at

1 after that.

2 Diet restriction is also decreasing over the time

3 period until up to 36 months, and opening is increasing

4 again up to approximately 12 months, and then it is stable.

5 [Slide.]

6 There is also prospective study, but it is

7 incomplete. I wouldn't give too much weight for this, but

8 it cannot be ignored because the number of patients is

9 approximately 90 or 100, so I wouldn't like to ignore it

10 completely. You observe back again in the sample the pain

11 level is decreasing up to approximately 12 months, and it

12 looks like it is stable after that. Diet restriction is

13 decreasing again up to approximately 12 months, and

14 remaining stable after that, and opening, there is a little

15 bit of puzzle. Opening, there is no significant improvement

16 in the opening as you can see from the numbers there. There

17 is no significant opening in the prospective row in the

18 study, but it is incomplete and I don't regard it as

19 important as the cohort study from the registry.

20 My final comment, judging from the data on Cohort

21 1 and Cohort 2, pain and diet restriction seem to go down

22 after the implant, and opening increases up to 12 months and

23 then stabilizes. This is true also for metallic condyle

24 patients, PMMA condyle patients, and patient-specific

25 prosthesis.

at

1 From the interim analysis in the prospective
2 study, pain and diet restriction decreased up to 12 months,
3 but opening remains the same.
4 Thank you.
5 DR. JANOSKY: Are there any panel questions for
6 Dr. Runner, Dr. Ponnapalli, or Ms. Blackwell? Dr. Li.
7 DR. LI: I would like to ask Ms. Blackwell, did
8 you also look at the retrieval wear patterns compared to the
9 wear test wear patterns? There were some photos in my
10 review packet, but they were like xerox copies of photos.
11 MS. BLACKWELL: I also had the xeroxes, and so I
12 wasn't really able to tell enough to analyze it. So, that
13 would be interesting, but I couldn't tell, and there are
14 different patterns apparently for the different condyle
15 types. So, that would make things even more complex.
16 DR. JANOSKY: Dr. Patters.
17 DR. PATTERS: Mark Patters for Ms. Blackwell.
18 Do you believe that there is a fundamental
19 engineering difference between the patient-specific implants
20 and the presized implant that would require separate
21 testing?
22 MS. BLACKWELL: Yes, there is a difference. Most
23 of the patient-specific ones are wider at the bottom, so the
24 loading will be different, but that doesn't necessarily mean
25 that patient-specific would be worse. It could be better

at

1 because it is bigger. But they need to perform some type of
2 justification to engineeringwise to show that the worst case
3 would not include the patient-specific.
4 DR. PATTERS: Thank you.
5 DR. JANOSKY: I have a question for Dr.
6 Ponnapalli. If I take a look at the two overheads that you
7 had presented, the first one being Cohort 1-pain, the second
8 one being Cohort 2-pain, is the Cohort 2-pain, if I look at
9 the means for the Cohort 2-pain compared to the cross-
10 sectional mean, it seems to me that the means for n equals
11 60 are uniformly lower for pain, most likely not
12 statistically lower, but I see a lesser number.
13 If I take a look at your Cohort 2 for opening, and
14 again if I take a look at the mean for Cohort 2 and your n
15 of 55, and I look at the cross-sectional mean, if I do that
16 comparison again, I see that the opening for the Cohort 2 is
17 again across the board larger or higher number than for the
18 cross-sectional mean.
19 Given those two pieces of information, do you have
20 any other information or could you address the issue that
21 the patients that continue, so the patients in these two
22 cohorts that have up to 3 years of data are different than
23 patients that do not continue.
24 That is an issue that we were dealing with
25 previously and it is one that sort of is within this same

at

1 data set in multiple studies, that I wanted to get some
2 clarification about.
3 DR. PONNAPALLI: As I said yesterday, there are
4 problems in comparing the means of a subset and the whole
5 population, as you know, but from the sample data you made
6 an important observation, that for pain, in the subset of 60
7 patients, the mean is almost consistently lower from the
8 whole population, and for the opening it is consistently
9 higher. I have no explanation for this, and I cannot
10 perform a statistical test.
11 DR. JANOSKY: I am just asking based on that, it
12 appears to me--what it's played out or not we haven't
13 analyzed it, and I am assuming that the sponsor has not
14 analyzed it--is that the patients that continue are starting
15 with less pain, starting with a wider opening, and then they
16 are being consistent across time compared to the cross-
17 sectional patients.
18 MS. BLACKWELL: Dr. Janosky, it was also of
19 interest to us to know how many of the patients in the two
20 cohorts for pain and opening were which type of implant,
21 because that could also give us the reason for why the pain
22 was lower on average. You know, if out of 60, 40 of them
23 were one type, that distribution could be important.
24 DR. JANOSKY: You don't present that information.
25 MS. BLACKWELL: We don't have that information,

at

1 no.

2 DR. JANOSKY: Oh, you don't have that information.

3 MS. BLACKWELl: That was one of the items we were

4 missing.

5 DR. JANOSKY: I am very interested in this group

6 because that seems to me that the ones that have the most

7 complete data, and perhaps that would give us some

8 information about at least two to three years effectiveness.

9 DR. JANOSKY: Dr. Burton.

10 DR. BURTON: Dr. Ponnapalli, do you have a feeling

11 when you look at the data on the prospective study, when

12 you get out to 18 months, there is only 9, that has an n of

13 9 for pain and diet, is that because of the fact that it is

14 prospective, only been going on for a period of time, so

15 there is only nine.

16 How many does that 9 represent out of the total

17 enrolled that could reach 18 months, because they have a

18 very, very high dropout rate in their other groupings prior

19 to that, and they continue out to about usually less than 30

20 or 40 percent at about 18 months, and by the time you hit

21 36, they are all down around anywhere from 4 to 8 percent,

22 but do we have a feeling for, in the prospective study now,

23 what percentage they are retaining as they start to reach

24 some of these milestones?

25 MS. BLACKWELL: I don't think we have that

at

1 information.

2 DR. BURTON: I am just trying to get a feeling, if

3 the prospective study is going to be able to get that.

4 DR. PONNAPALLI: No, we don't.

5 MS. BLACKWELL: The prospective study is not under

6 IDE or was not reviewed by us prior to submission in the

7 PMA, so we are not really sure how many patients are going

8 to be in there. I think it was 180 or so, but that wasn't

9 real clear. It also didn't stratify between, as far as out

10 the number of 180, how many of which devices.

11 DR. RUNNER: Possibly the sponsor could answer

12 that question.

13 DR. BURTON: Could you give us any idea of how

14 many patients you have, what your dropout rate is in the

15 prospective study now as you start to reach 12 and 18 months

16 where, again out of your n of 95, you have 28 and 9, is that

17 because there are only a small number of patients who have

18 reached those milestones, and you have basically a large

19 number still remaining that are being followed or have you

20 already had high losses?

21 MR. ALBRECHT: To answer the first question, the

22 number of patients we expect is 138 patients total with 62

23 being partial strata and 76 being of the total strata. The

24 data presented in the PMA is presented up on the slide. The

25 FDA did indicate that we were allowed to update those

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1 patients that we presented in the PMA with a little bit
2 longer term data for our presentation today, and that is the
3 data that I presented.
4 Percentage dropout, I think is small at this
5 point. We did allow for that in our sample size
6 calculation. I cannot tell you specifically the percentage
7 of dropout at this point, but those numbers out at 12 and 18
8 months are somewhat higher than what is originally reported
9 in the PMA submitted in January.
10 DR. BURTON: Thank you.
11 MS. BLACKWELL: I have a question for you. If you
12 have 70-something patients and you are splitting that
13 between three different models of total, how are you going
14 to get a statistically significant number for each?
15 MR. ALBRECHT: We will have to analyze the data
16 when we finish the study and see, and it is possible if we
17 don't have statistical significance at that point, we may
18 have to expand the study.
19 DR. JANOSKY: Additional questions for FDA?
20 Dr. Bertrand.
21 DR. BERTRAND: Can I address a question to the
22 sponsor?
23 In the prospective study, the initial openings are
24 rather good, at 31.5 mm, and they don't seem to increase,
25 and according to some information, maybe 70 percent of those

at

1 patients only had a fossa implant.

2 In this particular group of patients, how is it

3 determined that the joints themselves are actually the pain

4 sources before the surgery was started, initiated? What

5 diagnostic criteria for the fact that it was actually the

6 joint was the pain source?

7 MR. ALBRECHT: We did have specific

8 inclusion/exclusion criteria to be included in the study.

9 Patients were enrolled if they had a pain greater than or

10 equal to 4 and/or opening less than or equal to 15

11 preoperatively at their baseline.

12 They also needed to have one of a variety of

13 different other joint problems that the physician had to

14 look at, and if the patient had that problem, they were

15 included in the study.

16 As far as how the physician diagnosed that, I

17 cannot answer that question. I am not a physician.

18 DR. BERTRAND: So, we don't know if we have, say,

19 an auriculotemporal nerve block done to anesthetize most of

20 the joint to see if nose resection towards the brain had an

21 impact on the patient's level of discomfort. That is not

22 part of the diagnostic criteria then?

23 MR. ALBRECHT: That was not part of the inclusion

24 criteria for the study.

25 DR. BERTRAND: But many of these patients, if they

at

1 had a fossa implant only, were a substantial number of these
2 patients first-time surgeries, is that my understanding, a
3 third of them?
4 MR. ALBRECHT: Approximately a third of them
5 probably are first-time surgeries, yes.
6 DR. JANOSKY: Dr. Gonzales.
7 DR. GONZALES: Just a follow-up on what Dr.
8 Bertrand said. The patients who preoperatively are being
9 evaluated, and specifically those patients with a great deal
10 of pain, somatic pain, pain in the joint, we would
11 anticipate that a pathological joint, which is reviewed for
12 somatic pain, pain from the structure itself, would improve
13 with removal of the joint, but there is a subset of patients
14 who have neuropathic pain, pain from the nerve itself,
15 where, in fact, doing procedures on those individuals is
16 contraindicated because you can actually make them worse,
17 you turn a neuropathic pain condition into a condition
18 called anesthesia dolorosa or a number of worsening
19 neuropathic pain states.
20 I think it is important to get some information
21 about the kind of pain these patients have, and I really
22 haven't heard a lot about the characterization of the pain
23 other than a pain scale is filled out, and that pain could
24 be their average pain for the prior month or at the time.
25 It is very difficult, and I know it is very, very

at

1 difficult to do adequate pain studies because you have an
2 enormous number of factors with these patients. You have
3 the psychological factors that you have premorbid or post
4 the implant that can occur with the patient who has
5 sustained pain.
6 You have all of these issues about the changing of
7 the pain and how it alters and it modifies, and its
8 incident, but I think you could narrow it down to some very,
9 very simple straightforward questions or details about the
10 quality of pain to at least find out if there is a
11 neuropathic, and it is fairly simple, straightforward to ask
12 about is there a burning quality, not just is the pain right
13 here or that it hurts when it moves, but is there a burning
14 quality, is there dysesthesias, does it move, is the pain,
15 is it hyperalgesic, is it displaced pain, is there a
16 shooting, stabbing, lancinating pain.
17 There are questions that can be asked that will
18 characterize that, because I think my concern is that for
19 whatever the number may be of patients who have neuropathic
20 pain, those patients should not have any kind of procedure,
21 and that goes for everything in terms of you are talking
22 about procedures for nerve root compression in the lumbar
23 spine or cervical compression or peripheral nerve
24 compressions elsewhere, in other parts of the body.
25 So, I think that one concern I have is that there

at

1 isn't enough information about just the quality of pain.
2 Again, that could be characterized I think very easily with
3 some statements at the time that the questionnaire, if that
4 is what you have and what you have going on here, is some
5 questions about the quality of pain.
6 Again, that could be characterized I think very
7 easily with some statements at the time that the
8 questionnaire, if that is what you have and what you have
9 going on here, is some questions about the quality of pain
10 in addition to is the fact that it hurts there in the joint.
11 So, I don't know that that was, in fact, not
12 having seen all the details of the questionnaire, but were
13 questions like that ever posed, and what are the concerns by
14 the company of neuropathic pain and replacing joints and
15 operating on those individuals?
16 MR. ALBRECHT: You make a very valid point. Pain
17 is a difficult symptom to address and to understand with
18 patients. We are trying to characterize at least the
19 patient with the study. We are obtaining medical history,
20 previous medical history before they are even enrolled in
21 the study. I am talking about the prospective study now.
22 We will hope to have some idea of what type of
23 problem the patients had, their previous medical history,
24 how many surgeries, how many insults to their joint they
25 have had prior to entering the study, and therefore,

at

1 hopefully, have some sense of an understanding of what kind
2 of pain they are having.
3 I cannot answer or address your concerns with
4 regard to neuropathic pain, and so forth, and how the
5 physician and the patient interact when they discuss that.
6 All I can say is that when we instituted the study, the
7 patients are given the VAS scales to fill out, and they
8 should be instructed by the physician to give me your
9 average pain over the past month or if you are really
10 feeling bad now, please mark it on this scale.
11 If you would like further information, maybe Dr.
12 Curry could add some light onto how he deals with his
13 patients, and so forth.
14 DR. CURRY: I am a participant in the prospective
15 study, and I can only speak for my own practice. We have
16 the same exact concerns that you do, but even beyond that,
17 if you do an auriculotemporal nerve block, that alone won't
18 really isolate the pain. If we lucky enough to be able to
19 inject the joint directly and miss the auriculotemporal
20 nerve, the anesthetic is nonselective in terms of whether it
21 anesthetizes the fossa component of the joint, the
22 mandibular condylar component of the joint or the soft
23 tissues that are in between those two structures.
24 So, we have, as clinicians, a very, very difficult
25 time sometimes characterizing the pain that you have

at

1 described, and we make every effort to try and isolate the
2 source of the patient's main complaint as relates to pain,
3 and sometimes that is exceedingly difficult.
4 DR. JANOSKY: Additional questions for FDA? Dr.
5 Patters.
6 DR. PATTERS: Could I address the sponsors? Thank
7 you.
8 From what I understand, there seems to be a
9 fundamental disagreement between FDA staff and the sponsors
10 as to how both the engineering data and the clinical data
11 need to be presented. FDA staff makes a strong argument
12 that you need to break the engineering data down and test
13 the individual configurations, and you need to treat the
14 clinical data based on the configuration.
15 You apparently disagree. I think I understand
16 FDA's rationale. I would like to hear what your rationale
17 is for not breaking them down into individual
18 configurations.
19 MR. MORGAN: Jim Morgan. I can address some of
20 that, and then I may ask some assistance from my colleagues.
21 It seems that some of FDA's concern is the
22 breakout of the information and the presentation of it from
23 a clinical standpoint, as you say. I believe in our
24 presentation, we saw that we did break out fossa-only, and
25 then total joints with PMMA heads and total joints with

at

1 metal heads, and then I believe we also broke out patient-
2 specific, and those are the four.
3 If necessary, we would be glad to set up again and
4 show those slides. In fact, I believe that even Dr.
5 Ponnapalli in his analysis pointed out metal-on-metal, PMMA,
6 and patient-specific, so we think we did satisfy what the
7 FDA was interested in.
8 In terms of the nonclinical testing, we admit that
9 we did not do, for example, fatigue testing at very high
10 levels. What we chose to do was physiologic testing, which
11 I believe that Mr. Lippincott addressed, and we can go into
12 detail again, and would be glad to do that.
13 I think we disagree on relative to nonclinical
14 testing is the definition of a failure on a PMMA head. Our
15 design is such that within the PMMA head, we have a post,
16 the tip of which is highly polished, as polished as that on
17 the metal-on-metal head, so that should the PMMA wear down
18 to the post, the post, along with the residual PMMA, which
19 by that time has conformed at least partially to the form of
20 the fossa, can articulate and help bear the load.
21 So, we do not consider wear of the PMMA head to
22 the metal as a failure. The device will continue to
23 function and to articulate.
24 If there are specific questions, I would be glad
25 to try and answer them or defer to my colleagues.

at

1 DR. JANOSKY: Additional questions for FDA? Dr.
2 Skinner.
3 DR. SKINNER: No.
4 DR. JANOSKY: Additional questions for FDA? Dr.
5 Floyd.
6 DR. FLOYD: I have got a couple of questions.
7 Maybe I misunderstood, but I almost thought I heard in Ms.
8 Blackwell's presentation, she raised a question about the
9 design of the joint, and suggested that it should be more
10 like other orthopedic joints.
11 TM joint is a very unusual joint. It must not be
12 locked in a lateral direction. It has to rotate.
13 Otherwise, the function that we are trying to restore in the
14 patient couldn't exist.
15 The other thing that surprised me a little bit was
16 the question about wear on a fossa implant only, because if
17 I understand what is being done clinically here, not on new
18 surgery obviously, but if I understand what is being done
19 clinically here, we are talking a fossa implant being done
20 if there is a healthy intact condylar head.
21 Now, if there is an intact healthy condylar head,
22 it has got to be covered with cartilage, and if it is
23 covered with cartilage, firstoff, it is a soft, compressible
24 material that, under compression, exudes long-straying
25 lubricating materials, and I really have difficulty

at

1 understanding why there is ever a question about that kind
2 of surface wearing through a metal implant.
3 DR. JANOSKY: Ms. Blackwell, would you like to
4 respond?
5 MS. BLACKWELL: The question with the fossa was
6 not for the fossa, it was for the condyle. We have reports
7 of the top of the condyle being destroyed by the fossa-
8 eminence. Those are telephone reports only. So, we were
9 requesting information, you know, validation whether that is
10 true or not, but that issue wasn't addressed at all in the
11 PMA.
12 The question about design, the comment was about
13 the fact that they haven't used any modern technology at
14 all. The technology they are using is sixties technology,
15 and we have some questions. For instance, he was talking
16 about wearing the top of the PMMA head, so that it mates
17 better with the fossa, well, if that is the purpose, why
18 don't they just make them mate to begin with instead of
19 having it wear off and the particles ending up in the
20 patient. That was the question we were looking for an
21 answer.
22 The company says that it wears off and it mates
23 better with the fossa. Why don't they make it that way to
24 start with? They haven't addressed that.
25 MR. MORGAN: I believe that there are two or three

at

1 issues that Ms. Blackwell brought up. One deals with
2 sixties technology versus more recent technology in terms of
3 design. I think our response is that we have a design that
4 works, works in nonclinical testing, it works in clinical
5 testing, it works in the field in the patient.
6 Also, in terms of the PMMA heading wearing and
7 conforming more to the fossa, there is a need, we think, for
8 sufficient room for the condyle to rotate and translate in
9 relationship with the fossa, and a close conforming fit
10 similar to, say, that of a hip implant, might not afford
11 that kind of liberty needed for that kind of rotation and
12 translation.
13 Ms. Blackwell, I believe there is one other point
14 that you had made? I thought you had made three points.
15 You had mentioned getting telephone reports of condylar head
16 being destroyed. We have not had any reports of that. We
17 are not aware of any. We simply can't respond to it if we
18 don't know about it.
19 DR. CHRISTENSEN: May I add something to that? Is
20 that all right?
21 DR. JANOSKY: Yes.
22 DR. CHRISTENSEN: I have seen the normal condyle
23 38 years later against fossa-eminence implants on several
24 patients, still functioning the way I put them in that many
25 years ago.

at

1 DR. FISCHMAN: Dr. Gary Fischman, Food and Drug
2 Administration.
3 Dr. Floyd, part of that issue with respect to the
4 orthopedics industry had specifically to do with the
5 materials and what the materials were being used for, and
6 that, to some extent, addresses the PMMA in this particular
7 aspect, in this particular function.
8 The question is, is it really working, and without
9 having any basis in any parallel uses or any other predicate
10 uses, it is hard for us to assess that given the situation
11 at hand.
12 DR. JANOSKY: Additional questions for FDA? Dr.
13 Li.
14 DR. LI: Two questions for the sponsor. I am
15 concerned a little bit about the histology reports
16 especially from tissues, the periprosthetic tissue.
17 If your wear rate is on the order of--was it 1.6
18 mm^3 for the PMMA? I back of the envelope calculated if the
19 average particle size was 1 micron, that is 100 billion
20 particles, which is low relative to polyethylene, but it is
21 still billions of particles, and the fact that you don't see
22 any under histological sections, for one who does
23 histological sections, it seems like it might be more a
24 reflection on your histological technique rather than the
25 actual absence of particles.

at

1 The same thing would hold true for the metal
2 particles. Even though the wear would be half or a quarter,
3 we are still talking billions of particles, and the fact
4 that you see none kind of puts the whole histology in
5 question.
6 Could you comment on that?
7 DR. GERARD: David Gerard. As far as the PMMA, I
8 am sure you are aware as during decalcification and
9 processing, the PMMA is leached out, and so what you
10 actually see are ghosts or where they had been, where those
11 particles had been.
12 Again, we did not see any giant cell reaction to
13 those particles, but we did see particles associated with
14 mild inflammation at early time points, one through three
15 months.
16 As to the fate of those particles later on, I
17 cannot tell you what happened to those particles although
18 there is some evidence that particles such as that could be
19 dissolved and processed through the system.
20 I guess that is what I would say about the PMMA.
21 As far as the chrome-cobalt, we saw a little bit more of a
22 reaction early on, a stronger inflammatory reaction. We did
23 see particles in the joint space at one month and two
24 months, and by six months we did not see particles any
25 longer, and I cannot tell you the fate of those particles.

at

1 I don't know what happened to those particles.

2 DR. LI: So, do you believe it is not wearing or

3 you just believe that you actually just didn't see them in

4 the sections that you are talking?

5 DR. GERARD: We did serial sections.

6 DR. LI: Right. So, my question is do you believe

7 actually wear is not happening?

8 DR. GERARD: No, no, no. Now, this is animal

9 studies where we have injected particles.

10 DR. LI: Okay. How about from patients, from

11 periprosthetic tissue from patients?

12 DR. GERARD: Most of the patients that I have

13 looked at that have had PMMA heads in total joints have had

14 prior surgeries, as a matter of fact, all of them, so the

15 material I see is not, as far as I can tell, chrome-cobalt,

16 because I have done elemental analysis on these particles in

17 some cases, and because PMMA is leached out, I cannot tell

18 you definitively whether or not PMMA was there.

19 DR. LI: Again, taken from total hip and knee

20 replacements, even around metal-on-metal total hips,

21 particles can be relatively easily identified.

22 DR. GERARD: Yes.

23 DR. LI: So, if you used the appropriate

24 histology, so I guess--the whole thing on the particles from

25 tissue, that you find none I find rather disturbing.

at

1 DR. SKINNER: Could I comment?

2 DR. JANOSKY: Yes.

3 DR. SKINNER: I hate to take the company's side on
4 this, Steve, but I think we are talking about a small joint
5 with relatively low wear rate production, and based on that,
6 I think that the orthopedic literature supports a threshold,
7 that if you don't get to a certain rate of production, you
8 often don't get much of a tissue reaction because it is
9 carried off in the--

10 DR. LI: I am not looking for a tissue reaction,
11 Dr. Skinner, I am looking for just the presence of the
12 particles. So, the wear rates they report for metal-on-
13 metal for their joint is in the range of the metal-on-metal
14 total hips where we do find the particles.

15 I am not looking for a tissue reaction, I am just
16 looking for the particles.

17 DR. GERARD: Can I respond to that? The only
18 joints that we have looked at that have been retrieved
19 histologically have had PMMA heads, and I would expect that
20 metal particles would be virtually nonexistent because of
21 the softness of the PMMA head articulating against the
22 metal. I don't think we are going to be generating many, if
23 any, metal particles. We may be generating some.

24 Now, we do see PMMA. We do not see it associated
25 with a giant cell reaction, just with a mild inflammation.

at

1 DR. LI: My final question. On metal-on-metal
2 total hips with also a similar long history, we have learned
3 that there are design factor issues that make a good or
4 worse metal-on-metal total hip articulation, that have to do
5 not only with the area of contact, but the location of that
6 contact.
7 Back of the envelope from what you provided, your
8 device seems to go contrary to all of that experience, so I
9 guess my question is, why are the design considerations that
10 are so critical for a total hip application, appear to be
11 absent completely, for instance, in your--well, let me ask
12 you actually if you can limit that even to just your
13 nonclinical lab data, why your results are so different,
14 because like on a metal-on-metal total hip replacement wear
15 simulation, even though the wear is low, the chamber is
16 often blackish from the release of the few particles that
17 you get, and you don't seem to be getting any of that.
18 MR. LIPPINCOTT: First of all are movement more
19 along the lines of knee movement rather than a congruent
20 movement as a hip. From the standpoint that there is
21 translation in rotation, as well as arc movement, and so it
22 is a complicated movement similar to a knee, and so if you
23 do confine the design so that it is congruent, like a hip,
24 you may introduce other factors, such as joint stresses that
25 are transmitted to the prosthesis that could cause further

at

1 loosening.

2 So, for that reason, TMJ Implants has followed the

3 line of going with less contact to allow for that movement,

4 if the movement is there.

5 Regarding the particulate debris, I am familiar

6 with some of the literature in the orthopedics regarding a

7 threshold level that Dr. Skinner mentioned, and the wear

8 volumes were seen from the testing were down to 0.2 mm^3/

9 million cycles.

10 I see that as even lower than some of the metal-

11 on-metal testing that has been done in the laboratory, which

12 is up to 0.5 to 1 to 4 mm^3/million cycles. So, we may, in

13 fact, not see that debris because of the threshold level

14 that the body is able to take care of and excrete it some

15 way.

16 DR. JANOSKY: Dr. Heffez.

17 DR. HEFFEZ: I have two short follow-up questions.

18 I will reverse the order because you just mentioned that

19 this joint closely parallels the knee, and you indicated

20 translation of movement, but earlier in your presentation,

21 your company's presentation, you indicated that there was

22 only rotational movement or minimal translational movement.

23 Could you clarify that and could you also indicate

24 if any jaw tracking methods were used in order to classify

25 how far lateral movements were?

at

1 MR. LIPPINCOTT: Much of the movement that we
2 describe is from a fluoroscopic study that we did, again on
3 a normal versus fossa-only versus a total. What they did
4 see in that motion study was definitely less movement and
5 more just arc movement on the total versus even the partial
6 versus even the normal, and granted that you don't have as
7 much motion with the total as you would with the normal, but
8 I feel there is still some motion there because in our
9 retrieval studies that we did, in analyzing the surfaces
10 through SEM high magnification, we saw multidirectional
11 scratches. We did not see uniaxial scratches. So, that
12 would indicate to us that there is more movement in there
13 regarding translation rather than just arc motion.
14 DR. HEFFEZ: Will you get multidirectional
15 scratches if you had arcing on an irregular surface?
16 MR. LIPPINCOTT: I don't think you would because
17 in the study that we did with the metal-on-metal, and I
18 didn't show you that, but we had uniaxial striated marks,
19 and there we, of course, looked a worst case scenario with
20 point contact rather than multiple contact.
21 DR. HEFFEZ: But the surface you were working
22 against was smooth as opposed to irregular.
23 MR. LIPPINCOTT: It was smooth from the standpoint
24 that it was polished, but there were irregular curvatures
25 against it. It wasn't totally congruent.

at

1 DR. HEFFEZ: My second follow-up question is the
2 histological studies didn't indicate any foreign body
3 reaction, but on your MDR report you indicated eight cases
4 of foreign body reactions. Could you clarify that?
5 MR. ALBRECHT: To respond to your question, Dr.
6 Heffez, yes, we reported eight foreign body reactions, MDR
7 reports. Six were unconfirmed, two of them came through us
8 through Freedom of Information or the device tracking
9 network, DEN, two reported to us by physicians did not
10 provide us any additional information surrounding the issues
11 at hand. We were not able to get pathology or anything from
12 them despite repeated requests.
13 We have two that are still under investigation
14 now. We are waiting for pathology results at this time.
15 One of those eight was found to be a residual reaction to
16 Proplast Teflon and not from our implant, and one was found
17 to be residual reaction to previous Silastic, and not to our
18 implant.
19 DR. JANOSKY: Dr. Skinner.
20 DR. SKINNER: Just to follow up on that
21 cineradiographic study I mentioned earlier, you did the
22 fluoroscopy. Was that done with an IRB approval, which you
23 said wasn't done before?
24 MR. ALBRECHT: I would like to clarify my
25 statement from before the break. I did not recognize Dr.

at

1 Dennis' name when you mentioned that. Yes, that study, Rose
2 Medical did do for us. To my knowledge, IRB approval was
3 not obtained, but I could confirm that, whether it was or
4 was not.
5 DR. JANOSKY: At this time, we are going to move
6 into the open committee discussion with presentation by
7 panel members.
8 The first panel to present will be Dr. Diane Rekow
9 followed by Dr. Leslie Heffez.
10 **Open Committee Discussion**
11 DR. REKOW: I am sure that everything that I have
12 to say is not going to be a surprise because I think all of
13 the points have been discussed, but if you will bear with
14 me, I will review a few of them.
15 The wear tests, of course, are an issue, and the
16 wear tests do show wear zones, but little mention is made of
17 the particle sizes in the information as we received it.
18 You did discuss that this morning, and the debris apparently
19 had some characterization, though it may or may not have
20 been complete.
21 I understand that with today's knowledge base,
22 things might have been done differently because some of
23 these tests were done some time ago, and we have learned a
24 lot, fortunately, since then, but we have also learned the
25 importance of some of those things, and the size and extent

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1 of the debris and the physiologic effects that it can have,
2 so there is some interest in better understanding of what is
3 going on and the relationship between the particles, their
4 volume and their size that is implanted in the animals and
5 the responses that you get from those.
6 A lot of that has been said, and I will just let
7 that sort out.
8 In the fatigue testing, too, it might be wise to
9 try to collect some of the debris as part of that test, you
10 sort of get that for free, and as you are doing the fatigue,
11 you might as well collect those particles and look at those,
12 as well.
13 There is lots and lots of choices and combinations
14 of sizes and devices that have been implanted, and there has
15 been some discussion about that. In the engineering data
16 that you present, you talk about worst cases, and certainly
17 that is a reasonable approach, and every engineer is going
18 to approach it as a worst case, but I think that some
19 verification of some sort that you do indeed get the same
20 results on smaller numbers of samples perhaps with different
21 combinations would relieve some of the concerns that other
22 people have.
23 On the fatigue problems, I think that one of the
24 issues that perplexes me is the fatigue degradation. You
25 are putting these in patients that are likely to have them

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1 for a very, very long time or hopefully, will have them for
2 a very, very long time, and you have a casting, and you have
3 a metal, and it is hard to see any internal flaws could
4 potentially be sites of subsequent fracture.
5 So, at some point along your fatigue testing, I
6 would be more comfortable, and I think other panel members
7 would be, if we saw what the post-fatigue strengths were of
8 some of these pieces.
9 I want to talk a little bit about your finite
10 element model. It is certainly not critical in your
11 decisions, but there is some points that I would like to
12 make. On one of your pages, on page 960, one of the people
13 that was involved in the development makes a mention that
14 the stiffness of the bone base structure and the mandible is
15 not known, and that information is appearing in the
16 literature, and it might be wise, depending upon what you
17 want to do with your model, to integrate that information as
18 the bone implant interface, because that certainly will
19 strengthen your predictive models if it is done right, of
20 course.
21 There is also some concern in some of the
22 mechanical testing, your measurements basically that were
23 done, there was a lot of variation in the stem thickness,
24 screw hole diameters, countersink diameters, and depth, and
25 the shape of the holes.

at

1 Those could potentially, those two metric changes
2 could potentially change your finite element results, and
3 perhaps you might want to look at the sensitivity of your
4 model to those changes. It may be important, it may not be
5 important. It also may make a difference in some of your
6 predictive value on your patient-specific stuff where the
7 thicknesses of various components may change, and the
8 geometry may change.
9 The impact of those is really going to impact what
10 it is you want to do with the model and how much you want to
11 use your model to predict other things, and if you want to
12 use that, because if it is a cheaper way to do testing, you
13 need to be very clear about what some of those sensitivities
14 are, so you can address those issues.
15 You also might want to address some of the
16 questions that Dr. Li brought up about the creep of the PMMA
17 and what you really are using as your failure criterion in
18 the model. That may have been there, I don't remember
19 seeing it.
20 One thing I forgot to say when I was talking about
21 the fatigue strength, the post-fatigue strength. That would
22 be less of a concern to me if one of the three samples that
23 you were using for getting your materials properties to the
24 finite element model hadn't failed before the tests were
25 done in the load to fracture tests, apparently had failed at

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1 some relatively low value, and so that raised a flag that I
2 needed to think about the inclusion problem.
3 That came up on page 990 where you are talking
4 about where you were getting the properties for your finite
5 element model. In those tests, there were three rods that
6 were tested, and one of them failed prematurely.
7 I think anything else has been said in greater
8 length than needs to be repeated.
9 DR. HEFFEZ: I was asked to review this PMA. I
10 won't belabor all the points. I will try to highlight maybe
11 some points that weren't discussed yet and rapidly go over
12 the points that have been discussed.
13 I was asked to evaluate several designs and
14 several devices. There is TMJ fossa-eminence separate from
15 the TMJ condylar prosthesis. The TMJ condylar prosthesis is
16 always used in conjunction with an eminence prosthesis.
17 DR. REKOW: While you are waiting, can I add one
18 thing, because I had it in my notes and glossed over it,
19 which I should not have, because the bone response to the
20 fossa, I think is a test that does need to be done, at least
21 some laboratory testing to show what wear you are going to
22 get with the bone opposing the fossa. I am sorry.
23 DR. HEFFEZ: These preamendment devices were used
24 now for some time, since 1960, in human use since 1961, and
25 the condyle was used since 1965. I think the strongest suit

1 for these devices is longevity as opposed to the accuracy of
2 their effectiveness data.
3 [Slide.]
4 One of the difficulties that exists, as has
5 already been discussed, is understanding the data, not only
6 from the different types of devices that have been tested,
7 and you can see these listed without actually specifically
8 describing them, but also the indications for use of each of
9 the devices. That is, I believe, a primary problem or
10 weakness is that in many cases, these devices were used,
11 especially the fossa-eminence device, in a primary surgical
12 procedure, not as a salvage procedure.
13 [Slide.]
14 As indicated, the indications for sole use are not
15 clear for the fossa-eminence device, the condyle head.
16 There is several devices, but the condyle can appear as a
17 chrome-cobalt or PMMA.
18 One of the concerns that I didn't feel comfortable
19 with was the PMMA definitely demonstrated greater wear, and
20 it wasn't really clear why the company persisted with the
21 marketing of it, especially since it indicated in its own
22 PMA that many surgeons are gravitating towards the chromium
23 rather than the PMMA.
24 [Slide.]
25 The tumor registry was performed as serial data

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1 was not provided per patient. I won't belabor the
2 statistical analysis, we ended up discussing that.
3 [Slide.]
4 The company states the loosened implant percentage
5 was less than 1 percent, however, it didn't really explore
6 all the MDRs. The data presented as MDRs is a little
7 confusing. It is indicated, for example, eight foreign body
8 reactions, and yet there is a lot of clarifications made on
9 the basis of the company.
10 We can accept certain anecdotal data from the
11 company, then, we have to accept certain anecdotal data from
12 other sources. The TMJ Association indicates that they have
13 received greater MDR reports than the company actually
14 describes.
15 [Slide.]
16 Foreign body reaction, allergic reaction. Nickel
17 content is always a concern. This is not routinely tested
18 on patients, however, with such a surgery it seems like it
19 should be even though the percentage is low routinely done.
20 [Slide.]
21 Trace ions. Clearly, there is wear pattern, and
22 we are not identifying where the wear pattern is. We know
23 that there is wear pattern, but we haven't identified the
24 wear particles, and so one concern is where do these
25 particles go.

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1 Clearly, it has been indicated in some literature
2 that there is deposition of some particles and excretion of
3 particles. They have found it in the reticuloendothelial
4 system. Clearly, there are trace levels and what a
5 threshold level that is required for the human body to
6 tolerate is not known.
7 [Slide.]
8 Just to highlight one important item here is that
9 material PMMA or some of the components are irradiated
10 through gamma irradiation, and whether the components were
11 from an engineering point of view tested following
12 irradiation, I understand that was done, but it was not
13 clear whether those components were aged before mechanically
14 testing them, in other words, what the effect is with age.
15 [Slide.]
16 Not to belabor all the tests that were done, but
17 what is important here is that certain tests were applied to
18 the joints, however, it wasn't clear whether these were
19 cumulative effect of all the testing was done, in other
20 words, you subjected certain joints to dynamic fatigue, were
21 those joints subjected to other mechanical testing. I think
22 that is valid.
23 [Slide.]
24 As far as the wear is concerned, the most
25 important item is in the last item that is mentioned, is

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1 even with CAD-CAM or patient-specific prostheses, you are
2 always concerned that you don't have a perfect mate. We
3 have to remember that you get a closer mate using patient-
4 specific prostheses, however, we are generating a computer
5 model based on CT scanning.
6 The surgeon may not exactly place that condyle
7 exactly on the ramus in order to interface properly with the
8 glenoid fossa. It is certainly much improved from using
9 generic sizes, however, even with computer-generated models,
10 there is no device that is actually holding the glenoid
11 fossa and the ramus portion together and transporting that
12 mechanism together, so it is secured in the proper
13 relationship. So, we don't know what the effect of
14 malalignment is.
15 [Slide.]
16 We talked about wear particle induced osteolysis.
17 I don't think it was properly or fully studied by the
18 company.
19 [Slide.]
20 Probably the middle item, the worst case scenario.
21 I think what is important is to identify what is the range
22 of motion that is expected postoperatively in these
23 patients, and then test those joints with expanded forces in
24 that particular range of motion.
25 Sometimes we are trying to be really good and

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1 trying to identify what the worst case scenario is, but
2 maybe when we don't try to mimic what we actually get
3 postoperatively, we may not be testing the materials
4 appropriately.
5 [Slide.]
6 Again, the greatest advantage I believe of the
7 materials, some of the devices, is longevity rather than the
8 statistical analysis.
9 The last item, potential carcinogenicity, it is
10 not clear. Definitely, the company has provided articles
11 regarding this, and it is certainly not at all clear in the
12 literature whether there is any carcinogenic potential, but
13 I bring it up.
14 [Slide.]
15 We already discussed this as far as bolusing
16 interarticular particles and the sizes of the particles that
17 are utilized. Again, we are using a small joint, how
18 important is it, and I think it becomes very important to
19 try to again. It's patient selection. If the patients were
20 selected, not as a primary surgical procedure, but as a
21 salvage procedure in a mutilated joint, then, you are
22 willing to take certain risks regarding osteolysis as
23 opposed to later rather than primary disease.
24 [Slide.]
25 The big questions are registry details. We know

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1 that there is a great fallout ratio, we mentioned that.
2 Very important I believe is the diagnosis, why the
3 particular patient was operated in the first place, and that
4 is when you can interpret the data to lump in people who
5 have had primary surgical procedures and had some devices
6 placed with those who have had more severe disease, I
7 believe is inappropriate. It is very hard to interpret the
8 data.
9 [Slide.]
10 As far as bite force calculation, I think it is
11 very important to try to evaluate these patients as far as
12 the pressures generated per patient, preoperatively and
13 postoperatively. We have to look at some of these patients.
14 Their vertical dimension is being changed dramatically. I
15 believe Dr. Curry showed a slide where the patient had an
16 open bite and retrognathia, and that was corrected using
17 this prosthesis.
18 That is going to generate a lot more forces than
19 another individual in which the joint is simply advanced,
20 for example, as opposed to correct significantly the
21 vertical dimension.
22 So, I think some pressure transducers are
23 important in evaluating these patients. Taking data that is
24 existing in the literature I don't think is appropriate
25 especially in this subset of patients where there may be

at

1 parafunctional habits.

2 [Slide.]

3 Again, identifying parafunctional habits is

4 extremely important because that may be a source of pain in

5 these patients, and it may be erroneously attributed to the

6 joint prosthesis.

7 [Slide.]

8 I would like to indicate again that it is a

9 heterogeneous population we are studying. There is a

10 constellation of symptoms. We have to identify the

11 symptoms, why we are operating the patients, and that is how

12 the data should be presented. It shouldn't be presented by

13 lumping it by devices or categorizing these people by

14 categories, such as failed prosthesis or previous

15 prosthesis.

16 [Slide.]

17 As far as effectiveness, again, I felt after

18 reviewing the PMA that really the effectiveness of surgery

19 should be based on identification of the patient's specific

20 complaints, not on a hardware. The hardware is in fixing

21 the patient. What fixes the patient is addressing the

22 problem, and you can address that problem in different

23 manners. You can't attribute success necessarily to the

24 hardware.

25 Unfortunately, you attribute failure, you have to

at

1 consider failure due to the hardware, but you don't
2 necessarily have to say success is due to the hardware.
3 [Slide.]
4 Presence of pain depends whether it is from loss
5 of vertical dimension, whether persistence of inflammatory
6 disease, whether we have removed an infectious process,
7 whether the bite has become stabilized. These are all
8 factors that have to be considered why the patient is
9 demonstrating improvement or stabilizing the disease
10 process.
11 [Slide.]
12 As far as safety is concerned, the clinician is
13 most concerned about having an option for reconstruction
14 other than autogenous bone. The safety as far as after
15 reviewing the PMA and further discussions today, the safety
16 of the polymethacrylate is not clear, and I wonder whether
17 we have an acceptable failure rate from it especially
18 indicating the tremendous amount of wear to the pin.
19 The indications for the fossa-eminence
20 relationship are not at all clear, and I feel that we should
21 be looking at these devices, not as a primary modality, but
22 rather as indicated, a salvage modality.
23 I think the clinician has to view any hardware
24 placed in the body of a patient, that it may have to be
25 removed at some other time, and informed consent should be

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1 discussed.

2 I am not sure that the brochures currently on this

3 implant clearly explain the problems that can occur with

4 these devices.

5 [Slide.]

6 The last item, if we are going to have to remove

7 that appliance or that device, we should be able to be

8 comfortable that it is only causing localized damage rather

9 than systemic damage, and it is not going to remove the

10 possibility of reconstructing that patient or increased

11 difficulty in reconstructing that patient.

12 Lastly, there is really no effective study

13 control. It is not possible to have an effective study

14 control because the patients' symptoms are varied, and the

15 etiology for each of those symptoms is varied. The fact

16 that the person has pain, it is nice to lump everybody up

17 that those patients have pain, but there are various reasons

18 why each one of those has pain.

19 The last item was regarding one comment that was

20 made that the company has seen a decrease in multiple

21 operated patients by inserting eminence-fossa prostheses or

22 devices. One has to wonder how would the disease have

23 favored if no intervention was contemplated.

24 That was my review.

25 DR. JANOSKY: Are there panel questions for Dr.

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1 Heffez or Dr. Rekow?

2 At this time we will break for lunch. I have five

3 to 12:00. We are going to shorten the lunch to one hour.

4 Let's say one hour and five minutes just for the sake of

5 remembering when to return. So, return at 1:00 p.m.,

6 please.

7 [Whereupon, at 11:55 a.m., the proceedings were

8 recessed, to be resumed at 1:00 p.m.]

at

1 A F T E R N O O N S E S S I O N

2 [1:00 p.m.]

3 **Open Public Hearing**

4 DR. JANOSKY: At this time, we are going to

5 continue and we are going to have an open public hearing.

6 Is there anyone that would like to address the

7 panel?

8 First is with Ms. Lisa Brown from TMJ Association,

9 followed by Mr. Kevin Clark from TMJ Association. You each

10 five minutes for a presentation, please.

11 Dr. Zuckerman, you also had your hand up

12 requesting to speak? Followed by Diana Zuckerman from

13 National Women's Health Network.

14 If you would please state any financial interest

15 in the company and/or other companies.

16 MS. BROWN: I am Lisa Brown, and I have no

17 financial or involvement with any of the companies here

18 today.

19 We would like to show you a few slides of patients

20 who have received devices, maybe to just kind of reinforce a

21 little about what we say when we are talking about patient

22 failures to you.

23 [Slide.]

24 This is Christine from California. This is at her

25 initial treatment.

at

1 [Slide.]

2 This is what Christine looked like one year before

3 her death in '94.

4 [Slide.]

5 This is Amy. This is Amy in '95. Amy had a

6 promising career as a model and after her TMJ implants and

7 severe problems afterwards.

8 [Slide.]

9 This is Amy in '95. I wish that I could say at

10 this point is that we keep in touch with Amy, that she had

11 improved greatly, but that is not the case.

12 [Slide.]

13 This is Marilyn. She has also received devices.

14 I think you can see some of the problems that we are having

15 here with the device out of the skin.

16 [Slide.]

17 I believe this is Sharon.

18 That's all.

19 DR. JANOSKY: Mr. Kevin Clark from TMJ

20 Association.

21 MR. CLARK: Good afternoon. I am Kevin Clark with

22 the TMJ Association, and also I guess presenting personally

23 from my own story. I have no financial interest in either

24 company today or yesterday or any of the competitors.

25 We heard a lot of the successes from today's

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1 sponsor, and I guess I would like to share just one personal
2 story of one that wasn't quite so successful, that case
3 being the one of my wife, which I explained yesterday. She
4 has had 6 TMJ surgeries, 5 of them bilateral.
5 In 1989, she had VK-2 put in and approximately one
6 year later one side failed and which was replaced with a
7 Christensen implant. We have had two opinions in the last
8 year and a half by two different surgeons that both of her
9 joints are failing and that they should both be removed and
10 replaced, again, one being a Christensen and one being a
11 Vitek.
12 She reports today that she has considerable more
13 problem with the Christensen implant than the Vitek, which I
14 was quite surprised by, and less movement. She has much
15 more pain on the Christensen side and less movement on that
16 side.
17 We are both very concerned about having them taken
18 out, and we are not sure at this point what to do. In
19 addition, I guess some of my concerns here are what devices,
20 and we have already kicked this around a lot today, but what
21 devices specifically are we looking at today with the
22 sponsor, and I am certainly not clear in my mind which exact
23 device we are looking at.
24 The device that my wife has is the PMMA-on-metal,
25 and I am not sure if that is what we are looking at today.

at

1 It appears to me to be a series of products that we are
2 looking at today, and I guess my request to the panel would
3 be that you look at the science behind each individual
4 device and approve only those which you find acceptable.
5 I have great concern with the PMMA head as the
6 advice that we received from the two surgeons is that it has
7 been sheared off and is coming loose toward the bottom of
8 the implant. The screws are coming loose according to the
9 two opinions that we received.
10 So, having said that, I guess that is one case.
11 That is not the science that you have seen. You have got
12 studies that show you differently apparently, but from what
13 I have seen I can't tell. It appears that they are all
14 meshed together in the science, and there is not specific
15 science for each individual device.
16 So, I will leave that alone for now. That is as
17 much as I had to say on that.
18 Another concern is--and, by the way, I have the x-
19 rays if anybody wants to see them, I don't know if that is
20 appropriate to show them, but they are available at the
21 panel's request--the other concern that I have with the
22 sponsor's activities are primarily related to truth in
23 advertising.
24 The company has shared with us a lot of success
25 stories on their web page, as I have looked at it, and my

at

1 wife and I were desperately searching for answers back in
2 the mid-eighties, late eighties, and it wasn't quite as
3 readily available as what is available today.
4 Fortunately, with the advent of the World Wide
5 Web, we can now reach 6 1/2 billion people at a key stroke,
6 which is a benefit, and also has some problems with that.
7 I am in the investment business myself, as I
8 mentioned yesterday, and every piece of material that my
9 office sends out must be scrutinized by the MESD. That is
10 our regulatory body. We have more disclosure in my business
11 to buy 100 shares of stock or even in the tobacco industry
12 where you can't buy a pack of cigarettes, there is more
13 disclosure on those two events than there is in a lifelong
14 implant such as a TMJ device.
15 I would like to read parts of the web page that
16 TMJ Implants, Inc. has put out. On their first page,
17 "Welcome to TMJ Implants, a world leader in providing
18 predictable alloplastic replacement for the
19 temporomandibular joint."
20 On their page Products and Services, "TMJ Implants
21 provides a complete set of stock prostheses or partial or
22 total joint reconstruction. The implants are constructed
23 from cobalt-chrome considered to be the gold standard for
24 orthopedic applications. TMJ Implants is also capable of
25 constructing a patient-specific prosthesis according to the

at

1 surgeon's prescription."

2 My question I guess is when I read this, does the

3 patient understand that they may end up with one of the PMMA

4 heads on their condyle as opposed to this cobalt-chrome, and

5 it is not clear. PMMA nowhere is mentioned in the web page.

6 So, again, which devices are we seeking approval

7 for today?

8 On their page about TMJ Implants, they have

9 multiple quotes from a variety of surgeons and doctors, some

10 that are here. Dr. Curry, who spoke earlier, suggest that,

11 "If can limit the patient to two or three surgeries before

12 they have a total joint replacement, they are more likely to

13 have success with the total joint than if we put them

14 through 10 or 15 surgeries and then do a total joint at last

15 resort."

16 I agree with some aspects of that statement, but I

17 think it clearly says that the sponsor and the associated

18 clinicians feel that this is a front-end device, this is not

19 a back-end, last ditch effort to salvage a patient who has

20 already had multiple surgeries.

21 Another quote under headline called Predictable,

22 on the same page says--and this is Dr. William Garrett from

23 Florida--"There isn't any patient that hasn't improved.

24 It's a matter of whether they have been multiply operated,

25 but even those patients have improved dramatically. It is

at

1 an outstanding prosthesis, it works very well."

2 My question is how could you possibly represent

3 this to 6 1/2 billion people and potential TMJ patients?

4 The choice to me is clear when I read this. I am going to

5 go for it, and I went for it, and my wife has not improved.

6 So, under that or following that it says, "Over 95

7 percent of the prostheses sold by TMJ Implants, Inc., from

8 1988 to present remain in service."

9 I don't know if that is true or not. I assume it

10 is, it is on their web page. You can probably tell from the

11 studies I guess that you have seen.

12 Going down the page to what is entitled

13 Preserving. This is Dr. Curry, who is with us today, and

14 has alluded to this benefit of using the joint.

15 "If we need to remove this prosthesis, we can go

16 back in, take the fossa liner out and the base of the skull

17 is just as pretty as the day we put the prosthesis in. With

18 most other procedures we get all kinds of distortion of the

19 bone. This prosthesis really preserves the bone."

20 I am not sure how my wife Heidi is going to react

21 when I inform her, first of all, that the sponsor does not

22 consider the shearing off of the PMMA head a failure.

23 Apparently that is not a failure in the company's mind.

24 I am also not sure how she is going to take the

25 suggestion that I mentioned yesterday that TMJ patients are

at

1 some paranoid of the system, they are paranoid of their
2 surgeons, unfortunately, of the companies, the
3 manufacturers, and even of the FDA unfortunately.
4 So, when I suggest to her that the base of her
5 skull is going to be just as pretty as the day she put that
6 thing in, I am not sure that she is going to believe me, and
7 I am not sure that she should.
8 I guess I would like to move on to the end of the
9 web page, which is entitled some Success Stories or Success
10 Stories it is called. There are six success stories which I
11 would like to quote just a few of them, just parts of a few
12 of them.
13 Tracey Finley who is age 26. "I began treatment,
14 but nothing worked. Four years later, the Christensen
15 procedure gave me my life back. Now, I am absolutely pain-
16 free. I am able to enunciate when speaking and I am no
17 longer embarrassed to be seen eating in restaurants. During
18 the recovery, my pain level has gone from a grade 10 to 0."
19 Charlene Jaspersen, age 53, in Colorado. Just a
20 portion again. "I was introduced to the Christensen fossa-
21 eminence prosthesis and had it placed in both sides in 1990.
22 I felt better within a week."
23 My wife has been through six surgeries, and I have
24 been at the hospital for about a week each time. I
25 guarantee you she didn't feel better within a week unless

1 she was on morphine or whatever it was that they were giving
2 her at the time.
3 "It's made a 95 percent improvement in my day to
4 day life. Once again I feel like a normal person. I do
5 everything and eat everything with no limitations. My jaw
6 feels like the one I was given at birth."
7 A last example is a Catholic sister, age 72, in
8 California. Again, just a partial quote of the testimony.
9 "Since I had the implant over 35 years ago, all
10 symptoms have disappeared. The severe pain in my joints is
11 gone. I'm able to eat without discomfort"-- da-da.
12 Thirty five years. One of my questions, is this
13 joint still on the market, the same one that was used 35
14 years ago? Are we having testimony of joints that no longer
15 exist?
16 In summary, I would just suggest again that the
17 panel only approve those specific devices that are
18 scientifically proven and stand on their own merit. I have
19 great concern with a blanket approval for the sponsor's
20 products which seem to be an evolving product line over a
21 period of time.
22 I also feel that the company's advertising should
23 be looked into, and just as in my business, a highly
24 regulated business from an advertising perspective, that
25 their advertising be scrutinized and promises apparently

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1 made to patients are not out of line with reality.

2 Dr. Christensen mentioned earlier that he had not

3 received the phone calls that the FDA has received. On this

4 very same web site, if you want to talk to the company, you

5 are instructed to talk to your physicians. The company does

6 not talk to patients, nor do they send patients materials.

7 They deal exclusively with the physicians.

8 My recommendation is that the panel or the FDA

9 would suggest then to the company that this web site be

10 limited to the clinicians. Let them access it by password.

11 Don't put this out for public reading if it's not available

12 for follow-up and having a balanced approach.

13 Thank you very much.

14 DR. JANOSKY: Dr. Diana Zuckerman from the

15 National Women's Health Network.

16 MS. BROWN: Lisa Brown. I just wanted to

17 apologize for letting you know that the pictures of the

18 people you just saw either had an all-metal or a device with

19 PMMA, so that you would know that these people did receive

20 an all-metal or a PMMA device.

21 MS. ZUCKERMAN: I am Diana Zuckerman from the

22 National Women's Health Network.

23 I guess I wanted to make three points. The first

24 point is that clearly, as we just heard from the web site

25 and from the manufacturers, these products have been on the

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1 market a long time.

2 This company has been in business a long time, and

3 so one would hope that given that they have had a lot of

4 patients, that they would have followed them in a research

5 study for more than 12 months, that they would have had a

6 really good sample size that stayed in place without a high

7 dropout rate for more than 12 months.

8 Yesterday, I talked about at least five to 10

9 years or more. Apparently, that is a standard that is too

10 high to reach, but I don't think two or three or four years

11 is a standard that is too high to reach, and particularly

12 for a manufacturer that has consistently been in business

13 and has apparently been selling the same devices for at

14 least some of that time.

15 It would seem to me that at least one really good

16 study that followed the same people, using really good

17 measures, would tell us a lot. All of the mechanical data

18 are very important, but when you do have patients getting

19 these devices, I don't think it is too much to ask that they

20 actually study them.

21 My second point. As a consumer organization, the

22 National Women's Health Network spends a lot of time trying

23 to explain to consumers, you know what does this FDA process

24 mean and what does this vote mean, and if a product is being

25 sold, does that mean it is safe and effective.

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1 So, I would ask you on the panel, and I would ask
2 the FDA respectfully, that it is very helpful to consumers
3 when votes that a panel takes are really clear. If being
4 approved by the FDA means that it is proven safe and proven
5 effective, it is very nice when the panel actually has a
6 vote that says how many people on the panel believe that the
7 manufacturer has proven this device safe, and a separate
8 vote asking how many people believe that the manufacturer
9 has proven this device effective, and those kinds of votes
10 are an objective kind of piece of information that is useful
11 for consumers to have and can be very helpful particularly
12 when there is so much hype and so much promotional material
13 talking about how great a device is, and, of course, every
14 manufacturer is going to do that.
15 So, it is helpful to not just have a decision
16 about how to proceed, but a clear vote as to what that means
17 would be very helpful. I have certainly seen it in panel
18 meetings, and it is something that the press understand and
19 consumers can understand, so that even when products remain
20 on the market or remain on the market under certain
21 conditions, or when the manufacturer has to meet certain
22 conditions, it is still helpful to have that very clear
23 vote, is it proven safe, yes or no, or is it proven safe for
24 two months, is it proven safe for 12 months, whatever.
25 I guess the last point I want to make, having

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1 participated in these kinds of panel meetings before, is
2 that I know that there is a lot of desire on the part of
3 panel members to keep products on the market that they see
4 as helpful to patients, even when they are not necessarily
5 proven safe and effective, and part of that process
6 frequently focuses on what can the manufacturer do to
7 improve their studies in the future or to improve how the
8 product is used in the future.
9 I would just respectfully ask that FDA make it
10 clear to panel members what it is they can and cannot do.
11 It is very to have a whole list of, you know, a wish list of
12 how a study could be so much better in the future or how the
13 manufacturers could provide so much more useful information
14 in the future, but I know, and FDA officials I think can
15 easily tell you, that they are not always able to do all of
16 these things. They have neither the resources nor, in some
17 cases, even the authority to make some of these demands on
18 manufacturers.
19 So, it would be very helpful I think for a
20 process, that everybody be clear on what is possible and
21 what isn't possible before you take those votes and before
22 you make those decisions.
23 Thank you.
24 DR. JANOSKY: Are there any other requests from
25 the public? Are there any questions from panel members for

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1 Ms. Brown, Mr. Clark, or Dr. Zuckerman? Dr. Patters.

2 DR. PATTERS: I would like to ask any of the three

3 individuals that just spoke how they think the panel can

4 differentiate between an unsafe or a poor device, and an

5 unsafe and a poor surgeon.

6 DR. ZUCKERMAN: I guess I would just say that as a

7 researcher, one of the key ways of doing that is making sure

8 that studies look at many surgeons, just the way when you do

9 a program evaluation, you don't study one program as

10 conducted by one person, because one person can have a great

11 program, one surgeon can have a lot of successes, so you

12 want to get some sense of a typical surgeon using a device

13 to find out if that device is safe.

14 From a manufacturer's point of view, of course,

15 they want to talk about the safety of the product, but if

16 they are not properly training surgeons to use it, or if the

17 product is difficult to use correctly, it doesn't matter it

18 seems to me how perfect that device is in the real world.

19 You have surgeons that have to put it in.

20 So, the more people you have in your study, that

21 is the whole point, right, of multicenter clinical trials,

22 the more people you have, the better sense you have of what

23 is going to happen to patients, and from a consumer point of

24 view, that is what we care about.

25 DR. PATTERS: Let me ask Ms. Brown specifically.

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1 Do you have any information on the failures that you showed
2 as to whether you believe it was a device failure or it was
3 poor surgery?
4 MS. BROWN: From what patients tell us through
5 phone calls and letters, it would very hard to distinguish
6 between the two. As we said before, that is subjective and
7 as you all have pointed out it is subjective data that we
8 receive from the patients.
9 However, you know, showing these pictures, I don't
10 think a tumor could necessarily come from a surgeon. Maybe
11 it's possible. I think a broken device, after it has been
12 implanted for three years, would probably not be due to the
13 surgeon, but could possibly.
14 So, in looking at a lot of the data we look at
15 from patients, it would be a very difficult decision to make
16 as to whether--and probably not for us to make as to whether
17 it would, you know, come from surgeons or the implants.
18 Our concern is that they are as safe as possible
19 for the people who actually--you know, if your jaws were
20 fused shut, as patients that we hear from are, and you
21 couldn't eat, your last option would be to get that implant,
22 to take the chance you have to eat food and live.
23 Granted, you know, if you are already in pain,
24 fine, but if you are in pain and you still have a little
25 function of your jaw left, I think between pain and

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1 functionality is a big issue, and I think that if you are in
2 a lot of pain, but you can still chew, are you going to make
3 the choice to have an implant? If you are fused shut, would
4 you make the choice to implant even though you would deal
5 with more pain?
6 I am really not sure exactly what to say on that,
7 but I wish that--I will stop here. Sorry. Did that answer
8 your question?
9 DR. PATTERS: Thank you.
10 DR. JANOSKY: Dr. Heffez.
11 DR. HEFFEZ: I just have a follow-up question if
12 you could come back the podium, Ms. Brown.
13 In your opinion, is the public principally, their
14 principal source of complaint is pain or lack of function?
15 MS. BROWN: Both.
16 DR. HEFFEZ: You don't find that they are
17 separate?
18 MS. BROWN: They are in combination with each
19 other, because if you take a bite of food and try to chew
20 it, and you are in excruciating pain, how often do you think
21 you will return to that plate of food or speak out and
22 experience that pain over and over again?
23 What you will do is you will try to compensate.
24 You will start keeping your mouth closed, perhaps you won't
25 eat.

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1 DR. HEFFEZ: Is the pain they are feeling
2 primarily therefore chewing function or is the pain that
3 they are complaining of primarily spontaneous with or
4 without function?
5 MS. BROWN: Since we hear from so many, I couldn't
6 tell you, but it is all of the above, it is D.
7 DR. SKINNER: Could I ask a question also? I am
8 an orthopedic surgeon, and I do mostly hip and knee surgery,
9 and I put in total joint implants similar to these in some
10 respects.
11 I get an occasion patient, despite putting in a
12 total knee, I tell them not to go skiing, I tell them not to
13 play tennis, and the patient insists on doing that.
14 Is there some analogy that can be drawn to this
15 implant, that the patient perhaps has some effect on the
16 survival of the implant?
17 MS. BROWN: Most that I have heard from, I think
18 they are fully aware. I really don't think that we have
19 patients that are taking a big bite of an apple two days
20 after their implant, not even two months after their
21 implants. Most of them aren't doing that two months after
22 an open joint surgery.
23 As far as being advised by their surgeons, I think
24 that they are advised by their surgeons to take special
25 care, and I think they do take the special cares. I think

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1 their frustration comes in when the problems start
2 recurring, and they have done everything that they know,
3 that their surgeon has said, and their doctor has
4 recommended to make them better.
5 DR. HEFFEZ: I have an additional follow-up
6 question. If you state they are having problem with
7 function, is the problem a function of their opening or
8 their biting?
9 MS. BROWN: It could be both.
10 DR. HEFFEZ: Which is the principal complaint of
11 the patient? The reason why that is important to understand
12 is that most of these companies end up studying how much a
13 person opens, but nobody is ever paying attention to the
14 biting force, and the reduction in biting force, whether
15 biting force gradually increases following surgery.
16 So, the importance is to direct the treatment to
17 the patient's symptoms. So, is the patient's chief
18 complaint primarily that, in your opinion, that they are
19 unable to chew or unable to open their mouth?
20 MS. BROWN: Well, as I said before, I think it
21 could be both in the respect that you have people whose
22 musculature, for instance, an atrophied muscle, if it did
23 not have any muscle tone at all, would it not sag, would
24 there not be any structure here?
25 A lot of people, just the spasm of it to begin

1 with, the spasm and the other things that are going on in
2 their face, can cause force to that joint or at least they
3 complain of forcefulness, the feeling of this into their
4 faces, I feel tightness, I feel pulling, I have spasms.
5 This is in a non-movement situation.
6 I think that they complain more about it when they
7 are talking or chewing, that this increases, but they could
8 be relaxing and still have that muscular force that they
9 tell us about, the spasms, that they say feels like it is
10 ramming my jaw into the back of my head.
11 DR. HEFFEZ: The question specifically was does
12 the patient come to you and say I cannot open my mouth, that
13 is my major complaint, or do they come to you and say I
14 cannot chew?
15 MS. BROWN: It's both.
16 DR. JANOSKY: Ms. Cowley.
17 MS. COWLEY: If I take time to respond to several
18 of the questions Dr. Heffez has, will you penalize me from
19 asking my questions? Okay.
20 First of all, somebody asked a question about the
21 surgeon whatever, I think you have a term for that, whether
22 it is the surgeon's fault or the device's.
23 Obviously, any device manufacturer should have an
24 impeccable training program for any surgeon that is going to
25 be implanting their devices. However, a model of the PMMA

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1 head that we know of, that was on the market in--I don't
2 know when--but the patients told us that at some point the
3 PMMA head just lopped off the platform, there was not a
4 screw going up the center.
5 So, you would have the PMMA bobbing around in the
6 space. Okay. So, I don't know if that's the surgeon, but
7 if the thing breaks off, the blob breaks off, that's a
8 device.
9 Dr. Heffez, in fact, this is quite interesting, in
10 the last month--well, first of all, a lot of doctors tell
11 their patients you can do anything after you have this
12 surgery. However, one of the manufacturer's surgeons
13 actually tells his patients never eat food, you must only
14 drink Ensure, and so forth. So, that is one of the
15 surgeons.
16 However, Dr. Curry's partner, in the last month, I
17 heard from a patient who was--Dr. Curry's partner was trying
18 to entice this patient into having a surgical procedure by
19 explaining to her husband how this was going to enhance his
20 sex life. So, obviously, if can do that, you can probably
21 eat apples, I don't know.
22 As far as pain goes, you ask a very interesting
23 question, because I think in my own situation, I have
24 identified about nine different types of pain. You have the
25 pain, the skin, so you have just scraped your skin on the

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1 ground from just the edematous swelling, you have streaking
2 pains from the joint, you have, for implantations, we have
3 the submandibular preauricular lymph node pain, you have
4 burning mouth from the loss of vertical dimension, and you
5 have allodynia, and you have every type of pain.
6 So, if the patient even called us on a particular
7 day and said I can't bite into an apple, would say, you
8 know, are you crazy, get the knife, you never should do that
9 anyway.
10 So, you know, is it biting, is it chewing, is it
11 whatever, I mean, heavens, first of all, we don't have the
12 science on that, so we don't know. So, you know, in answer
13 to that question.
14 Should I continue with my others? I have
15 questions of the FDA.
16 DR. JANOSKY: Excuse me for one second, please.
17 No one else is requesting to speak from the
18 public, am I correct?
19 DR. HOFFMAN: My name is Dr. David Hoffman. I am
20 an oral and maxillofacial surgeon.
21 DR. JANOSKY: Excuse me. Do you have financial
22 interests?
23 DR. HOFFMAN: Yes, I do.
24 DR. JANOSKY: Can you please state those for us?
25 DR. HOFFMAN: I am the co-developer of a joint for

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1 Endotech, which is one of the joint companies making a
2 prosthetic joint, and I will be paid potential royalties.
3 What I wanted to do is hopefully, just for the
4 purpose of the record that is being recorded today, that
5 having had a large experience in putting total joint
6 prosthesis in, that I wanted to make sure that it was at
7 least documented that in doing such, these are not isolated
8 events, and they are part of a total health care delivery
9 system, and even though the information that is being
10 delivered is important, very important, that one of the
11 problem I see is that it is not just the FDA and the
12 manufacturer and the surgeon, that is the health care
13 delivery that falls often short, in particular the HMOs, and
14 I know that this is a little bit supercilious, but I want to
15 again stress that patients undergoing these situations, in
16 terms of range of motion, pain control, deciding who is a
17 good candidate often are shortchanged because their
18 insurance carriers aren't helping with the total package.
19 You can't look at a patient in terms of a joint
20 rehabilitation without having them have rehabilitation after
21 surgery, and it's not the onus of the manufacturer or the
22 surgeon, but there is a definite problem existing in the
23 United States today that my patients, a good percentage of
24 them, are denied the total health care package which makes
25 them successful, and that is probably as important a

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1 consideration.

2 I realize there is not much this panel or the

3 group can do, but it should be noted that a patient who has

4 had this surgery, and not permitted to seek pain management

5 either before or after surgery, not reimbursed for their

6 physical therapy, and not reimbursed for a whole host of

7 other things that they need, such has CPM machines, if you

8 choose, often may very well be looked at as a failure, when,

9 in fact, it has nothing to do with the equipment, the

10 surgeon, or the regulatory bodies, it's purely a function

11 that they ran out of health care financing or they never had

12 it available to them.

13 Thank you.

14 DR. JANOSKY: At this time I would like to close

15 the open public hearing and move on to the open committee

16 discussion and vote.

17 I would like to organize the open committee

18 discussion and vote by first addressing any final questions

19 to the FDA, and then any final questions to industry.

20 So, final questions to the FDA, for Dr. Runner or

21 Ms. Blackwell, Dr. Ponnapalli.

22 **Open Committee Discussion and Vote**

23 MS. COWLEY: I have a question. What is the

24 intent of device tracking, and is evidence of a reliable

25 device tracking system inherent in the PMA package, is it a

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1 part of the PMA package? And if not, how can a TMJ patient
2 be assured they will be notified in the event of
3 identification of a product defect?
4 MR. ULATOWSKI: The tracking of devices, the
5 follow-up on implants, that opportunity is available in the
6 PMA process to what extent we feel is appropriate in order
7 to track those devices farther out, and then for follow-up
8 purposes, and I am not sure if that was an element of
9 yesterday's conditions, but that is certainly on the table
10 for discussion.
11 MS. COWLEY: I think the patients would feel very
12 comfortable if our companies were at least tracking us, to
13 find us in the event that we all get osteolysis in five
14 years of something.
15 Secondly, does the FDA have a copy of the
16 Christensen prospective study protocol as part of the PMA,
17 should you have, as well as a copy of the patient consent
18 form?
19 MR. ULATOWSKI: I am looking at Dr. Runner for a
20 nod yes or no on that. We do not have the prospective
21 study, but that would not be a requirement under our
22 regulations in any case.
23 MS. COWLEY: It is not, so you would not.
24 MR. ULATOWSKI: It is? I am not sure if we have
25 the entire protocol.

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1 DR. JANOSKY: Are you going to address the issue
2 as to whether it is contained in the PMA or not?
3 MR. ALBRECHT: Yes, the prospective study protocol
4 is part of the appendix of Section 6B of the PMA.
5 MS. COWLEY: So, you do have it.
6 MR. ULATOWSKI: Yes.
7 MS. COWLEY: You all. I mean I didn't get it.
8 MR. ULATOWSKI: Evidently. But I think a point to
9 be made is prospective studies for these types of devices,
10 these 515(b) devices does not require FDA preclearance
11 because they are marketed products, and they are exempt from
12 our investigational regulation.
13 MS. COWLEY: Should I continue with questions of
14 the manufacturer?
15 DR. JANOSKY: The questions are for FDA at this
16 point. We can return back to the other.
17 Additional questions from panel members for FDA?
18 Dr. Heffez.
19 DR. HEFFEZ: Can they voluntarily provide that?
20 MR. ULATOWSKI: Voluntarily. People submit
21 protocols to us all the time for comment, so that is
22 certainly open for consideration, but formally, they are
23 exempt from our investigational regulation.
24 DR. JANOSKY: Dr. Stephens? No.
25 Additional questions for FDA?

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1 At this point, I would like to move to additional
2 questions for the sponsor, if panel members have additional
3 questions for the sponsor. Dr. Stephens.
4 DR. STEPHENS: I have a question that I would like
5 to ask Drs. Curry and Christensen.
6 On the fossa prosthesis, is it indicated as the
7 primary treatment for first-time operated internal
8 derangement, is the typical patient with an anterior
9 displaced meniscus with MRI documentation for which you feel
10 that that is the etiology of their pain or dysfunction?
11 DR. CURRY: In my practice it is, yes.
12 DR. STEPHENS: Dr. Christensen, is this the
13 company recommendation?
14 DR. CHRISTENSEN: Our history has certainly shown
15 that as a primary surgical treatment for diseased joint, it
16 is very, very effective. That first operation is the time
17 you get to have the greatest ending or the greatest time of
18 no more surgeries, and I can tell you from my experience of
19 40 years, that that is the great place to have it, but you
20 don't do it, as Dr. Heffez would surely tell us, you don't
21 do it on a joint that you don't know that you have got some
22 problem.
23 Did that answer for you?
24 DR. STEPHENS: I think so. This is the typical
25 patient who would otherwise have a meniscus plication.

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1 DR. CHRISTENSEN: I certainly found plication was
2 not the answer, but if I put a fossa-eminence implant in
3 there, that was the answer, statistically, too.
4 DR. CURRY: Let me amend my statement to you a
5 little bit because there are certainly other treatments that
6 are available for some of our patients, for instance,
7 arthrocentesis and arthroscopy, and certainly, under certain
8 circumstances, those would be recommended before an open
9 joint procedure is done.
10 DR. STEPHENS: Patients who have the fossa
11 prosthesis, do you have any sense of how many of those
12 patients will go on to total joints, and patients where
13 there is not an indication of early DJD?
14 DR. CURRY: Yes, I do. In my own practice, 14.4
15 percent of my patients have moved from partial joint
16 reconstruction to total joint reconstruction. There is a
17 reference in the literature, in 1990, out of the University
18 of Pennsylvania, Peter Quinn's bunch, when he was doing a
19 Christensen joint prosthesis, he had about a 12.2 percent
20 conversion rate from partial rates to total joints.
21 As my partner and I looked at our series of cases,
22 we found that in the early stages of our learning curve for
23 doing joint protheses, in an effort to be more conservative,
24 we did more partial joint reconstructions early on even in
25 cases which today we would do a total joint procedure on to

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1 begin with.

2 A couple of reasons for that. We have learned

3 since the middle 1990s, that the more procedures that a

4 patient has, the less likely they are to have a successful

5 outcome no matter what we do to them. So, in an effort to

6 cut back on the number of surgeries a patient is likely to

7 have because of the disease process in rescuing this

8 disabled joint, we do a partial joint reconstruction when it

9 is indicated, and hopefully a total joint replacement when

10 it is indicated.

11 DR. STEPHENS: In these patients who go on to

12 total joint replacement, what is your sense, what is the

13 typical diagnosis that is made at the time that you are

14 progressing, are they principally DJD or are there other

15 causes?

16 DR. CURRY: I am not really sure I understand. In

17 a significant number of our earlier patients that we were

18 treating with partial joint reconstruction, were Teflon

19 Proplast failures and other alloplastic failures and other

20 joint failures, and if the condyle radiographically and/or

21 clinically had any chance of survival, it was our protocol

22 to try and maintain the patient's condyle, and if, in fact,

23 the partial joint reconstruction did not meet our

24 expectations and/or the patient's expectations, and further

25 clinical evaluation of that patient indicated continued

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1 joint pain and/or continued joint dysfunction, then, we
2 would either recommend a total joint at that point or do a
3 revision arthroplasty and maintain the partial joint.
4 DR. STEPHENS: The patients that I am thinking of
5 are patients who have only a meniscus displacement primarily
6 in an otherwise healthy joint, that looks normal, and the
7 only problem is a displaced meniscus, I am interested in the
8 number of those patients that you think go on to a total
9 joint, and what kind of problems led to them needing a total
10 joint?
11 DR. CURRY: I don't have data on that. My sense
12 clinically is that we very rarely, very rarely see an early
13 case like that, that has to go on to more than the initial
14 surgical insult in my hands.
15 I can't speak for other surgeons, and I think
16 there are some things to be considered there, but in my
17 hands, early recognition of a failed joint beyond which
18 nonsurgical intervention has been totally ineffective and/or
19 even arthroscopy sometimes and arthrocentesis has been
20 ineffective.
21 We know from studies that disk position is very
22 controversial, and we have also known from studies that
23 replacement or repositioning the disk surgically and
24 nonsurgically has been shown to be absolutely unreliable.
25 Up to 86 percent of repositioned disks, surgically and

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1 nonsurgically, are imaged two years after their procedure,
2 and they are out of place again.
3 So, disk position doesn't mean as much to me now
4 clinically as it did five, 10 years ago.
5 DR. STEPHENS: Another question I would like to
6 ask Dr. Christensen. When the company decided to add the
7 all-metal joint to the inventory, can you give us a sense of
8 what the company's impetus was for doing this, and were
9 there were reports from surgeons of feeling that perhaps
10 there were problems that might have been related to wear
11 debris, inflammation around the joint, that kind of thing?
12 DR. CHRISTENSEN: That is a good question, Dr.
13 Stephens. Oh, I think over the years we have probably heard
14 from people that were concerned about the PMMA because it is
15 a little bit softer, but over the years I have not seen a
16 problem with it. In fact, it will flatten off and smooth
17 down. But anything that we can do to minimize wear totally
18 will help, and we had a number of doctors that were
19 utilizing, as well as myself, utilizing metal, and the
20 results have been very good with that.
21 I think over the long haul, if we look at the
22 thing 20 years from now, we are going to find that metal is
23 going to do very, very well.
24 Did I answer your question?
25 DR. STEPHENS: So, there was not a push by users

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1 of the joint--

2 DR. CHRISTENSEN: No. There are a lot of doctors

3 that still liked, preferred using plastic versus metal. It

4 is a doctor's choice.

5 DR. STEPHENS: If there is a new surgeon who is

6 going to use the joint system, and if they were to inquire

7 to the company about the joints, which ones they ought to

8 use in a particular situation, what would you tell them

9 about indications for one or the other?

10 DR. CHRISTENSEN: I would like to answer that

11 slightly different, if I could. We really encourage our

12 courses which we put on in various parts of the country at

13 various times during the year, we encourage the surgeons to

14 be there. We put on really an excellent course, and try to

15 bring in all the data that we have, and all the data of

16 surgeons that use it. There are several hundred doctors

17 that utilize this technique, so it is not just 1, 2, 3, 4,

18 5.

19 The results you have seen up there today have all

20 come from these hundreds of doctors doing it, so it isn't

21 particularly a single doctor doing it, but would we--was

22 your question how would we recommend?

23 DR. STEPHENS: What would you tell a new surgeon

24 who is inquiring about the system the difference between the

25 two and what instances, how one would consider one or the

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1 other?

2 DR. CHRISTENSEN: I think in our courses we have
3 probably got the greatest evidence of that, but it is really
4 doctor choice. Both will work. One has a little bit more
5 wear than the other, and beyond that, I think that is about
6 it. We have not seen foreign body reaction or--I have not
7 seen osteolysis to either one of these implants in all these
8 years. Occasionally, you will see an AVN of a condylar head
9 that would occur whether you did anything or not. That is
10 very rare, too.

11 DR. STEPHENS: On the PMMA head, have you had
12 joints returned where they have worn down to the pin?

13 DR. CHRISTENSEN: If we have, it has probably been
14 one, and I am not sure that that happened. Even if it does,
15 it is highly polished that it would make no difference, it
16 would stop right there. It would take forever to wear much
17 beyond that point.

18 DR. STEPHENS: Have you had fractures of the head
19 above the shoulder of the joint?

20 DR. CHRISTENSEN: No, I know of one case in which
21 this patient had about 25 surgeries before, kept getting
22 heterotopic bone, and they went in and cranked this jaw open
23 and open and open and open, did it on a TV program, did it
24 everywhere, and that one did break off, right. That's the
25 only one I ever heard from.

at

1 In regards to the patients on the web site, that
2 Mr. Clark talked about--and I am not criticizing--those
3 patients, I know them personally. What is said in there is
4 absolutely true, what is on that web site.
5 DR. STEPHENS: Thank you.
6 DR. JANOSKY: Dr. Li.
7 DR. LI: A question for the sponsor. You have
8 multiple sizes. What is it, 45 sizes, I think, is that per
9 side, left and right sizes? Are the sizes interchangeable?
10 Is it possible for the physician, for instance, to use--I
11 will just make up, I don't know how you catalog them--but a
12 size 1 condyle and a size 45 fossa component, and if there
13 is an opportunity, are there combinations that, in fact,
14 should be disallowed because wear rates would be affected or
15 impingement would be affected in some way?
16 MR. MORGAN: Jim Morgan. Dr. Curry may want to
17 comment on part of that. The stock system is what you are
18 referring to. We have 44 right fossas, 44 left fossas, and
19 then we have Universal and Christensen/Chase condyles in
20 three sizes, 45, 50, and 55 mm.
21 Those can be used interchangeably, that is, you
22 could take any one size of Universal condyle and fit it to
23 any of the fossa.
24 DR. LI: My question is do they perform
25 differently, in other words, are the contact areas the same,

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1 are the loads the same, is the wear the same if you mix and
2 match?
3 MR. MORGAN: Contact areas could be different.
4 You could have, for example, one point of contact, which is
5 what we consider to be our worst case testing scenario. It
6 is possible to have two or three point contact.
7 DR. LI: A question on your packaging or
8 sterilization. You gamma-sterilize your components?
9 MR. MORGAN: That is correct.
10 DR. LI: And you do that in air environment, just
11 in a normal package?
12 MR. MORGAN: They are double packaged in PETG with
13 Tivek.
14 DR. LI: But in air, it is not evacuated or
15 flushed with--
16 MR. MORGAN: That is correct.
17 DR. LI: Do you have any data on the aging of the
18 PMMA as a function of time, sterilizing under those
19 conditions?
20 MR. MORGAN: We don't have specific aging data.
21 We do haver pre- and post-sterilization test data.
22 DR. LI: It is quite possible, though, if you have
23 an inventory that is a few years old, the properties are
24 significantly changed with aging, which occurs with every
25 other polymer. I wouldn't see why it wouldn't happen with

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1 the PMMA.

2 MR. MORGAN: We have not performed specific aging

3 testing.

4 DR. LI: Thank you.

5 DR. JANOSKY: Question from Dr. Altman?

6 DR. ALTMAN: My question really involves

7 information to the patient. I noticed in the back of I think

8 the last book that we received, there is a TMJ patient

9 brochure draft that I hope will forever be a draft. I think

10 the information here is understandable to myself because I

11 have a dental degree, but I don't think a patient that

12 doesn't have a dental degree would even understand this

13 information, and would not be of use.

14 My point is that I think that any information that

15 goes to patients really needs to be down on a fifth or sixth

16 grade level. That is what patient information educational

17 information should be written at.

18 But a bigger concern also sort of tags onto Mr.

19 Clark's and that there really isn't a way for the consumer

20 to contact the company to receive information, and I find

21 that a little bothersome that there is not, if not so much a

22 patient advocate at your company, somebody that could answer

23 nonsurgical questions, if you will.

24 I mean I see some problems with giving out

25 clinical information, but for there to be a web site to give

1 information and to have a brochure, to give information and
2 not be able to seek clarification other than having to go to
3 a surgeon, I find a little bothersome.
4 What is the reason for that?
5 MR. MORGAN: Let me address the sixth grade level
6 thing first. That is something that the FDA has identified,
7 and we will be addressing in that labeling.
8 Relative to communication with patients, our
9 policy has been to encourage patients to seek medical advice
10 from their surgeons and discuss these issues with them as
11 opposed to the manufacturer.
12 DR. ALTMAN: But yet you will distribute the
13 information or they can get it from the web. For some
14 reason I have a disconnect with that.
15 You will give them just enough information, but
16 then you are going to refer them to a surgeon if they want
17 any sort of clarification. It seems to me that there should
18 be some way that they could, you know, be answered, have
19 answers to frequently asked questions, if you will, that are
20 not surgically related, but there might be a question about,
21 you know, just simple indications or--I can't think right
22 offhand.
23 I guess I am concerned that that is the policy,
24 understand it as the policy. I just want to register my
25 concerns with that.

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1 MR. MORGAN: We can certainly revisit that.

2 DR. JANOSKY: Dr. Burton.

3 DR. BURTON: Just in some of the comments that I

4 heard you make earlier--and I am not sure which one of the

5 individuals made this--said that the only explanted devices

6 had been PMMA head devices, is that correct? You have had

7 both metallic condyle, all-metallic, and PMMA heads that

8 have been returned to the company as explants?

9 MR. MORGAN: Yes, I think that is correct.

10 DR. BURTON: I had heard that comment earlier,

11 that they said, well, the only things we have seen that have

12 come back have been PMMA heads.

13 MR. LIPPINCOTT: We have had it up to five years

14 explant of metal-on-metal, and up to 11 years explant of

15 PMMA.

16 DR. JANOSKY: Dr. Patters.

17 DR. PATTERS: I would like to address Dr. Curry,

18 if I could. Dr. Curry, you apparently have great experience

19 at placing temporomandibular joint implants. I would have

20 to assume you also have some experience at explanting

21 others, not necessarily the Christensen implants, but

22 others.

23 In your experience, when dealing just with

24 metallic implants, not the Proplast Teflon ones, when a

25 patient comes and you advise them to have the implant

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1 removed, and you explant them, do you think the reason for
2 failure is more often failure of the device or some
3 iatrogenic failure based on how the device was placed
4 originally by the surgeon, certainly not yourself.
5 DR. CURRY: Certainly not.
6 DR. PATTERS: Certainly not.
7 DR. CURRY: Most of the devices that I have
8 explanted, that are metal devices, had Proplast attached to
9 them, and so the major issue that I have seen with other
10 devices that are metal have had the Proplast attached to
11 them, as well, and so I see a huge device failure on that
12 basis.
13 I have explanted one fractured Christensen device
14 that had been in for 11 years. I showed the device earlier
15 in the day. The screws were all still tight, the only
16 problem was the device itself had a fracture in it, and it
17 was relatively simple to take it out and replace it with a
18 new device. The bone was beautiful underneath it.
19 So, that is the only Christensen device total
20 joint that I have taken out for that length of time. I have
21 done two or three other revision cases in patients who have
22 had problems, either posttraumatic or what have you, and I
23 have seen one PMMA head shear off, but it was an iatrogenic
24 placement on my part, and so when I look at a case like
25 that, I question in my mind whether that is surgeon related

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1 or device related.

2 Certainly the patient is having a problem related

3 to the device, but the device failed because of something

4 that I did. I have bent the--maybe the company won't listen

5 to me for a minute--I have bent the flange on the fossa

6 liner early in my career trying to get it to fit just a

7 little better, and have fractured that off and reported that

8 to the company, and that has been reported as an MDR. That

9 is not a device failure, that is a surgeon making a bad

10 choice.

11 DR. PATTERS: Have you seen any of the dramatic

12 failures, such as Ms. Brown presented?

13 DR. CURRY: You mean with the Christensen device?

14 DR. PATTERS: No, sir, just in your surgical

15 experience.

16 DR. CURRY: Yes, sir, I have.

17 DR. PATTERS: In your professional opinion, are we

18 most often looking at a device failure or are we looking at

19 some iatrogenic failure? There are good surgeons, there are

20 bad surgeons, as I am sure you will agree.

21 DR. CURRY: I do agree, and I have seen a little

22 of both. The kind of failures that I saw earlier in the

23 afternoon have been--every one of them have been, in my

24 opinion, device related, but they have had Teflon and

25 Proplast associated with them and/or Silastic, and the tumor

1 that was shown earlier, I have seen a case like that, and
2 that was giant cell reaction to Proplast Teflon, and that is
3 all I have seen from that standpoint.
4 DR. PATTERS: Thank you.
5 DR. JANOSKY: Ms. Cowley.
6 MS. COWLEY: I believe you answered the question
7 this morning, but perhaps I wasn't terribly clear. I think
8 the issue of who owns the device is very important,
9 particularly when we have implant failure, and we
10 consistently hear complaints from patients that a device
11 suddenly disappears from the OR, nobody can find it, oh, it
12 was sent to the manufacturer.
13 The patient then requests the device from the
14 manufacturer or their lawyer does, and it's lost, or as in
15 one case, a totally different, new, banged-up device was
16 returned and presented as theirs.
17 Is there a consistent policy that your company
18 has, do you respect the right of the patient? I mean to the
19 best of my knowledge, we don't sign a sheet saying that this
20 is, you know, Christensen rent a device, it's we buy it, and
21 even though it can be sent back to the company for analysis,
22 should it not be returned to the patient?
23 DR. HEFFEZ: It is hospital protocol, if a foreign
24 body or any metallic device is removed, and that is the
25 reason why the patient presents them to the operating room,

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1 that it is sent to the Pathology Service of that hospital.
2 It is from there that the company has to answer what
3 happens.
4 MS. COWLEY: Right.
5 DR. CHRISTENSEN: I understand your concern, and
6 from a company's point of view, and having been a surgeon
7 for so many years, we want to see what is happening to the
8 device and so that we can study it, and to my knowledge, I
9 don't recall ever losing one or throwing one away or giving
10 the wrong one back. I am not denying what you are saying.
11 I don't know of that happening.
12 But we are there to help, come up with an answer
13 to that, and then if it gets into a legal thing, I think we
14 have to go to our attorneys, and so on.
15 DR. CURRY: But would you consider having some
16 kind of consistent type of protocol for that, for the
17 patients?
18 DR. CHRISTENSEN: I think in our physician booklet
19 it says if it breaks or something happens to it, that it
20 should be sent back to us. I think we can surely work out
21 something.
22 MS. COWLEY: I understand. Dr. Christensen, if
23 you don't mind, do you have a device tracking system in
24 place as well as the patient registry, and if--well, answer
25 that first.

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1 DR. CHRISTENSEN: Yes, we do.

2 MS. COWLEY: Great. What is your attrition rate

3 on the device tracking system?

4 MR. MORGAN: Device tracking is the registry. I

5 am not quite sure, Ms. Cowley, what you mean by attrition

6 rate.

7 MS. COWLEY: Well, your patient registry shows

8 that you have lost an awful lot of patients, and I am

9 looking at a patient registry for research purposes entirely

10 different from the legislated device tracking system where

11 you are supposed to find a patient within 10 working days in

12 the event FDA deems there is a device failure.

13 MR. MORGAN: I can respond by saying that our

14 device tracking system is in compliance with the regulation,

15 and we do--I don't recall what the frequency of follow-up,

16 what that requirement is--but we, on a regular basis, follow

17 up to try and make sure that we have current information on

18 the patients who have our devices.

19 Relative to attrition in a study, I think Mr.

20 Albrecht can--

21 MS. COWLEY: No, I understand the attrition there,

22 but I am more concerned about the device tracking system.

23 MR. ALBRECHT: May I just make a clarification?

24 MS. COWLEY: Sure.

25 MR. ALBRECHT: I would just like to make a

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1 clarification. The data that we presented from the registry
2 was from the secondary part of the registry where we do try
3 to collect information from the patients. That doesn't
4 reflect that we are losing patients to tracking. The data
5 presented was data we received back from patients on a
6 voluntary basis. The tracking is up to date. On a monthly
7 basis we do send out requests to patients to be sure that we
8 still have their accurate address, phone number, all the
9 demographic information, and then we update our files
10 consistently, but every device that we do sell or distribute
11 that is implanted, is in our device tracking registry.
12 MS. COWLEY: You communicate with the patient to
13 keep that updated, right, not with the physician, the
14 surgeon?
15 MR. ALBRECHT: I believe that is correct. If we
16 cannot find the patient, then, we will go back to the
17 physician and say do you know if this has moved, died,
18 whatever, and can you give us the location of that patient.
19 MS. COWLEY: Great. Okay.
20 I don't know how should address this, perhaps Dr.
21 Christensen. You have a prospective clinical study
22 encompassing 10 centers. Does each center have IRB
23 approval?
24 MR. ALBRECHT: Yes. We have conducted the study
25 as close to an IDE study as possible even though it is not

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1 required as such, so for every center we have received IRB
2 approval.
3 MS. COWLEY: Okay. However, you have an
4 impressive disappearance rate of patients, and, as
5 yesterday, I have to ask the question who is paying for this
6 follow-up care, and is that a consideration when patients
7 are having to travel as well as pay for doctors' services at
8 the centers? Is this an impediment to compliance?
9 MR. ALBRECHT: It potentially can be. To answer
10 the first part of your question, again, we cannot calculate
11 the dropout rate yet because the study is not completed, but
12 as the data suggested, the farther you go out, the less
13 patients have gotten out that far, so they are not ready for
14 that window yet.
15 To answer the second question with regard are
16 patients charged for the follow-up visits, we have not
17 stipulated that to the investigators that they should or
18 should not charge, that is between them and their patient
19 and their business. We can surely discuss that with them
20 and come up with something, but that has not been done in
21 the past.
22 MS. COWLEY: Finally, I would like to follow up on
23 Dr. Altman's concerns about not being able to get--the
24 patient not being able to get through to the company. As we
25 discussed yesterday, one of the prime problems a TMJ patient

1 has is they are stonewalled at the surgeon's door, and if
2 there is a problem, they are at the mercy of the surgeon,
3 they cannot get to the company to tell them, excuse me, my
4 device is sticking out of my head, or anything else to that
5 effect.
6 So, as they are being shuffled back, being told
7 this is no problem, you have no problem, this isn't cracked,
8 to find a year later at another doctor's office, yes, the
9 device was broken, you know, you aren't going to hear this
10 if you don't answer a telephone. I just want you to know
11 that.
12 Thank you.
13 DR. JANOSKY: Dr. Burton.
14 DR. BURTON: This is for Dr. Curry. Who is
15 providing the IRB approval for these? I believe, Dr. Curry,
16 you said you were one of the centers involved in this, and I
17 know you are in private practice, and I would assume--are
18 these university-based centers, hospital-based, private
19 practices, and, if so, who is providing the IRB approval in
20 those settings?
21 DR. CURRY: I will speak for my IRB. It is
22 through hospital.
23 MR. ALBRECHT: For all the other investigators,
24 the majority of them are in private practice, and we have
25 gone to their individual hospital IRB to receive IRB

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1 approval.

2 DR. JANOSKY: Dr. Heffez.

3 DR. HEFFEZ: Dr. Curry, can I ask you a question?

4 You have stated in your presentation that there was no other

5 device available that could be used for your intended

6 purpose. What are the criteria of the other devices that

7 are available, that have, in your mind, eliminated their

8 possibilities for your patient?

9 DR. CURRY: I think I made that statement in

10 reference to partial joint reconstruction only. I know that

11 there are other devices available for total joint

12 reconstruction.

13 DR. JANOSKY: Dr. Bertrand.

14 DR. BERTRAND: This is for Dr. Christensen,

15 please, sir. You obviously probably have more experience

16 than anybody else in this room placing implants, and I

17 realize that you haven't seen that many failures.

18 How many implants have you placed, sir?

19 DR. CHRISTENSEN: To go back over all the years, I

20 don't really know a number. It's in the hundreds, it is not

21 as large as some of the people out there that have much

22 bigger practices today than I had over many of those years.

23 DR. BERTRAND: What percent of those patients, do

24 you have any idea, have you been able to do 10, 15, 10 year

25 follow-up?

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1 DR. CHRISTENSEN: At this time, I go back to only
2 just a handful, a few, but I go back 39 years starting next
3 month, so it is a pretty good length of time.
4 DR. BERTRAND: But just a few for a 10-year
5 follow-up?
6 DR. CHRISTENSEN: Well, there is a lot more than
7 that now for 10-year follow-up because of the company, some
8 of the people I have seen, some of the people I didn't see
9 personally as a surgeon, but I was in surgery to watch the
10 surgeries sort of thing.
11 DR. BERTRAND: But in your own private practice,
12 there is no direct recall to bring these patients in
13 yourself to see?
14 DR. CHRISTENSEN: I quit practice about 10 years
15 ago, so it is a little hard to do that.
16 DR. BERTRAND: Thank you.
17 DR. JANOSKY: If we turn to panel questions, it
18 should be toward the back of the agenda packet.
19 MR. MORGAN: Jim Morgan. Just for my sake, will
20 there be opportunity for us to make a closing statement?
21 DR. JANOSKY: Yes, probably about a three-minute
22 closing statement after we are done with the questions.
23 MR. MORGAN: Thank you.
24 DR. JANOSKY: I have listed three panel questions.
25 I will read each of the questions and then we respond.

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1 The first question. We are working on resolving
2 fatigue-testing issues with the sponsor. What would be
3 adequate fatigue and wear testing parameters for this
4 device?
5 Responses from panel? Dr. Li.
6 DR. LI: It is a little tough to get at some of
7 these answers without seeing more retrieved devices.
8 Apparently, there is a number of them available somewhere,
9 as the sponsors have seen, but as a panel member, I have
10 seen very few of these. So, again, it is very difficult to
11 judge the value or even set what laboratory tests you should
12 do if it is unclear exactly what failure mode it is you are
13 trying to duplicate.
14 So, basically, the data we have seen so far is
15 entirely anecdotal in a sense that occasionally they were
16 shown implant with broken screws, one with a broken plate,
17 but we are looking at onesie and twosies out of tens of
18 thousands of devices, so in that sense, I am not exactly
19 sure how one creates a fatigue test that actually would be
20 demonstrably transferable to the clinical situation.
21 In the absence of that information, then, you are
22 going to just have to basically fatigue test these things in
23 the most strenuous way you can, and just hope that testing
24 has something to do with the clinical outcome.
25 In that regard, I would go with what Dr. Rekow

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1 suggested, if you want to do fatigue testing and then also
2 failure, then, probably the most severe test would be to
3 combine those two, which would be to fatigue it for a while,
4 and then do a failure test, because unlikely they are going
5 to fail as soon as you put them in for a failure test. If
6 they are going to fail, it is going to be some long cycle of
7 fatigue feature, and I think because of all your different
8 sizes and the number of screw options, especially in the
9 patient-specific one, the engineers are going to have to
10 identify for each design option what the weakest point is,
11 and then test that particular location on that device.
12 The best way, of course, is to know exactly where
13 they break and how they break, and then you can set up a
14 laboratory protocol to address that. In the absence of
15 that, you are just going to have to do like any good
16 engineer would, identify the weakest point and then
17 accordingly test.
18 DR. JANOSKY: Dr. Rekow.
19 DR. REKOW: I think that you could get a lot of
20 that data actually if you knew the degradation mechanics of
21 your material with time and loading, and then have some
22 experimental data to confirm that your finite element model
23 is a good predictor.
24 I think that you could accelerate a lot of your
25 testing by using your finite element model, but I think you

1 need to be able to show that there is a very high
2 correlation between your predictive values and your
3 experimental values, and then you can take care of a lot of
4 the geometry questions, as well, in terms of the different
5 devices that you have the sizes, and all of that sort of
6 stuff.
7 DR. LI: Let me add to that. My previous comments
8 were to the metal components of your system. I think my
9 testing would be more rigorous on the methylmethacrylate
10 option that you offer, which not that I don't believe the
11 results, but the performance is nothing short of miraculous
12 based on the material properties of that device and the
13 design as I saw as I passed it around. It almost goes
14 against every--if I was a betting man, I would have lost my
15 house that the thing performs the way it does.
16 So, either you have got some miraculous performing
17 methylmethacrylate combination design, but if that is the
18 case, you ought to be able to actually prove that in the
19 laboratory, but designing an appropriate fatigue or failure
20 test aimed at again isolating the weakest component of that
21 structure, and the directly testing it.
22 So, I don't think any of the tests you do actually
23 are rigorous or are worst case scenarios, because you have
24 not identified and tested specifically the weakest point or
25 points in that structure.

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1 DR. JANOSKY: Dr. Heffez.

2 DR. HEFFEZ: Just to follow through, I believe
3 also we have to look at the loading forces. They should be
4 increased and they should be applied in a consistent manner,
5 not in an intermittent or sinusoidal fashion.

6 DR. JANOSKY: Dr. Skinner.

7 DR. SKINNER: Regarding the wear testing, I think
8 that the orthopedic history suggests that for total hips,
9 the criss-cross wear is more useful in sorting out wear
10 patterns than a wear that is back and forth like a reversing
11 pin on disk type of thing. So, I would suggest something
12 along that line.

13 DR. JANOSKY: Additional comments or responses?

14 Moving on to Question 2. Wear particles generated
15 from previous implants have proven to be problematic. Does
16 the wear testing demonstrate that this device has adequate
17 safety in terms of wear?

18 DR. LI: I guess I have three points. One is,
19 just to shorten, a brief comment. The lack of being able to
20 just find any particles in histology from patients is
21 bothersome, and it has got to be technique oriented, so I
22 think as a follow-up to a retrieval program or any kind of
23 explantation, I think there are techniques around where, if
24 you are looking for methylmethacrylate, that you can isolate
25 those tissues and find them. So, I believe that is

1 basically a protocol deficiency to date.

2 As far as the wear test goes, neither wear test,

3 the pin-on-disk or the more anatomic one done at Rose

4 Medical have been validated from two centers. Again, we

5 don't have, or at least I have not seen very many retrieved

6 devices, so I don't know what wear pattern I am supposed to

7 get in my wear test.

8 So, without that again, there is no way to

9 validate if I am wearing appropriately or not appropriately,

10 and I like Dr. Skinner's thing about the emotion of the wear

11 test. The third validation is the size and shape of

12 particles. It could be that even if the surface looks the

13 same, the test is still invalid in the sense that the size

14 and the shape of the wear particles you are generating are

15 not those ones that you generate clinically.

16 So, I think you have to validate the test and

17 basically those three conditions, otherwise, you might as

18 well just take sandpaper and rub them and see how they do,

19 because otherwise there is no connection again with the

20 clinical outcome.

21 As far as the challenge of the wear particles in

22 our rabbit study, it is quite often the case, even if you

23 are using submicron polyethylene particles, which we know

24 are highly reactive, that you do it that particular model

25 and don't get a response.

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1 So, your animal model for tissue response is not a
2 particularly severe one, and there are other more severe
3 tests--you have got to use a test at least for polyethylene
4 more often than not elicits a response as opposed to a test
5 where often polyethylene doesn't even elicit a response.
6 So, your rabbit test was okay, but it certainly
7 was nowhere near a severe test. This is a final note.
8 Although the word we have on metal-on-metal implants--and I
9 don't know if Dr. Skinner wants to add something on that--is
10 that there is no question that metal-on-metal implants have
11 lower wear than metal-on-polyethylene, but it is also
12 relatively agreed that at least in tissue culture, size for
13 size metal particles are listed as stronger cytokine
14 reaction than polyethylene.
15 So, history is kind of on your side that you don't
16 get as much osteolysis in metal-on-metal hips as you do on
17 metal-on-polyethylene, but the potential is still there.
18 DR. JANOSKY: Additional responses, comments?
19 Moving on to Question 3. Do the data demonstrate
20 reasonable safety and effectiveness when taking into account
21 possible risks and benefits to the patient? Please state
22 the basis for your answer.
23 Dr. Patters.
24 DR. PATTERS: As I was concerned yesterday about
25 the high number of dropouts and feeling that the cohort,

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1 which was usually less than 20 percent of the cases started,
2 may be a biased cohort in that the patients who didn't
3 continue, and data was not gathered from them, may be either
4 those that were extremely happy and extremely successful,
5 or, on the contrary, those who were total failures, and that
6 the cohort that you test may be a biased one.
7 It is particularly of concern, I think, for a
8 company that has been selling TMJ implants for more than 30
9 years, that they have yet to conduct a rigorous scientific
10 test, but rather have tried to gather data from the selling
11 of their implants to private practitioners and try to gather
12 anecdotal data as to how these implants fared.
13 I really think it is time that you sit down and
14 support, not just sell, but support a study to answer the
15 question of whether your implants are safe and effective
16 long term. The data is not available to this panel at this
17 time in my opinion.
18 DR. JANOSKY: Dr. Gonzales.
19 DR. GONZALES: I do not feel that the efficacy
20 regarding pain has been adequately evaluated due to the
21 single-point average visual analog scale in a very complex
22 situation. I think that there is a lack of information
23 regarding pain type, and I feel that the benefits for pain
24 relief have not been addressed, and that the risk of
25 worsening pain in some small subgroup still needs to be

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1 investigated.

2 That is to say, there is still the possibility

3 that a small subgroup of patients can be worsened and

4 potentially identified before an implant is performed, and

5 the only way to get to the small subgroup is to do a study

6 regarding pain, addressing the issues of pain type, as well

7 as other characteristics of the patients that are undergoing

8 these implants.

9 DR. JANOSKY: Dr. Heffez.

10 DR. HEFFEZ: I think given the multi-indication

11 for the multiple devices, I do not feel that they

12 demonstrate reasonable safety and effectiveness. If we want

13 to look at utilization of some of the devices for salvage

14 procedures or mutilated joints, then, I have to state that

15 the risk versus the benefits of using some of the devices

16 may lean to replacing the devices.

17 As far as effectiveness, I don't believe that the

18 data has been adequately collected in order to demonstrate

19 effectiveness.

20 DR. JANOSKY: Dr. Skinner.

21 DR. SKINNER: I am surprised to hear you say that,

22 Dr. Heffez, because you were the one that convinced me that

23 it was probably safe and efficacious. You made the comment

24 that this device has been around for a long time, and I

25 think it is pretty obvious that this is far from being a

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1 Proplast type safety device. I think it is much safer than
2 that. It may not be a perfect device, but I think that it
3 falls into the range of being safe and effective.
4 I think that there are problems, and I think it
5 would be good if the indications were limited to salvage
6 procedures, but I think that that is getting into the range
7 of regulating medical practice even though the FDA is
8 charged with indications and labeling.
9 I would say that, yes, it demonstrates reasonable
10 safety and effectiveness when you consider the risks and
11 benefits to the patient.
12 DR. JANOSKY: Dr. Stephens.
13 DR. STEPHENS: I think that clearly, the devices
14 require additional studies, and that the studies in
15 particular need to break out the partial joint
16 reconstruction from the total joint reconstruction, and it
17 would also be helpful to look at the all-metal joint
18 separate from the PMMA joint.
19 I think that in looking at safety and efficacy of
20 the device, it is somewhat difficult with the data that has
21 been presented, but I think that some leverage has to be
22 given to the longevity of the device, and I am not sure that
23 I have seen indications of safety problems over the length
24 of time that the device has been in use, and I think that
25 the effectiveness of the device is reasonably well shown

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1 within the longevity of the device, the time that it has
2 been around.
3 But clearly, I believe that additional studies
4 with each of the three devices, the PMMA device, the all-
5 metal device, and the partial joint reconstruction device
6 need to be separated out and looked at separately.
7 DR. JANOSKY: Dr. Bertrand.
8 DR. BERTRAND: I am very concerned about the
9 prospective study as giving us any future data that is going
10 to help us understand what is happening in that the opening
11 measurements, opening measurements of this group indicate
12 that those patients already have some degree of translation,
13 otherwise, they wouldn't be opening 31.5 mm.
14 From clinical experience, we are talking about a
15 great deal here today. A large percentage of those patients
16 may well have primary muscle problems with a perception of a
17 joint problem irregardless of what imaging shows.
18 So, my concern that this prospective study,
19 because there is nothing about lateral movements that I have
20 read either, I don't really know if we have a primary joint
21 problem for which a surgical fossa or a subsequent condylar
22 implant would be provide any benefit other than maybe
23 contributing to future problems.
24 DR. JANOSKY: Dr. Burton.
25 DR. BURTON: I think you obviously have to

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1 separate the safety and effectiveness issues. I think it
2 has been shown that the data that they presented really does
3 not show good clinical effectiveness. I think it's a safety
4 issue probably best answered by the longitudinal amount of
5 time that it has been on the market, however, I think that
6 the panel and all the different people on the panel and
7 engineering support that we have received have raised some
8 serious questions regarding the PMMA version of that in
9 terms of both wear debris and in potentials for failure
10 within that.
11 So, I think again when you talk about safety, it
12 also depends very much on which one of the devices. We have
13 a number that are actually being considered here.
14 DR. JANOSKY: Dr. Heffez.
15 DR. HEFFEZ: Just a point of clarification for Dr.
16 Skinner. I felt that the way the data was presented did not
17 demonstrate the safety and effectiveness, but the longevity
18 is clearly the hallmark for this company.
19 DR. JANOSKY: Dr. Stephens.
20 DR. STEPHENS: I think the problem with the
21 opening data in the prospective study is the fact that the
22 indications for the partial joint reconstruction, I think is
23 an entirely different animal from the total joint
24 reconstruction.
25 When you are talking about patients with internal

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1 derangement, those patients' opening can be anywhere from
2 very restricted or close locked of less than 10 mm to
3 greater than 40 mm, and still require some sort of
4 intervention at some point.
5 I think that that is a great problem. Those
6 patients have to be taken out, because it really tells us
7 nothing about that group that requires total joint
8 reconstruction. I think that that is a major problem with
9 the prospective study.
10 DR. JANOSKY: Additional comments or responses?
11 Dr. Runner, have we answered all the questions
12 that you wanted us to consider here today? Yes. Okay.
13 At this point we are going to take a very, very
14 short break, five minutes, and when we return we will have a
15 three-minute wrap-up from industry followed by a motion and
16 a vote.
17 MR. MORGAN: Could I make a plea for 10 minutes,
18 please?
19 DR. JANOSKY: Why don't we compromise and say 7?
20 MR. MORGAN: Seven and a half?
21 DR. JANOSKY: I will keep the watch. We will say
22 7 1/2.
23 MR. MORGAN: Thank you.
24 [Recess.]
25 DR. JANOSKY: At this time, we will have a 7 1/2

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1 minute presentation from the sponsor followed by a few
2 comments from Dr. Floyd, who is the Industry Representative.
3 MR. MORGAN: We are grateful that we have had the
4 opportunity to present our products to you today. We
5 recognize that there are differences in the approach, our
6 approach and FDA's approach regarding the data, and we have
7 tried today to clearly delineate what we did and why we did
8 it.
9 I would like to emphasize that in over 35 years of
10 use, the objective has always been on the part of Dr.
11 Christensen, and then later, on the part of TMJ Implants,
12 Inc., to keep the patients' interest first and then also the
13 safety of the patient.
14 Second, we provide systems that we believe are not
15 otherwise available, and it is essential, we believe, to
16 keep these devices available and in commercial distribution
17 for use.
18 In this regard, we would welcome any guidance the
19 panel would care to provide on labeling conditions it
20 believes are appropriate.
21 Third, we are conducting additional confirmatory
22 tests that we will supply to FDA, and we plan to continue
23 postmarket studies to provide further support for the safety
24 and efficacy of our devices.
25 There are just a few specific issues I would like