

FOOD AND DRUG ADMINISTRATION
 CENTER FOR DEVICES AND RADIOLOGICAL HEALTH

OPHTHALMIC DEVICES PANEL

107TH MEETING

FRIDAY
 FEBRUARY 6, 2004

The Panel met at 9:30 a.m. in Salons B-D of the Gaithersburg Marriott Washingtonian Center, 9751 Washingtonian Boulevard, Gaithersburg, Maryland, Jayne S. Weiss, M.D., Chair, presiding.

PRESENT:

JAYNE S. WEISS, M.D.	Chair
ARTHUR BRADLEY, Ph.D.	Voting Member
ANNE L. COLEMAN, M.D., Ph.D.	Voting Member
MICHAEL R. GRIMMETT, M.D.	Voting Member
WILLIAM D. MATHERS, M.D.	Voting Member
TIMOTHY T. McMAHON, O.D., FAAO	Voting Member
KAREN BANDEEN-ROCHE, Ph.D.,	Consultant,
	deputized to vote
RICHARD CASEY, M.D.	Consultant,
	deputized to vote
ANDREW J. HUANG, M.D., MPH	Consultant,
	deputized to vote
MARIAN MACSAI-KAPLAN, M.D.	Consultant,
	deputized to vote
OLIVER D. SCHEIN, M.D., MPH	Consultant,
	deputized to vote
JANINE A. SMITH, M.D.	Consultant,
	deputized to vote
WOODFORD S. VAN METER, M.D.	Consultant,
	deputized to vote
GLENDA V. SUCH, M.Ed.	Consumer Representative
RONALD McCARLEY	Industry Representative
SARA M. THORNTON	Executive Secretary

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PRESENT: (continued)

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SHERYL L. BERMAN, M.D.
JAN CALLAWAY
DONNA R. LOCHNER
JAMES F. SAVIOLA, O.D.
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1 For this reason, FDA encourages you, the
2 Open Public Hearing speaker, at the beginning of your
3 written or oral statement to advise the Committee of
4 any financial relationship that you may have with the
5 sponsor, its product and, if known, its direct
6 competitors.

7 For example, this financial information
8 may include the sponsor's payment of your travel,
9 lodging or other expenses in connection with your
10 attendance at the meeting. Likewise, FDA encourages
11 you at the beginning of your statement to advise the
12 Committee if you do not have such financial
13 relationships. If you choose not to address the issue
14 of financial relationships at the beginning of your
15 statement, it will not preclude the Public Hearing
16 speaker from speaking.

17 I will remind those of you who are
18 speaking for sponsor, when you do come to the podium,
19 aside from identifying yourself and giving your
20 relationship with the sponsor, you also are required
21 to disclose any financial relationships you may have.

22 If you can just remain in your seats, we

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1 will sort of take an informal break for a few minutes
2 until we have the necessary information here. So you
3 can talk among yourselves.

4 We will go out of order. As long as I
5 have given the introductory statement for the Open
6 Public Hearing, we will start with the Open Public
7 Hearing. In interest of the 30 minutes that we have
8 for this section, on each of the speakers we will have
9 no more than seven minutes.

10 The first speaker is Mr. Glenn Hagele of
11 the Council for Refractive Surgery Quality Assurance.

12 MR. HAGELE: Good morning, and thank you
13 for the opportunity to address this Panel. My name is
14 Glenn Hagele. I am the Executive Director and Founder
15 of the Council for Refractive Surgery Quality
16 Assurance which, from this point forward I will refer
17 to by its acronym, CRSQA.

18 I have no financial interest in Refractec.
19 My travel here is self-funded, and do not necessarily
20 -- Sorry, I missed my notes. The comments that I make
21 here are my own and not necessarily those of anyone
22 affiliated with the Council for Refractive Surgery

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1 Quality Assurance.

2 CRSQA is a nonprofit consumer patient
3 organization, and through its sister websites,
4 USAEyes.org and ComplicatedEyes.org, receives over
5 800,000 visitors annually. We provide objective
6 information about refractive surgery issues and
7 resources for those unfortunate few who have
8 encountered poor refractive surgery outcomes.

9 Additionally, CRSQA evaluates and
10 certifies refractive surgeons based upon patient
11 outcomes. In addition to research of public studies
12 and case reports, my interaction with patients
13 provides me with a unique accumulation of anecdotal
14 information and the perspective of a patient.

15 The issues and concerns that I will raise
16 today all relate to communications between physician
17 and patient.

18 I wish to commend the sponsor for
19 investing the time and money in seeking FDA approval
20 of conductive keratoplasty for monovision correction.

21 CK monovision is currently an appropriate off-label
22 use of the approved device under scope of practice

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1 rules.

2 Seeking FDA approval for monovision
3 correction is not a requirement. Yet sponsor has
4 decided to subject itself to the rigors of the
5 approval process. No matter what the final decision
6 of this Panel regarding approval, the company should
7 be recognized for this commitment.

8 While it could be argued that the
9 motivation for seeking approval of CK monovision is
10 primarily for purposes of marketing, that opinion
11 would overlook the important asset that will be
12 afforded the public by sponsor's decision to seek
13 approval, the safety and efficacy data that will be
14 evaluated by this panel, which will, of course, help
15 patients make an informed consent.

16 Plano presbyopes seeking relief from the
17 need for reading glasses inundate our organization
18 with requests for information about techniques and
19 technologies to rid themselves of what many consider a
20 tolerable inconvenience. As you can see, I am sliding
21 my glasses down to be able to see these papers.

22 Although we may be able to provide limited

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1 information about monovision correction with contacts,
2 LASIK and other forms of refractive surgery, the
3 information presented to this Panel by sponsor will
4 provide prospective patients with hard data that they
5 seek to be able to make an informed decision about CK
6 monovision.

7 Something about the terminology that will
8 be used will be really important. CK monovision is
9 not a cure for presbyopia. Accommodation will not be
10 restored. There will be no functional change to the
11 crystalline lens.

12 For this reason, I am hopeful the language
13 used in this labeling will reflect that CK monovision
14 is a surgical process that attempts to compensate for
15 the effects of presbyopia. It is not a cure.

16 It is very important that patients
17 understand this difference, and I suggest that
18 labeling reflect that presbyopia remains, even if CK
19 monovision compensates for presbyopia's effects.

20 Regarding the learning curve, today you
21 are going to see results from what can only be
22 described as some of the best surgeons in the world.

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1 It is reasonable to assume that not every surgeon will
2 be of the same caliber.

3 I have no reason to doubt that sponsor
4 will provide significant training, and I am certain
5 that this panel will insist on adequate training or
6 proctoring. I believe, however, that it is in the
7 best interest of the patient to be informed of the
8 practical experience of the prospective surgeon.

9 From the results I have seen through
10 direct patient interaction, it appears that the
11 probability of successful outcome with CK for
12 hyperopia is significantly dependent upon the
13 surgeon's practical experience. Although we have
14 received relatively few patient complaints regarding
15 CK for hyperopia, they have been primarily from
16 patients whose surgeons had limited CK experience.

17 I will quickly add that the sponsor was
18 very responsive to our expressed concerns in these
19 instances, but I will discuss that later.

20 Our organization provides a list of 50
21 tough questions for your doctor for patients to use as
22 a guide in selecting their refractive surgeon. In our

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1 50 tough questions we recommend that a patient seek a
2 doctor who has performed at least 100 refractive
3 surgeries of exact type intended to be used on the
4 patient with the same equipment, the same refractive
5 error, and significantly more practical experience
6 with similar surgical techniques.

7 While this panel may find our
8 recommendation of 100 a bit conservative and even
9 restrictive, it does seem reasonable to assume that
10 the patient would like to know if he or she is the
11 doctor's first unsupervised CK monovision patient.

12 I respectfully request that this Panel
13 include in the patient labeling an indication that
14 training and practical experience of the surgeon may
15 be an important factor in the probability of a
16 desirable outcome.

17 Determining which eye is dominant and,
18 thereby, which eye would receive CK monovision is an
19 important factor in the success of the monovision
20 effect. Surprisingly, I have found that a single best
21 method for determination of dominant eye is not
22 currently established in ophthalmology.

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1 If I ask 10 doctors how to determine which
2 is the dominant eye, I will receive six different
3 answers, from asking which hand the patient writes
4 with to having the patient hold a camera up to see
5 which eye the patient uses to look through the
6 viewfinder, to tossing an object at a patient to see
7 which hand they use to catch it.

8 In researching the most appropriate
9 technique to help advise patients on how to determine
10 their dominant eye, I sought the counsel of those
11 individuals who be very negatively affected if they
12 did not use the correct eye as dominant, including
13 SWAT team sharpshooters, hunters and, ultimately,
14 members of the U.S. Olympic archery team. I can
15 assure you that the members of the U.S. Olympic
16 archery team do not throw objects at each other to
17 determine eye dominance.

18 I do not wish to be so presumptuous as to
19 suggest to this Panel the technique for determination
20 of eye dominance that is considered most accurate by
21 these other groups, but I do respectfully request that
22 the labeling for the physician include an appropriate

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1 technique and subsequent information.

2 CK is currently approved as a temporary
3 correction for hyperopia. This decision to approve CK
4 as a temporary correction was predicated on CK's rate
5 of regression. This is a very important consideration
6 for a patient considering CK monovision, because it
7 creates a unique situation after surgery.

8 If the patient, for any reason, decides
9 after CK monovision that he or she does not like the
10 monovision effect, surgical corrective measures are
11 probably not appropriate.

12 If a myope has LASIK in one eye and one
13 eye undercorrected for the monovision effect, then
14 decides that he or she does not like the effect,
15 additional LASIK enhancement surgery would be
16 appropriate, because both the primary and the
17 secondary procedures are permanent.

18 If the patient has CK monovision and--

19 CHAIRMAN WEISS: Excuse me, Mr. Hagele. I
20 think you have had your seven minutes, and your time
21 is up. I thank you for your comments.

22 We are going to go on to Dr. Milne. If I

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1 am mispronouncing your name, I apologize. In interest
2 of time and the agenda, we are sticking to the
3 allotted time. So just keep it in mind.

4 DR. MILNE: Thank you, and "Mill-ne" is
5 correct. The Scots say "Miln," but "Mill-ne" is the
6 way we say it over here.

7 CHAIRMAN WEISS: Good.

8 DR. MILNE: My name is Rick Milne. I am
9 general ophthalmologist in Columbia, South Carolina.
10 I am not a paid consultant of Refractec, and I had to
11 pay my way here today and was glad to get here last
12 night through all the winter weather.

13 I am here because I have a sincere desire
14 to see CK approved for the correcting of -- or the
15 recovery of near-vision in the presbyopic patient.

16 I have performed over the last two years
17 over 800 CK procedures in my practice. I have a
18 general ophthalmology practice that does more cataract
19 surgery than refractive surgery.

20 Interesting, over the last year over 80
21 percent of the patients I am doing CK on are having
22 the procedure for the off-label use of regaining their

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1 near vision, and they are presbyopic. That seems to
2 be the true niche and the true great benefit this
3 procedure is bringing to my patients.

4 Now I am speaking not only as a provider
5 of CK, but I am also speaking as a 47-year-old
6 microsurgeon who has chosen to have CK to recover my
7 near vision. I had CK about two months ago. Pre-CK I
8 was a +.65 hyperope, and I was Jaeger 10 vision, and
9 my life had become quite frustrating.

10 As an ophthalmologist, we go from a slit
11 lamp to chart work, speaking to patients. Reading
12 glasses were not a very good option for me there, and
13 also contact lens wear -- I did try the monovision
14 contact lens, and I have basically genetically dry
15 eyes. My father had dry eyes. I have dry eyes, and
16 really, contact lens wear was uncomfortable to me and
17 something that was just really not very doable for me.

18 So I chose CK. It is interesting. Maybe
19 it is because I am now a 47-year-old presbyope or
20 maybe it is because there's so many baby boomers who
21 are becoming presbyopic, but over the last several
22 years I have really noticed how frustrated our society

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1 and how intolerant our society is becoming over
2 presbyopia.

3 I will give you one example. A few weeks
4 ago I was traveling and was in a Hertz van in the late
5 evening, and I was in a van full of a bunch of
6 presbyopes, and we were heading out to get our cars,
7 and everyone had their Gold Medallion car selections.

8 So the manifesto was passed around so people could
9 see where their car was parked.

10 Well, our driver was a presbyope. All of
11 our people in the van were presbyope, and person after
12 person cannot read to find out where their car
13 manifesto was. To tell you the van was getting
14 frustrated is a minor statement. You know, it was a
15 long travel, and there was a lot of anxiety going on
16 there.

17 Finally, there was one presbyopic myope
18 that took his glasses off and read the manifesto for
19 everyone. Interestingly, I had had CK and I was just
20 quietly waiting for my time to see the manifesto to
21 help people. I didn't want to be braggadocious or
22 anything. But anyway, of interest, my wife leaned

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1 forward. She was sitting across from me, and she
2 learned forward and she looked at me, and she said
3 something very profound. She said, "You could help
4 these people."

5 You know what? She had it exactly right.

6 I had personally come to realize that presbyopia is
7 really quite disabling in a lot of situations, and
8 there really is a need to help people.

9 Also just in general in our culture, I
10 don't know if you have seen the movie, "Something's
11 Got to Give," where Jack Nicholson and Diane Keaton
12 play a great role. But that movie identifies two
13 things of becoming aged and infirm.

14 The one is Jack's need for Viagra, and the
15 other is both he and Diane's need for reading glasses,
16 over and over again throughout the movie. It was
17 portrayed in a way that most of us baby boomers don't
18 like to be portrayed. So it is something baby boomers
19 -- we are definitely frustrated with our situation,
20 and we are looking for good options.

21 It has been interesting. I chose CK for a
22 number of reasons, and I find my patients choose it

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1 for the same reasons. Number one, the option of
2 reading glasses, as I said, were not a good option.
3 Contact lens were not a good option for me, and a lot
4 of patients over the age of 40-45 are beginning to
5 have problems with their tear functioning.

6 I found the procedure to be a very safe
7 procedure after doing it on 800 people. Even now,
8 looking through the literature, and I will call John
9 Hayashida from time to time to make sure I am correct
10 about this, there has not been one serious
11 complication from CK worldwide to this date.

12 Now as a microsurgeon who makes my living
13 needing to see things with fine detail, I wanted a
14 very safe procedure. I wanted one where I was not
15 taking a risk, because I lose a few lines of vision
16 and I don't get to do what I do and my family is very
17 unhappy with me. But I chose it, and I'm very glad I
18 did.

19 Also of interest, the stability of my
20 patients, anecdotally -- I have not had one patient in
21 two years have to return and say, you know, I'm
22 beginning to lose the effect of this. I'm hoping, if

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1 I get five to ten years from this procedure, I'll be
2 thrilled. At that time I may need something else down
3 the road; maybe not. We may find this to be quite
4 stable.

5 In fact, just as another anecdote, my
6 hyperopic LASIK patients, I find that they seem to
7 have more regression than this procedure does, just
8 anecdotally.

9 So I am thrilled with my CK procedure. I
10 am thrilled with what it has done for me. I am very
11 thrilled with what it has done for my patients. I
12 have a lot of happy people out there, and I would
13 highly recommend you to approve CK for the recovery of
14 near vision in the frustrated presbyopic patient.
15 Thank you very much.

16 CHAIRMAN WEISS: Thank you very much.
17 Barbara Jo Morley.

18 MS. MORLEY: Good morning. My name is
19 Barbara Morley, and I am from Overland Park, Kansas.
20 I am a teacher by education and a homemaker, and I
21 have come here today as a recipient of the
22 keratoplasty monovision procedure.

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1 My mother once said to me that, be
2 thankful you have long arms, because they will come in
3 handy one day. And they did, I found out, because the
4 older I got, the further away I had to hold my piece
5 of paper to read it. But eventually my arms were not
6 long enough.

7 So I resorted to other measures like
8 buying glasses at WalMart, and I had them in every
9 room in the house, bathroom, kitchen, bedroom and,
10 then when I couldn't find mine, I would use my
11 husband's, because he had the same problem.

12 As an educator, I tutor now out of my
13 home, and I tutor on an individual basis. So I was
14 constantly having to put my glasses on to see the text
15 of the students, and then take my glasses off to
16 actually talk to the student. I'm sure that was very
17 distracting for the student, as it was for me.

18 I also lead a Bible study with a group of
19 16 women, and the Bible that I have is very small
20 print, and I would be doing the same thing, reading
21 the verses in the Bible, taking my glasses off to
22 speak to the ladies in the group, and putting them

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1 back on. It came to be quite the joke.

2 At a certain point when you can't find the
3 glasses, when you are tired of doing that, you look to
4 other options. About the first time that I thought
5 that I needed to have something done was -- Really, it
6 wasn't a funny situation. It was dangerous.

7 I had been on Mapquest, and I needed to go
8 to a place, and I didn't know how to get there. So I
9 printed the directions out, and as I was driving to
10 the place, I don't drive with my glasses, but I
11 actually needed my glasses to read what the Mapquest
12 said.

13 So I thought this is dangerous. So I had
14 to pull over to the side of the road and read the
15 directions and then get back on the road, and remember
16 the directions, which is a whole 'nother problem, to
17 get where I was going. I thought that's just not
18 good.

19 I have never worn glasses before. I have
20 always had perfect vision. So it was hard for me to
21 identify people with glasses. So what's the big deal.

22 But as I aged and I saw it was a big deal, especially

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1 when you only need them a portion of the time.

2 So at that point, my husband had had eye
3 surgery, but he had had not had this eye surgery. So
4 I was familiar with the clinic, the Hunkeler Eye
5 Clinic in Overland Park, and was presented with the
6 opportunity to have this done.

7 I am not a person who takes risks at all,
8 although you wouldn't believe that if you heard the
9 story of how we got here. But I decided that I wasn't
10 liking my lifestyle as it was. It was too much of a
11 hassle and, if there was something that I could have
12 done that would eliminate that, that I would be
13 willing to do that.

14 I did a lot of reading that was presented
15 to me by the clinic, and talked to several people and
16 Dr. Durrie has an awesome reputation in our city. So
17 I decided that I would do that.

18 The procedure itself takes such a
19 minuscule amount of time. I think I was in the chair
20 and out of the chair in less than five minutes. There
21 was no pain at all associated with the procedure. I
22 was able to read immediately afterwards when they took

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1 me into the little recovery room there, and they gave
2 me the after-procedures that I would need to do. I
3 could read the sheet right away. So there was no time
4 to adjust.

5 The only inconvenience of the surgery
6 itself was -- I think it was after the numbness, the
7 anesthetic, wore off that your eye feels like it has
8 sand in it or a little gritty for about a day. Then
9 after that, it's fine.

10 I had the surgery -- it will be two years
11 this August, and I can still read the phone book. I
12 have thrown all the glasses away in my house. That's
13 how confident I am. It has been a huge blessing to me
14 and my lifestyle for that.

15 Just to end, Charlene, the other lady and
16 I that came together to testify -- We feel so blessed
17 that we had this that we were sitting in the Kansas
18 City airport when the flight that we were supposed to
19 take to come here ran off the runway. So they came on
20 and they say, Flight 5454 is no longer in existence.

21 So Charlene and I sat there and, you know,
22 what do we do now. But we were determined to come and

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1 speak with you, because we are both so thankful for
2 this procedure.

3 My affiliation with the sponsor is none
4 other than they did pay my travel expenses here.
5 However, I think they still owe me, because that was
6 some harrowing trip. Thank you very much.

7 CHAIRMAN WEISS: Well, you can do your
8 negotiations with the sponsor. Charlene Myers. Thank
9 you.

10 MS. MYERS: Hi. I am Charlene Myers, and
11 I am from Kansas City, Kansas. I just want to say
12 that -- I'm very nervous -- that I had the procedure
13 done about -- It will be three years in August, and I
14 have been absolutely thrilled with it.

15 My job -- I work in the travel industry,
16 and I have to read the computer a lot, and I have to
17 read a lot of tickets and a lot of papers, and it is
18 frustrating when you have to take your glasses off and
19 on to be able to look at someone, that they are not
20 blurred. Then you have to tote them on to be able to
21 read. So that was an absolutely wonderful thing
22 there. I can also read to my grandchildren without my

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1 glasses, which is even better.

2 How I got into it was two of my daughters
3 had surgery, but for a different type of vision. They
4 made a comment, saying that it's too bad they didn't
5 have something for you to be able to read better.
6 Well, they were speaking to someone there at the
7 clinic, and they did say there was.

8 So I went in and was, I guess you might
9 say, a candidate. So I did the procedure, which was
10 very scary, but I did it, and I am so happy that I
11 did.

12 I really don't know what else to say
13 except it's just absolutely wonderful, and I would
14 recommend it to anyone to have done if they cannot
15 read without having glasses. Thank you.

16 CHAIRMAN WEISS: Thank you very much.
17 Your sincerity outweighed your nervousness.

18 Are there any other speakers for the open
19 public hearing? If not, the open public hearing
20 portion is closed.

21 We will now have introductory remarks by -
22 - or semi-introductory remarks by Sally Thornton

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1 before we go on to the open committee session.

2 MS. THORNTON: I would like to read at
3 this time the conflict of interest statement for this
4 date.

5 The following announcement addresses
6 conflict of interest issues associated with this
7 meeting and is made part of the record to preclude
8 even the appearance of an impropriety. To determine if
9 any conflict existed, the agency reviewed the
10 submitted agenda for this meeting and all financial
11 interests reported by the committee participants.

12 The conflict of interest statutes prohibit
13 special government employees from participating in
14 matters that could affect their or their employers'
15 financial interests. The agency has determined,
16 however, that the participation of certain members and
17 consultants, the need for whose services outweighs the
18 potential conflict of interest involved, is in the
19 best interest of the government.

20 Therefore, waivers have been granted for
21 Doctors Michael Grimmett, Oliver Schein, and Woodford
22 Van Meter for their interest in firms that could

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1 potentially be affected by the Panel's
2 recommendations.

3 Dr. Grimmett's waiver involves a past
4 imputed interest, a grant to his institution for the
5 sponsor's device, which is not the subject of this
6 meeting. He had no involvement and received no
7 compensation.

8 Dr. Oliver Schein's waiver involves two
9 consulting arrangements, one pending for a
10 competitor's unrelated device for which he had not
11 received any compensation, and the second with a
12 competitor's unrelated device for which he receives an
13 annual fee between \$10,000 and \$50,000.

14 Dr. Van Meter's waiver involves an imputed
15 interest, a stockholding in the parent of a competing
16 technology firm in which the value is greater than
17 \$100,000.

18 The waivers allow these individuals to
19 participate fully in today's deliberations. Copies of
20 these waivers may be obtained from the agency's
21 Freedom of Information Office, Room 12A-15 of the
22 Parklawn Building.

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1 We would like to note for the record that
2 the agency took into consideration other matters
3 regarding Doctors Anne Coleman, Arthur Bradley,
4 Michael Grimmett, Andrew Huang, Marian Macsai-Kaplan,
5 Oliver Schein, and Jayne Weiss. Each of these
6 panelists reported past or current interests involving
7 firms at issue, but in matters that are not related to
8 today's agenda. The agency has determined, therefore,
9 that the panelists may participate fully in all
10 discussions.

11 In the event that the discussion involves
12 any other products or firms not already on the agenda
13 for which an FDA participant has a financial interest,
14 the participant should excuse him or herself from such
15 involvement, and the exclusion will be noted for the
16 record.

17 With respect to all other participants, we
18 ask in the interest of fairness that all persons
19 making statements or presentations disclose any
20 current or previous financial involvement with any
21 firm whose products they may wish to comment upon.

22 Thank you, Jayne.

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1 CHAIRMAN WEISS: Thank you. With that, we
2 will open the Open Committee Session for PMA
3 P010018/S005. The sponsor can come to the podium.
4 You have one hour for your presentation. If you can
5 please identify yourself when you speak into the
6 microphone, what your relationship to the sponsor is,
7 and any financial interests you have in the company or
8 any other financial relationship you have with the
9 sponsor.

10 DR. HAYASHIDA: Good morning. My name is
11 Dr. Jon Hayashida, Vice President of Clinical Affairs
12 for Refractec.

13 I have the pleasure of introducing for
14 consideration by this Panel our pre-market
15 application, P010018 Supplement 5 for the ViewPoint CK
16 System used for the improvement of near vision in
17 presbyopes.

18 I will be joined by Dr. Mark Bullimore who
19 will present some background information on
20 monovision, and Doctors Marguerite McDonald and Dan
21 Durrie, clinical investigators in the PMA clinical
22 trial. Dr. Judy Gordon will facilitate our discussion

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1 in response to questions from the Panel.

2 Please note that Doctors Bullimore,
3 Durrie, Gordon and McDonald are paid consultants to
4 Refractec.

5 We appreciate the opportunity to present
6 to this Panel and hope that our presentation
7 elucidates the clinical data presented in this PMA.

8 I will begin our presentation with a brief
9 discussion of the indication for use. The ViewPoint
10 CK System indicated for the temporary treatment of
11 hyperopia was approved by the FDA in April 2002.
12 Since that time, approximately 25,000 cases of
13 conductive keratoplasty have been performed in the
14 U.S., and to date the safety profile of the procedure
15 has been excellent.

16 The subject of the current PMA being
17 considered by this Panel is the use of the ViewPoint
18 CK System for the temporary induction of myopia, from
19 -1.00 to -2.00 diopters, for improvement of near
20 vision in the non-dominant eye of presbyopic hyperopes
21 and presbyopic emmetropes with a successful
22 preoperative trial of monovision or history of

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1 monovision wear.

2 The improvement in near vision is provided
3 by the clinical technique of monovision in which the
4 non-dominant eye is targeted for a myopic endpoint,
5 and the dominant eye provides distance vision.

6 To present some pertinent background on
7 monovision, I would now like to introduce Dr. Mark
8 Bullimore.

9 DR. BULLIMORE: Thank you, Jon. Good
10 morning, ladies and gentlemen. My name is Dr. Mark
11 Bullimore, and as previously mentioned, I am paid
12 consultant to Refractec.

13 Now the clinical technique of monovision
14 is widely accepted and has a long history of use. In
15 their comprehensive 1966 review, Jain and colleagues
16 concluded that monovision is an effective and
17 reasonable therapeutic modality for correcting
18 presbyopia. They also noted that proper patient
19 selection and clinical screening are essential for
20 monovision success.

21 Currently, monovision may b achieved in
22 our practices by means of contact lenses, intraocular

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1 lenses or refractive techniques such as PRK or LASIK.

2 Nonetheless, monovision is not without its
3 limitations. Even in satisfied, successful monovision
4 patients, it is common to find decreased contrast
5 sensitivity and reduced stereopsis in selected
6 patients, and this is, of course, due to the monocular
7 blur.

8 It has also been widely reported in the
9 published literature that patients can experience
10 glare and other night vision difficulties. There are
11 also a few case series and case reports of patients
12 having more severe binocular vision anomalies
13 associated with monovision.

14 Now these monovision related issues serve
15 to emphasize the need to balance good near visual
16 acuity with maintenance of comfortable binocular
17 vision. In essence, the goal or the challenge is to
18 provide or to attain some intraocular blur
19 suppression. It is well known that the quality of
20 this suppression is associated with a number of
21 factors, in particular, the magnitude of the reading
22 addition.

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1 Now a number of factors contribute to a
2 successful monovision patient. Careful pre-screening
3 of patients is important, along with a contact lens
4 monovision trial or a history of successful monovision
5 contact lens wear.

6 As mentioned previously, it is important
7 to maintain an appropriate level of binocularity, and
8 this can be achieved by limiting the add power. It
9 has been documented that add powers higher than 1.5 to
10 2.0 diopters can result in a loss of binocular
11 summation and associated problems.

12 Finally, patient education is critical.
13 Patients need to understand, of course, that
14 monovision is a compromise between distance vision and
15 near vision. There are potential for symptoms well
16 documented and, most importantly, there may be a need
17 for continued spectacle use, even though, hopefully,
18 in a successful monovision patient, that dependence on
19 spectacles would be substantially reduced.

20 At this point, I would like to introduce
21 Dr. Marguerite McDonald who will describe the
22 technology and begin the presentation of our clinical

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1 trials results.

2 DR. McDONALD: Good morning. I am Dr.
3 Marguerite McDonald, and I am going to first present
4 information on the ViewPoint CK System, then describe
5 the study design and review the safety results.

6 Monovision treatment performed with
7 conductive keratoplasty or CK is the same procedure as
8 was approved for hyperopia treatment, using the same
9 device, same energy, same spot pattern and the same
10 range of correction, but with a refractive target of -
11 1.00 to -2.00 diopters.

12 As shown in this photograph, the ViewPoint
13 CK System consists of a portable console that
14 generates the radiofrequency energy, a lid speculum
15 and a handpiece in which a small tip called the
16 Keratoplast Tip is held. The Keratoplast Tip is used
17 to deliver the energy for treatment, while the lid
18 speculum serves as the return.

19 CK involves the controlled intra-stromal
20 delivery of radiofrequency energy to a depth of
21 approximately 500 microns in the corneal periphery.
22 Radiofrequency energy passes from a generator to a

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1 probe tip into the corneal stroma, and returns via the
2 lid speculum. This provides a homogeneous and uniform
3 cylinder of optimally constricted collagen to a depth
4 of approximately 80 percent of the peripheral corneal
5 thickness.

6 The CK treatment applications are of
7 constant power, with an increase in the number of
8 rings of applications to achieve greater levels of
9 corneal steepening. The procedure spares the visual
10 axis, offering an important potential safety feature.

11 Application of treatment spots in a
12 circular pattern at fixed radii results in steepening
13 of the central cornea with a range of correction from
14 +0.75 to +3.00 diopters, since some patients required
15 up to 3.00 diopters of intended change to reach a
16 refractive target of -2.00 diopters.

17 As shown, the optical zone marks of 6, 7
18 and 8 millimeters act as a template for the treatment
19 application. Once the optical zone marks are applied,
20 the surgeon begins applying treatment spots until all
21 of the rings of treatment are complete, resulting in
22 steepening of the central cornea.

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1 I will now present the study design and
2 the safety results for the prospective multi-center
3 clinical trial of the ViewPoint CK System for
4 improvement of near vision in presbyopes.

5 The clinical trial that is the subject of
6 our PMA was conducted at five clinical sites with
7 investigators who are experienced refractive surgeons.

8 All but one of the study investigators participated
9 in the hyperopia clinical trial of CK.

10 The study protocol called for enrollment
11 of 150 consecutive subjects who met all eligibility
12 criteria. To enroll in the study, prospective
13 candidates were required to be presbyopes at least 40
14 years of age, requiring a near add of +1.00 to +2.00
15 diopters.

16 Hyperopes with cycloplegic refraction
17 spherical equivalence of up to +2.00 diopters and
18 emmetropes were eligible for enrollment. Patients
19 were required to be successful monovision contact lens
20 wears prior to enrollment or to successfully complete
21 a contact lens monovision trial.

22 To this end, a documented history of

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1 successful contact lens monovision or a successful
2 contact lens monovision trial was required. A contact
3 lens monovision trial lasting an average of one week
4 was conducted to carefully screen patients with no
5 prior monovision experience.

6 The treatment goal in this study was to
7 improve near vision by targeting a myopic endpoint of
8 -1.00 to -2.00 diopters in the non-dominant eye.
9 Distance vision was provided by the patient's dominant
10 eye. It should be noted that, because this study was
11 initiated prior to approval of the CK procedure for
12 hyperopia, dominant eyes of presbyopic hyperopes
13 requiring distance correction were enrolled and
14 treated under the study protocol.

15 The target correction for the non-dominant
16 eye was determined by first performing a subjective
17 refraction with add determination. This was followed
18 by addition of plus lenses until the best clarity was
19 achieved at 14 inches.

20 Patients had the option of selecting a
21 partial near correction to meet individual preferences
22 for near vision, such as reading or computer work, to

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1 ensure clinically acceptable anisometropia, the
2 refractive target was limited to -2.00 diopters.

3 Safety parameters included measurement of
4 best correct visual acuity, induced cylinder, contrast
5 sensitivity, patient symptoms, and as for any clinical
6 trial, complications and adverse events.

7 Following the CK procedure, all FDA limits
8 for safety with regard to preservation of best
9 corrected distance acuity were met in the study
10 population. No more than one percent of eyes lost
11 more than two lines of best corrected distance acuity
12 at anytime during the course of the study, and no eyes
13 were worse than 20/40 post-operatively.

14 The key effectiveness parameters in this
15 clinical trial of CK for improvement in near vision
16 are the same as those reported for all refractive
17 surgery studies, but with a primary endpoint of
18 improvement in uncorrected near acuity rather than
19 uncorrected distance acuity.

20 The data we will be presenting differ from
21 the standard refractive surgery outcomes in that we
22 will be presenting monocular and binocular,

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1 uncorrected near acuity, as well as combined
2 uncorrected distance and near acuity.

3 Please note that in this summary of
4 effectiveness parameters 14 eyes treated for
5 uncorrected near acuity at distances greater than 14
6 inches are excluded. As you can see from this slide,
7 FDA targets for predictability of the refractive
8 outcome are approximated or exceeded at all follow-up
9 intervals.

10 The improvement in uncorrected near acuity
11 from baseline is particularly impressive when
12 considering that only five percent of eyes were J3 or
13 better preoperatively, and this increased to
14 approximately 80 percent after treatment with CK.

15 Clinical results: A total of 188 eyes of
16 150 subjects were enrolled in this study, and
17 demographic information for the study population is
18 shown here. Consistent with other clinical trials of
19 refractive surgery procedures, a larger number of
20 women than men were enrolled. However, this is a
21 slightly older population with a mean age of
22 approximately 53 years.

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1 As mentioned earlier in our presentation,
2 the study population included 38 hyperopic eyes
3 treated for distance. These eyes were included in the
4 study protocol, since the study was initiated prior to
5 approval of the hyperopia PMA. However, since the
6 results of these distance corrections were consistent
7 with the approved PMA outcomes, they will not be
8 discussed further.

9 Accountability in the study was excellent,
10 with 97 percent of all eyes enrolled available for
11 analysis at six months. This level of accountability
12 and availability for analysis was discussed with FDA
13 prior to submission of the PMA, and is consistent with
14 the data presented in the approved hyperopia PMA.

15 The safety cohort for this study consists
16 of all 150 eyes treated for near, while the
17 effectiveness cohorts are differentiated for the
18 endpoint under consideration.

19 Effectiveness with regard to accuracy of
20 the refractive outcome to target was analyzed for all
21 but three eyes with a target refraction above the
22 protocol limit. Uncorrected near visual acuity will

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1 be presented for the cohort of eyes treated with a
2 full correction, such that 14 eyes treated for
3 distance is greater than 14 inches, as well as the
4 three eyes representing protocol deviations, were
5 excluded.

6 Safety: As we move on to a discussion of
7 safety parameters, please note that safety is reported
8 for all 150 eyes treated for near.

9 The limits established in FDA guidance for
10 preservation of best corrected acuity are: Less than
11 five percent loss of more than two lines of best
12 corrected distance vision and less than one percent
13 decrease, worse than 20/40, in eyes with preoperative
14 best corrected distance vision of 20/20 or better.

15 Following the CK procedure, all FDA limits
16 for safety with regard to preservation of best
17 corrected distance acuity were met in the study
18 population. No more than one percent of eyes lost
19 more than two lines of best corrected distance acuity
20 at anytime during the course of the study, and no eyes
21 were worse than 2/40 postoperatively.

22 Only five eyes in the total cohort of 150

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1 eyes treated for near lost two or more lines of best
2 corrected distance acuity at six months or later.
3 Four of the five eyes were 20/16 or better at the last
4 reported visit, and the remaining eye was 20/25.

5 Concerns were expressed by the primary
6 Panel reviewers regarding the decrease of one line of
7 best corrected distance acuity in 34 percent of eyes
8 at one month. In this cohort of eyes with a decrease
9 of one line in BCVA, best corrected acuity in the
10 majority of eyes was 20/20 or better, and all of these
11 eyes were 20/25 or better. At three months, all of
12 these eyes were 20/20 or better.

13 Beginning at three months, the proportion
14 of eyes experiencing a gain of one line increased and
15 then surpassed the proportion of eyes with a loss of
16 one line.

17 The next safety parameter to be discussed
18 is the incidence of induced cylinder.

19 Preoperative cylinder of up to 0.75
20 diopters was allowed in the study population, and this
21 is reflected in the baseline mean cylinder of
22 approximately 0.3 diopters, and almost half of the

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1 study population had 0.5 diopters of preoperative
2 cylinder.

3 Postoperatively, the mean increase in
4 absolute refractive cylinder magnitude was relatively
5 small, and decreased from 6 to 9 to 12 months. No
6 eyes experienced an increase of more than two diopters
7 of refractive cylinder. However, the effect of the
8 lower levels of induced cylinder are of clinical
9 interest, and we examined this more closely.

10 To determine the clinical effect of
11 induced cylinder on the key parameters of uncorrected
12 and best corrected acuity, a comparison was performed
13 of eyes with one diopter or more of induced cylinder
14 versus eyes with less than one diopter of induced
15 cylinder at six months.

16 While there appears to be a numerical
17 difference in the proportion of eyes achieving J3 or
18 better, this difference was not statistically
19 significant. The number of eyes with higher levels of
20 induced cylinder is relatively small, and precludes
21 the ability to draw any definitive conclusions. There
22 was no difference between groups in change of best

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1 corrected near acuity.

2 The same analysis was repeated using the
3 more stringent criteria of the combination of axis
4 shift of 30 degrees or more combined with induced
5 cylinder greater than 0.75 diopters. Consistent with
6 the previous comparison, even this level of induced
7 cylinder and axis shift had no significant effect on
8 either uncorrected or best corrected near acuity when
9 compared to the remaining study eyes.

10 In summary, the incidence of induced
11 cylinder is well below the FDA limit, with no cases of
12 induced cylinder greater than two diopters.
13 Importantly, the frequency and magnitude of induced
14 cylinder decreased over time, and no compromise in
15 either best corrected or uncorrected near acuity was
16 observed, even in the eyes with induced cylinder.

17 Contrast sensitivity was evaluated more
18 extensively in the study population than for other
19 refractive surgery procedures, because of the
20 possibility that contrast, particularly mesopic, might
21 be reduced in subjects undergoing monovision
22 treatment.

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1 Over half of the eyes treated for near, 83
2 eyes, underwent contrast testing, with and without
3 glare, and non-treated fellow eyes were tested as well
4 to serve as a control.

5 Additionally, binocular contrast
6 sensitivity testing was performed under both photopic
7 and mesopic conditions. Preoperative binocular
8 contrast sensitivity was compared to postoperative
9 binocular contrast sensitivity with the near eye
10 uncorrected.

11 Mesopic monocular contrast sensitivity
12 without glare was performed on eyes treated for near,
13 and no change from baseline was observed over the
14 course of the study. The addition of a glare source
15 had no effect on contrast sensitivity in the
16 monovision eye, with no change from baseline over the
17 course of the study.

18 We will now present the results of the
19 binocular contrast sensitivity testing.

20 As I just noted, this testing is not part
21 of the standard battery of contrast testing performed
22 in studies of refractive surgery procedures, since it

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1 was designed specifically to evaluate the potential
2 effects of monovision.

3 As part of this testing, preoperative
4 binocular contrast results were compared to
5 postoperative binocular contrast results, with the
6 near eye uncorrected to simulate actual visual
7 performance with monovision. There was no change in
8 binocular photopic contrast sensitivity from
9 preoperative across the 12 month study follow-up.

10 The same binocular testing performed under
11 mesopic conditions, without glare, similarly showed no
12 change from baseline at three, six or 12 months.

13 The addition of a glare source had no
14 effect on the results of binocular contrast testing
15 performed under mesopic conditions and, as before,
16 there was no change in contrast sensitivity results
17 from baseline following the CK procedure.

18 In summary, there was no change in
19 contrast sensitivity under any of the testing
20 conditions, including uncorrected monovision under
21 photopic and mesopic conditions, with and without
22 glare. These data establish the absence of any

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1 detrimental effect of CK on contrast sensitivity.

2 Information on patient symptoms was
3 obtained by means of subjective questionnaires
4 administered to the study population preoperative and
5 at follow-up examinations. Patients were asked to
6 rate symptoms as none, mild, moderate, marked, or very
7 severe, with the same questionnaire administered at
8 each visit.

9 Visual symptoms were graded as
10 significantly worse by a very small proportion of the
11 study subjects, ranging from none to a maximum of four
12 percent. The proportion of subjects with visual
13 symptoms graded as none or mild decreased slightly at
14 one month, but then returned to close to preoperative
15 levels at six and 12 months, suggesting that these
16 symptoms largely resolved over time.

17 The symptoms most consistently reported in
18 the study population, blurred vision and variation of
19 vision in dim light, are typical monovision symptoms.

20 Since loss of depth perception is a common
21 complaint with monovision contact lenses, study
22 subjects were asked to grade the quality of depth

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1 perception preoperatively and following the CK
2 procedure. Depth perception was essentially unchanged
3 from baseline throughout the follow-up period.

4 In summary, the large majority of the
5 study subjects were symptom-free or had very mild
6 symptoms. Those symptoms that were reported were
7 consistent with published studies of monovision
8 contact lens wear and would be anticipated with any
9 monovision correction.

10 The final component of safety consists of
11 reports of complications and adverse events. FDA
12 guidance limits the occurrence of adverse events to
13 not more than five percent of eyes, with any single
14 adverse event occurring in not more than one percent
15 of eyes during the study.

16 Only a very small number of complications
17 were reported during the PMA clinical trial. One
18 patient reported foreign body sensation across all
19 study visits. There were four reports of double
20 images and ghost images, and there were several other
21 complications unrelated to the CK procedure. These
22 included one case of EKC, a case of viral

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1 conjunctivitis, and transient basement membrane
2 thickening, not located in the vicinity of the CK
3 spots.

4 No serious, unanticipated or sight-
5 threatening adverse events were reported at anytime
6 during the course of the study. Of the four adverse
7 events that were reported, two were non-ophthalmic, a
8 case of Type 2 diabetes and a case of multiple
9 sclerosis.

10 One subject experienced a decrease in best
11 corrected distance acuity at six months, from 20/16
12 preoperatively to 20/32, returning to 20/16 at nine
13 months. Finally, there was a single case of mild
14 iritis reported at one week, and this resolved
15 uneventfully.

16 In summary, the safety of CK for
17 improvement in near vision has been well established
18 in this PMA clinical study, with no significant safety
19 concerns.

20 I would like to now introduce Dr. Dan
21 Durrie who will present the effectiveness outcomes.

22 DR. DURRIE: Thank you, Marguerite. As

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1 mentioned before, I am a paid consultant for
2 Refractec, and they did pay my way here to the
3 meeting.

4 I'd like to now present the effectiveness
5 outcomes following the CK procedure. The areas we are
6 covering in the effectiveness section in this
7 presentation are standard measures of stability and
8 predictability. The main outcome we were looking at
9 in the study is improvement in uncorrected near
10 vision.

11 We are looking at uncorrected near vision
12 monocularly, binocularly, and combined with
13 uncorrected distance vision. We will also review
14 patient satisfaction and the use of spectacles after
15 the CK procedure.

16 So that the N's in the slides don't
17 confuse you, I would like to reemphasize the
18 effectiveness cohorts. For stability and
19 predictability, we excluded three eyes with protocol
20 deviations. These eyes had a target of a -2.25
21 instead of the maximum of -2.00.

22 The near cohort consists of only those

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1 eyes with full near correction, and excludes the 14
2 eyes corrected for distances greater than 14 inches,
3 by patient request, as well as the three protocol
4 deviations.

5 The FDA criteria for assessing stability
6 of refractive outcomes is shown on this slide.

7 The next two slides show stability of the
8 manifest and then cycloplegic refractions. All
9 criteria for refractive stability were met except the
10 confidence interval did not include zero. This was
11 true for the manifest refraction shown on this slide
12 and the cycloplegic refraction on this slide, which
13 the confidence level did include zero at the six to
14 nine months, but not at the nine to 12 months.

15 The current data meet all FDA targets for
16 refractive stability with the exception of the
17 confidence intervals. These stability outcomes are
18 consistent with the results reported in the approved
19 hyperopia PMA, and the sponsor is suggesting the same
20 labeling for temporary correction in the supplement
21 for near vision improvement.

22 The FDA targets for predictability of

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1 refractive outcome are: Manifest refractions
2 spherical equivalent of ≤ 0.50 diopter in 50 percent
3 of eyes, and ≤ 1.00 diopter in 75 percent of eyes.

4 This graph shows that both of these
5 predictability targets were met from one month to 12
6 months postoperatively.

7 When we looked at the patients who were
8 outside the target range, we observed undercorrection,
9 with a maximum of 24 percent of eyes undercorrected at
10 six months. We were interested in understanding the
11 factors that might be impacting the predictability of
12 refractive outcome.

13 We identified several factors that might
14 be contributing to the undercorrections, including
15 patient age, spot pattern used, and the preoperative
16 refractive status, whether they were hyperopes or
17 emmetropes.

18 This slide displays two of the variables,
19 age and spot pattern, with age shown along the top of
20 the table and spot pattern on the left side of the
21 table. As you can see, there was a significant
22 dropoff in the predictability within 1.00 diopter for

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1 eyes treated with 32 spots, and there was a slight
2 decrease in predictability in older patients.

3 This next slide also shows stratification
4 by two variables, by spot pattern as well as baseline
5 refractive status, whether they were hyperopes or
6 emmetropes preoperatively.

7 There was no difference in the
8 effectiveness for the hyperopes compared to emmetropes
9 with the same spot pattern, but the 32-spot treatment
10 pattern was less effective for both groups. Even in
11 the 32-spot treatment, there was still a very high
12 proportion of eyes that achieved J3 or better for
13 near.

14 Statistical modeling using generalized
15 estimating equation was performed to more definitively
16 identify the predictors of both refractive accuracy
17 and uncorrected near acuity of J3 or better. When
18 controlling for number of spots, neither age or
19 baseline refractive status was a significant factor
20 predictive of either refractive accuracy or
21 uncorrected near visual acuity.

22 Modeling only identified the 32-spot

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1 treatment pattern as a predictor of low refractive
2 accuracy.

3 This is a summary of the 8, 16 and 24 spot
4 patterns compared to the 32 spot pattern for
5 effectiveness variables. As we showed you in the GEE
6 modeling, the 32 spot treatment is not as effective as
7 the other treatment patterns and not as predictable.
8 But as a clinician, I think it is important to note
9 that even the 32 spot pattern, 70 percent had
10 uncorrected vision of J3 or better, and almost 50
11 percent were J2 or better.

12 Also, this is the first time that we are
13 showing you the entire group of eyes that received 8,
14 16 or 24 spots. As you can see, the results are
15 excellent, with 82 percent of eyes achieving J3 or
16 better. In 72 percent of eyes, they were J2 or better
17 at six months.

18 I will now discuss the improvement in
19 uncorrected near visual acuity, which was a main goal
20 within this study.

21 We have clear targets for improvement in
22 uncorrected distance acuity from the FDA and ANSI

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1 guidelines, but there are no guidelines or standards
2 to define what can constitute a successful outcome for
3 uncorrected near acuity.

4 In the absence of established target, a
5 target for uncorrected near acuity of J3 or better in
6 at least 75 percent of the treated eyes was defined at
7 the start of the study protocol.

8 To put these Jaeger values into
9 perspective, we can now look at something familiar to
10 all of us, the front page of USA Today. Font sizes
11 for this front page were measured on an optical
12 comparator and converted to Jaeger values. J16 is
13 headlines. J10 is smaller headlines, and the print in
14 the body of these articles is J5. J3, which is the
15 target of our study, is even smaller print, and J1 is
16 really footnote size print.

17 If we had tried to make every patient J1,
18 it is very likely they would have more symptoms of
19 anisometropia.

20 This is an example of the type of reading
21 material that you see routinely, and you may be
22 surprised to see that the font size is actually J5.

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1 This suggests that functional vision is achieved at
2 print size larger than J3.

3 What we really hear from our patients, and
4 as a presbyope who has been successfully treated with
5 monovision LASIK myself, and especially for you who
6 have not gotten to presbyopia yet, I can certainly
7 tell you that functional vision at J5 and J7 are
8 really important for cell phones, menus and reading
9 your watch. Nearly every patient in the study
10 achieved J5 uncorrected near vision.

11 Monocular uncorrected near vision improved
12 significantly from baseline at all levels from J1
13 through J5, with approximately 80 percent of eyes
14 achieving J3 or better. Additionally, nearly 85
15 percent of subjects achieved binocular uncorrected
16 near vision of J3 or better.

17 On this slide, you will note there was a
18 small improvement in binocular uncorrected distance
19 acuity, with the 20/20 rate improving from
20 approximately 75 percent pre-op to 95 percent post-op,
21 likely attributed to CK treatment of the 38 hyperopic
22 fellow eyes for distance correction that were included

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1 in the study.

2 Perhaps the most important indicator of a
3 successful monovision procedure is the combined
4 binocular uncorrected distance vision and uncorrected
5 near vision. Over 80 percent of subjects achieved
6 uncorrected distance acuity of 20/20 or better, and J3
7 or better at near.

8 Again, if we look at the group of eyes
9 with 8, 16 and 24 spots, excluding all 32 spot
10 treatments, the number improves to almost 90 percent
11 of subjects with combined binocular uncorrected
12 distance visual acuity of 20/20 and J3 or better, and
13 75 percent of patients achieving 20/20 at distance and
14 J2 or better at near.

15 Subjective questionnaires regarding
16 patient satisfaction and spectacle use were
17 administered to all subjects in this study. Two
18 different questionnaires were used to ask patients
19 about spectacle use for near tasks.

20 Questionnaire number one administered from
21 the beginning of the study had only three categories
22 of near task identified. This leaves us realizing

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1 that we need a better definition of near task. So we
2 introduced a second questionnaire later in the study.

3 Because it was introduced late in the
4 study, the second questionnaire has been administered
5 to only a small number of study subjects.

6 In the first questionnaire, we only asked
7 the subjects about their use of spectacles for
8 computer work, reading and whether they were used for
9 all near activities. Reading was not defined with
10 regard to print size or how long their spectacles were
11 used.

12 You can see that approximately 85 percent
13 of study subjects did not require correction for all
14 near activities, and 81 percent of study subjects did
15 not require correction for working on a computer.

16 In the second questionnaire we asked the
17 question: What can you see without your glasses? and
18 gave them different topics to fill in. Because the
19 second questionnaire was introduced during the course
20 of the study, we did not have the preoperative
21 information and answers to these questions.

22 As a result, the subjects were asked to

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1 recall what they could see before the CK treatment.
2 As expected, very few subjects could read menus and
3 newspaper print preoperatively. After CK, not only
4 did 65 percent of subjects read fine print, they also
5 have significant improvement in mid-range targets,
6 such as menus and computers.

7 A more global index of success of the
8 procedure is to ask the study subjects whether they
9 were satisfied. Patient satisfaction levels were
10 high, with 84 percent of patients reporting satisfied
11 or very satisfied at 12 months, and only four percent
12 dissatisfied or very dissatisfied. At 12 months over
13 90 percent of the subjects said that they would have
14 the procedure again.

15 The goal of monovision is to decrease, not
16 eliminate, the spectacle use, and we saw a clear
17 reduction in reported spectacle use in the study
18 population. Since we had a refractive limit of -1.00
19 to -2.00 diopters to minimize anisometropia, we
20 anticipated that reading fine print would require
21 spectacles.

22 The high patient satisfaction reported in

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1 the study population reflects the clinical benefit
2 that patients associated with improvement in near
3 visual acuity.

4 I would now like to summarize the body of
5 data presented for this PMA.

6 The ViewPoint CK System is indicated for
7 the temporary induction of myopia, -1.00 diopter to -
8 2.00 diopters, to improve near vision in the non-
9 dominant eye of presbyopic hyperopes and presbyopic
10 emmetropes with successful preoperative trial of
11 monovision or a history of monovision wear.

12 All safety limits established by the FDA
13 and the study protocol were achieved in the study
14 population, including all criteria related to
15 preservation of best corrected vision and induced
16 cylinder.

17 Induced cylinder decreased in frequency
18 and magnitude over time and had no effect on the best
19 corrected distance acuity or uncorrected near acuity.

20 There was no effect of CK monovision treatment on
21 contrast sensitivity. Finally, the incidence of
22 adverse events was very low, and all resolved without

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1 sequelae.

2 In summarizing the effectiveness of CK
3 procedure, we can see that we achieved the target of
4 improvement of near vision monocularly, binocularly,
5 while preserving excellent distance vision. As noted
6 before, results for the eyes treated with 8, 16 and 24
7 spots are even better in all three analyses of
8 effectiveness, monocular, binocular, and when combined
9 with uncorrected distance and near vision.

10 We believe these excellent outcomes for
11 the 8, 16 and 24 spot treatment patterns support a
12 recommendation for approval of these treatment
13 patterns, since safety and effectiveness have been
14 clearly established.

15 We understand the agency and the Panel
16 reviewers concern related to the lower levels of
17 effectiveness associated with the 32 spot treatment,
18 and look forward to the Panel's discussion of the risk
19 to benefit ratio of these treatment patterns, and
20 whether adequate labeling can be developed to address
21 these concerns.

22 In closing, this PMA represents an

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1 additional indication for an approved device and a
2 procedure that is a widely used clinical technique
3 known as monovision for the improvement of near
4 vision.

5 The safety profile was excellent. The
6 ViewPoint CK System provides a significant and
7 clinically meaningful improvement in uncorrected near
8 vision, resulting in very high satisfaction to the
9 patients.

10 This ends the formal portion of our
11 presentation. The presenters and the sponsor would
12 like to thank the FDA and the reviewers for their
13 careful review of this study. Thank you.

14 CHAIRMAN WEISS: Thank you very much. We
15 will now move into -- I will ask any members of the
16 sponsor of they could sit at the table here, because
17 we are going to entertain questions from the Panel.

18 I just wanted to start out with one
19 question addressing stability. We had received Table
20 4-1 from a Panel review packet dated January 19th. I
21 would appreciate some help in understanding the
22 following.

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1 It talks about, for those patients who --
2 excluding 32 spots -- uncorrected visual acuity was 59
3 percent, so at J1 at month one, which went down to 51
4 percent at month six and went down to 39 percent at
5 month 12, basically decreasing from a 59 percent rate
6 at month one to a 39 percent rate at month 12.

7 That seems to me like that is not stable.

8 So I could use your explanation of how that would
9 confirm your stability.

10 DR. BULLIMORE: This is Mark Bullimore. A
11 couple of points. Firstly, the sponsor has previously
12 discussed with the FDA the use of the word temporary
13 in the labeling, in the indication, to address some of
14 these issues.

15 With reference to the data you quote, and
16 that is for J1, yes, there are some changes and
17 reductions and the apparent effectiveness, going from
18 -- I forget the time points you quoted, six months and
19 12 months?

20 CHAIRMAN WEISS: From one month to 12
21 months, it consistently decreases.

22 DR. BULLIMORE: If we look at other

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1 effectiveness outcomes, things appear to be much more
2 stable, particularly when you compare, for example,
3 the six month and the 12 month outcome where we
4 believe that stability is much more tolerable.

5 Eighty-two percent of patients are able to
6 read J3 or better at six months, 81 percent at 12
7 months. Actually, if you use a consistent cohort,
8 which would be a more correct thing to do, the numbers
9 are identical at six months and 12 months for J3.

10 If you look at J1, the data do seem to
11 change a little bit more, but we believe that J3
12 perhaps gives you a better idea of the functionality.

13 CHAIRMAN WEISS: But wouldn't J1 be more
14 accurate because, of course, if your correction at
15 near was decreasing, you would be able to see J3
16 consistently, but if your near vision was decreasing,
17 then what would fade would be a J1.

18 DR. DURRIE: Dr. Weiss, one thing -- and I
19 tried to allude a little later on there -- is at the
20 same time those patients have a higher percentage of
21 J1, they have more symptoms at that point in time,
22 too; and as they move, as you saw, into more the

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1 stable J3, which seems to be consistent across that,
2 the patients are actually happier when they have less
3 anisometropia.

4 So I think that this is actually part of
5 the thing that clinically I like about this procedure,
6 that although they may be J1 at the one month, as they
7 get to J2 and J3, they are actually happier, because
8 eyes are working together better. You have to
9 remember, this is a monovision procedure. So we have
10 to keep in mind both eyes.

11 CHAIRMAN WEISS: I guess my question is
12 really targeting the question of stability. If it is
13 temporary, I assume it's temporary because it is not
14 stable.

15 DR. DURRIE: Well, and I think that maybe
16 I wasn't quite clear there. I want to make a point.
17 We agree with the temporary indication. So we don't
18 mislead patients that this is stable. I think it is
19 very important this patient group understand that this
20 procedure -- They may need reading glasses more and
21 may have to put them on for more tasks as time goes
22 on.

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1 CHAIRMAN WEISS: So sponsor would agree
2 that stability has not been proven in this procedure?

3 DR. GORDON-MEYER: That is correct, and on
4 that basis the sponsor proposed labeling including the
5 word temporary. But I'd like to add to that.

6 This data, the set of data were very
7 interesting in that we did compare it back to the
8 original hyperopia PMA because it is the same
9 treatment. In that population, I think there was a
10 little bit more early overcorrection. There was some
11 overshoot.

12 Here, it is less noticeable, but I think
13 that is what you see happening when you have these
14 early J1s, and that does -- you know, you see a
15 decrease there. But we think that there is reasonably
16 good stability in terms of uncorrected vision,
17 particularly at J3, over time from six to 12 months,
18 but we do not claim anything other than temporary.

19 I think the early data is a small
20 overcorrection, less than we saw in the previous
21 study, but very consistent with that set of data.

22 CHAIRMAN WEISS: But if it is a temporary,

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1 you would have to indicate to the patient at two years
2 or three years, then your "stability" of day three
3 might not be so stable. Then we might have to look at
4 stability of day five.

5 DR. GORDON-MEYER: Well, I think Dr.
6 McDonald will speak to that.

7 DR. McDONALD: I started doing CK in April
8 of '99, and I have done several hundred cases since
9 then, somewhere between five and six hundred, I think.

10 The cases that I did in April of '99 were part of the
11 hyperopia PMA, but I did quite a few of them. Five
12 years out, none of them have come back and asked to be
13 enhanced or to have further treatment.

14 So using that as my experience, when I
15 speak to patients, I say this is temporary, but you
16 will probably need further correction of some kind of
17 five, seven or ten years, based on my experience. Not
18 one of those people has come back for a touch-up.

19 CHAIRMAN WEISS: I had two other
20 questions, and then we are going to go around to the
21 panel.

22 Why doesn't induction of cylinder more

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1 than a diopter decrease your vision in this study?

2 DR. GORDON-MEYER: We think that it is
3 regular rather than irregular astigmatism, and also
4 the number of eyes -- If you look at the number of
5 eyes in both of those cohorts where there's either one
6 or more diopter or the combined axis shift and induced
7 cyl, it's a fairly small number of cases. So we are
8 not really sure how robust that observation is.

9 I think the more important observation or
10 what we were looking for is was there any effect on
11 the patient's ability to be corrected, and there
12 wasn't.

13 CHAIRMAN WEISS: And just my last question
14 in reference to a comment made at the open public
15 hearing, that there have never been any serious
16 complications. I recall at the first PMA there was a
17 case where there was a perforation of the cornea, and
18 subsequently I think the company changed the device.
19 But I also vaguely recollect a report, I think in the
20 literature, of a perforation for someone who had prior
21 refractive surgery.

22 So what serious complications are you

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1 aware of with the device? Those are the ones I'm
2 aware of.

3 DR. GORDON-MEYER: Right. And certainly,
4 we were aware of the report in the initial study, but
5 that was the only report during that period. Since
6 the product has been in commercial distribution, and
7 the company has a very active product surveillance
8 activity going on, and also because of training and
9 being in very frequent contact with their user base,
10 you know, there is kind of a plethora of questions.

11 There has not been a serious adverse
12 event. I am not personally aware of this perforation
13 that you noted in the --

14 CHAIRMAN WEISS: Perhaps I misspoke.
15 Maybe it was --

16 DR. GORDON-MEYER: I think we are not
17 aware of it. The sponsor is not aware of it.

18 CHAIRMAN WEISS: Maybe it was in a
19 publication, but it was a cautionary note in someone
20 who had prior LASIK. Are you aware of that one, Dr.
21 Durrie?

22 DR. DURRIE: Yes. I get calls on that.

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1 There was no sequelae to it, but certainly it is
2 something that is a significant potential problem. We
3 recommend that people with previous refractive
4 surgery, especially incisional refractive surgery --
5 and that was a post-RK patient -- that this is not a
6 good treatment for that, and I think it is important
7 in labeling to have this be pointed out.

8 CHAIRMAN WEISS: Thank you.

9 DR. GORDON-MEYER: I just wanted to
10 confirm with the company, but at the time of the first
11 study when there was the perforation -- and you know,
12 we, of course, were acutely aware of that -- the tip
13 has a stop on it so that it controls the depth. That
14 stop had come off, and the design of that was changed
15 immediately, and the design was verified through the
16 design control process.

17 We felt that that had been addressed,
18 because there's been no additional reports of the stop
19 coming off.

20 DR. McDONALD: If I may add just one more
21 thing: We also -- Since the development of the new
22 improved stop, we also teach doctors to do peripheral

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1 pachymetry. Anyone with a corneal thickness less than
2 560 in the periphery should not have CK, and it is an
3 absolute contraindication to do this procedure on
4 post-RK patients.

5 CHAIRMAN WEISS: Thank you. We are going
6 to go around among the Panel members and ask you if
7 you have any questions. Dr. Huang, I believe you had
8 a question for sponsor.

9 DR. HUANG: Yes, for the sponsor. You
10 know, there are a significant number of patients who
11 are undercorrected greater than one diopters. Does
12 sponsor have any kind of recommendation regarding the
13 subsequent management options?

14 DR. DURRIE: If I could, if I could talk
15 about some of my -- This procedure is approved for
16 hyperopia. So if I can talk about my clinical
17 experience, patients who are under-responders or
18 undercorrected for this procedure, if they have had
19 less than 32 spots, I rotate a 8-spot additional
20 treatment and put them in between the previous spots.

21 If someone did not respond to that or
22 already had 32 spots, I have done laser procedures on

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1 patients who have been successful both with LASIK
2 procedures and PRK procedures and have not had any
3 difficulty doing that.

4 I think one of the things about this study
5 is we wanted to keep the database as pure as possible.

6 So we didn't encourage people to do re-treatments,
7 but then you don't have re-treatment data to report at
8 this time. So I think we have to use the -- The
9 advantage of this procedure is it is approved, and
10 25,000 of these have been done. So if you talk to
11 surgeons, that is what we hear from surgeons that they
12 would do.

13 There is a chance if you are adding more
14 CK, and I think laser procedures can be performed
15 successfully, if necessary.

16 DR. GORDON-MEYER: I'll just add that the
17 sponsor feels that a re-treatment study to evaluate
18 whether additional correction could be induced would
19 be an appropriate thing to do, and there is a lot of
20 interest in doing that. But in this study, it was
21 well controlled to look at the effect of an initial
22 treatment.

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1 CHAIRMAN WEISS: Dr. Huang?

2 DR. HUANG: I have an additional point.
3 You mentioned that you can potentially do a re-
4 treatment with the CK. You had mentioned you can do
5 an additional laser procedure. How about the LASIK
6 procedure?

7 DR. DURRIE: I have performed LASIK, and
8 other doctors have. Personally, I prefer PRK, just
9 because you are not having a flap -- you are not
10 adding a flap through the CK spots, and I like surface
11 ablation anyway. So there's a lot of doctors who
12 don't like surface lasers as much as I do. But LASIK
13 has been performed successfully as well as surface
14 PRK.

15 DR. HUANG: I have a comment to my fellow
16 members. In this past Academy there is a report
17 regarding the subsequent LASIK after the conductive
18 keratoplasty and with the perforation. So I think
19 there should be a precautionary statement.

20 DR. GORDON-MEYER: Right. In the absence
21 of data on re-treatment generated in a clinical study
22 and in this PMA, the labeling that has been proposed

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1 indicates that the safety and effectiveness of re-
2 treatment has not been established. So we put that in
3 right up front. We understand that concern.

4 CHAIRMAN WEISS: Dr. Bandeen-Roche.

5 DR. BANDEEN-ROCHE: Yes. I have two
6 questions. But first I would say I am just having the
7 first signs of presbyopia. I am not a clinician. I
8 am not a psychophysicist. So I am probably the
9 closest thing to a relatively uninformed patient on
10 the panel.

11 So if I were to come to you -- I'm getting
12 at this word temporary. Dr. McDonald, you partially
13 answered my question. But I would say something like,
14 I'd like to be able to read Times New Roman font 11
15 comfortably. Suppose that my initial procedure works,
16 and I am able to do that. How long will it be before
17 I need to start wearing reading glasses again, and you
18 know, more than just sort of clinical opinion, what
19 data can you show me to inform how long I can expect
20 to go without glasses?

21 DR. GORDON-MEYER: Yes. FDA actually
22 asked us to look at kind of the percent retention. It

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1 was something we did in the hyperopia database,
2 because there was the same question. We have done it
3 here, and that information also will go into the
4 product labeling.

5 So I think it will give patients a sense.

6 I am going to turn around to my colleague, Dr.
7 Hayashida, to see if he remembers the number, because
8 I don't have it at hand. Ninety percent retention of
9 the initial effect at one year.

10 DR. BANDEEN-ROCHE: So that's just through
11 one year that you could tell me?

12 DR. DURRIE: If you wouldn't mind, I'd
13 like to answer that question, because I have to answer
14 it every day. Every patient who is thinking about
15 this procedure asks me that particular question.

16 I think it is important, because if this
17 procedure -- this supplement is approved, it will
18 provide some information that we will provide in the
19 teaching for the doctors on what to say.

20 I think it is very important to not over-
21 promise how long this procedure is going to last,
22 because we know statistically patients get a little

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1 more hyperopic as they age. They get a little more
2 presbyopic as they age. They lose their ability to
3 read.

4 So I tell patients that it is going -- The
5 study data shows that it looks for at least a couple
6 of years, because we have the hyperopia data that it
7 is going to be stable, but I like to not over-promise,
8 and I would like to see within the labeling, if we get
9 to that stage, that this temporary is a very good
10 thing to tell patients, because we do not want to let
11 them think they are actually going to get younger or
12 that we are actually correcting presbyopia. We are
13 just improving near vision in a presbyopic population.

14 When I give patients that kind of
15 ambiguous answer that I just gave you, it makes them
16 think, do I want to have an elective procedure that
17 could be temporary? I think it is a very good thing
18 for the patients to jump through, and good
19 communication between doctors and patients is
20 important.

21 DR. BANDEEN-ROCHE: Thank you very much.
22 Then my second question is just for a very simple data

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1 analysis that maybe someone can do.

2 It goes to the question: Do you wear
3 spectacles or contact lenses? Dr. Bullimore already
4 referred to the consistent cohort issue. So what I'd
5 like to see is a cross-tabulation, month six to month
6 twelve, of that question: Do you wear spectacles or
7 contact lenses? Just yes/no, yes/no, going from month
8 six to 12. You know, whenever that is ready, that
9 would be fine.

10 DR. DURRIE: Would you like to see that --
11 because there's different spectacle tasks that were
12 asked.

13 DR. BANDEEN-ROCHE: If we could see it for
14 all of them, that would be fine, but I'd like to see
15 it for the overall question as well.

16 DR. GORDON-MEYER: We will start trying to
17 generate that, if we can get to it quickly.

18 CHAIRMAN WEISS: Dr. Smith?

19 DR. SMITH: Since monovision is a key
20 aspect of this study, and I know you did ask about the
21 quality of depth perception in a subjective way, can
22 you tell me why there was no objective testing for

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1 stereopsis included in the study design? Was that
2 discussed?

3 DR. DURRIE: There was not, and one of the
4 problems -- and I have done other studies on this
5 procedure and other monovision procedures. We have a
6 real problem with stereopsis testing with plain old
7 presbyopes, because they can't see the chart. So you
8 give them the fly, and they go, what fly? You put
9 them on the reading glasses, and now you are not
10 testing their near vision.

11 We have worked with distance stereo
12 testing in other studies on this, and we are still
13 trying to adapt that. So we have this unique set of
14 patients who it's hard to test with our classic test,
15 because you give them a stereo test, and they can't
16 see it.

17 So it's an interesting dilemma. So we
18 weren't able to really do our regular tests that we
19 normally do, and I'm still interested in that. So
20 we've been trying to figure out ways to evaluate that
21 more.

22 It is interesting, though, because I think

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1 all of us expect with this -- Since it is a monovision
2 procedure, we expected to have problems with depth
3 perception, which did not show up. We expected to
4 have problems with contrast sensitivity, and it did
5 not show up either.

6 So I think that these are good things for
7 this particular procedure. But I think it shows that
8 our testing that we traditionally use we need to
9 continue to look at as we are developing these new
10 procedures.

11 DR. GORDON-MEYER: Dr. Bullimore would
12 like to add.

13 DR. BULLIMORE: Just to follow up, most of
14 our clinical tests required really almost pinpoint
15 visual acuity at near to perform these stereo tests.
16 As Dr. Durrie suggests, it is a problem for clinical
17 testing.

18 There have been a number of studies that
19 have looked at sort of functional real world stereo
20 tests like card sorting, putting pointers into straws
21 and things, and you do see the kind of decrement that
22 you would expect in somebody who has some monocular

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1 blur associated with monovision. But the performance
2 deficit is relatively modest. It's sort of in the
3 three to five percent range rather than being
4 equivalent to covering one eye.

5 So people have tried to quantify that, but
6 it is something that is very difficult to do in the
7 consulting room.

8 CHAIRMAN WEISS: Dr. McMahon.

9 DR. McMAHON: I have three questions. Is
10 that all right? My first one is, I think, the gist of
11 my concern, and you addressed it peripherally. That
12 is: If 32 spots really doesn't demonstrate any
13 meaningful effectiveness, why are you asking for it?

14 CHAIRMAN WEISS: Can you repeat that
15 question? I didn't hear the rest of it.

16 DR. McMAHON: I said, if 32 spots or the
17 application of 32 spots clearly is not demonstrating
18 any meaningful effectiveness -- and I will say that
19 equivocally -- why are you asking for that indication?

20 DR. DURRIE: Well, I think it certainly
21 shows a significant improvement in near vision in the
22 32 spot treatments. I mean, we had 75 percent of

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1 people that could read J3, and it was actually 50
2 percent of people could read J2.

3 So they did have very good improvement in
4 their uncorrected vision. They didn't look very good
5 on the refractive accuracy within plus or minus a
6 diopter.

7 Now one of the things with this is the
8 study was almost a small, medium and large study.
9 They either got 8 or -- or most of them got 16, 24 or
10 32 spots, and that is -- There is a gap in between
11 there. So we had to kind of choose one or the other.

12 So some of that refractive accuracy may be
13 because of the nominals of what we were kind of
14 shooting at. But I think that, from the standpoint of
15 vision improvement, there definitely was significant
16 improvement with the 32 spot patients.

17 Their satisfaction was good. There wasn't
18 any difference in their satisfaction from the other
19 patients', but I think when we look at it in the
20 refractive surgery world, we are always looking at
21 plus or minus a half, plus -- and it didn't do very
22 well in those categories.

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1 So I think that is why a discussion of the
2 Panel on the 32 spots, I think, is very appropriate,
3 as we kind of have this -- It helped the patients, but
4 it didn't look very good on our criteria. So I think
5 that's why we are asking for discussion on that.

6 DR. McMAHON: I will posit a potential
7 theorem here, and that is that there isn't much more
8 effect going from 24 to 32, and what you are seeing is
9 the effect of the initial 24 in that particular
10 population. In fact, 32 actually may be a decrement
11 in response. But again, that is up for discussion.

12 The second question is: Presbyopia is a
13 continuum up to a certain point. You start off, as
14 Dr. Bandeen-Roche is, at the nexus of presbyopia, and
15 then where Dr. Bullimore is heading, near the bottom
16 of presbyopia.

17 As you said, this is sort of a small,
18 medium and large procedure. The question comes into
19 play then, when is this indicated in the presbyopic
20 scenario, in view of the fact that there is no
21 information that is available at this point on the
22 efficacy of secondary treatments?

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1 So is somebody who needs a 1.00 diopter
2 correction the appropriate patient to do or do you
3 wait until they are 2.00?

4 DR. GORDON-MEYER: I think this is really
5 a clinical question. So I'll allow my colleagues here
6 to answer, but the mean age in this population was 53
7 years. So I think that really speaks to -- You know,
8 patients are going to self-select, to some extent, as
9 to when they feel they need it, but I think again that
10 is the -- we'll get an answer from the clinical
11 perspective.

12 DR. McDONALD: Not to beat a dead horse,
13 but as I said, the people who were treated for
14 distance five years ago have not come back for an
15 enhancement, but that is something that is decided on
16 a case to case basis, and we are not asking for any
17 claims about enhancement in labeling, for sure.

18 If I could very quickly just say one
19 thing. We are getting together the table for Dr.
20 Bandeen-Roche very quickly, but it's the sort of thing
21 where you have to make an individual decision based on
22 a conversation with the patient as to exactly what

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1 their near point is. We will return to that as soon
2 as we get the table for you.

3 DR. DURRIE: I think that it is
4 interesting, because my average age for this procedure
5 -- and since it has been performed a lot off-label --
6 is 55. So it's even higher than the study, because I
7 looked at my data quite carefully.

8 So the patients -- you're right. When
9 they need 1.00 diopter in their early forties, they
10 don't come in for this procedure. So there is a lot
11 of self-selecting.

12 I have had some patients now -- There's
13 just two of them. They are both dentists -- who came
14 in and never wore reading glasses and had CK, because
15 with their occupation, they didn't want to wear them.

16 They heard this was available. So I think that might
17 change over a period of time, but I think that right
18 now the patient selection for this is when they are
19 having enough trouble -- You know, I had my monovision
20 when I was 50. So before then it wasn't bad enough.

21 So I think there is some self-selection.
22 I don't know how we really handle that in labeling as

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1 much other than telling them that the average age of
2 this population was 53, and I think that is important
3 to know.

4 DR. McMAHON: That's a good point. You
5 know, with the mean age of the group being 53 and in
6 your experience 55, that's close to the bottom, in
7 which case that's not much of an issue, because your
8 accommodative amplitudes have sort of hit bottom
9 anyway, and then that's not a worry.

10 It's the 46-year-old that comes in who is
11 starting to have early presbyopic symptoms and, if you
12 have a shot at them then with 8 spots of 16 spots,
13 then what do you do when they are now 50? And an
14 issue is whether we should deal with that in labeling
15 or just --

16 CHAIRMAN WEISS: The problem is we don't
17 have the answer. But it's an excellent point, but we
18 don't have the answer.

19 DR. McMAHON: One minor quick question.
20 That is: In the list of complications you list, you
21 mention a few cases of "viral infection." Was this
22 viral conjunctivitis or was it corneal?

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1 DR. McDONALD: One was viral
2 conjunctivitis, and one was EKC.

3 DR. McMAHON: Okay, thank you.

4 CHAIRMAN WEISS: Dr. >Coleman?

5 DR. COLEMAN; No questions.

6 CHAIRMAN WEISS: Thank you. Dr. Van
7 Meter?

8 DR. VAN METER: Early in your presentation
9 -- I don't know if this was Dr. Bullimore or Dr.
10 Durrie -- the mention was made that depth perception
11 was tested by subjective means and was not a problem.

12 There are a number of ways to accurately test depth
13 perception objectively and, given the obvious
14 imperfections in judging depth perception
15 subjectively, why did you not test depth perception
16 objectively in these patients?

17 DR. BULLIMORE: Which test are you exactly
18 thinking of?

19 DR. VAN METER: Anything. You know, even
20 a fly test will give you something.

21 DR. BULLIMORE: As I probably did a poor
22 attempt of explaining earlier, you really do need good

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1 acuity in both eyes for those tests to work. They
2 require probably J3, J2 acuity to test that kind of
3 fine stereopsis.

4 So it would have been a self-fulfilling
5 prophecy that the patients probably wouldn't have been
6 able to see very much on those tests, had we used
7 them. I think the bigger issue is it will be nice to
8 have a test of distance stereopsis, some clinical
9 metric of how well people judge distances,
10 particularly from the point of view of driving and
11 things like that.

12 That's what we were trying to get at with
13 the questionnaire. Whether we did a good job of that
14 or not --

15 DR. VAN METER: I just didn't understand
16 what the questionnaire was supposed to show.

17 Second question: Dr. Durrie, you
18 mentioned in Slide 83 that there were -- I'm sorry,
19 Slide 12, that there were three patients eliminated
20 for treatment deviations, because they required +2.25
21 diopters of change rather than 2.00 diopters of
22 change.

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1 Yet it looks like the treatment on Slide
2 12 is the same. It is -- The same number of spots
3 would be for 2.00 as 2.25. Are these considered
4 treatment deviations or is this a --

5 DR. DURRIE: This was just in our
6 discussion with the agency in filing it, because the
7 protocol said you were not supposed to attempt any
8 correction greater than 2.00 diopters, and the
9 investigator included somebody and wrote down on the
10 form that their target was a -2.25. So it was
11 classified as a protocol deviation.

12 The patient had no safety issues. The
13 performance was exactly the same as the other group,
14 but it's just -- It's kind of just fallen between the
15 cracks, because it was something the investigator was
16 not supposed to write down, and they did. But the
17 treatment was exactly the same.

18 DR. VAN METER: Slide 83 showed a graph of
19 people who could see what their tasks were before and
20 after the procedure. I notice that there were nine
21 people who could see without glasses, another nine
22 people who could read a gold score card.

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1 Given the fact that in Slide 85 you say
2 these people will need glasses for fine print anyway,
3 help me see what would be gained for these nine people
4 by having the procedure under the given indications.

5 DR. DURRIE: Those are percentages. I
6 mean, just for clarification, those are percentage of
7 patients, not really patients.

8 DR. VAN METER: Oh, I'm sorry.

9 DR. DURRIE: But the situation here is
10 this overall improvement is kind of what we see from
11 patients as functional vision improvement is very hard
12 to define. So we are trying to define it with both
13 these questionnaires, neither of which were adequate.

14 The one thing is, certainly with some of
15 the expertise we have on this Panel in near visual
16 acuity questionnaires, I'd love to get more questions.

17 Dr. Schein's questionnaire was not available at the
18 start of this study, but I think we will be using more
19 addressing this.

20 So there's weakness in both these
21 questionnaires. We did the best we could, and we are
22 reporting the information we have, but I think we all

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1 need to continue to address that more as more near
2 procedures are being looked at.

3 CHAIRMAN WEISS: Than you. Dr. Van Meter,
4 do you have any other questions?

5 DR. VAN METER: I have one question about
6 what do we tell patients when surgical re-treatment is
7 indicated, since we don't really know where that goes?
8 We can discuss that later.

9 CHAIRMAN WEISS: I think we don't know
10 where that goes. I am also going to ask sponsor, in
11 order to limit the amount of time for the question
12 session, if you could just have one person answer the
13 question, so it just doesn't go around the panel.

14 Dr. Bradley.

15 DR. BRADLEY: I have questions about Slide
16 68. Again, it is a confusion about the use of the 32
17 spot treatment. You have emmetropes receiving --
18 emmetropes grouped in the 8, 16 and 24 spot group, and
19 emmetropes included in the 32 spot treatment.

20 I just wondered if you could clarify under
21 what circumstances the 32 spot treatment was used.
22 The particular reason we would like to know that is

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1 that didn't work as well.

2 DR. DURRIE: Great question. We asked the
3 same question when I saw this data. Emmetropes are
4 defined up to plus a half a diopter of hyperopia. So
5 they were patients that, when we went through the
6 steps as established in this on deciding how much
7 treatment was done, and that was done on a very
8 controlled basis, they fell into that nominal group
9 that required 32 spots because they were plus half a
10 diopter of hyperopia and the way that we set the near
11 card at 14 inches and did an add, that is what they
12 were assigned to.

13 So I think that most emmetropes under the
14 real world criteria will probably not receive 32
15 spots, but it was just the way the study was designed.

16 When we did the testing, because they were hyperopic
17 plus one-half, they required 32 spots under the
18 protocol, just because the range in 32 spots was from
19 2.37 to 3.00 diopters of attempted correction. So
20 those were our buckets.

21 So if you wanted to get a -2.00 and you
22 were plus one-half, you had to do 32 spots.

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1 CHAIRMAN WEISS: Dr. Grimmer.

2 DR. GRIMMETT: Dr. Grimmer. Pardon me
3 while I put on my very first pair of readers here for
4 my question, a gift from my wife this Christmas.

5 The first question for Dr. Durrie. On
6 slide 32, a chart regarding the change in best
7 corrected vision shows at one month there was a
8 decrease in one line of best corrected vision by 34
9 percent, and this decreased to eight percent by month
10 twelve.

11 I am inferring that the early decrease in
12 best corrected vision is secondary to corneal
13 irregular astigmatism. Do you agree that that is true
14 or is there another reason that there is a decreased
15 vision that subsequently improves with time?

16 DR. DURRIE: That is my clinical
17 impression also, because when you are doing these
18 spots around, I have clinically noticed that you can
19 get a little edema in the superior spots more than the
20 inferior spots during that first month of healing, and
21 I think there is some irregular astigmatism.

22 It really doesn't show up even on

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1 wavefront testing or topography testing, and I have
2 looked at it pretty carefully, but clinically that is
3 what I think it is, and it decreases with time.

4 DR. GRIMMETT: You anticipated my second
5 question, topography and wavefront. In any of those
6 patients, were contact lens over-refraction performed
7 to rule in the diagnosis of corneal irregular
8 astigmatism at early time points?

9 DR. DURRIE: We did not do it in the
10 study, because it wasn't in the protocol, but that is
11 something I am really interested in looking at now.

12 DR. GRIMMETT: Has anybody done it
13 clinically, just as a clinician or anything that you
14 know of?

15 DR. DURRIE: Not that I know of

16 DR. GRIMMETT: Okay. Second question
17 directed to Dr. Bullimore regarding monovision status.
18 How is the sponsor recommending to the physician to
19 determine which eye is the dominant or non-dominant
20 eye? Clearly, that is probably an important issue.

21 You mentioned that 70 percent or so of
22 patients tolerate monovision in studies that have been

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1 published, with the non-dominant eye as the near eye.

2 So my first question is how do you recommend they
3 determine, and if the choice is wrong, if it is done
4 the other way, how many percent tolerate it when the
5 wrong eye is chosen for which task, or does that data
6 exist?

7 DR. BULLIMORE: Let me take the last question
8 first. Those data do exist in the literature. Jain,
9 et al. who did the comprehensive review, a more
10 recently published case series where they went back to
11 the records and looked at monovision patients and
12 determined tolerance of surgically induced monovision
13 and tested very carefully, at least in their terms,
14 ocular dominance.

15 What they found was that -- I can't
16 remember the exact proportions, but there was a
17 significant number of people who had what they called
18 crossed monovision. That is to say the distance eye
19 or distance corrected eye was actually the non-
20 dominant eye. The dominant eye, for whatever reason,
21 had been corrected for near.

22 They found no difference in the outcomes

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1 in terms of satisfaction with monovision in the cross-
2 monovision patients and the conventional.

3 DR. GRIMMETT: So it's still two-thirds
4 tolerate it, or so.

5 DR. BULLIMORE: I can't remember their
6 exact data. I think it was eight out of ten of the
7 cross-monovision patients were still tolerant of that.

8 As far as their technique that they
9 describe in the literature, it's a sort of holding the
10 hands technique. Make the hand smaller, and see which
11 eye is sighting through the small hand. That seems to
12 be the most or among the most prevalent technique for
13 assessing dominance.

14 I mean, there are certain rules that, you
15 know, if you were going to test dominance, eye
16 dominance, you should use both hands so you are not
17 biased by the hand that the patient uses to point
18 with. So if you are making other gestures with your
19 hands, you should use both hands rather than just one
20 hand or finger.

21 As far as what the sponsor plans to put in
22 the labeling, that is very much sort of still on the

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1 table, and we would appreciate -- It's not on the
2 table? It's off the table now.

3 DR. GORDON-MEYER: I apologize for
4 interjecting as the second speaker on this question,
5 but it is important that -- I don't remember what
6 year, but FDA provided to manufacturers of contact
7 lenses information on labeling for monovision. We
8 have adopted that information, and it included a
9 determination of dominance, how to determine
10 dominance, and we have included that language as just
11 a basis and a precedent and certainly a body of
12 experience in our labeling.

13 Again, we are open to discussion, but we
14 did feel that we adopted at least that standard.

15 DR. GRIMMETT: Excellent. I am glad to
16 hear that. I have another quick issue.

17 Does the sponsor recommend any kind of
18 contact lens monovision trial prior to actually
19 performing this surgery? It's included?

20 DR. GORDON-MEYER: It is also in the
21 labeling. It was included in the protocol --

22 DR. GRIMMETT: Thank you. Sorry for the

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1 oversight.

2 DR. GORDON-MEYER: -- and absolutely vital.

3 DR. GRIMMETT: Sorry.

4 CHAIRMAN WEISS: Dr. Casey.

5 DR. CASEY: My question relates to trying
6 to appreciate what the functional duration of
7 temporary is. Looking at patient satisfaction
8 information, particularly the questionnaire number two
9 that was provided, I guess Table 13A, what patients
10 can see without glasses.

11 The first question is: Is this group that
12 is listed with questions asked at six months, nine
13 months and 12 months a consistent cohort; and if so,
14 what do we know about those patients in terms of what
15 their preoperative refractions were, what spot number
16 they received in terms of the treatment?

17 Then the third question would be: How
18 come all the patients just haven't been given this
19 questionnaire, regardless of where they are, so that
20 we can get a sense of what their functional
21 capabilities are?

22 DR. DURRIE: Well, as far as the

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1 questionnaires are concerned, as the second
2 questionnaire which you alluded to, that did give us
3 more information. Unfortunately, we didn't do it at
4 the beginning of the study. So that we had to ask
5 them to recall and from their memory, which is not a
6 great way to come up with some defined data.

7 We reported it with that caveat and
8 telling you that up front. But I'll come back to the
9 point where I think that in hindsight I would have
10 loved to have that questionnaire pre-op.

11 Now there is a lot of work going on in
12 this where people are looking at these satisfaction
13 tests going forward, and I think that, as the agency
14 and this Panel, I think it is something we truly need.

15 Unfortunately, it just wasn't available, and we did
16 the best we could. So I can't go on and state about
17 that, as it is not here.

18 DR. GORDON-MEYER: I'd like to add by
19 responding to the specific question on data.

20 CHAIRMAN WEISS: Do we have to? I mean,
21 at this point we are going to end up having to limit
22 the questions from some of our Panel members. So if

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1 the additional stuff is very important, then please
2 add it, but if it's not, please don't.

3 DR. GORDON-MEYER: I think we have Dr.
4 Bandeen's -- a response to Dr. Bandeen on the
5 consistent cohort, and I think it tires in as well
6 with this question.

7 Part of your question was do we know what
8 patients were treated with 32 spots. As we analyzed
9 the data by excluding the 32 spots and looking at the
10 rest of the population, there really weren't
11 differences in satisfaction and spectacle dependence
12 types of things. But again, you are cutting the data,
13 and so now you have a smaller group.

14 If you look at -- The largest number of
15 cases was in the first questionnaire and, while very
16 imperfect, I think, gives us an idea when we look at a
17 consistent cohort. Again, it does not take into
18 account frequency of use, but just use, yes/no.

19 In a 12-month cohort, the percentage of
20 patients who used correction for all near activities
21 was 13 percent at six months, 14 percent at 9 months,
22 and 15 percent at 12 months. So I'd say it's fairly

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1 level.

2 CHAIRMAN WEISS: Dr. Mathers, and I would
3 just let the members of the Panel know, we have about
4 10 more minutes. So if you could -- as well as the
5 sponsor, if you could limit the length of your
6 answers, I would greatly appreciate it. Dr. Mathers?

7 DR. MATHERS: Did you correlate or
8 stratify them by the number of spots for stability or
9 for patient satisfaction?

10 DR. GORDON-MEYER: Yes, we did. In our
11 January submission we provided -- and Dr. McMahon had
12 suggested it, and we ourselves come to the conclusion
13 to separate by spots. We pulled the 8, 16 and 24
14 versus the 32, and we did not perform statistical
15 testing, but we commented that we had done a review
16 comparing those, and there were no differences in any
17 of the safety or stability findings or patient
18 satisfaction.

19 The difference really seemed limited
20 particularly or most accentuated in the refractive
21 accuracy and, of course, lower levels of uncorrected,
22 J3 or better.

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