

UNITED STATES OF AMERICA

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DEPARTMENT OF AGRICULTURE
AND
DEPARTMENT OF HEALTH AND HUMAN SERVICES

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DIETARY GUIDELINES ADVISORY COMMITTEE

+ + + + +

FIFTH MEETING

+ + + + +

WEDNESDAY, APRIL 14, 2010

The meeting came to order at 9:00
a.m. via webcast, Dr. Linda Van Horn,
Chairperson, presiding.

MEMBERS PRESENT:

LINDA VAN HORN, PhD, RD, LD, CHAIR
NAOMI K. FUKAGAWA, MD, PhD, VICE CHAIR
CHERYL ACHTERBERG, PhD
LAWRENCE J. APPEL, MD, MPH
ROGER A. CLEMENS, DrPH
MIRIAM E. NELSON, PhD
SHARON M. NICKOLS-RICHARDSON, PhD, RD
THOMAS A. PEARSON, MD, PhD, MPH
RAFAEL PEREZ-ESCAMILLA, PhD
XAVIER PI-SUNYER, MD, MPH
ERIC B. RIMM, ScD
JOANNE L. SLAVIN, PhD, RD
CHRISTINE L. WILLIAMS, MD, MPH

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ALSO PRESENT:

SHANTHY BOWMAN, PhD, ARS, USDA

CAROLE DAVIS, MS, RD, CNPP, USDA

KATHRYN McMURRY, MS, ODPHP, HHS

HOLLY McPEAK, MS, ODPHP, HHS

RADM PENELOPE SLADE-SAWYER, PT, MSW, ODPHP,
HHS

ROBERT POST, PhD, CNPP, USDA

WENDY BRAUND, MD, MPH, MSeD, ODPHP, HHS

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P-R-O-C-E-E-D-I-N-G-S

9:00 a.m.

DR. VAN HORN: Good morning, everyone. I'm Linda Van Horn, chair of the Dietary Guidelines Advisory Committee. Welcome back for the second day of our deliberations.

We apologize for some technical difficulties that occurred yesterday afternoon, and we're happy to tell you that we will pick up from where we left off.

Yesterday we heard from the carbohydrates and protein, fatty acids, and energy balance and weight management subcommittees. And today we'll start with the completion of the energy balance and weight management subcommittee report from Dr. Pi-Sunyer, and then hear from the remaining four subcommittees on updates on their work regarding the dietary patterns, the new total diet chapter and a brief overview on the translation/integration chapter that we are

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1 planning for this report.

2 I would like to reiterate that
3 everything being presented today is still in
4 draft form. As a Committee we need to come to
5 an agreement on all conclusions, if possible.

6 And so, there are several issues that remain
7 tentative at this point.

8 I would like to remind each
9 Committee member to announce themselves
10 whenever they speak so that we all know who is
11 who, although we on the Committee have become
12 very familiar with each other's voices.

13 We look forward to a rousing day,
14 and I would like to begin by introducing Dr.
15 Pi- Sunyer who will take us back to where we
16 were with the energy balance report.

17 Xav?

18 DR. PI-SUNYER: Okay. Thank you,
19 Linda. I'm sorry about yesterday's technical
20 problems, and I will begin here with the
21 effect of weight loss in older adults on
22 health outcomes. And the research question

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1 that we asked was for older adults, age
2 greater than 65 years, what is the effect of
3 weight loss versus weight maintenance on
4 selected health outcomes: cardiovascular
5 disease, type 2 diabetes, cancer and
6 mortality.

7 The question was not addressed in
8 the 2005 Dietary Guidelines Advisory Report,
9 and we felt it was a question that needed
10 investigation. We did an NEL search. We went
11 back to 1995 and we included older adult
12 studies, people above 65 years of age and
13 looked at health outcomes; cardiovascular
14 disease, diabetes, cancer and mortality.

15 Next slide, please? So, the
16 proposed conclusion that I had when we
17 prepared these slides last week was a Grade II
18 evidence base. And in older adults mortality
19 associated with BMI is U-shaped, increasing
20 below 18.5 and also rising beginning at 27 to
21 34, depending on the study. Weight loss in
22 older adults is associated with an increased

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1 risk of mortality. Most studies have not
2 differentiated between intentional versus
3 unintentional weight loss, so no conclusion
4 can be reached on this.

5 Weight maintenance is associated
6 with a lower risk of mortality, while weight
7 gain produces increased risk. There are
8 insufficient data regarding the risk of
9 developing diabetes, cardiovascular disease or
10 cancer to come to any conclusions.

11 Now since yesterday, Larry sent me
12 an article that came out just a couple of days
13 ago in the Journal of Gerontology from the
14 ADAPT study, which did a randomized controlled
15 trial with an 18-month weight loss, and the
16 intervention group lost 4.8 kilograms and the
17 usual care group lost 1.4 kilograms. And they
18 were followed for seven years and the group
19 that lost the weight had a much lower event
20 rate for mortality, so the mortality was about
21 half in the group that was intervened. So,
22 this seems like a very good study. It was

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1 well carried out, not a whole lot of people,
2 318 people.

3 And there is one other study by
4 Locher in 2007 that also compared intentional
5 and unintentional weight loss. They're the
6 only two that we could find from 1995 on that
7 had separated intentional from non-intentional
8 weight loss.

9 So, I think we probably should
10 change this and say that there's certainly no
11 risk and there probably is an advantage to
12 losing weight after age 65. So, we can talk
13 about that.

14 Let me just go onto the next
15 slide. Next slide, please? What we looked at
16 were 35 articles; 32 cohort studies, two
17 longitudinal observational studies. And this
18 one by Shay et al makes three longitudinal --
19 well, not observations; it's an intervention
20 study. And you can see 10 were positive, 24
21 were neutral and none were negative.

22 Next slide, please? If you look

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1 at the data, you can see the mortality on the
2 third column, and throughout the mortality is
3 higher in the groups that lose weight. But as
4 I mentioned, this does not necessarily
5 translate to a higher event rate for
6 cardiovascular disease or diabetes.

7 If you go to the next slide,
8 please, you'll see again a whole series of
9 prospective cohort studies showing an
10 increased mortality in people who lose weight.

11 And the next one, please? Again, here
12 increased mortality with people who lose
13 weight. I again emphasize that this does not
14 separate intentional from non-intentional
15 weight loss. The only one that does is the
16 Locher in 2007, and when they did -- although
17 they got overall an association between weight
18 loss and mortality, when they separated out
19 intentional from unintentional weight loss,
20 the intentional weight loss people did not
21 have a higher mortality than the usual care
22 group.

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1 Next slide, please. We did have
2 research recommendations relating to this that
3 we think randomized Controlled trials need to
4 be done on the effect of intentional weight
5 loss on the development of diabetes,
6 cardiovascular disease and cancer in the
7 elderly. And also intervention studies that
8 are long enough to give you data on mortality.

9 We now have two data on mortality. We only
10 have a handful of not very good studies on
11 morbidity.

12 So, what I had put here originally
13 was the proposed implication was the
14 maintenance of weight seems the prudent advice
15 for elderly patients. Since the majority of
16 the studies available have not differentiated
17 between intentional versus unintentional
18 weight loss, preventing weight loss is
19 reasonable. Weight gain, however, should also
20 be prevented.

21 I think we could now change it
22 since we have two studies that are good

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1 studies suggesting that intentional weight
2 loss actually decreases mortality. I think we
3 can be stronger about saying that it's okay
4 for 65 year olds and over to lose weight and
5 maintain that weight loss over time.

6 So, I think I will rewrite this
7 and send it around for people to look at.

8 Next slide. So, these are the
9 overall questions that we asked, and we're
10 open for discussion, I think.

11 DR. NELSON: Xav, this is Mim.

12 DR. PI-SUNYER: Yes?

13 DR. NELSON: The older adult
14 question I think is a really good addition to
15 all of this. I agree with your revisions, but
16 I might also just clarify it a little bit. If
17 there is evidence that it would be that weight
18 loss is beneficial for older adults, was there
19 any evidence that those in the most recent
20 study that they were at risk, you know, like
21 they had BMIs over 25, or had
22 cardiovascular/CVD, type 2 diabetes risk?

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1 Because I'm not sure that ideal body weight
2 people older adults should be losing weight.
3 That's the only thing.

4 DR. PI-SUNYER: Oh, no. No, I
5 neglected to mention that. These studies with
6 intentional weight loss were of people who had
7 higher weights.

8 DR. NELSON: Right. Yes, so I
9 think that --

10 DR. PI-SUNYER: You know, there is
11 this caveat that mortality is low over a wide
12 range in older people. It goes up to --

13 DR. NELSON: Yes.

14 DR. PI-SUNYER: -- depending on
15 the study from BMI of 27 --

16 DR. NELSON: Yes.

17 DR. PI-SUNYER: -- all the way up
18 to BMI of 34.

19 DR. NELSON: Yes.

20 DR. PI-SUNYER: So, you've got a
21 much wider range where mortality is pretty
22 flat from --

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1 DR. NELSON: Right.

2 DR. PI-SUNYER: -- about 18½ all
3 the way up to 30 probably.

4 DR. NELSON: But, yes --

5 DR. PI-SUNYER: So, it really
6 should be people who are probably no lower
7 than BMI of 27.

8 DR. NELSON: Yes, I would add that
9 to that piece, because I don't think you want
10 --

11 DR. PI-SUNYER: Yes, that's --

12 DR. -- ideal body weight folks
13 losing.

14 And then the only other comment I
15 had was, you know, way back in the early part
16 of your discussion there was one research
17 question which at this point I'm not even sure
18 that I would do much with it because you only
19 had two cross-sectional studies. It was on
20 optimal macronutrient proportions. That
21 question, it seems like you in a sense
22 answered that question more directly when you

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1 looked at the different sub-components later
2 on and there was more evidence, the question
3 as it was stated.

4 DR. PI-SUNYER: Right.

5 DR. NELSON: I'm not even sure I
6 would do much with that. So, that's all.

7 DR. PI-SUNYER: Okay.

8 DR. APPEL: This is Larry. I was
9 actually going to propose that it be dropped.

10 DR. NELSON: I think it should be
11 dropped.

12 DR. APPEL: I mean, other times --

13 DR. PI-SUNYER: Yes, there are
14 only two cross-sectional studies, so --

15 DR. NELSON: And I think you get
16 at it with the other questions.

17 DR. PI-SUNYER: Yes.

18 DR. NELSON: I just would drop it.

19 DR. PI-SUNYER: Okay. I think
20 that's a good point.

21 DR. APPEL: This is Larry. I had
22 a question, and it might be that it's covered

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1 in the chapter, but it seems to me that your
2 chapter sort of begs the issue of where
3 calories come from. So, are you going to have
4 in your chapter sort of like a prominent
5 display of sort of like sources of calories,
6 you know, by age group, gender, the other
7 variables? Because I think that sort of like
8 underlies a lot of the questions you have.

9 DR. PI-SUNYER: What do you mean
10 where calories come from?

11 DR. APPEL: Yes, sources.

12 DR. PI-SUNYER: You mean what
13 foods?

14 DR. APPEL: Yes, like are they
15 coming from sugar-sweetened beverages or
16 sweets? Because I think in the section on
17 energy balance people are going to say sort of
18 like, well, what are the foods that account
19 for the most calories and to just display
20 that. Because I think particularly for
21 sugar-sweetened beverages, you know, my
22 recollection is that it's much higher in young

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1 individuals and that it really wanes over
2 time. So, that's not as much as an issue with
3 like older adults.

4 DR. PI-SUNYER: Right.

5 DR. WILLIAMS: Larry, this is
6 Christine and I'm in the process of preparing
7 those types of charts and graphs for children.

8 DR. PI-SUNYER: So, I think we
9 should have that. We did not have it in the
10 chapter, but I think we can add it. I'll work
11 with staff on trying to get such a table made
12 up.

13 DR. NELSON: Yes, this is Mim.
14 We've spoken about this, that there needs to
15 be sort of one central place for the whole
16 report, because it sets up the whole report,
17 understanding where the calories are coming
18 from. And the other pieces for the behavior
19 and the environment section, there really is a
20 fairly robust section on how things have
21 changed for the last 35 years or so in terms
22 of where people eat and what their eating and

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1 portion sizes and number of items that are for
2 sale, sort of, if you will, the whole food
3 environment. And I think it could be that
4 that section on then what we're actually
5 eating now could be there so that it's the
6 whole picture. So, I think we need sort of
7 one place that's central so we're not having
8 to piece it all over the place.

9 DR. VAN HORN: Yes, Mim, this is
10 Linda and I'm so glad that this topic came up
11 because this is becoming an issue. I do have
12 a feeling that this chapter might be the best
13 place for the contributions of various foods
14 and food groups to the caloric intake, whereas
15 the chapter that you're discussing is more of
16 the behaviors related to that.

17 But the point I was going to make,
18 and Christine raised it with the children and
19 where their sources of calories are, and of
20 course how appalling it is that up to 40
21 percent of them are coming from snacks and
22 desserts, as we mentioned yesterday.

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1 In this age group, being somewhat
2 familiar with the post-menopausal women and
3 that age group and their dietary needs,
4 recognizing how few calories most older
5 individuals who are sedentary really need is
6 often sort of shocking to people when they
7 realize that they're sort of like children in
8 the sense that their energy needs are fewer.
9 And therefore, their choices of foods are
10 really even more important from a qualitative
11 sense because they really have so few calories
12 really to work with without gaining weight.

13 So, as we've said before, we
14 recognize that this report is just so huge
15 that there will be people who cannot possibly
16 read the whole thing. And that in this
17 chapter called Energy Balance, et cetera, you
18 know, it may be the best place to deposit that
19 kind of information so that there is one
20 central location for understanding energy
21 intake so we better understand the energy
22 balance and the needs surrounding that.

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1 But, if others have other thoughts
2 about that, I'd love to hear what you think.

3 DR. NELSON: This is Mim. I like
4 the idea of having it more centralized so that
5 it's easier for people to see, you know, for
6 children, adults, older adults, gender, and
7 we'll have to be selective. But, you know,
8 some of the data that we've all been presented
9 at these meetings is pretty sobering.

10 DR. VAN HORN: Right.

11 DR. PI-SUNYER: Yes, well, I think
12 it would fit in well in the energy balance
13 Committee.

14 DR. NELSON: Yes, I do think --

15 DR. PI-SUNYER: And we certainly
16 can work on that.

17 DR. VAN HORN: Maybe, Christine,
18 while you're working on your version, perhaps
19 that model could be the same we used for other
20 segments of the population, so we have a more
21 unified presentation.

22 DR. WILLIAMS: I think that's a

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1 good idea.

2 DR. VAN HORN: You know, a
3 standard format, but involving all different
4 age groups and genders, et cetera.

5 DR. VAN HORN: Maybe the staff
6 could help us with that.

7 DR. PI-SUNYER: I think that's a
8 good idea, Linda.

9 DR. VAN HORN: Okay. Great.
10 Other comments? This has been really
11 excellent. This is probably where the heart
12 beats of this whole report, given our energy
13 and obesity problem.

14 DR. APPEL: This is Larry. There
15 is one other major trial on weight loss in the
16 elderly where it wasn't powered for clinical
17 outcomes, but there was no adverse signal, and
18 that's the Tone study.

19 DR. PI-SUNYER: Yes, well, the DPP
20 also showed good effect, and so did the Look
21 AHEAD trial. That was in diabetics, but not
22 mortality.

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1 DR. APPEL: Yes.

2 DR. PI-SUNYER: They haven't
3 looked at mortality yet. It was only
4 morbidity.

5 DR. APPEL: Do they have events in
6 those studies though?

7 DR. PI-SUNYER: They have events,
8 but they haven't gone long enough to really
9 publish them yet. So, we don't have outcomes.
10 We just have risk factors.

11 DR. APPEL: I see.

12 DR. NELSON: But in the DPP, I
13 mean, they showed a reduced incidence of --

14 DR. PI-SUNYER: Diabetes.

15 DR. NELSON: -- diabetes, so --

16 DR. PI-SUNYER: No mortality data.

17 DR. NELSON: Right.

18 DR. APPEL: I think the Tone study
19 showed that weight loss controls blood
20 pressure, and DPP says that intentional weight
21 loss can prevent diabetes. We just don't have
22 clinical outcomes.

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1 DR. PI-SUNYER: Right.

2 DR. NELSON: Those aren't bad
3 things to try to modify.

4 DR. FUKAGAWA: This is Naomi. The
5 other thing though that we do have to consider
6 is perhaps a few words about the kinds of
7 diets that older individuals --

8 DR. PI-SUNYER: Older people?

9 DR. FUKAGAWA: -- use to try in
10 the weight loss, because, you know, all sort
11 of weight reduction diets aren't the same.
12 And if we're going to recommend just decrease
13 in calories, that's one thing, but if one
14 starts going out to the market with, you know,
15 the numerous variations on weight
16 reduction-type diets, then we could have --

17 DR. PI-SUNYER: Yes, I think it's
18 important to make sure they have high-quality
19 protein and enough protein particularly in
20 elderly people.

21 DR. FUKAGAWA: Right.

22 DR. RIMM: This is Eric. The

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1 other thing that many studies now tabulate and
2 show is that the best kind of diets for weight
3 loss are those where people actually adhere to
4 the diet. Frank showed that, I think the
5 study from Tufts showed that, that regardless
6 of the diet you were on, that if you adhere to
7 it and were conscious to it, people lost
8 weight. I don't know if that's something you
9 can put into a Dietary Guideline, but spoke to
10 the fact that being mindful of what you're
11 eating was as important as what you were
12 eating.

13 DR. VAN HORN: Yes, I think Xav
14 did a great job of that yesterday in talking
15 about the different studies with the POUNDS
16 LOST study being one of them, demonstrating
17 quite clearly that, you know, it's really not
18 about high protein or low carb, or whatever.
19 It's about calories and --

20 DR. RIMM: Right. So, I don't
21 know if we can just say something in the
22 chapter to the fact that adhering to the diet

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1 is important. So, finding a diet that you
2 could adhere to probably has importance.

3 DR. VAN HORN: Exactly.

4 DR. PI-SUNYER: Right.

5 DR. VAN HORN: But I do think --

6 DR. PI-SUNYER: I think that's the
7 message.

8 DR. VAN HORN: And the message
9 about the high-quality protein that Joanne
10 raised yesterday and I believe we'll probably
11 raise again.

12 DR. RIMM: Yes, I agree. I think
13 that's very important.

14 DR. VAN HORN: Okay. Anything
15 else to be said about energy balance and
16 weight loss, et cetera? This is a meaty
17 chapter.

18 (No audible response.)

19 DR. VAN HORN: All right. Well,
20 thank you, Xav.

21 DR. PI-SUNYER: Okay.

22 DR. VAN HORN: And we appreciate

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1 everybody's patience as we started off today
2 with finishing up from yesterday, but that was
3 excellent.

4 And now I think we're ready to
5 move ahead to the chapter on nutrient
6 adequacy, and the chair for that is Shelly
7 Nickols-Richardson.

8 Shelly, are you on? I noticed
9 that you had been disconnected. Are you
10 there?

11 DR. NICKOLS-RICHARDSON: I am.
12 I'm back.

13 DR. VAN HORN: Oh, great. Okay.

14 DR. NICKOLS-RICHARDSON: Okay.
15 Well, thank you, Linda, and it's a pleasure to
16 be able to present information related to
17 nutrient adequacy. And we do have quite a bit
18 of information to present, so we'll just jump
19 right in here.

20 The members of the subcommittee
21 include Naomi Fukagawa, Cheryl Achterberg,
22 Joanne Slavin and Miriam Nelson. And I do

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1 also want to take time to recognize the
2 brilliant work of our CNPP liaisons Trish
3 Britten and Eve Essery, as well as Rachel
4 Hayes with HHS. In addition to that, Joan
5 Lyon with the NEL staff and Shanthy Bowman at
6 ARS who have been just very instrumental in
7 making sure that we've had all the data that
8 we needed to review and look at.

9 We have six topic areas for which
10 we're pulling information. Some of these new
11 to the 2010 report. There are eight questions
12 that we're addressing and a few sub-questions
13 within those eight key questions.

14 We've already presented and talked
15 about some of these questions at previous
16 meetings, so today we'll just focus on what
17 hasn't been presented yet. And then at the
18 end of this section, we do have two modeling
19 questions to present that will actually be
20 incorporated into the total diet chapter, but
21 because the nutrient adequacy subcommittee has
22 been working on those, then we'll present them

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1 as part of this today.

2 So, this slide lists sort of three
3 of our topical areas. Questions 1 and 2 are
4 new to the 2010 report, so we'll talk about
5 those here with some detail in just a few
6 minutes.

7 The next slide shows one of our
8 topical areas and some sub-questions related
9 to nutrient issues for selected population
10 groups.

11 Next slide are the final topic
12 areas. Nutrient supplements are new to this
13 report, as well as some of the selected
14 behaviors.

15 So, jumping right into this, I
16 want to first start with a couple of topics
17 related to how we proceed with coming at
18 nutrient adequacy from a food standpoint and
19 looking at how we select foods and view foods
20 in relation to the nutrients that they
21 provide.

22 So, one of the questions that has

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1 been discussed is this concept of
2 nutrient-dense and do we continue to use
3 nutrient-dense in the --

4 DR. RIMM: Shelly, I think we're
5 losing you. Do you mind moving closer to the
6 phone?

7 DR. NICKOLS-RICHARDSON: -- so,
8 being able to use nutrient-dense and to
9 continue with nutrient-dense as part of the
10 2010 report and the work that we do.

11 Some of the pros of continuing
12 with nutrient-dense include that the concept
13 is theoretically valid. We believe that it's
14 generally accepted and well-understood by
15 nutrition professionals in particular, that it
16 does emphasize foods and distinguishes
17 nutrients from the energy that's contained in
18 food. We also believe that this can be
19 applied to help assist consumers in making
20 food choices that meet nutrient needs within
21 fixed calorie levels or within fixed energy
22 ranges.

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1 Some of the cons related to this
2 is that when we look at nutrient density there
3 are different ways of calculating nutrient
4 density for foods and for total diets,
5 different variety of ways of doing that. And
6 some of those ways are listed here, whether
7 it's the ratio or trying to avoid nutrients
8 that should not be consumed in quantities
9 larger than what's recommended such as
10 cholesterol or saturated fats, for example.
11 Adjustments for water and fat content and what
12 that does to the nutrient density of a food.
13 And then nutrient fortification and how do we
14 handle fortification of foods.

15 Nutrient-dense may or may not also
16 encompass nutrient-rich, nutrient density or
17 nutrient- to-energy ratio, and these can be
18 looked at as separate concepts. We're not
19 real sure what the contrast truly is. Is it
20 non-nutrient- dense, is it nutrient-poor or is
21 it energy density or energy-dense foods. So
22 again, these are some of the questions and

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1 cons related to using nutrient-dense that
2 we've discussed and debated a little bit.

3 And then just the concern over
4 whether naturally nutrient-rich foods are
5 equal to or superior to foods that have been
6 fortified with nutrients.

7 So, in discussions and in thinking
8 about this within the subcommittee and opening
9 this to the broader Advisory Committee, the
10 consensus is that we do continue to use
11 nutrient-dense. This was defined in 2005 by
12 the Advisory Committee as those foods that
13 provide substantial amounts of nutrients and
14 relatively few calories.

15 And so, what this means in
16 translation and really trying to use this as a
17 definition that can be translatable, what
18 we're really talking about and focusing on
19 then are forms of foods that are lean or low
20 in solid fats and without added solid fat,
21 sugar, starches or sodium and that do retain
22 naturally occurring components such as fiber.

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1 So, what this means then -- and we
2 can go ahead to the next slide there.
3 Actually this slide, Trish. Just as examples
4 what this means is that all vegetables,
5 fruits, whole grains, fish, eggs and that that
6 are prepared without added solid fats or
7 sugars are considered nutrient-dense, again in
8 lean low- fat forms, again not prepared with
9 solid fats or added sugars.

10 So, using this as our operational
11 sort of working definition here, we're not
12 advocating for a specific calculation to
13 identify nutrient density of foods, because
14 we're not wanting to pit apples and oranges
15 against each other, which would have different
16 nutrient density numbers or ratings, if you
17 will, but we're wanting people to incorporate
18 all of those wide range of foods, particularly
19 vegetables, fruits, whole grains, foods that
20 can be included in a total diet that are
21 nutrient-dense.

22 So, we're also looking at

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1 nutrient-dense foods being in a variety of
2 forms, so this includes intact foods or whole
3 foods, if you will, sliced, cooked,
4 minimally-processed. So again, all the
5 variety of forms that foods can be included
6 and can be nutrient-dense foods.

7 And then consuming nutrient-dense
8 foods of lower energy density. And rather
9 than sort of trying to take foods that are not
10 normally nutrient-dense and putting nutrients
11 into those through fortification or
12 enrichment, or making food-like substances
13 that have a lot of nutrients in them, we're
14 talking about those foods then that already
15 have naturally- occurring components of
16 nutrients and fiber and so on.

17 So, to move forward with this,
18 using nutrient-dense sort of in this
19 operational definition as it exists in the
20 previous slide.

21 I'm going to move now to sort of a
22 second question that we've had related to

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1 definitions and talk about discretionary
2 calories. And after discretionary calories,
3 I'll stop for a minute and see if there are
4 questions related to nutrient-dense and
5 discretionary calories.

6 So again, one of our questions
7 related to just how we approach foods, how we
8 approach energy in the diet, a question came
9 up about should we continue to use the
10 discretionary calories concept in the 2010
11 Dietary Guidelines?

12 And in our discussions and
13 deliberations some of the pros for doing that
14 -- and next slide -- is that discretionary
15 calories is still a theoretically valid
16 concept. In 2005, this was operationalized as
17 calories from solid fats, added sugars and
18 alcohol. And that was successfully used in
19 the 2005 Dietary Guidelines. That has been
20 translated and transformed into assessments,
21 including the Healthy Eating Index 2005, which
22 included solid fats, alcohol and added sugars

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1 as components of looking at the diet quality.

2 And of course, these were sort of negative
3 indicators of diet quality. But nonetheless,
4 it has been used to be able to take a look at
5 diets and the quality of those diets.

6 From a consumer standpoint, it has
7 been expressed as calories from extras and has
8 somewhat successfully been used in -- some of
9 the cons related to discretionary calories is
10 that it is a difficult concept for the average
11 consumer to understand. Even for nutrition
12 educators it's been somewhat hard to translate
13 that into a useable definition. The setting
14 of a discretionary calorie allowance sort of
15 gives this suggestion that there is an amount
16 of discretionary calories that are needed, and
17 that's not the case. These are non-essential
18 nutrient-based calories, and we really don't
19 need these calories in the diet, so trying got
20 move away from sort of an allowance to a
21 suggestion.

22 The other issue is that SoFAAS are

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1 not necessarily discreet entities, and so it's
2 hard to figure out for some how to count
3 discretionary calories as they're embedded in
4 foods.

5 We know that SoFAAS consumption is
6 about a third of all calories consumed, and so
7 to focus on solid fats and added sugars; and
8 we'll discuss a little bit more of this when
9 we move into components over-consumed, trying
10 to make sure that we're not trading off these
11 particular calories that come from solid fats,
12 added sugars, alcohol for refined grains or
13 starches, or other components that might be
14 added to the diet then if these are decreased.

15 And then finally, there's not a great body of
16 evidence suggesting that discretionary
17 calories has been helpful. There is some
18 consumer research that's ongoing, but it's not
19 very clear how well and how useable
20 discretionary calories is for the public.

21 So, our consensus here is that
22 even though we can model and use modeling to

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1 determine maximum amounts of calories from
2 non-essential nutrients sources that can be
3 consumed here, we're really trying to help
4 Americans avoid some of these additional
5 calories, or these calories that count as
6 discretionary calories.

7 So, moving away from the use of
8 discretionary calories and then really
9 focusing on solid fats and added sugars. And
10 I'll provide the rationale for why we're not
11 focusing on alcohol when we get to the
12 components over consumed.

13 So, I'll stop here for a second
14 and see if there are any questions, comments,
15 further discussion related to nutrient-dense
16 and discretionary calories, keeping in mind
17 that we'll move forward with the use of
18 nutrient- dense and promoting nutrient-dense
19 foods and forms of foods, and moving away from
20 discretionary calories then and focusing on
21 trying to decrease solid fats and added sugars
22 in the American diet.

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1 Questions or comments?

2 DR. NELSON: Shelly, it's Mim. I
3 just have a quick question. I think,
4 excellent -- I like this direction. Somewhere
5 I do think we have to have, when we're talking
6 about nutrient-dense, a sentence, all the
7 stuff that you talked about, but also just
8 sort of usually in its most natural state.
9 Something about that. I think that gets at
10 the sort of less-processed, less-concocted
11 foods that may just have added vitamins and
12 minerals.

13 DR. NICKOLS-RICHARDSON: Good
14 point.

15 DR. NELSON: But otherwise, I
16 think it's excellent.

17 DR. PEARSON: Shelly, this is Tom
18 Pearson. Can you hear me?

19 DR. NICKOLS-RICHARDSON: I can.
20 Go ahead.

21 DR. PEARSON: Sorry, I've had
22 trouble with my phone. The non-solid fats

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1 have never been part of this discussion
2 because of the essential fatty acid and fat
3 soluble vitamin issues, is that correct?

4 DR. NICKOLS-RICHARDSON: Correct,
5 and we'll actually address oils in the food
6 groups and dietary components.

7 DR. PEARSON: Right. But
8 obviously they have a caloric density per
9 gram, but obviously they have more nutrients
10 that are found only in them. So, that was my
11 question. Thanks.

12 DR. NICKOLS-RICHARDSON: Yes.

13 DR. SLAVIN: This is Joanne. Tom,
14 I'd like to follow up on that, because it's
15 the same issue in carbohydrates that --

16 DR. PEARSON: Right.

17 DR. SLAVIN: -- you know, we worry
18 about that and say, okay, added sugar is what
19 we're going to focus on, then starches and
20 other carbohydrates, you know, that have
21 equally no real difference in health benefits,
22 kind of drop off here.

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1 DR. APPEL: This is Larry. This
2 is very reasonable. I hope that in the
3 chapter you mention that the concept is valid
4 and that this represents a refinement. I
5 mean, it's been the basis for many
6 deliberations and it shouldn't be just dropped
7 as a concept, the discretionary calories
8 concept.

9 DR. VAN HORN: I think, you know,
10 just to summarize for those listening, because
11 we all have spent so much time talking about
12 this that others have not heard us do that, I
13 think the point to be made here, and Shelly
14 mentioned it, but just to reiterate,
15 scientifically it makes total sense.
16 Practically it's very confusing. Therefore, I
17 think the whole point of what constitutes
18 energy density versus nutrient density is a
19 message that needs to come out more clearly to
20 the American public so that instead of that 40
21 percent of calories coming from nutrient-poor
22 energy-dense foods, they actually recognize

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1 there's a way to get calories that are more
2 nutrient-dense.

3 And, yes, to add to the point that
4 was just made by Joanne and others, you know,
5 this does not necessarily require
6 fortification of functional foods as much as
7 it does choosing whole foods that are --

8 DR. NICKOLS-RICHARDSON: And I'm
9 making a note to myself and certainly if we
10 refine the chapter, we'll make sure that these
11 comments are incorporated into that.

12 DR. VAN HORN: Right.

13 DR. NICKOLS-RICHARDSON: And then
14 I think, yes, there will be much work related
15 to the translation of this for the consumer
16 messages and for the final Dietary Guidelines
17 that come from the Advisory Committee's
18 recommendations.

19 DR. PEREZ-ESCAMILLA: Larry, this
20 is Rafael Perez-Escamilla, and I guess my
21 question is why do you consider that
22 discretionary calories is a valid scientific

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1 construct?

2 DR. APPEL: Well, I mean, actually
3 Shelly agreed to it, too. I mean, it's a way
4 to indicate the difference. And this is of
5 course very difficult to explain, the
6 difference in total calories that somebody
7 consumes and the total calories that are
8 needed to provide the nutrients and meet our
9 guidelines. And it's a tough concept to
10 describe, but I think it's valid. And that in
11 order to meet your nutrient requirements,
12 given the physical activity that most people
13 have, there are next to no discretionary
14 calories. But it's an equation, and it's hard
15 to describe.

16 DR. PI-SUNYER: This is Xavier. I
17 think it's extremely hard --

18 DR. APPEL: Yes, I mean, I --

19 DR. PI-SUNYER: -- for people to
20 understand.

21 DR. RIMM: Yes, this is Eric. I
22 think there's two different things that all of

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1 us agree that it is hard to understand. And I
2 think from Larry's standpoint he was using it
3 because he wanted to, you know, construct
4 diets for trials, and so it was an easier way
5 to come up with a calculation or an equation
6 so you could construct something that fit, I
7 guess, within this construct. But everybody
8 on the Committee I think kind of struggles
9 with the fact that it's really hard for an
10 individual to use it.

11 DR. VAN HORN: And I guess I would
12 just add to that. It's almost like what I see
13 so commonly among pregnant women thinking,
14 whoopee, I can eat for two, you know? And the
15 idea of telling somebody you have some
16 discretionary calories, I think unfortunately
17 translates in their mind to, you know, eat up.

18 And I'm afraid that that message somehow just
19 hasn't made it across. And so, the idea of
20 concentrating in this obese environment, the
21 fact that there are very few extra calories
22 that anyone has and that food or indulgence,

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1 one of them, you know, that people enjoy, but
2 not feeling as though there's open reign on
3 energy-dense nutrient-poor foods. And I think
4 that's what this Committee has been struggling
5 with. But we all recognize the value of the
6 concept, so it's the tug and pull between the
7 translation of that versus the essence of that
8 scientifically.

9 DR. ACHTERBERG: This is Cheryl.
10 If I can weigh in?

11 DR. VAN HORN: Sure.

12 DR. ACHTERBERG: I think the
13 easiest way to explain it is that this
14 discretionary calorie concept is in fact a
15 margin, a margin after individuals meet their
16 other nutrient needs in order to meet their
17 calorie needs. But that margin is so thin for
18 most people it in essence is near zero. But
19 for people who are very, very active, they
20 would have a larger margin and then could
21 quote/unquote afford to eat more calories.

22 DR. SLAVIN: Again discretionary

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1 calories could come from lots of things
2 besides added sugar and solid fat. So I think
3 that's where, when we were just talking about
4 the energy chapter, somewhere in this document
5 we have to have really clear data on calories
6 and foods. That you can take added sugars out
7 and solid fats out and you can still have a
8 high-calorie food. And we need to make sure
9 that point doesn't get lost in this document.

10 DR. ACHTERBERG: And I think
11 coupled to that, if we go back in history to
12 how did the particular foods in discretionary
13 calories end up there, it's because there was
14 no place else to put them. They don't
15 contribute anything else to the diet, besides
16 calories, that's meaningful.

17 DR. NICKOLS-RICHARDSON: Okay.
18 Thank you for that discussion, and I think
19 I'll go ahead and move into dietary components
20 over- consumed, because we get into some of
21 the meat here of looking at solid fats and
22 added sugars.

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1 And so again, this is a question
2 that's new to the 2010 Advisory Committee and
3 we really wanted to, again approaching this
4 from a food standpoint, a foods perspective,
5 to try to get a handle on what is it about the
6 American diet that is presenting some concerns
7 in relation to the foods that we eat, to the
8 calories that we eat.

9 So, a draft conclusion here is
10 that estimated intakes of the following
11 nutrients and dietary components are high
12 enough to be of concern: For adults, this
13 includes total energy intake, particularly
14 energy intake from solid fats and added sugars
15 because we have good data about those
16 contributions to total calories; sodium;
17 percentage of total energy from saturated
18 fats; total cholesterol, primarily only in
19 men, and refined grains. For children, energy
20 intake from solid fats and added sugars;
21 sodium; percentage of total energy from
22 saturated fats; total cholesterol in boys aged

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1 two to 19 years of age; and refined grains.

2 Where we drew this information is
3 from the National Cancer Institute that used
4 NHANES data, and I do want to acknowledge Sue
5 Krebs- Smith and the fabulous work that
6 they've done at NCI in getting these data
7 together and often responding to a lot of
8 questions that we've had in a very timely
9 manner. Also, the ARS NHANES analyses. I
10 will mention that we also looked at reports
11 from the Supplemental Nutrition Assistance
12 Program, formally known as Food Stamp Program,
13 as well as reports on school lunch and the WIC
14 Program that were prepared by Food and
15 Nutrition Service, and the Institute of
16 Medicine's report on school meals. And just
17 to briefly mention that the data that I'll
18 show you in the next several slides in those
19 reports related to the food assistance
20 programs and school meals is very consistent
21 with what I'm presenting here from the NCI and
22 ARS information.

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1 So, to identify dietary components
2 over- consumed, what we did is take a look at
3 typical intakes and amounts per day in
4 standard units and then compare those to DRIs
5 or limits from the USDA Food Pattern. So
6 again, those model patterns for appropriate
7 eating to meet nutrient needs based on DRIs.
8 And so, we looked at specifically at total
9 energy, energy from solid fats and added
10 sugars, sodium, saturated fats, cholesterol
11 and refined grain.

12 What we see in terms of total
13 energy intake, and this is mean total energy
14 intake in comparison to recommended ranges.
15 So to orient you to this particular slide, we
16 have on the bottom, the x-axis is our age/sex
17 group. On the y-axis are calories per day.
18 What the bars represent are the high end of
19 the range, which would be for active
20 individuals, and the low end of the range
21 would be sedentary individuals. So, for each
22 sex/age group, we have the range of calories

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1 that is appropriate depending on physical
2 activity level. And then the triangles are
3 the actual mean energy intakes for those
4 age/sex groups.

5 So, I would point out here that if
6 we look at males and females two to five years
7 of age, mean energy intake is up at the higher
8 end of that range. I think it's safe to say
9 that not all of our two to five-year-old boys
10 and girls are very physically active.

11 Males and females six to eleven
12 years of age are also at that higher end of
13 mean energy intake.

14 A little bit better when we get
15 toward the adult population, the adult groups
16 here. But again, I would point out that for
17 overweight men they do tend to underreport
18 intake by about 14 percent. Obese men
19 underreport intake by about 20 percent.
20 Overweight women underreport by about 15
21 percent, and obese women underreport intake by
22 about 21 percent. And this is compared to

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1 normal weight men who underreport by about one
2 percent, and normal weight women who
3 underreport by about six percent. And that's
4 based on data comparing energy intake to
5 energy expenditure using the doubly-labeled
6 water method.

7 So, to make that point and again
8 to show here that, particularly in childhood
9 and moving through the years, that we do need
10 to be concerned about energy intake compared
11 to what recommended ranges are in relation to
12 physical activity for the American population.

13 To look a little bit further into
14 this, and, next slide, now we start to look at
15 what are some of those components then related
16 to energy intake. And again, this information
17 is related to solid fats and added sugars.
18 Alcohol is not included here. And, if we
19 think about solid fats, solid fats are those
20 that are solid at room temperature. It would
21 include saturated fats. Added sugars are
22 those sugars and syrups added to food during

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1 processing or preparation and not sugars that
2 are found naturally in foods such as sugars in
3 milk or fruit, for example.

4 Alcohol is not included here
5 because generally alcohol has not been
6 included in the reporting of the intake of
7 children and adolescents. And alcohol
8 actually contributes not as much energy intake
9 to the total diet in adults, so the focus here
10 again is on solid fats, added sugars. In the
11 past, the SoFAAS acronym has been used
12 including that additional A for the alcohol.
13 Here again, and when I move through these,
14 we'll focus mostly on just the SoFAS, the
15 truncated solid fats and added sugars. And
16 I'll try to refer to this as solid fats and
17 added sugars rather than SoFAAS to avoid that
18 confusion.

19 The next several slides will have
20 sort of a similar orientation. So again, what
21 you see here are the age groups, the children,
22 and then females and males are for our adult

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1 age group. Those also include adolescents.
2 So, you'll see across sort of the x-axis here
3 is the age groups. And then across the y axis
4 is the item that we're looking at.

5 So, here this is in kilocalories
6 per day of solid fats and added sugars.

7 The yellow bars across all of
8 these graphs then are maximum limits in this
9 particular slide. So, if we look at where
10 that yellow bar is and where our maximum
11 limits for SoFAAS calories -- and again, this
12 is sort of the 2005 discretionary calories
13 limit, then we see that everyone in every
14 age/sex group, with the exception of those
15 over 70 years of age, are above the maximum
16 limit for solid fats and added sugar intake.
17 And I think I should note that one-third of
18 all calories for adults are from SoFAS, that's
19 the median intake, and again that's without
20 alcohol. And greater than 95 percent of the
21 population, except again for those aged 70 and
22 older, consume more than 20 percent of total

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1 calories as SoFAS, again without alcohol.

2 Next slide. These are mean usual
3 intakes. So, if we look at where those total
4 SoFAS calories are coming from, this breaks it
5 down into added sugars and solid fats. Added
6 sugars in blue, solid fats in the red bar. So
7 again, we see age/sex groups along the x-axis,
8 the kilocalories per day along the y-axis.
9 And I think this speaks to maybe Larry's point
10 from yesterday. If we look at children four
11 to eight and nine to 13 years of age, as well
12 as our adolescent individuals 14 to 18 years
13 of age, I'll just point out males who were 14
14 to 18 years of age, about 450 kilocalories --
15 well, actually it's more than that. Males
16 nine to 13 years of age, 450 kilocalories in
17 the diet are coming from added sugars, about
18 480 on average coming from solid fats.

19 Next slide. If we look at sodium,
20 the yellow bars are maximum limits. The
21 higher yellow bar represents the upper level.
22 The lower bar represents adequate intake.

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1 So, if we look across all age/sex groups,
2 looking at sodium in milligrams per day, we
3 see that with the exception of a few groups,
4 the older individuals, that really everyone is
5 above the adequate intake for -- well,
6 everyone's above the adequate intake for
7 sodium and some are a little bit under the
8 upper level, but many are over the upper limit
9 of intake. And you'll hear more about that
10 in sodium, potassium and water later this
11 morning.

12 Next slide. Looking at saturated
13 fats, again the yellow bars are maximum
14 limits, so less than 10 percent of total
15 energy from saturated fats. And again, if we
16 look at children, females and males, we see
17 that about 50 percent of the population are
18 over the limit of less than 10 percent of
19 total calories from saturated fats.

20 Next slide. Cholesterol is
21 represented here. Our maximum limit is 300
22 milligrams per day. And children tend to do

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1 okay with this, so really less than five
2 percent go above that recommendation. Females
3 tend to do pretty well here, but males, for
4 the older ages starting at about 14 to 18
5 years of age and above, about half of males
6 consume more than 300 milligrams of
7 cholesterol per day.

8 Next slide. If we look at refined
9 grains, again the yellow bars are maximum
10 limits. The higher bar is for active
11 individuals and the grain in ounce equivalent
12 per day that could be consumed for active
13 individuals, the higher yellow bar. For
14 sedentary individuals, which is the lower
15 yellow bar; and just as a frame of reference,
16 in a 2000-calorie diet, this would equate to a
17 six-ounce equivalent per day of total grains.

18 If we look at the distribution here, the
19 percentile distribution, we see that for
20 sedentary individuals that would --

21 MR. GILBERT: Shelly, I'm sorry to
22 interrupt. This is Nathan. Is it possible

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1 for you to speak louder or closer to the
2 microphone? We're getting some reports that
3 your audio is faint and cutting out.

4 DR. NICKOLS-RICHARDSON: Still too
5 quiet? Okay. I'll try to speak closer to the
6 phone. Does this help?

7 MR. GILBERT: It's a little
8 better. Thank you.

9 DR. NICKOLS-RICHARDSON: Better?
10 Okay. I'll try to do the best I can here.

11 MR. GILBERT: All right. Thank
12 you.

13 DR. NICKOLS-RICHARDSON: Okay.
14 So, with refined grains then, if we look at
15 really across-the-board for sedentary
16 individuals, really in all age/sex groups,
17 we're consuming more refined grains that are
18 recommended.

19 So, the draft implication related
20 to dietary components over-consumed include
21 that, to lower overall energy intake without
22 compromising nutrient intakes Americans should

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1 focus on lowering consumption of calories in
2 the form of solid fats and added sugars.
3 Efforts are warranted to lower total sodium
4 intakes, promote lower intakes of saturated
5 fats and total cholesterol, particularly in
6 males older than 12 years of age, and to lower
7 refined grain intakes and replace refined
8 grain intakes with higher-fiber whole grains.

9 We do have a research
10 recommendation which includes: develop and
11 test behavior-based interventions designed to
12 lower dietary intakes of nutrients and dietary
13 components over-consumed with particular
14 emphasis and focus on solid fats and added
15 sugars.

16 I'll stop here and see if there
17 are any questions or comments related to
18 dietary components over-consumed.

19 DR. PEARSON: Shelly, this is Tom
20 Pearson.

21 DR. NICKOLS-RICHARDSON: Yes?

22 DR. PEARSON: This is terrific, a

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1 real tour de force. There's so much to think
2 about.

3 One question I had, looking at the
4 source of the data, had some period of years
5 from the various sources. Is there any
6 possibility of getting some trend data over
7 say the better part of a decade, in particular
8 relative to one slide you showed of excess
9 fats versus carbohydrate sugars?

10 DR. NICKOLS-RICHARDSON: That's
11 probably possible.

12 And, Trish, I know you're out
13 there listening, so can you make a note and
14 we'll see what we can come up with?

15 DR. PEARSON: Yes, it has to do
16 with again, some of our campaigns for low fat
17 being traded off with carbohydrates without
18 really a caloric implication, or maybe even a
19 bad caloric implication.

20 DR. NICKOLS-RICHARDSON: Yes.

21 DR. PEARSON: So, that's the
22 interest.

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1 DR. NICKOLS-RICHARDSON: Okay.
2 Thank you.

3 DR. NELSON: This is Mim. I think
4 the only question I have is, given the
5 conversation we just had about where --
6 because you've just presented, actually, a lot
7 of dietary intake data. And I'm wondering if
8 there is any reason -- I just think we need to
9 strategize a little bit about where we put all
10 the intake data. Because what you've just
11 presented is quite a bit of some of the more
12 interesting stuff.

13 DR. NICKOLS-RICHARDSON: Sure.
14 And I actually -- as to the discussion about
15 where is this information, that's when my
16 phone cut off, so I wasn't able to share that
17 information. And, you know, we're moving
18 along with the drafting of the chapter, but I
19 am very flexible that if this fits better
20 somewhere else and it makes more sense to
21 reinforce points perhaps in energy balance, I
22 think we can take a look at where we want to

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1 have certain types of information.

2 So again, I think, you know,
3 working as our science writer, as Ann takes a
4 look at the chapters and how things are coming
5 together, putting things where it really makes
6 sense. Obviously, this makes sense to us here
7 because of the food focus and where do our
8 calories and where do our nutrient components
9 come from, but if some of this needs to be
10 shifted, I'm flexible on that.

11 DR. PEARSON: This is Tom Pearson.

12 Relative to that, I think wherever this goes,
13 this is such a core part that it should be
14 cross-referenced very carefully. So for
15 example, in fatty acids and cholesterol, we
16 have to quote these slides elsewhere in the
17 modules, even in our section. So, I think
18 that's very important that this all get linked
19 together.

20 DR. NICKOLS-RICHARDSON:
21 Absolutely. And I'm the queen of
22 cross-referencing, so in the draft of the

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1 chapter, I have referenced energy balance,
2 carbohydrates, protein, fatty acids, alcohol.

3 I think maybe the only place I haven't
4 cross-referenced is the food safety, but we
5 will do that when we talk about fish.

6 DR. FUKAGAWA: Shelly, this is
7 Naomi. That's great, with your presentation.

8 But just as a point of
9 clarification, the chapter does deal with the
10 issue of the enrichment of refined grains and
11 that we really are not compromising intakes of
12 some of those micronutrients that refined
13 grains are enriched with when we recommend a
14 potential reduction. Correct?

15 DR. NICKOLS-RICHARDSON: Correct,
16 and I think what we're really talking about is
17 because all of our grains come in the form of
18 refined grains and we're missing dietary fiber
19 by doing that, we do get to, when we talk
20 about folate, the modeling of looking at all
21 grains as whole grains and what that means in
22 terms of nutrient adequacy. So, we're not

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1 suggesting that we push that completely to
2 whole grains, or if we do, that those are
3 fortified products. But, yes, you're correct.

4 We will get to that when we do address that
5 question.

6 DR. FUKAGAWA: Thanks.

7 DR. NICKOLS-RICHARDSON: Okay. In
8 the interest of time, I think I'll keep moving
9 along here.

10 Our next topic is food groups of
11 concern. And again, this is our second
12 topical area, question No. 2. Again, to get
13 an understanding or to gain an understanding
14 of where we missed the mark in nutrient
15 intake, we wanted to take a broader look at
16 the foods that Americans are consuming and
17 what that means then in terms of nutrients.

18 So again, a new question for 2010.

19 And our draft conclusion here is that
20 reported dietary intakes of the following food
21 groups and dietary components are low enough
22 to be of concern: For adults and children,

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1 this includes vegetables, fruits, whole
2 grains, fluid milk and milk products, and as a
3 dietary component, oils. For adult women and
4 adolescent girls, meat, poultry, fish, eggs,
5 soy products, nuts and seeds as a complete
6 food group. Primarily the focus is on meat,
7 poultry, fish.

8 The evidence that we looked at
9 again includes National Cancer Institute data
10 in which NHANES were analyzed. We also looked
11 again at the FNS reports and the Institute of
12 Medicine reports, and again the findings from
13 those reports were very consistent with what
14 will be presented related to the NCI data from
15 NHANES analyses.

16 Our methods here were to look at
17 typical intake in amounts per day or amounts
18 per week in standard units and then compare
19 this again to the USDA Food Patterns for the
20 basic food groups and the modeling that was
21 done of those patterns to meet nutrient
22 intake.

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1 So, specifically we looked at:
2 Vegetables as an overall group in addition to
3 the various subgroups of vegetables; fruits,
4 including total fruits as well as
5 sub-components or subgroups of fruit; grains,
6 including whole grains; fluid milk and milk
7 products; the meat group; and then oils.

8 Okay. Next slide. And I saw that
9 popped up here. And this is just to remind
10 you that with the USDA Food Patterns, that the
11 range of calories do exist for the different
12 age/sex groups, and so just to look at those
13 ranges of calories because those relate then
14 to the serving for the different food groups.

15 The next slide, and what you'll
16 see here for the food groups are two slides.
17 This first is more of a table format. A
18 second slide will be presented to you in more
19 of a figure or a graphic form. Really what I
20 want you to focus on is all of the red that
21 appears in these medium intake slides. And
22 what this shows, then, is the food group of

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1 concern. So, what we're looking at for food
2 group, the population group that includes all
3 of those age/sex groups, what the median
4 intake is, what the recommended ranges are
5 across those calorie ranges for those groups,
6 again remembering the lower end is the
7 sedentary, higher end is for active
8 individuals, and then the link to the
9 shortfall nutrients that will be important as
10 we move to nutrients of concern.

11 So, here with the total
12 vegetables, which does include dry beans and
13 peas, you see all of the red, all of our
14 age/sex groups missed the mark for our
15 recommended intake across calorie ranges,
16 which links to shortfall nutrients such as
17 potassium, dietary fiber, magnesium, several
18 vitamins and then folate of women of
19 childbearing age.

20 When we look at this based on the
21 percentile data, again to orient you to this
22 slide, on the bottom is the age/sex group.

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1 So, what we're presenting here is just the
2 females and males ages 14 to 18, and then we
3 have a midlife group, females and males ages
4 31 to 50. This is consistent with the other
5 age/sex group, so we just selected these to
6 sort of give you an idea of what this picture
7 looks like.

8 So, percentile data. Age/sex
9 group is on the bottom. The recommended goals
10 are the yellow lines, so we'll see our
11 recommended goals for vegetable intake are
12 three cup- equivalents per day of vegetables
13 for females, 3.5 for males. And everyone
14 falls below those targets.

15 Next slide. If we look at males
16 and females in midlife, with the exception of
17 some males, about five percent of males, again
18 men and women in midlife fall short of meeting
19 the vegetable intake recommendation.

20 Next slide. Here we move to the
21 vegetable subgroups, and again, if you focus
22 on all of the red, these are places where we

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1 missed the mark. So for dark green and leafy,
2 red, orange, dry beans and peas, potatoes and
3 other starchy vegetables and other vegetables,
4 with the exception of males and females 19
5 years of age and older, in that other
6 vegetable group, again we're missing our
7 target intake for the different subgroups or
8 subcategories of vegetables. And again, these
9 contribute important nutrients to Americans,
10 and so we're missing the mark for those
11 nutrients.

12 The next slide moves into fruits.

13 If we look at total fruit intake, the only
14 group that meets target recommended intakes
15 from a median intake standpoint are children
16 two to three years of age. And I should note
17 that that's largely because they do consume
18 fruit juices, 100 percent fruit juices
19 specifically in relation to this. So, but
20 moving into the older age group and by gender,
21 certainly we're missing the mark here. So,
22 these are median intakes. If we look at this

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1 from a percentile intake, again the yellow bar
2 is our target in cup equivalents for fruit.
3 Again, total fruit, for our adolescent boys
4 and girls, most of them are missing the mark
5 for fruit consumption.

6 Next slide is in midlife. Again,
7 for men and women, missing the target for
8 fruit intake.

9 Next slide relates to grains.
10 You've already seen information about refined
11 grains being over-consumed, so that's the
12 representation of total grains. And in large
13 part our grain consumption is refined grains
14 and so we do fine with total grains because
15 we're consuming refined grains. But if we
16 look at the recommendation of at least half of
17 grains coming from whole grain sources, then
18 we're missing the mark there. Again, if we
19 think about a 2,000-calorie standard diet,
20 then greater than three ounce-equivalent
21 should come from whole grain, and for all
22 age/sex groups we miss the mark there.

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1 Looking at this from a percentile
2 data standpoint, I think it's very clear here
3 that everyone across-the-board for our
4 adolescent males and females miss that at
5 least three ounce-equivalents. If we look in
6 midlife, again we miss the mark for whole
7 grain consumption.

8 Moving to milk and milk products,
9 again children two to three years of age do
10 meet target recommendations looking at this
11 from a median intake standpoint. Children
12 four to eight years of age do pretty well
13 also, however, there's some new data from
14 Bailey in 2010 that suggests that the four- to
15 eight- year-olds may have some concern. And
16 then as we move up the age/gender group, we
17 see that again we fall short of recommended
18 intake and the nutrients then that we miss by
19 not consuming from the milk and milk products
20 group.

21 Looking at this from a percentile
22 intake, again for females, adolescent females,

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1 only about five to eight percent meet
2 recommendations. Boys do a little bit better,
3 about 30 percent of them meeting
4 recommendations, but there's about 70 percent
5 not. If we look in midlife, we see that all
6 women in midlife are not consuming the target.

7 And men do a little bit better, but again a
8 vast majority not meeting target for milk and
9 milk product consumption.

10 Next slide. Then, the meat and
11 beans group, with the exception of females 19
12 years of age and older and a little bit of a
13 concern on the lower end for children, then we
14 see that women really from a median intake
15 standpoint are missing the target intake here.

16 Other age and sex groups do fine.

17 If we look at this from a
18 percentile data standpoint, then here we see a
19 little over 75 percent of our adolescent
20 females fall short of meeting the
21 recommendation in this food group. Boys tend
22 to do a little bit better. But again, about

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1 half the population not meeting that. And
2 then if we look at midlife, again the concern
3 really is for the women with a little over 50
4 percent not meeting the target for meat
5 intake.

6 Next slide. If we look at oils,
7 then, as a dietary component, we see that in
8 relation to recommended intakes across those
9 calorie ranges that for all age/sex groups
10 that median intakes are lower than the
11 recommended intakes and the link to the
12 shortfall nutrients, as Tom pointed out,
13 really being essential fatty acids, as well as
14 vitamin E.

15 Next slide. And then if we look
16 at oil consumption from a percentile intake
17 perspective, again we see for our adolescent
18 individuals that both boys and girls fall
19 short, or the vast majority fall short of
20 that.

21 And if we look at midlife, then we
22 also see -- next slide. Okay. So, here we

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1 have midlife males and females, and again we
2 see that oil consumption compared to goals
3 falls short of that goal.

4 So, next slide. In relation to
5 food groups of concern, our draft implication
6 is that efforts are warranted to promote
7 increased intakes of vegetables, especially
8 dark green, red, orange and dry beans and
9 peas, fruits, and whole grains, and
10 substitution of oils for solid fats,
11 regardless of age, increased intakes of
12 fat-free or low-fat fluid milk and milk
13 products by children age four to eighteen
14 years of age, and adult men and women, and
15 increased intakes of lean iron-rich meat,
16 poultry and fish by adult women and adolescent
17 girls. And I want to emphasize the point
18 about substitution of oils for solid fats.
19 We're not encouraging or recommending
20 Americans to simply add oils to the diet, but
21 they should be substituting oils for those
22 solid fat components.

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1 Further implications include
2 intakes of nutrient-dense forms of foods. And
3 again, forms of foods that are lean or low in
4 solid fat and without added solid fat, sugar,
5 starches or sodium from these basic food
6 groups should replace foods in the current
7 American diet that contribute to high intake
8 of solid fats and added sugars and refined
9 grains. Again, not talking about adding
10 additional food, but making better selections
11 from food groups that meet nutrient needs.

12 Research recommendations include
13 conducting clinical trials in children and
14 adults to critically examine the impact of
15 adherence to the 2010 Dietary Guidelines as
16 these become developed and are published as a
17 total dietary approach to a healthy lifestyle
18 on body weight change, cardiovascular disease,
19 type 2 diabetes, cancer and osteoporosis and
20 related clinical end points.

21 Further research recommendations
22 include quantitatively and/or qualitatively

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1 investigating how the food environment
2 facilitates or hinders achievement of food
3 groups and dietary component recommendations
4 notably in individuals enrolled in food,
5 assistance programs and/or across various
6 ethnic and cultural groups. And this is
7 largely linked to the food environment
8 information that Mim presented yesterday
9 related to energy balance.

10 I'll stop here, take time for
11 questions, comments, concerns about food
12 groups of concern.

13 DR. VAN HORN: Excellent job,
14 Shelly. I think the graphics are so
15 incredibly convicting when you see so many
16 shortfall foods, as well as nutrients. It
17 really sends the message loud and clear as to
18 where we really need to shore up and increase
19 intake, which hopefully will then
20 counterbalance some of the recommendations to
21 reduce sugars and fats.

22 DR. WILLIAMS: Shelly, this is

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1 Christine. Excellent presentation. I was
2 just thinking, when you look at the food
3 sources of solid fats, for example, for
4 children, pizza, grain desserts, whole milk,
5 regular cheese, fatty meats, some of them,
6 certainly the dairy products would be personal
7 choice that individuals could make, but others
8 we'll need to have industry help us to make
9 some changes in what's available and
10 recommended to the public.

11 DR. NICKOLS-RICHARDSON: Excellent
12 point.

13 DR. PEREZ-ESCAMILLA: Shelly, this
14 is Rafael. Excellent presentation. In terms
15 of the nutrient density recommendations, it is
16 very clear that, you know, the fruit intake,
17 but especially the vegetable intake, dark
18 green vegetables, you know, orange, yellow
19 veggies and so on, that consumption is so
20 incredibly low, that I think it fully
21 justifies making a strong statement about
22 increasing nutrient density in the U.S. diet

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1 by dramatically increasing the variety of
2 vegetable intakes that are recommended.

3 DR. NICKOLS-RICHARDSON: Yes,
4 thank you. And, you know, we say this every
5 time, but the dry beans, peas, you know, that
6 whole category that could enhance the protein
7 intake as well as the dietary fiber intake.
8 You know, there are certain cultures where
9 those foods seem to play a more dominant role,
10 but to increase awareness and access to those
11 foods in easy- to-eat forms, et cetera, would
12 seem to be a great step in the right direction
13 to try to raise awareness and attention to
14 that.

15 DR. APPEL: This is Larry. I had
16 a question. By the way, it was excellent. I
17 really enjoyed it. Learned a lot.

18 For the meat and beans group, what
19 really drove the -- under -- was it primarily
20 the iron? because in all honesty I see the
21 link to nutrients of concern, phosphorus and
22 choline, and quite frankly, I don't see those

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1 as public health issues.

2 DR. NICKOLS-RICHARDSON: Great
3 question. And it really is the iron that was
4 driving this. And actually, as we move into
5 nutrients for selected populations, we'll
6 address the iron and women's reproductive
7 capacity question.

8 The phosphorus is sort of -- and
9 the choline -- I'll also actually show a
10 couple of slides specifically about choline,
11 phosphorus and how we arrived at really not
12 considering those of great public health
13 implication at this time. The phosphorus is
14 sort of an anomaly. It's really that
15 adolescent population that seems to be missing
16 the mark for intake there, which is somewhat
17 confusing I think to many of us because of
18 phosphorus sources, you know, and the variety
19 of where phosphorus can come from, and our
20 thinking about the foods that adolescent girls
21 do consume.

22 DR. APPEL: Yes.

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1 DR. NICKOLS-RICHARDSON: So again,
2 we're not looking at phosphorus as a nutrient
3 of great public health significance, but it
4 really was the iron.

5 DR. APPEL: The reason I bring that
6 up is that, you know, one of your concerns as
7 stated is meat, but really if it's iron, then
8 that seems to be a pretty expensive vehicle
9 for, you know -- it seems that -- and I'm not
10 quite -- you know, I'm a little bit struggling
11 with this. You know, is there a public health
12 concern related to inadequate meat intake?
13 And then consistent with some of the other
14 discussions yesterday, there are ecologic
15 issues when you start, you know, pushing meat
16 intake.

17 DR. SLAVIN: This is Joanne. I
18 don't think we're pushing. I know being on
19 this Committee it's iron for sure, but also
20 protein quality. So, if we want people to eat
21 fewer calories, especially during growth and
22 development with higher protein needs, protein

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1 quality is a big issue.

2 DR. PI-SUNYER: And I think what

3 --

4 DR. ACHTERBERG: And this Cheryl,
5 too.

6 DR. PI-SUNYER: -- is that maybe
7 there are alternatives to meat that would be
8 better.

9 DR. VAN HORN: Well, and it's not
10 just meat, right, Shelly? I mean, the group
11 heading is meats and meat's the first word,
12 but it's poultry, fish, dry beans, eggs, nuts.
13 It's the whole proteins array. So, you know,
14 I don't think -- and maybe it's just the order
15 of this, but, you know, I don't think it's
16 necessarily meat that is the single driver
17 here. It's the whole concept of protein
18 quality including any of these and all of
19 these foods. I suppose we could do, you know,
20 a further breakdown and drill into red meat
21 versus poultry versus fish, et cetera, since
22 we are advocating, you know, consumption of

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1 more omega-3 fatty acid-rich foods, fish being
2 one of them. You know, it might be valuable
3 to dig a little deeper in this particular
4 category so that we can get a better sense of
5 exactly where the protein is coming from. And
6 recognizing currently, as we all know, that
7 the number one source of dietary iron is
8 fortified cereal right now.

9 DR. NICKOLS-RICHARDSON: Right,
10 and we are addressing in the chapter, sort of,
11 the sources of iron and sort of keeping in
12 mind that with the non-animal-based iron
13 sources that the bioavailability obviously is
14 a little bit less, but keeping that in mind.

15 But as we come to maybe iron as a
16 concern for women of reproductive capacity, if
17 we have further questions or comments about
18 iron and the protein and the meat, then we can
19 come back to that again a little bit more.

20 Cheryl, I think you were wanting
21 to make a comment?

22 DR. ACHTERBERG: I think the

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1 comment was made. It's not meat per se, it's
2 the meat group, and there are a lot of other
3 foods in the meat group.

4 DR. NELSON: This is Mim. I think
5 just echoing that, I do think that it might be
6 time to disaggregate this group. Because from
7 the rest of the report, I mean, we're trying
8 to get more fish consumption, we're trying to
9 get more, you know, vegetable-based proteins
10 that I think we need to be consistent in terms
11 of the implications.

12 DR. APPEL: This is Larry again.
13 I think that this is treading on an important
14 sort of overarching issue, which is the name
15 of this group. And I had a sidebar
16 conversation with Janet King, and you know, if
17 there's one thing she wished she did it was to
18 not say meat and beans. And I was sort of
19 interested, because we said the meat group.
20 We conveniently dropped the beans. And I've
21 really been wondering whether -- you know, I
22 know it doesn't; and maybe we're not in the

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1 position to spend a lot of time on this, but
2 maybe we should rename the group as a protein
3 source. I know that that might be
4 oversimplification, but I think that's how
5 people are thinking of this and of which you
6 could get it from several different forms.

7 DR. NELSON: Yes, I agree. It's
8 Mim. I think it antiquated. I think we've
9 got to shift that nomenclature.

10 DR. VAN HORN: Yes, I actually
11 find myself editing in some places, you know,
12 the order and instead of saying meat, poultry
13 as we usually do, I started putting fish,
14 poultry, meat just in terms of being able to
15 draw emphasis to the foods that we are
16 advocating. I think we can't on one hand say
17 increase omega-3 and not then also advocate
18 where the omega-3 is coming from, recognizing
19 we're also talking about reducing saturated
20 fat and reducing dietary cholesterol.

21 So, you know, trying to make sense
22 out of this in terms of the recommendation and

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1 the practical translational message that needs
2 to come out, I think you're right and that
3 maybe we should at this point, you know, do
4 away with that old title and call it, you
5 know, the protein group or something like
6 that.

7 DR. ACHTERBERG: This is Cheryl.
8 I have to jump in. A basic premise of this
9 whole group at the outset looking at food
10 groups of concern is to describe what our
11 recommendations are in terms of food and not
12 nutrients. If we decide to make that leap to
13 change the name to something like the protein
14 group or even a protein food group, then I
15 think what we are sliding into is changing all
16 the group names to more nutrient-based, or at
17 least macronutrient-based categorization. And
18 I think that's a much, much larger issue that
19 would have to be considered very carefully.
20 And if I remember right, that's not even
21 within the purview of the Dietary Guideline
22 Committee. But rather, the USDA sets the food

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1 patterns and food groups.

2 DR. VAN HORN: Yes, well, we can
3 only recommend and advocate, but you raise a
4 very good point, Cheryl, you know, that we
5 wouldn't want to have an outlier in this
6 particular group. So, maybe we just need to,
7 you know, reconsider what we call it or come
8 up with an acronym or, you know, something
9 that would relate to the foods, but not
10 necessarily, you know, emphasize red meat as
11 the single most important source as much as
12 drawing from the entire array in a way that
13 accommodates all these nutrient
14 recommendations.

15 DR. FUKAGAWA: This is Naomi. So
16 much of the focus ends up being on the needs
17 for iron. We also have to be cautious that
18 people don't think that iron fortification is
19 good for everyone, because that is truly
20 gender or sex and age-dependent. And so, you
21 know, I mean, red meat is a good source of
22 that, but so are other foods. And so, we

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1 somehow have to balance it. And I agree with
2 all of you for the rest of the comments.

3 DR. NELSON: But maybe the issue -
4 this is Mim again - that it's in the
5 implication that we need to increase -- this
6 is a food group of concern, but within the
7 food group these are the foods we need to
8 increase, not certain other ones.

9 DR. RIMM: Yes, I like the idea of
10 disaggregating and having fish, poultry and
11 eggs as one, or nuts and legumes as another,
12 or those together. And then sort of the red
13 meat/butter thing separately just because of
14 everything else we've been saying yesterday
15 about processed meat and yesterday about
16 saturated fat. I mean, we don't have to call
17 it protein group or two separate protein
18 groups. We could call it by their foods, but
19 disaggregate the food groups.

20 DR. SLAVIN: I would suggest we,
21 as being on this Committee, that we get to the
22 iron part that Shelly's going to present. And

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1 also, we've done modeling on proteins, and one
2 of the issues is calories. So, I think as
3 those things get presented, we'll have more
4 information for this discussion, and I'd
5 really recommend we let Shelly get to that.

6 DR. NICKOLS-RICHARDSON: And thank
7 you for all of these comments. And I do
8 apologize, I do tend to drop the rest of the
9 title of that to make it shorter. So, Trish
10 actually has provided some information to me,
11 and obviously everyone's falling short in
12 dried beans and peas. Everyone's falling
13 short in fish consumption, including the
14 particular group of concern here. So, it is,
15 you know, several parts of that group where
16 we're really falling short.

17 And then thinking about the most
18 bioavailable sources of iron and that being
19 one of the key aspects of this, I think we can
20 tweak this and word this a little bit better
21 to where we're focusing on those foods that we
22 really want to focus on without having to

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1 regroup this entire food group.

2 But we'll take it back to the
3 Committee and discuss some more, and thank you
4 for that.

5 Okay. I'm going to move forward
6 here, keep plugging along.

7 One of our topical areas is
8 nutrients of concern, and I do want to remind
9 everyone that we have presented nutrients of
10 concern at a previous meeting. And so, our
11 four key nutrients of public health importance
12 or significance include vitamin D, calcium,
13 potassium and dietary fiber. Today what we're
14 focusing on are vitamin D and modeling of the
15 calcium question. So even though these are
16 not the only two nutrients of concern, I'm
17 just going to remind everyone that because
18 we've presented the other two key ones, we're
19 just going to focus on these two.

20 I'm actually going to turn things
21 over to Mim who will talk about vitamin D and
22 present this for us.

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1 DR. NELSON: Hi, this is Mim. And
2 we've talked about this a little bit in some
3 of the previous meetings, but here is sort of
4 what we've come up with. The draft conclusion
5 is that there is strong evidence that
6 indicates that many children and a majority of
7 adults do not meet the adequate intake for
8 vitamin D. Furthermore, a significant portion
9 of the population has deficient or inadequate
10 blood levels of vitamin D to promote health
11 and to prevent chronic diseases such as poor
12 bone health and possibly certain types of
13 cancers, cardiovascular disease and
14 immune-related disorders. This is especially
15 apparent in people living in northern
16 latitudes, in persons with dark skin and in
17 overweight and obese adults.

18 Next slide, please. The
19 background is that there is in the last -- I'd
20 say eight to ten years, there's a lot more
21 emerging research on vitamin D and health that
22 goes beyond bone health. We did not conduct

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1 an independent systematic review, NEL search
2 for vitamin D because the Institute of
3 Medicine has concurrently empaneled an expert
4 Committee to review the 1997 dietary reference
5 intakes for vitamin D. And that's expected in
6 the next couple of months, those results from
7 that Committee.

8 So, what we did do, because we
9 felt it was imperative that we do something,
10 our strategy for review was to look at the
11 National Institutes of Health Conference,
12 Vitamin D and Health in the 21st Century, an
13 update, and an NIH roundtable discussion with
14 experts that was held after the conference,
15 and this was published in AJCN in 2008. We
16 also looked at the Agency for Healthcare
17 Research and Quality, AHRQ, Evidence Report
18 for Vitamin D and Calcium. This is what's
19 been used -- some of which has been used by
20 the IOM Committee, and that was just
21 published. And then we, also with the help of
22 USDA staff, examined current vitamin D intakes

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1 and status.

2 Just a little background. It's
3 important for optimal bone health and other
4 body systems, including the immune system,
5 cardiovascular and reproductive systems.
6 There is emerging research that's shown a
7 reduced risk of type I diabetes, some cancers,
8 autoimmune diseases and infectious diseases,
9 however, there seems still to be a need for
10 further research to fully establish these
11 relationships.

12 Next slide. Little bit on vitamin
13 D intakes, looking at NHANES 2005 to 2006.
14 And understand that we base this on the
15 current adequate intakes, not what we presume
16 the IOM may or may not do. So, looking at
17 just the AI for children, less than 65 percent
18 of children meet the AI for vitamin D. Less
19 than 50 percent of females, 53 percent of
20 males and about 10 percent of men and women
21 over age 50 that do not currently meet the AI.

22 Contributing scientists to the

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1 roundtable discussion. This is a really
2 tricky one, because there are no
3 government-established criteria for blood
4 concentrations of vitamin D, but the
5 roundtable group came up with these three
6 demarcations of less than 27.5 nanomoles per
7 liter, less than 50 nanomoles per liter, and
8 less than 75 nanomoles per liter. And looking
9 at those demarcations, about 30 percent of
10 people aged 12 and older had serum levels that
11 were lower than 50 nanomoles per liter and
12 about 15 percent of children aged one to
13 eleven had serum levels that were less than 50
14 nanomoles per liter.

15 And after adjusting -- there's
16 been a bit of a measurement drift in the
17 NHANES data set, and Looker's done a lot of
18 work on, the concentrations in the population
19 have actually, seems to, even when you account
20 for the drift, gone down from 1988 to the
21 early '90s to current times.

22 Implication is that all children,

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1 adults and the elderly are encouraged to meet
2 the AI for vitamin D. Children and adults and
3 the elderly with deficient or adequate blood
4 levels of vitamin D should consume more
5 vitamin D-rich foods in both naturally-
6 occurring and fortified forms and consider
7 supplementation with vitamin D to bring blood
8 levels into an adequate range.

9 What I will say here also is that
10 we're trying to be a little bit elastic, so
11 whatever the IOM comes up with with a new
12 adequate intake for vitamin D, that this would
13 hold to whatever the IOM comes up with.

14 Next slide. Research
15 recommendations. We need more high-quality
16 long-term, especially dose-response study with
17 relevant health outcomes that include bone as
18 well as other functional outcomes related to
19 the immune system, autoimmune disorders and
20 chronic diseases such as cancer or diabetes.
21 I think that the issue here is really a
22 dose-response.

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1 Next slide. Investigate the
2 metabolic partitioning, fate and mobilization
3 of key vitamin D metabolites at recommended
4 and greater than recommended levels. This
5 issue of obesity is having a real effect on
6 vitamin D levels, because there seems to be
7 some sequestering of the vitamin D in the fat
8 tissue, which may not be all that great.

9 Next slide. And then go back.
10 So, I'm going to stop there. Any questions?

11 DR. APPEL: Yes, this is Larry.
12 This is obviously a rapidly moving area, and
13 we can't really even say too much given what's
14 going on with the IOM, but just wondering
15 about the comments about consider supplements,
16 because that really is sort of a hot potato.
17 And even with omega-3, we did come out and
18 state that, even though there actually are
19 some, you know, well-designed clinical trials.

20 And I'm wondering if that could be that
21 phrase drops.

22 DR. NELSON: You know, I'm not an

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1 advocate of supplements, with the exception --
2 I actually think that it's really hard for
3 people to get enough vitamin D to keep their
4 blood levels at an adequate range without
5 supplements, and this is especially for older
6 adults. I think that, you know, there's been
7 even more research on blood levels and
8 probably 75 percent of elementary schools;
9 we've just finished this study in
10 Massachusetts, that are low in vitamin D. I
11 think it's going to be really hard to do it
12 with just food.

13 DR. CLEMENS: And, Mim, this is
14 Rog. Thank you very much for the very
15 important continuity between what your group
16 has identified and the IOM report.

17 One of the issues that we have to
18 look at as well is that most of the foods that
19 are fortified with vitamin D actually have
20 under regulatory constraints. So, even if the
21 IOM report were to augment the current
22 standard or recommendation, the food industry

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1 is really challenged to put vitamin D in
2 various food supplies because of the
3 regulatory constraints at this time. So,
4 clearly we need to consider perhaps that what
5 are the regulatory issues and what are the
6 implications for dietary supplements?

7 DR. NELSON: Yes, I think that's
8 an issue. You know, really I'm not sure what
9 the difference is between somebody taking a
10 supplement and then somebody eating lots of
11 foods that are, you know, extra fortified with
12 vitamin D. I think that there are some
13 constraints on the food industry. I predict
14 that the upper limit is going to change even
15 if the adequate intake doesn't change for
16 vitamin D. It's the one nutrient for all the
17 obvious reasons that, you know, there isn't
18 much in the food supply anyway, and then
19 people aren't getting outside anymore. People
20 are putting sunscreen on. This obesity
21 epidemic is causing a drop in vitamin D
22 levels. I think it is just -- sort of the

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1 anthropological, sort of evolution of this is
2 such that it's difficult to get it in the
3 foods. So, I'd be interested to hear if any
4 other people on the Committee also had any
5 comments.

6 DR. VAN HORN: Well, Mim,
7 somebody's going to be talking to us soon
8 about the fluid milk reduction as well, and,
9 you know, recognizing that that, especially
10 for children, represents the single richest
11 source. And of course, with reduced intake
12 and increased intake of sugar-sweetened
13 beverages, et cetera, that further
14 contributes, especially in that age group, to
15 the, you know, insufficient intake of vitamin
16 D.

17 DR. NELSON: Yes.

18 DR. VAN HORN: I think that the
19 caution that Larry is raising, and I think the
20 Committee has, you know, discussed this
21 before, is that in our capacity in pointing
22 out the evidence related to, you know, what

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1 currently exists and the data and the
2 research, et cetera, you know, this particular
3 topic certainly has had a flurry of activity
4 of late, and I think those data are being
5 carefully reviewed. And of course the IOM
6 report is in fact, you know, imminent at this
7 point and hopefully will come up with what is
8 the best recommendation at this time. But I
9 think for us at this point, without the
10 additional evidence that suggests that we have
11 data regarding use of supplements and the
12 safety and efficacy, et cetera, you know, just
13 puts us a little bit at a disadvantage, and
14 our goal is to be evidence- based.

15 DR. NELSON: Well, I think it is
16 evidence- based. But, I think the one thing
17 we could do is to -- the one paragraph -- we
18 could go back to the implication slide, is to
19 focus more on foods, you know, to consume more
20 vitamin D- rich foods. We could maybe list
21 more of those. We do have a table in the
22 chapter that lists all the most vitamin D-rich

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1 foods, and they would actually I think
2 complement some of the foods that are lacking.

3 I think that --

4 DR. FUKAGAWA: This is Naomi. I
5 also think we do have to be cautious about,
6 you know, treating blood levels, because it's
7 an integrated organism that we're dealing
8 with, namely us.

9 DR. NELSON: Yes.

10 DR. APPEL: Yes, this is Larry. I
11 want to follow up on that, because I think
12 it's the way you actually phrase that, to
13 bring blood levels into an adequate range, and
14 you acknowledged earlier that, you know,
15 what's considered normal is still being
16 debated. And I actually don't even know if
17 there's a trial of where people were titrated
18 to a blood level.

19 DR. NELSON: Yes, I think that's
20 fair. I think we should take that out. I
21 think maybe what we need to do is separate out
22 the sentence, and I can modify the

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1 supplementation to meet adequate intakes, but
2 only after -- a lot of this is the elderly.
3 You know, their needs are high and it's almost
4 impossible for them to get it in foods.

5 DR. CLEMENS: Mim, this is Rog
6 again. I appreciate your remarks. And might
7 your table include possibly a paragraph of
8 what technology is going to offer, and is in
9 the process of offering to improve the vitamin
10 D content of a variety of foods without
11 fortification? There are some processes which
12 are actually being utilized now to increase
13 the vitamin D content of a variety of foods,
14 and we might want to make a remark on that.

15 DR. NELSON: Sure, I'll add that.
16 So, I'll soften the statement and take out
17 the blood levels.

18 DR. CLEMENS: And I'll give you
19 that information, Mim.

20 DR. NELSON: That would be great
21 if you could send that to me.

22 DR. CLEMENS: Thank you, Mim.

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1 DR. VAN HORN: And enhancing the
2 bioavailability and issues of --

3 DR. NELSON: Yes.

4 DR. VAN HORN: -- you know, we can
5 certainly advocate for that.

6 DR. CLEMENS: Yes. Yes.

7 DR. NELSON: Yes.

8 DR. VAN HORN: And encourage
9 industry to help us with that.

10 DR. NELSON: Yes.

11 DR. VAN HORN: And, you know, I
12 think that would be the steps that this
13 Committee would feel comfortable taking at
14 this time in the absence of the IOM report
15 and, you know, focusing on our job of food,
16 you know, and diet as recommendations.

17 DR. NELSON: I mean, and this
18 isn't very far off. This is pretty similar to
19 the 2005 DGAC, because there were a couple of
20 nutrients in which subgroups may need to
21 supplement. This was one of them. So, I'll
22 soften this.

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1 DR. NICKOLS-RICHARDSON: Okay.
2 Thank you, Mim. And, yes, so the next
3 component related to nutrients of concern is
4 calcium. And we're sort of in the same
5 situation with calcium also being under review
6 by the IOM. But in relation to some of the
7 questions that we have here in terms of food
8 and food intake, there were a few
9 sub-questions related to calcium being a
10 nutrient of concern, and questions about what
11 if people choose not to consume fluid milk and
12 milk products and so on and so forth?

13 So, we have three sub-questions
14 related to calcium that were handled through
15 modeling exercises. Sub-question A is, what
16 is the impact on nutrient adequacy if no fluid
17 milk or milk products are consumed, and if
18 calcium is obtained from non-dairy sources or
19 other fortified foods rather than fluid milk
20 and milk products.

21 Sub-question B is, what non-dairy
22 calcium sources or fortified foods are the

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1 most feasible alternative to milk products for
2 those who choose not consume dairy foods?

3 And sub-question C is, how would
4 the nutrients provided by the milk group be
5 changed if more low-fat or fat-free fluid milk
6 and less cheese were consumed?

7 So, just as a background or some
8 rationale behind why we undertook this
9 modeling exercise is that many Americans fall
10 short of the recommended intake levels for
11 fluid milk and milk products, as you've seen.

12 Some individuals desire non-dairy calcium
13 sources for a variety of physiological,
14 psychosocial or personal reasons, so those
15 wanting to avoid fluid milk or those who
16 perceive that they're lactose intolerant or
17 are actually diagnosed with lactose
18 intolerance. And then the relative
19 proportions of fluid milk and cheese
20 consumption have changed over time and milk
21 and cheese differ in some important ways in
22 nutrient content.

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1 So, just as this last bullet point
2 to show you some those data. If we look at
3 the green bar and focus on that and look at
4 the trends from 1970 to 2007, the gallons per
5 capita per year of total beverage milk, and
6 the green line again has declined over that
7 40-year period of time. If we contrast this
8 with cheese intake and look at pounds per
9 capita per year from 1970 to 2007, again the
10 green bar, focus on that one, we see that
11 total cheese consumption has increased over
12 that 40- year period of time.

13 So, to address sub-question A and
14 the findings related to this modeling
15 exercise, we found that when fluid milk and
16 milk products are removed from the USDA Food
17 Patterns, calcium dropped substantially below
18 the adequate intake across all energy levels.
19 Further, vitamins D and A, and choline,
20 magnesium, phosphorus and potassium also fall
21 below 100 percent of DRI levels in some or all
22 patterns.

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1 For sub-question B, our findings
2 are that of the non-dairy alternatives
3 evaluated as a substitute for fluid milk,
4 yogurt and cheese in the USDA Food Patterns,
5 soy milk fortified with calcium and vitamins A
6 and D is the alternative with the most similar
7 nutrient profile to fluid milk. And other
8 non-dairy food sources were compared,
9 including calcium- fortified rice drink or
10 calcium-fortified orange juice, tofu prepared
11 with calcium sulfate, green vegetables, green
12 soybeans, white beans, and so on and so forth.
13 And so, the soy milk fortified with calcium
14 and vitamins A & D provided the most similar
15 nutrient profile as a substitute food product.

16 For sub-question C, when fat-free
17 fluid milk is substituted for some or all of
18 the low-fat cheese in the USDA Food Patterns,
19 we find that energy, protein and calcium
20 levels remain similar. Vitamin A and choline,
21 magnesium and potassium increased slightly.
22 And sodium, cholesterol and saturated fatty

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1 acids decreased slightly. And vitamin D
2 content is substantially improved across
3 energy levels suggesting that incorporation of
4 fat-free fluid milk as a substitute for
5 low-fat cheese would make an important
6 contribution to nutrient intake.

7 So, draft conclusions here include
8 that for individuals who avoid fluid milk and
9 milk products because of lactose content, a
10 clinical diagnosis of lactose intolerance is
11 important to determining whether dairy-based
12 foods should be eliminated from your diet
13 patterns. I know this seems somewhat
14 incongruent with the modeling information that
15 was presented, but this is here because of the
16 recent State of the Science Panel on lactose
17 intolerance, and this comes from their draft
18 report of their consensus statement. So,
19 making sure that individuals who perceive
20 lactose intolerance are actually diagnosed so
21 that they don't eliminate a food group and
22 foods from their diet that may not have to be

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1 eliminated.

2 Lactose-reduced or low-lactose
3 dairy-based products of fortified soy milk may
4 assist some individuals in meeting nutrient
5 needs -- milk and milk products food group.

6 I'll stop here, see if there are
7 any questions related to these three
8 sub-questions and the modeling process for
9 calcium.

10 DR. ACHTERBERG: This is Cheryl.
11 Maybe in the chapter or somewhere we should
12 make note of the difference in price points
13 here for these substitutions as well?

14 DR. NICKOLS-RICHARDSON: Okay.
15 All right. Well, thank you, Cheryl.

16 And we'll move onto --

17 DR. APPEL: This is Larry. I have
18 a comment or a question.

19 DR. NICKOLS-RICHARDSON: Yes?

20 DR. APPEL: That second, or the
21 first bullet, the clinical diagnosis, it turns
22 eating into sort of a medical issue, and I'm

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1 wondering if that's a little bit too strong.
2 I just can tell you in our feeding studies if
3 somebody has a problem with milk, we give them
4 lactate or equivalents, and it's sort of like
5 a therapeutic test, but with a pretty benign
6 approach. And so, we don't go through any
7 formal diagnostic testing, which I think would
8 be, you know, massive if you think of it
9 applied to the full population. It's a pretty
10 strong statement, clinical diagnosis.

11 DR. NICKOLS-RICHARDSON: Okay.

12 DR. PI-SUNYER: Yes, I would agree
13 with Larry.

14 DR. VAN HORN: And, Shelly, in
15 regard to the report that you're referring to,
16 are you suggesting -- or I think that what
17 you're indicating is that that report that was
18 showing that many fewer people actually are
19 lactose intolerant and think they are? Is
20 that the point?

21 DR. NICKOLS-RICHARDSON: Correct,
22 that is the point. And I think that, you

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1 know, this certainly can be rephrased and I
2 can go back to that report, but, yes, that is
3 the point, that there are more people avoiding
4 milk and milk-based products because of their
5 perception of lactose intolerance.

6 DR. SLAVIN: This is Joanne.
7 Shelly, I wonder about -- some of it could be
8 protein allergies, too. So, probably it's
9 good not to just focus on lactose. You know,
10 people could be avoiding dairy because of
11 protein intolerance. So, I agree we need to
12 rephrase this.

13 DR. NICKOLS-RICHARDSON: Okay.
14 Good point.

15 Okay. And then moving to
16 shortfall nutrients. And so, again sort of
17 keeping in mind that for nutrients of concern
18 we have a two-prong approach to identifying
19 our nutrients of public health implication of
20 significance. And just to present here that
21 as we looked at choline and phosphorus, and
22 you'll see that here in just a second, we did

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1 ask the question about choline intake and does
2 that present a significant public health
3 concern. And our outcome for choline is
4 although most age/sex groups do not meet
5 adequate intake, there really is a lack of
6 either biochemical data or trials to really
7 suggest that this is of public health concern
8 at this time. And so, choline then is a
9 shortfall nutrient, but has not been sort of
10 moved to the status of nutrient of concern.

11 Moving to phosphorus then, again
12 the question is are there subgroups that at
13 risk for inadequate intake and what does that
14 mean? And again, our NHANES data suggests
15 that nine to eighteen-year-old girls have
16 inadequate intake of phosphorus in a good
17 majority of those individuals. But again,
18 there's really not biochemical evidence or
19 related health concern to suggest that this is
20 anything more than a shortfall nutrient and
21 with some very well-pointed recommendations
22 for food intake, these individuals could

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1 likely meet the recommendation for phosphorus.

2 So, any questions about shortfall
3 nutrients before I move to selected population
4 concerns?

5 DR. PEARSON: This is Tom Pearson
6 about the issue with choline. Obviously this
7 is then immediately juxtaposed to dietary
8 cholesterol issues with fewer eggs being less
9 choline. So, I think this is an important
10 place to emphasize these non-egg sources of
11 choline. We were looking at some consumption
12 data of the 38 percent of cholesterol in the
13 diet from eggs now going down to around 24
14 percent, obviously suggesting lower egg
15 consumption. So, whatever shortfall nutrient
16 issues you had with choline would appear to be
17 getting worse.

18 DR. NICKOLS-RICHARDSON: Yes, you
19 know, choline is similar to vitamin E in that
20 in the USDA Food Patterns it is always below
21 the AI.

22 DR. PEARSON: Right.

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1 DR. NICKOLS-RICHARDSON: So, I
2 think that really kind of no matter how we
3 model it, it always falls short. But again,
4 looking at what are the key health-related
5 issues, we don't really have evidence there
6 quite yet. So again, I think, you know,
7 you're point's very well taken related to egg
8 consumption, obviously being a very good
9 source of choline. We will have a table for
10 choline sources and direct people to that
11 table and some of these other things that
12 we're emphasizing; fish, for example, that
13 through some of these other food sources we
14 can hopefully, you know, at least get a better
15 handle on choline consumption.

16 DR. CLEMENS: Shelly, this is Rog.
17 I know your group didn't look at say the
18 pregnant woman. Is it possible that the
19 absence of these -- or in light of these kinds
20 of data that we have insufficient intake
21 relative to the IOM recommendations and that
22 there's actually up-regulation of choline

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1 synthesis for pregnant and lactating women.
2 And do we have any information on the
3 interplay of choline and folic acid relative
4 to methyl transport and the onset of neural
5 tube defects?

6 DR. NICKOLS-RICHARDSON: Yes,
7 great question and, yes, obviously there is
8 metabolic work with that relationship, folate,
9 choline, B12, and so it is very important in
10 that interplay. I can't answer your question
11 about the up- regulation issue, but I can say
12 that there are only maybe two or three human
13 clinical trials really looking at choline and
14 neural tube defect. And it does seem to be
15 important, but I don't think that those
16 studies can really lead us to making a
17 recommendation compared to folate, for
18 example, in the data that we have about
19 folate.

20 DR. CLEMENS: Thank you.

21 DR. NICKOLS-RICHARDSON: Okay.
22 Then we'll move to nutrient issues for

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1 selected population subgroups.

2 The three key things we're looking
3 at here include folate, B12 and iron. We've
4 presented the folate as a very broad question,
5 so what will be presented now is just food
6 pattern modeling, and this really relates to
7 the question that has come up about if
8 individuals select all grains as whole grains,
9 what happens then to nutrient quality of the
10 total diet, and what does that contribute?

11 So, the rationale behind this
12 folate modeling question is that the 2005
13 Dietary Guidelines recommend that at least
14 half of all grains be whole grains. And so,
15 I've already mentioned the 2000-calorie
16 pattern. What this means is that at least
17 three ounce equivalents of grains be whole
18 grains. The most commonly consumed refined
19 grains are enriched with iron and other B
20 vitamins and fortified with folic acid. Whole
21 grains typically are not enriched or fortified
22 except for some ready-to-eat whole grain

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1 cereals.

2 Some of the key assumptions in the
3 folate modeling process included that the
4 proportions of non-whole grain products were
5 maintained but replaced with a whole grain
6 version. The fortified whole grain
7 ready-to-eat cereals were included at levels
8 currently consumed, so not trying to over
9 include foods that really aren't consumed at
10 current levels. And the non-whole grain
11 ready-to-eat cereals are replaced with either
12 -- and two scenarios then were modeled,
13 non-fortified whole grain cereals or then
14 fortified whole grain cereals.

15 What was found then is that when
16 all recommended grains are consumed as whole
17 grains rather than half whole and half-
18 enriched refined grains, and these whole
19 grains were not fortified, dietary patterns
20 were insufficient for dietary folate for girls
21 14 to 18 years of age, women of all ages with
22 low to moderate energy needs and men older

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1 than 50 years of age with relatively low
2 energy needs. In addition, dietary patterns
3 were low in iron for boys and girls two to
4 eight years of age and then adolescent girls
5 and women age 14 to 50 years. So again,
6 that's without any enrichment or fortification
7 of those whole grains. That was scenario 1.

8 Scenario 2 findings. So, when all
9 recommended grains are whole grains rather
10 than half whole and half-enriched refined
11 grains, and these whole grains include then
12 fortified ready-to-eat cereals in the dietary
13 pattern, what was found is that dietary
14 patterns are then actually adequate for folate
15 and iron.

16 So, a draft implication is that if
17 individuals desire to consume only whole
18 grains in their dietary pattern, some of those
19 whole grains should be fortified.

20 I think I'll move onto our next
21 population subgroup here, and then we'll stop
22 after this one. This is the iron question.

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1 And a draft conclusion here is
2 that substantial numbers of adolescent girls
3 and women of childbearing age have laboratory
4 evidence of iron deficiency. If we look at
5 the evidence and look at intake data, then
6 it's estimated that 15 to 17 percent of women
7 of reproductive age do not meet dietary iron
8 requirements. NCI data for food group intake
9 suggests that about 75 percent of 14 to
10 18-year-old women and 60 percent of 31 to
11 50-year-old women don't meet the suggested
12 ounce equivalents. And I'll carry out the
13 whole food group here. Meat, poultry, fish,
14 dry beans, eggs and nuts.

15 The next slide is again what
16 you've seen before in relation to the
17 percentile data, so I'm showing that to you
18 again. Now, carrying it further to laboratory
19 data, the biochemical evidence, NHANES data
20 indicates that greater than five percent of
21 individuals aged one to fifty-nine years,
22 including women in this, have inadequate serum

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1 ferritin concentrations and that more than 10
2 percent of individuals of all ages have low
3 levels of transferrin saturation. And this is
4 suggestive of iron deficiency.

5 So, a draft implication is that
6 efforts are warranted to increase dietary
7 intake of iron- rich foods and of enhancers of
8 iron absorption by these special populations.

9 So again, focusing on women of reproductive
10 capacity and encouraging iron-rich foods,
11 whether that be meat or poultry, fish, other
12 foods.

13 Okay. So, questions related to
14 these nutrient issues for the selected
15 population subgroups?

16 DR. RIMM: This is Eric. The
17 whole grain modeling probably is troubling
18 some people, not because you got anything
19 wrong. It's only because it seems that it's
20 almost implying that we shouldn't be
21 recommending whole grains for everybody for
22 most servings.

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1 And is that just because we were
2 modeling it that the other folate is coming
3 from what they typically eat, or if people eat
4 within the guidelines they still would be
5 short on folate?

6 DR. NICKOLS-RICHARDSON: Yes,
7 great question.

8 DR. RIMM: Is that clear?

9 DR. NICKOLS-RICHARDSON: Yes, that
10 question is very clear, and in anticipation of
11 this question Trish gave me some information.

12 So, if we look at the 2000-calorie pattern,
13 where vegetables are suggested at
14 two-and-a-half cups, fruits at two cups, that
15 provides 190 micrograms of folate, total
16 dietary folate. And then the grains from
17 fortified whole grains would be 374. So, we
18 would need, in addition to the vegetables and
19 fruits and the contribution of folate there,
20 we would still need the fortified grains.

21 Does that answer your question?

22 DR. RIMM: Yes, I guess so. It's

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1 just surprising to me that there's -- I guess
2 because a lot of the fortified grains have
3 substantially more folate than the whole grain
4 version --

5 DR. NICKOLS-RICHARDSON: Yes.

6 DR. RIMM: -- and maybe the DRI
7 increased for folate. It just seems
8 surprising that you can't achieve this by
9 having more whole grains in your diet and not
10 achieve the requirement for the fortified
11 grains.

12 DR. SLAVIN: This is Joanne here.
13 It's a little confusing though, Eric, because
14 a lot of the cereals are whole grain and they
15 still have folic acid. But, it's only refined
16 grains that are officially fortified. And so,
17 other people -- I think Roger brought this up
18 with vitamin D, too, their hands are tied
19 about what they can't do because of standards
20 of identity. So, they just --

21 DR. RIMM: Oh, right, that I
22 realize.

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1 DR. SLAVIN: Yes.

2 DR. RIMM: It seems like we're
3 saying don't have whole -- I mean, well, I
4 guess the implications are you really need to
5 have more folate if you're having more than
6 half your grains as whole grain.

7 DR. SLAVIN: Yes.

8 DR. RIMM: We're not going to be
9 saying don't have whole grains.

10 DR. SLAVIN: Right.

11 DR. VAN HORN: This is Linda. And
12 especially when we consider the dietary fiber
13 recommendations. I think, you know, this is
14 another example of why we need other sources
15 of dietary folate, including things like
16 beans. Lentils are an excellent source. We
17 all know, you know, there are other ways to
18 get more dietary folate.

19 DR. RIMM: That's true. So, how
20 does that work into the patterning? I mean,
21 can we --

22 DR. VAN HORN: Yes.

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1 DR. RIMM: -- have that as an
2 implication? It just seems like this is one
3 of those things where it's very clear. The
4 way you've modeled is exactly right. It's
5 just that it doesn't agree with everything
6 else you're saying, because we're essentially
7 saying take the fiber out of your diet.

8 DR. VAN HORN: Right. Yes, right.
9 Well, every single chapter has an issue like
10 this.

11 DR. RIMM: Yes.

12 DR. VAN HORN: And as I've gone
13 through and edited, you know, the chapter so
14 far, it would appear to me, and, you know,
15 when we get down to the final go-around here,
16 that when we hit a topic like this, is exactly
17 where we need to provide a table illustrating
18 what alternate dietary sources are of some of
19 these shortfall nutrients. And, you know, I
20 think it is a complicated but important
21 message, you know, that advocating whole
22 grains makes total sense, but in terms of

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1 achieving dietary folate intake, one cannot
2 only rely on fortified cereal or, you know,
3 refined grains as their primary source or
4 their only source.

5 DR. FUKAGAWA: The other important
6 thing; this is Naomi, is that we have to
7 remember that not all populations need, you
8 know, fortified folate products.

9 DR. RIMM: That's a good point.

10 DR. FUKAGAWA: And so, you know,
11 weighing the benefits and risks --

12 DR. RIMM: This is just for women
13 and girls that get -- women that can become
14 pregnant for some of these.

15 DR. VAN HORN: Right.

16 DR. SLAVIN: Right. And also I
17 think we need to remember; this is Joanne
18 here, is that the refined grain and enriched
19 grains, most people are getting more than
20 enough of it. And we keep needing to make
21 this message to not just add whole grains, but
22 to substitute so this balance idea that we

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1 don't want to push grains on people, but, you
2 know, get into balance. So, if people would
3 go with half of their grains and then keep the
4 grains where they should be, you'd actually be
5 in pretty good shape if you modeled.

6 DR. NELSON: And this is Mim.

7 DR. CLEMENS: And, Shelly, this is
8 Rog. This is really a nice presentation. I
9 appreciate your comments on bioavailability.
10 Will your chapter include any type of summary
11 or paragraph or statement or table to address
12 the bioavailability of say folic acid, iron
13 and other nutrients, whether it's from grains
14 or from cereals?

15 DR. NICKOLS-RICHARDSON: That
16 would be new.

17 DR. CLEMENS: Clearly, you'll --

18 DR. NICKOLS-RICHARDSON: We
19 weren't anticipating doing that, but it's a
20 good thought, good question. We'll talk about
21 that at our next subcommittee conference call.

22 DR. CLEMENS: It's really quite

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1 complex. To Linda's comment, you just can't
2 arbitrarily choose an iron source or a folic
3 source because they don't behave the same in
4 the same food matrix or different matrices.

5 DR. NELSON: This is Mim. You
6 know, we used to get our folate from green
7 leafy vegetables, so, you know, getting back
8 to that would get us two things at once.

9 DR. SLAVIN: But I think that's
10 like grains have typically been enriched or
11 fortified is because most people are going to
12 consume that on a daily basis. So, from a
13 public health way of getting nutrients to
14 people, it's a really good vehicle.

15 DR. NELSON: Oh, I've done the
16 folate question; I completely agree. I just
17 think that, you know, if we ate more green
18 leafy vegetables along with whole grains and
19 some, you know, fortified refined, we would be
20 doing a lot better.

21 DR. CLEMENS: And, Mim, great
22 question, great point. Has anyone done any

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1 calculations on the production of green leafy
2 vegetables and the potential availability of
3 those vegetables to meet these folic acid
4 requirements?

5 DR. NELSON: I don't know. I
6 could look at the modeling, but, I mean,
7 historically that's the way humans mostly got
8 their folate?

9 DR. CLEMENS: We just have 300
10 million people to feed in the United States
11 and I don't think that the production -- we'd
12 have to look at some ARS data that in fact
13 we're producing an adequate amount --

14 DR. NELSON: Oh, we're not. No,
15 we're not. We know that. And, you know, we
16 talk about in the integration and translation
17 chapters.

18 DR. CLEMENS: Absolutely.

19 DR. PEREZ-ESCAMILLA: This is
20 Rafael. But it's not only green leafy
21 vegetables. It's also orange juice in the
22 U.S. and beans in many Latin American

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1 countries. They are contributors.

2 DR. NELSON: Yes.

3 DR. PEREZ-ESCAMILLA: So, it's
4 possible to get a much higher amount through
5 foods, but --

6 DR. NELSON: And foods --

7 DR. PEREZ-ESCAMILLA: -- that's a
8 part of the discussion at the table toward the
9 decision to fortify the food supply was made.

10 DR. NELSON: Yes, and I think that
11 -- Mim again -- that we shouldn't lose sight
12 of all those fine, you know, nutrient-dense
13 foods that do have folate, that there's a
14 variety of them. And, you know, we have just
15 focused on grains because of the
16 fortification. I think we need to make sure
17 people realize, unlike some other nutrients, I
18 mean, there are a variety of really wonderful
19 foods that have folate.

20 DR. RIMM: Yes, this is Eric
21 again. I agree. I think that, you know, I'm
22 just trying to think down the line of how this

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1 is going to be used to translate into school
2 lunch programs and institutionalized feeding.

3 They're actually going to interpret this as
4 don't go to more than half of your grains as
5 whole grains because of all these other
6 concerns. And, you know, I don't know what we
7 can do it about it. If there's something
8 that's saying, you know, eat more than 50
9 percent but include in your diet, you know,
10 fruits, vegetables and beans and these other
11 sources, because I am afraid that we are
12 parsing this too carefully and then we're
13 going to end up doing a disservice to the
14 guidelines.

15 DR. ACHTERBERG: And Cheryl here.

16 And why can't we fortify more whole grains?
17 We do some but not others, or we do sometimes
18 but not other times. Why not do it more
19 often?

20 DR. RIMM: Well, that could happen
21 also. It's a shame that we don't stick to the
22 whole food --

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1 DR. SLAVIN: You know, I want to
2 get back to what Naomi pointed out, too, is
3 that there's always this issue about
4 over-fortification, the folic acid and B12 --
5 who's eating all the grains? It's people
6 eating a lot of calories, so they may not be
7 the people needing so much folic acid. So,
8 it's a really hard thing to - -

9 DR. FUKAGAWA: Right, so I don't
10 think the answer is necessarily increasing
11 fortification. It's, you know, probably
12 trying to get it from other sources.

13 DR. SLAVIN: Exactly.

14 DR. NELSON: Yes, so I just don't
15 want to lose sight of that as opposed to just
16 putting everything on fortified grains.

17 DR. ACHTERBERG: But we can't lose
18 sight of what the typical American eats
19 either. And neural tube defects has been a
20 problem over the whole course of history. All
21 the students of art history recognize the
22 paintings over time. I'd even go back to the

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1 Inca. So, it's a long-term human problem with
2 humans not getting enough in their food
3 supply. So, we have to consider what do
4 people generally eat and how far can we move
5 them?

6 DR. FUKAGAWA: The people who are
7 producing food could help us tremendously,
8 because it's a team effort --

9 DR. ACHTERBERG: I agree.

10 DR. FUKAGAWA: -- to be offering
11 that would perhaps would be better choices. I
12 think that's true --

13 DR. VAN HORN: My opinion --

14 DR. FUKAGAWA: -- as well as the
15 indication, as I said earlier, of providing
16 sources, making it readily available so that
17 the average individual has some knowledge of
18 what are the choices that could contribute,
19 you know, and making that better known to
20 them.

21 DR. NICKOLS-RICHARDSON: These are
22 all great points and I do want to sort of

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1 raise the point here that this is the piece of
2 the folate question. And so, as this is
3 presented in the chapter, certainly this will
4 be the part of that whole broad question and
5 there will be tables about sources of folate.

6 So, I think maybe we can tweak this a little
7 bit, the implication here a little bit that
8 incorporates some of the thoughts and ideas
9 that we do want to emphasize whole grains, we
10 do want people to consume dietary fiber.
11 Folate is a piece, a component of this, to be
12 concerned about those folate sources. And if
13 you're consuming whole grains, then being sure
14 to -- and it probably is part of one those
15 healthy total diet packages, but if you're
16 consuming whole grains you're also more likely
17 to consume vegetables and fruits. But I think
18 we can tweak this a little bit to emphasize
19 those points and have the consumer at the
20 total diet.

21 DR. PEARSON: Shelly, are you
22 going to get into the discussion obviously

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1 that's been going on at CDC about the need for
2 more fortification based on the etiologic data
3 coming for neural tube defects compared to the
4 randomized controlled trial data of
5 fortification in those individuals?

6 DR. NICKOLS-RICHARDSON: I'm going
7 to turn that over to Mim.

8 DR. NELSON: I knew you would.

9 DR. NICKOLS-RICHARDSON: Yes. My
10 initial response is no, because I think with
11 the evidence-based analysis that we've looked
12 at that current fortification is adequate in
13 relation to how that has changed blood folate
14 levels.

15 DR. PEARSON: There's a lively
16 debate out there.

17 DR. NELSON: There is a lively
18 debate, Tom. I think that we can't
19 necessarily enter into that fray at the moment
20 because I don't think that our Committee was,
21 you know, put together to do all of that. And
22 our conclusion with the folate, which we

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1 presented last fall, we basically state that
2 there is solid evidence at this point that
3 neural tube defects have gone down and that we
4 recommend that the fortification stay as it is
5 because there's a risk benefit ratio here.
6 So, it's not across the board positive, so
7 there are reasons to not change it at this
8 point in time. But I think that's going to
9 have to be left to another Committee

10 DR. PEARSON: Yes. Yes, I agree.
11 It's quite complex.

12 DR. NELSON: It's quite complex.
13 And the advocacy, you know, you got the colon
14 cancer people on one side; you've got the
15 neural tube defect people on the -- and
16 dementia people on another. There's a lot of
17 different things that are going on. I think
18 we should just have actually better
19 surveillance and research on it at this point
20 and make a decision in maybe like five more
21 years before we go tinkering with it.

22 DR. PEARSON: I think that's

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1 probably good advice.

2 DR. NICKOLS-RICHARDSON: Okay. I
3 do want to go ahead and move onto nutrient
4 supplements, because I think this will have
5 another bit of lively discussion. And if it's
6 acceptable, Linda, if we could go until 11:30?

7 DR. VAN HORN: Yes, of course.
8 Let's keep going.

9 DR. NICKOLS-RICHARDSON: Okay.
10 All right. So, our next topical area is
11 nutrient supplements, and we have an
12 overarching question under this area. This is
13 a new question for the 2010 Committee.

14 Just to point out some of the
15 limitations of what we were looking at related
16 to nutrient supplements, because of the pieces
17 of evidence that we used, we were limited to
18 looking at vitamins and minerals. With the
19 new questions about DHA, EPA, we have also
20 considered that, but we've not looked at other
21 dietary supplements like botanicals, hormones,
22 performance enhancing supplements such as

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1 specific protein products or amino acids and
2 so forth. So, that was beyond the scope of
3 really what we were looking at and what your
4 primary question really is here.

5 Multivitamin and mineral
6 combinations of more than three vitamins or
7 minerals were evaluated, functionally related
8 nutrient pairs. So for example, calcium and
9 vitamin D were examined. Single nutrients
10 were also evaluated and really using
11 randomized control trial data.

12 The draft conclusion, and this
13 really relates to our very broad question
14 about sort of a multivitamin/mineral
15 supplement. And what we are drafting as our
16 conclusion is that for the general healthy
17 population there is a lack of evidence on
18 which to base a recommendation for the use of
19 a daily multivitamin/mineral supplement in the
20 primary prevention of chronic disease.

21 Further, there's limited evidence
22 that suggests that supplements containing a

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1 combination of certain nutrients are
2 beneficial in preventing or reversing chronic
3 disease when used by special populations such
4 as zinc or zinc plus antioxidant supplements
5 in preventing further age-related macular
6 degeneration in individuals with intermediate
7 or advanced disease. And certain nutrient
8 supplements appear to be harmful in other
9 subgroups such as beta-carotene or beta-
10 carotene plus vitamin A in increasing lung
11 cancer risk in smokers and individuals exposed
12 to asbestos. And regulation of vitamins,
13 multivitamin, mineral and other dietary
14 supplements is lacking such that safety from
15 nutrient toxicity and quality of products
16 cannot be assured.

17 Our pieces of evidence that we
18 looked at include an AHRQ report that was
19 initiated for use by the NIH State of the
20 Science Conference that examined this question
21 of multivitamin and mineral supplements. The
22 AHRQ report was prepared in 2006 and the

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1 conference was held in May of 2006 with the
2 conference proceedings being published in AJCN
3 in 2007.

4 From this particular report the
5 AHRQ report addressed four questions. They
6 looked at multivitamin and mineral supplements
7 in the primary prevention of 10 chronic
8 disease categories, including cardiovascular,
9 cognitive function, so on and so forth. They
10 reviewed 14 single nutrient supplements in
11 addition to the multivitamin/mineral daily
12 preparation, four functionally-related paired-
13 nutrient supplements. For the report they
14 searched articles between 1996 and 2006 and
15 came up with over 11,000 potentially relevant
16 articles. Of those, 63 randomized control
17 trials were included and evaluated.

18 Some of the key findings from the
19 AHRQ report is that there's a lack of
20 randomized controlled trials on a daily
21 multivitamin/mineral supplement and the
22 effectiveness of primary prevention of disease

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1 among health Americans.

2 Some other sort of bullet points
3 of what was found in the AHRQ report is that
4 there are benefits of beta-carotene, vitamin E
5 and selenium on lowering gastric cancer in
6 inadequately nourished men and women in China.

7 So, keep that in context of the population
8 that was examined. There is reduced overall
9 cancer risk in men in France with beta-
10 carotene, vitamin E, vitamin C, selenium and
11 zinc; lowering of age-related macular
12 degeneration and total mortality only in
13 adults with intermediate or advance disease
14 with zinc or zinc plus antioxidants; lowering
15 of prostate cancer incidents and mortality in
16 men, colorectal cancer in adult smokers and
17 cardiovascular disease mortality in women
18 older than 65 years of age with vitamin E;
19 retention of bone mineral density in post-
20 menopausal women with calcium supplementation
21 and a reduction in hip and non-vertebral
22 fractures and falls with calcium and vitamin D

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1 supplements.

2 There was no effect of
3 beta-carotene supplementation on cancer,
4 cardiovascular disease, diabetes or sensory
5 diseases in adults. No effect of vitamin A
6 plus zinc or vitamin A plus beta-carotene on
7 CVD, cancer or all-cause mortality in adults.

8 There was an adverse effect of beta-carotene
9 supplementation or combined beta-carotene and
10 vitamin A on lung cancer and mortality in
11 adult smokers and those exposed to asbestos,
12 and increased incidence of kidney stone
13 formation with calcium supplementation and
14 discoloration of skin with beta-carotene, but
15 a lack of randomized controlled trials in
16 which safety has been tested.

17 Further, from this then with the
18 AHRQ report information and looking at the NIH
19 State of the Science Conference and their
20 proceedings, primarily they brought in some
21 additional experts to give additional
22 testimony and data about vitamins and mineral

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1 supplementation. And what they found and what
2 they concluded was very congruent with the
3 AHRQ report. A couple of differences related
4 to vitamin E and cardiovascular prevention.
5 They found little evidence or insufficient
6 evidence to support vitamin E supplementation
7 in prevention of cardiovascular disease in
8 older women. They further reviewed folic acid
9 supplementation and found it to be important
10 for women of reproductive capacity. No effect
11 of B6 or folic acid with or without B12 on
12 cognitive decline in older adults. And they
13 further went and identified a lot of
14 limitations about nutrient supplementation in
15 gaps and knowledge.

16 We also looked at a supplement of
17 the American Journal of Clinical Nutrition
18 related to omega-3 fatty acids. This is not
19 part of the AHRQ report. This is not part of
20 the State of the Science Conference, so this
21 was a separate supplement of AJCN. And in
22 looking at this information, there appears to

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1 be promising evidence that pregnant women and
2 lactating mothers should supplement with DHA
3 at 200 to 300 milligrams per day primarily for
4 cognitive development of their infants. It's
5 a little bit less clear about the visual
6 acuity question.

7 I will point out that this then is
8 very consistent with the fish intake
9 recommendation, and so as we go into
10 discussion about this talk about how we
11 suggest supplementation here and the way it's
12 phrased currently.

13 Evidence that those with
14 cardiovascular disease should supplement with
15 500 milligrams per day of DHA to prevent
16 further disease, and the American Heart
17 Association recommends one gram of EPA plus
18 DHA per day.

19 We further did a hand search of
20 articles from 2007 to the present, so post-the
21 State of the Science Conference. There was
22 one meta-analysis of beta-carotene

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1 supplementation, finding again adverse effects
2 on smokers and those exposed to asbestos.

3 The SELECT study of selenium or
4 vitamin E, or a combination of that, was found
5 to have little effect on prostate cancer in
6 adult men.

7 A daily multivitamin/mineral
8 supplement that included those nutrients
9 listed here as a single supplement had no
10 effect on cognitive function in
11 community-living older adults in Scotland, but
12 did have a modest association with verbal
13 fluency among those older than 75.

14 In looking at an additional
15 vitamin K that was added to a multivitamin
16 supplement plus additional calcium and vitamin
17 D didn't offer any further benefit to bone
18 density beyond the simple multivitamin/mineral
19 preparation with the calcium and vitamin D in
20 older individuals, but those who had the best
21 compliance; I think this was greater than 80
22 percent compliance with their supplementation,

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1 there was a lowering of coronary artery
2 calcification progression.

3 Variable effects of
4 multivitamin/mineral preparations on cataracts
5 in men and women, meaning that certain types
6 of cataracts were prevented while other types
7 of cataracts were actually facilitated through
8 multivitamin and mineral preparation use. And
9 then vitamin E supplementation had no effect
10 on cataract incidence in the women's health
11 study.

12 So, a draft implication here is
13 that long- term effects on primary prevention
14 of several chronic diseases are poorly defined
15 with a daily multivitamin and mineral
16 supplement use. Americans are encouraged to
17 meet overall nutrient requirements within
18 their energy levels that balance daily energy
19 intake and expenditure really from food here.

20 And the exceptions are folate supplementation
21 in women of reproductive capacity, crystalline
22 B12 supplementation among older adults which

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1 has previously been presented; and so you
2 didn't see that B12 question here today, and
3 then potentially the DHA supplementation in
4 pregnant and lactating women.

5 Research recommendations are
6 really very supportive of the State of the
7 Science Conference priorities, and so focusing
8 on precision and self-reported intakes of
9 multivitamin and minerals. Over 50 percent,
10 about 52 to 53 percent of the population
11 report using vitamin/mineral supplements, but
12 being able to really get a handle on the
13 frequency, the duration of those and what
14 "use" actually means. Accurate composition of
15 bioavailability data and evaluation of
16 outcomes based on those factors with the
17 multivitamin/mineral matrix. And this goes
18 back to Roger's comment about that matrix and
19 the bioavailability of these as supplement or
20 in supplement forms and how that relates to
21 the food matrix. Randomized control trials
22 for primary prevention of chronic disease in a

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1 diverse range of the healthy population,
2 including safety and risk assessments.

3 I'll stop here with nutrient
4 supplements and then open this for discussion.

5 DR. APPEL: Yes, this is Larry. I
6 don't know if this fell through the cracks,
7 but there's a meta-analysis that was published
8 in JAMA after the AHRQ report. The senior
9 author was Glude. And he expanded, you know,
10 the list of potential harms beyond
11 beta-carotene and indicated that
12 supplementation with vitamin E might be
13 harmful I think in high doses.

14 So, I think your conclusions have
15 to be expanded. I know that this might
16 generate, you know, some controversy, but it's
17 now been reviewed twice with a similar
18 conclusion.

19 DR. NICKOLS-RICHARDSON: Okay.

20 DR. APPEL: I can send you that
21 reference, if you want.

22 DR. NICKOLS-RICHARDSON: Yes,

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1 absolutely.

2 DR. RIMM: The only issue with
3 that, Larry; this is Eric, is that a lot of
4 those studies that were reviewed in there were
5 very specialized populations and, you know,
6 very small numbers in some of those where they
7 were finding adverse effects. So, I don't
8 think it was across the board, so I think we
9 have to be a little careful that we're not
10 changing a guideline for a small percentage of
11 clinical populations.

12 DR. APPEL: Yes. Go ahead.

13 DR. RIMM: But it's worth
14 reviewing again just to make sure.

15 DR. CLEMENS: This is Rog.
16 There's a great review on the upper limits in
17 toxicity that might want to be included as
18 well.

19 On another point, again this is
20 Rog, you made a really interesting comment on
21 the regulations on dietary supplements. You
22 may wish to include an update on that and

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1 listen to Duchet of 1994. As you were all
2 aware of, there are new GNPs that have to be
3 implemented effective June of this year, which
4 is the last time they -- and they tried a
5 tiered approach. So maybe you want to look at
6 that, as well as the standards established by
7 USP on the production of dietary supplements,
8 and do they have to meet basically drug
9 production standards? So, I think we want to
10 look at that very carefully, because there are
11 regulations. Perhaps the clinical work needs
12 to be addressed in some cases, but I assure
13 you that my experience is that -- I teach food
14 and drug law, that many of the many of the
15 companies follow these really wicked standards
16 that most people don't know about.

17 And lastly, if there's time, I'd
18 like to ask Kelly or someone to bring up the
19 slides on the limitations issues that we look
20 at the fatty acid group relative to DHA and
21 EPA supplements.

22 DR. PEREZ-ESCAMILLA: Shelly, this

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1 is Rafael. In terms of your implications
2 slide, you provide exceptions to the
3 recommendation of getting the nutrients from
4 foods.

5 DR. NICKOLS-RICHARDSON: Yes.

6 DR. PEREZ-ESCAMILLA: And you
7 include DHA supplementation in pregnant and
8 lactating women, but you did not include DHA
9 supplementation among individuals with
10 cardiovascular disease. And I thought
11 previously you stated that there was fairly
12 solid evidence that it can provide a benefit.

13 DR. NICKOLS-RICHARDSON: Yes, and,
14 you know, I'll disclose that again the DHA/EPA
15 sort of came to us a little bit late, so we're
16 adding this in and hoping for this kind of
17 discussion. And perhaps Tom or someone who
18 really knows the cardiovascular and fatty
19 acids literature best could suggest to us or
20 recommend how we should handle that. Is that
21 a population that we want to make that
22 exception or add that exception to, given how

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1 we're handling healthy versus those already
2 with cardiovascular disease in the report?
3 So, I'm completely open to suggestions and
4 recommendations here.

5 DR. PEARSON: Yes, this is Tom,
6 and Eric and Roger can jump in as well. We
7 obviously dealt mostly with whole foods in the
8 general population, although as was covered
9 yesterday, we did break out with and without
10 cardiovascular disease populations for both
11 plant-based and marine-based omega-3 fatty
12 acids.

13 I think one approach here would be
14 to -- there is a very large randomized
15 controlled trial literature on supplementation
16 with some very large -- the Goetz trials, et
17 cetera, obviously providing very good
18 evidence. And I think much of this has been
19 reviewed with the American Heart
20 recommendations of that 1,000 milligrams of
21 EPA/DHA and would be I think a reference
22 again. We did not go there because this was a

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1 specialized population and not a general
2 population recommendation. So, I think you
3 could handle this quite quickly with a very
4 solid review of the evidence and
5 recommendations, you know, from another body.

6 I don't know if there --

7 DR. CLEMENS: Tom, the piece on
8 expert opinion is up on the graphics. Why
9 don't you go through those three slides,
10 please?

11 DR. PEARSON: Right.

12 DR. FUKAGAWA: So, Shelly, one of
13 the things that we did want to also do, which
14 I think we had discussed, was to harmonize
15 sort of the quote "recommendations" for
16 supplement use with some of the other groups
17 such as the AHA and things, and utilize their
18 evidence-based work, since we didn't quite
19 review supplements per se --

20 DR. NICKOLS-RICHARDSON:
21 Absolutely.

22 DR. FUKAGAWA: -- of DHA and EPA.

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1 DR. PEARSON: What's up here of
2 course is supplementation for pregnant and
3 lactating women, and the cardiovascular group
4 is another group with even a larger database.

5 DR. VAN HORN: Right. Right.

6 DR. CLEMENS: And you see that
7 database, which is on this slide that's being
8 broadcast right now I think, this is the group
9 -- the fatty group put together, and you see
10 the five bullets there. So, we did look at
11 this quite seriously. And the next slide
12 indicates the implications which raised was --
13 Larry and others raised yesterday. We
14 examined this and clearly we emphasized that
15 we clearly look at the risk benefit analysis
16 that came out of the IOM report in 2007 that
17 indicated that the consumption of fish for
18 pregnant and lactating women was preferred and
19 that the benefits are in fact maximized with
20 fish high in EPA and DHA obviously lower in
21 methylmercury. And these are consistent with
22 what we discussed, you know, with the Food

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1 Safety Subcommittee, and Rafael will address
2 some of this just today.

3 But there are limitations and
4 they're indicated on the next graphic. And
5 these are the limitations. And these are just
6 -- when we did our analysis and evaluation of
7 the evidence, we clearly eliminated or
8 excluded many of the supplement forms, and
9 some of those supplement forms are indicated
10 here. It was the consensus of the group that
11 we should reexamine that and look at the
12 supplementation. We certainly could do that,
13 but it's a whole new kettle of fish.

14 And you could tell here that most
15 of the studies that were in fact excluded were
16 dealt with the pregnant and lactating women,
17 and the impact obviously on neonatal health.
18 And we addressed some of that issue yesterday.

19 Clearly, the studies that were not included
20 were included here, noted here that breast-
21 feeding versus infant formula feeding prior to
22 DHA addition -- and that occurred in 2001 when

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1 DHA was initiated and approved for addition in
2 the United States. And all the infant formula
3 manufacturers included DHA from algal sources
4 in infant formula as of 2002 in the United
5 States.

6 So, we want to put proper
7 perspective in on the context of all the
8 evidence as we have today. And if you think
9 that we should include some additional studies
10 relative to DHA/EPA supplementation, we could
11 certainly augment that in the time constraints
12 that we have.

13 DR. NELSON: Shelly, this is Mim.
14 I have another quick question. There's a
15 2008 AJCN paper with calcium and vitamin D
16 supplementation out of Creighton State that
17 looked at a reduction in cancer incidence.
18 Was that included in the hand search, do you
19 know?

20 DR. NICKOLS-RICHARDSON: I don't
21 believe it was.

22 DR. NELSON: If there was hand

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1 search, I should get you that paper, because
2 it is on incidence on cancer with D and
3 calcium and showed a reduced incidence. So,
4 I'm just also thinking about the -- we need to
5 coordinate with the vitamin D implication,
6 too.

7 DR. NICKOLS-RICHARDSON: Sure.
8 Yes.

9 DR. NELSON: Okay.

10 DR. NICKOLS-RICHARDSON: I guess I
11 would say that, you know, as we move forward
12 with this particular topic and section in this
13 chapter, then Tom and Roger and Rafael and
14 Eric will talk about how to handle further DHA
15 and EPA. And then, yes, Mim, we'll sync the
16 calcium/vitamin D.

17 DR. NELSON: Okay.

18 DR. NICKOLS-RICHARDSON: Okay.
19 So, we'll move to the next part, and this
20 looks or begins to look at some of the
21 behaviors related to nutrient adequacy. And
22 certainly this isn't all behaviors that would

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1 relate to nutrient intake, but to begin to
2 look at and talk about behaviors that are
3 important here.

4 So, we decided to focus on
5 breakfast, snacking and eating behaviors. And
6 our draft conclusion is -- again this being a
7 new questions to 2010. Our draft conclusion
8 is that some evidence supports a positive
9 relationship between the behavior of breakfast
10 consumption and intake of certain nutrients in
11 children, adolescents and adults. And this
12 was assigned a Grade II. Very limited
13 evidence supports a positive relationship
14 between snacking and nutrient intakes in
15 children, adolescents, adults and older
16 adults, and this is assigned a Grade III. And
17 inadequate evidence to evaluate a relationship
18 between eating frequency and nutrient intakes,
19 and so we didn't grade that particular part of
20 this broader question of behavior.

21 Our search strategy. And unlike
22 some of the other components of the nutrient

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1 adequacy chapter, which really relied on
2 evidence from dietary intake information, we
3 did use the NEL search process to answer these
4 questions. So, our strategy included looking
5 at data from and papers from 2004 to the
6 present. We did look at the international
7 publications for individuals aged two years of
8 age and older, and we didn't limit ourselves
9 to study designs because of the nature of the
10 question. We're really looking at the
11 relationship for the association here.

12 Our search terms for the breakfast
13 component of this are identified here. There
14 were 79 potential articles identified.
15 Sixty-four were excluded. So of the 15
16 studies that were reviewed, 11 were
17 cross-sectional studies, two were prospective
18 cohorts, one was a retrospective cohort study
19 and one was a systematic review. The
20 systematic review is not listed in this group
21 of papers here, but provided a foundation.
22 And we didn't then further review the papers

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1 that were included in that review paper, and
2 that was a paper by Rampersaud and colleagues.

3 So the 14 that are listed here are those
4 published after the publication data. That
5 puts them out of review.

6
7 And so, we see that there were
8 four papers addressing adults. The remaining
9 addressed children and adolescents. You see
10 the type of study.

11 Positive relationship here means
12 that those who were consuming breakfast; and
13 I'll mention a little something about
14 breakfast and what that means in just a bit --
15 but those that were consuming breakfast were
16 more likely to consume or were consuming, had
17 reported higher intakes of the nutrients
18 listed in that positive relationship column.
19 So, you see carbohydrates, fiber, B6, calcium,
20 iron, magnesium. Some of these nutrients are
21 sort of all over the board here.

22 Negative relationship is those

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1 that were consuming breakfast had lower
2 reported intakes of PUFAs, MUFAs, *trans* fats
3 in the first study. And as you move down, you
4 see negative relationships just in a couple of
5 other studies. And then no relationship was
6 reported for breakfast intake and certain
7 nutrients in a few of the studies as well.

8 When we look at snacking then, the
9 search terms that were used are listed here.
10 There were 53 potential articles, 46 were
11 excluded. The reasons that these were
12 excluded wasn't because of design, because we
13 weren't looking for specific design, but
14 because they simply did not answer the
15 question of the relationship between nutrient
16 intake and breakfast, snacking or eating
17 frequency. So, that was the reason for the
18 exclusion.

19 For snacking, we had seven
20 studies, five cross-sectional, one prospective
21 cohort and one retrospective study. And our
22 findings here include papers for adults,

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1 adolescents and a couple for children. Again,
2 the positive relationship is those who were
3 snacking had greater reported intake for
4 carbohydrates, folic acid, vitamin C, calcium,
5 magnesium, iron, potassium and fiber in the
6 first Kerver 2002 article. And you can see
7 the other relationships there that were
8 positive.

9 Negative relationships. Those
10 that were snacking had lower intakes of
11 protein and fat in the Kerver paper.
12 Cholesterol and iron in Stockman's study, and
13 so on and so forth. And then no relationship
14 with a couple of items here in that last
15 column.

16 MR. GILBERT: Shelly, I'm sorry to
17 interrupt. This is Nathan again. Is it
18 possible to speak a little louder? We're
19 hearing some people reporting they're having
20 difficulty hearing again.

21 DR. NICKOLS-RICHARDSON: Yes, I'm
22 sorry about that. I wasn't leaning toward the

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1 phone as much, so --

2 MR. GILBERT: All right. Thank
3 you. Much better.

4 DR. NICKOLS-RICHARDSON: Better?

5 MR. GILBERT: Yes.

6 DR. NICKOLS-RICHARDSON: Okay.
7 Thanks for the reminder.

8 And then looking at eating
9 frequency, our search terms that we used are
10 listed here. Twenty-five potential articles.
11 Twenty-two were excluded. And again, if you
12 didn't hear me, the reason that articles were
13 excluded was not because of study design. We
14 have that pretty open to help answer this
15 question, but because the papers then in fact
16 did not address nutrient intake and the
17 question at hand, whether it was breakfast,
18 snacking or eating frequency.

19 So, for eating frequencies, again
20 there were three cross-sectional studies. Two
21 were positive, one was neutral, and we just
22 didn't have enough data here to really come to

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1 a conclusion.

2 So, our draft implications include
3 that Americans are encouraged to eat
4 nutrient-dense forms of foods and beverages
5 for breakfast to facilitate achieving nutrient
6 recommendations. And if snacking, the
7 nutrient-dense forms of foods and beverages
8 are suggested while staying within energy
9 needs, and adding that phrase to be consistent
10 with the energy balance implications related
11 to behaviors.

12 There are limitations to these
13 questions related to behavior. First of all,
14 the definitions of breakfast and what a
15 breakfast consumer versus non-consumer is were
16 pretty disparate across the studies. Same for
17 snacking. Mim did mention that there are
18 better definitions now that have been defined
19 in a recent paper. But eating frequency,
20 there were inconsistent definitions here, and
21 so it was a little bit hard to evaluate the
22 studies because of that.

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1 Also, methodological differences
2 in how dietary intake was assessed, whether it
3 was through food frequency or food records, or
4 24- hour recalls. Inconsistencies in the
5 nutrients examined, so there wasn't a
6 consistent set of we're going to be looking at
7 these 13 nutrients or these 23 nutrients. It
8 was across the board for individual studies.
9 And there could be some publication bias,
10 meaning that those studies that found those
11 positive relationships were published, or the
12 nutrients that were positive relationships
13 were published within those studies.

14 The research recommendations here
15 include perhaps forming a consensus panel on
16 what's the definition of breakfast or
17 breakfast skipping is, what snacking is and
18 eating frequency; longitudinal evaluation of
19 the cumulative nutritional risks and/or
20 benefits from these three behaviors and
21 perhaps others; and then evaluation of
22 critical components of breakfast or snacks and

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1 their health effect. So, is it really whole
2 grains and high fibers in breakfast foods, for
3 example, or is it something else? Are there
4 health detriments because of refined and maybe
5 sugar-sweetened cereals, and so on and so
6 forth.

7 So, I'll stop there with the
8 behaviors and see if there are questions
9 related to behaviors and nutrient adequacy.

10 DR. APPEL: Shelly, this is Larry.
11 I have a question. I'm wondering what the
12 best approach is to this question about
13 nutrient intake and breakfast. And just
14 looking at that slide where you had mostly
15 cross-sectional studies and, you know,
16 positive relationships of certain nutrients
17 with breakfast, it still doesn't get at the
18 issue of whether they're achieving the
19 recommendations in the DRIs. So, you could
20 have a positive, you know, association, but
21 still be falling short.

22 So, I'm wondering if the best way

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1 to actually address this question; it might be
2 too late, is actually modeling, where you say
3 if somebody doesn't eat food before 11:00
4 o'clock or noon, and you try to get everything
5 through lunch and dinner using the usual foods
6 that people eat for lunch and dinner, can you
7 meet, you know, nutrient requirements? And I
8 would be shocked if you could. But anyway,
9 that to me is the approach to the question
10 rather than sort of the cross-sectional data
11 that looks at just what people are currently
12 doing.

13 DR. NICKOLS-RICHARDSON: Yes.

14 DR. PEREZ-ESCAMILLA: And, Shelly,
15 this is Rafael. In terms of your nutrient
16 adequacy and behaviors, breakfast, snacking
17 and eating frequency implications, you talk
18 about the need to encourage the consumers to
19 eat nutrient-dense beverages. So, I was
20 wondering if we needed a more specific
21 definition as to what we mean by
22 nutrient-dense beverages, because there are

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1 all sorts of fortified drinks out there that
2 --

3 DR. NICKOLS-RICHARDSON: Right.

4 DR. PEREZ-ESCAMILLA: -- could
5 qualify, could meet this criteria. And I'm
6 not sure that's what we want to recommend.

7 DR. NICKOLS-RICHARDSON: Okay.
8 That's a great point, and we may come to you
9 to ask about maybe energy-dense and how you're
10 handling beverages also in relation to energy
11 balance to make sure that we're consistent
12 with how you're handling those beverages.

13 DR. PI-SUNYER: To go back to what
14 Larry said, do you have time to model the no
15 breakfast issue?

16 DR. NICKOLS-RICHARDSON: I'll
17 certainly discuss that with Trish and see. I
18 know we're really down to the wire here, and
19 so we'll have that conversation. But
20 intuitively, you know, again I can't say this
21 from really looking at the data sampling, but
22 intuitively I would agree with Larry that it's

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1 harder to meet nutrient requirements if food
2 intake doesn't happen sort of as a breakfast
3 meal and only those foods that would typically
4 be eaten at later times during the day are
5 consumed. And some of those studies did try
6 to get at that a little bit, so I will go back
7 and look at those studies and try to pick up
8 on those that actually carried that through
9 for an entire day again to revisit that. But,
10 I will definitely talk with Trish about the
11 modeling question.

12 DR. PEREZ-ESCAMILLA: Shelly,
13 Rafael again. In terms of how we handle
14 energy, the beverages within energy density,
15 the issue is that most studies have excluded
16 beverages from the energy density estimations.

17 DR. NICKOLS- RICHARDSON: Right.

18 DR. PEREZ-ESCAMILLA: So, I'm not
19 sure if that literature is going to be very
20 helpful.

21 DR. NICKOLS-RICHARDSON: Yes,
22 okay.

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1 DR. NELSON: The only other --
2 this is Mim, about the beverages, I mean,
3 can't we just say nutrient-dense foods? Do we
4 need the beverages in there, or, you know, non
5 -- I don't know. The beverage thing is a
6 problem.

7 DR. PEREZ-ESCAMILLA: Unless we
8 use milk.

9 DR. NICKOLS-RICHARDSON: Yes, and
10 I think, you know, maybe from a breakfast
11 standpoint, and again we had in some ways
12 intended to look at food, so what are the
13 breakfast foods in relation to nutrient
14 intake, and we weren't quite able to do that.

15 But thinking about some of the studies that
16 did have foods, the reason the beverages
17 become important at breakfast is really
18 because of the 100 percent juice, you know,
19 being part of that meal, the likelihood of
20 that being consumed at the breakfast quote
21 unquote meal. So, that's why beverages was
22 inserted in there, but, you know, it does

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1 raise some questions and issues. So, I want
2 to capture that those are nutrient- dense
3 foods that are consumed at a breakfast meal,
4 however you define that, that do contribute to
5 nutrient quality and adequacy of the diet, but
6 I think we can think about how to best phrase
7 that and include those foods.

8 DR. VAN HORN: This is Linda, and
9 I'm just looking at the clock. And I would
10 like to just suggest that we push on so that
11 we can take a short break and then start in.

12 I would also like to just let
13 everyone know that we will probably shorten
14 our lunch break so that we can get caught up a
15 bit. And also, I'm guessing that by the end
16 of the day we will probably have a relatively
17 short discussion of the dietary patterns issue
18 because we really want to pay attention to
19 some of these really more, you know, current
20 issues that are in full development.

21 So, Shelly, with that, if you can
22 push through and finish this presentation,

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1 that would be great.

2 DR. NICKOLS-RICHARDSON: Okay --

3 DR. RIMM: This is Eric. I also
4 cede 30 minutes of my alcohol time to Shelly,
5 because this is much more interesting.

6 DR. NICKOLS-RICHARDSON: Really?

7 DR. VAN HORN: We'll drink to
8 that.

9 All right. Go ahead, Shelly.

10 DR. NICKOLS-RICHARDSON: Okay.
11 And actually at this point, the last couple of
12 pieces here -- and again, thank you for giving
13 us the extra time here. The last couple of
14 pieces are really related to modeling
15 exercises, and I'm going to turn this over to
16 Cheryl to talk about starchy vegetables.

17 DR. ACHTERBERG: Thank you much.
18 This presentation I think will begin to give
19 the Committee some sensibility, if we start
20 rearranging food groups, actually how complex
21 that exercise is.

22 In this particular modeling

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1 exercise we asked two questions: How do the
2 nutrients provided by the starchy vegetable
3 subgroup compare with those provided by grains
4 and other vegetable subgroups, specifically
5 looking inside the one food group; and then,
6 how would nutrient adequacy of the pattern be
7 affected by considering starchy vegetables as
8 a replacement for some greens?

9 Next slide. To provide some
10 background, in the 2005 Dietary Guidelines for
11 Americans the suggested number of servings for
12 vegetables was increased primarily to increase
13 potassium intake such that now on a
14 2000-calorie diet you can see the dark green
15 vegetables, the recommendation is three cups
16 per week; for orange, really that's
17 red-orange, two cups per week; for dry beans,
18 three cups per week; starchy vegetables, then
19 three cups for week; other vegetables,
20 six-and-a-half cups per week. What that
21 translates into on a daily basis is about
22 two-and-a-half cups of total vegetables per

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1 day, which you know by looking at the previous
2 slides this morning, virtually no Americans
3 are consuming.

4 Next slide. For further
5 background, and this question was raised
6 yesterday, how are starchy vegetables defined?

7 In rank order of consumption here in the U.S.
8 it's potatoes, yellow and white corn, green
9 peas, immature lima beans, cow peas, field
10 peas, black-eyed peas, pigeon peas, cassava,
11 taro, burdock root and white yams. Out of
12 this entire subgroup, by far the largest
13 component consumed in this country in this
14 starchy vegetable subgroup is potatoes. And
15 looking at the potato consumption more
16 specifically, there are five item clusters.
17 Boiled, baked, French fried, potato chips and
18 puffs, and home fries and hash browns. So,
19 together they make up 80 percent of the
20 starchy vegetable consumption. I would add
21 that boiled potatoes by themselves make up
22 just over a quarter of the consumption, 26

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1 percent. But if you add the French fries and
2 the chips together, that would be 37.3 percent
3 of consumption of potatoes.

4 Next slide. So, again I want to
5 emphasize that the food patterns here are set
6 by the USDA. So, realigning vegetable
7 subgroups has been already completed by USDA
8 with the purpose of providing guidance for
9 more achievable vegetable intake by Americans.

10 And that specifically refers to the
11 red-orange vegetable subgroup. This
12 realignment suggested increase intakes of
13 vegetables from the starchy vegetable
14 subgroup, of concern due to the higher intake
15 of potatoes in the forms we identified.

16 Starchy vegetables, looking at
17 them with a macronutrient profile, they are
18 more similar to grains as recognized by other
19 organizations like the American Diabetes
20 Association. If you reflect on the AICR
21 report, starchy vegetables were grouped with
22 grains, and typically that's done in Europe as

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1 well.

2 Next slide. So, in this case we
3 conducted a modeling analysis to compare the
4 nutrient contributions of starchy vegetables
5 to those of other vegetable subgroups and to
6 grains to investigate changes in nutrient
7 adequacy of the patterns if starchy vegetables
8 were considered as grain replacements rather
9 than as vegetables. And to identify how those
10 recommended intakes might compare to the
11 median intakes and the 95th percentile intakes
12 for various population groups. In other
13 words, we wanted to find out if these changes
14 might be feasible.

15 Continuing with methods, in a step
16 wise fashion, this gets fairly long and
17 complex, so bear with me.

18 First, we compared the amounts of
19 the selected nutrients in a standard amount of
20 each vegetable subgroup and the grain
21 subgroup, then identified the nutrients in the
22 patterns provided by the currently recommended

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1 amounts of starchy vegetables and calculated
2 the increased amount of the dark green, red-
3 orange and other vegetable subgroups that
4 would be needed to bring that total vegetable
5 recommendation up to current levels. If we
6 take out something, we need to increase the
7 others to fill in behind it if starchy
8 vegetables were considered as a grain
9 replacement rather than as a vegetable.

10 Okay. Next slide. Calculate the
11 decreased amount of whole and refined grains
12 that would be needed to maintain current
13 recommended intakes of grains with starchy
14 vegetables counted as a grain replacement. In
15 other words, shifting looking at [inaudible]
16 -- then test the impact on nutrient adequacy
17 of potential modifications in the patterns
18 with starchy vegetables replacing some grains
19 and three vegetable subgroups increased
20 proportionately. And finally, identifying how
21 the amounts of the vegetable and grain
22 subgroups compared to the usual intake

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1 distributions with the potential modification.

2 Next slide. Results. The first
3 set of methods were to try to figure out what
4 serving size group comparisons if we're
5 shifting foods from one group into another
6 that we use, and concluded that a two ounce
7 equivalent portion of a grain serving is
8 equivalent to one cup of starchy vegetables,
9 which is also equivalent to one serving, one
10 cup equivalent of fruit. So, in other words,
11 the shifting is one cup of vegetables, or for
12 that matter fruit, is equivalent to two ounces
13 of grain. Doing that then and looking at the
14 nutrient profiles compared to grain, starchy
15 vegetables are similar in energy content,
16 similar on fiber, magnesium, phosphorus and
17 niacin, but also somewhat lower in protein,
18 calcium, iron, thiamine, substantially lower
19 in selenium and dietary folate and
20 substantially lower in potassium and choline.

21 Next slide. More specifically,
22 looking at the nutrients provided by starchy

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1 vegetables in the USDA Food Intake Patterns,
2 starchy vegetables now contribute about six
3 percent of the total energy, 13 percent of
4 potassium, 10 percent of thiamine, 10 percent
5 of B6, nine percent of fiber, nine percent of
6 copper, eight percent of magnesium, eight
7 percent of niacin, seven percent of vitamin C
8 and seven percent of sodium. Again, we want
9 to underscore this is in their most nutrient-
10 dense form.

11 Next slide, the proportional
12 substitution of other vegetable subgroups for
13 starchy vegetables and the substitution of
14 grain for starchy vegetables resulted in these
15 recommended changes: An increase of .14 cups
16 of dark green vegetables; an increase of .28
17 cups for red-orange vegetables; an increase of
18 other vegetables -- we're thinking there of
19 things like eggplant, mushrooms, a whole
20 variety of other vegetables, plus .29 cups.
21 And that's based on current consumption
22 patterns to compensate for moving or adjusting

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1 those starchy vegetables. That's taking out
2 almost three-quarters cup if we shift them to
3 the grain group.

4 We intentionally left the legumes
5 unchanged. Obviously theoretically they could
6 be included in the change here, but given the
7 fact that American consumption of legumes in
8 general is so low, we didn't want to try to
9 increase that any further and therefore make
10 this modeling result in something that would
11 not be feasible in practice.

12 Whole grains, on the other hand,
13 declined .71 ounces, and refined grains also
14 .71 ounces. Because we're trying to equate
15 the refined and the whole grains, as suggested
16 earlier, and increase or replace that with
17 1.42 ounces of starchy vegetables in the grain
18 food group.

19 Next slide. Then we wanted to
20 determine what is the impact of these changes
21 on the nutrient adequacy of patterns. Overall
22 we concluded that the total impact was pretty

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1 minimal. Based on a 2000-calorie pattern, the
2 largest changes of percent of goals were: A
3 decline of 10 percent for vitamin B12; decline
4 of 13 percent in carbohydrates; and
5 incidentally, that's about 90 calories;
6 decline 14 percent in selenium; 14 percent of
7 folate, 14 percent of thiamine, but an
8 increase because starchy vegetables in their
9 naturally occurring forms are in fact
10 nutrient-dense, an increase in vitamin E, 14
11 percent; vitamin C, 23 percent; and vitamin K,
12 60 percent.

13 So the comparison of amounts of
14 vegetable subgroups in revised patterns back
15 to median intake and 95th percentile of usual
16 intakes, there were some fairly divergent
17 patterns. For dark green vegetables, that
18 revised recommendation produced by this
19 modeling is far above median intake for all
20 groups and exceeds the 95th percentile of
21 intake at that level.

22 Similarly for red-orange

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1 vegetables, the revised recommendation is no
2 more than four times the median intake for any
3 age/sex group and it's above the 95th
4 percentile for all groups.

5 Again, legumes we left unchanged.

6 Our current food patterning recommendation is
7 three to seven times the median intake, but
8 within the 95th percentile intake for all
9 groups.

10 Starchy vegetables, again as a
11 subgroup, unchanged in terms of total intake,
12 but if we count them as grains, the
13 recommendation is two to three times the
14 median intake, but within the 95th percentile
15 for all age/sex groups.

16 And then looking at the last
17 subgroup, other vegetables, the revised
18 recommendation is no more than three times the
19 median intake but above the 95th percentile of
20 intake for three of five age/gender groups
21 evaluated.

22 Next slide. In sum, our draft

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1 conclusion states that is possible to use
2 starchy vegetables as an alternative to grains
3 rather than as a subgroup within the vegetable
4 group with relatively little impact on
5 nutrient adequacy as long as additional
6 amounts of other vegetables, including dark
7 green, red- orange and other vegetables, are
8 used to replaced the starchy vegetables
9 counted as grains. These additional
10 vegetables should be substituted equally, one
11 cup for one cup, with starchy vegetables that
12 are counted as grains. With this change, the
13 amount of grains, whole and refined, must be
14 decreased by two ounce equivalents for each
15 one cup equivalent of starchy vegetables.
16 That's just to underscore that it's a
17 substitution, not an addition to that green
18 group.

19 Further, one cup equivalent of
20 starchy vegetables can replace or substitute
21 for a two ounce equivalent of grains. For
22 each cup of starchy vegetables that's counted

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1 as grains, dark green, red-orange or other
2 vegetables should be increased by one cup to
3 meet vegetable group recommendations.
4 Consumers should not increase intakes of both
5 starchy vegetables and grains. In all cases
6 to meet nutrient adequacy goals within caloric
7 limits vegetables and grains selected should
8 be in their nutrient-dense form rather than in
9 forms with added solid fats, sugars or salt.

10 This model represents, finally, an
11 alternative dietary pattern for consumers who
12 have an interest in carbohydrate exchanges.
13 It will be challenging for many if not most
14 Americans in terms of meeting vegetable
15 consumption; that is, holding calories.

16 Thank you. So, I think if we're
17 going to have any questions about this
18 section, this would be the time to do it.

19 DR. RIMM: This is Eric. Cheryl,
20 that was really very clear. Thank you for
21 walking us through that.

22 I'm sure there was some thought

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1 about this, and I know that Linda and I and
2 Joanne have been harping about this for the
3 last year and a half, just the issue of it.
4 You know, in this modeling you would be
5 concerned about the loss of fiber, only
6 because you're reducing the grains. Was there
7 any discussion of just within the starchy
8 vegetable group just increasing vegetables and
9 decreasing the potato starchy vegetable?

10 DR. ACHTERBERG: Well, as you
11 know, the concern is that our general advice
12 has been for Americans to eat five a day, and
13 then Americans generally choose which
14 vegetables they're going to eat, and potatoes
15 are among the most common vegetables consumed.

16 And with our concern in this particular set
17 of dietary guidelines about calorie intake, we
18 thought it would be useful to see if we looked
19 at things from a different perspective, what
20 would that result in, in terms of us providing
21 advice.

22 DR. RIMM: It seems like it's sort

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1 of a -- I mean, what we're really trying to
2 say is eat more of the, you know, dark green
3 and red and other vegetables, red-orange
4 vegetables. It seems like that's the problem,
5 as you have stated it, that we've said people
6 should eat five servings of vegetables and
7 they're choosing potatoes. The issue is that
8 we want them to eat fewer potatoes and eat
9 more of the other vegetables. I don't know if
10 this is just sort of an alternative to what we
11 really want to say. I know it's -- it's just
12 maybe that if we say it more clearly and
13 really, you know, specify what we think is the
14 right thing to do, then again people creating
15 institutional meals and school lunches and
16 things like that would have to live up to this
17 higher standard as opposed to shifting
18 potatoes and reducing whole grains.

19 DR. ACHTERBERG: Well, remember,
20 it might be reducing refined grains as well.
21 So, it's two issues. It's the one issue that
22 you've raised, we want people to eat more of

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1 certain kinds of vegetables than they do at
2 present, but also that other aspect that the
3 starchy vegetables are really different in
4 their macronutrient profile, and that profile
5 is more similar to grains than it is to
6 anything else. And for many Americans, they
7 really want to be able to use exchanges and we
8 needed to figure out how would using those
9 exchanges work against the USDA Dietary
10 Patterns? What kind of advice could we give
11 people that hadn't been done before? We
12 needed to go through the exercise. It is of
13 great interest to many Americans. So, there's
14 really more than one purpose here.

15 DR. VAN HORN: But I think Eric's
16 point is, you know, well-taken, that just as
17 we've been saying all along -- and again to
18 the average consumer, this list even would be
19 in code. I mean, we nutrition people
20 understand what we're talking about when we
21 talk about starchy and red and orange and all
22 of that, but they want to hear carrots, you

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1 know, and actual broccoli. I mean, terms and
2 ideas about what it means to include the kinds
3 of vegetables that, you know, really need to
4 be added and involved in terms of the average
5 diet.

6 So, especially seeing, you know,
7 all of Shelly's slides and seeing how
8 under-consumed a lot of those vegetables are,
9 and the fact that we keep advocating again
10 dietary sources of shortfall nutrients like
11 folate coming from the green vegetables.

12 So, I think once again this is
13 just an opportunity to help clarify rather
14 than confuse or, you know, dissuade people
15 from filling in with the vegetables of
16 highest, you know, order in terms of their
17 nutrient density while maintaining and
18 reducing excess of caloric intake. And I
19 think that's really part of it. But, I think,
20 you know, this is definitely getting in the
21 right direction. We just would encourage, I
22 guess, this group to take another look at how

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1 to make sure that one message doesn't
2 overshadow the other.

3 DR. ACHTERBERG: Right, we want
4 people to eat more of the green, red and
5 orange vegetables, and we also want to give
6 people more flexibility in figuring out how
7 they can meet the guidelines and
8 recommendations we present. So, I think as
9 opposed to some of the work in the past, this
10 provides people with more options, and I
11 honestly believe that's important, too.

12 DR. APPEL: This is Larry. I have
13 a question for you. I didn't see this; and
14 maybe I missed it. I mean, you presented a
15 list of starchy vegetables that are in this
16 category, but when you did the modeling was it
17 -- I just want to make sure that we don't
18 leave this section and say, oh, it was all
19 potatoes. I imagine it was a whole array of
20 starchy vegetables of which potatoes might
21 have been some percent.

22 DR. ACHTERBERG: Right. Again,

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1 boiled potatoes were 26.5 percent; baked,
2 13.2; French fries were 18.2; potato chips
3 were 19.1 percent; and hash browns 6.5
4 percent. So, the potatoes really dominated.
5 But then corn, yellow corn was 8.3 percent;
6 hominy, grits, white corn, 1.7 percent; green
7 peas, 4.1; lima beans, .6; cow peas, field
8 peas, black-eyed peas, pigeon peas together,
9 .5; water chestnuts were --

10 DR. APPEL: So, that's a pretty
11 tiny --

12 DR. RIMM: Yes, but the potatoes
13 were 80 percent. That's what she had on one
14 of her slides. So, it's almost essentially
15 potatoes.

16 DR. APPEL: So, the modeling was
17 done keeping that rate, the distribution the
18 same then?

19 DR. ACHTERBERG: Yes. We thought
20 was important to do.

21 DR. PI-SUNYER: So, that's what
22 makes sense in the sense that if you're going

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1 to change, you have to use the foods that
2 people are eating at the time.

3 DR. APPEL: Yes, but I would think
4 that the distribution could shift if we're
5 trying to encourage more nutrient -- or
6 starchy vegetables with I think a more
7 desirable nutrient profile. That's clearly,
8 you know, a debatable issue.

9 DR. ACHTERBERG: Yes, when you
10 model, obviously you get to make choices, but
11 then when we make recommendations, it might be
12 presented differently.

13 DR. NICKOLS-RICHARDSON: I'm going
14 to move on and keep us pressing forward here.

15 So again, I apologize for going way over our
16 time now. I'm going to try to do this really
17 quick.

18 So, Trish, as you're moving
19 through slides, I'm going to bounce across a
20 few slides here since everyone has these
21 really in their notebooks.

22 So, this final modeling piece is

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1 really looking at vegetarian or plant-based
2 diets. And so, the question asked here is how
3 well do plant-based or vegetarian food
4 patterns adapted from the USDA Food Patterns
5 meet our recommendations for nutrients?

6 So, three different plant-based
7 vegetarian- type patterns were modeled. The
8 first was a plant-based diet in which more
9 than 50 percent of all protein came from plant
10 sources. The second was a lacto-ovo
11 vegetarian diet in which only milk and egg
12 products from animal sources were included.
13 And then a vegan diet in which no animal
14 products were included.

15 Here I'm going to jump and just
16 cut to the quick here. There is a method
17 slide; Trish, if you want to hit the method
18 slide here, looking at sort of the patterns
19 and how they were modified. Again just
20 reiterating that plant-based, 50 percent of
21 all protein from plant sources, lacto-ovo
22 vegetarian, eliminating all meat, poultry,

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1 fish and an increase in nuts and seeds,
2 processed soy and legumes to compensate for
3 the removal of the meat, poultry and fish, and
4 then vegan, eliminating all of those
5 animal-based products. An iterative process
6 to again identify the best meaning of
7 nutrients within caloric limits and looking at
8 adequacy of the nutrient profile.

9 I'm going to flip to the results,
10 so these two slides that have tables. This is
11 just showing you then how those patterns sort
12 of played out, but the results are the
13 important part. And what we find is that for
14 most nutrients nutrient adequacy is not
15 affected. Nutrients are still adequate but
16 amounts that are lower in the plant-based
17 approach is protein, zinc and selenium. Those
18 that are higher in the vegetarian-type
19 patterns include carbohydrates, dietary fiber,
20 iron, but keeping in mind that those are the
21 lesser bioavailable sources of iron,
22 magnesium, vitamin E, folate, potassium,

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1 calcium and vitamin D. Choline is lower, but
2 again in the base patterns anyway, this is
3 under the AI. For EPA and DHA the amounts are
4 lower, especially in the vegan pattern, so
5 fish is removed from that pattern. Then we
6 have inadequate EPA and DHA, but the amino
7 acids all meet the RDAs in all of the
8 patterns.

9 So, the summary here for looking
10 at really plant-based vegetarian-type of
11 eating, the base USDA Food Patterns can be
12 adapted for use as a guide to healthy eating
13 by those who want to consume more or only
14 plant-based foods with little impact on
15 nutrient adequacy, but keeping in mind that
16 the way these patterns were modeled may not
17 actually be perfectly aligned with how people
18 who say that they are vegetarian-type eaters
19 truly eat. So again, these were modeled after
20 what our best knowledge and best information
21 is about what a vegetarian diet is. Choices
22 of plant foods should include foods that pay

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1 attention to B12, vitamin D and calcium, and
2 then other nutrients that might be concern if
3 those animal products are removed include
4 choline, EPA and DHA.

5 The last slide that we have here
6 is just really I think to let the general
7 public know and understand that we are
8 listening and reviewing their comments.
9 Obviously, you've seen here in this
10 presentation related to nutrient adequacy that
11 we have looked at flexibility in eating
12 patterns viewed by the vegan/vegetarian, the
13 starchy vegetable modeling. Food processing
14 is a comment that comes to us time and time
15 again, so again I think the comments about
16 having food manufacturers work with us, work
17 with all of us so that Americans can follow
18 the guidelines that are presented to them that
19 are based on the best science that we've been
20 able to review to get the sugars and the solid
21 fats and sodium in foods lower so that
22 Americans can better follow guidelines. And

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1 then food groups, again looking at starchy
2 vegetables, a lot of comments about
3 emphasizing whole grains, fluid milk, dry
4 beans and peas. And so, we are paying
5 attention to your comments and trying to
6 address this the best that we can with the
7 science-based and our dietary intake data.

8 So, I'll open it for any final
9 questions, comments, concerns about nutrient
10 adequacy and where we are with this part of
11 the report.

12 DR. VAN HORN: Excellent job,
13 Shelly, and the whole Committee. This is a
14 huge, huge amount of work and covers a
15 tremendous amount of territory, but obviously
16 all of it is very important and is probably
17 the unifying chapter of everything else that
18 we're saying. So, thank you so much for all
19 this hard work and all to the staff as well.

20 Comments from people? We've sort
21 of covered a lot of territory already, but
22 there may be some additional final points

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1 people would like to make now.

2 DR. PEARSON: So, this is Tom
3 Pearson. So, relative to the woman who is
4 pregnant or lactating, this is obviously
5 targeted at a healthy general population, are
6 you going to be making any comments about that
7 relative to these diets?

8 DR. NICKOLS-RICHARDSON: Specific
9 to the modeling or specific to just the whole
10 Dietary Guidelines relating to pregnancy and
11 lactation?

12 DR. PEARSON: I think relative to
13 I guess the modeling that would be related to
14 those specific instances. I just wondered if
15 you were going to comment on that particular
16 population subgroup, particularly with -- the
17 EPA and DHA are obviously something that we
18 were concerned about.

19 DR. NICKOLS-RICHARDSON: Yes,
20 okay. And so, in relation to vegetarian/vegan
21 eating, certainly I think we can put a
22 cautionary note for pregnant and lactating

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1 women related to nutrient shortfalls that
2 would be inherent in that type of eating. We
3 can certainly do that.

4 DR. VAN HORN: Anything else from
5 anyone?

6 (No audible response.)

7 DR. VAN HORN: Okay. I would like
8 --

9 DR. PI-SUNYER: I would just --

10 DR. VAN HORN: Oh, sorry. Go
11 ahead.

12 DR. PI-SUNYER: This is Xavier. I
13 just wanted to ask Cheryl, are you going to
14 put this in as something that you want to do,
15 to switch this over?

16 DR. VAN HORN: Is Cheryl still
17 there?

18 DR. ACHTERBERG: Can you hear me?

19 DR. NICKOLS-RICHARDSON: This is
20 Shelly. I'll take a stab at that.

21 DR. ACHTERBERG: I'm here.

22 DR. NICKOLS-RICHARDSON: Oh, there

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1 she is. Okay.

2 DR. ACHTERBERG: I'm sorry I
3 didn't come through. As I understand it, it's
4 not our call per se, but we could make
5 suggestions or recommendations. And I think
6 the recommendation we're suggesting at this
7 point in the draft report is to consider
8 presenting it as an option that some Americans
9 might consume to follow a dietary pattern
10 based on this adjustment and others wouldn't.

11 DR. PI-SUNYER: Okay. So, you
12 would give specific instructions about that?

13 DR. ACHTERBERG: Well, I think
14 when the Dietary Guidelines come out, USDA
15 would give instruction. We can suggest in
16 this report whether or not they should or
17 shouldn't do that.

18 DR. APPEL: Cheryl, this is Larry.
19 And I've been working on another section,
20 dietary patterns, that might be close to what
21 you're getting at. I think we're planning on
22 presenting, in contrast to 2005, several

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1 dietary patterns that appear to have nutrient
2 adequacy and also several dietary patterns
3 that have health benefits. And so, I think
4 the three -- I didn't realize it until I saw
5 this slide deck. In this chapter we're
6 thinking about presenting four different
7 dietary patterns based on the modeling that
8 the USDA has done. So, the plant-based, the
9 lacto-ovo and vegan, providing documentation
10 that it can be done.

11 DR. VAN HORN: Right.

12 DR. APPEL: And then how it gets
13 done I think is going to require the
14 translation step.

15 DR. VAN HORN: Right. I think the
16 points that are being made are very important
17 and yet also attest to the need for some
18 flexibility in letting consumers make some
19 choices on the basis of, you know, what
20 they're trying to accomplish. So, I think
21 just as Larry points out, the hope is that
22 within this total diet chapter some of those

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1 kinds of alternatives will be presented to
2 people as approaches, you know, that they can
3 take to try to meet all of these goals and mix
4 and match as needed.

5 DR. NICKOLS-RICHARDSON: This is
6 Shelly. If I didn't mention it before, yes,
7 these last two modeling pieces will be part of
8 the total diet chapter and not specific to
9 nutrient adequacy. It's just it fell within
10 our group to look at it, so it makes sense to
11 include it in total diet and that flexibility.

12 DR. VAN HORN: Right. With that,
13 I guess I'd like to break in at this point.
14 We've all been glued to our computers for over
15 three hours. I think we all desperately need
16 a little break.

17 But I have communicated with Larry
18 and I haven't heard back from Eric, but I'm
19 hoping that perhaps what we might do is modify
20 this schedule a bit, and Eric graciously
21 offered up a little of his time. And I
22 wondered if we might not at this time take a

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1 very brief 10- minute break, come back and let
2 Eric do his presentation expecting that we
3 will then break for lunch right around 1:00
4 Eastern Time and try to stick with a fairly
5 abbreviated lunch, and start back again at
6 maybe 1:40 so that we can try to catch up a
7 bit. And as I said, I know that some of the
8 discussion at the end has already been
9 addressed in some ways, so we may make up time
10 at the end. But I think this might be better
11 than breaking into Larry's presentation
12 mid-stream.

13 Would that be all right with the
14 staff and with Eric?

15 DR. RIMM: That's fine with me.
16 It would only be if the public has the
17 schedule and, you know, the four people that
18 were interested in the alcohol that may be on
19 are chiming in at 1:30 and see that I'm done,
20 you know?

21 DR. VAN HORN: Yes, that is a
22 problem.

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1 DR. RIMM: I don't know. Was the
2 schedule already put out there? Is that open
3 to the public? Probably is, right?

4 DR. VAN HORN: I don't think so,
5 but I don't know. And I don't see any
6 feedback from anybody, so I don't know how to
7 answer that question.

8 DR. RIMM: Yes, it's possible that
9 -- I mean, since it's being recorded, people
10 can always get it anyway, but I just wanted to
11 bring that up in case it was problematic.
12 Maybe Rob or someone else can speak to that.

13 DR. VAN HORN: Okay. I'll tell
14 you what, why don't we take a 10-minute break
15 now, and when we come back either Larry or
16 Eric will start down the road. And we'll find
17 out if it's possible to move you earlier. All
18 right?

19 DR. APPEL: Yes, this is Larry. I
20 don't mind, you know, if mine needs to get
21 broken up. I might be able to do it in 40
22 minutes, or it might take longer, and finish

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1 up after the luncheon break.

2 DR. VAN HORN: Okay. That's fine,
3 too. I just hated to interrupt you. I just
4 don't think it's --

5 DR. APPEL: We could figure out a
6 break, I mean, you know?

7 DR. VAN HORN: Yes. Okay. So,
8 why don't we officially take our break at this
9 point for the next 10-12 minutes, and be back
10 by 12:30, please. Thank you.

11 (Whereupon, at 12:14 p.m. off the
12 record until 12:30 p.m.)

13 DR. VAN HORN: Welcome back,
14 everyone. Thank you for your cooperation as
15 we try to really do justice to the content of
16 this meeting and all these wonderful reports.

17 We've decided to make a mid-course
18 adjustment, and our next presentation will be
19 made by Eric Rimm in regard to the Alcohol
20 Subcommittee. Our plan is to present the
21 report and then take our lunch break at 1
22 o'clock or whenever Eric is finished. And

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1 then abbreviate lunch somewhat and be back by
2 1:40 or so with Larry Appel's presentation on
3 sodium, potassium and water. So, we
4 appreciate your understanding and cooperation.

5 And with that, Eric, take it away.

6 DR. RIMM: Thanks, Linda. So, I'm
7 presenting this on behalf of the subcommittee
8 presented here. I also, too, would like to
9 thank you colleagues at HHS and the USDA for
10 being very helpful and doing these searches
11 and helping us get through a lot of changes in
12 our questions along the way.

13 So, if I could go to the next
14 slide? So, the final three questions that we
15 would like to address today and present to the
16 Advisory Committee are on alcohol and bone
17 fractures and bone health, alcohol and
18 unintentional injury, and finally, alcohol and
19 breast-feeding.

20 Next slide. So, for bone
21 fractures and bone health, the question we put
22 forward was among persons who consume

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1 alcoholic beverages what is the relationship
2 between patterns of alcohol intake and bone
3 fractures and bone health? And for this, we
4 went back to 1995, focused only on adults of
5 legal drinking age, since that's where the
6 Dietary Guidelines would cover. And also
7 outcomes included in our search included bone
8 fractures and bone density.

9 Next slide. Our proposed
10 conclusion based on Grade II moderate evidence
11 is that there is a moderate evidence to
12 suggest a J-shaped association between alcohol
13 consumption and incidence of hip fracture.
14 And compared with accidents, consuming one
15 drink or less per day is associated with a
16 lower risk of hip fracture. This may reflect
17 a positive linear association between alcohol
18 consumption and bone density. However, at
19 greater than two drinks per day, alcohol
20 consumption is associated with a higher risk
21 of hip fracture. This may result from both
22 acute effects on balance and long-term effects

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1 on bone density.

2 Next slide. For this, we started
3 to do a thorough review and came up with a
4 very nice systematic review, a recent
5 systematic review/meta-analysis of 33 studies
6 and thought that this adequately captured the
7 preponderance of evidence, but we didn't think
8 it was necessary to do further NEL search just
9 within the last six to twelve months. This
10 meta-analysis covered 13 studies, eight
11 prospective, five case control, and concluded
12 that there was a J-shaped relationship between
13 alcohol consumption and hip fracture. Four
14 cohort studies rated showed a linear
15 association between femoral and neck bone
16 density in alcohol consumption. Studies often
17 combined moderate and heavy drinkers into a
18 single category, therefore we could not assess
19 relative association between alcohol
20 consumption and bone density in the moderate
21 compared with heavy drinkers.

22 Next slide. So, the implications

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1 for this is that there is insufficient
2 evidence related to patterns of alcohol intake
3 and bone health. If you recall from my past
4 presentations, we've been trying to sort out
5 whether we can look at specific patterns
6 versus just giving guidance on average
7 consumption, and there were not enough studies
8 that looked at patterns. Obviously, when we
9 talk about very heavy consumption on one
10 single day, there was the increased risk of
11 imbalance and bone fractures. Also, study
12 limitations frequently included combining the
13 moderate and heavy drinkers in the same
14 category and failing to control adequately for
15 physical activity, so that also meant we could
16 do less with patterns of consumption. And
17 there are only limited data are available that
18 address changes in markers of bone health and
19 metabolic studies of alcohol consumption,
20 therefore this would be folded into a research
21 question.

22 Next slide. For unintentional

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1 injury we also wanted to look at among persons
2 who consumed alcoholic beverages what is the
3 relationship between patterns of alcohol
4 intake and unintentional injury. And for here
5 we went back to the mid-1990s to present,
6 again looking only at adults of legal drinking
7 age. And for outcomes we included a broad
8 range of outcomes including accidents,
9 accidental falls, home accidents, occupational
10 accidents, wounds and injuries, alcohol
11 drinking and adverse effects. And for this,
12 because some of them were acute events, we
13 made the decision to include cross-sectional
14 studies.

15 Next slide. For here the proposed
16 conclusion with Grade I evidence is that among
17 persons who consume alcoholic beverages there
18 is substantial evidence to suggest that
19 drinking in excess of current guidelines
20 increases the risk of unintentional falls,
21 motor vehicle accidents and drowning. And
22 although the evidence of risk of unintentional

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1 injury is not as well established in alcohol
2 consumed in moderation, abstinence from
3 alcohol is likely the safest level for
4 occupational activities and other activities
5 such as driving motor vehicles of any type,
6 swimming and participating in athletics. We
7 actually put swimming in here (I think it was
8 not in past guidelines) only because there
9 have been several studies looking at
10 unintentional injury from drinking and
11 swimming.

12 Next slide. For here we looked at
13 the review of the evidence. There are 22
14 studies. Five of them are systematic reviews,
15 seven cohort studies, five case control
16 studies, a longitudinal study and several
17 other study types. Most of the studies were
18 of neutral quality, two were positive and one
19 negative. But for the most part there was
20 pretty clear evidence of unintentional injury
21 at alcohol consumption beyond moderation, and
22 even in many of the studies when alcohol is

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1 consumed in moderation.

2 Next slide. So, the implications
3 for this and sort of folding in future
4 research is that we think that in this area
5 there should be a focus on effective
6 communication policies that reinforce and
7 expand the current messages on drinking and
8 driving to inform individuals of the potential
9 risks of alcohol consumption in the setting of
10 other activities.

11 Next slide. So finally, our final
12 question was what is the relationship between
13 alcohol consumption and lactation, and this
14 was one of the major questions, and we had two
15 sub- questions underneath this. What is the
16 relationship between alcohol consumption and
17 the quantity and quality of breast milk
18 available for the offspring? And the second
19 question was what is the relationship between
20 alcohol consumption and post-natal growth
21 patterns, sleep patterns and the psychomotor
22 patterns of the offspring?

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1 This was I guess a question that
2 came out of comments we had gotten from
3 several groups suggesting that women were
4 giving up breast- feeding because they wanted
5 to have a drink. So, we wanted to address
6 this with the knowledge going in that clearly
7 breast-feeding is the best thing for the new
8 child, and so we wanted to see if there was a
9 conflict between this or if there would be a
10 specific guideline we could give to women who
11 are interested in having an occasional
12 alcohol-containing beverage and also want to
13 continue breast- feeding their child.

14 So, because of this, we sort of
15 left it open. There was no date range. We
16 searched for all available evidence, again
17 using 21 years and older and looking at all
18 study designs to see if we could get a sense
19 of the data, and those are the different
20 outcomes we used in the search. We also did
21 some hand searching and talked to an expert in
22 the field, actually I think the expert in the

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1 field, when making up these conclusions.

2 Next slide. So, for sub-question
3 1, we have a Grade II conclusion. When a
4 lactating mother consumes alcohol, alcohol
5 enters the breast milk and the quantity of
6 milk produced is reduced, leading to reduced
7 milk consumption by the infant. This is only
8 while alcohol is in the blood stream, and
9 therefore it's really a temporary alcohol in
10 the milk, but it does match the alcohol in the
11 bloodstream.

12 Conclusions at Grade II, limited
13 but overall insufficient evidence suggests
14 that the alcohol consumption during lactation
15 is associated with post-natal growth, sleep
16 patterns and the psychomotor patterns of the
17 offspring.

18 Next slide. So, for the
19 sub-question 1, review of the evidence, the
20 conclusion is based on the review of 13
21 studies. Six studies examining the effect of
22 alcohol ingestion during lactation on quality,

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1 sort of the impact of the physical properties
2 or chemical composition of the breast milk
3 produced. Seven within the subject design
4 studies addressed the impact of alcohol
5 consumption during lactation on the quantity
6 of breast milk produced or consumed.

7 For the most part, these were very
8 small studies done on 10 to 20 women where
9 they -- obviously it would be difficult to do
10 this type of study, where the mother was given
11 alcohol on one occasion and then the child was
12 monitored. And then alcohol was not given on
13 a second occasion and the infant was monitored
14 in terms of the amount of alcohol they were
15 consuming. In most cases, the amount that the
16 woman produced was less and the amount that
17 the infant consumed was less, although in
18 subsequent feedings the infant made up for it
19 as long as the mother was not drinking.

20 Next slide. So, for sub-question
21 2, our conclusion is based on the review of
22 five studies examining the relationship of

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1 mothers' alcohol consumption during lactation
2 on growth, psychomotor development, and wake
3 and sleep patterns. For here, the psychomotor
4 development, there really was I guess mixed
5 evidence where the first study of '89 found
6 differences. A subsequent study by the same
7 office tried to validate that and did not find
8 the same evidence of psychomotor development
9 changes. So, that one is I guess more
10 equivocal.

11 The wake and sleep patterns, it
12 has been looked at again in a very small
13 number of studies, but they do see that the
14 child that sleeps after breast-feeding, when a
15 small amount of alcohol is consumed, does not
16 sleep as well as the child that consumes
17 breast milk without alcohol.

18 Next slide. So, the implications
19 I guess are really more of the meat of this.
20 The first implication is the level of alcohol
21 in breast milk mirrors the mother's blood
22 alcohol content, thus it is not sufficient for

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1 a woman to express breast milk after alcohol
2 consumption to prevent exposure to the infant.

3 The benefits of breast-feeding to
4 the infants are well established. A woman who
5 chooses to breast-feed however need not
6 completely abstain from alcohol. Instead, if
7 the infant is of adequate age and mother
8 chooses to drink, she should wait for three to
9 four hours after a single drink before breast-
10 feeding to ensure that exposure of alcohol to
11 the infant is negligible. Actually, these are
12 proposed implications. I would like to put in
13 here that the alcohol should be consumed with
14 meals. There were a few studies suggesting
15 that the blood alcohol level obviously was
16 lower if it was with meals, as was the alcohol
17 content in the milk.

18 And here we wanted to just
19 emphasize that if a woman does choose to drink
20 one drink, that this is defined as 12 ounces
21 of regular beer, five ounces of wine and
22 one-and-a-half ounces of 80-proof distilled

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1 spirits.

2 A third implication is contrary to
3 medical and cultural folklore alcohol
4 consumption does not enhance lactational
5 performance, and instead reduces milk
6 production and decreases infant milk
7 consumption in the three to four hours after
8 alcohol is consumed by the mother.

9 And finally, although there is
10 insufficient evidence to conclude that alcohol
11 consumption during lactation affects the
12 post-natal growth of the child, we still felt
13 that breast-feeding infants should not be
14 exposed to alcohol.

15 I believe that is my last slide.
16 So, as promised, I was less than an hour, but
17 I'd be happy to take 10 to 20 minutes of
18 questions if they do exist.

19 DR. VAN HORN: Thank you, Eric.
20 That was excellent.

21 How about other members of your
22 Committee? Does anyone have anything to add?

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1 DR. ACHTERBERG: I'll just thank
2 you, Eric; this is Cheryl, and I learned
3 something in terms of bone fracture. What I'm
4 curious about is looking at the data about
5 alcohol consumption and patterns, when you
6 talked about patterning. Did you look at
7 binge drinking per se and the effects with
8 binge drinking versus other patterns of
9 intakes?

10 DR. RIMM: We have done that for
11 other outcomes like heart disease and stroke.
12 Most of the fracture data, as you would
13 expect, there are a few studies that have
14 looked at emergency rooms, people coming in
15 with fractures, and, you know, I think our
16 guidelines already tell people not to binge
17 drink. So, it's clear that there is
18 unintentional injuries, some of them
19 fractures, associated with drinking in excess,
20 well below even the level that we would call
21 binge drinking. And we could come out with a
22 stronger statement saying don't binge drink

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1 because it's going to cause bone fractures,
2 but we already I think sort of conclude that
3 throughout. Was that why you were asking the
4 question?

5 DR. ACHTERBERG: Yes, basically.
6 Thank you.

7 DR. RIMM: And I think there are
8 fewer studies on bone fractures per se than
9 there are for I guess our section on
10 unintentional injuries where there is evidence
11 on binge drinking.

12 DR. NELSON: Eric, this is Mim.
13 Just a quick question. It's more just an
14 editorial one, because your proposed
15 conclusion is a Grade II moderate that there's
16 moderate evidence to suggest a J-shaped curve
17 association between alcohol consumption and
18 the incidence of hip fracture, yet your
19 implication doesn't mention that. I think you
20 might want to just -- you talk about there's
21 insufficient evidence -- talk about patterns.
22 I think maybe in the implication there should

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1 just be that, you know, bring back your
2 conclusion and how the implication should be
3 basically repackaged here in implications.
4 Otherwise, when I just read your implication
5 slide, it looks like there's no evidence, or
6 that we shouldn't do anything about it.

7 DR. RIMM: Yes, I guess it is.
8 So, we're sort of mixing our conclusions of
9 average alcohol with patterns of alcohol. So,
10 maybe I can just put the implication related
11 to patterns either at the bottom or --

12 DR. NELSON: Yes.

13 DR. RIMM: -- describe it better.
14 Yes, I could --

15 DR. NELSON: I think that would be
16 greater, because otherwise it looks like
17 there's no evidence and you presented it.
18 It's more of an editorial issue.

19 DR. PI-SUNYER: Eric, this is
20 Xavier. With regard to having the alcohol
21 with the meal, could you also say that you
22 could have it just before the meal? Some

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1 people want a cocktail before meals.

2 DR. RIMM: Specifically for the
3 breast-feeding mother? That's what that was
4 related to.

5 DR. PI-SUNYER: Yes.

6 DR. RIMM: Yes. In fact, the way
7 that -- I'm trying to recall the studies.
8 They're not huge studies, but that's not the
9 way they were tested, and they actually --
10 let's see, they did the -- no, they did the
11 alcohol before the meal and after the meal.
12 That actually is the way they tested them.
13 So, yes, I can just say, you know, around the
14 time of meal consumption, or something like --

15 DR. PI-SUNYER: Right.

16 DR. RIMM: Yes.

17 DR. PI-SUNYER: I think that would
18 be better.

19 DR. FUKAGAWA: I think the
20 important thing is in terms of what blood
21 levels are achieved in the mom that would be
22 related to, you know, when and what she

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1 consumes with the alcoholic drink. And that's
2 sort of what you were trying to address,
3 wasn't it?

4 DR. RIMM: Yes. I mean, again,
5 there's not a ton of data. There's a few
6 modeling papers and a few papers where they
7 actually looked at the blood alcohol of a
8 mother. And most of the time, you know, by
9 four hours the blood alcohol is down to zero,
10 even if alcohol is consumed on an empty
11 stomach, just as long as it's one drink. So,
12 what we're talking about is sort of between
13 three and four hours, depending on if alcohol
14 is consumed with the meal or on an empty
15 stomach. Yes, so ideally, regardless of if
16 you're a lactating mother or if you're, you
17 know, somebody else, it's better to consume
18 alcohol with a meal.

19 DR. VAN HORN: Other comments?

20 (No audible response.)

21 DR. VAN HORN: Eric, I was
22 actually trying to remember, and just remind

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1 me, in your last presentation at our last
2 meeting did we go over the food patterning
3 issues related to, you know, again, the
4 equivalent of alcohol for an adult is sort of
5 those added sugar calories for a child, I
6 guess. And it would just be interesting, and
7 I think this was suggested, but I don't
8 remember, you know, to be able to provide some
9 guidance regarding incorporation of alcohol
10 into a diet that otherwise meets, you know,
11 the nutrient needs and making it possible in
12 terms of both energy and nutrient density. I
13 just wondered.

14 DR. RIMM: Yes, that's a really
15 important question. Thanks.

16 In the past meeting I did touch a
17 little bit at first on drinking patterns in
18 this country and the percent of people that
19 were at different ranges. And then thanks to
20 Patricia Guenther and a few others, Shanthy
21 Bowman and a few others, I did present some of
22 the data on alcohol and differences in diets

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1 among people who drink. And Patricia just
2 published a paper two weeks ago or a month ago
3 with Roz Breslow and colleagues pointing out
4 differences in dietary patterns among people
5 who drink or don't drink. And in fact, that
6 will be then something that we've written into
7 the chapter. It's right early, you know, high
8 up in the chapter noting that individuals who
9 drink, you know, typically may have a slightly
10 different type of dietary pattern and a
11 slightly lesser dietary quality, and so they
12 need to be cognizant of the fact that they're
13 drinking. They need to, you know, be very
14 careful about their diet quality.

15 DR. WILLIAMS: Eric, this is
16 Christine. I just had a side question. I
17 wonder about that three to four hours after a
18 drink when alcohol is cleared from breast
19 milk. Is that similar for caffeine, do you
20 happen to know?

21 DR. RIMM: Clearly different
22 enzymes are involved. Yes, you caught me

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1 there. I'm actually not sure how quickly
2 caffeine is metabolized.

3 DR. PEARSON: I don't think it
4 would be the same because of the solubility of
5 alcohol versus methylxanthines.

6 DR. RIMM: Roger should know the
7 answer to this.

8 Roger, you know the answer to
9 this? I don't know.

10 DR. RIMM: Roger's on mute.

11 DR. CLEMENS: Here we go. Yea.

12 DR. RIMM: Yes. He's back, yes.

13 DR. CLEMENS: Hey, hey.

14 DR. RIMM: You know the answer,
15 Roger?

16 DR. CLEMENS: Yes. Actually, Tom
17 is right on the money with that, and actually
18 there's a delayed metabolism in the pregnant,
19 lactating women when it comes to caffeine. It
20 doesn't clear nearly as well and the
21 solubility is one of those characteristics.
22 Clearly, the methylxanthines are much more

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1 involved. Same with caffeine, any of the
2 theobromine and theophylline, which of course
3 you find in tea and hot chocolate. They're
4 metabolized in the same metabolic pathways.

5 DR. RIMM: I mean, I guess
6 obviously we're talking about the alcohol
7 chapter, but I don't know if anybody else was
8 going to touch on that. But I guess that
9 could be an issue.

10 DR. CLEMENS: The entire
11 composition of breast milk and components that
12 are passed through, even to the point, Eric,
13 when it comes to various peptides that we
14 ingest or digest protein to create peptides
15 that pass through breast milk, and what are
16 the implications of those peptides on infant
17 milk? Clearly a topic for another day.

18 DR. RIMM: This alcohol chapter
19 sounds like it's getting larger as we speak.
20 No. Right. I guess --

21 DR. CLEMENS: I don't think it'll
22 fit there.

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1 DR. RIMM: Yes. No, it won't fit
2 there. I don't know if it's something that
3 Rafael will touch on, or anyone else, but it
4 may be something that does not get captured
5 within this guideline.

6 DR. VAN HORN: Right.

7 DR. CLEMENS: But to that point,
8 it may well be in the future that we go below
9 two years of age and that topic could be
10 covered.

11 DR. RIMM: Yes, right. Good
12 point.

13 DR. VAN HORN: I was just going to
14 echo that, Roger. Thank you for bringing that
15 up. One of the things that has been an issue
16 with Committee, and we have mentioned it many
17 times, is that fortunately the data have been
18 accumulating and emerging related to even in
19 utero what consequences or impact diet may
20 have in fetal development, as well as, you
21 know, the first two years of life. And the
22 fact that as these Dietary Guidelines

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1 continue, it will become really necessary to
2 pay attention to the whole concept of eating,
3 even at birth or earlier.

4 And so, questions related to
5 breast milk and quality of breast milk really
6 do deserve to have time. I think that just
7 this alcohol question alone will be incredibly
8 valued by people, because I know among many
9 lactating moms, you know, this kind of a
10 question would be high on their list in terms
11 of whether or not they should even try to, you
12 know, have a glass of wine or something.

13 So, I think this is very valuable,
14 but the points you're raising about other
15 beverages and other side effects of things
16 that maybe people don't even think about such
17 as caffeine or hot chocolate, you know,
18 definitely should be on the list for future
19 consideration.

20 DR. CLEMENS: You raise an
21 excellent point, Linda. I think a guideline
22 or a recommendation for the subject Committees

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1 to actually start to look at the epigenetics
2 and the nutrigenomics impact of feeding babies
3 in utero, as well as the first two years of
4 life and the impact of genetic expression.
5 And you could use an example, and this could
6 be one of those examples.

7 DR. VAN HORN: Yes, excellent
8 point.

9 All right. Other comments from
10 anyone on the Committee? Or, Eric, anything
11 else you'd like to add?

12 (No audible response.)

13 DR. VAN HORN: We really appreciate
14 your willingness to go early like this.

15 And I think at this point then,
16 we'll take a lunch break, but we'll try to
17 keep it short and reconvene at 1:40. That's
18 Eastern Time at 1:40. And then we'll launch
19 into the sodium, potassium, water chapter.

20 With that, thank you and we'll be
21 back at 1:40.

22 (Whereupon, the hearing was recessed at

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1 12:55 p.m. to reconvene at 1:40 p.m.)

2 A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

3 1:42 p.m.

4 DR. VAN HORN: Welcome back,
5 everyone. We are now ready to begin the
6 sodium, potassium and water subcommittee
7 report, and that is chaired by Larry Appel.

8 Larry?

9 DR. APPEL: Great. All right.
10 Well, let first acknowledge the Committee
11 members and staff working on this component of
12 the report. So, besides myself, Tom Pearson,
13 Linda Van Horn, Chris Williams, and our staff,
14 Donna Blum-Kemelor and Patricia Guenther, Joan
15 Lyon and Holly McPeak.

16 So, next slide. So, these are the
17 topics that actually have and will be covered.

18 So, we already covered sodium
19 intake and blood pressure in children and
20 adults at the November meeting. Today we're
21 going to cover some issues that are revealed
22 in the sodium modeling. Then the second

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1 content area is potassium intake and blood
2 pressure, and we'll cover that today. That
3 wasn't covered previously. And we'll also
4 cover potassium modeling. In terms of water
5 intake and health, we're not going to cover
6 that, but like sodium and potassium, will
7 present our conclusions and implications.

8 We'll discuss an issue that's
9 important to our Committee, but also I think
10 relevant to others, which is the adjustment of
11 sodium and potassium recommendations by energy
12 intake, and then public comments and research
13 recommendations.

14 So, the objectives of the sodium
15 modeling were to document the relationship of
16 sodium with energy intake and to describe
17 sodium levels under several different
18 scenarios. One is a base condition, which is
19 what we've seen previously. This is the base
20 USDA dietary patterns. And then a typical,
21 which is to give an -- this would be if people
22 choose badly and they consume foods that are

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1 higher in sodium intake, if more typical
2 choices were made, if people weren't selecting
3 better foods. And then a lowest, which is at
4 the other end. You know, what if people
5 really, you know, went out of their way and
6 selected only the lowest available sodium food
7 in a category.

8 And I guess to preface that, it's
9 first important to look at where we are. And
10 I think Shelly covered this format a little
11 bit different from her graphs, but I think the
12 same point. And then that is that average in
13 this case means dietary sodium intake across
14 the population for men and for women really
15 exceeds the 2,300, which is the recommended
16 upper limit for the general population of
17 adults, and then 1,500, which is the
18 recommendation for those who are especially
19 vulnerable to the adverse effects of salt on
20 blood pressure.

21 So, let's move onto the next
22 slide. One slide back without the black line,

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1 please.

2 Okay. So, this figure, or this
3 line actually, presents the average sodium
4 intake plotted by energy intake or calorie
5 level. And this is real data. It's from
6 NHANES. And I think if you go down to the
7 bottom, there's a really important number that
8 is actually quite striking, which is the
9 correlation of sodium and energy intake, which
10 is .8. I mean, it's amazing how tight sodium
11 is with calorie intake. It also presents a
12 lot of methodological issues when you're
13 looking at cohort studies where people
14 estimate sodium intake and you have problems
15 with accurate collection.

16 Next slide. Okay. Now, this line
17 actually is not real data. These are targets
18 in the DASH sodium trial where we were trying
19 to provide the recommended intake of sodium,
20 which is the upper limit 2,300 at 2000 kcals.

21 And those Xs actually correspond to what the
22 targets were in those trials. So, if somebody

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1 was 1,600 calories, their target was actually
2 a little bit below 2,000 milligrams. And then
3 if they required 3,600 calories because
4 they're very physically active, they were fed
5 food that had provided around 3,600
6 milligrams.

7 Next slide. And this is a similar
8 line, but it's for the lower level of sodium
9 intake that was offered in the trials. So, in
10 this case it was around 1,500 milligrams of
11 sodium at 2,000. So, you see the same sort of
12 dose response, but again, these are targets in
13 a major trial.

14 Next slide. This is actually also
15 targets, but this was based on USDA Food
16 Patterns. And this is choosing nutrient-dense
17 foods prepared without salt and using, I
18 think, decent choices, but they could be
19 better as we'll show. But you again see this
20 direct relationship of sodium with calories.

21 Now, if individuals select badly,
22 but fall within the category structure, they

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1 still will have this marked, you know,
2 calorie/sodium intake relationship. This is
3 again with more typical salt content of foods
4 as opposed to ideal.

5 Next slide. And at the other
6 extreme, if people really sought out the
7 lowest available sodium product, and this is
8 eliminating all salts in preparation and using
9 the lowest sodium foods instead of the
10 inherently high- sodium foods. And you can
11 come close to what is the recommendation for
12 people in those high-risk groups, roughly
13 1,500 milligrams at 2,000 kcals.

14 So, next slide. So, the main sort
15 of points of this is that the base USDA Food
16 Patterns is actually about 40 percent less
17 than current intakes, and this is roughly
18 similar to what is provided in this major
19 trial, the DASH sodium trial, the intermediate
20 level which corresponds to 2,300 milligrams at
21 2,000. Unfortunately, if you just made bad
22 choices, your sodium intake would be much

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1 higher. And then the last bullet, which is
2 quite important, which is with really careful
3 selection you can get much lower, but it's
4 pretty rough, and this is a level that's about
5 70 percent below the current intake levels.

6 So, I don't know if we want to
7 stop here for questions. I think it leads
8 naturally into the next section. Maybe we
9 could just stop after we finish the sodium
10 section and take questions at that point.

11 So, our first question is what is
12 the effect of sodium intake on blood pressure
13 in children and adults?

14 So, now I'm just going to -- next
15 slide -- just review the draft conclusion and
16 draft implications. And as we said, we
17 presented the data in November.

18 So, the draft conclusion. A
19 persuasive body of evidence has documented
20 that in adults as sodium intake decreases, so
21 does blood pressure, and that's an evidence
22 Grade I. A large body of evidence has also

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1 documented a similar relationship in children
2 birth to 18 years. Let's go back to that
3 slide, please. And we made that an evidence
4 Grade II. There's some debate about -- and I
5 think many groups are sort of struggling with
6 this. You know, it's not as strong as the
7 evidence in adults, but it's also not bad.
8 There's meta- analysis and also at least one,
9 you know, major trial that's documented it.
10 So, we made that an evidence Grade II.

11 Next slide. So, there are a lot
12 of implications here, so it's worthwhile to
13 sort of review each one.

14 So, implications. A daily sodium
15 intake of less than 2,300 milligrams is
16 recommended for the general adult population
17 and an intake of 1,500 milligrams for
18 hypertensive individuals, blacks and
19 middle-aged and older-aged adults.

20 Second bullet. Because together
21 the latter groups comprise nearly 70 percent
22 of U.S. adults, the goal should be 1,500

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1 milligrams per day in the general population.

2 Third bullet. The current U.S.
3 marketplace make this a challenging but
4 compelling public health goal to be achieved
5 over time. You know, there's been some
6 discussion about whether to actually put some
7 time frame in this, by a certain date, and
8 maybe we should open that up for discussion,
9 make sure that point is at least covered.

10 And then the fourth bullet, all
11 individuals should concurrently increase their
12 consumption of potassium because a diet rich
13 in potassium attenuates the effects of sodium
14 on blood pressure.

15 Next slide. The projected health
16 benefits of reduced sodium intake are
17 substantial and include fewer strokes,
18 cardiovascular disease and death, as well as
19 substantially reduce health care costs. And
20 we provide documentation of that in the
21 chapter.

22 And then next bullet. In view of

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1 these potential benefits and the currently
2 high intake of sodium in the general
3 population, children and adults should reduce
4 their sodium intake as much as possible by:
5 (a) consuming less processed foods, which are
6 high in sodium; and (b) preparing foods with
7 little or no salt. Of course, we have the
8 same issue as others with the definition of
9 "processed."

10 Next slide. An emerging concern
11 is the addition of sodium to products such as
12 poultry, pork and fish in the form of
13 injections, marination or surface sprays.
14 Although such processing seems commonplace,
15 quantification of the sodium content is scant
16 and evidently not regulated.

17 And then the third bullet, because
18 sodium intake is tightly linked to calorie
19 intake, reducing calorie intake should also
20 lower sodium intake.

21 Next slide. So, we view the --
22 you know, I guess per the call last week, some

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1 sort of identifying impact issues. I think
2 the first one is the sodium goal for adults,
3 and for the reasons that we just discussed,
4 the goal should be incrementally reduced from
5 2,300 to 1,500 milligrams over time, but
6 preferably no later than blank. And then
7 secondly, a sodium goal for children. Because
8 early stages of blood pressure-related
9 atherosclerotic disease begin during
10 childhood, children should likewise consume
11 diets that are reduced in sodium intake.

12 And I think there's one more slide
13 before we'll stop, the research
14 recommendations.

15 So, first is conduct studies
16 including clinical trials in children to
17 determine the effects of sodium on blood
18 pressure and the age-related rise in blood
19 pressure. I actually probably would modify
20 that by adding "sodium and other dietary
21 factors," but I know this chapter is just on
22 sodium.

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1 Then the second is to conduct
2 trials that determine the effect of sodium
3 reduction on clinically-relevant non-blood
4 pressure variables such as left ventricular
5 mass, proteinuria and bone mineral density.

6 So, I think that that is the end
7 of the sodium section of the presentation, so
8 maybe I should just stop here and take
9 questions and hear comments from the
10 Committee.

11 DR. CLEMENS: This is Rog. Can
12 you hear me all right?

13 DR. APPEL: Yes, I hear you fine
14 despite your being in California.

15 DR. CLEMENS: Well, I thought
16 maybe being a long away from everybody else, I
17 may have lost signal.

18 Thank you for the very stimulating
19 presentation. You always do a great job.

20 I just want to bring to everyone's
21 attention your remark on slide 17 on the
22 implications. That's quite an issue, frankly,

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1 as you know. Two things. One, that poultry
2 and other products are actually used -- by
3 mandate, by the law, have to actually brine
4 some types of products. So, in addition,
5 things like cheese have brining. Olives; many
6 people enjoy the Mediterranean diet, are
7 brined to preserve. And also pickles. So, a
8 lot of those products are required by law to
9 go through the brining process. And that
10 differs of course whether a product is fresh
11 or if a product is frozen, and that goes to
12 the poultry-type products like the turkeys
13 that you mentioned.

14 DR. APPEL: Yes.

15 DR. CLEMENS: So, there are some
16 regulatory issues they maintain so that
17 product remains safe, and that is stipulated
18 by the USDA.

19 DR. APPEL: So, yea, I hear what
20 you say. I think that there are certain
21 products where I think it is intrinsically
22 part of, you know, the preparation. And

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1 certainly there might be some limits, but
2 there's also perhaps some excess, and I don't
3 know if we can deal with it. I don't think we
4 can deal with it on a product-by-product.

5 But I think the group that I was
6 thinking about were more sort of like pork
7 which now seems to be it's the rule, not the
8 exception that it's injected with brine, and I
9 don't think there's a regulatory requirement
10 for that. A lot of the prepared poultry items
11 that are provided like pre-cooked chickens,
12 rotisserie chickens that you get in
13 supermarkets, those are now injected. And
14 even I think some of the uncooked poultry
15 products are now injected and fairly high as
16 well. You know, turkeys come to mind.

17 But the thing about this whole
18 area is that it's not really -- some of them
19 are -- there is reporting, and others aren't.

20 And I think it has to do often where the site
21 of the injection, so like if it's done in the
22 supermarket, which it might not get reported

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1 on the label. And then other places if it's
2 done beforehand, like pork, it probably is on
3 the label. What's done with fish, I don't
4 really know if there's reporting.

5 But it's very haphazard and I
6 really sense this is an emerging area that
7 should be I think of concern to manufacturers
8 in particular because there are groups like
9 those that are producing baked goods and
10 cereals that I think many of which are --
11 companies are making really aggressive efforts
12 to reduce their sodium. And meanwhile, there
13 are other groups that are just sort of adding
14 sodium and doing it, you know, under the radar
15 screen, so to speak.

16 DR. CLEMENS: Well, I can
17 appreciate under the radar screen, as you
18 mentioned, and I just wanted to be sure that
19 we all realize that depending on the process
20 and the product and how it goes through the
21 food chain or food distribution, there are
22 regulatory guidelines and those guidelines are

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1 stipulated by the USDA. Those guidelines are
2 intended to provide a safer food product.

3 DR. APPEL: Yes.

4 DR. SLAVIN: But also; this is
5 Joanne, if it's on the label, no matter how
6 the sodium got there, they need to make sure
7 that that's the right amount as consumed.

8 DR. CLEMENS: Absolutely. I agree
9 with that, Joanne. Good point.

10 DR. SLAVIN: Depending on when
11 they put it in, it doesn't really matter on
12 the label, it's got to be as consumed. So, if
13 anybody comes to them and argues, they got to
14 make sure they meet that guideline.

15 DR. APPEL: I'd appreciate some
16 staff assistance on this one, because my
17 understanding though is that many of these
18 products where the injection occurs in the
19 supermarket, it's not included on the label,
20 the sodium content.

21 DR. POST: Roger and Larry and the
22 rest, this is Bob Post. I have a comment

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1 about that. There is a requirement that
2 anything added to products, you know, any
3 product with two or more ingredients of course
4 has to reflect in the ingredient statement.
5 And there's also a requirement that where
6 solutions are added to meat and poultry
7 products that it be reflected as part of the
8 product name. In fact, there are policies in
9 place, and I guess this was some of Roger's
10 comment, too.

11 Now, if that's not happening, then
12 that's a problem. But there are controls in
13 place to ensure that consumers receive not
14 only a complete ingredients statement, but a
15 product name reflecting a percent of added
16 ingredients, as well as the nutrition facts
17 which of course would have the sodium
18 declared. That's the intent.

19 DR. CLEMENS: That's my
20 experience, too, Rob. Thank you very much for
21 that very important comment.

22 So, what you're saying, Larry,

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1 maybe we have to look for alternatives to be
2 sure that the food supply is safe and other
3 methods to make cheese?

4 DR. APPEL: Yes. To me, I guess
5 the implication is to understand where new
6 sources of sodium are and to quantify the
7 amount, because I don't think that many people
8 have traditionally thought of like turkey a
9 source of sodium. And now with certain of
10 these products you're getting 300 or 400
11 milligrams per serving as opposed to very
12 little. And the same thing with pork, which
13 is inherently a low-sodium product.

14 DR. CLEMENS: Indeed, pork is
15 inherently, as is turkey, as most is most
16 poultries are.

17 DR. APPEL: Yes.

18 DR. CLEMENS: At that point. And
19 so, it depends on how it goes through the food
20 distribution and what's mandated by law by the
21 USDA. And as well all know that sodium
22 injections are required for pork and for

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1 bacon. We may not advocate bacon consumption,
2 yet that's the reality of how it's produced
3 because it's a safety issue.

4 DR. APPEL: Yes.

5 DR. CLEMENS: So, maybe it's
6 incumbent, Larry, for us to look for
7 alternatives that would actually provide a
8 safer food supply. And to my knowledge,
9 because I'm the food scientist on this
10 Committee, I'm not aware of any good low-cost
11 food safety interventions other than sodium
12 chloride in this regard.

13 DR. APPEL: Yes, you know, I think
14 there might not be as much wiggle room like
15 with bacon, although I can't say for sure.
16 It's interesting though for like cold cuts,
17 and I think that there are reduced versions of
18 let's say, you know, turkey breast that you
19 can buy from the deli now. So, clearly there's
20 some wiggle room with that particular product,
21 but there might not be with others.

22 DR. FUKAGAWA: This is Naomi. But

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1 it could also work that we just need some
2 consumer education, because at least, you
3 know, when you brined a long time ago, you
4 knew to soak your brined meat in order to
5 remove some of that sodium, or to rinse
6 things.

7 DR. APPEL: Yes.

8 DR. FUKAGAWA: So, that might be
9 another side of things if it's from a food
10 safety standpoint necessary.

11 DR. CLEMENS: That's an excellent
12 comment, Naomi. And if you recall, this last
13 couple of years brining by consumers has
14 become quite popular.

15 DR. FUKAGAWA: Right.

16 DR. CLEMENS: In addition, it's
17 become quite popular on the Food Network, and
18 they're advocating that you brine certain
19 kinds of foods. And to Larry's comment,
20 people may not be aware that brining actually
21 contributes to the sodium content of these
22 kinds of foods.

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1 DR. FUKAGAWA: Right.

2 DR. APPEL: Okay. All right.
3 Well, we can go back. Is there any other
4 comment on sodium before I move onto
5 potassium?

6 (No audible response.)

7 DR. APPEL: Okay. So, we had
8 three areas. The second one was potassium.
9 This wasn't covered, so I'm going to provide
10 some detail about potassium.

11 So, the next slide. So, the
12 second question, what is the effect of
13 potassium intake on blood pressure in adults?

14 Next slide. So, we actually
15 conducted searches on blood pressure. There
16 was no date range. We really did focus mostly
17 on randomized control trials. This is an area
18 where there have been a lot of trials, but
19 mostly with actually supplements, some with
20 food. But if they do use food, then it's
21 potentially confounded with other nutrients
22 like fiber and other foods or nutrients.

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1 Inclusion criteria of adults,
2 greater than 10 subjects per arm. And we did
3 exclude chronic disease. And the main outcome
4 was blood pressure or hypertension status.

5 Next slide. So, there actually
6 were, you know, several systematic reviews,
7 actually three meta-analyses as well. So, the
8 DRI report concluded that there was an inverse
9 effect on blood pressure. The higher the
10 potassium intake, the lower the blood
11 pressure. There was a report by Burgess, and
12 it was a combination of epi studies,
13 randomized trials and it did not reach the
14 conclusion that there was a protective effect.

15 On the other hand, there were three -- that
16 was not a meta-analysis. They didn't have to
17 really combine the data. There was an early
18 meta-analysis by Cappuccio/MacGregor. And then
19 Geleijnse and Whelton. The Whelton analysis
20 is particular good because it gives the delta
21 of blood pressure per delta of potassium.

22 And the meta-analyses reached the

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1 conclusion that as potassium intake goes up,
2 blood pressure goes down. I will give a
3 caveat that there are really not dose-response
4 studies, so these are typically two-dose
5 studies. They're just one level of intake and
6 then a second, and in contrast to the sodium
7 where there are actually several dose-response
8 trials.

9 Then there was a systematic
10 review, Dickinson, that did not see an effect
11 of potassium on blood pressure, but it was
12 really an extremely restrictive enrollment
13 criteria that weren't really -- we wouldn't
14 really apply the required fairly long
15 treatment periods, which are actually
16 difficult to sustain on free-living people as
17 well as just hypertensive subjects.

18 So, the next slide. Then there
19 were new randomized controlled trials. And
20 these were -- you know, they're sort of a
21 hodgepodge here because, to tell you the
22 truth, the field has moved beyond does

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1 potassium lower blood pressure, and it's down
2 to sort of what I call ancillary issues. Does
3 potassium citrate versus potassium chloride
4 have any different effect on blood pressure?
5 So, those are the types of studies that were
6 done. And so, it's hard actually combining
7 these and I really don't think they contribute
8 that much to the overall answering the
9 question.

10 Next slide. So, our draft
11 conclusion. And we're hedging a bit in part
12 because I really wanted to hear how people
13 were phrasing their conclusions and also get a
14 sense of the evidence grade. And so, this is
15 what we crafted prior to this webinar. And
16 that is, that a considerable body of evidence
17 that documents that a higher intake of
18 potassium is associated with lower blood
19 pressure in adults.

20 And we're fluttering between an
21 evidence Grade I or II. You know, when I look
22 at the data for sodium in children, I don't

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1 think it's as strong as the sodium data in
2 adults, but I think it's better than the
3 sodium grade in children. So, ideally I would
4 give it a 1.5, but we can't split hairs, no
5 significant digits to the right of the decimal
6 point. So, I'm inclined after hearing a lot
7 of discussion to actually give it a Grade I,
8 but I'm open to discussion on this one and
9 other issues.

10 So, I think we have one or two
11 more. Actually, we have the implications and
12 some research recommendations.

13 So, implications. Diets rich in
14 potassium can lower blood pressure.

15 Second bullet, a high intake of
16 potassium also attenuates the adverse effects
17 of sodium on blood pressure.

18 Three, other possible benefits
19 include a reduced risk of developing kidney
20 stones and decreased bone loss. You know,
21 these are actually -- they were covered in
22 2005, also in the DRI report, but there was

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1 really no new evidence, so I didn't present
2 the data either in November. But these are
3 possible benefits.

4 Next slide. In view of the health
5 benefits, potassium and its relatively low
6 intake by the general population, increased
7 dietary intake of potassium is warranted.

8 The next bullet. The IOM set the
9 AI for adults at 4,700 milligrams per day.
10 Only six percent of men and fewer than three
11 percent of women meet or exceeded this amount.

12 Number three. The IOM set the AI
13 for potassium in children as well, and yet
14 less than three percent of children have met
15 that AI.

16 And then the fourth bullet.
17 Available evidence suggests that Blacks and
18 hypertensive individuals especially benefit
19 from an increased intake of potassium.

20 Next slide. So, similar to
21 sodium, we also conducted some potassium
22 modeling. The issues were a little bit

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1 different here, some similar some different.
2 First one, what is the relationship of
3 potassium and energy intakes in the U.S.? And
4 secondly, how would potassium levels of the
5 USDA Food Patterns change if an assumed amount
6 of coffee and tea based on current intake
7 levels were to be added? This was not done in
8 2005, and I think Patricia pointed out that
9 we're missing, not a huge, but a real source
10 of potassium that is under-appreciated.

11 So, next slide. This is similar
12 to the earlier slide for sodium. Displays
13 mean dietary potassium intakes in NHANES in
14 2005 to '6, and shows it both for men and
15 women. As you'll see soon, it really does
16 reflect that most likely the calories consumed
17 with obviously more being consumed in general
18 by men than women.

19 So, next slide. So, this is
20 little bit more ragged than the one for
21 sodium, but generally as energy increases, so
22 does potassium. Here the correlation is .72,

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1 still pretty high. Just to refresh your
2 memory, it was .8 for sodium and energy.

3 Next slide. This is actually what
4 was provided in the DASH trials. And again,
5 these are not actual intakes. This is the
6 targets. And you can see it's a line. It's
7 about 4,600 milligrams at 2,100 kcals.

8 Next slide. This is the amounts
9 in the base USDA Food Patterns. And again,
10 you see the same pattern of increased
11 potassium intake with increasing energy. One
12 important point is that it's a bit less than
13 what we studied in DASH. And I can tell you
14 that we purposely increased the amount or had
15 high levels of potassium in the DASH side
16 because the DASH study was originally designed
17 as a study of dietary patterns to lower blood
18 pressure. And we felt that potassium was one
19 of the key players here, and we wanted to have
20 it high. We actually thought that the amount
21 that we provided was about at the 25th
22 percentile of intake. I think we probably

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1 were wrong. It was closer to the fifth or
2 tenth percentile. But in any case, that's
3 what we did provide.

4 Next slide. So, this is the
5 amount that would be consumed if you add
6 coffee and tea for adults at the average
7 levels of fluid consumption. So, you can see
8 that if individuals consume on average 18
9 ounces per day, they'll get 247 milligrams per
10 day of potassium. So, in addition to staying
11 awake, you get more potassium. So, everybody
12 should consume more potassium more coffee,
13 which I'm going to do shortly after this
14 presentation.

15 So, summary of the potassium
16 modeling. So, the potassium is provided in
17 the base food patterns ranges from roughly 1.5
18 to 1.9 milligrams of potassium per kcal. Very
19 tightly, you know, correlated with calories,
20 again .7. This potassium density is actually
21 higher than current intakes, but lower than
22 what we provided in DASH, which is around 1.9

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1 to 2.5 milligrams per kcal. And it would be
2 somewhat higher, five to eight percent if
3 typical amounts of coffee and tea were
4 consumed by adults.

5 Next slide. Okay. Actually,
6 maybe I should just stop here. This is the
7 issue about energy. Yes, let's just stop here
8 for the potassium section and have some
9 discussion. Unless -- I'm just seeing. The
10 potassium research questions which -- maybe if
11 you could go to that slide, Holly, the
12 potassium research questions. Okay. Right
13 here.

14 So, the first one is to conduct
15 trials to test whether increased potassium
16 intake or potassium-rich foods increased bone
17 mineral density. I think this is an
18 incredibly important issue, but it hasn't been
19 addressed. We recommended it in 2005 and
20 there's only sort of slow progress at the NIH
21 for doing such a trial, but I think it has
22 tremendous public health importance.

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1 And the second one, conduct dose
2 response trials that test the main and
3 interactive effects of sodium and potassium on
4 blood pressure and other clinically relevant
5 outcomes. And that probably needs to get -- I
6 think Tom pointed this out. There are some
7 nuances to this. I think one of the areas
8 about potassium that has been -- it only can
9 be addressed indirectly. Is it a low intake
10 of potassium that is a risk factor for
11 elevated blood pressure? In converse, do you
12 get more bang for your buck increasing your
13 potassium level even above what's recommended?

14 And I think probably both are true, but we
15 don't really have good dose response studies,
16 as I said.

17 And the second one, the
18 interactive effects of sodium and potassium
19 have been dealt with in a few trials, but I
20 think more would be useful, particularly if it
21 involved multiple levels of potassium.

22 So, I think I'll finish there and

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1 then go back to the energy adjustment, which I
2 think is an overarching issue.

3 Shall we discuss potassium right
4 now?

5 DR. FUKAGAWA: This is Naomi.
6 Does the type of tea make a difference with
7 respect to potassium content?

8 DR. APPEL: Yes, I don't know.
9 That's a good question. You mean green tea
10 versus other forms of tea?

11 DR. FUKAGAWA: Black versus --

12 DR. APPEL: Yes.

13 DR. PEARSON: I wouldn't imagine
14 it would, because it's inorganic. The
15 roasting and fermenting I don't think changes
16 anything. It might change the bulk.

17 DR. FUKAGAWA: But it may differ
18 with respect to the plant source, right? You
19 know, because there are people -- like is
20 chamomile as potent as --

21 DR. PEARSON: Oh, I thought even
22 though the -- I mean, I'm talking about tea

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1 bushes as being the same plant.

2 DR. FUKAGAWA: Right. Oh okay,
3 tea tea.

4 DR. PEARSON: Tea tea, yes.

5 DR. FUKAGAWA: Rather than what
6 generally is looked upon as a beverage that,
7 you know, now there's all kinds of teas.

8 DR. PEARSON: Because as a plant
9 source, they should be relatively high in
10 potassium as one of their mineral sources.

11 DR. CLEMENS: Tom is right. This
12 is Rog. Tom is right about the mineral
13 content of these teas. However it's handled
14 and through fermentation and how it's dried
15 could have somewhat of an impact on the
16 mineral content such as potassium.

17 DR. PEARSON: Right.

18 DR. CLEMENS: And we would all
19 expect that.

20 DR. PEARSON: Yes.

21 DR. APPEL: Anything else about
22 potassium?

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1 (No audible response.)

2 DR. APPEL: Then let me go back to
3 the slide on energy adjustment, just because I
4 want to make sure everybody, you know, is
5 aware of the issues.

6 So, energy adjustment. So, it's a
7 bit of a haphazard -- I don't want to call it
8 haphazard; there is some science, but energy
9 adjustment DRIs. It's done for sodium in
10 children and older adults, and it's done for
11 potassium in children, but there's really an
12 inconsistent application to other nutrients
13 such as proteins and fiber. I think maybe for
14 fiber it might be indexed to calories, but as
15 I said, it's only done partially for sodium
16 and potassium.

17 And yet, the reality is that both,
18 in sort of just, you know, regular eating
19 environments, you know, when people are eating
20 together as a family, whether you have 1,500
21 calories or you're running marathons and
22 consuming 4,000 calories, people are consuming

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1 typically the same food at the table. So,
2 there's really energy adjustment that occurs
3 implicitly. And then, in the studies that we
4 do, typically feeding studies that involve
5 food, there's an energy adjustment. You
6 provide more of a nutrient depending on, you
7 know, the calories an individual consume. So,
8 energy adjustment occurs. And you might have
9 considered it, you know, sort of like it's
10 just math, because the more you eat, the more
11 you're going to get. And that's the case for
12 sodium and potassium with these really high
13 correlations. And yet we have, you know,
14 absolute levels for guidelines.

15 And so, we had a lot of discussion
16 about this, and we had a panel of experts join
17 us for a conference call in January of this
18 year. And the sense was not to make any
19 formal recommendation about energy adjustment
20 as a recommendation, acknowledge this as a
21 very practical issue and then use this in the
22 modeling that Trish and others are doing.

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1 And, you know, I think that in the next round
2 of Dietary Guidelines they really need to
3 spend more time on this issue, because there's
4 a combination of science and practical reality
5 that needs to be dealt with, and sodium in
6 particular is one area where this has both
7 implications, science and practicality.

8 So, I don't know if other people
9 have comments or thoughts on it. It's really
10 not an issue that sort of like you about up
11 front, but it's really quite important,
12 because it's a primary determinant of how much
13 of these electrolytes we consume.

14 DR. VAN HORN: Comments from the
15 Committee? Christine do you want to say
16 anything about children?

17 (No audible response.)

18 DR. VAN HORN: I don't know if
19 she's still there.

20 DR. PEARSON: This is Tom.
21 Obviously, this is the same issue with
22 cholesterol and milligrams per day.

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1 DR. APPEL: Yes.

2 DR. PEARSON: And, you know, men
3 are almost twice that of women in cholesterol
4 consumption. That's because of the caloric
5 intake. So, it probably hits us quick with
6 sodium, but it's an omnibus issue.

7 DR. APPEL: Yes. See, and I think
8 that the DRI Committees didn't spend a huge
9 amount of time on this. They probably were
10 focusing mostly on whether it should be
11 increased or decreased, and then the issue of
12 calorie adjustment is often an 11th hour
13 issue.

14 DR. WILLIAMS: This is Christine.
15 I think it certainly helps with children to
16 have everything calorie-linked, because the
17 caloric intakes are so different at different
18 ages. But I think it would be just as helpful
19 to have it linked to calories with adults. To
20 recommend one level for everyone just doesn't
21 seem appropriate, and we've always had that
22 problem with cholesterol recommendations also.

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1 And we do now have fiber intake linked to
2 calorie intake, which is very helpful.

3 DR. SLAVIN: But I think --

4 DR. APPEL: See, this is where --

5 DR. SLAVIN - creates problems, you
6 know, with fiber because of with labeling, you
7 know? So, I think it works for the DRIs, but
8 it typically is difficult to translate into
9 recommendations.

10 DR. APPEL: See, the thing that is
11 difficult here is that from a science
12 perspective if you need -- let's say you need
13 only, you know, 10 millimoles of sodium just
14 to replace your intake, a very tiny amount,
15 you know? And that's true whether you're
16 2,000 or 4,000, you know, maybe if you would
17 adjust that from 10 to maybe 20. But it's so
18 far below what we are currently consuming that
19 it's almost, you know, from a health
20 perspective, the amount of sodium just gets
21 magnified so that, you know, if you're a
22 triathlete and consuming 5,000 calories per

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1 day, the amount of cholesterol, the amount of
2 sodium, the amount of all of these sort of
3 nutrients is really huge. And it's indexed by
4 calorie, but is it really healthful to be
5 consuming let's say, you know, 300 milligrams
6 of sodium even if that corresponds to a low
7 intake?

8 DR. VAN HORN: This may be one of
9 those again areas where, you know, we make our
10 statements regarding the evidence and, you
11 know, I don't think anyone would argue the
12 benefits of reducing sodium nationally in the
13 food supply, et cetera. But the actual steps
14 towards that and how it gets achieved over
15 what period of time, et cetera, et cetera, you
16 know, that's clearly going to require some
17 further discussion and negotiation, and
18 probably beyond the scope of this Committee.

19 DR. APPEL: Just as a plug here,
20 the Institute of Medicine report is going to
21 be coming out next Wednesday. So, that will
22 deal with a lot of the translational issues.

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1 And, I mean, we probably, you know, at that
2 point can, you know, pull sections of that
3 report into our report dealing with some of
4 the general rather than specific translational
5 issues.

6 Okay. Then I think we move onto
7 water, don't we?

8 Okay. So, what amount of water is
9 recommended for health? We prepared a draft
10 conclusion and this is one where the type of
11 evidence is very different from the evidence
12 that we have for other studies, randomized
13 trials, cohort studies. So, the draft
14 conclusion is, as I said, a bit different.
15 Based on an extensive review of evidence, an
16 IOM panel in 2004 concluded that the
17 combination of thirst and usual drinking
18 behavior, especially the consumption of fluids
19 with meals, is sufficient to maintain normal
20 hydration. However, because water needs vary
21 considerably and because there is not evidence
22 of dehydration in the general population, a

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1 minimum intake of water cannot be set. All
2 right?

3 And we decided not to apply an
4 evidence grade to this body of evidence in
5 part because, as we state in that second
6 sentence, there's no evidence of dehydration
7 in the general population. If you look at
8 serum osmolalities by decile of water intake,
9 it's flat. You don't see any evidence of
10 dehydration. And in terms of chronic disease,
11 we reviewed the literature in 2003, 2004 for
12 the DRI report, and also did literature
13 searches for studies since that report was
14 published, and really there's not much out
15 there. So, that might be a point of
16 discussion, but let's move onto the
17 implications.

18 So, first, in order to prevent
19 dehydration, water must be consumed daily.
20 Secondly, healthy individuals who have routine
21 access to fluids and who are not exposed to
22 heat stress consume adequate water to meet

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1 their needs. Third, purposeful drinking is
2 warranted for individuals who are exposed to
3 heat stress or who perform sustained vigorous
4 activity. Fourth, in view of the ongoing
5 obesity epidemic, individuals are encouraged
6 to drink water and other fluids with few or no
7 calories.

8 So, research recommendations.
9 Investigate the role of increased total fluid
10 intake as a means to chronic disease. I think
11 there's a reasonable basis for conducting
12 further epidemiologic studies for the most
13 trial, not trials, of water consumption on
14 illnesses such as bladder cancer, kidney
15 stones. There's a little bit of a signal for
16 heart disease, but it's only one study. So,
17 we kept it broad because the data at this
18 point is not very voluminous for any one
19 condition.

20 I think that's -- we could look at
21 this -- go back a slide. So, maybe we could
22 just talk about water and our approach,

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1 particularly the fact that we don't provide an
2 evidence grade, which I sense we're not going
3 to be the only ones. I believe, Shelly, your
4 group didn't have evidence grades for some
5 your conclusions. So, you know, maybe that's
6 okay. But I'm interested in hearing what
7 other people think.

8 DR. NELSON: This is Mim. But
9 isn't there evidence that we don't have a
10 dehydration problem? You know, like --

11 DR. APPEL: There is evidence.
12 Yes, there is.

13 DR. NELSON: Yes.

14 DR. APPEL: But it's a funny kind
15 of evidence. It doesn't fit any of our
16 traditional categories. You take NHANES data,
17 and this was done for the DRI report, and you
18 classify people by decile of fluid intake.
19 So, some people are consuming like less than a
20 liter, you know, half a liter. And then you
21 look at people that are consuming four of five
22 liters or more. And their serum osmolality is

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1 flat.

2

3 DR. NELSON: Yes.

4 DR. APPEL: You know, it's the
5 same. It's like, you know, 280-290, whatever
6 it is.

7 DR. NELSON: Right.

8 DR. APPEL: It's just flat.
9 Within age group and gender there are some
10 modest differences. So, that's the kind of
11 evidence, so it's not a clinical trial. It's
12 not a cohort study. And so, I mean, you could
13 give it a evidence Grade I for there is no
14 evidence of dehydration in the general
15 population.

16 Now, that would be an interesting
17 possibility. I mean, if you want to sort of
18 revise the rules on evidence grades and then
19 put just that very narrow statement, there is
20 no evidence of dehydration in the general
21 population, and then you move everything else
22 to implications. That could be an

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1 alternative.

2 DR. NELSON: It probably doesn't
3 matter. I mean, I think your conclusion and
4 your implication, you know, are sound. So, it
5 probably doesn't even matter that much.

6 DR. APPEL: Yes, where sort of
7 like this is sort of marginal technical things
8 that aren't going to have an impact.

9 DR. NELSON: Right. Clearly, we
10 don't need to be pumping water unless it's hot
11 or you're out for long exercise periods.

12 DR. APPEL: Yes.

13 DR. SLAVIN: Yes, I think it's
14 fine without the grades. I think it's good.
15 Because you're right, the data is not going to
16 fit well within the usual grading.

17 DR. APPEL: Use the framework for
18 all of our decision making to this point.

19 DR. CLEMENT: This is Roger. Do
20 you wish to make a comment on hyperhydration?

21 And I appreciate your remark that you've not
22 seen any changes in plasma osmolality or any

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1 evidence of hyponatremia, yet clearly there
2 are cases out there where too much water
3 consumption leads to intoxication,
4 hyponatremia and obviously has some
5 significant health implications.

6 DR. APPEL: You know, that's a
7 good point, Roger. There are some selected
8 circumstances and typically -- but it's in a
9 setting for not a general population though.
10 So, the ones that come to mind, and they are
11 fortunately infrequent, but they do happen,
12 are in the setting of poorly trained athletes
13 or athletes who take long periods of time to
14 complete endurance events and they develop
15 hyponatremia from over-consumption of water.
16 So, that's one group. And then the second
17 group are individuals, you know, who force
18 volume consumption like, you know, fraternity
19 hazing where that occurs. And then the third
20 group actually is psychogenic polydipsia, and
21 that's individuals who develop hyponatremia.

22 But, you know, those are obscure,

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1 and so I'm not quite sure that at least for
2 the last two we would mention it. But for
3 endurance athletes, you know, I think there's
4 both concern for under and over-hydration.
5 And I'm not quite sure if we should get into
6 that area. I don't know. I'd be interested
7 in hearing what other people think. Many
8 people think that we've over-emphasized the
9 concerns about over hydration and
10 under-emphasized the concerns about
11 dehydration in athletes. But it's an area
12 that we didn't -- I don't know, I feel a bit
13 uncomfortable, because I think is really more
14 for the general population that isn't doing
15 these endurance events -- again. But, you
16 know, what do other people think about this?

17 DR. CLEMENS: I was just thinking
18 maybe a paragraph or a couple of sentences
19 might be warranted to address it.

20 Miriam, you -

21 DR. APPEL: We actually do with --
22 -- I'm sorry to interrupt. We do actually

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1 have it in the chapter after we mention these
2 as issues, but we don't -- I think I tried, at
3 least for the implications, to draw the
4 statements that would be most relevant for the
5 general population.

6 DR. NELSON: I think just a couple
7 of sentences in the chapter is just fine.
8 Because, it is an issue, but I don't think it
9 needs to be here.

10 DR. CLEMENS: Thank you. Thank
11 you so much, Miriam.

12 DR. SLAVIN: I'm wondering; this
13 is Joanne, about just kind of the
14 misconception that people are going to lose
15 weight by drinking water. There's seems to be
16 people that over- hydrate and somehow think
17 that's going to help them. Maybe it's an
18 alternative. You know, it's like other
19 habits. And I don't think there's any data on
20 that, right?

21 DR. APPEL: Yes, I mean, I didn't
22 go into this set of questions for which there

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1 was no data, but that was one of them, what is
2 the impact of water intake on weight? And I
3 don't remember the specific results of that
4 search, but I do remember that we came up
5 pretty dry, you know, maybe one or two studies
6 that were nothing to hang your hat on. You
7 know, I'm not sure if we actually state
8 anything in the chapter per se.

9 Just, Holly, if you'd take a note
10 of that, maybe I can return to that --

11 DR. SLAVIN: Yes, if you guys --

12 DR. APPEL: -- when we headed it
13 up.

14 DR. SLAVIN: -- the fact that you
15 searched and that you've, you know, found
16 nothing would be actually useful. But make
17 sure that's documented.

18 DR. APPEL: Yes. Yes, it's an
19 important point, because it actually came up
20 in 2005, the Committee deliberated. I
21 remember that was one of the questions that
22 Committee members were interested in, the

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1 relationship between water consumption and
2 weight. And I know that for the 2003 DRI we
3 didn't find anything and with this subsequent
4 search the same issue the same result, no
5 data.

6 DR. SLAVIN: So, maybe it is worth
7 saying something so we don't have a sort of
8 publication bias.

9 DR. APPEL: Yes. Inadvertently,
10 yes.

11 DR. SLAVIN: Yes.

12 DR. APPEL: Okay. So then, well,
13 I don't know. The other groups really didn't
14 do this, but we do read our public comments
15 and there have been several comments related
16 to sodium, some dealing with sort of the
17 approach, so the voluntary gradual approach,
18 step-wise change, and then acknowledging I
19 guess the fourth sub-bullet that Roger
20 mentioned, or technical and regulatory
21 barriers as well that have to be addressed.
22 Safety issues for certain products. And other

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1 roles.

2 So, you know, to some extent I
3 think this is actually an area where the IOM
4 report will have more to say because they
5 actually had involved experts who dealt with
6 safety matters, as well as other issues like
7 taste and its role beyond taste, too.

8 Next slide. So, then there was a
9 recommendation related to sodium and
10 potassium. That's actually something our
11 Committee talked about, too. And it's a bit
12 tricky in part because it's almost like a
13 discretionary calorie-kind of thing where you
14 want to make recommendations to the general
15 population on intake of a nutrient, and ratios
16 is a very challenging type of concept to get
17 across, as well as interactions. So, and then
18 at the bottom, focus on hydration.

19 But again, I think, you know, we
20 are pretty sound advice, you know, because we
21 don't really see a problem with dehydration in
22 the general population and even in athletes.

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1 too.

2 Okay. I think that's about it
3 with our section. We have the chapter
4 finished. There's still, you know, editing to
5 be done, but I think we're in pretty good
6 shape.

7 DR. VAN HORN: I would agree.
8 Thank you, Larry. That was excellent.

9 All right. Well, I think then
10 we're ready to move on, and our next
11 presentation will be then from Roger in regard
12 to Food Safety and Technology.

13 Roger?

14 (No audible response.)

15 DR. VAN HORN: Uh-oh, we don't
16 hear you, Roger.

17 DR. CLEMENS: I had to push the
18 un-mute button.

19 DR. VAN HORN: That's a good
20 start. Okay.

21 DR. CLEMENS: Thank you so much.
22 Rafael and Naomi are a part of the team right

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1 here, and I extend my great appreciation on
2 behalf of Rafael and Naomi, of course, to
3 Kellie, Donna, Holly and Shirley, without whom
4 none of this would actually be possible.

5 To kickoff here, will be my friend
6 and colleague Rafael.

7 So, Rafael, why don't you talk to
8 us about the in-home issues and fish. Thank
9 you so much. Rafael?

10 DR. PEREZ-ESCAMILLA: Yes. Next
11 slide, please. Keep on going. Keep on going.
12 Thank you.

13 The overarching question that I
14 will be addressing today is what behaviors are
15 most likely to prevent food safety problems
16 and to what extent do U.S. consumers follow
17 these behaviors.

18 For this presentation the
19 sub-questions are organized following the
20 principles of FightBAC!®; clean, separate,
21 cook and chill. Studies were included if they
22 were published in the peer reviewed literature

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1 between 2000 and 2009, included individuals
2 two years and older, and we were interested in
3 the population at large, as well as specific
4 vulnerable subgroups that may be at higher
5 risk for foodborne illness due to their
6 compromised immunological status. The NEL
7 review also benefitted from secondary data
8 analysis of the 2006 USDA FDA CSFAN survey,
9 which stands for Consumer Food Safety and
10 Nutrition Survey.

11 Next slide, please. Next slide.

12 DR. O'CONNELL: Rafael, just one
13 second. The slide got stuck.

14 DR. PEREZ-ESCAMILLA: Okay. The
15 first set of sub-questions deals with what
16 techniques for hand sanitation are associated
17 with favorable food safety outcomes and to
18 what extent do consumers follow them. The
19 proposed conclusion regarding this is best
20 practices for hand sanitation, is that clear
21 and consistent evidence shows that hand
22 washing with plain soap for 20 to 30 seconds

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1 followed by proper hand drying is an effective
2 hand hygiene technique for preventing
3 cross-contamination during food preparation,
4 and it is Grade I. Alcohol-based, rinse-free
5 hand sanitizers are an adequate alternative
6 when proper hand washing with plain soap is
7 not possible.

8 The implications of these findings
9 are that antimicrobial soaps are not needed
10 for proper hand hygiene at home and should be
11 avoided due to possible microbial resistance
12 to antibacterials associated with their
13 long-term use.

14 The evidence for this conclusion
15 is robust as it is based on 17 studies, four
16 meta- analysis or systematic reviews, six
17 randomized controlled trials, four of which
18 are summarized in these slides and two in the
19 following slide, five quasi-experimental
20 studies and two observational prospective
21 studies.

22 With regards to hand sanitation

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1 behaviors consistent evidence shows that U.S.
2 consumers are not following proper hand
3 sanitation techniques. This conclusion is
4 based on five cross-sectional studies
5 summarized in the following slides two slides,
6 as well as secondary data analysis of the
7 CSFAN survey. With regards to hand
8 sanitation, here research recommendations
9 involve better understanding, how to persuade
10 consumers to follow recommended hand
11 sanitation behaviors.

12 From hand sanitation, we will now
13 move into the topic of what techniques for
14 fresh produce washing are associated with
15 favorable food safety outcomes and to what
16 extent do U.S. consumers follow them.

17 With regards to best practices,
18 evidence based on a limited number of studies
19 has shown that proper washing of vegetables
20 and fruit at home or under laboratory
21 simulation conditions to be associated with
22 reduced microbial loads. This evidence is

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1 derived from one cross-sectional study, one
2 pre/post- home-based study and one laboratory
3 simulation study. And this is the slide that
4 summarizes those studies.

5 We can go to the next, please.
6 With regards to consumer produce washing
7 techniques, the Committee concludes that
8 limited evidence shows that U.S. consumers are
9 not following proper produce washing
10 techniques. This conclusion is derived from
11 two cross-sectional studies and also
12 benefitted from analysis of the CSFAN survey.

13 The Committee identified a clear
14 need to further examine the link between
15 different washing techniques in the home
16 kitchen and microbial and pesticide loads in
17 diverse food products.

18 I will now move onto the last of
19 the clean questions, which is to what extent
20 do U.S. consumers clean their refrigerators
21 following current guidelines.

22 The Committee's conclusion is that

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1 consistent evidence shows that U.S. consumers
2 do not clean their refrigerators following
3 current guidelines. The evidence for this
4 conclusion comes from the four cross-sectional
5 studies summarized in the following slide.

6 I will now start addressing the
7 three questions as to what techniques for
8 cross- contamination prevention are associated
9 with favorable food safety outcomes and how
10 much are they followed by consumers in the
11 U.S.

12 With regards to best practices to
13 prevent cross-contamination, consistent
14 evidence indicates that preventing
15 cross-contamination in the home kitchen may
16 reduce exposure to foodborne pathogens among
17 U.S. consumers.

18 This conclusion is drawn from 13
19 studies including systematic reviews,
20 comprehensive risk analysis, laboratory
21 simulation studies, observational studies
22 including a case- controlled study and a

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1 randomized controlled trial.

2 The Committee identified key
3 future needs in this area, including
4 understand if and how home kitchen microbial
5 cross-contamination during food preparation
6 translates to actual risk for foodborne
7 illness and further, examine the application
8 of HACCP principles to prevent
9 cross-contamination during food preparation in
10 the home kitchen.

11 I will now present the section on
12 temperature control which is divided into food
13 thermometers and refrigerator/freezer
14 thermometers.

15 With regard to food thermometers,
16 the Committee concludes that consistent
17 evidence shows that the great majority of U.S.
18 consumers do not use food thermometers to
19 properly assess internal cooking temperatures
20 of meats while cooking.

21 With regards to
22 refrigerator/freezer thermometers, the

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1 Committee concludes that consistent evidence
2 shows that U.S. consumers lack refrigerator
3 and freezer thermometers in their homes.
4 Whereas the food thermometer conclusion is
5 derived from one systematic review and six
6 cross-sectional studies summarized in this and
7 the following slide, the evidence for that
8 conclusion on refrigerator/freezer
9 thermometers is drawn from analysis of the
10 CSFAN survey, as well as to cross-sectional
11 studies.

12 Next slide, please. Although not
13 a formal FightBAC!® step, the 2005 Dietary
14 Guidelines Advisory Committee report
15 identified consumption of risky foods such as
16 raw or undercooked animal-source products as a
17 consumer behavior that should be discouraged.

18 The Committee concurs with these
19 recommendations and does so to find out to
20 what extent do U.S. consumers ingest raw or
21 undercooked animal-source food products.

22 The conclusion reached by the

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1 Committee is that clear and consistent
2 evidence shows that the consumption of raw or
3 undercooked animal- source food products is
4 common in the U.S., especially for eggs and
5 egg-containing products. And I would like to
6 add, to some extent ground beef products as
7 well, including hamburgers and meatloaf.

8 This conclusion is arrived from
9 eight studies, one meta-analysis, one
10 systematic review and six cross-sectional
11 studies.

12 There are serious food safety
13 hazards associated with consumption of raw or
14 undercooked animal-source products such as
15 salmonella present in raw/undercooked eggs, E.
16 coli in undercooked beef and Vibrio vulnificus
17 and parahaemolyticus in raw oysters. In
18 addition, even though the incidence of
19 foodborne illness outbreaks reported from
20 consumption of raw/undercooked seafood are
21 relatively less common, the morbidity
22 associated with each case can be extremely

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1 severe and potentially fatal.

2 The Committee recommends for a
3 better quantification and characterization of
4 the risks associated with the consumption of
5 raw or undercooked animal-source products.
6 This work can lead to better risk
7 communication when educating consumers about
8 the health risks associated with these
9 behaviors.

10 With regards to vulnerable
11 populations, including pregnant women, older
12 adults and college students that are
13 vulnerable in other respects, the Committee
14 found that all of these groups practice unsafe
15 food handling and consumption behaviors, and
16 that really the lack of adequate food safety
17 practices is a problem is across the life
18 cycle.

19 To conclude, the Committee
20 recommends for the following overarching
21 research needs to better guide food safety
22 consumer education in the U.S.: First,

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1 improve the validity of self-reported food
2 safety behaviors. And this issue is huge,
3 especially for behaviors related to hygiene,
4 personal hygiene, and also hygiene and
5 cleaning of the kitchen during food
6 preparation because of the strong potential
7 social desirability bias associated with
8 self-reported behaviors.

9 Secondly, understand how to
10 improve consumer's food safety knowledge,
11 attitudes, self-efficacy, internal locus of
12 control and ultimately behaviors. As I
13 reported at the last meeting, a lot of the
14 consumers don't believe that their home
15 kitchens are likely to be sources for
16 foodborne illness outbreaks. And furthermore,
17 a large proportion of consumers feel that it
18 is beyond their control and it is just within
19 the hands of government and industry to
20 protect them against the foodborne illnesses.
21 So, we really need to use better focused
22 behavior-based approaches to improve food

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1 safety behaviors and this requires further
2 research in diverse populations.

3 Thirdly, improve monitoring and
4 surveillance to better understand the
5 epidemiology of home-based foodborne illness
6 outbreaks. Our colleagues at the CDC are
7 kindly currently helping us to try to get a
8 better assessment of the proportion of
9 home-based foodborne illness outbreaks in the
10 U.S. As you can imagine, it is not an easy
11 task and a very, very large percent of
12 home-based foodborne illness outbreaks get
13 under-reported when they just affect a few
14 people and not a congregation of people.

15 And lastly, it is important to
16 examine the application of HACCP principles at
17 the household level so that we can better
18 educate consumers as to how improve their food
19 safety behaviors while they are preparing
20 different dishes, recipes and so on in their
21 households.

22 So with this, I'm going to end the

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1 in-home presentation and I'm open for any
2 questions that you may have.

3 DR. VAN HORN: Excellent job,
4 Rafael.

5 Any comments from the group?

6 DR. APPEL: Yes, this is Larry.
7 Yes, Rafael, this was great. I always learn a
8 lot from these food safety presentations.

9 I'm not quite sure it's a research
10 recommendation, but I really think there needs
11 to be some very creative and novel approaches
12 to teaching the population food safety. You
13 know, I was just thinking as you presented,
14 like how do you get this information to the
15 population? And I didn't see that as actually
16 a research question, like, you know, have
17 there been strategies that effectively test or
18 that effectively disseminate these really
19 important food safety principles? Maybe you
20 could add that to your research
21 recommendations and maybe, you know, CDC or
22 some group would come up with a funding

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1 initiative.

2 DR. PEREZ-ESCAMILLA: Absolutely,
3 Larry. And it is very important, because
4 there are very big initiatives that have
5 invested a good amount of resources including
6 FightBAC!®, Thermy™ and a number of USDA food
7 safety education initiatives as well. But as
8 far as I know, they have not been evaluated in
9 a way to give us a good idea of how effective
10 they have been at changing food behaviors.

11 DR. APPEL: And it might involve
12 creative use of health information
13 technologies.

14 DR. PEREZ-ESCAMILLA: Yes.

15 DR. APPEL: You know, Twitter, you
16 know, just mass broadcasts to people, because
17 I think a lot of people are cooking now who
18 never were taught how to cook, not just what
19 they eat, but how to cook.

20 DR. PEREZ-ESCAMILLA: Yes, your
21 point is well-taken and will be included,
22 Larry. Thank you very much.

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1 DR. PEARSON: Rafael, this is no
2 longer part of a secondary education
3 curriculum, is it? I mean, is there any, you
4 know, high schools at all that teach this
5 anymore. I mean, when I went to school, we
6 learned about this, you know, as part of
7 health things, but that's all gone, I'd
8 imagine.

9 DR. PEREZ-ESCAMILLA: Yes, as
10 Miriam brought up at the last meeting, you
11 know, the return of cooking lessons for kids
12 in the schools I think is something that we
13 need to do to improve their ability to choose
14 better foods and so on. And as part of that,
15 food safety education should be a very
16 important component.

17 DR. PEARSON: I mean, part of this
18 is the degradation of our cooperative
19 extension services. You know, with funding
20 cuts, this has been one of the casualties, I'm
21 afraid.

22 DR. PEREZ-ESCAMILLA: And it's a

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1 problem, but also the very, very strong
2 emphasis on reading and math curriculums in
3 the schools when there is no time even for
4 recess anymore or for kids to wash their
5 hands.

6 DR. PEARSON: You can't do math if
7 you're sick.

8 DR. NELSON: This is Miriam.
9 Rafael, maybe this is beyond the purview of
10 this Committee, but I'm assuming we're not
11 going to deal at all with some of the issues
12 about food safety with the food supply and,
13 you know, the sort of homogenization of, you
14 know, it all coming together and not knowing
15 where it's coming from, et cetera, et cetera?

16 DR. PEREZ-ESCAMILLA: Except for
17 fish.

18 DR. NELSON: Okay. Except for
19 fish.

20 DR. PEREZ-ESCAMILLA: The fish
21 we're doing a fairly reasonable job.

22 DR. NELSON: Okay.

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1 DR. PEREZ-ESCAMILLA: But you're
2 right, it's very --

3 DR. NELSON: That any given
4 hamburger will have, you know, 1,000 cows in
5 it and things like that.

6 DR. PEREZ-ESCAMILLA: Yes.

7 DR. CLEMENS: This is Roger. Good
8 point, Miriam. It was a deliberate position
9 that we took to focus on the home except for
10 fish or in seafood.

11 DR. NELSON: Okay. Yes, that's
12 reasonable. I think we should just make sure
13 that we're stating we're not dealing with that
14 other issue.

15 DR. CLEMENS: That's right. Good
16 point.

17 Okay. Rafael, let's go onto one
18 of our favorite topics here, seafood.

19 DR. PEREZ-ESCAMILLA: Yes, I'm
20 getting hungry now. Okay.

21 DR. CLEMENS: It's almost lunch
22 time where I am.

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1 DR. PEREZ-ESCAMILLA: So, the
2 question that I will be addressing now is what
3 are the benefits in relationship to the risks
4 for seafood consumption.

5 Following the IOM recommendation,
6 the Committee defined seafood as
7 consumer-obtained fish, shellfish and
8 mollusks coming from marine and fresh water
9 sources. And I think that it should be
10 commercially-obtained fish, shellfish, et
11 cetera.

12 In 2004, EPA and FDA jointly
13 issued a fish advisory targeting women of
14 reproductive age and young children based on
15 the potential adverse consequences of methyl
16 mercury exposure on the fetus and child's
17 neurological development. This advisory set
18 weekly limits for seafood consumption and
19 specifically advised the target individuals to
20 avoid the consumption of large predatory fish,
21 limit the consumption of albacore or white
22 tuna and call for consumers to pay attention

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1 to local advisories for locally-caught
2 freshwater fish.

3 As stated at the last public
4 meeting, the question regarding benefit/risk
5 ratios needs to be revisited as there are
6 uncertainties about risks previously assumed.

7 There are no existing recommendations for
8 groups not targeted by the 2004 advisory. And
9 most importantly, the public at large is
10 confused, and this includes consumers and also
11 OB/GENS and other health care providers.

12 The evidence was based on studies
13 published between 2007 and 2009, with the
14 exception of the seminal work by Mozaffarian
15 and Rimm that was identified via a hand review
16 of references from included citations.

17 The Committee conclusion is that
18 consistent evidence shows that health benefits
19 derived from the consumption of a variety of
20 cooked seafood in the U.S. in amounts
21 recommended by the Committee outweigh the
22 risks associated with methyl mercury and

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1 persistent organic pollutant exposure, even
2 among vulnerable populations defined as women
3 of reproductive age who are pregnant or
4 nursing, and children ages 12 and younger.

5 Overall, consumers can safely eat
6 up to 12 ounces of a variety of cooked seafood
7 per week, provided that they pay attention to
8 local seafood advisories and limit their
9 intake of large predatory ocean fish.
10 Furthermore, the Committee reaffirms that
11 women of reproductive age who are pregnant or
12 nursing and children ages 12 and younger
13 should avoid large predatory fish.

14 The implications of the Committee
15 findings are that seafood is a healthy food
16 choice that can be safely promoted provided
17 that the types and sources of seafood to be
18 avoided are clearly communicated to consumers.

19 The conclusion is supported by
20 quantitative and qualitative benefit/risk
21 assessments, some of which took only into
22 account risks associated with methyl mercury

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1 for heart disease among adults and child's
2 neurological development. Others took into
3 account cancer risks associated with exposure
4 to POPs and others took into account risks
5 associated with both POPs or persistent
6 organic pollutants and methyl mercury
7 exposure.

8 From the benefit side, most
9 analysis took into account the cardiovascular
10 benefits and neurological development benefits
11 associated with consumption of omega-3 PUFAs
12 found in seafood.

13 This slide summarizes three
14 quantitative benefit/risk analysis that I
15 presented at the last public meeting, so I
16 will not dwell much into them. I do want to
17 emphasize, however, that with regards to
18 methyl mercury the analysis by Ginsberg and
19 Toal with 16 seafood species available in
20 Connecticut found that consumers can indeed
21 consume as much as six ounces per day for
22 about half of the fishes analyzed without

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1 exceeding upper tolerable limits of methyl
2 mercury exposure. So, it is very likely that
3 consumers can obtain the omega-3 PUFAs that
4 they need without exceeding the methyl mercury
5 upper tolerable levels provided they choose
6 the right kinds of seafood.

7 Also, as previously discussed, the
8 analysis by Mozaffarian and Rimm finds a very
9 favorable benefit/risk ratio for salmon
10 consumption, either farmed or wild, after
11 taking into account potential cancer risks
12 associated with POPs exposure.

13 Regarding the concern of higher
14 POPs levels in farmed versus wild fish, the
15 Committee found that in general consumers in
16 North America can consume the levels of
17 omega-3 PUFAs needed without exceeding the
18 upper tolerable levels of either POPs or
19 methyl mercury intakes. Indeed, the
20 benefit/risk analyses by Gochfeld and Burger
21 based on fish available in New Jersey document
22 that the benefit threshold for

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1 neurodevelopmental and cardiovascular disease
2 outcomes appear to be at seafood intakes below
3 the harm threshold associated with methyl
4 mercury consumption. And although I did not
5 find data with regard to POPs, it is possible
6 that a similar finding would be obtained.

7 As the Fatty Acid Subcommittee
8 reported yesterday, a sensitivity analysis was
9 done to model the impact on nutrient adequacy
10 of four ounces per week of seafoods high in
11 omega-3 PUFAs, eight ounces per week of
12 seafood with both high and low levels of
13 omega-3 PUFAs, and 12 ounces per week of
14 seafood low in omega-3 PUFAs.

15 The last part of my presentation
16 will be on the work to report on an
17 exploratory analysis led by Kellie O'Connell
18 from CNPP USDA to examine if there are
19 potential concerns regarding the use of
20 seafood fishes high in methyl mercury in the
21 USDA seafood patterns.

22 The conclusion is that amounts of

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1 seafood in USDA Patterns do not raise evident
2 potential concerns for the 11 possibly
3 problematic seafood varieties identified in
4 our literature review that are relatively high
5 in methyl mercury content. Of the 11 seafood
6 species for, that is, shark, king mackerel,
7 tilefish, yellow fish, yellowfin tuna and
8 Atlantic cod are not in the pattern. Sea
9 bass, white tuna, light tuna, lobster and
10 halibut are in the pattern, but at amounts
11 substantially below the levels of potential
12 concern. For swordfish where any level could
13 potentially be of concern, the level among the
14 three scenarios that were simulated are
15 minimal, ranging from zero to 0.04 ounces per
16 week.

17 In terms of research needs, the
18 Committee recommends to conduct consumer risk
19 communication research to determine how best
20 to translate these seafood benefit/risk
21 findings to the public.

22 The Committee also recommends to

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1 conduct further research to further refine
2 seafood intake recommendations for U.S.
3 consumers by simulating the presence of more
4 beneficial and detrimental compounds that are
5 as we know simultaneously present in seafood.

6 And also, it is very important that the
7 country improves current seafood consumption
8 surveillance and monitoring, and especially we
9 are concerned about the monitoring of the food
10 safety of seafood produced via aquaculture.
11 As it was presented yesterday by the Fatty
12 Acid Subcommittee, a very large proportion of
13 the fish and seafood that we're consuming
14 these days and times is already coming from
15 seafood farms, and it is important that the
16 monitoring of the whole chain including the
17 feeding that the fish and other seafood get,
18 the quality of the water in which they're
19 grown in the farm, and also what happens
20 during the transportation of these products
21 gets properly monitored. So it is not only an
22 issue of having sustainable aquaculture, but

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1 also an issue of having aquaculture that is
2 safe for U.S. consumers.

3 Thank you, and I am open for
4 questions.

5 DR. CLEMENS: Nice work. This is
6 Rog. Nice work, Rafael. I appreciate your
7 closing remarks in particular as we look at
8 aquaculture. I know that has been quite a
9 controversial issue. This issue will be
10 discussed in a little bit more detail as we
11 know in the chapter on Food Safety and
12 Technology. I think the numbers are as much
13 as 84 percent of our import fish is through
14 aquaculture, so monitoring is going to be
15 really critical. I know that the National
16 Oceanographic Association, NOAA, is actually
17 increasing its monitoring capabilities and has
18 a very active and aggressive program to do
19 just that. So, it's quite an exciting time in
20 which we live so we can provide a very safe
21 and abundant food supply through aquaculture.

22 Any other remarks?

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1 DR. PEARSON: This is Tom Pearson.
2 Rafael, has there been any studies on the
3 messaging on large predatory fish, how that's
4 actually understood and followed? The
5 recommendations have been around for a while.
6 Obviously very highly-educated groups are
7 probably are doing all right with that, but
8 how about some of the others?

9 DR. PEREZ-ESCAMILLA: Yes, large
10 predatory fish is not consumed in large
11 quantities in the U.S., but I can say that the
12 overall impact of the federal advisory, the
13 2004 EPA/FDA Federal Advisory, was to reduce
14 the consumption of fish and other seafood
15 among pregnant women to a point, where as
16 Roger has reported before, OB/GYNs tend to
17 recommend women not to consume any seafood at
18 all.

19 DR. PEARSON: At all. Yes, that's
20 the problem. That's the point, that there's a
21 two-edged sword here.

22 DR. PEREZ-ESCAMILLA: Yes.

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1 DR. PEARSON: One obviously is not
2 to consume the predatory fish, or to be
3 confused and still eat predatory fish. And
4 the other edge is not to eat any fish at all.

5 DR. PEREZ-ESCAMILLA: Right. So I
6 think that the risk communication research is
7 not there.

8 DR. PEARSON: Right.

9 DR. PEREZ-ESCAMILLA: I think we
10 need to do a much better job. And also
11 regarding Christine's question from yesterday,
12 we know that, you know, women also have the
13 option of consuming the omega-3 PUFAs in the
14 form of fish oil supplements. And I think
15 that at the end of the day my take on this
16 right now is that it should be a decision
17 between the mom-to-be and her health care
18 provider, but it must be an informed decision
19 that is grounded on an adequate assessment of
20 benefit and risk.

21 DR. PEARSON: Thank you.

22 DR. RIMM: This is Eric. Is there

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1 actually something that we could put in there
2 that says -- maybe you did comment on it,
3 saying that on average 94 percent of the fish
4 consumed in this country, you know, is not an
5 issue?

6 DR. PEREZ-ESCAMILLA: Yes, and I
7 think that's where we're heading with the
8 wonderful data that was analyzed. The
9 wonderful job that Kellie O'Connell did
10 analyzing the data from the USDA Food
11 Patterns.

12 DR. RIMM: Great. Because, I
13 mean, this was a great presentation, but I
14 think you're exactly right, and it was brought
15 up yesterday that most obstetricians just tell
16 their patients to take an omega-3 supplement
17 because of you just never know. But I just
18 think that that's the wrong message because
19 we'd like to be focusing on the whole food and
20 the protein package in addition to the omega-3
21 fatty acids.

22 DR. PEREZ-ESCAMILLA: Yes.

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1 DR. CLEMENS: Right.

2 DR. VAN HORN: Yes, I would just
3 like to reiterate that. This is Linda. And,
4 you know, again along the line of having a
5 consistent message where we're talking about
6 the benefits of omega-3, we can't then say but
7 don't eat fish, you know? So, I think that's
8 valuable.

9 The other thing, as we discussed
10 last time, and maybe, Roger, you're going to
11 raise this again now, would be the whole
12 emphasis on improving the standards within
13 aquaculture because of the presentation that
14 we had last time that clearly indicated that
15 in order to keep up with America's potential
16 increased interest in consuming fish, we hope,
17 you know, the only way that's going to be
18 accommodated is if we have additional
19 production and availability, and aquaculture
20 becomes, again, front and center as the
21 logical transition to that. But of course,
22 maintaining safety throughout that effort

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1 would be a high priority.

2 DR. CLEMENS: That's an excellent
3 remark, Linda. Thank you so much. We know
4 that the National Oceanic and Atmospheric
5 Administration, NOAA, is actually primarily
6 responsible for the aquaculture movement in
7 this country. And they have new re-
8 insurgence, if you will, to look at overseeing
9 aquaculture production, whether it be for a
10 food supply or for a medication. So it's
11 quite exciting to see what's going on there.
12 Hopefully we'll get some of the tidbits of the
13 conference that's been held as we speak today
14 so that we can incorporate it into our chapter
15 on Food Safety and Technology.

16 DR. VAN HORN: That's great.

17 DR. FUKAGAWA: This is Naomi. The
18 other consideration is that as our economy
19 becomes more global, we do have to be
20 cognizant of aquaculture that may be occurring
21 elsewhere for which we may not be able to
22 monitor as well.

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1 DR. CLEMENS: Yes, that's an
2 excellent comment, Naomi, and my experience is
3 that in fact some of the products we're
4 monitoring we see that the antibiotic levels
5 exceed the standards we have here in the
6 United States. So to your excellent comment,
7 we clearly need to be more diligent in our
8 monitoring process.

9 DR. NELSON: And this is Mim. I
10 think as we have it right now in the
11 integration and translation chapter, this is a
12 piece of it that we think is important.

13 DR. CLEMENS: Excellent. Thank
14 you, Mim.

15 DR. PEREZ-ESCAMILLA: I think with
16 regards to Naomi's excellent comment, in
17 general the food safety monitoring and
18 surveillance system in the U.S. with regards
19 to products that are coming from abroad is
20 very reactive.

21 DR. FUKAGAWA: Right.

22 DR. PEREZ-ESCAMILLA: If something

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1 really bad happens, then we take action and we
2 work with the countries to set up better ways
3 of monitoring the standards before the
4 products leave the countries. And I think the
5 conclusion from the 2006 IOM Food Safety
6 Report was for the system to become much more
7 proactive so that we can prevent a lot of
8 outbreaks before they happen. And I think
9 that's a challenge that we have been
10 discussing and the recent efforts by the
11 current administration to improve food safety
12 monitoring and surveillance.

13 DR. CLEMENS: That's right. You
14 know, and that's actually incorporated in two
15 bills that are on the Hill as we speak.

16 Okay. So let's move onto
17 technology so we can get the last two
18 chapters. And thank you very much, Kellie,
19 for moving that on.

20 There are three basic questions we
21 asked in terms of in-home technologies.
22 Obviously, here it says to what extent are

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1 recently developed technology materials
2 designed to improve food safety as designed.
3 The comments on food safety are indicated down
4 below, which they're designed to improve food
5 safety. And effective.

6 Well, let's look at the data. And
7 fortunately, it's Grade III. There isn't very
8 much in the public scientific literature to
9 examine the various technologies that could be
10 available or should be available in the home
11 level. But most of these technologies are
12 applied in the commercial level.

13 So we were able to find three
14 studies, and they're identified here in front
15 of you. And they examined two excellent
16 comments made by Rafael already relative to
17 home thermometers. Then we looked at
18 antibacterial products. Again, Rafael
19 addressed that in terms of hand washing, and
20 we also included a study to address wipes and
21 food contact surfaces and various sanitizers
22 you might find in a home today.

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1 We looked at how those studies
2 indicated that the consumers are actually
3 using these kinds of products. Were they
4 following manufacturing instructions? Were
5 they using thermometers correctly? And do the
6 proper usage of those products actually
7 decrease potential microbial burden in the
8 protected products?

9 Not all thermometers were tested,
10 of course, not all wipes were assessed and not
11 all sanitizers could be, but those that were
12 they in fact provided in most cases that
13 provided correct cook information. And also
14 there's always a potential of course of
15 overcooking and undercooking a product, the
16 point that Rafael brought out in his remarks.
17 So obviously the bottom line, we need to
18 assure using these types of technologies to
19 assure that we actually have a safe food
20 supply in the home against foodborne diseases.

21 Next. So we looked at the
22 evidence that was available. We had seven

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1 studies to look at consumer technologies,
2 cleaning surface materials, cutting boards and
3 sanitizers used in the home. There are a
4 number of studies, but you see here by this
5 graphic there weren't very many studies in
6 each one of these very important topics.

7 Next. Those topics and studies
8 were summarized in this block, cross-sectional
9 studies. You see the youthfulness of these
10 kinds of studies. They're really fresh out of
11 the block. We clearly need to have more
12 studies to corroborate various settings.

13 Next. And, again, two more
14 studies indicated here relative to cutting
15 boards and food contact surfaces. You just
16 can't wipe down a surface and hope that it's
17 wiped clean.

18 Next. Well, here are some
19 additional studies indicated here. What type
20 of technology is available? Again, in this
21 particular case they're looking at studies of
22 the impact of pH as acidity, even using a salt

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1 solution, the brining, that's one of Larry's
2 favorite topics. And you will see what will
3 happen in terms of microbial loads. And we
4 have other opportunities looking at Salmonella
5 typhimurium, which was an indicator of
6 contamination. In this case it was used
7 because it's very commonly found in vegetables
8 such as onion and arugula we might have in our
9 daily salads.

10 Next. And then we looked at to
11 what extent technologies are being used to
12 effectively improve the shelf life of foods.
13 Unfortunately, again we don't have enough peer
14 reviewed literature, as in none. So clearly
15 this is an indicator, an opportunity for us to
16 examine what technologies can be improved or
17 added to food products or environments of food
18 products that in fact we can prolong the shelf
19 stability of the foods that you and I consume.

20 Therefore, we don't have a conclusion to
21 offer. But it will be addressed in the
22 chapter that Rafael and I and the entire food

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1 safety team are putting together.

2 And the last comment here --
3 Kellie, next slide. Yes. And which recently
4 developed effective technology standards in
5 fact are accessible, cost-effective and
6 acceptable to recommend to various consumers?

7 Again, none was located in the peer review
8 literature. And we're trying to pull out some
9 data relative to cost for thermometers, but
10 other than those data we don't have sufficient
11 information to draw a conclusion to assist the
12 various consumers.

13 So at the end of the day, we have
14 information on hand wipes, we have limited
15 information on food contact surface material
16 and it really shows that other than
17 thermometers and the washing material that
18 Rafael -- to which he referred, that you
19 really don't have a lot of scientific
20 information to support the next level of
21 technology that could be applied to foods in
22 the home so that we can actually provide a

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1 food-safe environment in the home.

2 And next. What we have in food
3 safety technology. By the way, this was a
4 really great effort by Rafael and Naomi, as
5 well as the great team of Kellie, Donna, Holly
6 and Shirley. Thank you so much for your
7 terrific effort.

8 And this also shows that food
9 safety has become quite an issue across
10 America and around the world. It's time that
11 we invest more information and more research
12 into this area of food safety in the home, as
13 well as the commercial environment.

14 Thank you so much. Comments?

15 (No audible response.)

16 DR. CLEMENS: None.

17 DR. VAN HORN: I think you wowed
18 the crowd. Let's put it that way.

19 DR. CLEMENS: Yes, right. We're
20 all going to go home and be sure that we're
21 wiping down our counters and be sure we're
22 washing our hands, and use the thermometers

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1 correctly.

2 DR. RIMM: Well, Roger, some of
3 the issues are that because there were -- this
4 is Eric -- that because lots of technologies
5 are used before we get the foods home, we
6 don't need them at home. Isn't that true?
7 You know, I guess, I don't know, radiating
8 beef or -- irradiating beef or other factors
9 that, you know, because the food is safe
10 before we get it home, we don't need it?

11 DR. CLEMENS: Well, I think
12 that's --

13 DR. RIMM: That's just stating the
14 obvious. I don't know.

15 DR. CLEMENS: Yes, you raise a
16 very good point, Eric. I think there is that
17 assumption. And as we both know, the comments
18 made by Rafael this morning, that in fact we
19 cannot always assume that.

20 DR. RIMM: Right.

21 DR. CLEMENS: And with the new
22 regulations and the new technologies and new

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1 enforcement technologies, it's still up to the
2 consumer to remain diligent. So obviously we
3 have to be careful. When in doubt, throw it
4 out. As the comments say, if there's
5 something in the refrigerator that doesn't
6 smell good, it probably isn't good.

7 So we still have to practice the
8 same type of procedures that the food industry
9 practices in the production facility. If you
10 look at the last remark made by Rafael, he
11 mentions in his closing remarks about HACCP.
12 That's applicable whether in the food industry
13 or any industry that in fact you need to
14 understand the various critical control points
15 in the home. Where in fact where
16 contamination can occur, it very much could
17 occur.

18 So when you use an instrument
19 once, you need to put it in the wash bag or
20 put it in the basin for dirty dishes. You
21 just can't overuse and then go from one
22 product, say fruits and vegetables and use the

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1 same knife for chicken, then go back and cut
2 up your vegetables. That clearly is a
3 compromise in separation. So we need to stick
4 with the basic principles of chilling and
5 obviously food separation and cleanliness.

6 DR. PEARSON: Roger, is there any
7 evidence whatsoever that this is done on a
8 secondary prevention basis? In other words,
9 after you've gotten the person through their
10 Salmonella attack, is there any evidence that
11 they're actually instructed at that time about
12 how to do it better so they don't come back
13 next week?

14 DR. CLEMENS: That's an excellent
15 comment, Tom. To the best of my knowledge the
16 answer is no.

17 DR. PEARSON: Well, I'll bet it's
18 no.

19
20 DR. CLEMENS: Yes, and that's just
21 really an excellent -- I know that the USDA
22 has some terrific educational programs. I

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1 know Rafael mentioned several of them in his
2 remarks. But the answer is no. I think most
3 attending in the ER, for example, Tom, that I
4 don't think they get any instruction on how to
5 better manage their home.

6 DR. PEARSON: Yes, and it's a good
7 interface between HHS and Department of
8 Agriculture, but, you know, getting some of
9 those materials out to health care providers,
10 particularly if it's a reportable disease,
11 which many of these are.

12 DR. CLEMENS: And they are indeed.
13 It's really interesting that the USDA -- they
14 want to be updated and they have software
15 ready to be updated. So, if there's an
16 entrepreneur out there that can actually work
17 with the USDA. They can update the materials
18 so that we can better educate the consumer.

19 Well speaking about educating
20 consumers, what a great segue, we want to talk
21 about dietary patterns, so I'll toss it over
22 now to Larry Appel and his team.

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1 DR. FUKAGAWA: Before you move on
2 though, I think one important thing that Tom
3 had brought up was the, you know, declining
4 use and support of the extension services.
5 Because in many ways our country could
6 potentially benefit from a health extension.

7 DR. PEARSON: Amen.

8 DR. FUKAGAWA: Yes.

9 DR. CLEMENS: Amen to that, your
10 excellent comment. And I know my friends at
11 Cornell, that's what they do. They talk about
12 food safety all the time. And with the
13 extension services being cut back, we're going
14 to have less interface with the consumers.

15 DR. VAN HORN: Well, Vermont wants
16 to do it.

17 DR. RIMM: Well, Roger, can I ask
18 one other thing? Again, this is my naivete
19 when it comes to food safety, like most of us.

20 It's all sort of anecdotally-based. But I
21 heard several times that using existing
22 technology such as the microwave to kill

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1 certain things before, you know, cooking them
2 or not -- you know, just to be sure that if
3 you don't cook them to the right amount of
4 time that sticking something in the microwave
5 is effective. Is that just pure anecdotal, or
6 is there any evidence to suggest that that
7 should be something that's discussed?

8 DR. CLEMENS: We did not discuss
9 it. I don't recall doing that. Thank you for
10 that remark. The home microwave was not
11 intended to eliminate foodborne illness. The
12 microwave at home is intended to cook.

13 DR. RIMM: Yes, well, that's true.
14 But is it effective? If you put something in
15 there for 30 seconds, does it actually -- it's
16 not 100 percent effective?

17 DR. CLEMENS: Well, the literature
18 would say that most people use the microwave
19 to warm, not to cook. There are data out
20 there that say, Eric, in effect if you don't
21 follow instructions by the manufacturer, well,
22 now you actually could increase your risk for

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1 an issue because it will not adequately cook
2 the material. So, that's the undercooked
3 issue that Rafael brings up. You need to
4 follow instructions.

5 DR. VAN HORN: All right. Well,
6 with that excellent comment, and thank you,
7 Roger and Rafael and Eric, and everyone, in
8 regard to the food safety. We really
9 appreciate all the work that everyone did and
10 we look forward to the chapter that will bring
11 all of these important issues together.

12 We're now ready to move into the
13 final phase of our webinar. And before I turn
14 it over to Larry, I just would like to provide
15 a little bit of an introduction to what's
16 going to happen next, in that we are planning
17 to have two additional chapters in this
18 report, one of which will be called the Total
19 Diet Chapter. And this aspect, dietary
20 patterns, will be front and center as a part
21 of that in regard to what we discussed
22 earlier. In other words, how does one

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1 actually take all this information and put it
2 into a reasonable eating approach, eating
3 pattern that involves all the various foods
4 and food groups and yet still meets nutrient
5 adequacy, as well as not exceeding caloric
6 needs.

7 And so we're going to be launching
8 that discussion now. It's a work in progress.

9 The individuals that you see identified as
10 Committee members are clearly people who have
11 been leading the other chapters, and we hope
12 will have specific and succinct contributions
13 for this report on the basis of the work that
14 was done as far as developing their own
15 respective chapters.

16 In addition, we will then also
17 hear from Naomi and Mim, who are leading the
18 Translational and Integration Chapter, another
19 new chapter for this report that we hope will
20 address some of the other very important and
21 relevant aspects of developing those eating
22 patterns and implementing them on the basis of

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1 the environmental issues and looking for
2 additional effort and support, as well as
3 research to look not only at food and
4 nutrients, but how people need to actually go
5 about choosing them, cooking them, eating them
6 and meeting all these nutrient requirements.

7 So with that by way of
8 introduction, Larry, are you ready to go into
9 --

10 DR. APPEL: Ready to roll. So,
11 yes, once again, this has been a team effort
12 and it's really been incredibly stimulating,
13 and I thank everybody on this list on this
14 slide and a lot of other people, too. We're
15 treading in territory that hasn't occurred
16 before, trying to understand the effect of
17 dietary patterns, synthesize the evidence and
18 present it.

19 So here are some of the topics
20 we're going to cover. The selection of
21 dietary patterns, the description of those
22 dietary patterns, the health benefits and

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1 issues for discussion.

2 So, next slide. So our first
3 research question is what is the effect of
4 different dietary patterns including DASH
5 dietary patterns; the Mediterranean diet,
6 which probably should be plural; vegetarian
7 diet, again plural; Okinawan diet, probably
8 plural, on blood pressure in adults.

9 Next slide. So right now this
10 should probably be labeled draft conclusion,
11 too, but the impression we have at this point
12 is that we can state that several distinct
13 dietary patterns lower blood pressure.

14 Next slide. So there were NEL
15 searches. And since this is a new question,
16 we didn't have a date range included for this
17 one on adults. Mostly trials, but also some
18 cohort studies. Excluded people with chronic
19 disease whose main outcome was blood pressure.

20 And the search strategies listed.

21 Next slide. So there were 21
22 studies that were included; 16 randomized

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1 trial, five prospective studies. And the
2 types of studies that were identified in part,
3 this is -- you know, because we also had these
4 as search criteria, were Mediterranean diet,
5 DASH diet, vegetarian diet and other or mixed.

6 Next. So this is a summary slide
7 of what was found. A lot of interest in DASH,
8 and several of these were randomized trials.
9 Twelve were deemed of positive quality. Two
10 were neutral. And the overwhelming majority;
11 13 for systolic, 11 of 14 for diastolic,
12 documented reductions in blood pressure.

13 Mediterranean diet. And there
14 actually hasn't been as much work, and that
15 was my impression beforehand and that was sort
16 of verified by the search.

17 And for vegetarian, actually
18 they're interesting. It's mostly randomized
19 trials, several small studies. There might be
20 an observational study that wasn't included,
21 but basically there's a reasonable body of
22 evidence that vegetarian-style diets are

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1 associated with lower blood pressure, and
2 similar for these other mixed patterns.

3 Next slide. So the next research
4 question was what are the effect of different
5 dietary patterns on cardiovascular disease,
6 stroke, and total mortality in adults.

7 Next slide. A similar strategy,
8 but just had a different outcomes,
9 cardiovascular disease or coronary heart
10 disease, stroke, and total mortality.

11 By the way, you know, we are
12 interested in cancer, but we felt that this
13 was covered in the World Cancer Research Fund
14 data synthesis that was recently done.

15 So anyway, for these clinical
16 outcomes, 43 studies. You know, systematic
17 reviews, very few randomized trials of course,
18 and then a lot of cohorts, some case
19 controlled studies. In terms of diet types, a
20 lot of work on Mediterranean diets, and from a
21 variety of different regions. Then DASH, DASH
22 variants and vegetarian, or studies of

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1 vegetarians and other types of diet, 15.

2 So this is sort of a crude
3 summary. Again, DASH, mostly prospective
4 studies and they were associated with lower
5 risk of CVD. Sometimes these were like -- it
6 scored differently. I mean, I know that
7 Eric's group has done work on this, a variety
8 of different scoring systems. Most of them
9 are really for cardiovascular disease, total
10 or CHD, not too many just on stroke. That's
11 understandable since that's a less frequent
12 outcome.

13 Mediterranean diet, there has been
14 a large number of cohort studies, as well as
15 some meta-analysis and synthesis. There was
16 one in BMJ; I think it was two or three years
17 ago, that was really quite good. And the vast
18 majority of those cohort studies documented
19 benefits on total mortality and CVD.

20 And similar for vegetarian diets
21 for CVD.

22 And then there's sort of this

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1 catchall other or mixed where they have
2 different sort of types of analyses
3 constructing sort of patterns based on
4 clusters and other types of analyses. And
5 again, it seems to be there are benefits of
6 certain clusterings of food groups.

7 Next slide. So we're just working
8 on how to synthesize those, but I think we can
9 probably make a statement that several
10 distinct dietary patterns are associated with
11 a reduced risk of chronic disease, but we
12 haven't really worked on the conclusion or
13 implications at this stage. This is a work in
14 progress.

15 The other area where we spent
16 quite a bit of time is trying to describe
17 these dietary patterns, and both sort of
18 descriptions in terms of words, but also
19 provide ideas of the types of food groups and
20 nutrients that are provided in the dietary
21 pattern. And this has proved to be very, very
22 challenging because of the very heterogeneous

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1 manner in which these studies are presented,
2 and a lot of the studies present a very
3 incomplete picture. So there will be studies
4 that don't provide, let's say, the amount of
5 sodium or potassium that is provided or the
6 amount of alcohol that is typically consumed.

7 So it's not perfect.

8 But this is where we are right
9 now. The patterns that we're considering, and
10 we're probably going to clip this a bit, DASH
11 pattern with low-sodium. Then we have three
12 options for the Mediterranean diet. We had a
13 discussion with Frank Hu about this earlier,
14 and we were thinking that we might have a U.S.
15 version versus a European. And there are a
16 lot of complexities actually about how to
17 select that European version because there is
18 no one Mediterranean diet. That's a problem
19 that's plagued the field. It's not something
20 that we just uncovered.

21 Likewise, there are studies now of
22 Japanese diets that have traditionally been

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1 associated with a reduced risk of CHD. An
2 Okinawan diet that is associated with
3 longevity and a reduced risk of not just
4 cardiovascular disease, but many chronic
5 diseases.

6 And then we have dietary patterns
7 that are based on modeling, and we had a
8 little bit of discussion earlier today in
9 Shelly's section. But we have four dietary
10 patterns that the USDA has developed. We have
11 to work on the terminology, but that might not
12 be critical for our report, but it will be
13 critical in translation. There's the base
14 pattern called plant-based, lacto-ovo,
15 vegetarian and vegan. And all those, as was
16 pointed out earlier, meet the nutrient
17 requirements with, you know, slight deviations
18 from goals.

19 But we don't for those have as
20 much data on disease prevention, but we do
21 have a lot of data on nutrient adequacy. In
22 contrast, we have for Mediterranean,

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1 Japanese/Okinawan -- well, maybe more for
2 Mediterranean and less so for
3 Japanese/Okinawan, good data on clinical
4 outcomes from cohort studies. And for DASH we
5 have data on nutrient adequacy, blood
6 pressure, and some data from cohort studies.
7 So that seems to be a pattern where we
8 actually have, you know, data across several
9 domains that are relevant for health.

10 So you can also see some of the
11 complexity when you look at the bottom part of
12 that page, the nutrients where you see quite a
13 bit of variation in how nutrients are
14 presented; sometimes percent of kcals,
15 sometimes grams. I think we're going to try
16 to as best we can present data in a uniform
17 way across studies, but that will require some
18 data manipulation beyond what was originally
19 published or developed.

20 Next slide. So what we're
21 planning on doing is developing some tables
22 related to health outcomes. So it will be the

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1 usual, what we've developed or similar to what
2 we've developed for other nutrient/disease
3 relationships. This is one for patterns in
4 blood pressure, CVD outcomes. And these are
5 like three studies, and we'll be developing
6 those. They'll probably be on the Web. I'm
7 not quite sure they'll be in the chapter, but
8 we'll have some summary tables on patterns.

9 Next slide. So we'll develop some
10 research recommendations. This is clearly a
11 work in progress. I can tell you one research
12 recommendation that's going to be right up
13 front is conduct research on how to synthesize
14 results from these different types of studies,
15 because I think we're going to be -- well, I
16 think it's a major step forward to discuss
17 dietary patterns and try to provide guidance
18 on this. It's been challenging in terms of
19 synthesizing results, and that actually might
20 be a little bit beyond dietary guidelines, but
21 I still think that's an important area.

22 I think that might be it for the

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1 slides. And I guess I'll at this point open
2 it up for questions and comments.

3 DR. RIMM: Larry, this is Eric.
4 That was really nice. Thanks. So I guess I'm
5 trying to think of a way to make your life
6 easier because it does look like a complicated
7 task. The one thing I might suggest is taking
8 out of the question, and maybe even out of
9 your summaries, is the sort of
10 Japanese/Okinawan diet. I think the Okinawan
11 diet is a proprietary thing. If you're not
12 going to have Atkins and all the other diets
13 in there, we probably should take out the
14 Okinawan diet.

15 And I'm not sure how applicable
16 the Japanese diet and the Okinawan diet
17 outcomes are, only because they're so
18 distinctly different in all the other
19 lifestyles that go along with the diet. You
20 know, I guess if we had a huge -- if we had 50
21 percent of the population that was Japanese
22 that lived that way in addition, then I guess

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1 we could focus on that. But I think that it
2 sounds like you're going to be spending a lot
3 of time putting tables together as it is, and
4 that might help you a little bit.

5 The other thing I guess is the
6 healthy eating index, which is something that
7 was derived by the government to see how well
8 people adhere to the Dietary Guidelines. And
9 I don't know if that's considered a pattern,
10 but it is sort of a pattern of adherence.

11 DR. APPEL: Yes, you know, let me
12 go in reverse. I think that this is a work in
13 progress, and I'm learning a lot as we go.
14 And I think documenting the potential benefits
15 of recommended eating habits is, I guess, the
16 best way to quantify it might be with the HEI.

17 DR. RIMM: Right. It's just I
18 know that a lot of -- I mean, we've done some
19 work and I know others have used that as a
20 measure of, you know, a healthy diet. And,
21 you know, to show what has been done might
22 show the contrast in the Mediterranean diet

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1 and the DASH diet, you know, do a fair bit
2 better than the healthy eating index. And
3 maybe -- I mean, the healthy eating index may
4 be a moving target because as the guidelines
5 change, so will that -- I assume so will that
6 description of a dietary pattern.

7 DR. APPEL: Yes, I think we'd have
8 to be careful to see if -- I mean, the HEI
9 based on 2005, and that's what the USDA
10 Dietary Patterns are based on, not earlier
11 sets of recommendations. But maybe we should
12 see if there's been anything -- I don't know
13 if that was, you know, captured in our
14 searches.

15 You know, your first point, we did
16 talk about this, you know, about whether to
17 include Japanese/Okinawan. First of all,
18 there's less data on Okinawan for sure, and
19 there's less data both on nutrient composition
20 and health outcomes, with the exception of
21 pretty well-documented, actually very well-
22 documented evidence of longevity, you know,

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1 highest number of centenarians and life
2 expectancy in that prefectorate compared to
3 other prefectorates in Japan. But I think
4 part of the rationale, and it might be the --
5 is to be a little bit less Western-centric in
6 this set of guidelines.

7 DR. RIMM: This partly came up
8 because I know someone who's selling a book
9 and a diet called The Okinawan Diet --

10 DR. APPEL: Yes, but --

11 DR. RIMM: -- you know, like
12 Atkins and other things. You know, it's
13 proprietary, which maybe it's fine, it's just
14 that we try to make a habit of not doing that.

15 DR. APPEL: Yes.

16 DR. RIMM: This is fine. I just
17 brought it up because, you know --

18 DR. APPEL: Yes. Yes, you know,
19 the thing about it is though, Eric, I think
20 there obviously -- I mean, there are also
21 people making money off of DASH, not myself.
22 And there's a book on it, and I know people --

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1 but, you know, I haven't gotten any royalties
2 from that or anything else.

3 But I think that the Okinawan diet
4 is a diet that was consumed by free-living
5 people for which we have okay but not perfect
6 information on nutrient composition and okay
7 but not perfect information on outcomes, which
8 looked pretty good. So I think that's why
9 we're including it. And I really was, you
10 know, in my naivete unaware of the commercial
11 aspects of this.

12 DR. RIMM: Yes, because it's just
13 the diet and not all the other aspects of
14 Okinawan living? I mean, I don't know. I
15 haven't looked at the study.

16 DR. APPEL: Yes, I think the same
17 thing can though be applied to, you know,
18 Mediterranean. I think that there are aspects
19 of -- you know, to be honest with you, I can't
20 fully separate it out. I don't think we're in
21 a position to do that. I wouldn't be
22 surprised, but it has a lot of the features

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1 that we are advocating as part of a healthy
2 diet. You know, their saturated fat intake
3 is, you know, is minuscule. As best we can
4 tell, their sodium intake is reduced.
5 Potassium intake is quite high. Actually,
6 their vegetable intake is really quite high.
7 So in many but not all aspects of the pattern.

8 So I --

9 DR. RIMM: Oh, that part I agree.
10 I just meant like the exercise and the, you
11 know, lack of --

12 DR. APPEL: Oh, yes. Yes.

13 DR. RIMM: Okay. Yes.

14 DR. APPEL: But I also think
15 that's true for example of the Mediterranean
16 lifestyle. I mean, the original -- I mean,
17 people who, you know, ate the diet in Crete
18 were also climbing trees to get their food,
19 you know? They're actually very physically
20 active.

21 DR. RIMM: Right.

22 DR. APPEL: So, you know, it's

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1 hard to totally separate everything out. But,
2 you know, actually there's one point that I
3 didn't raise in the early discussion I think
4 is important, is that, you know, in displaying
5 these, I don't think we can say that any of
6 them is ideal or perfect, particularly the
7 free-living. Because, you know, there are
8 aspects -- for example, some of the
9 Mediterranean-style diets had higher saturated
10 fat than we would recommend. So it's not as
11 though when we have this, when we present this
12 table, we're going to have many caveats, you
13 know, that they still can be better. And
14 we're just, at least for the observed diets,
15 documenting what people are consuming.

16 DR. FUKAGAWA: Well, I think this
17 is a perfect segue to introduce a
18 fourth-generation Japanese person who's going
19 to translate and synthesize.

20 DR. VAN HORN: That's a great
21 segue, you're right. But let me add one thing
22 before we leave, because we do want to talk

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1 about the translation, and you are the perfect
2 person to do it. But I think the only
3 additional point I'd add to the discussion
4 that we just had is first to point out that
5 the Okinawan diet was 85 percent
6 carbohydrates, which of course, you know, is
7 much more higher than what we would
8 necessarily advocate. And as you point out,
9 Larry, there, you know, is no one perfect
10 diet, but that does certainly represent
11 another approach to an eating pattern that's
12 high in carbohydrates, complex carbohydrates.

13 But for this Total Diet Chapter,
14 in addition to what's been presented thus far,
15 some additional themes that we're planning to
16 incorporate are the whole focus on use of
17 fresh, whole, minimally-processed foods. So
18 the Committee has discussed over and over
19 again the need to emphasize the benefits of
20 nutrients coming from foods, from whole foods,
21 and wanting to make recommendations and
22 provide information on how to go about doing

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1 that.

2 And then also of course this
3 concept that we have said from the minute we
4 started this webinar, which is the whole issue
5 of understanding nutrient density versus
6 energy density, and discussing exactly how
7 that gets translated by selection of these
8 various food groups. And that's why each of
9 the chairs of these respective chapters will
10 have hopefully something to contribute to how
11 we actually address that within each of those
12 categories. So, hopefully that will take
13 shape and develop in the time we have ahead.

14 And then also the last thing I
15 would mention is even in terms of our listing
16 in the slide related to the
17 macro/micronutrients, we'd have to also I
18 think add a slash for dietary fiber. Our goal
19 again is to try to unify and provide
20 overarching recognition of shortfall
21 nutrients, shortfall foods, and illustrating
22 how by shifting the focus to the shortfall

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1 foods and increasing them, some of these other
2 nutrient problems actually will fall into
3 place. And I think, you know, that's how the
4 healthy eating index can also be applied to
5 this whole process. But, you know, it's just
6 a matter of trying to illustrate that, you
7 know, a lot of these nutrients would be of
8 less concern if the foods that provide them
9 were in the proper balance.

10 So with that, Naomi, please do
11 proceed with the Translational Integration
12 Chapter.

13 DR. FUKAGAWA: Thank you. And I
14 will have to have a disclaimer that I am
15 fourth- generation Japanese, but I don't
16 necessarily adhere to any of these dietary
17 patterns.

18 But anyway, the purpose of this
19 chapter which will be worked on by Mim,
20 Rafael, Eric, Chris, Tom, Roger and staff
21 members from HHS and USDA is really to
22 identify some cross- cutting issues that have

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1 come out in the science-based chapter reviews
2 that we've just heard about over the last
3 several meetings. And hopefully, what we'll
4 try to do is to synthesize some of the
5 disparate findings and narrow them down to
6 some key points about what we think the
7 evidence is really saying about the
8 relationship between diet and health.

9 And in our earlier discussions
10 we've tentatively identified four primary
11 points that we think we will address in this
12 chapter. And the first one of them is to
13 address the issue of the incidence and
14 prevalence of overweight and obesity in the
15 U.S, which obviously has to have a life stage
16 focus and has a number of bullet points under
17 that.

18 The second one is to reconcile
19 issues that we've heard about over the last
20 two days regarding added sugars, solid fats,
21 refined grains and sodium in the diet and
22 relate this to issues of consumer behavior,

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1 some of the food policies that might exist,
2 and issues of food production and safety that
3 we've talked about earlier today.

4 The third one dovetails well with
5 this whole diet chapter that Linda addressed
6 and that Larry spoke about, was whether or not
7 one needs to consider recommending or
8 suggesting that we have a shift in food intake
9 patterns in order to achieve better health for
10 the nation while still dealing with the
11 variety of differences that we have
12 culturally, ethnically and with lifestyle and
13 food preferences.

14 And the fourth one is probably a
15 no-brainer in that it relates to trying to
16 encourage Americans to adhere to and meet some
17 of the 2008 Physical Activity Guidelines that
18 were presented and for which Mim was a very
19 important member of that Committee.

20 And so, over the next few weeks
21 our subcommittee will hopefully be able to get
22 together and address this.

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1 And wondered if, Mim, do you have
2 any additional comments about where we're
3 headed?

4 DR. NELSON: No, I think that was
5 a good synthesis. The only thing I'd say is
6 in point 3, what we've been talking about is
7 to shift the food intake patterns to a more
8 plant-based diet, that it's not just a shift,
9 but again that meets the sort of cultural and
10 heritage needs of different people. And then
11 I think the context of this is the sort of
12 integration.

13 And then the translation piece is
14 much more -- I think that what we will be
15 focusing on with this chapter, sort of
16 surrounding the whole chapter, is that we need
17 a coordinated strategic plan for meeting these
18 targets. And that it's not just -- it's
19 beyond -- as we say, far beyond individual
20 behavior change. And that all segments of
21 society are going to have to come together to
22 make these changes, because we've seen with

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1 many of these in the past with the Dietary
2 Guidelines with no budging of actual changes
3 in food intake patterns, so that it needs to
4 be multi-sector.

5 And then I think that's the sort
6 of key elements. As I look at our notes,
7 that's it.

8 DR. FUKAGAWA: Any --

9 DR. NELSON: I mean, if I could
10 just sort of just summarize this, the idea is
11 just to really try to change the overall food
12 environment for people so that it makes it
13 easier over time for them to meet the
14 Guidelines and to be as healthy as possible.

15 DR. VAN HORN: All right. Other
16 comments from any other Committee members at
17 this point? Anything that you have burning on
18 your heart that we haven't addressed today or
19 yesterday that you want to be sure gets
20 officially heard today?

21 (No audible response.)

22 DR. VAN HORN: All right. If not,

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1 then I would like to just briefly summarize
2 the next steps as we near the end of our
3 journey together, and then I'll turn it over
4 to Rob for some closing comments.

5 Between now and the final meeting,
6 each subcommittee will finalize their
7 conclusion statements in response to the
8 feedback received at this meeting and ongoing
9 discussions.

10 The chairs will lead the drafting
11 of the content of their respective chapters
12 and work with our science writer on the
13 organization and flow within their chapter, as
14 well as contributing to the content of the
15 Total Diet Chapter and the Translation
16 Integration Chapter, as we just discussed.

17 There will be a sixth and final
18 meeting planned for next month after the
19 entire report has been drafted. This meeting
20 will be again held via webinar for the public
21 and will be announced in a Federal Register
22 notice upcoming. At this meeting we'll

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1 present and come to consensus on the full
2 content of our advisory report and we're going
3 to depart as friends. After which, this
4 report will undergo final formatting and we'll
5 formally submit the advisory report to the
6 Secretaries of USDA and HHS who will post it
7 for public comment.

8 Once again, any final comments or
9 questions from anyone on the Committee?

10 (No audible response.)

11 DR. VAN HORN: If not, I would
12 like to offer my great and deep appreciation
13 to every single person who participated to
14 make this such a rich and full two days. We
15 may have been snowed out in February, but I
16 think we more than accomplished a full agenda
17 over these last couple of days, and I just
18 want to thank all the members, as well as all
19 the staff for their incredible dedication to
20 making this all come together.

21 And with that, I would just like
22 to ask Rob to close us up.

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1 DR. RIMM: Hey, Linda, before you
2 do that --

3 DR. VAN HORN: Yes?

4 DR. RIMM: -- can I just point out
5 in case that your comment was misinterpreted,
6 actually I think this group has been quite
7 collegial throughout. I'm quite impressed
8 with the fact that I don't think it's
9 individuals patting each other on the back
10 just because we want to pat each other on the
11 back, but actually I think we have worked
12 quite well together. So, I'll just give my
13 kudos to you and to Naomi for having us be
14 collegial throughout.

15 DR. VAN HORN: Thank you. It's a
16 wonderful group and a tremendous opportunity
17 to work with fine people all interested in a
18 common good. So, thank you all.

19 Rob?

20 DR. POST: Well, thank you, Linda.
21 And I speak on behalf of the Center and my
22 HHS colleague Rear Admiral Penny Slade-Sawyer

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1 when I say, wow, this is clearly -- the
2 Committee has done fantastic work. It's
3 undertaken a tremendous amount of important
4 work to date that's been reflected in the
5 discussion over the past two days.

6 We definitely look forward to the
7 continued work of the Committee as it moves
8 towards the completion of the advisory report.

9 I'd like to take a moment quickly
10 to recognize the staff of USDA and HHS that's
11 supported the work of the Committee through
12 this intricate process. You've heard
13 Committee members refer to them during this
14 message or during this meeting, and I'd like
15 to recognize them.

16 In addition to Carole Davis from
17 CNPP and Kathryn McMurry from ODPHP, the
18 Office of Disease Prevention and Health
19 Promotion in HHS, who I introduced yesterday,
20 and the Senior Co-Executive Secretary of USDA
21 and HHS, I also want to recognize Shanthy
22 Bowman from the Agricultural Research Service

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1 of USDA and Holly McPeak from ODPHP of HHS, of
2 the Health and Human Services Department, who
3 are also Co-Executive Secretaries of the
4 Committee.

5 We have the Dietary Guidelines
6 Management Team, who in addition to the four
7 Co-Executive Secretaries, also include Jan
8 Adams and Trish Britten, Eve Essery, Patricia
9 Guenther, Kellie O'Connell and Collette
10 Rihane. And we thank them for their
11 contributions. And from HHS, I'd like to
12 mention Shirley Blakely and Rachael Hayes.

13 And I'd also like to give
14 recognition to our science writer and editor,
15 Anne Brown Rodgers, who is assisting in
16 pulling together the final report.

17 We also have the evidence analysis
18 division at CNPP, which is directed by Joanne
19 Spahn, and includes Jean Altman, Donna
20 Blum-Kemelor, Eve Essery, who I also mentioned
21 is on the Dietary Guidelines Management Team,
22 Thomas Fungwe, Joan Lyon, Patricia MacNeil,

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1 Molly McGrane, Julie Obbagy, and Yat Ping
2 Wong, who is our research librarian from the
3 National Agricultural Library.

4 We'd also like to recognize our
5 national service volunteer evidence
6 abstractors who are depicted here on this
7 slide, and on this slide, and also on this
8 slide. As you can see, this is a very
9 intricate process and involves an awful lot of
10 dedicated and hard- working individuals.

11 Last but not least, we'd like to
12 thank our contract support staff and
13 consultants for their efforts and
14 contributions. And again, I want to express
15 our deep appreciation for the service that the
16 Advisory Committee is providing to the federal
17 government and the cooperative work of all the
18 subcommittees and the staff.

19 And with that, thank you, Linda.
20 And we're concluding here from the Department
21 of Agriculture. Linda?

22 DR. VAN HORN: Thank you.

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1 DR. POST: Okay. With that, I
2 guess we can conclude our meeting. Thank you.

3 DR. VAN HORN: Thank you.

4 (Whereupon, the meeting was
5 adjourned at 4:00 p.m.)
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