

UNITED STATES OF AMERICA  
DEPARTMENT OF AGRICULTURE  
AND  
DEPARTMENT OF HEALTH AND HUMAN SERVICES  
DIETARY GUIDELINES ADVISORY COMMITTEE

FOURTH MEETING

WEDNESDAY, NOVEMBER 4, 2009

The meeting came to order at 1:00 p.m. Dr. Linda Van Horn, Chairperson, presiding.

PRESENT:

LINDA V. VAN HORN, PHD, RD, LD, CHAIR  
NAOMI K. FUKAGAWA, MD, PHD, VICE CHAIR  
CHERYL ACHTERBERG, PHD, MEMBER  
LAWRENCE J. APPEL, MD, MPH, MEMBER  
ROGER A. CLEMENS, DRPH, MEMBER  
MIRIAM E. NELSON, PHD, MEMBER  
SHARON (SHELLY) M. NICKOLS-RICHARDSON,  
PHD, RD, MEMBER  
THOMAS A. PEARSON, MD, PHD, MPH, MEMBER  
RAFAEL PEREZ-ESCAMILLA, PHD, MEMBER  
XAVIER F. PI-SUNYER, MD, MPH, MEMBER  
ERIC B. RIMM, SCD, MEMBER  
JOANNE L. SLAVIN, PHD, RD, MEMBER  
CHRISTINE L. WILLIAMS, MD, MPH, MEMBER

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## ALSO PRESENT:

CAROLE DAVIS, MS, RD, CO-EXECUTIVE SECRETARY  
AND DFO, CNPP, USDA

KATHRYN McMURRY, MS, CO-EXECUTIVE SECRETARY,  
ODPHP, HHS

SHANTHY BOWMAN, PHD, CO-EXECUTIVE SECRETARY,  
ARS, USDA

HOLLY McPEAK, MS, CO-EXECUTIVE SECRETARY,  
ODPHP, HHS

RAJ ANAND, DVM, MPH, EXECUTIVE DIRECTOR, CNPP,  
USDA

RADM PENELOPE SLADE-SAWYER, PT, MSW, DEPUTY  
ASSISTANT SECRETARY FOR HEALTH, DPHD,  
HHS

CAPT SARAH LINDE-FEUCHT, MD, DEPUTY DIRECTOR,  
ODPHP, HHS

ROBERT POST, PHD, DEPUTY DIRECTOR, CNPP, USDA

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## AGENDA

**Wednesday, November 4, 2009**

|                                     |  | PAGE |
|-------------------------------------|--|------|
| 1:00 p.m.                           | <b>Opening Remarks</b>   |      |
|                                     | Raj Anand, Executive Director<br>Center for Nutrition Policy and<br>Promotion U.S. Department of<br>Agriculture                                | 4    |
|                                     | Sarah Linde-Feucht, Deputy Director<br>Office of Disease Prevention and<br>Health Promotion<br>U.S. Department of Health and<br>Human Services | 9    |
|                                     | Linda Van Horn, Chair, Dietary<br>Guidelines Advisory Committee  | 13   |
| SUBCOMMITTEE TOPIC AREA DISCUSSIONS |  |      |
| 1:30 p.m.                           | <b>Nutrient Adequacy</b>   |      |
|                                     | Chair: Shelly Nickols-Richardson   | 26   |
| 3:00 p.m.                           | <b>Carbohydrates and Protein</b>   |      |
|                                     | Chair: Joanne Slavin   | 118  |
| 5:00 p.m.                           | <b>Meeting Recess</b>  | 218  |

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P R O C E E D I N G S

1:00 p.m.

DR. ANAND: Ladies and gentlemen, good afternoon from Washington. Those of you who have come from off site, luckily we have a nice weather for you. So, if you get a chance, go out.

I am Raj Anand, the Executive Director for USDA's Center of Nutritional Policy and Promotion.

I would also like to welcome people who are on webinar for the fourth meeting of the 2010 Dietary Guideline Advisory Committee.

I would really like to thank the Committee for their contributions, and I want each member to know that their service is highly-appreciated.

I would also like to acknowledge the cooperation between USDA and our partners in the 2010 Dietary Guideline process, the Department of Health and Human Services, the

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1 ARS, the Agricultural Research Service, and  
2 the original committee members at the table  
3 here today.

4 We also have some members, and  
5 I'll take the liberty of introducing them. On  
6 my right is Dr. Robert Post, Deputy Director  
7 of the USDA's Center for Nutrition Policy and  
8 Promotion.

9 Next to him is Ms. Carole Davis,  
10 Director of Nutrition Guidance and Analysis  
11 Division of the CNPP. Carole is a Designated  
12 Federal Officer and Co-Executive Secretary of  
13 the DGAC and I call her the Queen of Dietary  
14 Guidelines. She lives and breathes dietary  
15 guidelines, believe me.

16 On the left also, Rear Admiral  
17 Penny Slade-Sawyer, Director of Office of  
18 Disease Prevention, Health Promotion, will be  
19 joining us later.

20 But we do have Capt. Sara Linde-  
21 Feucht, Deputy Director, Office of Disease  
22 Prevention and Health Promotion. And we also

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1 have Ms. Kathryn McMurry, Senior Nutrition  
2 Advisor at the Office of Disease Prevention  
3 and Health Promotion at the HHS. She also Co-  
4 Executive Secretary of the DGAC, which is the  
5 Dietary Guideline Advisory Committee.

6 I would like to take the liberty  
7 of reminding the Committee of their charge.  
8 Your charge is informing the Secretaries of  
9 both departments of the changes to dietary  
10 guidelines that are warranted, based on the  
11 preponderance of most current scientific and  
12 medical evidence, placing their primary focus  
13 on the review of scientific evidence published  
14 since the last Dietary Guideline Advisory  
15 Committee deliberation, emphasizing the  
16 development of food-based recommendations, not  
17 nutrient-based, preparing and submitting a  
18 report of technical recommendation with  
19 rationales to the Secretaries of USDA and HHS.

20 The charge also states that the  
21 DGAC does not have the responsibility of  
22 translating these recommendations into policy

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1 or communication document.

2 This committee is governed by the  
3 Federal Advisory Committee Act, or otherwise  
4 called as FACA. FACA was established to  
5 assure that advisory committees, one, provide  
6 advice to -- provide advice that's relevant,  
7 objective, open to public, they act promptly  
8 to complete their work -- Remember, they act  
9 promptly to complete their work in time --  
10 comply with reasonable cost controls and keep  
11 recordkeeping requirements.

12 Therefore, each public meeting of  
13 this committee has been and will continue to  
14 be announced in the Federal Register through a  
15 public notice.

16 As part of the open, transparent  
17 process, the meeting -- the full committee are  
18 open for observation by the public, and any  
19 deliberation that occur between meetings, such  
20 as those topic-specific subcommittees are  
21 brought back to the full committee at a public  
22 meeting, as you will hear today and tomorrow.

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1           During the meeting, all public  
2 participants will be in a listen-only mode.  
3 The public has opportunities to participate in  
4 the process by providing written comments to  
5 the committee through our on-line public  
6 comments database at www.dietaryguidelines.  
7 gov. I repeat, www.dietaryguidelines.gov.

8           In the recent rules of FACA, I  
9 would also like to introduce some rules of  
10 engagement for the committee. The Dietary  
11 Guideline Advisory Committee Members will  
12 refer any individual who contacts them  
13 personally to solicit information about their  
14 work on the committee, the Dietary Guideline  
15 Management Team.

16           The committee members are not able  
17 to speak or give presentation to any  
18 individual or outside group regarding the work  
19 of the committee, as this would be  
20 inconsistent with the Advisory Committee  
21 operations, and would preclude the requirement  
22 the committee works is transparent to public.

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1                   Now, I want to recognize Capt.  
2 Sarah Linde-Feucht from HHS, who would make  
3 some comments and that will be followed by our  
4 Deputy Director, Rob Post. Sarah.

5                   CAPT. LINDE-FEUCHT: Thank you so  
6 much, Dr. Anand. Good afternoon, everybody.

7                   As introduced, I am Dr. Sarah  
8 Linde-Feucht, and I'm the Deputy Director of  
9 the Office of Disease Prevention and Health  
10 Promotion. And for those of you who are  
11 interested in the shorter name, we call it  
12 ODPHP, part of the Department of Health and  
13 Human Services.

14                   I'm giving the welcoming remarks  
15 on behalf of Rear Admiral Slade-Sawyer, who  
16 will be joining us later. She had an  
17 engagement that precluded her attendance right  
18 at this moment, but she will be joining us  
19 just as soon as she can.

20                   On behalf of her and the  
21 Department of Health and Human Services, I  
22 would like to join Dr. Anand in welcoming the

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1 Committee Members, and also the listening  
2 members of the public.

3 The Department of Health and Human  
4 Services deeply appreciates all of the many  
5 hours that you have provided in leading your  
6 expertise for the very important job of  
7 ensuring the Dietary Guidelines for Americans  
8 continue to reflect the preponderance of  
9 current scientific and medical evidence  
10 relating to nutrition and health.

11 We fully appreciate all of your  
12 efforts, the efforts of the USDA staff, as  
13 well as the HHS staff to improve the  
14 nutritional health of Americans.

15 So, Dr. Post, I will turn it over  
16 to you.

17 DR. POST: Thank you, Sarah, and  
18 than you, Raj.

19 As one of the Center for Nutrition  
20 Policy and Promotions, policy officials, I  
21 certainly welcome the committee and look  
22 forward to another productive meeting.

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1                   We are very excited to be  
2 broadcasting this meeting live via the Web.  
3 The third meeting was held this past April,  
4 and it was the first to be held via Webinar.

5                   And as evident from the WebEx  
6 survey feedback, from those participants, this  
7 new medium enables us to reach a more varied  
8 and larger audience of interested parties. It  
9 also provides for recording of the meeting to  
10 be archived at, once again,  
11 [www.dietaryguidelines.gov](http://www.dietaryguidelines.gov), for current and  
12 future reference by the public.

13                   We have individuals or  
14 participants that are registered from across  
15 the nation, as well as internationally. We  
16 are particularly happy knowing that. In fact,  
17 we've got folks registered in Saudi Arabia,  
18 Slovenia, Brazil, Iraq, Canada and Greece, to  
19 name a few countries.

20                   I would like to review a few  
21 technical points for the public, and I guess  
22 in a departure from the past, I'm not here to

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1 tell you where the restrooms are. I can,  
2 though, tell you that on your screen, for  
3 those who have registered, you will see some  
4 relevant information.

5 If you experience technical  
6 difficulties, you may contact WebEx technical  
7 support, toll free at 1-866-229-3239. This  
8 information was also emailed to all  
9 registrants, as was a technical assistance  
10 number for our international participants.

11 The event staff here in the room  
12 at the committee's meeting will be monitoring  
13 an email line, so to speak, where public  
14 participants can send notes of any technical  
15 difficulties while the meeting proceeds.

16 Now, as you see on the screen,  
17 this email address is [tech\\_issue@yahoo.com](mailto:tech_issue@yahoo.com).  
18 Please note that the event staff will not  
19 respond to these emails. It is simply one of  
20 the several ways we are monitoring the  
21 streaming efficiency of the meeting to the  
22 public.

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1                   We value your feedback on this  
2 Webinar meeting.           After the meeting  
3 registrants will receive a follow-up survey  
4 from WebEx. And, as in the past, a transcript  
5 and a written summary of this event will also  
6 be posted to our website when available.

7                   Because this meeting is being  
8 streamed live to the public, I would like to  
9 ask that the committee members clearly state  
10 their name before speaking. This is  
11 particularly important to facilitate clear  
12 deliberations to the public who are following  
13 the discussion.

14                   And with that, I'd like to turn  
15 back to Dr. Anand.

16                   DR. ANAND: Thank you. I will  
17 speak a little more now. I would like to turn  
18 the meeting to the Chair of the Dietary  
19 Guideline Committee, Dr. Linda Van Horn.  
20 Linda, all yours.

21                   CHAIR VAN HORN: Thank you, Dr.  
22 Anand. And good afternoon to committee

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1 members and the DGAC support staff, and good  
2 afternoon to our public participants who are  
3 watching via the Web today.

4           Since the third meeting of the  
5 DGAC in late April, the committee and our  
6 support staff have been working very hard to  
7 complete many milestones, and I think that's  
8 an understatement.

9           The committee has given much  
10 thought to the various research questions that  
11 could be asked to help inform dietary guidance  
12 for the United States. In so doing, we have  
13 developed an extensive list of research  
14 questions to be answered.

15           The detail involved in the work  
16 being completed is extraordinary, but  
17 necessary, enlightening and also highly  
18 relevant. It will provide the information  
19 needed to develop a thorough, yet concise  
20 advisory report.

21           The process we are using will  
22 strengthen our advisory report, and in turn,

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1 enhance the value of the report to inform the  
2 Federal Government, as they develop the 2010  
3 Dietary Guidelines for the American's policy.

4 The committee has seven  
5 subcommittees, each with it's own topics  
6 listed on the agenda. In addition to these  
7 seven subcommittees, we have also the Science  
8 Review Subcommittee whose task is to provide  
9 oversight and guidance related to the  
10 technical weighing of the evidence.

11 Among the subcommittees, a number  
12 of families of research questions have been  
13 developed that encompass roughly 180  
14 subquestions that we'd like to address. We  
15 have begun drawing proposed conclusions on the  
16 evidence but, due to the volume of work, we  
17 will not be presenting all of our conclusions  
18 at this meeting.

19 Today and tomorrow we hope to  
20 propose conclusions supported by the evidence,  
21 and have discussion for a large number of our  
22 research questions. This means that at the

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1 fifth meeting, which will occur in quarter of  
2 2010, the first quarter, we will plan to  
3 propose our conclusions for all of the  
4 remaining research questions and come to  
5 general consensus on the science.

6 We originally had five meetings  
7 planned for our public deliberations, however,  
8 to accommodate the large volume of information  
9 that needs to be discussed, we will be holding  
10 a sixth and final public meeting in the spring  
11 of 2010, where we will present and vote on our  
12 advisory report.

13 To help meet our goals for this  
14 meeting, our committee members have agreed to  
15 keep their presentation succinct. I would  
16 like to remind the public that our evidence  
17 review will be summarized in our report,  
18 however, the details of the evidence review  
19 will also be available in an electronic  
20 database called the USDA Nutrition Evidence  
21 Library or NEL, as you will hear referred to  
22 throughout our deliberations.

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1           The NEL is a web-based system set  
2 of tools to help support our scientific review  
3 process.     Having the nutrition evidence  
4 library ensures that the details of our  
5 scientific review are well-documented,  
6 transparent and reproducible.

7           Our systematic process also  
8 reduces reviewer bias and better standardizes  
9 the approach used by the various  
10 subcommittees. Most questions we will discuss  
11 were answered using a NEL systematic review.

12           To help with the time, I would  
13 like to preface an upcoming presentations with  
14 some general criteria and information that  
15 applies broadly to all our work.

16           The first step of the evidence  
17 review process was to generate research  
18 questions that led to the search and sort  
19 plans to search the scientific literature.

20           In general, literature in our  
21 review met the following inclusion and  
22 exclusion criteria.     Inclusion criteria

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1 generally entailed studies with human subjects  
2 that are of English language as well as  
3 international. Sample sizes with a minimum of  
4 ten subjects per study arm and a preference  
5 for larger sizes if available.

6 Drop-out rates less than 20  
7 percent with a preference for smaller drop-out  
8 rates and populations of healthy individuals  
9 and those with elevated chronic disease risk.

10 Most questions only considered  
11 healthy or at-risk populations, but other  
12 populations were included when it was  
13 pertinent to the question.

14 Exclusion criteria generally  
15 entailed studies of medical treatment or  
16 therapy, disease subjects with -- such as  
17 subjects already diagnosed with or a disease  
18 related to the study's purpose, hospitalized  
19 patients, malnourished or Third-World  
20 populations or disease incidences that are not  
21 relative to the United States population, such  
22 as malaria, animal studies, in vitro studies,

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1 and articles that are not peer reviewed.

2           Exceptions to this list and  
3 additional criteria considered will be noted  
4 by each subcommittee during their  
5 presentation. In some cases the systematic  
6 review of the literature went back to cover  
7 literature on infants since potential  
8 manifestation of disease in infancy can  
9 continue on and across the lifespan.

10           The Dietary Guidelines themselves,  
11 however, provide recommendations for ages two  
12 and above. An evidence worksheet was  
13 developed to organize the information for each  
14 article included in our reviews.

15           These worksheets were developed by  
16 trained evidence abstractors from throughout  
17 the country. NEL staff then prepared draft  
18 portfolios of evidence worksheets, summaries  
19 of each article and overview tables for each  
20 research question that we used to review the  
21 evidence and draw our conclusions.

22           The committee is grading the body

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1 of evidence supporting our conclusions using  
2 an approach the group has agreed to. You can  
3 see the criteria here which takes into account  
4 the quality of the studies, consistency of the  
5 findings, number of studies supporting the  
6 evidence, magnitude of the effect or outcome,  
7 and generalized ability.

8 Based on these criteria the  
9 conclusion statement will be given a grade of  
10 I, strong; II, moderate; III, limited; IV,  
11 expert opinion; and V, grade not assignable.

12 In addition to NEL reviews, we  
13 also use other sources of evidence when  
14 appropriate. Thus, it is important to note  
15 that only conclusion statements for which  
16 there was a formal DGAC NEL review are graded.

17 After the release of our report,  
18 all of the materials, including the  
19 committee's evidence summaries, conclusion  
20 statements, grades and so forth will be  
21 accessible online to the public in addition to  
22 our written advisory report to the

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1 Secretaries.

2 For some questions it was decided  
3 that a formal NEL review was not needed. For  
4 example, when only a brief update is needed to  
5 another substantial source of evidence such as  
6 the 2005 Dietary Guideline Report, IOM reports  
7 or other sources.

8 Examples of this approach that are  
9 being presented today and tomorrow include  
10 assessing, if there's a need for B12  
11 fortification, and answering the question,  
12 "What amount of fluid is recommended for  
13 health?"

14 For some questions, we use food  
15 pattern modeling. To understand the  
16 implications of dietary guidance for  
17 Americans, the total diet must be evaluated.  
18 We do this by identifying amounts of different  
19 foods that could be consumed to achieve  
20 various nutrient intakes.

21 The modeling approach has been  
22 developed by USDA's Center for Nutrition

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1 Policy and Promotion and provides an  
2 opportunity to answer our "what-if" type  
3 questions. Modeling allows evaluation of the  
4 amounts of nutrients that would be obtained  
5 for consuming various combinations of food to  
6 ensure adequate intake.

7 All modeling analyses are designed  
8 to be isocaloric. That is, the changes are  
9 made within fixed calorie levels and they also  
10 evaluate how the proposed modifications impact  
11 moderation goals for the diet.

12 For example, one question that was  
13 evaluated through modeling is: What is the  
14 impact on intake of folate and other nutrients  
15 if all recommended grain amounts are selected  
16 as whole grains, rather than half whole grains  
17 and half enriched grains.

18 The draft report for this question  
19 will be presented by the Nutrient Adequacy  
20 Subcommittee today.

21 In addition to modeling, we also  
22 have other types of data analyses such as

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1 analyses of dietary intake data from the  
2 National Health and Nutrition Examination  
3 Surveys.

4           These data help us answer  
5 important questions such as what are the major  
6 food sources of sodium in the US diet. So, as  
7 you can see, there are many sources of  
8 evidence. Often they are used in combination  
9 to answer a question.

10           We have also received about 750  
11 public comments throughout the process  
12 already, and each subcommittee is taking these  
13 into consideration in the development of their  
14 work.

15           The DGAC has the assistance of  
16 staff that help to support this work. All of  
17 us are extremely grateful for their assistance  
18 and ongoing input. Each subcommittee has a  
19 team that includes a lead staff person from  
20 the Dietary Guidelines management team who  
21 supports the Chair and the Members of their  
22 subcommittee in overall project management.

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1           There is a NEL project manager who  
2 leads the NEL review for the subcommittee, and  
3 also performs quality control measures to  
4 ensure the integrity of the evidence-based  
5 systems that stay intact.

6           There is a NEL research librarian  
7 who conducts the many literature searches and  
8 each team also has other staff support members  
9 that contribute in a supportive role similar  
10 to those I have just described.

11           Now that we have reviewed the  
12 overall systematic approach being used, we are  
13 ready to begin hearing some results. Each  
14 subcommittee will present their research  
15 questions, propose conclusion statements and  
16 then briefly describe the evidence supporting  
17 those conclusions.

18           The proposed conclusions will be  
19 presented first, but I'd like to remind the  
20 public that the subcommittees began with open-  
21 ended questions and conducted extensive  
22 surveys of the scientific literature and

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1 graded the evidence before drafting these  
2 conclusions.

3 When appropriate, the  
4 recommendations from other national  
5 organizations will also be summarized. When  
6 there are inadequate data to draw fully the  
7 evidence-based conclusions, the DGAC has  
8 listed recommended research needed to address  
9 these issues.

10 I'd also like to remind everyone  
11 that on everything being presented today and  
12 tomorrow, it's in a draft form.

13 Although, as a committee, we need  
14 to come to agreement on many conclusions, as  
15 many as possible for some topics, especially  
16 those for which there are still puzzle pieces  
17 missing or collaborative work between  
18 subcommittees planned, additional discussion  
19 will be needed after this committee meeting  
20 and before a consensus can be formally reached  
21 at a later meeting.

22 Lastly, each committee member

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1 should please remember to announce themselves  
2 when speaking to help the public follow along.

3 With that, I would like to begin  
4 our first subcommittee, and we are ready to  
5 proceed with the Nutrient Adequacy  
6 Subcommittee, chaired by Shelly Nickols-  
7 Richardson.

8 With that, I'll turn it over to  
9 you, Shelly.

10 MEMBER NICKOLS-RICHARDSON: Thank  
11 you, Linda. And -- Okay. I just want to  
12 start off by recognizing the members of the  
13 Nutrient Adequacy Subcommittee. They are  
14 listed here on your slide, recognizing the  
15 work of Naomi and Cheryl and Joanne and Mim in  
16 this committee.

17 I also want to recognize Trish  
18 Britten, our liaison at USDA, as well as  
19 Rachel Hayes and Eve Essery at the DHHS. They  
20 have been extremely instrumental in helping us  
21 complete our work, particularly the modeling  
22 analyses that we present today.

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1           So, our subcommittee today will  
2 present information about nutrients of  
3 concern, folic acid fortification, B12  
4 fortification/supplementation and then move  
5 into some food pattern modeling, including the  
6 realignment of vegetable subgroups, adequacy  
7 of USDA food patterns and then USDA patterns  
8 with typical food choices.

9           And I'll ask that questions be  
10 held to the end so that we can move through  
11 our information and our proposed conclusions  
12 prior to taking those questions.

13           So, the first question that the  
14 subcommittee has been working with is looking  
15 at nutrients of concern and when considering  
16 nutrients of concern, two basic principles  
17 were used to frame this question, and the  
18 review of data, as well as guide the  
19 decisionmaking process.

20           The first is that nutrients should  
21 come primarily from foods and so population-  
22 based dietary intake data were examined to

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1 identify gaps in nutrients, as contained in  
2 the usual intakes of individuals residing in  
3 the United States.

4 The second premise is that the  
5 Dietary Guidelines for Americans provide  
6 guidance regarding means to achieve the most  
7 recent Dietary Reference Intakes so that  
8 nutrient needs by age and sex groups are  
9 achieved.

10 So, our first question here is  
11 "What nutrients are most likely to be consumed  
12 by the general public in amounts low enough  
13 and are of public health significance to be of  
14 concern?"

15 The process by which nutrients of  
16 concern were evaluated included first, the  
17 short-fall nutrients were identified. Short-  
18 fall nutrients are those nutrients for which a  
19 group or groups has or have a high prevalence  
20 of inadequate dietary intake based on food  
21 consumption data.

22 Second, biochemical indices, when

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1 available and/or disease prevalence data were  
2 evaluated for short-fall nutrients to consider  
3 the public health significance of all or any  
4 short-fall nutrients.

5 And third, the likelihood of a  
6 short-fall nutrient being met by achieving  
7 food intake guidelines was also considered.

8 So, to identify short-fall  
9 nutrients, usual intake data from several  
10 sources were examined. The 2005, What We Eat  
11 in America Report included 24 nutrients from  
12 NHANES 2001 through 2002 data.

13 The 2008 Food and Nutrition  
14 Service reports on the diet quality of  
15 Americans by Food Stamp participation status,  
16 the diet quality of American young children by  
17 WIC participation status, and the diet quality  
18 of American school-aged children by school  
19 lunch participation status included 18  
20 nutrients from NHANES 1999 through 2004 data.

21 The 2009 What We Eat in America  
22 Report for 25 nutrients from NHANES 2005/2006,

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1 for one-day intakes, and then the 2009 What We  
2 Eat in America Report for usual intake of four  
3 nutrients, including vitamin D, calcium,  
4 phosphorus and magnesium from 2005/2006 data  
5 were also evaluated.

6 The 2008 Centers for Disease  
7 Control and Prevention Report titled National  
8 Report on Biochemical Indicators of Diet and  
9 Nutrition in the US Population, 1999 through  
10 2002, was used to evaluate blood or urine  
11 concentrations of relevant biochemical  
12 indicators of diet and nutrition.

13 Specimens were from the NHANES  
14 1999 through 2002 survey, and then additional  
15 peer reviewed studies were used to supplement  
16 this report for nutrients not included in the  
17 report, and disease prevalence data were  
18 considered for nutrients without biochemical  
19 indicators to reflect nutritional status.

20 The likelihood of achieving the  
21 DRI for nutrient was also considered. Food  
22 intake patterns using the 2005 USDA Dietary

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1 Guidelines for Americans within set caloric  
2 levels were modeled and the ability to consume  
3 nutrients in adequate amounts were examined  
4 using nutrient-dense food choices from food  
5 item clusters for food groups.

6 A review of the dietary intake  
7 evidence indicates that short-fall nutrients  
8 for adults and children include vitamins A, C,  
9 D and E, and calcium, magnesium, potassium and  
10 dietary fiber.

11 For adults, short-fall nutrients  
12 also include vitamin K and choline and for  
13 children, phosphorus is a short-fall nutrient  
14 among adolescent females.

15 A review of biochemical evidence  
16 indicates that less than five percent of the  
17 US population has low serum concentrations of  
18 retinol and alpha tocopherol, and the CDC has  
19 also reported from 2003 to 2004 NHANES data, a  
20 very low prevalence of poor serum vitamin C  
21 concentration in the US.

22 And Booth and Al Rajabe in 2008,

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1 reported that vitamin K deficiency is very  
2 rare in the United States.

3 One report also indicated that  
4 more than 55 percent of individuals residing  
5 in lower latitudes in the United States had  
6 serum 25 hydroxy vitamin D concentration less  
7 than 25 nanograms per ml or 63.5 nanamoles per  
8 liter during the wintertime.

9 And I'll just note here that this  
10 particular information is pointed out  
11 specifically for lower latitudes because these  
12 individuals do have more year-round exposure  
13 to sunlight compared to those living in the  
14 higher latitudes.

15 The IOM defines serum 25 OHD  
16 concentration of less than 12 nanograms per ml  
17 or approximately 30 nanamoles per ml for  
18 adults and less than 11 nanograms per ml, or  
19 27.5 nanamoles per liter, excuse me, for  
20 infants and young children.

21 So, using the IOM cutoff values,  
22 only about ten percent of non-Hispanic whites

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1 over the age of 60 years have a 25 OHD  
2 concentration of less than 11 nanograms per  
3 ml, with a proportion of older adults having  
4 vitamin D deficiency increasing as the cutoff  
5 values increase.

6 And so, minor changes in that  
7 cutoff point do increase somewhat  
8 significantly the number of individuals with  
9 lower or inadequate vitamin D concentrations,  
10 25 OHD concentration.

11 These cut points will be reviewed  
12 when we review vitamin D more thoroughly and  
13 potentially present that at the next meeting.

14 Data from NHANES 2005-2006  
15 indicated that ten percent of women and two  
16 percent of men over age 50 years had  
17 osteoporosis of the femoral neck and many more  
18 older women and men have osteopenia.

19 Nearly 100 million men and women  
20 have prehypertension and hypertension, and  
21 it's also known that increased potassium  
22 consumption in foods can lower systolic and

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1 diastolic blood pressure in individuals with  
2 normal and elevated blood pressure.

3 Dietary fiber is considered in  
4 light of risk reduction of coronary heart  
5 disease, which is the leading cause of death  
6 in the US.

7 And food pattern modeling  
8 indicates that DRI's for vitamins A, C, and K  
9 can be easily achieved by meeting  
10 recommendations for fruit and vegetable  
11 intakes, although vitamin E is less readily  
12 consumed in the typical diets of individuals  
13 in the US, biochemical data and disease  
14 prevalence data do not suggest that vitamin E  
15 nutriture is problematic for Americans.

16 Choline and phosphorus represent  
17 nutrients that may be possible -- of possible  
18 concern for some subgroups of individuals in  
19 the US and these nutrients are addressed in a  
20 separate question by the Nutrient Adequacy  
21 Subcommittee looking at particular nutrients  
22 of concern for subgroups of individuals.

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1                   So, after evaluating dietary  
2 intakes of Americans, biochemical data,  
3 disease prevalence and potential ability to  
4 meet nutrient recommendations by consumption  
5 of a variety of foods, the nutrients of  
6 concern for children and adults include  
7 vitamin D and calcium, magnesium, potassium  
8 and dietary fiber.

9                   Evidence for magnesium is still  
10 under review, and for certain subgroups,  
11 vitamins B12, folate, choline, iron and  
12 phosphorus require attention. Potassium will  
13 be and is thoroughly addressed in the sodium,  
14 potassium and water group. I believe that's  
15 in future discussions, and not presented  
16 today.

17                   And then dietary fiber will be  
18 addressed in upcoming meetings and discussions  
19 in the carbohydrate and protein group.

20                   Questions related to folate and  
21 vitamin B12 will be presented today and to  
22 start with folic acid fortification, I'll turn

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1 it over to Mim to discuss fortification and  
2 questions related to folic acid.

3 MEMBER NELSON: Hi. This is Mim  
4 Nelson. Are we going to -- we aren't going to  
5 do questions within each piece, as we go, or  
6 are we going to wait till the very end? Okay.  
7 Okay. That's fine.

8 So, I am presenting on a series of  
9 questions related to folic acid fortification.

10 So, what is the relationship between folic  
11 acid intake in the US post fortification era  
12 related to serum, plasma and red blood cell  
13 folate status, neural tube defects, CVD and  
14 stroke.

15 I should say CHD and stroke, colon  
16 cancer and folic acid supplementation, risk of  
17 CHD and folic acid supplementation risk of  
18 stroke.

19 You will recall that in mandatory  
20 compliance in the United States for folic acid  
21 fortification began in January 1998, with  
22 voluntary starting in '96, and in Canada, full

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1 compliance was by 1998. All of this as a  
2 result of an FDA authorization -- or rather  
3 the United States Public Health Service  
4 recommendation that all women of childbearing  
5 age should be consuming 400 micrograms of  
6 folic acid daily to reduce the risk of neural  
7 tube defects.

8 So, we had our basic inclusion  
9 criteria with the NEL was research published  
10 between 1999 and February 2009. January 2004,  
11 and February of 2009, regarding colon cancer,  
12 looking at healthy human subjects for the most  
13 part and some that have elevated chronic  
14 disease risk, peer-reviewed in the English  
15 language.

16 So, one of the first questions  
17 that we wanted to look at was "Has there been  
18 an increase in folic acid in serum plasma and  
19 red blood cells as a result of the  
20 fortification?" and our draft conclusion with  
21 the Grade I evidence is that there's clear and  
22 consistent evidence that serum plasma and red

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1 blood cell folic concentrations increased in  
2 the United States and Canada following  
3 mandatory folate fortification.

4 This is from eleven different  
5 cross-sectional studies, eight in the United  
6 States, three in Canada, five, which were  
7 nationally represented in the United States  
8 using NHANES data, and one with high-risk  
9 Mexican-American population that was on the  
10 border between Mexico and America.

11 And serum folate more than doubled  
12 between pre and postfortification periods.  
13 Red blood cell folate increased approximately  
14 57 percent. There still is a very small group  
15 of women of childbearing years that do have --  
16 or are still at risk for low folate  
17 concentrations.

18 The second question, "What impact  
19 has mandatory folic acid fortification had on  
20 the incidence of neural tube defects?" The  
21 proposed conclusion with the Grade I evidence  
22 is that there is clear and consistent evidence

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1 that the incidence of children born with  
2 neural tube defects has been reduced following  
3 mandatory folic acid grain fortification in  
4 the United States and Canada.

5 This is from 13 different studies,  
6 three cohort, one longitudinal, one CDC  
7 report, one cross-sectional and seven trend  
8 studies. Of the nationally-represented  
9 studies in the United States, it showed that  
10 there was about a 23 to 54 percent reduction  
11 in spina bifida incidence and about 11 to 16  
12 percent reduction in anencephaly incidents.

13 One Canadian national study  
14 reported a similar 53 percent reduction in  
15 spina bifida and a 31 percent reduction in  
16 anencephaly incidents.

17 So, moving along, "What impact has  
18 mandatory folic acid fortification had on the  
19 incidence of stroke?" The proposed conclusion  
20 with a Grade of III is that there is limited  
21 evidence.

22 This is mostly because there's not

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1 much evidence, but there is some that stroke  
2 mortality has declined in the US and Canada  
3 following folic acid fortification policy.

4           There is one population-based  
5 cohort study that was conducted in the United  
6 States and Canada, and with controls against  
7 England and Wales, ongoing decline in stroke  
8 mortality in the US and Canada between  
9 comparing 1990 to 1997 to 1998 to 2002 showed  
10 an increasing reduction going from minus 3.3  
11 percent to minus 2.9 percent per year in the  
12 US and going from one percent per year, minus  
13 1 percent to minus 5.4 percent per year in  
14 Canada, whereas the stroke mortality in  
15 England and Wales did not change significantly  
16 between 1990 and 2002. So, a small but  
17 significant difference.

18           So, "What impact has mandatory  
19 folic acid fortification had on the incidence  
20 of colon cancer? We gave this a Grade of III,  
21 that there's limited evidence that mandatory  
22 folic acid fortification has resulted in a

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1 transient increase in the incidence of colon  
2 cancer in the US and Canada.

3 This comes from two studies, one  
4 that was done in the United States and Canada,  
5 and one that was done in Chile. Absolute  
6 rates of colorectal cancer began to increase  
7 in 1996.

8 This is when voluntary  
9 fortification began, or 1997 in Canada and  
10 peaked in 1998 or 2000 in Canada, and it  
11 represents a significant transient deviation  
12 from prior folate fortification in the US by  
13 about four to six additional cases per hundred  
14 thousand individuals.

15 There is some evidence that the  
16 rate of incidence is back to where it was  
17 before, and that this is a -- the reason for  
18 the transient is that there was a shift for  
19 several years during the time, and if we need  
20 to, I can get into some of the biological  
21 plausibility, but I'd rather not, because we  
22 did that before in an earlier meeting.

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1 Rates -- an interesting study that  
2 was done in Chile looked at the rates of  
3 hospital discharge due to colorectal cancer in  
4 Chile before their fortification, which was  
5 looking between 1992 and '96, and after 2001  
6 to 2004, after their mandatory folic acid  
7 fortification, and they saw an increase by a  
8 rate ratio of 2.6 in adults age 45 to 64, and  
9 2.9 in adults age 65 to 70.

10 So, further evidence in another  
11 country that went through folate fortification  
12 of this bump up in colorectal cancer.

13 So next, we wanted to look at --  
14 to sort of complete the full question, looking  
15 at folic acid supplementation, so, "What  
16 effect does folic acid supplementation with or  
17 without additional B vitamin supplementation  
18 have on risk of stroke and those with or  
19 without existing -- preexisting vascular  
20 disease.

21 We give this a Grade III, that  
22 there's inconsistent evidence that

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1 supplementation with folic acid reduces risk  
2 of stroke in adults. This comes from two  
3 meta-analyses, one that 12 RCT's in the US,  
4 Canada in Europe and another that had eight  
5 RCT's from US, Canada, China, Australia, New  
6 Zealand and Europe.

7 In the first there was an overall  
8 relative risk for patients treated with folic  
9 acid supplementation compared to controls, was  
10 nonsignificant. For cardiovascular diseases,  
11 CHD, stroke and all-cause mortality -- and  
12 I'll get to CHD further in the next question.

13 And in the other trial, folic acid  
14 supplementation, in that meta-analysis did  
15 significantly reduce risk of stroke by about  
16 18 percent, but should be noted that the  
17 relative risk for those trials that were in  
18 regions with fortified grain was  
19 nonsignificant.

20 The final question was, "What  
21 effect does folic acid supplementation, again,  
22 with or without additional B vitamin

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1 supplementation, have on the risk of CHD, in  
2 those with or without preexisting vascular  
3 disease?"

4 And we give this a Grade I, that  
5 folic acid supplementation does not appear to  
6 reduce risk of CHD, particularly in countries  
7 with folic acid fortification.

8 This comes from two large  
9 randomized control trials, and one meta-  
10 analysis that -- that also -- that contained  
11 12 RCT's.

12 One of the randomized trials was  
13 done in Norway. There was no effect of folic  
14 acid, B12 or B6, total mortality or  
15 cardiovascular events. This is in people with  
16 preexisting disease.

17 The other was also looking at  
18 folic acid, B12 and B6, and also did not  
19 reduce cardiovascular events. That trial also  
20 was in people with preexisting disease.

21 And then the meta-analysis, folic  
22 acid supplementation did not reduce risk of

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1 cardiovascular disease or all-cause mortality  
2 in persons with prior history of disease.

3 So, Eve, do you have -- is there -  
4 - I see you're wandering around in there.

5 MS. ESSERY: I am going to pass it  
6 along.

7 MEMBER NELSON: Oh, okay. Okay.  
8 Sorry.

9 So, in summary, the overarching  
10 question which we will summarize this into  
11 really one answer, but the overarching  
12 question really is, "What is the relationship  
13 between folic acid intake in the US and Canada  
14 postfortification era and health outcomes?"

15 And the overarching is that there  
16 is a substantial reduction in neural tube  
17 defects. There may be a very small decrease,  
18 but significant decrease in stroke. There may  
19 also be -- and it may have been transient --  
20 we'll have to see with further data as we get  
21 further along after these dietary guidelines  
22 are out, but that there may be a transient

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1 increase in colon cancer.

2 So, it's mixed, but I would say  
3 the overall -- the overarching is that the  
4 benefit of the neural tube defects is very  
5 much there.

6 MEMBER FUKAGAWA: This is Naomi  
7 Fukagawa who will now address the question --  
8 another overarching question, namely -- why am  
9 I not going forward? Ah. Here we go. --  
10 about special nutrient recommendations needed  
11 for certain subgroups.

12 And this is somewhat of a  
13 different nutrient, in that we did not conduct  
14 a full NEL review of the literature for this  
15 specific nutrient.

16 As many of you know, the 2005  
17 Dietary Guidelines for Americans did address  
18 the concern about groups at risk for  
19 pernicious anemia or neurological deficits  
20 related to vitamin B12 deficiency, and these  
21 were largely pregnant women and those who are  
22 over the age of 50.

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1           Instead of a full NEL review, we  
2 chose to update the literature review since  
3 2005, since there weren't significant new  
4 randomized control trials done on these  
5 particular nutrients, and we also included a  
6 review of the NHANES intake data for 2005 to  
7 2006 in order to draft a conclusion.

8           So, my presentation this morning  
9 is -- or this afternoon, will actually be a  
10 little bit different from what Mim has just  
11 done, in that I'll present the evidence before  
12 proposed conclusion.

13           So, on this next slide, we can see  
14 that, based on the NHANES 2005 to 2006 data,  
15 the mean daily vitamin B12 intake from foods  
16 was above the recommended dietary allowance,  
17 which is approximately 2.4 micrograms per day,  
18 for all ages and all gender groups.

19           And furthermore, vitamin B12  
20 deficiency, which was found in -- was found in  
21 less than three percent of the population  
22 based on serum B12 concentrations, but this

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1 was also in combination with serum  
2 homocysteine concentrations greater than 10  
3 micromoles per liter.

4 We did find in this particular  
5 report that the supplement, the use of  
6 supplements or fortification for B12 did  
7 reduce this prevalence to less than .5 percent  
8 in the older at-risk population.

9 So therefore, our proposed  
10 conclusion is that individuals over the age of  
11 50 appear to be meeting their RDA for vitamin  
12 B12 and should continue to do so by eating  
13 foods naturally rich in vitamin B12 and  
14 consume fortified foods with -- foods that are  
15 fortified with vitamin B12 or by taking the  
16 crystalline form of vitamin B12. Thank you.

17 CHAIR VAN HORN: Before we move  
18 into the food modeling discussion, I think  
19 perhaps it would be valuable for the committee  
20 to discuss a little bit of what was presented  
21 so far in terms of the nutrient issues.

22 So, Shelly, if you want to maybe

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1 kick off the discussion, that would be great.

2 MEMBER NICKOLS-RICHARDSON: Well,  
3 I'll open it for questions or comments.

4 MEMBER CLEMENS: This is Rog.  
5 Thank you very much, Naomi, for that insight  
6 on vitamin B12 status, in particular. I can  
7 remember a number of years ago we're looking  
8 at the elderly population and I found that in  
9 that particular case we see that a number of  
10 those individuals have challenges with the  
11 intrinsic factor.

12 Do we have any data that these  
13 individuals are able to maintain an adequate  
14 status other than what you indicate here in  
15 terms of absorption, other than what you  
16 indicated on serum status?

17 MEMBER FUKAGAWA: That's more of a  
18 problem. This is Naomi Fukagawa. More of a  
19 problem with the naturally-occurring vitamin  
20 B12. But if one -- the absorption of the  
21 crystalline vitamin B12 is really quite good  
22 in the elderly individuals.

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1           And so therefore, if one looks at  
2           adequacy and intake, at least across the age  
3           groups, they certainly are receiving  
4           sufficient -- or it appears that they are  
5           receiving sufficient B12.

6           MEMBER RIMM: This is Eric Rimm.  
7           I just wanted to add onto that comment,  
8           because I know I've seen some, I believe,  
9           preliminary data, or if not published data,  
10          probably published data by now, from the  
11          Premium Heart Study, suggesting that measuring  
12          serum B12 and homocysteine doesn't actually  
13          capture deficiency, that looking at  
14          methylmalonic acid, which really is a marker  
15          of vitamin B12 activity, you capture much more  
16          of the deficiency state, and there actually  
17          was cognitive function associated with  
18          methylmalonic acid.

19          So, I wonder if there's -- maybe  
20          this data set doesn't have that, and I wonder  
21          if there's a way to try to incorporate that,  
22          because I do worry that this may be an

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1 underestimate of the population that's getting  
2 sufficient amounts of B12 that's actively  
3 incorporated.

4 MEMBER FUKAGAWA: This is Naomi  
5 again. At least in the data and the studies  
6 that I've reviewed, there wasn't an  
7 association, even looking at methylmalonic  
8 acid concentrations with change -- functional  
9 changes such as cognitive decline and so  
10 forth, but that's a point well-taken, yes.

11 MEMBER APPEL: Larry Appel. I  
12 have a question for Mim about the folic acid  
13 supplementation. The -- it looks like for  
14 coronary heart disease you gave Grade I.  
15 There's no relationship, and yet for stroke,  
16 it seems like you're -- you might be trying to  
17 leave the door open, and I was wondering  
18 whether, you know, the conclusion should be no  
19 apparent benefit as opposed to inconsistent  
20 evidence that it reduced.

21 It looks like one of the -- the  
22 bigger of the two meta-analyses -- and granted

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1 I don't have it in front of me, showed no  
2 relationship. So --

3 MEMBER NELSON: Yes. This is Mim  
4 Nelson. Inconsistent. I'm -- I'm a little  
5 nervous about sort of providing much strength  
6 to either of those in terms of -- so you're  
7 talking about with the stroke one in  
8 particular?

9 MEMBER APPEL: Well, actually, I  
10 think we might be on the same wavelength here.

11 MEMBER NELSON: Yes.

12 MEMBER APPEL: Your conclusion,  
13 proposed conclusion for CHD was -- does not  
14 appear to reduce --

15 MEMBER NELSON: That's right.

16 MEMBER APPEL: -- say, risk Grade  
17 I, okay, so it's basically you don't see a  
18 relationship, good evidence, and yet for  
19 stroke you say inconsistent evidence of -- of  
20 a relationship --

21 MEMBER NELSON: Because --

22 MEMBER APPEL: -- with Grade III.

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1                   MEMBER NELSON: Because one of the  
2 meta-analyses did show an improvement and the  
3 other didn't, but I think that the key with  
4 that was that in the folate-fortified  
5 countries, there was no reduction.

6                   So, it's inconsistent. Do you  
7 think it should be a different grade?

8                   MEMBER APPEL: Well, it's two  
9 points. I was wondering whether it should be  
10 there is no apparent relationship, which is  
11 probably --

12                   MEMBER NELSON: So, what do I do  
13 with the other meta-analysis, then?

14                   MEMBER APPEL: Well, I'm not -- is  
15 the one with the 12 RCT's -- I know it has  
16 more numbers, but is it a -- you know, meta-  
17 analyses get updated, and so --

18                   MEMBER NELSON: Right.

19                   MEMBER APPEL: -- the general is  
20 you accumulate more evidence, you believe the  
21 last one rather than using the first one to  
22 keep a hypothesis alive that might not be

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1 worthy of being alive.

2 MEMBER NELSON: Yes, I'm just  
3 looking.

4 MEMBER APPEL: Part of the reason  
5 I say this is --

6 MEMBER NELSON: Yes.

7 MEMBER APPEL: -- somebody's going  
8 to look at this and say, yes, it's a  
9 reasonable hypothesis, we need to do another--

10 MEMBER NELSON: Yes --

11 MEMBER APPEL: -- study.

12 MEMBER NELSON: I don't think --  
13 one of my researcher -- I'm not sure that we  
14 need any more research here.

15 MEMBER APPEL: Yes.

16 MEMBER NELSON: I think I'd be --  
17 I don't know, Eric, you had just reviewed  
18 this, you said also. So, can we go back, can  
19 I just go back?

20 MEMBER APPEL: This is the kind of

21 -- MEMBER NELSON: Yes.

22 MEMBER APPEL: -- maybe it's worth

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1 either a committee coming back and --

2 MEMBER NELSON: Yes, and taking a  
3 look.

4 MEMBER APPEL: Because you have  
5 two frames --

6 MEMBER NELSON: So, it's with this  
7 one -- it's this one, because there's  
8 inconsistent evidence.

9 MEMBER APPEL: And you said that a  
10 Grade III, but your larger meta-analysis  
11 would, I think, support a Grade I, no  
12 relationship.

13 MEMBER NELSON: That's right.

14 MEMBER APPEL: You know, and I  
15 don't know if --

16 MEMBER NELSON: Or at least a  
17 Grade II, yes.

18 MEMBER APPEL: Or whatever, yes.

19 MEMBER NELSON: Yes, okay.

20 MEMBER APPEL: And then the CHD  
21 one is --

22 MEMBER NELSON: Pretty strong.

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1                   MEMBER APPEL:     It's stronger in  
2 the Grade I. So, I'm just trying to look for  
3 parallels here.

4                   MEMBER NELSON:     More, because  
5 they're -- yes, okay. Yes. Let me go back  
6 and look at this, but I'm inclined at least to  
7 go with a Grade II on this instead of Grade  
8 III, because I agree.

9                   MEMBER APPEL:     Yes.

10                  MEMBER NELSON:     The trickier part  
11 is the one is actually with the folate  
12 fortification, in seeing this small -- both in  
13 Canada and the United States, and is there  
14 anything else going on that may have caused  
15 that -- I don't think so. I think it's the  
16 folate.

17                  Or, what do you think, because  
18 this right here, this is -- this is, again,  
19 it's just one -- it's one population-based  
20 cohort study with stroke. And this is just --

21                  MEMBER APPEL:     Yes.

22                  MEMBER NELSON:     -- similar to the

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1 neural tube defects. I mean, it's a similar  
2 design. It's basically looking at the decline  
3 -- stroke mortality has been going down, so  
4 it's looking at the percent reduction.

5 MEMBER APPEL: Yes.

6 MEMBER NELSON: It's very small.

7 MEMBER APPEL: Yes. I mean, I  
8 think you, in order to make a strong  
9 statement, you need to know what's happening  
10 with blood pressure levels and control rates--

11 MEMBER NELSON: There's so many  
12 other things going on.

13 MEMBER APPEL: -- such as -- I  
14 mean, blood pressure is probably the strongest  
15 determinative of stroke that we know.

16 MEMBER NELSON: That's right.

17 MEMBER APPEL: So, if you're not  
18 out --

19 MEMBER NELSON: So that's why -- I  
20 mean, it's only -- we'll never have another  
21 study because this is the data and it's only  
22 one time only, but I give it -- do you think

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1 this is fair?

2 I mean, given this is the one, you  
3 know, it was US and Canada versus England and  
4 Wales.

5 MEMBER RIMM: Larry, what are you  
6 saying? Are you saying we should -- I mean,  
7 the conclusion is that there may be some  
8 benefit for folate and stroke, and you want to  
9 make that a stronger grade?

10 MEMBER APPEL: No, no. No.

11 MEMBER NELSON: No.

12 MEMBER APPEL: I mean, I was --

13 MEMBER NELSON: I brought up this

14 --

15 MEMBER APPEL: -- brought up the  
16 issue, and I was explaining that it's hard to

17 --

18 MEMBER NELSON: It is very hard.

19 MEMBER RIMM: I mean, the  
20 challenge is that a lot of these studies are  
21 among people -- this is Eric Rimm, sorry. A  
22 lot of these studies are among people with

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1 preexisting disease, so the question really  
2 is, for primary prevention, it's more  
3 challenging because most of the trials for  
4 stroke also are among people with preexisting  
5 disease.

6 MEMBER NELSON: No, but this is --  
7 no, this is not the trial.

8 MEMBER APPEL: This just looks  
9 like vital statistics --

10 MEMBER RIMM: Oh, sorry. Yes,  
11 this aspect of it, yes.

12 MEMBER NELSON: This aspect.

13 MEMBER APPEL: So it can be very  
14 hard. This is ecologic data, I believe.

15 MEMBER RIMM: Yes. Okay. I mean,  
16 I think there are a few prospective studies  
17 from a long time ago also that would suggest  
18 that there's benefit of folate in stroke that  
19 are observational, that are not just  
20 ecological --

21 MEMBER NELSON: But this is --

22 MEMBER RIMM: -- that's not

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1 fortification.

2 MEMBER NELSON: This is about  
3 fortification.

4 MEMBER APPEL: Right.

5 MEMBER NELSON: This is  
6 prefortification and post. I mean, I -- I --  
7 so, Larry, you're saying -- and Tom, I'm  
8 looking at you, too, you're okay with this as  
9 a Grade III, and it's limited evidence and we  
10 leave it because we'll never know, is  
11 basically it?

12 MEMBER RIMM: No, we may know.  
13 There's a lot of countries that have fortified  
14 with folate.

15 MEMBER NELSON: Right.

16 MEMBER RIMM: There may be 30 or  
17 40 studies that can be done like this.

18 MEMBER NELSON: Come up.

19 MEMBER RIMM: Yes, that come up  
20 where there's a -- you know, change in stroke  
21 rates over time.

22 MEMBER NELSON: Okay.

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1                   MEMBER APPEL: Yes, the -- it just  
2 will have to have better data because, you  
3 know, also there are big pushes now to achieve  
4 better blood pressure control in a lot of  
5 different countries.

6                   MEMBER NELSON: Right. There's so  
7 many. And that's the same issue, I think,  
8 with these -- sorry, with the questions about  
9 folate supplementation. It's the same issue.

10                   These people with preexisting  
11 disease, most of them are on statins or blood  
12 pressure medication. There's so many other  
13 things that are going on that it's  
14 problematic.

15                   But, Larry, we'll revisit this one  
16 on stroke and probably upgrade it to II.

17                   Yes, Tom.

18                   MEMBER PEARSON: This is Tom  
19 Pearson. You know, I think the 1990 to 1997  
20 actually was in somewhat of an odd sequence of  
21 years ago, to stroke incidents, which it  
22 actually had been going down, flattened off

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1 for about seven years, and then proceeded to  
2 go down again, so that the decline in stroke  
3 on fortification looks like pre-  
4 prefortification levels.

5 And I think it's just entirely  
6 ecologic, and probably the declines had to do  
7 more with an awareness that the stroke rates  
8 weren't going down and blood pressure control  
9 --

10 MEMBER NELSON: Yes.

11 MEMBER PEARSON: -- had kicked in  
12 at that point. I think the other thing is  
13 that you have ecologic data that's influencing  
14 your Grade III, and you have randomized  
15 control trial data that usually, in the course  
16 of things, you go with a high-risk group, you  
17 do your randomized trials and then put all the  
18 evidence together, but it's the randomized  
19 trial data that I think really is the most  
20 direct here.

21 MEMBER NELSON: It is.

22 MEMBER PEARSON: So, I think the--

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1 I think the Grade III for this particular  
2 conclusion is adequate, because it's --  
3 ecologic data has many, many other  
4 explanations.

5 MEMBER NELSON: Right. For this  
6 one. For the fortification one, but we may,  
7 for the actual supplementation one, upgrade  
8 this to a II, this one. There's two different  
9 ones around the stroke. Does that make sense?  
10 Okay. Okay. Thank you.

11 MEMBER PEREZ-ESCAMILLA: Can I --

12 MEMBER NELSON: Yes. Sorry.

13 MEMBER PEREZ-ESCAMILLA: I have a  
14 follow-up question on folic acid  
15 fortification, and -- this is Rafael. -- and  
16 what you are calling a transient increase in a  
17 colon cancer, and my understanding, based on  
18 the biological plausibility that you shared  
19 with that committee before, that these may be  
20 related to people that have precancerous  
21 lesions to begin with.

22 MEMBER NELSON: Yes.

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1                   MEMBER PEREZ-ESCAMILLA:     But my  
2 question is why it would be transient and not  
3 continue.

4                   MEMBER NELSON:     Well, the folate  
5 hypothesis here with cancer is that it may be  
6 -- it may be actually protective,  
7 chemoprotective in terms of if somebody does  
8 not already have cancer, it may reduce their  
9 risk.

10                  But, if they actually have  
11 precancerous polyps, then the replication of  
12 the cancerous cells may be up-regulated with  
13 the folate, and so that may speed up the  
14 incidents of full-blown cancer, colorectal  
15 cancer.

16                  So, it could be -- if you don't  
17 already have polyps, it's protective. If you  
18 do have them, it may speed it up. So, there  
19 is this sort of a hypothesis that, you know,  
20 maybe over time colon cancer rates may go  
21 down, but we popped up that group that -- no  
22 pun intended, but already had polyps, so to

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1 speak.

2 So, I guess that's the best way I  
3 can simply sort of describe this.

4 MEMBER PEARSON: I have a couple  
5 of questions. This is Tom Pearson again on --  
6 for Mim on the folic acid fortification. One  
7 of the charges was to look at cardiovascular  
8 disease and fortification.

9 MEMBER NELSON: Oh, yes.

10 MEMBER PEARSON: I would like to  
11 expand that to congenital coronary --  
12 congenital heart disease --

13 MEMBER NELSON: Okay.

14 MEMBER PEARSON: -- because I know  
15 that your search was focused on neural tube  
16 defects, but I thought there was some evidence  
17 that might influence on a quantitative basis  
18 your recommendations coming from the  
19 congenital heart disease data, I think in the  
20 Canadian study, particularly about the  
21 conotruncal abnormalities, ventricular septal  
22 defects and a single ventricle disorder.

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1 MEMBER NELSON: Yes.

2 MEMBER PEARSON: So, I was -- I  
3 was wondering if, because relative to where  
4 the neural tube defect activity is going, it  
5 should also affect the closure of the  
6 structures of the heart on an embryologic  
7 basis.

8 MEMBER NELSON: Yes.

9 MEMBER PEARSON: So, I think --

10 MEMBER NELSON: I think that will  
11 --

12 MEMBER PEARSON: -- will influence  
13 some of your decisions about the, say, the  
14 quantity of the fortification, which is my  
15 second question, is is it -- I would agree  
16 with your conclusions that the fortification  
17 has been a success.

18 The question is, there seems to be  
19 a lingering discussion of should we go  
20 further, so it becomes not a qualitative one,  
21 whether or not this has been good, but a  
22 quantitative one about should the

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1 fortification be even more. Would you comment  
2 on that.

3 MEMBER NELSON: Boy, I'm hesitant  
4 to really answer that question because I don't  
5 think that we, as a committee, might be the  
6 right committee to answer that.

7 One of the things that we know  
8 happened with the -- right at the mandatory  
9 folate fortification time is that, in fact, it  
10 was probably double to triple or somewhere --  
11 it was very high levels of fortification,  
12 because the manufacturers were worried they  
13 were going to not meet the targets.

14 And then, in fact, if you look at  
15 serial blood, there are a couple of these --  
16 when looking at the blood levels, there are a  
17 couple of studies that actually looked at just  
18 before, just during the first couple of years,  
19 and then after, you see an increase and then  
20 you actually see a coming down. So the  
21 highest levels were within those two years.

22 I'm hesitant to answer that

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1 question, whether there should be more. My  
2 bias reading this would be at the moment, I'm  
3 always worried about the risk/benefit ratio,  
4 and I would say probably not.

5 But one of the things I should  
6 say, one question that we attempted to answer  
7 was actually -- which I don't have here, was  
8 the impact of folate fortification on coronary  
9 heart disease, and there were no -- there were  
10 no data. So, we didn't answer it.

11 But, I will take a look at what  
12 you're talking about before.

13 MEMBER FUKAGAWA: Mim, I'd like to  
14 make a comment addressing Tom's concern about  
15 congenital heart disease.

16 MEMBER NELSON: Yes.

17 MEMBER FUKAGAWA: But one of the  
18 other considerations we have to think about  
19 are the epigenetic changes that might be  
20 induced by higher methyl group intake in the  
21 form of folate.

22 And I think that's a question

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1 that's not yet answered. It certainly has  
2 been investigated in animal studies, and would  
3 be a consideration.

4 MEMBER NELSON: Yes. But, I don't  
5 know, Tom, maybe I should ask you. Do you  
6 think -- I mean, do you know anything I don't  
7 know about whether we should actually be  
8 fortifying with more folate?

9 MEMBER PEARSON: Well, around the  
10 time there had been, relative to some  
11 population-based folate levels, I believe,  
12 some consideration of a further reduction from  
13 the -- say 50 percent or so reduction in  
14 neural tube defects and anencephaly, even  
15 further.

16 MEMBER NELSON: Right.

17 MEMBER PEARSON: Because the  
18 randomized control trials, I think, of high-  
19 risk groups, you know, the folate story is  
20 absolutely textbook, a case of causal --

21 MEMBER NELSON: Right.

22 MEMBER PEARSON: -- inference.

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1 All the pieces are there.

2 MEMBER NELSON: Yes.

3 MEMBER PEARSON: And even though  
4 there is a public health piece, the  
5 epidemiologic, ecologic piece there, the  
6 question still remains whether you could get  
7 down to the levels of folate that you get with  
8 a supplementation strategy with women who are  
9 planning childbirth --

10 MEMBER NELSON: Right.

11 MEMBER PEARSON: -- in which you  
12 get very large reductions in neural tube  
13 defects, whether or not you're achieving that  
14 with a fortification policy.

15 MEMBER NELSON: Yes.

16 MEMBER PEARSON: And I think this  
17 is --

18 MEMBER NELSON: Yes.

19 MEMBER PEARSON: -- so it's not a  
20 scientific --

21 MEMBER NELSON: Right.

22 MEMBER PEARSON: -- question, it's

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1 almost an implementation issue about should be  
2 supplementing more, as part of our charge  
3 looking at the American diet.

4 MEMBER NELSON: Yes. I think it's  
5 worthy to continue doing research on the  
6 impact. There's different ways to look at  
7 this, but to look at it before we change it,  
8 there's -- it wasn't -- it was -- the initial  
9 -- the monitoring research projects were not  
10 well-designed before the fortification went  
11 into play, and so -- which is unfortunate,  
12 because this was something -- we're going into  
13 a national experiment, and all of these should  
14 have been set up better, and I think we need  
15 to -- you know, there's still more work that  
16 needs to be done on the existing  
17 fortification.

18 Larry.

19 MEMBER APPEL: Yes. Hi. I'll  
20 take you off the hot seat. I want to --  
21 Shelly, I have a question for you, and it has  
22 nothing to do with nutrient adequacy, even

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1       though that's the name of your -- phosphate  
2       and phosphorous -- I mean -- phosphorous.

3                 It seems that -- is there a public  
4       health issue that is lurking that we haven't  
5       really dealt with, which is that not  
6       inadequate, but excessive intakes -- you know,  
7       I think, you know, we'll come to this in  
8       electrolyte, but sodium, you know, phosphate  
9       is now being added to a lot of meats, and we  
10      have a, you know, kidney disease epidemic, and  
11      with a lot of people consuming large amounts  
12      of, you know, phosphorous that they might not  
13      be aware of.

14                I don't know, did that -- was  
15      there a -- you listed it more as a possible  
16      short-fall in children, but I'm thinking of it  
17      more as a potential serious -- a potential but  
18      unknown -- I'll put that "unknown" health  
19      problem in the adult population.

20                MEMBER NICKOLS-RICHARDSON:     This  
21      is Shelly Nickols-Richardson.   In response to  
22      that from our dietary intake data, it is just

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1 that one adolescent female group that there  
2 appears to be, you know, a short-fall nutrient  
3 related to phosphorous.

4 So, I don't think it's a large  
5 concern. I don't think that there's a public  
6 health concern in relation to a positive  
7 health outcome.

8 We will be looking at abundance  
9 nutrients next. That's one of our next steps,  
10 and I don't know that we had really thought  
11 about phosphorous as maybe in light of  
12 abundance-type nutrient in relation to health  
13 outcomes, but I think we could add it to the  
14 list of those that we consider and take a look  
15 at it from that perspective.

16 MEMBER APPEL: I guess that if you  
17 do that, too, you -- just my own experience is  
18 that nutrient databases are pretty inadequate,  
19 and you might get a misleading result that you  
20 think it's not a problem because it all adds  
21 up, and it seems to be relatively low, but  
22 there are so many missing values when we try

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1 to attempt to understand our diets and our  
2 feeding studies, that it might appear normal  
3 or low, but really actually be quite high when  
4 you take into account all sources.

5 MEMBER NICKOLS-RICHARDSON:  
6 Shelly, again, and that's a great point. I  
7 think when we consider, you know, much of the  
8 dietary intake data, that there are some  
9 limitations to that, putting them in the  
10 context of what are the -- I'm not sure that  
11 they are biochemical data to support this, but  
12 what are the other public health issues of  
13 concern, and maybe doing an exploratory search  
14 that would lead us toward making some  
15 decisions about that, but it's certainly  
16 something we could take a look at.

17 CHAIR VAN HORN: Shelly -- this is  
18 Linda Van Horn. I think the other topic that  
19 came up during discussions within this  
20 subcommittee related to the whole issue of  
21 supplement use, indiscriminate, I guess I  
22 should say, supplement use, especially among

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1 certain segments of the population, and in  
2 this case, particularly the elderly who, of  
3 course, are at higher risk for development of  
4 something like colon cancer.

5 And I think it was certainly a  
6 telling moment to me, personally, but I would  
7 imagine we all would want to continue to keep  
8 in mind that what perhaps we used to think of  
9 as a kind of benign activity, i.e., taking  
10 vitamin, mineral supplements individually or,  
11 you know, complex, may not necessarily be as  
12 benign as we think in the context of food  
13 fortification, and there may be reason to  
14 consider studying those kinds of questions to  
15 make sure that we're not overnourishing  
16 certain segments of the population, and then  
17 placing them at risk.

18 So, I think, as this group  
19 continues to go forward and as the studies  
20 move ahead, we should continue to keep that  
21 very important question in mind, and plan our  
22 studies to be specific about assessing not

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1 only diet, but also supplement use so we can  
2 take a look at that.

3 MEMBER NELSON: Linda, if I could  
4 just comment on that. This is Mim Nelson.  
5 During our Webinars that we had in helping us  
6 to inform our work on the folic acid  
7 supplementation, fortification, et cetera, all  
8 of our experts, it seemed to me, and those  
9 that were on the call can hopefully agree or  
10 disagree with me, but that, in fact,  
11 multivitamin B supplement, supplementation for  
12 older adults was not advised, specifically  
13 because that's where the problems come in, not  
14 with the fortification, not with basic folate  
15 that's in the foods, but the problem is much  
16 more with actual B vitamin supplementation,  
17 and in the very high levels.

18 So, I think what you -- you  
19 reminded me about that, and I'll make note of  
20 that.

21 MEMBER NICKOLS-RICHARDSON: Okay.  
22 And we will move on with the rest of the

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1 nutrient adequacy information. Let's get to  
2 our appropriate slide here.

3 Okay. So now we're going to shift  
4 to questions that were investigated by food  
5 pattern modeling, because these questions were  
6 more appropriately addressed by modeling  
7 scenarios, rather than through literature  
8 searches.

9 And in the next three modeling  
10 questions that we discussed, for each of these  
11 modeling analyses, there was a specific  
12 methodology that was developed and approved by  
13 the subcommittee.

14 So, as we go through these  
15 different -- these three different modeling  
16 analyses, you'll see that there were very  
17 different approaches taken for them.

18 Cheryl's going to begin with the  
19 first question related to the vegetable  
20 subgroups.

21 MEMBER ACHTERBERG: Thank you,  
22 Shelly. Cheryl Achterberg here. This is a

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1 very different kind of research question,  
2 where we're actually investigating whether or  
3 not the current food group patterning or  
4 categories is effective, and what would it  
5 look like if we made some adjustments.

6 So, the first food pattern  
7 modeling question was designed to address the  
8 vegetable subgroups and current patterns of  
9 intake, and more specifically the question is  
10 "What revisions to the vegetable subgroups,  
11 such as including tomatoes with orange  
12 vegetables and leafy lettuce with dark green  
13 vegetables may help to highlight vegetables of  
14 importance and allow recommendations for  
15 intake levels that are achievable -- that's by  
16 the general public -- without compromising the  
17 nutrient adequacy of the patterns themselves.

18 This current concern -- I'm sorry.  
19 I went the wrong way there. This current  
20 concern is that the other vegetable subgroup  
21 contributes the greatest proportion to overall  
22 vegetable intake in the US diet, but the

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1 recommendation for orange vegetables is much  
2 greater than consumption.

3 For example, the recommendations  
4 are nine times greater for girls and 14 times  
5 greater for boys than median intakes. Orange  
6 vegetables currently count for four percent of  
7 vegetable consumption, while the, quote,  
8 "other vegetable" subgroup accounts for 55  
9 percent. And tomatoes, alone account for 22.3  
10 percent of total vegetable consumption.

11 Giving more recognition to  
12 tomatoes will make vegetable consumption  
13 recommendations more realistic and highlight a  
14 good source of specific short-fall nutrients.

15  
16 Therefore, the rationale for  
17 examining potential changes in the vegetable  
18 subgroups structure is four-fold: to decrease  
19 the wide discrepancy between the largest  
20 vegetable subgroup, "other vegetables," and  
21 the smallest vegetable subgroup, orange  
22 vegetables; to provide more focus on tomatoes,

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1 now part of the "other vegetable" group,  
2 orange vegetable group, as a vegetable choice  
3 in recognition of their nutrient  
4 contributions.

5 Did I skip something?

6 MEMBER NICKOLS-RICHARDSON: Just  
7 go back one.

8 MEMBER ACHTERBERG: Yes, I'm  
9 sorry. To facilitate development -- we'll  
10 call this number three for now -- to  
11 facilitate development of food intake patterns  
12 that meet nutritional recommendations, within  
13 calorie needs and are realistic and similar to  
14 proportions selected by consumers.

15 And the forth rationale, to  
16 encourage increased vegetable consumption and  
17 selection of a variety of vegetables to meet  
18 nutrient needs through guidance that is both  
19 understood and achievable by consumers.

20 To cut to the chase, the vegetable  
21 subgroups were realigned. The results are  
22 that the food item clusters changed somewhat.

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1 And, as you can see, orange shifted now to  
2 red-orange vegetables, subgroup emerged.

3 Butterhead lettuce and bok choy  
4 shifted to the dark green subgroup, and the  
5 consumption of orange-red vegetables, when  
6 tomatoes are included substantially increases.

7 So, red-orange vegetables, when  
8 tomatoes are included, is a new subgroup we  
9 have introduced and consumption is  
10 substantially increased in that particular  
11 group.

12 The overall vegetable  
13 recommendation does not change. That is two  
14 and a half cup equivalents per day. With the  
15 realignment, the new recommendations are  
16 within the 95th percentile of usual intake for  
17 almost all age, sex categories, while still a  
18 large increase above the median, the change  
19 required may be more achievable than the  
20 change required for meeting current targets.

21 In terms of nutrient adequacy, the  
22 overall nutrient adequacy of the new patterns

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1 is essentially the same as the old patterns.

2 Shifting now to conclusions. The  
3 proposed revision of the vegetable subgroups  
4 results in expanding to the new red-orange  
5 vegetable subgroup with only minor changes in  
6 the dark-green, leafy and broccoli subgroup.

7 And these proposed new amounts are  
8 more achievable than existing recommendations  
9 while meeting nutrient adequacy and staying  
10 within an individual's calorie needs.

11 MEMBER NICKOLS-RICHARDSON: Okay.

12 Thank you, Cheryl. This is Shelly Nickols-  
13 Richardson again. Our second question related  
14 to modeling, dealt with "How well do USDA food  
15 intake patterns using updated food intake and  
16 nutrient data meet DRI's and potential 2010  
17 Dietary Guideline nutrient recommendations.

18 And part of the reason for  
19 conducting the vegetable subgroup modeling  
20 first was to be able to use those patterns  
21 within this next step. So, this was the next  
22 logical question after that realigning

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1 vegetable subgroups, and then looking at how  
2 well do these patterns, based on the USDA  
3 Dietary Guidelines meet requirements.

4 This modeling analysis was  
5 actually conducted in 2005 as well for the  
6 Dietary Guidelines, and the approach to the  
7 modeling analysis was that appropriate energy  
8 levels for food intake patterns were  
9 identified based on the DRI formulas for  
10 estimated energy requirements.

11 Next step was that nutritional  
12 goals for these patterns were set for nine  
13 vitamins, eight minerals, six macronutrients,  
14 and the acceptable macronutrient distribution  
15 range for five macronutrients, and then based  
16 on age, sex groups.

17 Food groups were established in  
18 amounts of nutrients obtained by consuming  
19 various combinations of foods were determined  
20 and nutrient levels in each pattern were  
21 evaluated against nutritional goals.

22 To update this modeling analysis

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1 for the 2010 Dietary Guidelines, more recent  
2 and detailed food consumption and nutrient  
3 content data were used. All foods reported  
4 consumed from the 2003-2004 NHANES were  
5 assigned to appropriate food item clusters and  
6 an ideal -- ideal being a nutrient-dense form  
7 representative food was selected for each item  
8 cluster. Nutrient profiles for each food  
9 group or subgroup were then calculated.

10 The vegetable subgroup realignment  
11 analysis was used again, and calories and  
12 nutrients provided by each pattern from the  
13 nutrient profiles and recommended intake data  
14 were calculated, and finally, nutritional  
15 goals that were or were not met were  
16 identified.

17 For all food patterns, when using  
18 the nutrients and calories from ideal  
19 representative foods, again, those are foods  
20 that are in their nutrient-dense forms. The  
21 sum of the calories from recommended amounts  
22 of each food group in oils, which are

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1 considered essential calories, was less than  
2 the caloric goal for the pattern.

3 The remaining calories were  
4 assigned to the discretionary calorie  
5 allowance.

6 So, the 12 USDA food patterns meet  
7 almost all of their nutritional goals for  
8 adequacy. Many nutrients in the patterns are  
9 well above the RDA or AI, such as protein,  
10 selenium, riboflavin, copper and vitamin B12.

11 Some nutrients are within 90 to  
12 110 percent of the RDA or AI, such as iron for  
13 women age 19 to 50 years of age, or calcium  
14 for adolescent girls.

15 Three nutrient adequacy goals are  
16 not met, including vitamin E and choline as  
17 well as potassium in patterns at the lower  
18 calorie levels. However, these patterns meet  
19 almost all nutrient goals for moderation.

20 As an example, the USDA food  
21 pattern for 1400 calories includes 1,255  
22 essential calories based on the ideal

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1 representative food pattern modeling analysis  
2 with 145 discretionary calories.

3           This example highlights that  
4 consumption of nutrient-dense foods within the  
5 guidance of the USDA food patterns can meet  
6 the vast majority of nutrient requirements  
7 with some discretionary calories available so  
8 that further nutrient-dense foods or other  
9 food items can also contribute to nutrient  
10 goals.

11           So the proposed conclusion here is  
12 that nutrient needs can be met by consuming  
13 the USDA pattern of eating that includes a  
14 defined energy intake level for an individual.

15           Then, the next food pattern  
16 modeling question that is of interest is,  
17 "What is the impact on caloric and nutrient  
18 intake, if the USDA food patterns are  
19 followed, but typical, rather than the ideal  
20 representative choices are made?"

21           So, this question then looks at  
22 what are Americans currently doing and how

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1 does that compare to these ideal food choices.

2 As with the USDA food patterns,  
3 modeling analysis, all foods reported consumed  
4 from the 2003-2004 NHANES were assigned to  
5 appropriate food item clusters, and the  
6 typical food consumed, which was usually the  
7 top contributor to intake from each item  
8 cluster was selected as the typical  
9 representative food.

10 Nutrient profiles for each food  
11 group or subgroup or were calculated.  
12 Calorie, sodium, cholesterol and saturated  
13 fatty acid levels for nutrient profiles using  
14 ideal and typical food choices were compared,  
15 and excesses and deficiencies in the typical  
16 choices pattern compared to ideal choices in  
17 the standard were identified.

18 Calories, sodium and saturated  
19 fatty acids in most food groups increased when  
20 typical versus ideal food choices were  
21 included in the model.

22 Typical food choices that

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1 contributed to these higher levels included  
2 foods from all food groups, so across all of  
3 our food groups, these typical choices  
4 contributed to the higher levels.

5 Must of these higher levels of  
6 calories, sodium and saturated fatty acids had  
7 to do with selection of processed foods,  
8 methods of preparation, such as frying of  
9 foods or inclusion of added sugar and whole  
10 fat foods.

11 Calorie levels per cup or ounce  
12 equivalent were up to 50 calories higher when  
13 typical rather than ideal food choices were  
14 made. So, if typical food choices were  
15 continually made, moderation goals for  
16 calories, total fat, saturated fat,  
17 cholesterol and sodium would not be met.

18 So, a proposed conclusion is that  
19 typical food choices do not substantially  
20 affect nutrient adequacy goals, so nutrient  
21 requirements are met with typical foods,  
22 however typical foods tend to be higher,

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1 again, in calories, total fat, saturated fat,  
2 sodium and cholesterol, compared to the ideal  
3 nutrient-dense food selected for the USDA food  
4 pattern models.

5 For example, the 2000 calorie  
6 pattern contains over 2400, or about 400 more  
7 calories if all food choices are typical food  
8 choices rather than nutrient-dense food  
9 choices as modeled in the USDA food intake  
10 pattern.

11 I'm going to go ahead and go on to  
12 our next -- next step slide, knowing that  
13 we'll come back for discussion on the modeling  
14 question. So, next steps for nutrient  
15 adequacy subcommittee include now moving into  
16 food groups of concern.

17 We've looked at the nutrients and  
18 we'll continue some work with the nutrients of  
19 concern, but we want to move into those food  
20 groups. We'll also be looking at abundance  
21 foods or nutrients of concern and can keep  
22 some of the comments in mind from today.

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1 Vitamin D will be a specific  
2 question, and we're moving forward with that.

3 Breakfast intake and meeting nutrient needs  
4 is part of a larger question that's being  
5 addressed by several subcommittees.

6 Looking at the question of  
7 nutrient supplements was sort of our  
8 fundamental premise of foods first, then  
9 taking a look at nutrient supplements only for  
10 specific intake patterns and age, gender  
11 groups and looking at this in light of  
12 nutrients for specific age groups.

13 We have some more modeling work to  
14 be done looking at substituting whole grains  
15 for enriched grains and Linda did mention we  
16 would present that today, but we're holding  
17 that until the next meeting to have some other  
18 pieces that go along with that from other  
19 subcommittees.

20 Then, also looking at vegan  
21 patterns, milk and milk products, nutrients  
22 from starchy vegetables compared to grains and

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1 additional food patterns and nutrient  
2 adequacy. So, some additional modeling that  
3 needs to be done.

4 So, I'll open the discussion up  
5 for questions related to the modeling.

6 MEMBER PEREZ-ESCAMILLA: I have a  
7 question for Cheryl or -- Cheryl, and thank  
8 you very much for a very nice presentation.

9 And this question is related to  
10 the issue of adding tomatoes to the orange-red  
11 group because I think it is important to have  
12 an understanding of the food products that are  
13 contributing the most to tomato intake in  
14 different age groups in the US, because if we  
15 allow for catsup and processed pasta sauces  
16 and so on that are very high in sodium, do we  
17 count it?

18 I'm not sure if we did a benefit-  
19 risk analysis how that would come out.

20 MEMBER ACHTERBERG: Thank you for  
21 the question. I feel confident in staying  
22 that catsup is not a huge contributor to this

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1 food group, but we have been doing the  
2 modeling and looking specifically at the  
3 particular foods, and I think, in fact, in the  
4 typical diet modeling study, we have the  
5 specific info on what tomato products are  
6 consumed.

7 Marinara sauce is high in that  
8 respect. If you were wondering about a tomato  
9 sauce, and we have separated plain tomato  
10 sauce from the marinara sauce which also,  
11 incidentally, contains added fats, but be that  
12 as it may, we have all of those data and we  
13 can speak to those data.

14 But the first modeling question  
15 was what difference would it make if we  
16 restructured the way that vegetables were  
17 categorized so that we could speak more  
18 directly to the public about the consumption  
19 of those vegetables.

20 MEMBER RIMM: This is Eric Rimm.  
21 I mean, just to add to that comment, Rafael, I  
22 think it is a really important point, but I

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1 think it needs to be taken in the context of  
2 all the guidelines.

3 If we have guidelines saying that  
4 sodium should be reduced and the fat that's in  
5 the food should be monosaturated tomato, then  
6 you could make a tomato sauce that contributes  
7 to the red vegetables, contributes to low  
8 sodium and contributes to monounsaturated  
9 fats. So, in defense of tomato sauce.

10 CHAIR VAN HORN: I would just like  
11 to congratulate the group on the work done so  
12 far, recognizing just how complex all these  
13 questions are. But I also would like to just  
14 sort of remind ourselves as we go forward with  
15 this discussion today, tomorrow, that we'll  
16 repeatedly remind ourselves of the obesity  
17 epidemic that we have currently underway.

18 And I think everything that Shelly  
19 and her group has done in regard to  
20 recognizing that lower energy intake is lower  
21 to be necessary for the majority of the  
22 American public as we go ahead.

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1           The value of energy density  
2 becomes even more apparent because making  
3 proper selections within each of those food  
4 groups really becomes essential in a reduced  
5 calorie environment, and so the food modeling  
6 that is going on, and all of the effort to try  
7 to come up with recommendations at various  
8 calorie levels will be just really invaluable,  
9 I would think, for the public as they try to  
10 work their way through these choices and still  
11 meet all their nutrient goals.

12           So, you know, the point that Eric  
13 just made about, you know, pasta sauce that  
14 makes a lot of different contributions in one  
15 felled swoop will become more and more  
16 important because meeting those nutrient needs  
17 within a limited calorie intake will become  
18 something that everyone in this country should  
19 be more conscious of.

20           MEMBER ACHTERBERG:       This is  
21 Cheryl, if I could add to that. And, thank  
22 you, Linda.

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1 I think this may be the first  
2 committee that's really taking in hand to what  
3 the realities of average intakes as they are  
4 in trying to figure how to move them in the  
5 direction that's desired.

6 And that was the impetus behind a  
7 lot of this food modeling. Acknowledging what  
8 exists, where it is, and then trying to figure  
9 out how do we shift it in the direction that  
10 we think is desirable.

11 MEMBER PEARSON: Cheryl, this is a  
12 directed view of maybe the entire committee,  
13 and we've had a number of issues from the  
14 fatty acid group relative to the probability  
15 that some of our models may not show adequacy  
16 in choline, and it looks like you've had that  
17 kind of across the board in many instances.

18 I guess it would certainly be  
19 helpful to us in our fatty acid committee to  
20 get an idea of really the significance of the  
21 choline recommendation, how definite those  
22 are.

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1 I had been led to believe that  
2 these were perhaps still a little bit sketchy  
3 in terms of compared to the nutrient adequacy  
4 data we have for many other things, and that  
5 would be very helpful for us to know that so  
6 that we don't basically have kind of the tail  
7 wag the dog here in terms of the -- a  
8 relatively minor issue, actually starting to  
9 control something that -- such as saturated  
10 fat or cholesterol content, which obviously  
11 are big issues.

12 MEMBER ACHTERBERG: Yes, thanks  
13 Tom, for the question. It looks like I am  
14 going to punt to Shelly.

15 MEMBER NICKOLS-RICHARDSON: Well,  
16 I am not sure that I am receiving that ball  
17 yet but I will say -- this is Shelly -- that  
18 when we look at choline, obviously, there's a  
19 particular food source that is abundant in  
20 choline. That presents a problem for  
21 cholesterol.

22 That when we look at this as being

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1 a nutrient of concern for certain subgroups,  
2 we're probably looking at women of  
3 childbearing age, and then potentially an  
4 older population.

5 So, it will not likely fall across  
6 the entire population of all age ranges.

7 MEMBER PEARSON: And the evidence  
8 for those concerns are strong enough to --

9 MEMBER NICKOLS-RICHARDSON: This  
10 is Shelly again. The evidence for those  
11 concerns is not at the same level of -- I  
12 don't think we have the ability to conduct a  
13 NEL search at this point. We have done some  
14 soft searches, if you will, some exploratory  
15 searches, and the evidence that is there is  
16 not as robust as what we have been able to do  
17 for some of the other questions.

18 So, I -- we don't plan at this  
19 point to have a NEL process to go along with  
20 that, but it's more a cautionary note for  
21 certain subgroups.

22 MEMBER SLAVIN: This is Joanne

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1 here. I just wanted to mention, it's an  
2 adequate intake for choline, so it isn't --  
3 you know, it's not -- so I think we do want to  
4 acknowledge that, so it's similar to fiber  
5 where we have and adequate intake as far as  
6 the DRI, so I think we need to make sure that  
7 if we're not meeting it, that we address it.

8 MEMBER APPEL: Yes, Larry Appel.  
9 That was great. I -- in terms of just one  
10 comment, could dark-green be just plain green  
11 vegetables, you know, because I think you're  
12 now moving some other --

13 MEMBER ACHTERBERG: Okay. The  
14 perennial problem. This is Cheryl. The  
15 perennial problem with green beans. Their  
16 nutrient profile doesn't align with the other  
17 dark-green vegetables.

18 MEMBER APPEL: So what are you  
19 going to put, like lettuce? Is that --

20 MEMBER ACHTERBERG: It's not dark-  
21 green, either, although the dark-green leafy  
22 lettuces are good. So, so the iceberg lettuce

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1 has fewer nutrients of interest here. It's  
2 basically water, but some of the darker-green  
3 leafy lettuces grouped in the dark-green leafy  
4 vegetable group do have the nutrients of  
5 interest.

6 MEMBER APPEL: You know, it might  
7 be helpful to see sort of side-by-side, you  
8 know, old system, new system to understand,  
9 you know, how these sorted out, and I think  
10 there is a -- I mean, I just -- I'm having a  
11 little bit of difficulty understanding it  
12 myself, as somebody who doesn't really  
13 understand --

14 MEMBER ACHTERBERG: Sure.

15 MEMBER APPEL: -- where all the  
16 greens --

17 MEMBER ACHTERBERG: We actually  
18 have, in essence a white paper written, and I  
19 think the suggestion is that these papers  
20 would be attached as appendices in the report.

21 MEMBER NELSON: Sorry, this is  
22 Mim. I agree. I agree. I think it might be

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1 helpful to very succinctly and clearly sort of  
2 describe the old and the new system and what  
3 things fit in, but which would -- I'm assuming  
4 would be done anyway.

5           So, beyond just a white paper, but  
6 actually in the question -- yes, just to  
7 clarify. But, as long as I have the speaker  
8 for a second, I just want to really commend  
9 Trish. The typical diet modeling, I think,  
10 you know, I echo some other voices around  
11 here.

12           I think it was incredibly helpful  
13 because what it really, really showed, and I  
14 think we've got to hammer it home, is that  
15 when people are meeting their nutrient needs,  
16 the typical American, the way that they're  
17 meeting them to get these food groups is  
18 they're, for a 2000 calorie diet they're  
19 getting 2400 calories, which is significant,  
20 and I just -- it's really -- I think it's  
21 really important that we highlight this.

22           MEMBER APPEL: Yes, to tell you --

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1 this is Larry Appel again. Actually, this was  
2 the main question I was going to raise, is  
3 that when I looked at the -- what at least the  
4 summary here is the substitution between ideal  
5 and typical was not meant to be isocaloric,  
6 which I think is a key issue, you know.

7 And so, the question that I would  
8 have -- I mean, you're changing -- your doing  
9 two things. One, you're letting the type of  
10 food change, but also the total caloric  
11 intake.

12 You know, so then saturated fat,  
13 sodium and cholesterol will go up, as well as  
14 actually the nutrients. A possibility.

15 So, I'm just wondering what -- you  
16 know, this gets at the heart of what the type  
17 of modeling should be. Should it be  
18 isocaloric, or should it be, you know, let it  
19 float a little bit, you know, and I really --

20 MEMBER NELSON: But my sense is --  
21 my sense is the ideal was we can design, or we  
22 -- as in the modeling, the global "we" can --

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1 this is Mim Nelson again -- that you can  
2 design with ideal foods really nutrient-dense  
3 wonderful diet.

4 So, it's -- and they were done at  
5 different caloric levels, and that's what  
6 Shelly presented. And I think that the --  
7 what we wanted to see was, okay, well, these  
8 are ideal and these are great and we actually  
9 can and we should be able to meet our nutrient  
10 needs with eating real foods.

11 But what are Americans actually  
12 eating, and how does that -- if you put that  
13 screen over it, what does it look like for  
14 these food groups to -- I think that that is  
15 the right -- if you -- the other thing is,  
16 without a doubt, if you then did it  
17 isocalorically, I'm assuming by just the math,  
18 if you do it isocalorically, you're going to  
19 be deficient in the food groups because you'd  
20 be eating a lot less of each of the things in  
21 order to make that calorie.

22 MEMBER APPEL: But I guess I'm --

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1 and I don't want to be a devil's -- I actually  
2 don't think it's being a devil's advocate. I  
3 think that, in reality people are eating those  
4 typical foods, but it's not -- I don't know  
5 the extent of the calorie, how many more  
6 calories, but the likelihood, you know, if  
7 people are just, you know, for the obesity,  
8 given the obesity epidemic, that's probably  
9 only like 50 to 100 calories, you know, on  
10 average that's contributed.

11 MEMBER NELSON: No.

12 MEMBER APPEL: So, if that's the  
13 case -- per day. So if that's the case, then  
14 do we, you know, how many calories more per  
15 day --

16 MEMBER NELSON: Over 400.

17 MEMBER APPEL: Over 400. That's  
18 impossible. It's impossible. So, I think --

19 MEMBER NELSON: But Trish is  
20 shaking -- Trish is shaking her head. Maybe  
21 --

22 MEMBER ACHTERBERG: Could I --

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1 this is Cheryl. Could I speak, please.  
2 Because I think it has not been widely  
3 recognized that when the food guide pyramid  
4 was put together, and the recommendations  
5 made, they were made on the basis of a so-  
6 called representative food items, which were  
7 the most extreme, the most nutrient-dense  
8 choices within each of those food groups.

9 So, comparing the most nutrient-  
10 dense food item choices to the typical intake  
11 is that gives us that 400-calorie spread on a  
12 daily basis on a 2000 calorie diet.

13 So, the exercise to evaluate the  
14 typical intake, I think was extremely  
15 important to show us, in essence, what the gap  
16 is, and to help us consider, as we are framing  
17 or reframing advice what we need to be giving  
18 our attention most to.

19 Does that make any more sense?

20 MEMBER APPEL: I understand but,  
21 you know, neither is realistic. That's the  
22 problem. And to have 400 calories more, I

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1 just don't -- I mean, I think if you did  
2 modeling where you somehow ratcheted the  
3 calorie -- because I just, for the life of me,  
4 cannot believe that, you know, people are  
5 consuming 400 calories more in real life.

6 And that's what I think you're  
7 trying to model, closer to real life. So, you  
8 might want to say, okay, well, it's not  
9 isocaloric, but maybe it's a hundred calories  
10 more on average when they make bad selections.

11 MEMBER ACHTERBERG: It's not  
12 intake data.

13 MEMBER APPEL: No, I realize that.

14 MEMBER ACHTERBERG: Yes.

15 MEMBER APPEL: You're trying to  
16 model what would likely be happening if people  
17 were consuming, you know, the typical choices  
18 --

19 MEMBER NICKOLS-RICHARDSON: The  
20 top typical choices all the time. So, it's  
21 one extreme to the other extreme. So, the  
22 reality is probably somewhere in that 400

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1 calories.

2 Let me have Trish speak now.  
3 Trish is going to say a few comments.

4 MS. BRITTEN: Hi. I think the  
5 confusion about the extra 400 calories is that  
6 the way we approach the modeling from the  
7 staff perspective was what if Americans  
8 actually followed all the advice about how  
9 much to eat from every food group so that they  
10 are actually are eating two and a half cups of  
11 vegetables a day, they actually are eating two  
12 cups of fruit a day, the three cups of milk,  
13 et cetera.

14 But, they didn't get the second  
15 half of the message, which is they have to be  
16 in nutrient-dense forms. So, we know right  
17 now that Americans are not eating two and a  
18 half cups of vegetables. They are eating more  
19 like a cup to a cup and a half, and about a  
20 cup of -- you know, less than two cups of  
21 fruit by a long shot, and less than three cups  
22 of milk by a long shot.

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1           So, that 400-calorie level is the  
2 -- I'm sorry. I'm reminded to say that this  
3 is Trish Britten from USDA.

4           So, that 400-calorie difference  
5 isn't a difference that actually would happen  
6 unless you had a person who said, okay, I'm  
7 now -- I'm going to -- I haven't been  
8 following this, I'm going to follow it, I'm  
9 going to eat all of these food groups as  
10 recommended, but they are still eating fried  
11 chicken and they're still drinking whole milk  
12 or two percent milk, and not listening to the  
13 rest of the message.

14           So, that's where that difference  
15 is. We just wanted to make sure that -- that  
16 we identified the extent of the problem of not  
17 getting the whole complete message about  
18 following the food patterns.

19           MEMBER ACHTERBERG: So, in essence  
20 it establishes both the floor and the ceiling.

21           MS. BRITTEN: Yes.

22           MEMBER ACHTERBERG: Through this

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1 modeling. But what people actually do is  
2 going to be somewhere in between.

3 MEMBER APPEL: Yes. The problem  
4 is that you're using the term "typical foods,"  
5 but it's not a typical total intake. And if  
6 you made typical foods plus typical intake,  
7 you probably would get a better idea of -- of  
8 what would be happening, you know, in the real  
9 world if somebody was --

10 MEMBER ACHTERBERG: Point taken.

11 MS. BRITTEN: Well, we have taken  
12 data. This is Trish again. We do have intake  
13 data from NHANES. We have -- we know what  
14 people are eating, and so that's one point of  
15 departure.

16 But this is another point of  
17 departure, looking at what if we're following  
18 these recommendations that would, in fact, be  
19 nutrient adequacy.

20 MEMBER FUKAGAWA: This is Naomi.  
21 I have a question for either Trish or Cheryl.  
22 With respect to making the change that you've

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1 made with respect to going to red-orange,  
2 certainly the other food groups changed,  
3 because you're within a finite.

4 And what impact does that have  
5 with the movement around between vegetables,  
6 starches, starchy vegetables, grains, et  
7 cetera.

8 MS. BRITTEN: The biggest change  
9 was in -- it really kind of equalized the  
10 amount of vegetables and the amount of  
11 consumption that came from each one of the  
12 subgroups, because the other -- the, quote,  
13 "other vegetable" subgroup in the old system  
14 represented over half of all vegetables  
15 consumed and it was kind of a mish-mash of  
16 different vegetables.

17 But pulling the tomatoes out, that  
18 was the only really big change that was made.

19 All the others are minor. I would call them  
20 housekeeping.

21 What you've done is, you've  
22 established a red-orange group that is about,

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1 I think it's 30 percent of vegetable  
2 consumption, but I don't have the numbers in  
3 front of me, and a, quote, "other vegetable"  
4 group that's about 30 percent.

5 So, things are spread out. The  
6 starchy vegetables, the legumes, were not  
7 changed at all in this modeling, and the dark-  
8 green only changed by finding a couple of  
9 dark-green leaves that are similar to the  
10 other dark-green leaves, which were the  
11 butterhead lettuce and bok choy, putting them  
12 in where they belonged, along with the romaine  
13 lettuce and the spinach and the collard greens  
14 and those things.

15 So, that was more of a  
16 housekeeping issue. But the big change was  
17 that -- that all of the intake of tomatoes  
18 kind of got lost and we had this focus, if you  
19 look at our vegetable subgroups of orange  
20 vegetables, a real focus on essentially four  
21 vegetables which only one has any kind of  
22 major consumption, and that's carrots.

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1                   MEMBER FUKAGAWA:    But the actual  
2 amounts that they would be consuming did  
3 change.

4                   MS. BRITTEN:    The total -- we kept  
5 that constant, because the question really was  
6 realigning the vegetable subgroups, not  
7 increasing total vegetable consumption above  
8 what's now currently recommended.    We just  
9 shifted the amounts around.

10                  MEMBER     ACHTERBERG:            Cheryl  
11 Achterberg.    So, these calculations were done  
12 in cup equivalents.

13                  MEMBER FUKAGAWA:    If they were  
14 they did change from 2005 for other things,  
15 such as peas, dried beans and peas would have  
16 gone down.

17                  MEMBER ACHTERBERG:    Actually, they  
18 didn't, but we have all of the data in this  
19 white paper.    I have the numbers all in front  
20 of me.    You probably don't want me to sit and  
21 read them to you, but -- but what we kept  
22 constant was the volume of vegetables, and all

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1 we did was sort them differently.

2 MEMBER PEREZ-ESCAMILLA: Cheryl, I  
3 have a question about -- are you going to be  
4 able to model -- and this is Rafael -- for  
5 families or individuals on a limited budget,  
6 the types of food selections that they could  
7 make to meet nutrient requirements and stay  
8 within caloric requirements and budgetary  
9 constraints?

10 MS. BRITTEN: This is Trish. We  
11 actually, at USDA have a whole other -- other  
12 set of food plans. They are designed  
13 specifically to look at lower income. I think  
14 there was a presentation in April or January  
15 by -- by Andi Carlson of our office, and the  
16 most famous of our food plans is the Thrifty  
17 Food Plan, which is the basis for Food Stamp  
18 allotments.

19 It actually used the same food  
20 grouping system as -- as our -- the patterns  
21 you're looking at that are the basis for  
22 MyPyramid.

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1                   And she does a computerized  
2 simulation to identify how to put -- meet all  
3 the constraints of the amounts that are  
4 recommended from each food group and all the  
5 nutrient constraints and what foods come up  
6 with -- with meeting that at the lowest cost.

7                   And so, that's what ends up being  
8 the Thrifty Food Plan. So, essentially, yes,  
9 we do it, and that is updated on a regular  
10 basis as well.

11                   So, presumably, after these  
12 guidelines are out, that will be updated  
13 again, and so people will be able to see foods  
14 that are at minimum cost that meet all of the  
15 constraints of nutrient adequacy and food  
16 group recommendations.

17                   MEMBER ACHTERBERG:     And perhaps  
18 just for the sake of clarification -- this is  
19 Cheryl again -- I'll share a few numbers just  
20 to give you a picture of this.

21                   So, dark-green vegetables, 5.38  
22 percent, red-orange, rounding it now to 27

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1 percent, legumes six percent, starchy, 30  
2 percent, other, 32 percent. Whereas, the  
3 "other" used to be over 50 percent.

4 So, the shift is really out of the  
5 "other" and into red-orange. And as Trish  
6 described it, almost everything else is  
7 margins, on the margins and housekeeping.

8 CHAIR VAN HORN: Okay. Other  
9 questions or comments in regard to this?

10 MEMBER ACHTERBERG: I just have  
11 one. I'm sorry. Go ahead, Xav.

12 MEMBER PI-SUNYER: I just wanted  
13 to clarify, is this a done deal?

14 MEMBER ACHTERBERG: Cheryl.  
15 Everything we're presenting today, in the  
16 spirit of everything else we're presenting  
17 today, I guess are provisional, but it was the  
18 basis from which all things flow in terms of  
19 our other modeling.

20 So, all of our other modeling  
21 exercises did so with this regrouping.

22 MEMBER NELSON: So, -- this is Mim

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1 -- a little bit of the same follow-up  
2 question. What if we, after, you know, April,  
3 that we say that actually it's not, you know,  
4 three vegetables a day or whatever the number  
5 is, that it should be five or six, does then -  
6 - do we sort of update the modeling process?  
7 Is that sort of -- okay.

8           Because, I think we ought to be a  
9 little careful, because there may be evidence  
10 why we want more fruits and vegetables.

11           MEMBER ACHTERBERG: I don't think  
12 this would get in the way at all. Rather, you  
13 know, our preexisting organization, if you  
14 wanted people to eat more fruits and  
15 vegetables, it was very hard to steer them  
16 into anything except other vegetables.

17           But, the choices in that other  
18 category essentially equate cucumbers and  
19 iceberg lettuce to tomatoes, but from a  
20 nutritional point of view, they are very, very  
21 different in terms of contributions to the  
22 diet. And that's what we were trying to take

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1 into account.

2 MEMBER NICKOLS-RICHARDSON: And  
3 this is Shelly. Just for the record, we were  
4 nodding head. The answer to Mim's question is  
5 yes.

6 MEMBER NELSON: Okay.

7 CHAIR VAN HORN: And maybe just to  
8 kind of summarize the discussion that we just  
9 had, I'm looking again at your slide, talking  
10 about the nutrients of concern, and the short-  
11 fall nutrients which in both adults and  
12 children, you know, A, C, D, E, K, you know,  
13 calcium, magnesium, potassium and dietary  
14 fiber.

15 Well, obviously, very many of  
16 those would be accommodated if there was a  
17 greater intake of fruits and vegetables across  
18 the entire population. So, as we continue to  
19 go forward and as Trish continues to do her  
20 modeling, I think, once again, in an obese  
21 environment, we're looking at ways to enhance  
22 nutrient density without increasing calories.

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1                   And so, you know, making choices  
2                   within this new configuration is more likely  
3                   to result in nutrient adequacy where these  
4                   nutrients are concerned.

5                   And in addition, you know,  
6                   initiating that, I think is really where we  
7                   would like to see people go. There's no  
8                   question that the kinds of things we'll be  
9                   recommending mean some differences, mean some  
10                  changes that we're advocating here that  
11                  people, children, families, policies, we'll  
12                  need to make, not only to meet those  
13                  nutrients, but also to address the obesity  
14                  problem.

15                  So, I believe that what we're  
16                  describing here is the essence of that, and as  
17                  we continue, you know, we'll simply continue  
18                  to add further to how that ideal eating  
19                  pattern should look, and hope that, you know,  
20                  we can come up with practical and cost-  
21                  effective ways to make that happen.

22                  Other questions, comments on this

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1 very important subcommittee?

2 (No response.)

3 CHAIR VAN HORN: All right. With  
4 that, I think I would like to adjourn for ten  
5 minutes just a postponement, or a break for  
6 everyone, and we'll resume promptly at three  
7 o'clock eastern time. Thank you.

8 (Whereupon, a short recess was  
9 taken from 2:49 p.m. until 3:00 p.m.)

10 CHAIR VAN HORN: Welcome back. We  
11 are ready to get started for the second  
12 presentation of the group this afternoon,  
13 which will be chaired by Joanne Slavin on  
14 carbohydrate and proteins, and we have a rich  
15 discussion in store. Thank you.

16 MEMBER SLAVIN: Thanks, Linda.  
17 Yes, we're the carbohydrate and protein  
18 subcommittee, and I'd like to acknowledge my  
19 other members listed here, Dr. Cheryl  
20 Achterberg, Dr. Pi-Sunyer and Dr. Van Horn.

21 I would also like to acknowledge  
22 the wonderful staff that works with us, Jan

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1 Adams, Eve Essery, all the NEL people, the  
2 librarians. It's been a ton of literature  
3 searches we're going to go through today and  
4 had a lot of help with that.

5 The topics we're going through  
6 today are all NEL searches, and the way we  
7 structured our work at the end we'll give you  
8 a list of all of the things that are also on  
9 the committee's plate to do.

10 But everything that we're going to  
11 talk about today are NEL searches. And they  
12 are listed in the next slide. Glycemic load  
13 and glycemic index by Dr. Pi-Sunyer.

14 I'll talk about dietary protein  
15 patterns and then we will get into our food  
16 groups discussions, fruit and vegetables.  
17 Cheryl will talk about and I will cover milk  
18 and milk products, and then dried beans and  
19 peas.

20 So, I'm going to turn it over to  
21 Dr. Pi-Sunyer. Thanks, Eve.

22 MEMBER PI-SUNYER: Thank you,

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1 Joanne. So this first presentation is a  
2 review of glycemic index and glycemic load,  
3 and we asked the following questions: What is  
4 the relationship between glycemic index and  
5 glycemic load, and body weight, cancer, type  
6 II diabetes and cardiovascular disease?

7 First of all, I want to go through  
8 some definitions. Glycemic index is a  
9 classification proposed to qualify the  
10 relevant blood glucose response to consuming  
11 carbohydrate-containing foods.

12 Operationally, it is the area  
13 under the curve for the increase in blood  
14 glucose after the ingestion of a set amount of  
15 carbohydrate in a food, generally 50 grams  
16 during the two-hour postprandial period  
17 relative to the same amount of carbohydrate  
18 from a reference food, white bread or glucose,  
19 tested in the same individual under the same  
20 conditions, and using the initial blood  
21 glucose concentration as a baseline.

22 Glycemic load is an indicator of

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1 the glucose response or insulin demand that is  
2 induced by total carbohydrate intake. It is  
3 calculated by multiplying the weighted mean of  
4 the dietary glycemic index of the diet of an  
5 individual by the percentage of total energy  
6 from carbohydrate.

7 And the glycemic response is the  
8 effects of carbohydrate-containing foods, the  
9 effects that they have on blood glucose  
10 concentration during the time course of  
11 digestion.

12 With regard to the search strategy  
13 that we used, we used -- we looked at any  
14 references that were available from June 2004  
15 to March 2009 for body weight and cancer.

16 When we did that for  
17 cardiovascular disease and type II diabetes,  
18 we found very few references, so we went back  
19 and looked at the time range from January  
20 2000.

21 We considered incident disease as  
22 outcomes. Neoplasm was the search term used

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1 for cancer and all types of cancer were  
2 included. We excluded all systematic reviews  
3 and meta-analysis and reviewed only original  
4 research articles.

5 The first question, then, is what  
6 is the relationship between glycemic index and  
7 load and body weight. The proposed conclusion  
8 with a grade of strong, is that GI and GL are  
9 not associated with weight and do not lead to  
10 greater weight loss or better weight  
11 maintenance.

12 There was no difference between  
13 high versus low GI and GL diets of greater  
14 than eight-week durations in facilitating  
15 weight loss.

16 The review of the evidence, we  
17 found 22 articles relating to this, 13  
18 randomized clinical trials, two prospective  
19 cohort studies and seven cross-sectional  
20 studies.

21 The randomized control trials  
22 overwhelmingly show no difference between high

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1 and low GI diets in achieving weight loss or  
2 maintenance. Data on glycemic load were less  
3 numerous, but show the same results. And  
4 observational studies validate this finding  
5 from RCT's.

6 The second question is: What is  
7 the relationship between glycemic index and  
8 load and cancer? Again, the proposed  
9 conclusion grade is strong. The evidence is  
10 strong that the epidemiological evidence for  
11 an association between glycemic index or  
12 glycemic load and cancer is overwhelmingly  
13 negative.

14 The review of the evidence, we  
15 found 26 articles, 19 prospective longitudinal  
16 observational studies, one cross-sectional,  
17 observational study, five case control and one  
18 case cohort study.

19 Seventeen prospective studies  
20 examined the association between GI and  
21 cancer, one showed a very weak positive  
22 association for total cancer, 15 found no

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1 association, and you can see the different  
2 cancers that were involved, endometrial,  
3 pancreatic, breast, stomach and colorectal,  
4 and one found an inverse association for  
5 colorectal cancer.

6 With regard to glycemic load, 19  
7 prospective studies examined the association  
8 between glycemic load and cancer. One, again,  
9 showed a very weak positive association for  
10 total cancer. Sixteen found no association  
11 with endometrial, pancreatic, breast, stomach  
12 and colorectal cancer, and one found an  
13 inverse association for colorectal cancer.

14 No other associations were  
15 observed except in the case control reports.  
16 In the case control reports, three found GI to  
17 be significantly associated with cancer. One  
18 for prostate and one for gastric and one for  
19 thyroid, and similarly for glycemic load.

20 With regard to type II diabetes,  
21 the question is: What is the relationship  
22 between glycemic index and load and type II

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1 diabetes?

2 For glycemic index, the proposed  
3 conclusion with a Grade of II, or moderate, is  
4 that there is mixed evidence as to whether  
5 there is an association between a high GI and  
6 type II diabetes.

7 With regard to glycemic load, the  
8 proposed conclusion with a Grade I of strong,  
9 is that there is little evidence to suggest  
10 that a high glycemic load is associated with  
11 type II diabetes.

12 The review of the evidence shows  
13 ten longitudinal prospective observational  
14 studies. With regard to the glycemic index,  
15 five reports found a positive association, two  
16 were from the same cohort, four found no  
17 association, and one found an inverse  
18 association.

19 With regard to glycemic load, one  
20 report found a positive association, seven  
21 found no relationship, and two found an  
22 inverse association.

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1           With regard to cardiovascular  
2 disease, the proposed conclusion is Grade III,  
3 very limited data, and the conclusion is the  
4 evidence for an association between high GI or  
5 high GL and cardiovascular disease is more  
6 negative than positive, but the evidence  
7 available is inadequate, really, to come to a  
8 firm conclusion regarding this question.

9           The review of the evidence with  
10 regard to cardiovascular disease, we found  
11 eight articles. Seven were longitudinal  
12 prospective observational studies, and one was  
13 a case control study.

14           The relationships between GI and  
15 GL and cardiovascular disease outcomes were  
16 inconsistent. Three studies reported a  
17 relationship between GI and GL and  
18 cardiovascular outcome in women with a BMI  
19 greater than 23 or 25, but not in those with  
20 lower BMI.

21           So, overall, if we put the  
22 questions together and say what is the

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1 relationship between GI, GL and weight, type  
2 II diabetes, cardiovascular disease and  
3 cancer, I think the overall conclusion is  
4 strong with a Grade of I.

5 Current evidence predominantly  
6 shows no relationship of GI and weight or  
7 cancer, and no relationship of GL and weight  
8 type II diabetes and cancer.

9 The evidence for GI and type II  
10 diabetes is mixed, but more strongly negative  
11 than positive. The evidence for the  
12 relationship of either GI or GL in  
13 cardiovascular disease is inadequate to come  
14 to any conclusion.

15 Thank you very much.

16 MEMBER SLAVIN: I think what we'd  
17 like to do is, since our different questions  
18 don't relate, if anyone has a question now on  
19 glycemic index, glycemic load, please ask.

20 MEMBER APPEL: Yes. Xav, a  
21 question. I notice that you didn't include  
22 systematic reviews and meta-analyses, and I

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1 think that a lot of other groups are using  
2 those, so I was just sort of curious what the  
3 rationale was, because I think -- I was hoping  
4 -- I wasn't quite sure.

5 MEMBER PI-SUNYER: Well, we  
6 thought it was better to go to the original  
7 literature rather than look at the reviews.  
8 So, we went to the original publications.

9 MEMBER APPEL: But sometime -- I  
10 mean, but then there's the -- I realize that,  
11 that's useful going to the originals, but then  
12 to synthesize -- I guess if it's a  
13 consistently null, and you know, you aggregate  
14 and you get point estimates that are null,  
15 then that reinforces the overall conclusion.

16 But sometimes, you know, things  
17 that tend -- you know, where there's  
18 inadequate statistical power, of course, and  
19 you aggregate, you might get a result.

20 MEMBER PI-SUNYER: Well, we could  
21 go back and do that. We felt that we had  
22 enough data -- I don't think that we could

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1 resolve the cardiovascular one if we went back  
2 and looked at the review ones, and I think the  
3 other would probably stay pretty much the  
4 same.

5 But, we could certainly do that if  
6 the committee wants us to go back.

7 The only advantage I could see to  
8 that would be that the reviews would probably  
9 go back beyond 2005, and so would include some  
10 studies that were not included here, because  
11 our window has been between 2005 and 2009,  
12 except for diabetes and cardiovascular  
13 disease, where we didn't have enough -- we  
14 didn't feel we had enough data from 2005 to  
15 2009 to come to any conclusions.

16 MEMBER NELSON: This is Mim. I  
17 had sort of a similar question, because I  
18 think that -- that I sure would feel more  
19 comfortable if there were systematic review or  
20 meta-analysis that sort of corroborated this  
21 and went back, because I'm concerned about  
22 some of our questions where there may have

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1 been really good trials that were done before  
2 our cutoff, were sort of -- not that we're in  
3 a vacuum, but we're not necessarily reviewing  
4 those, and I think that that's where a meta-  
5 analysis or review can sort of corroborate and  
6 we feel solid.

7 I think it might be really  
8 helpful, because if it doesn't say anything  
9 different, it's more, you know, confirmatory  
10 and it does go back further in history, which  
11 I think can be helpful.

12 MEMBER PI-SUNYER: Well, we can  
13 certainly do that if the subcommittee wishes.  
14 Tom.

15 MEMBER PEARSON: This is Tom  
16 Pearson. It seems in the lipid, in the fatty  
17 acid group we were coming across a number of  
18 times an end point that was not related to a  
19 nutrient, except in the subgroup with  
20 diabetes, or metabolic syndrome, and I was  
21 wondering if you got any signal since, you  
22 know, seven or eight percent of Americans now

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1 are diabetic, and probably another 25 percent  
2 are pre-diabetic.

3 Did you get any possible subgroup  
4 signals of the glycemic load index, et cetera,  
5 that would suggest that as a subgroup that  
6 might have some -- a different conclusion than  
7 you're drawing?

8 MEMBER PI-SUNYER: I think it's  
9 possible that a diabetic group would have a  
10 different result with regard to this. Our --  
11 I think when we started our deliberations we -  
12 - we agreed that we wouldn't do diseases, that  
13 we would do it essentially we're talking to  
14 healthy nonchronic disease Americans.

15 If we branch out and do diabetes  
16 and cardiovascular disease and so forth, we  
17 could do that, but then that would greatly  
18 change the whole -- the whole inspection of  
19 the evidence.

20 One of the problems with the  
21 diabetes ones, I think, if you look at them as  
22 most of them are very short-term, you know, we

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1 generally said that we would only look at  
2 those that went longer than eight weeks.

3 There are a lot of single-meal or  
4 short -- very short-term studies with diabetic  
5 patients. There aren't many long-term  
6 studies. There are some, but not very many.

7 MEMBER PEARSON: No, I agree. We  
8 did the same thing, but these came up in the  
9 course of looking at other papers where the  
10 authors looked at the subgroup and said that,  
11 but it didn't look like the diabetics were  
12 acting the same way as the healthy groups. I  
13 just wondered if that was a signal you got.

14 MEMBER PEREZ-ESCAMILLA: Xavier,  
15 this Rafael. My understanding is that there  
16 is quite a large intra individual variability  
17 in glycemic measures. And if that is the  
18 case, could that explain why it is so  
19 difficult to find association with any of the  
20 outcomes or do you think it's just a poor  
21 biomarker for predicting chronic disease?

22 MEMBER PI-SUNYER: Well, I think

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1 it's probably both. I think it's certainly  
2 true, there is an enormous variation from time  
3 to time. We know that even from a glucose  
4 load for a two-hour glucose tolerance curve.

5 You know, one day a person could  
6 be normal and the other day abnormal. It's  
7 created a bit of havoc with diagnosis. So, we  
8 know there is this variation that's very  
9 strong, but I think, you know, whether it's --  
10 that it's a biomarker effect, there could be  
11 some of that, too.

12 MEMBER SLAVIN: I am going to cut  
13 in if that's okay, unless there's a pressing  
14 question, just to keep on our schedule.  
15 Appreciate that -- the glycemic index load was  
16 an example of one that was reviewed in 2005,  
17 so then we took the NEL approach.

18 We're going to move on to  
19 something that is new to this committee, so we  
20 had nothing to start from, so we -- what is  
21 the association between consumption of various  
22 dietary patterns, plant-based, animal based

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1 and vegan, and health outcomes.

2 And in trying to put this question  
3 together, these are the ways we came up to  
4 phrase them. "How did the health outcomes of  
5 a plant-based diet compare to that of an  
6 animal-based diet?"

7 "How did the health outcomes  
8 differ between those who follow a vegan, non-  
9 animal protein diet, and those who consume  
10 animal products?"

11 Definitions were a problem, just  
12 we came up with these, and this is the way we  
13 searched, and this is -- and at the end you  
14 will see that this is a limitation of this  
15 field.

16 We define the animal-based diet as  
17 a dietary pattern that includes regular  
18 consumption of animal products, a plant-based  
19 diet, as a dietary pattern that includes  
20 occasional consumption of animal products with  
21 most dietary intake coming from plant foods,  
22 and a vegan diet as a dietary pattern that

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1 does not include animal products.

2 We went back, trying to figure out  
3 how far to search. Our date range, January  
4 2000 to June 2009. Children and adults, two  
5 years and older, and specific health outcomes  
6 were not identified in the search, so we  
7 wanted to go fairly broad in this search.

8 First question: How do the health  
9 outcomes of a plant-based diet compare to that  
10 of an animal-based diet, and our conclusion is  
11 a Grade III limited.

12 Using the current NEL process,  
13 intake of a plant-based diet is associated  
14 with lower BMI and blood pressure, no  
15 protective properties of vegetarian diets  
16 against cancers were found in the EPIC-Oxford  
17 cohort, and a little bit of a disclaimer here  
18 is that the differences in eating patterns  
19 among countries are great and affect the  
20 results of this question.

21 The studies that came in to the  
22 NEL review: 18 observational studies, 15

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1 longitudinal cohort, two-case controls, 11  
2 cross-sectional studies. They represented  
3 data from nine different countries, and six  
4 articles were actually from the same EPIC-  
5 Oxford cohort in the UK.

6           They've made an attempt to include  
7 vegetarian, so it was one of the few cohort  
8 studies that has enough vegetarians. Some of  
9 the limitations of this, small sample sizes of  
10 those consuming plant-based compared to  
11 animal-based diets in these cohorts, and  
12 that's particularly true of vegans.

13           But even people that are more  
14 plant-based, there is a small number, and this  
15 all inconsistent classification of plant-based  
16 diets, that in most studies there's not a way  
17 that this gets sorted out, that people go into  
18 these categories.

19           So, I think the Oxford study that  
20 -- the reason that we have data from that is  
21 that they made an attempt to do that. Most  
22 other studies, the numbers in these groups are

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1 very small, and they are not easily  
2 classified.

3 Question: How did the health  
4 outcomes differ between those who follow a  
5 vegan, non-animal protein diet, and those who  
6 consume animal products? Our Grade III,  
7 limited for a conclusion, there are very few  
8 studies that compare vegan diets to animal-  
9 based diets.

10 So, any types of study,  
11 perspective, interventions, there just aren't  
12 studies out there that have been published in  
13 this area to go from. There is some limited  
14 data that vegans have lower body mass index  
15 than meat-eaters. There is some data that  
16 vegans may have lower blood pressure than  
17 meat-eaters.

18 There's -- in looking at nutrient  
19 data in these studies, vegans have  
20 significantly lower intakes of calcium than  
21 meat-eaters. So there's some data that a  
22 vegan eating pattern may improve certain

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1 biomarkers, but can also be associated with  
2 lower intakes of some nutrients, and  
3 particularly calcium coming out here.

4 Dietary protein patterns, review  
5 of the evidence, five observational studies,  
6 two longitudinal cohorts, three cross-  
7 sectional. Again, four were based on this  
8 EPIC-Oxford cohort, and the limitations of  
9 very small number of vegans and semi-  
10 vegetarians in this cohort.

11 We have a big section on research  
12 recommendations on this just because this  
13 area, even though there's a lot of interest, a  
14 lot of public comments, and we really wanted  
15 to do a nice job of reviewing this and seeing  
16 what's out there, but there are really a need  
17 for well-defined cohort studies of populations  
18 where we have people consuming plant-based  
19 diets compared to animal-based diets.

20 Some of the potential limitations  
21 of plant-based diets for key nutrients come  
22 out: calcium, iron, B12, protein quality,

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1 especially in children and the elderly, and  
2 some of these can be done with a modeling.  
3 We'll talk more about that as potential ways  
4 to get at that.

5 Better assessment tools to  
6 classify vegetarian dietary patterns in  
7 epidemiologic studies. Most of the studies,  
8 there's very few people in these categories,  
9 anyway, and they're not well-classified.

10 A need to identify and follow  
11 cohorts that include a significant number of  
12 vegan subjects on US diets compared to matched  
13 protein eaters. I mentioned most of the data  
14 is in other countries, or hardly any US data  
15 at all. A lot of variation between the --  
16 among all these different countries and the  
17 results.

18 And then there are -- essentially,  
19 I could find -- we could find really no  
20 intervention studies where people were  
21 actually given vegan diets compared to other  
22 non-vegan diets, and looked at biomarkers,

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1 weight loss, anything like that. There's just  
2 no real studies out there that make those  
3 comparisons.

4 All right. Any questions about  
5 animal protein patterns?

6 MEMBER FUKAGAWA: I do. This is  
7 Naomi Fukagawa.

8 MEMBER SLAVIN: Yes.

9 MEMBER FUKAGAWA: Presumably into  
10 the category of protein quality, you are  
11 implying that it's the amino acid distribution  
12 within vegetable versus animal proteins?  
13 Because there are definite differences that  
14 will occur based on some of the essential  
15 amino acids, and therefore, it could have an  
16 impact on health outcomes.

17 MEMBER SLAVIN: Well, the way this  
18 search was -- the questions were put together  
19 was just animal versus plant, so we didn't  
20 talk about all the differences that  
21 potentially would be in those diets, whether -  
22 - you know, because absolutely protein

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1 quality, there would be big differences there.

2 MEMBER FUKAGAWA: So that's what  
3 you mean by protein quality in that research  
4 areas, or research recommendations?

5 MEMBER SLAVIN: Okay.

6 MEMBER FUKAGAWA: Looking at that,  
7 that was the question.

8 MEMBER SLAVIN: Okay. Yes.

9 MEMBER FUKAGAWA: And a follow-up  
10 question to that is, another important  
11 consideration is whether it's total protein  
12 intake or really the type of protein that  
13 induces some of the, you know, negative  
14 health, or whatever health outcomes you may be  
15 concerned about, because there are some sort  
16 of prospective sort of, you know, studies and  
17 clinical research centers, et cetera, that  
18 might suggest that it's the total protein  
19 intake, not really the type of protein that  
20 could be associated with physiologic changes  
21 that lead to negative health outcomes.

22 MEMBER SLAVIN: Right. In some of

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1 our other areas we're going to look at with  
2 the macronutrient distribution of  
3 carbohydrates, proteins and fats in weight  
4 loss and relation to biomarkers will get at  
5 that more than this question will.

6 This question was really just set  
7 up of, if we look at protein source, plant  
8 versus animal, and ask that question straight-  
9 out, what kind of differences do we see?

10 MEMBER PEREZ-ESCAMILLA: Joanne,  
11 this is Rafael. You know, the difference in  
12 lifestyles between vegetarians and non-  
13 vegetarians have been well-documented for a  
14 number of risk factors, others than diet, and  
15 I'm assuming that, you know, these studies  
16 probably control for a number of those, but  
17 still, you know, without a randomized trial,  
18 this is an area where it's, I think, very  
19 difficult to interpret the differences.

20 MEMBER SLAVIN: We looked at some  
21 information on just number of vegetarians and  
22 vegans in the US and I think it's like 2.3 and

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1 1.4, so it's a very small number.

2 So these large studies, typically  
3 we don't get very many people -- and people do  
4 go, you know, from category to category. They  
5 become vegans and then they, you know, stop  
6 being vegans.

7 So, I think we wanted to ask this  
8 question because of all the public comments we  
9 got to see what -- what information is out  
10 there and to -- I think the research  
11 recommendations would say there's a real need  
12 to generate more research in this area to  
13 answer a lot of the questions that we have.

14 Mim.

15 MEMBER NELSON: Well, I have a  
16 question because -- this is Mim Nelson. I  
17 also wonder, the reality, seeing that there's  
18 less than, let's say, three percent of the  
19 population that is vegan or even vegetarian,  
20 isn't the more relevant question on the range  
21 -- like high, abundant meat-eaters, versus,  
22 you know, like along the spectrum so that -- I

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1 mean, isn't there some data that, you know,  
2 people that eat meat, you know, three times a  
3 day, that they may not have as great health  
4 outcomes as people that eat, you know, meat,  
5 twice a week kind of thing.

6 So, it's on the spectrum, not in  
7 the categorical, but more as a continuous  
8 variable, I guess, is what I'm getting at.

9 MEMBER SLAVIN: We are asking a  
10 question on animal protein later on, and I  
11 think that would get at that as far as more of  
12 a quantity.

13 I think there's this kind of  
14 perception, though, that there would be a huge  
15 difference in health outcomes if you separate  
16 it out, you know, vegetarians versus meat-  
17 eaters.

18 And with the data we have, that we  
19 can't -- that data doesn't exist. Now,  
20 whether, if you had -- I don't know, I think  
21 it would be good to study people and have more  
22 information.

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1           But even like, meat-eating -- you  
2 know, Cheryl wants to chime in. Help me out  
3 here.

4           MEMBER ACHTERBERG: I think my  
5 perception of going through the literature is  
6 that somewhere along the line we, as a  
7 nutrition community, stopped investigating  
8 vegetarian diets, vegans or plant-based foods.

9           There were a lot more studies done  
10 about 20 years ago, but the diets that people  
11 consumed then about 20 years ago are quite  
12 different, I think, than the plant-based  
13 vegetarian diets today.

14           So, I think, in general, all we  
15 can say is there was a big hole in the  
16 literature that needs to be filled, and it's  
17 very hard for us to speculate beyond that.

18           MEMBER SLAVIN: Tom.

19           MEMBER PEARSON: Were the -- this  
20 is Tom Pearson. Were the blood pressure  
21 changes explained by the BMI changes in the  
22 vegans versus the meat-eater?

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1                   MEMBER SLAVIN: I think they were,  
2 because that's the same study that information  
3 came from. So, yes.

4                   MEMBER PEARSON: So all of that,  
5 there's no other pathways to look like we're  
6 acting --

7                   MEMBER SLAVIN: Not reported.

8                   MEMBER APPEL: This is Larry  
9 Appel. I have a little bit of perspective on  
10 this because actually the rationale for the  
11 DASH Diet was a vegetarian diets lower blood  
12 pressure and if you go to the RFA that was  
13 part of it.

14                   So, the fact that the literature  
15 search was clipped, what was it -- ten years,  
16 is a problem because the two major study --  
17 there are clinical trials of vegetarian diets  
18 and blood pressure, and they both showed about  
19 a five millimeter reduction in blood pressure,  
20 one and hypertensive and one in  
21 nonhypertensive.

22                   So -- and I grant you, there are

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1 not a lot of clinical trials in this, so it  
2 won't be -- get a rating of I, but there are  
3 clinical trials out there, and it was just  
4 before your point in time. So, that's one  
5 thing.

6 And then, just to get to Cheryl's  
7 point, I actually wanted to do a clinical  
8 trial. It didn't have the menus for DASH Diet  
9 versus a vegetarian version of the DASH Diet,  
10 could not get it funded, couldn't even get  
11 approval to submit the application.

12 So, the reality is that, you know,  
13 that when you try to even do the studies and  
14 you have a good design and an infrastructure  
15 to do these things, you might not be able to  
16 get it done.

17 MEMBER NELSON: But -- this is Mim  
18 Nelson. I mean, I think we have to, with all  
19 these questions, be careful about clipping the  
20 data at a certain time point because a lot of  
21 times -- we have to be cognizant of previous  
22 research because otherwise, some of the best

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1 research may have been done earlier. We just  
2 have to be very careful about it.

3 MEMBER APPEL: Yes. I don't know  
4 what the solution is, though. If you just  
5 say, you know, how do you deal with this if,  
6 you know, if you -- the last ten years when  
7 your best studies are done 30 years ago or 25  
8 years ago and they were trials.

9 MEMBER SLAVIN: Well, I also think  
10 just the diet has changed at that point, that  
11 with soy and some of the -- yes, some of the  
12 newer things that people are consuming, it  
13 would be nice to have more current studies on  
14 that.

15 CHAIR VAN HORN: The other thing  
16 we were discussing earlier on this subject --  
17 this is Linda Van Horn -- is the fact that  
18 what we do have are data that suggest that  
19 people who eat more vegetable protein versus  
20 animal protein -- in other words, not  
21 necessarily pure vegans or vegetarians, even,  
22 but rather do consume a diet that is more

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1 vegetable plant-based, those data exist in  
2 greater abundance.

3 And so, you know, sometimes it's a  
4 matter of looking at the data through those  
5 eyes and being able to tweak and filter out  
6 those answers from data that were not  
7 necessarily collected to answer that question.

8 And I think this group has done a  
9 great job of trying to do that, and I believe  
10 we'll probably go forward a little bit more on  
11 that -- that level.

12 Despite what Joanne said about the  
13 very small estimate of vegans, less than two  
14 percent in the population, I suspect, and I  
15 think we already know that there are more  
16 people who eat relatively less animal protein  
17 and more vegetable protein, and that  
18 population is somewhat greater, which would  
19 allow us to look at some of those  
20 relationships.

21 So, I think that's kind of the  
22 direction we're more likely to head, rather

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1 than an all-out randomized control trial,  
2 looking at, you know, one versus the other.

3 MEMBER SLAVIN: I wanted to follow  
4 up on Naomi's point, too, just about protein  
5 quality because, as we talk about people  
6 eating less, I think protein quality becomes a  
7 more important variable.

8 MEMBER NELSON: Linda -- this Mim.  
9 Shouldn't we make sure that some of the  
10 studies that you're referring to are -- it  
11 seems that they would be appropriate in this  
12 search category that we -- that Joanne just  
13 reviewed, that we should make sure that those  
14 papers are in there because sometimes these  
15 search terms can really cut out a whole  
16 category of studies that should be considered.

17 CHAIR VAN HORN: Yes. To share  
18 with those who are listening and may know  
19 specifically. Hello. Linda Van Horn. To  
20 share with those who are listening and may not  
21 know this specifically about the kind of  
22 search that we're doing and the use of the

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1 NEL, et cetera, it's only as good as the  
2 search terms that are applied.

3 And I'm not suggesting that  
4 they're not good. They're absolutely  
5 wonderful, and this is the closest we've ever  
6 come, I think, to doing a thorough evidence-  
7 based analysis.

8 But without a doubt, even in our  
9 deliberations earlier today we recognized that  
10 there were certain studies, certain papers,  
11 certain topic areas that, for whatever reason,  
12 were simply not captured by that search that  
13 we now need to go back and work with our  
14 librarian staff and group to try to make sure  
15 that we've done justice to the availability of  
16 some of those data, even if it's a hand search  
17 to try to be sure we incorporate some of that.

18 So, you know, it's not a perfect  
19 world and some things will, you know, simply  
20 fall out, but I think the goal now is to look  
21 at whatever was provided on a standardized  
22 approach and make sure we're not missing

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1 anything by going back over it with some of  
2 these other studies.

3 MEMBER SLAVIN: I wanted to  
4 mention -- this is Joanne again, Linda, that  
5 we are looking at animal protein products as  
6 another one of our searches. So, this is not  
7 -- we're not done with protein. So, there is  
8 -- yes, we're just starting.

9 So, any other protein questions  
10 before we go to food groups?

11 Roger?

12 MEMBER CLEMENS: Yes. Rog. A  
13 number of years ago there were a number of  
14 studies that looked at protein in excess. If  
15 you are to reexamine to Larry's comment, go  
16 back another ten, 20 years, would your group  
17 look at the potential issues associated with  
18 excess protein intake.

19 I think the current USDA data  
20 indicate we're taking about two times the  
21 amount of animal protein than we do in terms  
22 of plant protein. I just throw that out, and

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1 it piggy-backs also on Naomi's comment.

2 MEMBER SLAVIN: Yes, and I think  
3 if you look at DRI, it's anywhere from ten to  
4 35 percent of our calories are from protein,  
5 and there's no UL for protein, so I think for  
6 DRI, as calories go down, percentage of  
7 calories from protein have to go up.

8 MEMBER FUKAGAWA: This is Naomi.  
9 I did want to make one more comment that, you  
10 know, we've placed a lot of emphasis, perhaps,  
11 on the EPIC-Oxford Study, and I just checked,  
12 and their BMI's were largely from self-report.

13 They did obtain real weights in  
14 only about 5,000 of the cohort, but we all  
15 know the difficulties we have with self-report  
16 of height and weight. So, we'd have to look,  
17 interpret that data with some caution, I  
18 think.

19 MEMBER SLAVIN: And I think that  
20 that comes up because they did try to recruit  
21 vegetarians, so they have -- and a lot of that  
22 obviously is self-reported in there, too, just

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1 the way the diets are described.

2 All right. Other questions before  
3 we move to our food groups?

4 We're going to go through fruits  
5 and vegetables, milk and dried beans and peas,  
6 and Cheryl is going to take us through fruits  
7 and vegetables.

8 MEMBER ACHTERBERG: Okay. I think  
9 as I go through this, a lot of the same themes  
10 will emerge once again, so you might want to  
11 consider contextual factors here.

12 Our first question here is, the  
13 general question: Was the relationship  
14 between the intake of fruits and vegetables  
15 and body weight. In one case cardiovascular  
16 outcomes, in another, future presentations,  
17 we'll be looking at diabetes type II, and  
18 cancer.

19 Our search strategy, I want to  
20 emphasize the date range here. June 2004 to  
21 June 2009. As we began this, and we looked at  
22 the charge to the committee it said to

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1 emphasize the last five years.

2 We were trusting that we would be  
3 building on the work that had been done in the  
4 former Dietary Guideline Advisory Committee  
5 work.

6 The studies here were restricted  
7 to adults 19 years and older, and that's  
8 because another subcommittee is looking at  
9 what happens in a pediatric population.

10 The search included individual  
11 studies as well as systematic reviews and  
12 meta-analyses, and we looked at the intake of  
13 all fruits and vegetables, but did not  
14 consider juices.

15 So, for the first question, a  
16 relationship between the intake of fruits and  
17 vegetables and body weight. The proposed  
18 conclusion here is Grade III, limited.

19 Using the current NEL search  
20 process, the evidence for an association  
21 between increased fruit and vegetable intake  
22 and lower body weight is modest, with a trend

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1 towards decreased weight gain over five or  
2 more years in middle adulthood.

3 No conclusions can be drawn from  
4 the evidence on the efficacy of increased  
5 fruit and vegetable consumption in weight loss  
6 diets.

7 So, for the review of the  
8 evidence, there were 11 studies, three RCT's,  
9 three prospective cohort studies, one case  
10 control and four cross-sectional studies.

11 In the RCT's, a small weight loss  
12 that was usually one to two kilograms were  
13 observed over short time periods of less than  
14 six weeks. All prospective cohort studies  
15 showed a weak inverse relationship between  
16 fruit and vegetable consumption and weight  
17 gain that was long term, from approximately  
18 six to 12 years.

19 There was also an inverse  
20 relationship reported in the cross-sectional  
21 studies except for one study from China where  
22 we didn't see any significant effect, but

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1 again, I think the baseline there had higher  
2 fruit and vegetable intakes.

3 Limitations, most of the  
4 limitations that were described in the  
5 previous section are here as well. It's also  
6 very difficult to quantify the amount of  
7 fruits and vegetables in any given study  
8 because of the various differences in  
9 methodology.

10 Shifting to the second question:  
11 What is the relationship between the intake of  
12 fruits and vegetables and cardiovascular  
13 disease?

14 The proposed conclusion in this  
15 case is a Grade II, moderate. Using the  
16 current NEL search process, there is moderate  
17 to strong evidence supporting an inverse  
18 relationship between fruit and vegetable  
19 consumption and cardiovascular coronary heart  
20 disease in the US, in US populations, with  
21 larger effects noted above, five fruit and  
22 vegetable servings per day.

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1           Looking at the evidence, then,  
2 there were ten studies, two meta-analyses, six  
3 prospective cohort studies and two case  
4 control.

5           The meta-analyses showed increased  
6 vegetable intake and increased fruit intakes  
7 are independently associated with decreased  
8 risk of CVD mortality when the total  
9 consumption was over five servings a day.

10           Four prospective cohort studies  
11 found positive relationships between fruit and  
12 vegetable intake and a decrease in CVD in  
13 extreme quintiles -- that's the highest versus  
14 the lowest consumption there, and the case  
15 control studies showed similar results.

16           Turning now to blood pressure.  
17 What is the relationship between the intake of  
18 fruits and vegetables and blood pressure?

19           In this case we're proposing a  
20 conclusion Grade III, limited. There were  
21 very few data. So, using the current NEL  
22 search process, there's limited evidence to

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1 suggest any association between fruit and  
2 vegetable intake and blood pressure.

3           What did we look at? There were  
4 four studies, one prospective cohort study and  
5 three cross-sectional studies. The  
6 prospective cohort study found no association  
7 between the intake of fruits, vegetables, or  
8 fruits and vegetables combined and  
9 hypertension.

10           Cross-sectional studies provided  
11 mixed results. I think all of these are  
12 international. One study reported no  
13 relationship where that average intake was  
14 over five and a half servings per day.

15           One reported an inverse  
16 relationship for fruit and vegetable intake  
17 and blood pressure. One reported a positive  
18 association between fruit and vegetable intake  
19 and lower risk of home measured hypertension.

20           Continuing now, blood cholesterol.  
21 What is the relationship between the intake  
22 of fruits and vegetables and blood

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1 cholesterol? Once again, the proposed  
2 conclusion is a Grade III, limited.

3 Using the current NEL search  
4 process, the evidence for relationship between  
5 fruits and vegetable intake and blood lipids  
6 is limited, but appears to show a trend  
7 between increased consumption of fruits and  
8 vegetables, with lower total and LDL blood  
9 cholesterol levels.

10 Review of the evidence. There  
11 were only three studies, one trial and two  
12 cross-sectional studies. The trial added  
13 three servings of cherries per day for 28  
14 days, and the impact on plasma lipids.

15 Cross-sectional studies found an  
16 inverse association between fruit and  
17 vegetable consumption and, as I said before,  
18 with total and LDL cholesterol between extreme  
19 quintiles.

20 Implications. I think this work  
21 is still under review. There are a lot of  
22 questions. I think we now want to look

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1 farther back in terms of what the research  
2 literature has to offer us, take a longer  
3 long-range perspective on that.

4 So, what we've presented today  
5 represents what evidence has been collected  
6 and reviewed for the last five years.

7 Any questions?

8 MEMBER NICKOLS-RICHARDSON: This  
9 is Shelly. Just a quick question just for  
10 clarification. In these studies "servings" is  
11 related to --

12 MEMBER ACHTERBERG: Cup  
13 equivalent.

14 MEMBER NICKOLS-RICHARDSON: Cup  
15 equivalents. What are the servings?

16 MEMBER ACHTERBERG: You raise one  
17 of the major limitations. I really struggled  
18 with this because different studies approach  
19 it different ways.

20 Europe tends to approach vegetable  
21 intake according to weight measures by gram.  
22 Here in this country we're using cup measures.

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1 Some of the Asian studies -- it's something  
2 different again.

3 So, a serving does not equal a  
4 serving, does not equal a serving as you're  
5 trying to compare studies one to another. So,  
6 that's one of several limitations here.

7 Other limitations go with the  
8 difference in diets altogether. For example,  
9 one study from Serbia, the main vegetable  
10 consumed were onions. In Asia, it's a  
11 different set of vegetables. In the US,  
12 another set of vegetables.

13 So, I think one of the major  
14 research questions and implications are  
15 whether, as we consider higher intakes of  
16 fruit and vegetables whatever effects are  
17 found, is that due to a replacement?

18 In other words, the question is:  
19 Are fruits and vegetables acting as an asset  
20 or out of a deficit model, that if there's  
21 more of something, there's less of something,  
22 and we see an effect that way.

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1           Or, are the fruits and vegetables,  
2 in and of themselves, contributing something.

3           And I might add there, are they contributing  
4 something independent of fiber, because  
5 another confounding factor here, as we look at  
6 the evidence, is oftentimes those two terms  
7 are used interchangeably, and clearly fruits  
8 and vegetables are more than fiber packages.

9           So, it ultimately gets down to  
10 food matrix questions, or perhaps even diet  
11 matrix question.

12           CHAIR VAN HORN: Eric.

13           MEMBER RIMM: I wonder -- this is  
14 Eric Rimm. This is one of those cases where  
15 you had to make tough decisions at the  
16 beginning of this in terms of which questions  
17 to ask.

18           You obviously did not ask fruits  
19 and vegetables and cancer because there's a  
20 recent report on it that you can probably  
21 point to.

22           But I wonder if it's, at this

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1 point, now that you've gone through some of  
2 this is that you may want to trim your  
3 questions, is that the fruits and vegetables  
4 and blood pressure, maybe there's not enough  
5 new, and we need to just sort of fall back on  
6 what was there and say what was there is --  
7 there's not -- you know, there's not enough  
8 new, and maybe the weight change is also  
9 because it's so difficult to measure weight  
10 change and the new data are not substantially  
11 greater than what's there, and maybe, instead  
12 of making it seem a little bit more vague and  
13 confusing, we should just fall back on the  
14 ones where the answers are the strongest.

15 MEMBER ACHTERBERG: Well, I think  
16 we still have to look at that literature  
17 before we decide that for sure, but the  
18 curious thing is these results don't  
19 necessarily align with some of the older  
20 results.

21 MEMBER RIMM: Yes. This is Larry  
22 Appel. Yes, this is one where the prior data

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1 are going to have an impact. I mean, most  
2 people -- the DASH clinical trial again, there  
3 was a third arm that was fruits and  
4 vegetables, and that significantly reduced  
5 blood pressure, well-controlled study, 150  
6 people, you know, versus control.

7 So, you know that -- and then  
8 there was another study, I believe, by John's  
9 -- the reason I know this is I was in your  
10 position five years ago. I reviewed the fruit  
11 and vegetable literature, so I'm glad --

12 So, I think that -- but, you know,  
13 there are not a huge number of studies, so  
14 you're not going to push this up to -- I mean,  
15 I think there is a reasonable argument, but  
16 it's also in the context of potassium, the  
17 reality, because you have supplement trials,  
18 then you have some food group trials, and  
19 together the argument is reasonable, though.

20 But in terms of the other issue  
21 that I wanted to raise, I think you need to  
22 divide cardiovascular into stroke and CHD

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1 because if I remember correctly when I did  
2 this, the evidence on stroke was actually  
3 pretty decent with almost all of the co -- not  
4 all, but most of the cohort studies showing a,  
5 you know, an inverse relationship.

6 You know, I just looked it up. It  
7 was like seven or eight out of ten cohort  
8 studies of higher fruits and vegetables  
9 associated with reduced stroke and again, it's  
10 consistent with this blood pressure-potassium  
11 hypothesis.

12 For CHD, it only comes out when  
13 you do the meta-analysis, you know, there  
14 might be one or two studies, but more then  
15 tend to be, you know, negative. So, I think  
16 you need to -- they are -- they're different,  
17 I think.

18 MEMBER ACHTERBERG: I wanted to  
19 follow up, too, Eric, because cancer and type  
20 II is still being done, so it's not like we're  
21 not -- yes, so they will be done.

22 And also, I wanted to just

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1 mention, Larry, just this -- when we start  
2 with this process, the NEL process, I think it  
3 really, you know, deciding how far to go back  
4 is a real problem.

5           You know, and because -- and the  
6 other thing I worry about is sometimes in  
7 these studies, unless somebody keyworded  
8 fruits and vegetables, they won't come up  
9 unless you know them. They are not going to  
10 get onto this review because that's not how  
11 they were keyworded.

12           So, that's a concern, that there  
13 might be data out there that we don't pick up  
14 in this type of a search unless somebody, you  
15 know, knows about it and brings it forward.

16           MEMBER APPEL: The one thing that  
17 we might do, and I don't know if the NEL  
18 people do this, is that there are, you know,  
19 seminal studies, you know, so you can, you  
20 know, with the fruit and vegetable area say,  
21 okay, most people really do know about these  
22 one or two studies, and if you do like, you

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1 know, linked -- linked, you know, related  
2 articles or something like that, you might be  
3 able to pull up some of the ones that you just  
4 described that wouldn't, you know, be captured  
5 in your search.

6 MEMBER NELSON: This is Mim. I  
7 agree. I'm concerned, because the DASH study  
8 didn't make it into the search, and so --

9 MEMBER ACHTERBERG: The date --  
10 the date would not --

11 MEMBER NELSON: Because of the  
12 date. And so, again, it's a time issue, and  
13 we've got to be careful that we're -- we can't  
14 come up with an implement -- you know, a  
15 conclusion and grade based on just a certain  
16 number of years when there's been good data  
17 beforehand that's not being considered.

18 And we -- just it's a -- we have  
19 to be very careful. I think that would be  
20 erroneous.

21 MEMBER ACHTERBERG: I just want to  
22 thrown in hindsight is 20/20. I think this

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1 was a careful, systematic review following the  
2 guidelines we as a committee all agreed on.

3 In hindsight, because these  
4 results didn't necessarily align with earlier  
5 results, now questions are being raised. Now  
6 it's being asked should we go back for a  
7 longer-term review.

8 But let's be clear about where we  
9 are, why we're there, and the quality of the  
10 work that got us here.

11 MEMBER RIMM: I don't -- this is  
12 Eric Rimm. I don't think anybody would  
13 question what you've done and that this is a  
14 thorough job.

15 I think the issue is that, for all  
16 of our things, I think ultimately what we're  
17 doing, we're trying to summarize, we're  
18 essentially bean-counting the number of  
19 studies -- excuse the pun but, I mean, the  
20 blood pressure is -- you have four studies,  
21 one's prospective and three are cross-  
22 sectional.

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1           So, you have three cross-sectional  
2 studies where people are diagnosed with high  
3 blood pressure. They may change their diet,  
4 so they compare that result with, you know,  
5 the many, many studies that came before.

6           It's not -- it shouldn't be just a  
7 matter of bean-counting. We have to look at  
8 the quality and decide if it really should  
9 impact our decision based on the new evidence.

10          New studies are not always the best.

11                 MEMBER ACHTERBERG:        Absolutely.  
12 And we also need to ensure that we maintain a  
13 systematic approach. That's what I'm trying  
14 to say.

15                 MEMBER PI-SUNYER:    Yes, that's the  
16 -- this is Xavier. That's the danger of your  
17 suggestion, Larry, that if you go back and you  
18 know two studies, that's not systematic.

19                 MEMBER APPEL:        No, no, no. That  
20 wasn't what I was saying. I was saying you do  
21 the systematic, but that gets you only part of  
22 the package. I mean, most systematic reviews

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1 actually have, you know, you search multiple  
2 databases, but then you also have seminal  
3 studies and you use those to either reference  
4 check or use those as related articles to  
5 identify ones that weren't captured. It's not  
6 only -- it's more global.

7 MEMBER NELSON: Yes, and it helps  
8 come up with different search terms that you  
9 haven't thought about --

10 MEMBER APPEL: Well, yes.

11 MEMBER NELSON: -- which is the  
12 key, and then you're systematic. I mean,  
13 we've done that with some other questions.  
14 You know, we've come up with why didn't it  
15 pick up these couple studies, and then you  
16 realize because of a couple of search terms or  
17 a date.

18 CHAIR VAN HORN: There is another  
19 issue that relates to the assessment  
20 methodology, and we're all aware of the, you  
21 know, limitations of diet assessment, not only  
22 in terms of the method used, i.e., food

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1 frequency, questionnaires, they tend to group  
2 things together which, of course, limits, you  
3 know, what you can do with those data.

4 But, also the fact earlier studies  
5 were more nutrient-focused and it's only been  
6 more recently that we started looking at food  
7 groups or foods themselves and food patterns  
8 and things of that sort.

9 So I think, you know, we're trying  
10 to, you know, synergies all of these different  
11 factors and maximize the benefit of current as  
12 well as previous studies that allow us to  
13 perhaps look at some of these questions using  
14 new approaches, but not, you know, forget that  
15 some of those were not created or developed in  
16 a way that allows us to have perfect  
17 assessment ability and, you know, the method  
18 used may not allow that. So, we just have to  
19 be careful.

20 MEMBER SLAVIN: Other fruit and  
21 vegetable questions before we move to milk?  
22 And I appreciate your comments, Linda, because

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1 it's like when we did this, these searches, we  
2 decided to go with the food groups pretty much  
3 early on because we thought they would create  
4 some discussion.

5 And the studies weren't really  
6 designed to do that. So, we're looking for  
7 milk, milk products, fruits and vegetables,  
8 this is what comes up.

9 So, background on milk and milk  
10 products. We know they are a source of many  
11 nutrients. They vary from fat-free to full  
12 fat. Calorie content is going to vary. You  
13 know, fat-free -- or get rid of saturated fat,  
14 but you have protein, calcium.

15 The relationship between milk  
16 intake and body weight is controversial. The  
17 role of calcium intake in obesity and  
18 adiposity has also been debated, so there's a  
19 lot of literature in this area.

20 It does tend to fall out, is it  
21 food, milk -- food-related, or is it nutrient-  
22 related. Calcium, we're going to talk about

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1 bone health, the importance of milk and milk  
2 products as calcium-rich foods.

3 Cardiovascular disease and  
4 saturated fat, we kind of move over into that  
5 area just because most of the searches we did  
6 on just dairy -- milk and dairy products, milk  
7 products, so fat is typically not controlled  
8 in our searching here.

9 So, low-fat dairy products  
10 included in the DASH Diet, here are some  
11 examples of where different dairy products are  
12 included in diets and I'm not sure we're going  
13 to always pick those things up.

14 So, our question has to do with  
15 what is the relationship between intake of  
16 milk and milk products and these end points,  
17 body weight, bone health, cardiovascular  
18 outcomes, metabolic syndrome, type II  
19 diabetes.

20 We did go back to 2004 and this  
21 was because in Section 6 of 2005 Dietary  
22 Guidelines there was a search on milk and milk

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1 products. So, we did not go past. Just like  
2 the fruit and vegetable which was also in the  
3 2005, we went back, started 2004 to July 2009.

4 For children two to 18, for all  
5 outcomes except body weight, and this is  
6 looked at in another subcommittee, so we're  
7 not going to include that, and then adults 19  
8 and older for all other outcomes we're talking  
9 about.

10 In this case we -- this is what's  
11 hard in our literature that when you include  
12 systematic review or meta-analysis, you don't  
13 want to double count them. So, trying to  
14 figure out what's already been counted, in  
15 this we included individual studies as well as  
16 systematic reviews and meta-analyses, and then  
17 if it was already counted in a meta-analysis,  
18 we tried to exclude it. So, that was really  
19 difficult to do.

20 And I can see like for Xav, the  
21 nice thing about excluding the meta-analysis  
22 and the systematic reviews is you can, you

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1 know, do all your own analysis and not be  
2 worried about double counting.

3 First question: What's the  
4 relationship between the intake of milk and  
5 milk products and body weight? It's a Grade  
6 I, strong. There is little convincing  
7 evidence that milk and milk products have any  
8 unique role in regulation of body weight and  
9 body adiposity.

10 So, we'll go through the review of  
11 the evidence. Eighteen studies, one  
12 systematic review, one randomized control  
13 trial, four prospective cohort studies, eight  
14 cross-sectional, three studies with energy  
15 intake as an outcome and one study in  
16 pregnancy, and this conclusion is supported by  
17 the systematic review and intervention study  
18 and four prospective cohort trials.

19 Any questions on body weight?  
20 There's been a lot of interest in it, calcium,  
21 milk as, you know, particularly linked to  
22 lower body weights, but I think the literature

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1 is quite clear, there's nothing uniquely  
2 calcium or dairy product, milk product that  
3 has any difference there.

4 Bone health --

5 MEMBER CLEMENS: This is Rog.  
6 Just real quick.

7 MEMBER SLAVIN: Sure.

8 MEMBER CLEMENS: This is rather  
9 intriguing, frankly, because there have been a  
10 lot of studies on fractions of milk relative  
11 to body weight and weight management, and  
12 obviously in this type of research, if you  
13 look at the full food to your comment, Linda,  
14 that that relationship doesn't pop up in the  
15 most recent information.

16 MEMBER SLAVIN: Yes. There are,  
17 you know, a lot of components for sure. There  
18 are studies that people have looked at that,  
19 and it doesn't -- in this approach we're  
20 looking at milk and milk products.

21 So, what is the relationship  
22 between the intake of milk and milk products

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1 and bone health? This is a -- we had a big  
2 discussion on this. This is a very top area.

3 Proposed conclusion, intake of  
4 milk and milk products is associated with  
5 improvements in bone health in children, and  
6 we've given it a moderate, Grade II.

7 Adults, the results in adult  
8 trials are more mixed and there's  
9 inconsistency. There's an inconsistent  
10 support for the role of milk and milk products  
11 on bone health.

12 We've struggled with this grade  
13 right now. It's -- we think it's a moderate,  
14 because -- well, we can go through the  
15 literature and we're going to have more  
16 discussion about this.

17 Review of the evidence, nine  
18 articles, one systematic review to meta-  
19 analysis, three trials, one longitudinal, one  
20 case control, one cross-sectional study.

21 A study reported that children who  
22 are milk avoiders have poorer markers of bone

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1 health. There is a meta-analysis of this  
2 question in adult populations that's less  
3 clear.

4 There are some concerns about just  
5 measures of bone health, so we can go down  
6 that path and talk about that, but one review  
7 concluded that there is weak evidence of a  
8 protective capacity of milk and milk products  
9 on bone health.

10 Another meta-analysis concluded  
11 that a low intake of calcium, as judged by  
12 intake of milk does not confer a substantial  
13 increase in fracture risk, and the  
14 intervention studies are supportive of a role  
15 for milk and milk products in bone health.  
16 So, there are quite a few intervention studies  
17 that show a role.

18 I guess we want to -- we'll go  
19 through all the milk, and then we'll take  
20 questions. Milk and milk products,  
21 cardiovascular disease, what's the  
22 relationship between intake of milk and milk

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1 products and cardiovascular disease, and a  
2 Grade II, moderate.

3           Recent studies find that intake of  
4 milk and milk products is protective against  
5 cardiovascular disease. This is based on  
6 three articles, one systematic review, one  
7 systematic review with a meta-analysis, and  
8 one case control study.

9           Some of the outcomes that were  
10 reported, stroke, myocardial infarction,  
11 ischemic heart disease, acute coronary  
12 syndrome, an inverse association was  
13 consistently reported.

14           Metabolic syndrome, what's the  
15 relationship between intake of milk and milk  
16 products and metabolic syndrome, Grade III,  
17 limited milk and milk product consumption is  
18 not generally linked to metabolic syndrome and  
19 may even be protective in certain population  
20 groups.

21           Evidence, five articles, one  
22 systematic review, one prospective cohort

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1 study and three cross-sectionals. The meta-  
2 analysis showed a reduction in risk associated  
3 with the highest level of milk consumption.

4 Dairy consumption was not  
5 associated with any metabolic variables in an  
6 elderly Dutch population.

7 In a French study, intake of dairy  
8 products was associated with lower probability  
9 of insulin resistance and NHANES data, looking  
10 at that data set that they found that each  
11 serving of dairy products increased risk of  
12 metabolic syndrome by eight percent among men,  
13 no significant associations between whole  
14 milk, low-fat milk or skim milk and metabolic  
15 syndrome were observed.

16 Blood pressure. What's the  
17 relationship between milk and milk products  
18 and blood pressure? Grade III, limited.  
19 Using the current NEL search process, there is  
20 limited evidence that supports a relationship  
21 between intake of milk and milk products and  
22 blood pressure.

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1                   This 13 articles, one systematic  
2 review, one trial, six prospective cohort  
3 studies, five cross-sectional. The systematic  
4 review concluded there is an inverse  
5 association between intake of dairy products  
6 and hypertension.

7                   The results from the six  
8 prospective studies reviewed suggest a more  
9 mixed result with four not reporting a  
10 relationship. And this area is complicated by  
11 types of milk products consumed, confounding  
12 with calcium intake, relationship of blood  
13 pressure to weight loss.

14                   Blood cholesterol. What's the  
15 relationship between intake of milk and milk  
16 products and blood cholesterol? Grade II,  
17 moderate. Intake of milk and milk products in  
18 recent studies does not show increases in  
19 total blood cholesterol, but may be linked to  
20 increased HDL cholesterol.

21                   Three articles, one randomized  
22 trial, one prospective, cross-sectional. In

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1 the dairy product feeding study intakes of  
2 milk product was associated with lower blood  
3 cholesterol, but that was also associated with  
4 weight loss in the study.

5 The Dutch elderly study, baseline  
6 dairy consumption was not associated with  
7 change in lipid levels over 6.4 years, and  
8 NHANES data set found that in women more  
9 frequent cheese consumption was associated  
10 with higher HDL cholesterol, lower LDL, while  
11 in men more frequent cheese consumption was  
12 associated with higher BMI, waist  
13 circumference, HDL and LDL cholesterol.

14 Diabetes. What's the relationship  
15 between intake of milk and milk products and  
16 type II diabetes. Grade II, moderate. Recent  
17 systematic review with a meta-analysis  
18 relative risk for type II diabetes was  
19 estimated to be ten percent lower in people  
20 who had a high milk intake.

21 One systematic review with meta-  
22 analysis -- meta-analysis included four

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1 prospective cohort studies and this relative  
2 risk was estimated to be ten percent lower in  
3 people with high milk intake.

4 All right. Milk and milk product  
5 questions. Comments.

6 Eric.

7 MEMBER RIMM: Hi. This is Eric  
8 Rimm. I mean, again, I don't know the studies  
9 that have led to this, but the fact that  
10 there's Grade II evidence that higher milk  
11 consumption is associated with potentially  
12 increased HDL cholesterol worries me.

13 Is that -- I don't know if that's  
14 driven by just the fact that this is only data  
15 from the last five years, or that we've -- it  
16 does not take into account different types of  
17 fat, but obviously, if you can compare it to  
18 what's going on in the fat subcommittee where  
19 we're looking at different types of fat and  
20 how they impact HDL or LDL cholesterol, I  
21 guess this would be an opposite conclusion.

22 MEMBER SLAVIN: Well, I think you

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1 have got to remember, too, we're asking the  
2 food group question here. Milk and milk  
3 products. So -- and it's a broad milk and  
4 milk product question, so we don't get --

5 MEMBER RIMM: So that -- well, can  
6 I make -- okay. Well, maybe the question is,  
7 is the Grade II based on -- is Grade II --  
8 that's a pretty strong statement. It's strong  
9 enough to have a single trial and a single  
10 prospective cohort study to make that  
11 statement.

12 The prospective study was not  
13 associated with -- I don't want to challenge  
14 you. You guys obviously know this stuff much  
15 more than I do. It just struck me as -- this  
16 is very different from what we have been  
17 talking about in the fat subcommittee.

18 I know, I realize it's fat, and  
19 milk and milk products are different things.  
20 The cross-sectional studies from NHANES, which  
21 is based on a single 24-hour recall of milk.

22 MEMBER SLAVIN: Yes. Yes, I think

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1 the NHANES -- right.

2 MEMBER RIMM: Which would trouble  
3 me, if you're going to base a Grade II  
4 conclusion on a single 24-hour recall where  
5 you're equating it with a biomarker. I don't  
6 know the trial, so I guess the issues is, if  
7 the trial is a fantastic trial and it's proven  
8 it's long-term and it's NIH-funded, then I  
9 would be very happy with that conclusion.

10 But I would be worried about where  
11 this could go. If this is such a strong  
12 conclusion, this would lead to a Guideline  
13 that -- to increase HDL cholesterol, the  
14 strongest thing to do would be to increase  
15 milk consumption and milk products.

16 MEMBER SLAVIN: Well, you know, --  
17 yes. Each -- you see, there's a lot of  
18 questions on milk and milk products with  
19 different end points. So, you know, in doing  
20 the search, that's what came up, because  
21 that's what we were looking for.

22 And so we're searching milk and

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1 milk products, and then these different search  
2 criteria that came in. So, I think that the  
3 rating with this is difficult.

4 MEMBER RIMM: Yes. No, I agree.

5 MEMBER SLAVIN: You know, and  
6 deciding what's a II or a III with the food  
7 groups now. So, I think we could discuss that  
8 for sure.

9 MEMBER PI-SUNYER: This is Xavier.

10 I wonder if this is -- you know, it's -- what  
11 this is bring up is that five years aren't  
12 enough, and we're running into trouble here  
13 with a lot of them, you know, where you have  
14 one RCT or no RCT and three cross-sectional,  
15 and we're trying to come to conclusions on the  
16 basis of very little evidence.

17 MEMBER ACHTERBERG: And it's a  
18 changing food supply. And we need to be  
19 careful about that. The milk and milk  
20 products is another example. So, as you're  
21 looking at the relationship between certain  
22 lipids derived from milk and milk products,

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1 the profile of what people have been consuming  
2 has changed pretty dramatically.

3 And people have decreased, a total  
4 decrease in milk and milk products, but people  
5 who are using them, many, many more are using  
6 nonfat, low-fat, fluid milk, yogurts, and  
7 other kinds of milk products.

8 So, I think it is useful to have  
9 the longer perspective but at the same time we  
10 have to be very careful to balance that longer  
11 view against changes in the food supply.

12 MEMBER APPEL: Just a question --  
13 just to follow up on that, the -- we say milk  
14 products. There actually have been sort of a  
15 -- several studies dealing with sort of  
16 products that have peptides from dairy. Was  
17 that what you mean by milk products or are you  
18 thinking about yogurt?

19 MEMBER SLAVIN: No. We're just  
20 thinking about foods. So, we didn't get into  
21 --

22 MEMBER APPEL: No, but those are

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1 actually -- I mean, I think some of them  
2 actually --

3 (Off-mic comment.)

4 MEMBER SLAVIN: Yes. We like whey  
5 protein, milk peptides. We did not -- that  
6 would not --

7 MEMBER APPEL: So, that's not  
8 included, okay.

9 MEMBER SLAVIN: -- that would not  
10 come up in the search.

11 MEMBER PEREZ-ESCAMILLA: This is  
12 Rafael. Have you looked at the dietary  
13 patterns comparing high versus medium versus  
14 low dairy consumers? Because, I think, you  
15 know, it's -- I understand why you are looking  
16 at a food group, but the food group falls  
17 within a dietary pattern, and it's really  
18 difficult, I think, for me at least, to make  
19 sense of all of these massive work that you  
20 have done without understanding more what are  
21 the characteristics in terms of the rest of  
22 the diet of those.

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1 MEMBER SLAVIN: Linda, go ahead.

2 CHAIR VAN HORN: Right. I think  
3 that the point you're raising, Rafael, is  
4 something that we talked about earlier today  
5 also as being one of those cross-cutting  
6 issues that go back to the discussion we just  
7 had about modeling.

8 For example, we know that in  
9 individuals, both adults and children who  
10 consume more dairy products, more milk  
11 products, their intakes of not only calcium  
12 but magnesium and vitamin D and a variety of  
13 other nutrients that are concerns, are  
14 enhanced because of the nature of the food  
15 that they are consuming.

16 I suspect that, you know, as we  
17 continue through this -- and again, this is  
18 all preliminary, so just to remind our  
19 listening audience as well as everybody here,  
20 you know, we're raising this today to reveal  
21 the level of discussion that we have going on,  
22 but there are absolutely no confirmatory

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1 statements being made here yet.

2 I think the other thing to recall  
3 is, even a study like DASH, for example, which  
4 did involve low-fat dairy products and  
5 including that as far as its relationship to  
6 blood pressure being a risk factor for  
7 cardiovascular disease, I think some of these  
8 issues really need further deliberation in  
9 terms of, you know, is it a cause and effect  
10 or is it an association, is it a substitution  
11 effect, what is it that we're actually looking  
12 at here.

13 But, you know, without a doubt, we  
14 won't have the answers to some of these  
15 questions on the basis of hard evidence  
16 because the studies were not designed that  
17 way.

18 Again, we're trying to make  
19 implications out of data that exists and try  
20 to tease, you know, those kinds of issues  
21 apart.

22 Mim.

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1                   MEMBER NELSON: This is Mim. One  
2 following up on that, I really think that we  
3 have to be careful as a committee with these  
4 single food group and nutrient sort of  
5 outcomes because I think where we have moved  
6 to, thanks to a lot of research over the last  
7 five to ten years is more of the patterns.

8                   And I think that -- that we're  
9 going to -- we may stumble on each other, with  
10 our different committees, different questions,  
11 because we're going to come up with one thing  
12 when you look at it one way, but you're going  
13 to look at it another, if you look at the  
14 pattern.

15                   And I think that there may be  
16 reasons to tone down the single food group  
17 piece and talk more, you know, beef up -- no  
18 pun -- well, I shouldn't use "beef up," but  
19 you know, strengthen the food pattern piece  
20 and the modeling piece because of the obvious  
21 -- it's -- whether it's the deficit model or  
22 the addition model, we don't know, because

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1 diet is a funny thing.

2           And I just wouldn't -- I mean,  
3 it's just sort of an overall -- I'm nervous  
4 about the single food group piece. And to  
5 that end, in terms of bone, having done a lot  
6 of research in the area of milk and dairy  
7 products and bone, I think one of the issues  
8 that we have weaker evidence is just because  
9 in the last -- all the best studies were done  
10 in the Eighties and Nineties around this, and  
11 all of the really new stuff on milk and milk  
12 intake has been more in the, you know, the  
13 lipids and, you know, it's like there's a lot  
14 more work that's happening, so you have  
15 stronger evidence just because of the nature  
16 of the trials that have been done.

17           And, you know, they're classic  
18 trials. And I, you know, just reading over  
19 again, looking at the guidelines that were  
20 before we should update -- I think, I really  
21 feel like we should be updating the literature  
22 searches here, not necessarily coming up with

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1 different conclusions because -- anyway, I  
2 just think we have to be careful, because the  
3 bone data, even though the diets change, it's  
4 pretty strong on the RCT's, and I know there's  
5 sort of a bi-modal approach to bone and  
6 calcium, but anyway --

7 MEMBER SLAVIN: Other dairy, milk  
8 and milk product questions?

9 I completely agree with you, Mim.  
10 You know, and I think last time these  
11 questions were done last, and we decided to do  
12 them first because we wanted to do them with  
13 the NEL process.

14 So, I think they will have to  
15 circle back and come back together and not be  
16 in conflict.

17 All right. Our next group of  
18 questions are dried beans and peas. We know  
19 they are important sources of protein, fiber,  
20 minerals and vitamins in the US diet.

21 I want to mention that these were  
22 not done in 2005, so we were starting from no

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1 review in the Dietary Guidelines book.

2 Typically, when you look at  
3 consumers, they don't consume much beans and  
4 peas in the daily diet in the US. We have  
5 good data on fiber linking to lower body  
6 weight, so we might think that intake of beans  
7 and peas might also be linked to lower body  
8 weight.

9 We also know that dried beans and  
10 peas are concentrated sources of soluble fiber  
11 which is known to lower serum lipids.  
12 Vegetable protein from legumes are stated that  
13 it also lowers serum lipids. We have an  
14 existing health claim in the US for soy  
15 protein and lowering serum lipids.

16 And a little bit on soluble fiber  
17 slowing absorption of carbohydrates and lower  
18 glycemic index of foods, and in the original  
19 studies on glycemic index, intake of legumes  
20 was associated with the lowest glucose  
21 response.

22 So, it's possible that dried beans

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1 and peas could show promise for use in blood  
2 glucose control.

3 So, that's the background. So,  
4 the questions we asked: What is the  
5 relationship between intake of dried beans and  
6 peas and body weight, cardiovascular outcomes  
7 and type II diabetes.

8 We, in this -- since this was not  
9 searched in the 2005 Dietary Guidelines, we  
10 went back to January of 2000 and, as we've  
11 discussed today, that may not be back far  
12 enough, but that's where we started.

13 Ages, children and adults, two  
14 years and older. What we did in this, we  
15 looked at individual studies and then we also  
16 looked at systematic reviews and meta-analyses  
17 were included in the review. And then if the  
18 individual study was included in the meta-  
19 analysis, then we did not review it twice.

20 First question: What is the  
21 relationship between intake of dried beans and  
22 peas and body weight? Grade III, limited.

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1 There's very little data that intake of dried  
2 beans and peas is related to body weight.

3 The evidence that we reviewed,  
4 nine articles, one meta-analysis, two  
5 systematic reviews, four trials, one  
6 prospective cohort study, one cross-sectional  
7 study.

8 In the randomized trials diet  
9 treatments with beans and peas are generally  
10 no more successful in weight loss than the  
11 controller, the comparison treatment. So, the  
12 studies that were done, they didn't -- beans  
13 and peas did not look to be uniquely better at  
14 weight loss.

15 The cross-sectional analyses  
16 suggest that bean-consumers had better overall  
17 nutrient intakes and lower body weights and  
18 waist circumference. So, there is some data,  
19 cross-sectional data that suggests that people  
20 that consume more beans, dried beans and peas,  
21 are lower body weights, but in general,  
22 there's hardly any intake of beans and peas in

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1 the US prospective cohort trials.

2 So, it's difficult to see if it's  
3 linked to disease outcomes, because intake is  
4 so minor.

5 Cardiovascular: What's the  
6 relationship between intake of dried beans and  
7 peas and cardiovascular. Also a Grade III,  
8 limited.

9 Soluble fiber content of beans  
10 contributes to lipid lowering benefits. There  
11 is limited evidence that dried beans and peas  
12 have any unique abilities to lower serum  
13 lipids, so there's a theoretical, but there's  
14 not much there.

15 Thirteen articles, one meta-  
16 analysis, six trials, three prospective cohort  
17 studies, one longitudinal, one case control  
18 and one cross-sectional.

19 In intervention studies, dried  
20 beans and peas lowered serum lipids, as  
21 expected, based on their soluble fiber  
22 content. So, in these studies they are

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1 typically fed, and the predicted amount of  
2 lipid-lowering is seen based on their high  
3 content of soluble fiber.

4 Soy studies. Soy may lower lipids  
5 in subjects -- hypercholesterolemic subjects,  
6 but doesn't lower serum lipids in subjects  
7 with normal serum cholesterol.

8 Then just this -- if you look at  
9 the prospective cohort studies, the intake of  
10 dried beans and peas is -- and soy all are  
11 really low.

12 And as we go through this I want  
13 to mention that we did separate out soy in  
14 these studies, just because there's a lot of  
15 research with soy that has been done since  
16 2000.

17 Dried beans and peas, type II,  
18 what's the relationship between intake of  
19 dried beans and peas and type II diabetes,  
20 limited. Their consumption of legumes may be  
21 inversely associated with risk of type II  
22 diabetes.

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1           There's very little data, one  
2 prospective cohort study, total legume  
3 consumption and consumption of soybeans and  
4 other legumes were each associated with  
5 decreased risk in type II diabetes.

6           So, any beans and peas questions  
7 before we move to a list of other things that  
8 we are working on?

9           Yes, Tom.

10           MEMBER PEARSON: As a major source  
11 of protein for vegans, is this confounded by  
12 this group being overrepresented in the  
13 consumer groups?

14           MEMBER SLAVIN: Ask me that again.  
15 I'm confused.

16           MEMBER PEARSON: I would imagine  
17 the highest consumption of dried -- the  
18 highest consumers of dried peas and beans, I  
19 would imagine, as a protein source, would be  
20 from vegetarians or vegans.

21           I'm just wondering if there was a  
22 confounding of the relationship with some of

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1 these with that group that had a lot of other  
2 things going on.

3 MEMBER SLAVIN: Yes, and I think  
4 there is such low consumptions in the  
5 prospective studies that you have hardly  
6 anybody. You know, if you look at protein  
7 quality of beans and legumes, even though they  
8 have fairly high protein content, their net  
9 protein utilization is actually pretty low.

10 It's one of the least digestible  
11 proteins, depending on how you cook it, but --  
12 I think we wanted to include this just  
13 because, trying to be responsive of interest  
14 in more vegetarian eating patterns and to see  
15 what kind of data is out there on health  
16 benefits.

17 Cheryl.

18 MEMBER ACHTERBERG: But I'm glad  
19 you mentioned that we did this analysis  
20 separating the soy from the beans and peas  
21 because the earlier comments we had about  
22 dietary patterns, people who eat a lot of soy

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1 don't necessarily eat dried beans and peas,  
2 and a lot of the folks who eat a lot of dried  
3 beans and peas don't eat soy.

4 And they may work quite  
5 differently. And certainly the way they are  
6 used in the diet are -- you know, it's a  
7 different pattern of usage.

8 So, I think that distinction is  
9 important, although it's still hard for us to  
10 draw very many conclusions.

11 CHAIR VAN HORN: Rafael.

12 MEMBER PEREZ-ESCAMILLA: This is  
13 Rafael. In terms of the soybean studies, did  
14 you -- and lipid profiles, did you identify  
15 randomized control trials?

16 MEMBER SLAVIN: Yes.

17 MEMBER PEREZ-ESCAMILLA: Okay.  
18 And did they actually use soybean foods or did  
19 they use soy protein isolates?

20 MEMBER SLAVIN: Yes. Most of them  
21 used soy protein isolates.

22 MEMBER PEREZ-ESCAMILLA: And my

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1 understanding is that when you translate that  
2 concentration into the actual food intake,  
3 into actual soy intake, that people would have  
4 -- would need to have, it's pretty large.  
5 Right?

6 MEMBER SLAVIN: Yes. It's like 25  
7 grams of soy protein to significantly lower  
8 cholesterol. So, to get a health claim, you  
9 have to have 6.25 grams in your -- but, you  
10 know, tofu, there's a lot of things, soy  
11 flour, that can get there.

12 So, you know, there are foods out  
13 there but, you're right. Most of the studies  
14 that were done on concentrated soy proteins.

15 In hyperlipidemics, yes.

16 Larry.

17 MEMBER APPEL: Yes. These are more  
18 questions -- I mean, comments, questions that  
19 are generic rather than to your group, but I  
20 listened to you and I'm getting sleepless  
21 trying to figure out how you're going to get  
22 all this done plus update the thing.

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1           And then I also take that in the  
2 context of -- I mean, there are 11 more, and  
3 each of those is actually in multiple parts.  
4 And then earlier on we had a discussion that  
5 in February we're supposed to go through all  
6 our conclusions and we said there are 180  
7 questions.

8           That means that if we have 16  
9 hours, we're going to finalize every hour 11  
10 conclusions. And I just think that we have to  
11 really trim our sails and focus on the things  
12 that are most likely to affect the Guidelines,  
13 and I'm worried that -- and I think I  
14 mentioned this before, that I'm really worried  
15 that we are -- some of these questions, I  
16 mean, are just not going to change the  
17 Guidelines, because we, you know, we might be  
18 relying on gut instinct, but we know that the  
19 literature isn't there to support something  
20 major, and so why are we, you know, wasting  
21 staff time, our time on this. So, the  
22 narrowing it, I think is really important.

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1           The second thing has to do with, I  
2 think, come out, and I don't -- I think that  
3 you've done a great job. I don't think it's  
4 sort of shooting the messenger to say this  
5 issue about how to deal with truncating the  
6 literature searches is huge, and affects all  
7 the committees.

8           And I think we're not dealing with  
9 it in a systematic way, and I think that  
10 unless -- I think we can't leave this meeting  
11 unless we, you know, have guidance for you,  
12 for my -- for our group.

13           I think we dealt with it  
14 differently, how to deal with, you know, the  
15 pre -- you know, before this NEL process, and  
16 because it could also, again, waste your time.

17           And I'm wondering how we do this  
18 because, you know, I look at our schedule and  
19 it's -- you know, it's dense with subcommittee  
20 presentations, and yet we really need a very,  
21 you know, procedure-oriented discussion about  
22 how to deal with this evidence and grade it,

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1 and at least have tentative conclusions.

2           So, I'm just -- you know, maybe we  
3 should -- some of us should just stay here and  
4 just think about the options and come back  
5 tomorrow, you know. Better use -- you know,  
6 better -- I don't know. I'm just throwing  
7 that out.

8           MEMBER SLAVIN: I think, took,  
9 that we want everything to be documented, so  
10 that's why we used the NEL process. If we  
11 bring in papers from before, if the 2005  
12 Dietary Guidelines, if that's in there, we can  
13 build on that, and then just say from this  
14 point on.

15           But if we're bringing in new  
16 things, then we want to make sure that it's  
17 been presented and it's -- people can get it  
18 from the library, so it's all, you know,  
19 available for everybody to see where the data  
20 is and what we based our conclusions on.

21           So, I agree with you that we want  
22 to make sure that that's done systematically

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1 so people --

2 MEMBER APPEL: And consistently.

3 CHAIR VAN HORN: There's another  
4 thing to keep in mind, I think, as we've  
5 discussed in terms of some of our sub --  
6 scientific review committee calls, that one of  
7 the beauties of this approach is that each of  
8 the subcommittees has a committed, dedicated  
9 group of experts deliberating on these  
10 questions.

11 And we, as a total team, rely on  
12 the expertise of these individuals to make  
13 some of those investigations and determine  
14 whether preexisting data are so solid and so  
15 complete that the idea of going back over  
16 them, just to say that we did, really, as you  
17 said, Larry, is not necessarily the best use  
18 of our time because, you know, there are such  
19 concrete, you know, data, suggesting that this  
20 is solid evidence, that we need to move ahead.

21 Whereas, in other cases, as we've  
22 just discussed today, and especially things

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1 that have come up since the 2005 Guidelines,  
2 once again, you know, there are some  
3 subcommittees that are dealing with that.

4 So, even though I think we all  
5 recognize the value of trying to standardize  
6 our approaches to this, there will be  
7 variability, subcommittee-to-subcommittee  
8 because of the data that exists, because of  
9 technology that has changed since then,  
10 perhaps, where there are perhaps more  
11 objective data now to be able to look at that  
12 didn't exist prior.

13 You know, it's all those kinds of  
14 questions, but if we all deliberated on every  
15 one of these collectively, we would be here  
16 until 2020.

17 So, I think we have to, you know,  
18 while I agree totally that we should do as  
19 much as we can to standardize, we also have to  
20 use some judgment here in making some of those  
21 decisions within subcommittees, and then  
22 prioritize those factors.

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1                   MEMBER APPEL: Yes. I think that  
2 -- this is Larry again. I think the main  
3 thing I'm finding, really concerned about, is  
4 this grades of evidence where you do a five-  
5 year search and you give a Grade III when the  
6 best studies were done, you know, 15, 20 years  
7 ago, and we know that, you know.

8                   And that really worries me. And  
9 we had, I think, some discussion in the  
10 electrolytes committee that we would apply the  
11 grades of evidence only to the ones where we  
12 did a NEL search, plus there was some  
13 systematic review.

14                   And I -- it might be worthwhile to  
15 say, okay, well, does everybody buy into this,  
16 and if so, then to try to follow this to the  
17 extent possible. And if you're not following  
18 that NEL process, you never give a numeric  
19 grade, I, II, III, you just give some  
20 qualitative, but it's not -- it's not, you  
21 know, an official --

22                   Now, there are probably other ways

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1 to do it, but I think we just need to make  
2 sure we are all sort of --

3 MEMBER SLAVIN: I want to mention  
4 to Larry, if you look at our remaining  
5 research topics, we started with our NEL  
6 searches. So most of those up there are not  
7 going to be NEL searches, the things that are  
8 still, you know, in the process.

9 So, I agree with you that I don't  
10 think we can -- we can't give them a grade, so  
11 they won't be graded.

12 MEMBER APPEL: Even though some of  
13 these might be your stronger relationships, or  
14 some of them.

15 MEMBER NELSON: This is Mim. But  
16 I also wonder, again, as procedural is,  
17 thinking about in particular some of the ones  
18 that you've presented and also, you know,  
19 looking at the Dietary Guidelines book, if  
20 there is -- it's the trimming of the sails.

21 At some point I think we're not  
22 going to be able to fully answer all 180 of

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1 these questions, and I think that we need to  
2 do some pretty quick triaging within our  
3 subcommittees to say all we need to do is  
4 update a few references in the 2005 Dietary  
5 Guidelines.

6 We did it pretty well, we did a  
7 search, but things haven't really changed in  
8 terms of what we would recommend, because it's  
9 a whole process when we do this NEL search and  
10 the way we present it.

11 And I really think within our  
12 subcommittees we should do some -- maybe in  
13 our next individual subcommittee calls, do a  
14 pretty quick triage on what we need to trim,  
15 also based on what we hear over the next  
16 couple of days, because 180 questions is -- I  
17 think it's actually ridiculous.

18 And especially when the focus  
19 should be more on the patterns, caloric  
20 intake, obesity. I mean, I just sort of am  
21 echoing what Linda has said, but I think we  
22 need to do some really quick trimming.

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1                   MEMBER ACHTERBERG:       I have a  
2 suggestion to offer.     This is Cheryl.    I  
3 think, as we've listened to the work we've  
4 presented so far today, one of the major  
5 outcomes of all our effort here is to identify  
6 what the research gaps are.

7                   And, very quickly, as we were  
8 looking at whatever individual question we're  
9 focused on, I think we can come to some  
10 conclusions whether there needs to be a lot  
11 more research, or whether there doesn't need  
12 to be a lot more research, and that might help  
13 us do this triage.

14                  You know, to focus on those areas  
15 where we know we need to look.   Well, if we  
16 know we can't answer the question and more  
17 research has to happen, let's say that, and  
18 then move on and focus more of our attention,  
19 our time in those areas where we think there's  
20 enough evidence that we can come to a more  
21 precise answer.

22                  MEMBER PI-SUNYER:     I do think --

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1 this is Xavier -- that some of the  
2 subcommittees will have an easier time than  
3 others. I think this has been a particularly  
4 difficult one, and it will continue to be.

5 I think things like ethanol and  
6 fluids and electrolytes and food safety, I  
7 think we can -- won't have this kind of  
8 difficulty.

9 So, it's not across the board.  
10 It's just some particular subcommittees have a  
11 much more difficult job.

12 MEMBER ACHTERBERG: And might I  
13 mention, this is a small subcommittee.

14 MEMBER PEREZ-ESCAMILLA: But it's  
15 bigger than the food safety subcommittee.

16 MEMBER SLAVIN: I just wanted to  
17 -- just the remaining research topics that we  
18 have up there, and some of these obviously are  
19 in progress, they're just not completed, so  
20 we're not going to present them today, but the  
21 food groups, whole grains and also animal  
22 protein products where we're asking questions

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1 about different animal protein and if there  
2 are health relationships with that.

3 Vegetable protein, animal versus  
4 vegetable. Fiber, carbohydrate type, which is  
5 a large -- and some of this is background  
6 that's already in the Dietary Guidelines and  
7 it will be expanded. There's not a lot of new  
8 research.

9 Liquids versus solids, a very  
10 large area. Noncaloric sweeteners, also a  
11 large area. Satiety and then some of the  
12 modeling questions that are related to our  
13 subcommittee, we appreciate.

14 Adjusting percent of animal and  
15 plant protein intake, if we do -- you know,  
16 since there isn't a ton of data on vegans  
17 versus vegetarians versus animal product  
18 protein-eaters, if we can just model that and  
19 see if we do the modeling, what type of  
20 nutrient deficiencies, problems we run into,  
21 if any.

22 And then macronutrient proportions

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1 and nutrient adequacy is also on our  
2 committee's plate.

3 CHAIR VAN HORN: Okay. Other  
4 comments or questions, either related to this  
5 subcommittee or other topics that go along the  
6 line of what Larry was saying?

7 One thing I would also add, based  
8 on just kind of following up to what Cheryl  
9 said, there may be some lightbulbs that go on,  
10 you know, as we continue with this over  
11 tomorrow.

12 I mean, we've heard -- we've heard  
13 some amazing, you know, and very comprehensive  
14 reports today. But they are only the  
15 beginning, and we have several more that are  
16 going to take place tomorrow.

17 And since I've had the opportunity  
18 sit in on several of the subcommittees, I  
19 would venture that the energy balance group  
20 and the discussion again -- you know, I sound  
21 like a broken record, but our focus is on  
22 obesity and the epidemic we're facing, or that

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1 we have currently in our country and I think  
2 that in many ways if we had to pick one  
3 priority area, we're sort of charged with that  
4 one, because we've already, you know,  
5 recognized and identified that that is public  
6 enemy number one at this point.

7           So, I think that we will want to  
8 keep that in mind as we go forward. I think  
9 that we have spoken over and over again, and  
10 we haven't even begun to talk about this yet,  
11 but we will tomorrow, about primary prevention  
12 of obesity which, of course, will, without a  
13 doubt, address children, and the need to look  
14 at children, growth, even gestational weight  
15 gain that we discussed earlier today in some  
16 of our smaller group sessions.

17           So, you know, I think that as we  
18 go forward, some of these questions, not all  
19 of them, I'm sure, but some of them may fall  
20 into place, and into rank order as far as what  
21 we should be addressing first and foremost in  
22 order to, you know, really stay true to our

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1 goals that were identified up front.

2 Other topics along that line or  
3 other things that anybody in the group would  
4 like to raise?

5 MEMBER FUKAGAWA: This is Naomi  
6 Fukagawa. I agree with you, Linda, and I do  
7 think that in some ways we're somewhat  
8 strapped by the fact that we've been grouped  
9 into nutrient categories.

10 And really, what we want is an  
11 integrated view on the diet that will affect  
12 the health and well-being of the population.  
13 So perhaps we don't need, as Larry was saying,  
14 to continue to, you know, try to whittle away  
15 at some of the more sort of specific types of  
16 questions, but perhaps put our energies  
17 towards a more global, integrated view, or at  
18 least that's my thought.

19 CHAIR VAN HORN: Other topics?

20 MEMBER NICKOLS-RICHARDSON: This  
21 is Shelly. I don't have a question, but just  
22 a comment, that Joanne and your committee, I

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1 very much appreciate this analysis that you  
2 have done, because I think now when nutrient  
3 adequacy goes to look at the food intake and  
4 look at patterns, this will help support if we  
5 find gaps in food intake, that there are  
6 health outcomes, health consequences of that.

7 So, in terms of connecting pieces,  
8 this is going to be very helpful for our  
9 committee in informing us on what those gaps  
10 mean.

11 CHAIR VAN HORN: All right. Well,  
12 I think we have really covered the territory.

13 I think for those listening in, the group  
14 here is still bright and eager, but clearly  
15 has seen a busy day, and is ready, perhaps for  
16 a little rest, and maybe you are, too.

17 We appreciate everybody's interest  
18 and attention, and we will adjourn for today  
19 and reconvene tomorrow morning at eight a.m.,  
20 Eastern Time. Thank you all very much.

21 (Whereupon, at 4:38 p.m., the  
22 meeting concluded for the day.)

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