Society for Radiation Oncology.

MS. TOMLINSON: I'm here.

MR. EINBERG: And Gary Williams, Veterans Health Administration.

Okay. Is there anybody else on the phone who I have not called, if they could please identify themselves.

MS. ROMANELLI: Gloria Romanelli, American College of Radiology.

MS. MERRIL: Janette Merril, Society of Nuclear Medicine.

MR. EINBERG: Thank you.

MR. POSTEN: Ray Poston from Frankfort, Kentucky, Radiation Health Branch.

MR. EINBERG: Okay. Anybody else? Okay, that completes the roll call.

Following a discussion of the item today, the ACMUI Chairperson, Dr. Leon Malmud, at his option may entertain comments or questions from members of the public who are participating with us today.

At this point, I'd like to turn the meeting over to Dr. Malmud.

CHAIRMAN MALMUD: Thank you. The other suggestion I would make just preventively is that if

you are not on -- if you're not speaking, to use the mute, if you have a mute available. It will reduce potential interference, should we have any.

Okay. So, the subject of today's meeting is the ACMUI Permanent Implant Brachytherapy Subcommittee Report. And that Committee is chaired by Dr. James Welsh. And with his permission, I will turn the agenda over to Dr. Welsh.

MEMBER WELSH: Thank you, Dr. Malmud.

As you can see from the handout, or the attachment in the email, we have completed our first draft of the Permanent Implant Brachytherapy final report. And there -- in the way of background, there has been some significant change in the membership of this Subcommittee over the past several years, and the process has taken quite a few years to evolve into its present state. Since then, several members have rotated off, and we do have new members joining us.

Having said that, we attempted to adhere to some of the initial basic premises, but also tried to modernize the overall report based on input from stakeholders, and feedback, and participation from the recent workshops.

This particular Subcommittee report is far more prescriptive than any of our previous attempts at

the prose, and we thought that this might be an opportunity to spell it out as cleanly and clearly as possible. Therefore, the report does not have the typical narrative that you've seen from our previous reports, but does start out right off the bat with a proposed definition, serves as a synthesis of the various -- opinions of the various members of the Subcommittee, and includes a comment on the Written Directive Completion concept that was missing from previous reports.

We did come up right off the bat with a proposed definition that we believe should satisfy all parties involved. It is based in large part on the ASTRO definition, which is activity or source-based in nature, but it also includes some components which are dose-based that would serve not so much as the principal backbone of the definition, but serve to catch outliers that might not be captured by the ASTRO original definition, and be an alternative to the proposed solution that has been bandied about; namely, that the Authorized User simply would sign some type of attestation in the Written Directive Completion.

So, the Written Directive Completion was not something that was permitted in the first place prior to this proposition. Now we are suggesting that

the Written Directive Completion be something that is included, and that unlike our previous proposal, that in the Written Directive Completion the Authorized User provide an attestation that the seeds are placed according to his or her intentions, that we have something that is a little bit more verifiable from a regulator's perspective.

It should be relatively easy for a regulator or an inspector to ascertain if medical event has been committed, and importantly, most importantly in my perspective as a clinician, this is compatible with routine standard of care practice of brachytherapy.

Importantly, although we drew very heavily from prostate permanent implant brachytherapy, the definitions and recommendations herein should apply to all forms of permanent implant brachytherapy, and that is why we included the word "macroscopic," in Section A, the proposed definition for medical event for macroscopic permanent implants, because we didn't want to include Y-90 microsphere brachytherapy or microscopic permanent implant brachytherapy in this, because it would not apply.

So, that is my basic introduction to the report.

CHAIRMAN MALMUD: Thank you, Dr. Welsh. Are there comments, additional comments from other members of the Subcommittee? Dr. Langhorst, Dr. Suh, Dr. Thomadsen?

VICE CHAIRMAN THOMADSEN: This is Bruce Thomadsen. I think that Dr. Welsh did a very nice job in summing up the report.

CHAIRMAN MALMUD: Thank you.

MEMBER LANGHORST: This is Sue Langhorst, and I agree.

MEMBER SUH: And this is John Suh. I also agree that Dr. Welsh did a nice job in summarizing the recommendations of the Permanent Implant Brachytherapy Subcommittee.

CHAIRMAN MALMUD: Thank you. Now, having heard from the Chair and members of the Committee, are there comments from other members of the ACMUI, or NRC, or members of the public?

MEMBER ZANZONICO: This is Pat Zanzonico. I had several comments, some of them are fairly specific. Is now the time to entertain those?

CHAIRMAN MALMUD: I think so.

MEMBER ZANZONICO: Okay. Some of these are just questions, others are suggested revisions. The first one deals with Item 1B, so that's A-1B, where it

says, "the calculated dose to 90 percent of the CTV," et cetera. Is there any -- was there any intention of associating some time frame to that? In other words, Dr. Welsh said this definition of medical events now largely, though not exactly, parallels the ASTRO recommended definition, but it also includes dosimetric components, namely this one.

But I was wondering what the thinking of the Subcommittee was in terms of a time frame, if any, as to when the actual dose would be determined, or dose distribution would be determined in order to determine if this criteria was or was not met.

CHAIRMAN MALMUD: Dr. Welsh.

MEMBER WELSH: Yes. I think that's a very valid and important question, and we did discuss this. It has been discussed repeatedly in previous ACMUI meetings, as well during the recent workshops.

One of the problems with any time frame from a regulatory perspective is that there might always be some challenge to specified time frame. For example, if we're using cesium-131 or palladium-103, we might have different recommendations compared to iodine-125. So, naturally, it should be the longest time frame appropriate for all isotopes if we're going to impose a time frame.

VICE CHAIRMAN THOMADSEN: Jim, this is Bruce. Can I jump in for just a second here?

MEMBER WELSH: Yes, please do.

VICE CHAIRMAN THOMADSEN: Pat, I think that the Subcommittee's thought on this is that the time frame on that is what the user would normally use for their own time frame for doing the dosimetry. It would be up to the user.

It should be noted that this is joined with 1A with an "and," so by itself the dosimetry criterion would not cause an event.

MEMBER LANGHORST: Hi, this is Sue Langhorst. Can I help answer, too? Pat, in looking at this and going through it many times with the Subcommittee, you wouldn't do that calculated dose for 1B unless there has been -- unless you are greater than 20 percent of the seed sources fall outside the intended location, or that there is this issue with how it's distributed within the planning treatment volume. So, you wouldn't have to even do that dose calculation unless Items 1A(i) or 1A(ii) were not met.

MEMBER ZANZONICO: Understood. I think that's all reasonable. I just wonder from a regulatory point of view if some qualifier should be added to 1B saying pursuant to prevailing clinical practice, or

pursuant to the judgment of the Authorized User, or Attending Physician, or some such thing as that in terms of timing.

I'm just wondering if leaving a time frame implicit as opposed to explicit given how prescriptive this current definition of an ME is, is a potential source of confusion.

MEMBER WELSH: This is Jim Welsh here. I think I agree with you there, Dr. Zanzonico, in that if we are going to ever impose any kind of medical event tag to an implant, that we can't leave this open ended. And that understanding that it's a Boolean and, and, therefore, it doesn't always have to be performed from a regulatory perspective to identify a medical event because -- unless it triggers 1A(i) and 1A(ii). If it doesn't trigger those, we don't have to go to 1B.

Having said that, without a time frame it can be very difficult to enforce. Because like I've given in the absurd example, when the inspector comes two years later, the Authorized User, Clinical Team could say oh, well, we do our post implant dosimetry two years and one day. So, that's not likely to happen in reality, but without the words here that remote possibility remains possible. So, I would be in favor

of including some kind of a time frame that is clinically appropriate and practical to impose.

MEMBER ZANZONICO: Understood.

MR. LIETO: A follow-up?

CHAIRMAN MALMUD: Yes.

MR. LIETO: This is Ralph Lieto. I share Dr. Zanzonico's concern because you do have a dose-based criterion in 2. There is no activity-based criteria in that, so I share his concern about when do you determine this dose value, at release, 60 days. If you're going to say whenever the licensee determines, then I think it should be explicitly stated, and I agree with his concern.

CHAIRMAN MALMUD: Thank you, Ralph. Is there an actual recommendation? This is Malmud. Is there an actual recommendation?

VICE CHAIRMAN THOMADSEN: This is Bruce. I thought that Pat actually had some verbiage that was pretty good.

CHAIRMAN MALMUD: Pat?

MEMBER ZANZONICO: Yes. Well, I think to kind of formalize it, I would say within a time frame to be determined by the Authorized User consistent with prevailing practice.

CHAIRMAN MALMUD: Thank you. Is that a

motion?

MEMBER ZANZONICO: I'll make a motion. Sure.

CHAIRMAN MALMUD: Thank you. Is there a second to Pat's motion?

VICE CHAIRMAN THOMADSEN: I will second that. It's Bruce.

CHAIRMAN MALMUD: Thank you, Bruce. Any further discussion of that motion?

MEMBER WELSH: This is Jim Welsh, who's trying to scribble this down. Dr. Zanzonico, can you repeat the final phrase or your sentence?

MEMBER ZANZONICO: Yes. Within a time frame to be determined by the Authorized User consistent with prevailing practice.

MEMBER WELSH: Thank you.

CHAIRMAN MALMUD: So, we have a motion that's been moved and seconded. Any further questions or discussion of that motion?

MEMBER WELSH: This is Jim Welsh here. I would like to ask NRC Staff if we put this in in our efforts to have language that is reminiscent of 10 CFR, is this kind of language going to be rejected, or would this suffice? Is there any reason for us to think about this right now before we go ahead and pen

it in?

MS. BALLA: Yes. Dr. Malmud, this is Neelam Balla from headquarters.

CHAIRMAN MALMUD: Yes?

MS. BALLA: We have our OGC Staff sitting here for the regulations. Wording like that leaves —-- makes it a little bit ambiguous, so we would like to have -- I suppose previously proposed was 60 days. Would that work, or 90 days? I think we would like to have a more specific time frame than -- it just leaves -- for regulatory purposes, it's rather ambiguous.

CHAIRMAN MALMUD: Thank you. So, you would like to amend that to say but not to exceed 60 or 90 days, whichever number is chosen?

MS. BALLA: Yes.

CHAIRMAN MALMUD: How does that sit with Dr. Zanzonico's recommendation? Dr. Zanzonico?

MEMBER ZANZONICO: Well, I'm completely ambivalent on the exact time frames, because I just don't have enough insight into the clinical issues in brachy to offer a time frame. And I was trying to defer to folks like Dr. Welsh, who actually perform this procedure on a regular basis. So, I would defer to his judgment.

CHAIRMAN MALMUD: Dr. Welsh, Dr. Suh?

MEMBER WELSH: This is Dr. Welsh here. And I agree with the sentiments of NRC Staff that it can be -- it does seem a little bit ambiguous with the wording that Dr. Zanzonico offered, even though as a clinician I'm very comfortable with that. But I have to think also from the regulatory perspective, it might not be as clear to somebody who is not fluent in prostate brachytherapy. Therefore, adding another phrase "not to exceed X number of days."

Now, I have stated publicly that although our national guidelines, National Committee Guidelines have come up with some recommendations which are clinically appropriate and may be appropriate for clinical trials, that from a regulatory perspective we have to be far more lenient, and 30 days or 60 days which might be appropriate for nine out of ten prostate brachytherapy implants or maybe 99 out of 100 from a clinical trial perspective might still be too strict from a regulatory perspective. And, therefore, I wouldn't want to impose or have NRC impose restrictions that -- on a community oncology center brachytherapy practice that pushes them to meet or exceed the National Guideline Standards for prospective clinical trials, for example.

And, therefore, I would be in favor of

having something more on the order of 90 days, or even six months. And it would like, if possible, the opinion of some of the experts who do a lot of prostate brachytherapy that might be on this call, such as Dr. Hagan, to see if six months might be acceptable for this.

In my opinion, 30 days, 60 days would be a little bit too short. Ninety days might be appropriate but, again, from regulatory perspective six months might be sufficient.

CHAIRMAN MALMUD: I think that Dr. Welsh has directed a question to Dr. Hagan. Do you care to respond, Dr. Hagan?

MS. COCKERHAM: I don't believe he's on the call. This is Ashley.

DR. HAGAN: Yes, I'm here. Actually, I was looking at another aspect of your last comment, so you'd need to repeat that for me to be able to respond to you.

CHAIRMAN MALMUD: Dr. Welsh felt that putting a fixed deadline of 60 or 90 days might be too strict in all circumstances, though it might be valid in 90 percent of cases and, therefore, cause a regulatory problem for those who had to exceed it. And the question that he was posing to you is, what do

you think as someone who practices prostate brachytherapy, do you think that 60, 90, or 180 days is the right number not to exceed?

DR. HAGAN: I think there are two considerations here, and I think that the first, that is to try to have a time that would include all possibilities; that is, if we required that the medical event criteria was susceptible to the impact of edema so we had to have a time frame based on edema, then probably neither 60 nor 90 days will catch every patient. It will catch the majority of patients, but not every patient.

But the second point is that this medical event -- this ensemble of criteria that delineate medical event, as I look at it, is insensitive to edema. That's no longer an issue with regard to the 60 day, or 90 day criteria. So, our typical practice is 30 days, so the initial interest in the FSME Staff to use 60 days was to say 60 days is long compared to 30 days, if 30 days is routine practice. Well, 30 days is based on being able to evaluate dose separate from the impact of edema, so that's the reason for the 30 days.

When there's a medical event criterion that has eliminated the impact of edema, then the only

issue is when we have a defined date are we going to create medical events because it is unreasonable to meet that date? That's what Dr. Welsh is pointing out, the difficulty with having any date.

Well, that same criteria will apply to any date you choose, so I think -- any date past 60 days you choose. So, I think 60 days is fine. I think that the practice can easily accommodate 60 days. I think there is no one who will be requiring that a patient be imaged after 60 days for the resolution of edema because that's no longer an issue.

I think the practice that doesn't fit with that in the past has been those that do day zero and day one CTs because they can't get their patients back in 30 days, or 60 days. Patients come from outside the country. So, now since you've removed edema as a major impact, then day zero, day one is a perfectly good time to do this evaluation.

I think cobbling together the criteria you have, I think you've eliminated the sensitivity to the issue of date. I think 60 days would work just as well as 90 days.

CHAIRMAN MALMUD: This is --

MEMBER WELSH: I believe that -- I'm sorry, this is Jim Welsh.

CHAIRMAN MALMUD: Go ahead, Dr. Welsh.

MEMBER WELSH: I agree that we have done the best we can to eliminate the concerns of edema, and that in practice 30 days, 60 days might work. Frankly, I would be in favor of 90 days, simply because we're not talking so much about clinical matters here, not medical matters, but we're talking about regulatory issues here. And, therefore, if we're going to label something as a medical event, 30 days, 60 days, which would be relevant from a perspective of whether or not this implant was managed well, performed well, assessed well from a medical perspective might still be a little bit too short, from my perspective. And, therefore, I would personally favor a more lenient 90 days for labeling something as a medical event. And I would like some feedback from others on the Subcommittee, and anyone about whether 90 days is just too long, is that impractical, is that ridiculous, or is that appropriate for this regulatory question of when to impose a medical event.

CHAIRMAN MALMUD: This is Malmud. This area is not my area of expertise, but in my interactions with the NRC, I have found that when there are exceptions, if they are documented by the provider,

the physician, or the physicist in a timely fashion, that the NRC tends not to challenge them. It's when there's no explanation, or when there's a delay in communication that concern arises.

What does the NRC Staff feel about putting in a fixed time frame, or with written justification if it's to be exceeded? Dr. Howe, Dr. Zelac?

MS. BHALLA: Yes. Dr. Malmud, this is Neelam Bhalla here, again.

CHAIRMAN MALMUD: Yes, I'm sorry, this is your turf. I'm sorry. Go ahead.

MS. BALLA: We are the rule makers so we need --

CHAIRMAN MALMUD: Yes.

MS. BALLA: -- to make sure things will be comfortable. Certainly, when we go out on our inspections, the Staff is -- the Inspectors always look at the scene circumstances, or maybe one case out of say 20 did not meet this, but if something is going on, if a patient or patients are not imaged, or there's no assessment done for all of them, or that process is not in place, then we do question it. So, going back to that case in hand here, I would think it seems like --

(Background noise.)

CHAIRMAN MALMUD: Please go ahead.

MS. BALLA: Yes, what I said was that 60 days does seem to be making sense. And in any case, a specific case, if an assessment has not been done in 60 days, then the Inspectors do bring that information back and exceptions are made. So, we could go with a certain time frame.

MEMBER WELSH: This is Dr. Welsh. May I then suggest an amendment to Dr. Zanzonico's original proposed verbiage?

CHAIRMAN MALMUD: Please do.

MEMBER WELSH: Within a time frame to be determined by the Authorized User consistent with prevailing practice, not to exceed 60 days except -- I'm sorry -- unless accompanied by written justification.

CHAIRMAN MALMUD: Thank you. How does that sit with the individual who seconded your motion -- seconded Dr. Zanzonico's motion?

VICE CHAIRMAN THOMADSEN: That was me, Bruce, and that's fine.

CHAIRMAN MALMUD: So, the motion has been amended and seconded. Any further discussion?

DR. HOWE: Dr. Malmud, this is Dr. Howe at NRC.

CHAIRMAN MALMUD: Yes, Dr. Howe?

DR. HOWE: One of the things that strikes me is that you don't have to put a time period in the definition of a medical event. 35-41 is the program that you use to assure that you've administered your treatment in accordance with Written Directive. You could put your time frame in 35-41 that says that you make your dose assessment, if necessary, within the 60 days. That would take it out of being a medical event, but would still make it a violation. So, the medical event would be that you exceeded this dose limit, or any other dose limit that you have here. The violation would be if you hadn't made that determination prior to the 60 days would be in 35-41. I throw that out for your consideration.

CHAIRMAN MALMUD: Thank you. Dr. Welsh, do you have a response to that?

MEMBER WELSH: I --

MEMBER LANGHORST: This is Sue Langhorst. I'd like to take a crack at that, if you don't mind, Jim.

CHAIRMAN MALMUD: Thank you, Dr. Langhorst.

MEMBER WELSH: Please do.

MEMBER LANGHORST: The dosimetry part of that criterion is not needed if the first part is met.

So, I don't think it would be appropriate to have it in the part that Dr. Howe is suggesting, because it's not necessary all the time. But the imaging would need to be done in a certain amount of time.

MEMBER WELSH: Sue -- if I could respond, Dr. Malmud, to Dr. Langhorst.

CHAIRMAN MALMUD: Please do.

MEMBER WELSH: That is not entirely correct in that we have A1 or 2, and for 2 you do have to do some quantitative calculations.

MEMBER LANGHORST: Yes, you're absolutely correct. I stand corrected.

MEMBER WELSH: So, my response to Dr. Howe at this point, that I proposed is that although this language that we have written down is in the framework of the regulations, none of us fool ourselves into believing that we are capable of writing the actual rules. And, therefore, I think that it is appropriate for us to put it here explicitly, and put a little asterisk afterwards saying that the real rule makers could put this in 35-41 or wherever it needs to be so that when final verbiage comes out it's consistent with what 10 CFR is supposed to say. But if we don't put it in anywhere -- or we could put it in the discussion, but if we put it right here understanding

that we're not expecting that this rule is going to be published verbatim in the regulations, that the concept will be illustrated abundantly clearly right from the start if we include it right here. And that's why I would favor putting something right here right now.

CHAIRMAN MALMUD: Thank you. What do we hear from the rule makers?

MS. BALLA: This is Neelam Balla again. For these rule makers it's fine, so long as we have a date, a time frame in there, and then in the proposed rules you'll all get to see how we have, and where we have put it, and how we have put it. And it will be such that it will be easy to implement.

CHAIRMAN MALMUD: Thank you. So, we have a motion amended and may we now vote on it?

VICE CHAIRMAN THOMADSEN: This is Bruce. Could we hear what it says one more time?

CHAIRMAN MALMUD: Yes, Dr. Thomadsen. Who has it written down?

MS. COCKERHAM: This is Ashley. I believe I do, if Dr. Welsh does not.

CHAIRMAN MALMUD: Ashley?

MEMBER WELSH: Ashley, please go ahead.

MS. COCKERHAM: Okay. I have, "Within a

time frame to be determined by the Authorized User consistent with prevailing practice but not to exceed 60 days unless accompanied by written justification."

CHAIRMAN MALMUD: How does that sound?

VICE CHAIRMAN THOMADSEN: Sounds right. But --

CHAIRMAN MALMUD: Did I hear a but?

MR. LIETO: This is Ralph Lieto. It sounds like what Dr. Zanzonico originally proposed without the time frame, because that last phraseology basically makes it whatever they want to determine it to be, just as long as they document it. And I would think that would be actually document -- whatever the standard practice is is going to be documented to begin with. I guess it just sounds to me like it's sort of waffling back and forth, and still gives really an open ended time frame.

VICE CHAIRMAN THOMADSEN: This is Bruce again. I think that the out at the ends would have to be there to accommodate if you do have a patient that you do, is maybe going to be out of the country for the next four months, so you have to write in the chart at the time why you aren't going to be doing it at the normal time.

MR. LIETO: Would that be consistent with

the clinical practice of the Authorized User?

VICE CHAIRMAN THOMADSEN: Hard to tell.

CHAIRMAN MALMUD: Ralph --

VICE CHAIRMAN THOMADSEN: They might always do --

MR. LIETO: You know, I just think that it's very ambiguous. I think I just would suggest keeping it the way Dr. Zanzonico had suggested originally. I think that's really the best way, and leaves it up to the Authorized User to document in his Written Directive program, which he has to have anyhow.

CHAIRMAN MALMUD: This is Malmud. I think, Ralph, that the reason for the 60 days is to establish a number so that those who read it can understand that that really is the goal. There obviously will be exceptions. There are practices which have a large number of non-compliant patients for one reason or another. We're concerned about non-compliant providers. And I believe that the motion as made with its amendment establishes more clearly guidelines for the provider to protect both the patient and the provider. But that's only one man's opinion. We're relying on the wisdom of the Subcommittee.

MEMBER WELSH: This is Jim Welsh here

replying to Ralph Lieto's comment. Yes, I agree that Pat Zanzonico's original words are very satisfying and would be appropriate from my medical perspective, but we heard from NRC Staff, the rulemaking section, that they would like a number. And I proposed 90 days, but I like the concept of 60 days except by written justification even better because, as we've heard from a member of the public, Dr. Hagan, who's an expert in prostate brachytherapy and does a lot, that 60 days probably is an appropriate figure. And if exceeded, it would have to be accompanied by written justification. And examples do abound where a patient simply declines to come in, or the patient is hospitalized for another medical problem, or is out of the country on vacation and forgets to show up. We call those so called patient specific or patient related factors. And in other versions of our proposed definitions or discussion we've said things such that -- such as patient specific factors should not be allowed to qualify as medical events. And we included things like the patient just doesn't show up for whatever reason.

So, here we're reincarnating that concept but putting in slightly different words here, and saying except if accompanied by written justification.

And yes, although I think Pat's original words are sufficient in my perspective, I understand the need for a specific number, and I like the way that this rolls off the tongue, not to exceed 60 days except if accompanied by written justification.

MS. FAIROBENT: Dr. Malmud, it's Lynne Fairobent. May I ask a question?

CHAIRMAN MALMUD: Yes, Lynne.

MS. FAIROBENT: I'm struggling with -- I don't know how one would enforce, or who would make the determination that the written justification provided is valid and acceptable. My problem with this that I'm struggling with the "unless accompanied by written justification," is that I can't envision a situation then that could occur that would result in a medical event, because I think an Authorized User could develop a written justification so that a medical event was not noted.

MEMBER WELSH: This is Jim Welsh, if I could reply or attempt to.

CHAIRMAN MALMUD: Please do.

MEMBER WELSH: I think that the written justification could be put in at the 60 day mark by an Authorized User saying that the patient was scheduled to have shown up by this date and was scheduled, but

failed to show for the following reasons. That should be justification that would suffice for regulatory purposes.

However, if there is no statement of the sort, and there is a policy scheduling post implant dosimetry and the patient was never told to come in this time, and nothing was ever scheduled, and doesn't show up, well, then that would be an example of -- that is falling below standards and might qualify as the medical event according to --

CHAIRMAN MALMUD: Does that satisfy your concern, Lynne?

MS. FAIROBENT: Perhaps from Dr. Welsh's viewpoint. I'm not sure it would satisfy me if I was still an inspector. And I guess I would like to hear from not only NRC Staff, but from Darice Bailey from the Agreement State viewpoint.

MS. BAILEY: I can speak. This is Darice. Any time in regulating and enforcing, the clearer the better. Practicing medicine is not black and white, so it's going to be difficult. Saying with an explanation, quantifying what that explanation is supposed to kind of entail just leaves it open so that anyone could say hey, we provided you an explanation. The explanation may have been we forgot, but your

rule just said provide an explanation.

So, while the majority of people are compliant and desire to do the best, rules are written for those that aren't. So, if you're going to rely on providing an explanation, now you go down the bunny trail of what justifies a valid explanation.

What I just heard, if it's patient intervention, that's a given. That's easy, but I think what we're going for, not necessarily patient intervention because that's sort of taken care of already. So, it's got to point out that this is a very unusual situation for the facility, that the facility's procedures were followed, and here is why this was an exception. It can't just be because -- it can't be a simplistic answer. And that's going to be very hard to write into rule.

MS. FAIROBENT: Dr. Malmud, that was exactly my concern.

CHAIRMAN MALMUD: Thank you. Are there comments from the members of the Subcommittee regarding this concern?

MEMBER WELSH: This is Jim Welsh, and I suppose that my initial suggestion not to exceed 90 days, or maybe now even 120 days should be reconsidered because if the rule makers want something

very concrete and don't want something that could be misinterpreted, or misused, or open ended such as accompanied by written justification for any date, then maybe it is best for us to put a very specific date there. But, again, my sentiment is that this should not be for regulatory purposes anything that is at all restrictive. And I would think 90 to 120 days, if you haven't done your implant -- post-implant dosimetry by then, something has gone wrong, and maybe it should be tagged as a medical event. And that's —-- I guess I would bounce it back to other members of the Subcommittee and others on the call for feedback on that concept.

MEMBER WEIL: Dr. Malmud, this is Laura Weil. May I ask something?

CHAIRMAN MALMUD: Yes, Laura.

MEMBER WEIL: Would it be appropriate instead of saying with written justification to state with detail of attempts made to bring the patient back in for imaging or dosimetry, or something to that effect, so that it's clear that it's not that someone forgot, or that it's been ignored, but rather that there's been no response from the patient to come back for this recommended part of the process.

CHAIRMAN MALMUD: Well, would the term "written explanation" be better than the term "written justification"?

MEMBER WEIL: I think it should be written documentation of efforts made.

VICE CHAIRMAN THOMADSEN: This is Bruce. From what we just heard from our state regulator, it sounds like, as she said, it was a given if the patient -- if you try to get the patient back and the patient doesn't come, that we don't really have to address that issue here. In which case, I'm wondering if we're trying to address something that doesn't need to be addressed. I'm also beginning to think maybe Dr. Howe had a point, and maybe we shouldn't worry about the timing at all.

MR. FULLER: This is Mike Fuller with the NRC, maybe I can help a little bit. Dr. Howe's point wasn't that we shouldn't worry about it. It's just we were getting into where in the rule. Not necessarily part of a medical event as opposed to a requirement that they be done within a certain time frame.

As we look around the room here with the various folks, we really think at this point in time we probably have enough information. Now, maybe you don't have all the feedback you need to write a

motion, but the failure of the patient to show up within the time frame should not be a violation. That's really all we need from a rulemaking perspective. As long as you guys as part of your motion agree in a particular time frame, and as long as there is a way for us to caveat that, and we can figure out what the words are, that a patient's failure to show up is not a violation. I think that's all we need in the motion, again. And whether or not it goes into -- and, again, it wouldn't be part of a medical event definition. You want to put it as a part of the motion, that's fine. We'll figure that part out.

But what we were talking about early on is the need for a time frame so that we would have what we needed with regard to post-implant imaging, to make the rest of the rule work. So, I hope that helps.

CHAIRMAN MALMUD: Yes, it does. Thank you. We're back to Dr. Welsh, and the motion, which was Dr. Zanzonico's motion. It has been made and amended. We've heard comments from NRC with regard to their understanding that this is the feeling of the Subcommittee. May we vote on that motion now?

MEMBER MATTMULLER: Dr. Malmud, this is Steve Mattmuller. Before we vote, I'm sorry. I've

been struggling with this whole discussion in that ASTRO's recommendation was that the medical event definition should be based on source activity. And from my recollection from the stakeholder meetings, everyone said source activity. But now it seems the Subcommittee has added the dose perspective to how we define a medical event. And in past meetings and discussions, and like what we've had so far today there's -- it's a very, very tricky, difficult aspect of dose to define in a medical event. And it seems like we're rehashing a lot of what we've said in the past to justify not including it in a medical event definition.

So, I'm curious if I could ask the Subcommittee why they think this is important to add to the medical event definition now, as opposed to just leaving it based on activity?

VICE CHAIRMAN THOMADSEN: Can I address that?

CHAIRMAN MALMUD: Please do.

VICE CHAIRMAN THOMADSEN: This is Bruce Thomadsen again. There are -- what we've seen in several of prostate implants, there are implants where more than 20 percent of the sources are not in the target, but are around the target, and still deliver

an appropriate dose to the target even though they would fall outside of the criteria in 1A-1.

The purpose of 1A-2 -- or is that the number? The purpose of the dose criteria is that even if the sources aren't where they were supposed to be, if the dose to the target was within a range that could be considered therapeutic, then that still doesn't need to be considered a medical event. It's not that this criterion is there to cause a medical event to be reported if the dose doesn't match that criteria, but it's to screen out those cases where you would trigger a medical event with 1A(i), but it wasn't a significant incident; that is, the doses were still adequate.

MEMBER WELSH: This is Jim Welsh; if I might add to Dr. Thomadsen's comment.

CHAIRMAN MALMUD: Please do.

MEMBER WELSH: As evident from a conversation about whether or not we could add the phrase “not to exceed 90 days,” not to exceed 60 days except if accompanied by written justification, changing that to “explanation,” changing that to “documentation,” and whether or not this would fly with regulators, is this something that's enforceable? The same challenge -- we face the same challenge with

the original ASTRO definition, where there was a section saying that the seeds were placed in accordance to the Authorized User's intention.

As a physician, I'm very comfortable with that, but I've heard back many times from those in rulemaking and others that this open ended conceptual verbiage is not going to be deemed satisfactory in the ultimate rulemaking. So, "in accordance with the Authorized User's intention" is very analogous to what we're talking about here, "60 days except if accompanied by written justification".

And you could see that we're going back and forth with just this little concept of the 60 days except, we would be going back and forth ad nauseam with in accordance to the Authorized User's intention. How are you going to verify that? How is it -- how can it be proved objectively? And, therefore, we came up with this alternative proposal that as Bruce said, does not trigger medical events at a low threshold, but actually raises the bar for making something meet the criteria of a medical event further than the original ASTRO definition. So, yes it is some dose-based addition, which is something that NRC expressed on numerous occasions, something they like, but it raises the threshold rather than lowering the

threshold, and does provide something that is objective and has some -- therefore, something that regulators can sink their teeth into.

CHAIRMAN MALMUD: Thank you, Dr. Welsh. Other comments?

DR. HAGAN: This is Mike Hagan. In response to this last pair of comments, if I read this correctly, as long as 1A criteria have not been met; that is, as long as there is no question about medical event vis-a-vis activity, placement under 1A(i) and (ii).

One doesn't need to do a D-90 calculation. The only purpose of a D-90 calculation is if either of those two upper criteria may have been met, then there is a need to demonstrate that it also corrupted the dose, as well. As long as your implant doesn't violate the two criteria conjoined by the “or”, you don't need to do a D-90. Is that not correct?

MR. LIETO: That's not correct.

CHAIRMAN MALMUD: Is that Mr. Lieto?

MR. LIETO: Yes, this is -- again, I think it was pointed out in number 2, for the normal -- that's a whole separate criteria. You have one --

DR. HAGAN: I'm not talking about number 2. I'm not talking about number 2.

MR. LIETO: With number 2, you have to do a dose calculation.

DR. HAGAN: I understand that, but I'm talking about for the target site, not normal tissue, but vis-a-vis the target site, and the calculation of C-90 to the CTV. There's no need to do a D-90 if the -- if neither of the upper two criteria have been met.

MEMBER WELSH: This is Jim Welsh. I would say that Dr. Hagan is correct, that D-90 does not have to be calculated, and is not incorporated for medical event criteria unless we're dealing with a situation of 1A(i), but Dr. Lieto is also correct in that yes, we do have to do post-implant dosimetry to calculate the normal tissue dose to see if you've exceeded them. But D-90 does not factor in very heavily at all in our current definition. And that's why we separate A1 versus A2, because we are talking about the target, and we're talking about the normal tissues very separately.

CHAIRMAN MALMUD: Thank you. I'm sorry, who was going to say something?

MR. LIETO: Just a clarification on this 150 percent in number 2.

CHAIRMAN MALMUD: Is that Mr. Lieto?

MR. LIETO: Yes. I'm sorry, yes, Ralph

Lieto. In number 2, this 150 percent, Dr. Welsh, or members of the Committee, Subcommittee, that is a separate prescribed dose to those organs or tissues.

MEMBER WELSH: That's correct.

MR. LIETO: See, I have a similar concern that Lynne was expressing, is that if you're an RSO and you're going in to audit your area on how you're going to determine whether an event occurred or not, because this really -- because it's so overly prescriptive and detailed, it almost makes it impossible for someone outside of the department to identify a medical event. It's really going to have to be self-identified. I think an expectation that a regulator is going to come in and determine these things is not realistic.

DR. HAGAN: This is Michael Hagan. I think that's absolutely correct.

CHAIRMAN MALMUD: May we hear comment about that from the NRC Staff?

MR. FULLER: At this point in time, we really don't have a comment.

CHAIRMAN MALMUD: Thank you.

MEMBER WELSH: Dr. Malmud, this is Steve Mattmuller again. And I would like to concur with Ralph -- well, that reading through this, my

impression was the Subcommittee was trying to make a good definition even better, but I think the folly is, is that we've -- it's now wandered into a territory where it would be very difficult to regulate, or to inspect against.

CHAIRMAN MALMUD: I heard another comment?

VICE CHAIRMAN THOMADSEN: May I speak up to that? This is Bruce. And I would disagree with the difficulty to evaluate this by a regulator, although qualifications of regulators vary greatly from state to state, of course. But if the regulator is at all familiar with prostate dosimetry, it is not hard to look at a case and evaluate the criteria. If they are not, then they will be hopeless, but then again it would be hopeless for them to make a reasonable evaluation in any case.

We have to assume that, first, the regulators are educated into how to do the evaluations. And, secondly, we also have to recognize that these implants are actually very complex, and evaluating the implants are very complex. And trying to make a simplistic rule is not going to work in this case. It is too complex, and it requires specific specialized knowledge.

CHAIRMAN MALMUD: Thank you, Dr. Thomadsen.

Other comments?

MEMBER WELSH: This is Jim Welsh. Can I comment further?

CHAIRMAN MALMUD: Yes, Dr. Welsh.

MEMBER WELSH: I would say I disagree with the previous few comments that assert that this is going to be more of a problem for regulators. I think that our efforts have been specifically designed to be a compromise between what is medically appropriate and what is relatively easy for a regulator or an inspector. And, therefore, the inclusion of dose, which was very strongly opposed by many of us in the Subcommittee over the past few years has been introduced, in part, for exactly this reason, so that there are some concrete numerical figures that can be used by regulators to make things simpler. And I think that everyone would agree that these concrete numerical figures have to be considered more concrete than the phrase "in accordance with the Authorized User's intention." And although I like "in accordance with the Authorized User's intention", you can only imagine the debate and the arguments that would be going on about whether that is enforceable, and whether -- how an inspector would handle that in comparison to these hinted, suggested rules here that

give you objective figures.

So, that's where these objective figures come from, and that's where the concept of limited use of dose, not D-90 for the target mind you, but dose in the specific context may be reasonable for these particular definitions in that they provide some objectivity that is very difficult to otherwise incorporate into rulemaking. And this is the best we've got so far, and I think most of us like it.

CHAIRMAN MALMUD: Thank you, Dr. Welsh. May I ask a question of NRC Staff; and that is, if this recommendation had been in place at the time of the issues that arose in Philadelphia at the VA, would these interpretations and recommendations have aborted the number of incidents that occurred in Philadelphia? Would this have been helpful in preventing some of those?

DR. HOWE: We would have to go back and look. I believe this would take out most of the medical events, because you're saying with written justification and what the intent was. In that particular case, the Authorized User made statements like well, I intended to give two fractions, and because I took 35 out of the bladder the first time, I'm just going to have him come back for a second

fraction which didn't happen. So, we would not have been able to pick up our index patient.

CHAIRMAN MALMUD: So, this would not have been helpful in reducing the number of incidents at the Philadelphia VA, for example.

DR. HAGAN: This is Michael Hagan. That's not -- I can give you exactly the answer to that question.

CHAIRMAN MALMUD: Thank you, Dr. Hagan.

DR. HAGAN: Out of the 116 implants, 10 would represent medical events under these definitions. There are none that would fall under Rubric 2 for normal tissues. There are 11 that would fall under 1A with greater than 20 percent of the activity outside of the PTV, and one of those, the D-90 was greater than 80 percent, actually. So, would not be a medical event because of the boolean and for calculated dose to D-90. That would leave 10 that would have been medical events out of Philadelphia.

CHAIRMAN MALMUD: And does that mean that if they would have been medical events, that the NRC would have been alerted to a problem occurring there and would, therefore, have given much closer oversight to what was occurring, and prevented the others from occurring?

DR. HAGAN: Yes, that would be correct. Out of those 10, there were a number that occurred early in the course of this implants; that is, in the 2003 time frame. So, had Quality Assurance Evaluations been done and a regulatory evaluation been done under this set of rubrics, and done accurately, they would have been identified and would have pointed out that there was a problem with this program.

Although 10 sounds like a low number compared to the previous number, 10 medical events in any program is not only unacceptable, but highly unacceptable, so this would have -- the application —-- the correct application of this definition would have identified early on the implant problem in Philadelphia.

CHAIRMAN MALMUD: So, that if I were a member of the public and I were to ask if this new Permanent Implant Brachytherapy Subcommittee report would have prevented the number of incidents at the Philadelphia VA, the answer would be affirmative, it would have helped to prevent the number.

DR. HAGAN: Yes, and my only caveat is that it would be the accurate application of this medical event definition. And the issue that I shared with the other caller about the need for self-

identification comes from the use of CTVs and PTVs, and the rendering of octants in order to be able to use a portion of medical event definition. Those are not trivial in terms of being able to in a rigorous and objective way to identify what the Authorized User is absolutely calling PTV and CTV, and how he renders his octants, because in today's treatment planning system where you can generate octants automatically, there's more than one choice, there's more than one way of rendering those octants. And I can choose ways that eliminate medical event criteria.

CHAIRMAN MALMUD: Thank you, Dr. Hagan. So, I'll just ask the question again rather simply; and that is, as a member of the public would I be reassured that if this Permanent Implant Brachytherapy Subcommittee report were advanced that the scale of problems at the Philadelphia VA would not recur?

DR. HAGAN: Correct.

CHAIRMAN MALMUD: Thank you. Any other further discussion of the motion with the amendment? May we --

MEMBER WEIL: This is Laura Weil. May I say something?

CHAIRMAN MALMUD: Yes. I'm sorry, I didn't hear the name.

MEMBER WEIL: Laura Weil.

CHAIRMAN MALMUD: Yes, please.

MEMBER WEIL: In terms of the time frame that we're discussing for A1-B, and given Dr. Hagan's comments, I wonder if it makes sense to include the shorter time frame, 60 days rather than 90 days, in the interest of identifying problems in a more timely way so that further difficulties can be avoided?

CHAIRMAN MALMUD: That's a question to the members of the Subcommittee. Dr. Welsh, you chair it.

MEMBER WELSH: This is Dr. Welsh, and I have to apologize that I dropped the call for a second when Dr. Hagan was probably saying the most important point.

CHAIRMAN MALMUD: Actually, Dr. Welsh, a question came in afterwards from Laura Weil; and that is: Is the 90-day too broad? And would 60 days be a better date beyond which there should be the written statement?

MEMBER WEIL: For the purpose of identifying problematic situations sooner in order to prevent future problems.

MEMBER WELSH: Okay. And I can answer personally that I'm comfortable with 60 days with the addition of the phrase "except if accompanied by

written justification", "explanation", "documentation", whichever word we'd like to add. Some members of the rulemaking group have questioned whether or not we can really use "except if accompanied by written whatever." I proposed an alternative of just saying flat out this number of days, and I suggested the number 90. But if others are more comfortable with the concept of 60, I guess I could go along with that. I still like the phrase "if accompanied by written justification," but if that's not going to fly with rulemaking --

CHAIRMAN MALMUD: No, I don't think it was dropped. It's still the amendment to your motion. And I think we agreed to allow the NRC to polish this up according to the way that they saw fit. I think they volunteered to do that. Am I correct?

MR. FULLER: Yes, you're correct, Dr. Malmud. This is Mike Fuller with the NRC.

CHAIRMAN MALMUD: Thank you, Mike. So, I would ask now, Dr. Langhorst, Dr. Suh, and Dr. Thomadsen if they agree with Dr. Welsh that 60 days would be acceptable as an alternative?

VICE CHAIRMAN THOMADSEN: This is Bruce. Affirmative.

MEMBER SUH: This is John Suh. So, I'm

okay with the 60 days, as well, as long as there's a comment saying it's accompanied by some written explanation beyond 60 days, because there are some circumstances where patients do not show up within that 60-day period.

CHAIRMAN MALMUD: Thank you, Dr. Suh. Dr. Langhorst.

MEMBER LANGHORST: And I agree with my esteemed colleagues, and with Dr. Hagan on if they feel that 60 days is a workable time frame, I support that.

CHAIRMAN MALMUD: Thank you. So, we have another amendment to the motion, and that just changes the 90 days to 60 days with the other amendment still standing. May we move on that motion? I'll call for the vote of the Subcommittee. That's Dr. Welsh, Thomadsen, Suh, and Langhorst, affirmative on it?

MEMBER SUH: Affirmative.

VICE CHAIRMAN THOMADSEN: Affirmative.

CHAIRMAN MALMUD: Thank you. Is there any other action required on this Advisory Committee of Medical Uses of Isotopes Subcommittee? I think that otherwise it appears to be met with approval, and it represents an enormous amount of effort and discussion on the part of the Subcommittee, for which we are very

appreciative. Dr. Welsh, Dr. Langhorst, Dr. Suh, Dr. Thomadsen, thank you all very much, and for the input of the comments of those who participated in this conversation, in this discussion today, including members of the public and the NRC Staff.

Is there any other business that you wish us to engage in for this meeting? I'm asking that question --

VICE CHAIRMAN THOMADSEN: Dr. Malmud, this is Bruce Thomadsen.

CHAIRMAN MALMUD: Yes, Dr. Thomadsen.

VICE CHAIRMAN THOMADSEN: Would it be appropriate to have the ACMUI endorse the Subcommittee's report?

CHAIRMAN MALMUD: Yes, it has to be moved forward to the ACMUI before it goes to the NRC. Do we have a quorum of ACMUI?

MR. EINBERG: Dr. Malmud, Chris Einberg here. We have a couple of questions from the NRC Staff here before we move to take a vote on this. Dr. Howe?

DR. HOWE: Yes. I have a very basic question and comment. This particular definition for medical event is supposed to be activity-based. I see no mention of activity in this definition. And I've got three different kinds of medical events that we've

had in the past that I'm interested in whether you considered those and decided that they're not important any more. One would be the -- you order air kerma, you get millicuries, or you order millicuries and you get air kerma, so you get a different activity than what you ordered. So, I'm looking at the activity of the sources.

The second one would be whether you had decayed sources. And we had a particular case this past year where there were palladium sources that were ordered for a May procedure, the patient couldn't come in. They came in in June and the May seeds were inadvertently picked up instead of the June seeds and given. So, all the sources were where they were supposed to be, but they were nowhere near the activity they were supposed to be.

And the third one would be, if there's a mistake in filling the order, and we had that a number of years ago where the group filling the order mistook what was written and they sent in a much higher activity source than was ordered. But I see no discussion of whether there is a problem if the activity is not what was ordered. And I wondered if that should go into Item 3 of the definition.

CHAIRMAN MALMUD: Thank you for bringing

that to our attention, Dr. Howe. Dr. Welsh, do you care to deal with that?

MEMBER WELSH: Yes, I'd be happy to. Thank you. I would say that Dr. Howe brings up some very important points that we may have inadvertently omitted in Section 3 where we tried to incorporate everything by saying the wrong radionuclide. Maybe we should have specifically said wrong radionuclide, or wrong activity. We have wrong patient, wrong site, wrong body part, wrong modality or leaking sources, but if we also add somewhere wrong activity, then that would probably capture the events that you discussed, and complete Section 3 a little bit more than it is presently.

CHAIRMAN MALMUD: Thank you, Dr. Welsh. You just said under 3A preferring using the wrong -- prefer using the wording "using the wrong radionuclide, or wrong activity." Is that acceptable? And would that satisfy the concern that Dr. Howe correctly brings to us?

DR. HOWE: Do you have a level at which the wrong activity would be acceptable?

CHAIRMAN MALMUD: Dr. Welsh?

MEMBER WELSH: It would depend on the particular isotope, of course, so we wouldn't be able

to -- we would have to say plus or minus a certain percentage. And I would want to be consistent with previous statements and regulations in that regard.

CHAIRMAN MALMUD: In nuclear medicine we use plus or minus 10 percent. Is that acceptable in this case?

MEMBER WELSH: I think that plus or minus 10 percent would be acceptable in this case, yes. If it's more than 10 percent that is clearly the wrong activity, and should probably meet the definition of a medical event, because it would have been the wrong date, wrong activity sent, wrong order, and I think that it would be caught.

VICE CHAIRMAN THOMADSEN: The current guidelines are, I think, at 20 percent. Is that not the case, Dr. Howe?

DR. HOWE: At the current time, I don't believe we have an activity base.

VICE CHAIRMAN THOMADSEN: I think you do. When you talk about the dose as far as sources, it's actually in source strength, I think.

MEMBER WELSH: If the question at hand is, is it 10 percent or 20 from our perspective right here today, then I would vote in favor of 10 percent. If it's off by 10 percent or more, there's something

wrong. That's why I think it's important to discuss it right now.

CHAIRMAN MALMUD: Dr. Welsh, I spoke from the perspective of nuclear medicine. I was not suggesting that it be applied to radiation oncology, except if it's appropriate. So, the choice is up to the members of your Committee. The recommendation is that of your Committee, your Subcommittee.

MEMBER WELSH: So, I would ask Dr. Thomadsen, irrespective of whether there's something that says 20 percent now, would you concur that if the activity is off by 10 percent that something is wrong in terms of the activity or the date perhaps would catch it, or if it's the wrong order, is 10 percent strict enough to catch those kinds of situations?

VICE CHAIRMAN THOMADSEN: The problem with that is that if you put together all the possible uncertainties in source activity that you would be using in a patient, you could get to 10 percent quite easily. And I'll base that on the AAPM Task Group 138th Report, in which case that may be close to what we're actually operating at.

And I think that the usual number that's being used by most practitioners would be 20 percent would be an event, or would be appropriate for an

event. Plus or minus 10 percent is probably relatively normal.

MEMBER WELSH: So, then 20 percent might be a more appropriate figure if we're going to include a number. Anybody else on the Subcommittee have an opinion about this?

MEMBER LANGHORST: This is Sue Langhorst. I would agree with the 20 percent.

CHAIRMAN MALMUD: Thank you. Dr. Suh?

MEMBER SUH: Yes, I would also with the 20 percent. I think the 10 percent is probably too low of a number.

CHAIRMAN MALMUD: All right. So, the Committee recommends 20 percent. Dr. Howe, is that an acceptable recommendation to the NRC?

DR. HOWE: It's the Committee's recommendation. It's acceptable.

CHAIRMAN MALMUD: Thank you.

VICE CHAIRMAN THOMADSEN: And for the wording on that I would like to see it be either activity -- that the "activity or source strength".

CHAIRMAN MALMUD: So, you'd like 3A to read, "using the wrong radionuclides or wrong activity."

VICE CHAIRMAN THOMADSEN: "Or source

strength".

CHAIRMAN MALMUD: "Or source strength".

MEMBER WELSH: And then parentheses plus or minus 20 percent.

CHAIRMAN MALMUD: Plus or minus 20 percent.

MS. FAIROBENT: Dr. Malmud, it's Lynne Fairobent.

CHAIRMAN MALMUD: Yes?

MS. FAIROBENT: I would suggest that you make that activity and source strength a new item under 3, and not tie it to 3A.

VICE CHAIRMAN THOMADSEN: And I would agree with Ms. Fairobent on that one. I think it should be a separate item.

CHAIRMAN MALMUD: Which item would you like it to be?

MEMBER WELSH: B.

CHAIRMAN MALMUD: B. All right. So, that will be the new B, and then B through E will be moved down and made into C-F. Is that it?

MEMBER WELSH: Maybe it would be -- yes, so there be a total of F.

CHAIRMAN MALMUD: Yes.

MEMBER WELSH: A, B, C, D --

CHAIRMAN MALMUD: B will become C, C will

become D, D will become E, E will become F, and this will be the new B.

MEMBER WELSH: May I ask a practical question here? Ashley or somebody, is somebody getting all this down or is this going to be the Subcommittee's responsibility to include all these comments. I just want to know. I'm scribbling as fast as I can, but if somebody else is doing this.

CHAIRMAN MALMUD: Ashley, that question is to you, if you're with us.

MS. COCKERHAM: I'm writing it, and I can talk to you, Dr. Welsh, and make sure that the Subcommittee report is revised.

CHAIRMAN MALMUD: Thank you, Ashley.

MEMBER WELSH: Thank you.

MS. COCKERHAM: He's scribbling this, so we can compare our scribbles, please.

MR. EINBERG: This is Chris Einberg. The meeting is being transcribed, as well.

CHAIRMAN MALMUD: Oh, thank you. Chris tells us the meeting is being transcribed, as well.

Now, we have a motion with several changes, the last of which was to include the wrong activity or source strength plus or minus 20 percent as Item 3B, and making the appropriate changes below

that. Having heard the recommendation, the amendments, are all in favor?

(Chorus of ayes.)

CHAIRMAN MALMUD: Thank you. Now, we don't have a quorum of the ACMUI on this conference call, do we? Ashley?

MR. EINBERG: Yes, we do.

MS. COCKERHAM: Yes, we do.

MR. FULLER: You do, you have every one except -- every member except for one.

CHAIRMAN MALMUD: Okay. And that --

MS. COCKERHAM: Dr. Van Decker joined us.

CHAIRMAN MALMUD: Oh.

MR. FULLER: Yes, everybody is here.

CHAIRMAN MALMUD: Wonderful. May we take this motion from the Subcommittee to the full ACMUI for its approval? Would someone care to make that motion?

VICE CHAIRMAN THOMADSEN: I'd make it if nobody else. This is Bruce.

CHAIRMAN MALMUD: Thank you, Dr. Thomadsen. Is there a second?

PARTICIPANT: Seconded.

CHAIRMAN MALMUD: Thank you. So, the motion of the -- the proposal of the Subcommittee chaired by

Dr. Welsh is that we accept this as the recommendation with the approval of the full ACMUI. Any further discussion?

DR. ZELAC: Dr. Malmud?

CHAIRMAN MALMUD: Yes, Dr. Zelac?

DR. ZELAC: I have two very small items that I'd like to bring to the attention of the ACMUI for possible modification of the Subcommittee's report.

CHAIRMAN MALMUD: Please do.

DR. ZELAC: The first is in Section A, number 1(a)(i)reads currently, "greater than 20 percent of the sources fall out of the intended locations." My suggestion would be to change that to "more than 20 percent". Excuse me. That's not quite what I wanted to say. Change it to "greater than" -- change it to "20 percent or more".

In other words, it currently reads --

CHAIRMAN MALMUD: I understand.

DR. ZELAC: -- "greater than 20 percent". I would suggest changing it to "20 percent or more of the sources" simply for consistency with all of the other sections within 3045.

CHAIRMAN MALMUD: Thank you. Is that acceptable to Dr. Welsh?

MEMBER WELSH: To me, it is acceptable. Initially I had a greater than sign with the unth line which meant greater than or equal to, and then I didn't want to start a sentence out with a symbol so I put the words in, and omitted greater than or equal to. So, from my perspective that is fine. I'd like to be sure that others on the Subcommittee are also fine.

CHAIRMAN MALMUD: Drs. Langhorst, Suh, Thomadsen, is that agreeable with you?

VICE CHAIRMAN THOMADSEN: It's agreeable.

MEMBER SUH: Yes.

CHAIRMAN MALMUD: Thank you. All right. Your second suggestion, Dr. Zelac?

DR. ZELAC: Yes, I did. This is on page 2 under the section called "Terminology," and specifically the definition that's given of D-90.

CHAIRMAN MALMUD: Yes?

DR. ZELAC: I believe that to be correct the word "minimum" should be inserted between "the" and "dose." In other words, the definition would read "the minimum dose to 90 percent of the CTV."

CHAIRMAN MALMUD: Thank you for that. Is that agreeable with you, Dr. Welsh, and members of your Subcommittee?

MEMBER WELSH: I'm going to ask Bruce to comment on that. We have some discussion about minimum. I think that this would be okay. Bruce, is it okay with you to amend that definition slightly?

VICE CHAIRMAN THOMADSEN: That is okay. It doesn't really change it, because the D-90 is both the minimum dose, 90 percent of the CTV, and it is the dose to 90 percent of the CTV. So, I have no objection to inserting that.

CHAIRMAN MALMUD: Dr. Langhorst and Dr. Suh, do you agree?

MEMBER LANGHORST: I agree.

MEMBER SUH: Agree.

CHAIRMAN MALMUD: Thank you. So, we now have agreement. Do you have any other suggestions, Dr. Zelac?

DR. ZELAC: No, that is all.

CHAIRMAN MALMUD: Thank you. So, we now have the motion of the Subcommittee with the amendments approved by the Subcommittee before the full ACMUI, and any further discussion?

MR. FULLER: Dr. Malmud?

CHAIRMAN MALMUD: Yes. Who is this, please?

MR. FULLER: This is Mike Fuller with the

NRC. And I had a couple of things that I wanted to get clarification on, as well.

CHAIRMAN MALMUD: Please.

MR. FULLER: First of all, with the term "macroscopic," we heard Dr. Welsh say that the reason that was put in there was to insure that these definitions and recommendations do not apply to yttrium-90 microspheres. Is that the -- so, my question is, is that the only consideration or concern, or is there something other? Because what we're thinking of here as we try to draft a proposed rule is that there might be a more clear way of capturing that, or clarifying that. So, I just wanted to make sure that yttrium-90 microspheres issue, if that was the only thing that they were concerned about. And that's why they put "macroscopic" here.

CHAIRMAN MALMUD: If I recall correctly, our concern was that there will certainly be other microspheres besides yttrium coming along, and this was in anticipation of other products that will be introduced in the near future.

MR. FULLER: Okay. All right. Well, thank you for that. And, also, I had another comment; and that is, if you'll recall in April of this year, the ACMUI endorsed the ASTRO position. So, I want to just

make it clear that if -- when you get ready to endorse this -- or if, in fact, you endorse the Subcommittee report, now you will be on the record of actually endorsing two different positions. So, I would just ask that you make sure that in your remarks or whatever motion that you make that you clarify for us if it's one or the other, or both, or what have you.

CHAIRMAN MALMUD: Thank you. Dr. Welsh, do you wish to comment on that?

MEMBER WELSH: Yes, I'd like to comment on both of Mr. Fuller's points. First, the reason why we put the word "macroscopic" in was because there was some discussion surrounding the original version of our report that made it seem like it applied only to prostate. And we admit that the original report a couple of weeks ago looked an awful lot like a prostate only, or prostate specific definition. So, we tried to polish it to incorporate all forms of Permanent Implant Brachytherapy.

During the teleconference we realized that if we included microscopic permanent implant, such as radio immuno therapy, if it could be considered that, Y-90 or other isotope microsphere brachytherapy that we would have to really amend this. And we didn't want to go back to the drawing board once again.

We felt that the edits encompassed all forms of Permanent Implant Brachytherapy that are visible to the naked eye, and that's why we used the word "macroscopic" there. And it is intended to incorporate prostate, but also other forms of permanent implants with the exception of the ones that we mentioned, radio immuno therapy, microsphere brachytherapy.

The second point was regarding the ASTRO definition. And, yes, the ACMUI endorsed this a number of months back, but that was -- we have had a number of workshops and internal conversations, and meetings that have allowed us to refine the ASTRO definition. And I believe that our current Subcommittee report is not so much at odds with the ASTRO definition, but perhaps a refinement of the ASTRO definition that addresses some of the many, if not all of the caveats or concerns that came up with the ASTRO definition.

Therefore, it is reasonable for ACMUI to have endorsed the ASTRO definition a number of months back, but now to endorse this Subcommittee report which is a final more workable version of the ASTRO framework.

CHAIRMAN MALMUD: Thank you, Dr. Welsh.

Does that answer your question, Mr. Fuller?

MR. FULLER: Yes, it does. And thank you for that explanation.

CHAIRMAN MALMUD: Any other further discussion of the Subcommittee's motion before the full Committee? Are we willing to take a vote on it now?

DR. HAGAN: Dr. Malmud?

DR. HOWE: Dr. Malmud, I have just one clarification.

CHAIRMAN MALMUD: Who's speaking?

DR. HOWE: This is Dr. Howe.

CHAIRMAN MALMUD: Oh, Dr. Howe. Yes, please.

DR. HOWE: As I was reading through the document and the Written Directive Completion, it is once the patient is released from the Authorized User's control. That, to me, seems a little bit ambiguous. It seems like in the proposed rule we had something like the patient was released from the post recovery room. I wasn't sure at what point you release the patient from the Authorized User's control.

CHAIRMAN MALMUD: Thank you for the question. I'll address it to Dr. Welsh and the Committee. That's under B, Written Directive

Completion, the last sentence. Am I correct? Is that your concern, Dr. Howe?

DR. HOWE: Yes, it is.

CHAIRMAN MALMUD: Thank you. Dr. Welsh, Dr. Howe is addressing us to Item B, Written Directive Completion, the last sentence, which says, "the permanent implant procedure shall be considered complete once the patient is released from the Authorized User's control."

MEMBER WELSH: Yes, this is Dr. Welsh. That's a fair question. We didn't specify it right there in the suggested language, but we discuss it briefly in the discussion section, specifically on page 4 where -- the second paragraph from the bottom, beginning with, "Completion of the Written Directive after implantation." We mention that this time frame is consistent with other types of surgical procedures allowing the physician to complete the surgical documentation while the patient is in the surgical recovery area.

So, if we -- if the concern is that the present language saying that "released from Authorized User's control" is too vague, perhaps we could be more prescriptive and define for you what Authorized User's control truly is. And surgical recovery area is

something that is often recovery room, or perhaps discharged from the hospital, discharged from the clinic could be used.

MR. FULLER: Dr. Welsh, this is Mike Fuller. We appreciate that clarification, and I think we have what we need in the way it's written.

CHAIRMAN MALMUD: Thank you, Mr. Fuller. And, Dr. Howe, is that satisfactory?

DR. HOWE: Yes. I wasn't sure whether you were equating this particular type of surgery with the other kinds of surgery, but if you mean the surgical recovery area, that's clear.

CHAIRMAN MALMUD: Thank you. Thank you for bringing it to our attention. All in favor of -- any further discussion?

MR. KENT: Dr. Malmud?

CHAIRMAN MALMUD: Yes?

MR. KENT: This is John Kent. I would like to ask one question, one clarification on the new Item 3B.

CHAIRMAN MALMUD: Yes?

MR. KENT: That it state "greater than 20 percent of the activity or source strength prescribed" to tie it into the Written Directive.

CHAIRMAN MALMUD: 3B?

VICE CHAIRMAN THOMADSEN: That was what we added.

MR. KENT: That's what you added in order to address the fact that there was no criteria of using "incorrect" activity or source strength.

CHAIRMAN MALMUD: I'm sorry. Your suggestion was?

MR. KENT: That it state "greater than 20 percent of the activity or source strength prescribed," which ties it into the prewritten directive, what was ordered, what came in, what was assayed, et cetera.

CHAIRMAN MALMUD: Yes. Dr. Welsh, is that acceptable?

MEMBER WELSH: It's not the word "prescribed," perhaps "as called for in the pre-implant written directive", or in the -- "as called for in the Written Directive".

CHAIRMAN MALMUD: "As called for in the Written Directive".

(Simultaneous speech.)

MEMBER WELSH: -- prescribed in terms of source --

CHAIRMAN MALMUD: Yes.

MEMBER WELSH: But, yes, the concept is

valid and the point is well taken.

CHAIRMAN MALMUD: Thank you.

DR. ZELAC: Dr. Malmud?

CHAIRMAN MALMUD: Yes, Dr. Zelac?

DR. ZELAC: Yes. Currently, the pre-implantation portion of the Written Directive doesn't call for anything but the treatment site, the radionuclide, and the intended dose at the treatment site. There's no mention there currently of the total source strength to achieve that. However, the after implantation portion of the Written Directive does call for the total source strength, and in this case exposure time is superfluous, or the total dose. So, I think what we're really talking about is variance of 20 percent or more from the total source strength as specified in the Written Directive. And, of course, what portion is, in fact, the post-implant portion of the Written Directive.

MEMBER WELSH: Dr. Zelac is right and, yes, perhaps we -- I strike that phrase "pre-implant Written Directive." It opens up, of course, the whole other topic of should the pre-implant Written Directive state the activity. I don't want to open that conversation today, but to address the point at hand, it probably should say "Written Directive"

rather than "pre" or "post", or anything specified like that.

CHAIRMAN MALMUD: So, the wording will be just "Written Directive" without indicating pre or post, or anything else. Thank you. Any further comments? All in favor of the motion as amended and corrected?

(Chorus of ayes.)

CHAIRMAN MALMUD: Any abstentions? Any negative votes?

(No response.)

CHAIRMAN MALMUD: If not, it passes unanimously. And, once again, I want to thank the Subcommittee for an extraordinarily thorough job, and I know how difficult it must have been. And please accept our appreciation for it.

I believe that completes the business of -- am I correct, Ashley?

MS. COCKERHAM: It does for my end. Anyone else at headquarters?

MR. EINBERG: No, that completes it from our end also at NRC, and I'd like to thank the Subcommittee as well as the full Committee for the extraordinary work here and who do the work that went into this.

CHAIRMAN MALMUD: Thank you, Mike Fuller and Ashley, and all the other Staff from NRC. We did contain the meeting to less than two hours. Thank you.

(Whereupon, the proceedings went off the record at 1:53:34 p.m.)