

DR BERRY

I guess that if any of you haven't guessed yet you ought to realize that this is the "Disease-of-the-month" and it's RUBELLA. There is a publication called "The Disease of the Month" and rubella made the grade. We are in sort of a unique position dealing with a children's disease concerned with a manned spaceflight. I thought seriously about going into pediatrics, I feel like I've learned a lot about rubella in the last few days anyway. It's a much more complicated disease than I had thought in medical school and the years since. We're in a position we're looking at Charlie Duke and possible exposure. We're in the process of pinning that exposure down. We have some of the contacts and we have run blood in the laboratory and we'll have those results tonight which will help to pin it down, and we also have been running daily bloods on him to check his possible rise in antibody titer to get laboratory confirmation of what we clinically feel is no question about the diagnosis of rubella. As the symptoms have progressed, we are even more sure about that than we were before. Therefore, it's a matter of getting laboratory confirmation. I think that's what was in the last release that you had.

At the risk of boring some of you, I think I ought to try and tell you what happens with these antibody titers, because I'm not sure that it's clear what we're talking about all this time and it may sound like I'm lecturing a little bit here but I think it would help if you understood what we're really talking about. This test that we're doing is called a hemagglutination inhibition test and agglutination means that we clump or clot the red blood cells. The way this test is done is you mix some virus, some actual known virus of rubella with some red cells. When you do that, normally the red cells agglutinate or clump. If you then take some serum from an individual and mix that with this same system of red cells and virus, if there are antibodies in that person's serum, the actual rubella antibody, it will react with the virus and you will NOT agglutinate or clump the red blood cells. So that's Hemagglutination Inhibition. You normally do this with the serum as it is, and you do it with dilutions of the serum. You dilute these usually one to ten, one to twenty, one to forty, one to eighty, one to 160 and on up until one to 640. There is a series of dilutions in this manner so you can get this hemagglutination inhibition and that gives you an antibody level on that particular individual. The normal course of the disease for about 95% of the people who develop it, is that you will develop an antibody titer somewhere in three to six days after you have developed the rash. You have a zero antibody level up until that time, and then you get a marked increase in this antibody titer. We have had a zero antibody titer thus far in Charlie Duke,

DR BERRY and that's not unusual, we expect that. Now what we're looking for, for this laboratory confirmation is this rise in titer. We're looking for that point where this titer goes up. That's what we're trying to follow at the present time. That positive confirmation is something that's important to us here because our decision has to be based upon the fact that, yes indeed, we are dealing with rubella and we'd like to have the laboratory confirmation of that. We feel very secure about that clinically. We also would match that with the fact that Ken Mattingly is indeed without any antibodies to this particular virus. And mixing those two we have to assume from what we know about the disease, that the chances of him getting this disease are very, very high indeed. It's a virus that is highly passable, in fact control studies have been run where you can just have someone with the virus cough in a room and you can walk through the room and that casual type of an exposure can give it to you if you are indeed serologically negative or without immunity.

That is the kind of a decision then that we have to make. We're awaiting these results. We have done these in our own laboratory at Houston, we have confirmed the laboratories at the Communicable Disease Center, and then today, because of the fact that where yesterday we thought that we had a situation where we had definite immunity in Jim Lovell, we had apparently no immunity in either of the other two crewmen at F-30 days, and then at F-5 days, the samples that were taken on Monday, it appeared that both of these individuals had some immunity level. This was very heartening to us and it could have meant one of two things because I told you that 95% of the people that get the disease don't develop the titer until some 3 to 6 days after the rash, but here's always 5% that never get the word, and they end up getting titer prior to the time that their rash developed. So they could have been in either one of these groups, they could be just getting a titer, they could have been in that 5%, statistically that would have been unlikely, but they could have, and they would have been ready to develop the disease or they could be in a group where they had a sub-clinical infection and thus were immune. A second titer would show us that. When we got these second titers and we went back and ran some F-14 titers, which we had not been able to run yet, we found a discrepancy in the results that came out. The discrepancy was the same in both laboratories and it was due to the transfer of the blood in the tubes at Houston after they arrived in the laboratory the samples were separated, so when we re-ran all these last night with new bloods taken last night, what we have in actuality then is Haise having immunity, which he has had apparently from the beginning, and Mattingly with no immunity. We then have

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DR BERRY spent much of today on a series of phone calls with the best people in this area, in the country, and in talking with these people, we decided that what we would do would be make some further checks...

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...in actuality then, is Haise having an immunity, which he has had, apparently, from the beginning, Lovell having immunity and Mattingly having no immunity, that we can show in this test. So, as a result of that, we then have spent much of today, I have on various series of telephone calls with the best people in this area in the country, and in talking to these people, in particular with people at National Institutes of Health, we decided that what we would do was to do some further checks, and particularly to do some different techniques, just as another last resort type thing, which I think is indicated. We would also fly some of the serum up there, which we did from Houston today, the serum that we had already run, and we also then are flying tonight some of the serum that we have drawn tonight, up to N.I.H., as well as to Houston, and that will be on the road very shortly. So, we will have these results then to help us in this regard. So I think I maybe ought to stop there and let you ask...I'm sure you have some specific things you want to know and it probably might be better than trying to go on and on with details.

KING Mr Mueller.

QUERY The way you're talking, Chuck, you sound like medically you have "grounded" Mattingly.

BERRY Well, I think that I'm in the position, Red, where it's difficult to arrive at any other conclusion at the moment, from my clinical feelings, that he does not have a very high chance of getting this disease. And, with that sort of a position, I think the recommendation would have to be that he not fly and I think that's what we've indicated in the release that came out earlier today. Now, we're waiting confirmation, and that's the thing that could happen, of course, and I think, as I've indicated, the chances of that are very slim, but the thing that could happen is that we could not get a Titer increase on Charlie Duke, and if that should happen, well then it could indeed be one of these Echo Viruses, or it could even be a (garble) but, which could produce this type of an illness that he has, although I think the chances of that, as I've indicated, are very slim.

QUERY I came in late on these briefings, but could he fly if he has an Echo Virus?

BERRY We did make a decision today that, should we have the, should we determine that we had no Titer, and it was the Echo Virus, then we would probably, we made the decision that we would allow him to fly on the basis that, not just the fact that it's difficult to pin this down, which it is from a laboratory point of view. but the fact that the symptoms are widely variant, and it's a much harder virus, much harder disease to transmit, than is the Rubella. And on that basis, we made a decision that we would fly him if it turned out that way.

QUERY I presume that Swigert has been tested thoroughly?

BERRY Yes he has, and he is immune.

QUERY Can I just follow this up, on the assumption that Mattingly is grounded, what happened to the Medical Safety rule that crews have to have forty-eight hours rest before lift-off?

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BERRY Come again, forty-eight hours what?

QUERY Rest...(garble).

BERRY Well, we're at the moment, we're assessing, the Crew Training people are assessing what the situation is here. And, it isn't that you have forty-eight hours of absolutely doing nothing, Merrill, it's the fact that you want to be sure that they get adequate rest as far as sleep at night, and that they don't get pushed with long working days and so forth. I think the situation here is that this is a very tight thing here, should we consider this kind of a switch, and as was indicated in the release, I think it's up to our training people to determine whether they, that's really a feasible thing, and that hasn't been decided, and it requires a lot of determination, still.

KING Go ahead, Jules.

QUERY Dr., if you were summing up the options, at this point, and the factors that go into a decision medically and otherwise, how would you think it might go tomorrow and Friday?

BERRY Well, the options that there are are really, you are pretty limited. You have an option to, one, if we get this increase in Titer, which I'd say I expect, then it would mean that I would say that Mattingly should not fly, and you have an option to do one of two things. You have an option to scrub, and go for the May launch, or you have an option, a second option, which would say that you could look at the situation of crew mixing, and those were the things as it's obvious, from the release, that we did get into this afternoon. This second option is being looked at, as a new type of an option, that we don't know how realistic that is now.

QUERY When do you think a hard decision will be made, one way or the other?

BERRY Friday morning.

KING Ev, did you have a question back there?

QUERY Chuck, when do you expect the final tests that will in effect definitely ground Mattingly? Can you give us any time on that?

BERRY Well, see it depends really on when this Titer goes up, you know, as I've indicated, there are some variants in here. We are getting a Titer on him tonight, we will have another one tomorrow, we'll get two tonight as a matter of fact, we'll get one from Houston and one from N.I.H., because we're one run at N.I.H. also. And should that show an increase, okay, we'll know pretty quickly. We also will have the results of the studies on the contacts, or the supposed contacts, and should that prove to be Rubella, I think that's another link in the chain that says, yeah, that's what we're faced with.

QUERY Most of this should happen tonight then, before tomorrow morning?

BERRY Well, I sort of lost track of the hours in the last few days, I don't know really if it's night or morning, but we do have some reports that are, it takes several hours to run these tests, by the time you get things set up it takes an eight hour run, roughly, so we will have some results coming in during the night and during the early part of tomorrow.

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So, we'll have some of those to look at, now it could be that they are going to be, in Duke's case, they may be zero again, and that still wouldn't give us a final answer. Certainly, by and so, we've got one drawn tomorrow morning, which we'll then get tomorrow night, and then if that isn't, we've still got another that we can draw. But, I think things are getting pretty binding by the time we get down to Friday morning.

OUERY Do you have any idea where Duke picked this thing up?

BERRY Yes, we do have an idea. He has an idea, and as I've mentioned, we had some idea of a contact that he felt, in retrospect, when we went back and delved deeply into his thinking, what might have happened, and there was an exposure to a family that had some children that have had a Measles-like disease, and these are the people that are being investigated in our laboratories at Houston, now, and we may confirm that.

KING Al?

QUERY I believe, a few missions ago, some one on NASA, or in NASA said that the back-up crew in the last couple of weeks before a flight, was not able to keep up with all the details that the prime crew had to go through. Is this indeed the case now, and if so, to what extent is that influencing the possible selection of Swigert?

BERRY Well, that's not really my question, I think you ought to give that to the training people, because I'm not the training man. I'll talk to you medically but...

KING We will have Deke Slayton, or one of his representatives at the Pre-Launch Briefing, which is on Friday afternoon, perhaps there'll be something before that. There certainly will be somebody within the next day or so, to provide an answer for you. I think, the tone of the question has been a couple of ways on it, I think however it is obvious that some real-time decisions are being made.

BERRY I think one thing you have to realize too, is that we're in a different launch frame than we were previously, you know we're trying about six-month centers, as we're...

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QUERY - because it is obvious that some real-time decisions are being made.

BERRY I think one thing you have to realize, too, we're in a different launch frame than we were previously, when we got - we're talking about six month centers, we're dealing with here four and six month centers. and that's a different kind of a ball game you're playing, too. I'm sure Deke will tell you.

QUERY How does Mattingly take all this?

BERRY I'm sorry, I didn't hear that.

QUERY How does Mattingly take all of this?

BERRY Well, I have had a long talk with Ken just this evening and he obviously is disappointed, somewhat depressed about it, the possibilities here. I think at the same time, he's been extremely understanding because we've gone through in some detail all of the technical aspects of the things we've used in coming to these conclusions. He's well aware of these and he's most understanding of them, and very philosophical about it.

KING Over here. Did you have a question?

QUERY Dr. Berry, some officials at the National Communicable Disease Center have said that it's questionable what you can learn from analyzing serum for antibody content. Some of them have said that even if we do discover certain quantities of antibodies, we can't tell if a person had German measles twenty years ago, twenty days ago, is having a case right now, or is about to come down. How do you react to that?

BERRY Well, I think that's probably a fair statement. You can't say when someone got the antibody. As I told you yesterday, for instance, if you had a null titer, in short, you have no antibodies, and then you get antibodies. then you can certainly say at that - and that's the situation that we thought we were in yesterday, as a matter of fact. You know, where we had had a zero titer at thirty days and then we had a positive titer at F minus 5 days. Now, that would tell us one of two things, all we could say about that is you could be either - you could have had a subclinical case, because they had no evidence of having had the disease other than that there was an - there was one time when they had, just prior to F minus 14 they had had a little bit of aching and some soreness in their throats for a day, just prior to the F minus 14 day exam. And it's the kind of thing that happens to everybody and it was insignificant, but we've combed even insignificancies in the last several days, and that could have passed as a subclinical case. In short, it didn't produce clinical symptoms, but it could have given them immunity. Now, well that hasn't turned out to be the case. I don't think those are common, I don't think subclinical cases are common in this disease. The experts don't think they are either.

QUERY Chuck, are there going to be new medical rules as an outgrowth of this episode, and is the medical requirement you stated that crews be as totally isolated as possible from T minus 21 days on to launch, are those rules going to be enforced after this?

BERRY Well, I think that what we are doing, certainly, is that we're looking very carefully at what we should be doing with a preventive medicine program and with the plan that's been laid out and certainly a lot of close looks are being taken because of what has gone on this time. Now, I think it's also fair to say that while we have stated that for a 21-day period preflight there were a lot of things that should occur, if you look at the documentation in some of these things you find that there are - you know. we haven't strictly stated you're locked up in this area sort of thing. We have had a lot of loopholes in that sort of thing, because we've felt it was very difficult to do the mission without some of these loopholes. Now, even these loopholes are being looked at, and I'm sure they will be, because we have to consider this. No one would ever have thought - for instance, we're quite concerned about our immunization program, the things that we do. You can't immunize for everything in the world, no one would have thought for an adult population, an adult male population, certainly, you would even consider immunizing for rubella. But I certainly would consider immunizing our population for rubella if they have no antibody level now. And that's the sort of thing we're going to look at, too.

KING Okay, Houston, we're ready for questions from you now, please.

QUERY Dr. Berry, you mentioned that if Charlie Duke develops no titer, then you might let Ken fly. You also said that Duke should develop that titer within 3 to 6 days. He first showed symptoms on Friday or Saturday evening, which means that Apollo 13 could be on its way - (background conversation)

KING How was that? Can Houston read us? Okay. Houston, if you can read us we're ready for questions from you now, please.

QUERY Dr. Berry, you said that if Charlie Duke does not develop a titer, it might indicate that he has an echo virus or some other virus than rubella and Ken Mattingly could fly. You also said that Duke should develop that titer within 3 to 6 days from the time that the rash developed. If I count right, six days from the time the rash developed would be some time Saturday night, which would put Apollo 13 on the way to the moon. Does that not mean that for all practical purposes Ken Mattingly is grounded whether Duke does or does not develop a titer?

KING Houston, you can come up with your questions.

KING                    We can go a quarter of a million miles to the moon, but the few thousand miles to Houston seems to be a problem.

KING                    Just a few minutes here, we'll see if we can get through, and if not we'll -

QUERY                    While we're waiting, perhaps we can have a few more questions here. How is that word titer spelled, and what is it?

BERRY                    It's spelled two ways, t-i-t-e-r or t-i-t-r-e, depending on whether you're British or not, I guess. You see it both ways in the literature and in the dictionary. Well, you actually are literally by these dilutions you are titrating, in other effects you are titrating the amount of antibodies to get a given level. Okay? Does that make sense to you? In effect you're mixing on acid and a base and you're putting them in a pipette or a tubular and you mix them until you get the color of litmus or an indicator of some sort that could change when you have them exactly balanced. Okay? Now, that's the kind of thing that you're doing here with this sort of a test. By this system, you have red cells which you can see, you've all seen, I'm sure, some red cells in a solution, in a water solution. It would be like putting a bit of blood, if you will, in a liquid solution, and then you mix some of the virus with that material. Now, what that will do, instead of being clear it will clump, it will form little clumps, it'll clot the red blood cells. Instead of being single cells, now they all coalesce, they come together in a clump, a little knot of red blood cells, and sort of fall to the bottom of the tube. Now, that's what the virus does by itself. Now, if you have antibodies in there, that reacts with the virus and prevents the virus from doing that to the red blood cells, and therefore they do not clump or fall to the bottom of the tube. Okay? And that's what you keep doing, and you find out how far you can dilute that and still prevent that clumping. In fact the name of the test - the name of the antibody was taken - the antibody was actually named from this test. It's called a hemagglutination inhibition test, so the antibody has been called the H. I. antibody for rubella. It was named from the test.

KING                    I'm now informed, we regret, that a microwave tower -

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BERRY - Hemagglutination Inhibition Test, and so the antibody has been called the HI antibody for rubella. It was named from the test.

KING I am now informed, we regret, that a microwave tower is out somewhere along the line, so, if Houston is not going to be able to get to us why don't yours, the final question here Ed. Go ahead.

QUERY (Garbled) - Dr. Berry, but if you're going to start this training or test with Swigert tomorrow doesn't that take Mattingly out of the final training program if Swigert is going to be working with Lovell and Haise?

KING I think we'll get a full run-down tomorrow morning, but from the information we had this afternoon it's obvious that Swigert is going to be between Lovell and Haise tomorrow, and I don't know at this time exactly what Mattingly is going to be - what his duties are going to be tomorrow. I'm sure we'll find out first thing in the morning and we'll be glad to pass it on to you. I don't have anything on that now Ed, and I don't know whether anything has been determined on that right now, but it is obvious from the information we have now that Swigert is going to be sitting in tomorrow.

QUERY I have another question. Are you going to keep the News Center open tonight for whatever results come through on these tests.

KING Well, we hadn't planned to. A schedule had been 7 to 7 with - I'd like to try and close about 10 o'clock tonight. We haven't had the man-power to go around the clock tonight. We don't think there will be anything coming up. If there is, we'll do our best to try, in addition to the public address system, to try and reach every motel and get any word out that we possibly can. Let us look into that and we'll see. I think we're going to have to see how the decision-making process goes and everything else and most certainly I think when a decision is made in whatever manner it is we certainly will try to make the people involved in the decision available.

BERRY Ed, I'm not sure that that - I was serious when I said I don't know that we'll have that made really until Friday morning because of things that are going on here, but I mean there are a lot of things that have to be done to really come up with that kind of a decision and I'm not sure it can be made until as late as Friday morning. And also I don't know whether it would be, I'm not sure whether it would really clear the water or muddy it more to try talk in depth before we get to that decision point. Now, if something may happen by tomorrow that it will be clear, you know, in the afternoon or something, and we'll know. If they did I think it would be worthwhile. If it wasn't, I'm not sure it would.

KING We'll surely look into it Ed and let us check

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KING that out also. So if we may, we'll be, Western Union I think, will be in operation in the building 'til about midnight. On our tape recorder phone we will have a duty officer identified, in case any questions come up, and we'll be reopening at 6:30 tomorrow morning unless there is any type of activity that occurs during the night that would change any status that has been reported to you up to this time. Thank you very much.

END OF TAPE