2020 DIETARY GUIDELINES ADVISORY COMMITTEE

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PUBLIC MEETING

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FRIDAY
MARCH 29, 2019
DAY 2 OF 2

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The Advisory Group met in the Jefferson Auditorium at the headquarters of the U.S. Department of Agriculture, 1400 Independence Avenue, Washington, DC, at 8:30 a.m., Barbara Schneeman, Chair, presiding. The meeting allowed for public viewing, both in-person and by Web.

PRESENT

BARBARA SCHNEEMAN, PhD, Chair
RONALD KLEINMAN, MD, Vice Chair
JAMY ARD, MD
REGAN BAILEY, PhD, MPH, RD
LYDIA BAZZANO, MD, PhD
CAROL BOUSHEY, PhD, MPH, RDN
TERESA DAVIS, PhD
KATHRYN DEWEY, PhD
STEVEN HEYMSFIELD, MD
HEATHER LEIDY, PhD
RICHARD MATTES, PhD, MPH, RD
ELIZABETH MAYER-DAVIS, PhD, RD
NOVOTNY, PhD, RDN, LD
JOAN SABATÉ, MD, DrPH
LINDA SNETSELAAR, PhD, RD
JAMIE STANG, PhD, MPH, RDN

ELSIE TAVERAS, MD, MPH

LINDA VAN HORN, PhD, RDN, LD
ALSO PRESENT

JACKIE HAVEN, MS, RD, USDA
COLETTE RIHANE, MS, RD, USDA
EVE STOODY, PhD, USDA, Designated Federal Officer
RICHARD OLSON, MD, HHS
JANET de JESUS, MS, RD, HHS
JULIE OBBAGY, PhD, RD, USDA
TUSAREBECCA PANNUCCI, PhD, MPH, RD, USDA
DAVID KLURFELD, PhD, USDA, Co-Executive Secretary
ERIC DECKER, PhD, University of Massachusetts, Amherst
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DR. STOODY: Good morning. My name is Eve Stoody and I'm the designated federal officer to the 2020 Dietary Guidelines Advisory Committee and also lead nutritionist for Nutrition Guidance at USDA's Center for Nutrition Policy and Promotion.

Thank you again for your interest in the Dietary Guidelines for Americans. We want to welcome you to Day 2 of the first meeting of the 2020 Dietary Guidelines Advisory Committee.

And just to start off, similar to yesterday, if you weren't here yesterday, for those of you here in person, you have a badge and if you'll just keep that badge on. In order to go through the halls of this building, you need to have either that sticker or a formal USDA badge. So please just hang on to that so security knows that you're a part of this group.

Also, there are badges that have a blue dot to indicate staff. And if you need
anything at any time throughout the day, please feel free to ask somebody with the blue dot and they will be sure to help you for find someone who can.

And if you’re looking for refreshments, the cafeteria is down Wing 3.

So for this morning’s agenda, we’re going to begin by having Janet de Jesus join us to talk about the topics and scientific questions to be examined by the committee. Then, Dr. TusaRebecca Pannucci will discuss the state of the current American diet. And we are pleased to have a guest speaker join us today, Dr. Eric Decker, who will talk about Implementing Guidance in the Real World – A Food Science Perspective.

We will also have today a fair amount of time for committee discussion. That will be around the topics and questions, about the subcommittee organization, and also talk about steps for moving ahead and what will occur after this public meeting.

The agenda for this meeting is
available at dietaryguidelines.gov. We will also post the recording of this meeting, as well as the slides from this meeting after the meeting. And we will send out a listerv notification when those materials are posted.

For the record, 18 of our 20 members are here with us today. Dr. Taveras is able to join us today and we are happy to have her here. We welcome her to the meeting and to the committee.

Drs. Donovan and Naimi were not able to be here today but they are going to tune in as they are able.

Please note that this is a meeting of the committee that is open to the public. If any member of the public would like to submit comments to the committee, you are welcome to do so at any time. The written comment public period is now open and you can access it at dietaryguidelines.gov. And there will be the opportunity for oral comments to the committee at two public meetings, the first opportunity at our
July meeting, which we will talk about a little more at the end of the day.

Now just as we begin today, if we can ask the committee members if you have questions or discussion during the deliberations today, if you will, identify your name. We are still learning voices and that will help everyone to follow along in the process.

Our first speaker today is Janet de Jesus, Nutrition Advisor at the HHS Office of Disease Prevention and Health Promotion or ODPHP. In addition to working on the development of the Dietary Guidelines, she participates in other cross-cutting nutrition activities across the federal government.

She joined ODPHP from the National Heart, Lung, and Blood Institute at the National Institutes of Health, where she participated in systematic evidence reviews in the development of clinical practice guidelines for the prevention and treatment of cardiovascular risk factors across the life span.
She will walk through discussion today of the topics and supporting scientific questions that are the departments are asking the committee to examine.

Please join me in welcoming Janet de Jesus.

MS. DE JESUS: Good morning. It is my pleasure to be here at this distinguished committee. So as Eve mentioned, I am going to walk through the process for the topic in question identification. So this is a new step in the process for the 2025 Dietary Guidelines for Americans that the department has decided on. So we added this step, really, to be more transparent and deliberate in this process.

So we first proposed topics and questions, and posted them online for public comment, and then they were refined with agency input.

Okay, some of you may have heard, as you can imagine, the topics and questions that we can examine is immense. So we applied criteria
to narrow it down to decide on which topics and questions to cover and the criteria is listed on the slide.

So federal nutritionists, including scientists from USDA, and HHS, and across the federal government form the initial list of the topics and questions, based on the needs of federal nutrition programs and initiatives.

So next, the departments, USDA and HHS, posted the topics and scientific questions for public comment. So this was February 28th through March 30th that the public comment period was open. We received 12,000 comments. At the same time, federal agencies provided input on this initial list.

So I am going to review the criteria that was also put out when we released the draft topics and questions. So the first was relevance. We wanted to make sure that the topics and questions really fit within the scope of the Dietary Guidelines. The focus of the Dietary Guidelines is food-based recommendations.
So an example of a topic that doesn't fit within this scope is clinical guidelines, so clinical treatment, such as diabetes, that is covered by our other agencies at NIH and CDC. So it is not -- the purpose is not for treatment of specific diseases and conditions but more prevention.

So the topics were also reviewed for importance. Topics should have new relevant data that represent an area of substantial public health concern or a knowledge gap.

Potential federal impact was another important factor. So we looked at the probability that the guidance would be used to inform federal food and nutrition policies and programs.

And finally, the last criteria. We wanted to make sure that there wasn't duplication and covered by another government program. So for example, as I mentioned, disease treatment is well covered by our colleagues at NIH, CDC. Food safety is another example that USDA, CDC, and FDA cover and provide guidance on for the public.
So following this review, we posted the final topics and questions online. So the main topics were similar. They just reflected the priorities and I will summarize these topics today.

At the same time we released the topics and questions, we also put a call out for nominations for the committee. So this new step in establishing topics and questions we hope that would drive the expertise of the committee when they were nominated.

Okay, so this is just the summary slide and I will really get into the details.

So as I mentioned, following all the review, we refined the topics and these are the major -- the main topics. So the main difference in the initial list and the revised final list is that we expanded the topics across the life stage, not just for specific stages.

We took into consideration the comments that we received and the four criteria that I outlined. And we also expanded some of
the outcomes that we received -- that we received comments on. So some of those are under cognitive health and gestational weight gain. We also expanded the questions on dietary fats, added sugars, frequency of eating, and alcoholic beverages.

Okay. So for full transparency, all of the lists are available on dietaryguidelines.gov. The original list that we posted is still available there and we have two lists that you can see.

So the first list is List A. So this is organized by life stage. So this follows the format that we originally posted in February. It makes it easy to see what has changed. So you can see that topics continue to reflect an overall view of what we eat and drink to prevent disease and keep people healthy.

So List B is actually what we're asking the committee to work from. It's a more streamlined version. It was reorganized to reduce redundancy and better reflect how
departments are asking the committee to review
the evidence.

It is not totally organized by life
stage but we ask the committee, as much as
possible, if the evidence is available, to speak
to life stage in your report.

So today I will be discussing the
streamlined version: List B.

Okay, so the first topic is reviewing
the current dietary intake and nutrients of
public health concern.

So for each stage of life, the
following will be described -- we are asking that
the following be described and evaluated:
current dietary patterns in beverage consumption;
current intake of food groups and nutrients;
nutrients of public health concern; and the
prevalence of nutrition-related health chronic
disease. So this is where the Data Analysis
Crosscutting Subcommittee will come in.

So with this data, how does dietary
intake, particularly dietary patterns, track
across the life stages from introduction of foods into childhood and through adulthood.

So our big crosscutting question.

Dietary patterns, looking at the relationship between dietary patterns, such as: Dietary Guidelines-related patterns; Mediterranean-style; Dietary Approaches to Stop Hypertension (DASH); vegetarian/vegan; low carb; high fat are consumed at each life stage. So these are just examples.

And looking at the following outcomes, as you can see, we have a long list of outcomes here. Looking at growth, body composition, risk of overweight and obesity, risk of cardiovascular disease, Type 2 diabetes, cancer, looking at bone health outcomes, neurocognitive health, sarcopenia specific for older adults, and all-cause mortality.

So in addition to this, this is a very broad question, we are asking that the dietary pattern questions consider quantities, proportions, varieties, and combinations of foods and nutrients when examining these relationships.
So studies that examine a specific food group but control for other aspects of the dietary pattern will also be considered.

Okay, so this is a specific dietary pattern question for pregnancy and lactation populations. So looking at the relationship of dietary patterns consumed during pregnancy and the risk of gestational diabetes, hypertension disorders, gestational age at birth, so that's for the infant, birthweight, and standardized gestational age and sex, looking at weight gain during pregnancy and micronutrient status of the mother.

Also what is the relationship between dietary patterns consumed during lactation, human milk composition and quantity, infant development milestones, including neurocognitive development, and postpartum weight loss.

Okay, continuing on with dietary patterns, we really want to examine other changes needed to the USDA dietary patterns based on the relationships identified. If nutrients are not
met in these patterns, is there evidence to support supplementation or consumption of fortified foods to meet nutrition adequacy?

And this is where food pattern modeling comes in. So as you can see, we are utilizing all of our evidence review methods, so our systematic review, our data analysis, and our food pattern modeling.

Okay, moving on to beverages, as you know we consume a variety of beverages, so it's really important to look at the health impact of the beverages that we consume.

So the first question: the relationship between beverage consumption such as -- and these are just examples -- cow's milk, milk alternatives, water, fruit juice, sugar-sweetened beverages, beverages with high-intensity sweeteners, caffeinated beverages, and alcohol during relevant stages of life.

And the outcomes are: achieving nutrient and food group recommendations, growth, body size and composition, risk of overweight and
obesity. And for alcohol only, we are interested in the types of cancer, risk of cardiovascular mortality, neurocognitive health, and all-cause mortality.

So continuing on with beverages specific for pregnancy and lactation: What is the relationship between beverage consumption during pregnancy and achieving nutrient food group recommendations, gestational weight gain, birth weight standardized for gestational age and sex?

During lactation, achieving nutrient and food group recommendations. Again, as you can hear, these are repetitive across the questions and some of the outcomes: human milk composition and quantity, postpartum weight loss. And for alcohol only, infant development milestones and neurocognitive development.

Okay, so getting into more specifics in the dietary pattern. Take a look at added sugar consumption at each stage of life and achieving nutrient and food group
recommendations, growth, body size, risk of
overweight and obesity, risk of cardiovascular
disease and Type 2 diabetes.

Okay, types of dietary fats: What is
the relationship between types of dietary fats
(such as saturated fat; omega-3, omega-6
polyunsaturated, and monounsaturated) consumed at
each stage of life. And we are asking you to
examine the source, amount, and replacement of
dietary fat.

Looking at neurocognitive development,
birth through 18 years old: neurocognitive
health for adults, risk of cardiovascular
disease, certain types of cancer, and all-cause
mortality.

Moving on to seafood: examining the
relationship between seafood consumption during
pregnancy and lactation and neurocognitive
development of the infant, examining the
relationship between seafood consumption during
childhood and adolescent (up to 18 years old),
and neurocognitive development; and risk of
cardiovascular disease.

And moving on to a behavioral question: examining the relationship between frequency of eating (such as meals per day, snacking, fasting) at each stage of life.

And looking at the outcomes of achieving nutrient and food group recommendations: growth, body size, risk of overweight and obesity, risk of cardiovascular disease, Type 2 diabetes, and all-cause mortality.

So given the emphasis on infants and toddlers, we have some very specific questions, since this is the first time we are examining this population. So for infants and toddlers -- really looking at healthy, full-term infants, we have the following topics and questions.

So the first topic is recommendation of duration of exclusive human milk and/or infant formula feeding. And the specific question is looking at the relationship between the duration of exclusive human milk or infant formula
consumption and growth, and body size
composition, food allergies and atopic allergic
diseases, longer term health outcomes,
micronutrient status, and development milestones,
including neurocognitive development.

Additionally, the frequency and volume
of human milk and/or infant formula feeding and
the relationship between frequency and volume of
the consumption and micronutrient status, growth
size, body composition.

And finally, a look at supplements.
So the relationship between specific nutrients
from supplements and/or fortified foods consumed
during infancy and toddlerhood and the nutrient
status, growth, composition, body composition,
and bone health.

Okay, continuing on with infants and
toddlers, looking at the relationship of
complementary feeding and the timing of
introduction, types, and amounts, and
micronutrient status, growth and body size,
developmental milestones, food allergy, and
atopic diseases, and bone health.

So we have a very -- we have a
definition of complementary feeding because we
received a lot of questions. So complementary
feeding is defined here as when the infant starts
adding foods during the feeding period,
transitioning from like about six months or five,
transitioning from sole infant formula or breast
milk to complementary foods, all the way through
24 months. So it's not just that first year but
it continues through 24 months any of the diet.
And dietary patterns will also be examined in
this complementary foods and beverages period.

So can the USDA food patterns be
established based on the relationships
identified? As we discussed yesterday, there are
no patterns for this age group. And if so, how
well do these food patterns variations meet
nutrient recommendations for infants and
toddlers? So, you are really starting from the
beginning with these dietary patterns.

Okay, some specific questions for
pregnancy and lactation. The first one on
dietary supplements, examining the relationship
between specific nutrients from supplements
and/or fortified foods consumed during pregnancy
and lactation, and micronutrient status, risk of
gestational diabetes, and hypertensive disorders,
human milk composition and quantity, and
developmental milestones, including
neurocognitive development for the infant.

Additionally, looking at maternal diet
during pregnancy and lactation and the risk of
infant and childhood food allergies and atopic
diseases.

Okay, so as I mentioned before with
the criteria of duplication, there are a lot of
topics that are addressed across the federal
government that aren't addressed here but we just
wanted to give some of the examples that aren't
included on the review list that are addressed
through other federal guidance.

So for example, as I mentioned, USDA,
FDA, and CDC regularly update food safety
information and disseminate this to consumers and professionals. Additionally, guidance on health risk of excessive alcohol use, such as binge drinking, is included in programs led by CDC and NIH.

    Gestational weight gain guidance is provided by recommendations from the National Academies and disseminated by federal agencies.

    And as you may know, the 2018 Physical Activity Guidelines were recently released by HHS. So physical activity is well covered by the federal government.

    And finally, Dietary Reference Intake, such as the recently released sodium-potassium DRI.

    So the entire process for topic and question identification is available online at dietaryguidelines.gov. So you will find the process that we used to establish this, the initial list, and the final list, and you can keep up with the progress of the committee.

    So the next step on the topics and
questions is for the committee to work with the
evidence, the NESR Team, and the Data Analysis
and Food Pattern Modeling Team, and specifically
to refine the protocols. So they will giving you
a draft protocol, and you can really help refine
that, and make sure that it is asking exactly all
of the right questions, inclusion criteria,
outcomes, et cetera. So we really look forward
to working with you on that process.

So I'm happy to take some questions,
if you have any. And just to add that this
afternoon there is going to be opportunity for
discussion (broader) on the topics and questions
that Dr. Schneeman is going to lead.

CHAIR SCHNEEMAN: Among the committee
members, if you have questions, just remember to
say your name before. This is Barbara Schneeman.
Just remember to say your name.

MEMBER MAYER-DAVIS: This is Beth
Mayer-Davis.

So if in the process of doing the work
over this next year, if a new question arises,
something new comes out in the literature, or for whatever reason another questions arises, I'm assuming that we can discuss that and include that. Is that the case?

MS. DE JESUS: As far as the evidence review process, we ask that the committee really focus on the topics and questions that are provided.

I mean if you have suggestions in the protocols to really help make those better, that is perfectly appropriate. But if it is really like outside the scope, I mean you are welcome to discuss any of these topics in the scientific report; there just won't be like the scientific evidence review behind that because we have a very large scope. So we really had to limit with the time that you have.

CHAIR SCHNEEMAN: This is Barbara. I think it will be important, though, to capture those if, in the process of the review, you identify a significant issue that needs to be addressed. That's something where in the report
we can make sure the Secretaries are aware of
that.

So don't lose of track of them.

MS. DE JESUS: Absolutely. Yes, if
we're missing something, like please. It can be
noted.

MEMBER HEYMSFIELD: Steve Heymsfield.

Maybe I'm just thinking out loud and I'm really
seeing some of this for the first time but it
seems to me that there's a grid. There's the
life stages and then there are these different
questions.

And I guess as someone who writes a
lot, I'm trying to think of how you integrate all
this information because our tasks are fairly
focused, right, for each of our topic areas. It
must be a real challenge to put all this
together. Am I right?

MS. DE JESUS: Yes. So that's, as we
discussed yesterday, really how to put it all
together in your scientific report and that will
really take some crosscutting work with the
committee to decide how best to present this
across the life span within the topics.

So it's a good point. Thank you.

MEMBER ARD: Jamy Ard.

So the life stages that have been laid
out, if I understand correctly, are birth to 24, 2 to 18, 19 to 64, and then 65 and over. Is that correct?

MS. DE JESUS: Yes.

MEMBER ARD: So in my way of thinking, some of those life stages have very different groups within them. So do we, as a committee, have the liberty, or the luxury, or the challenge of sort of refining some of how we think about those life stages? A menopausal woman or a perimenopausal woman will be very different than a 25- to 35-year-old woman in reproductive years.

So what is our guidance there?

MS. DE JESUS: Right, as the committee, based on evidence, I mean you are welcome to provide more information on subgroups, so different populations, different age groups.
So if you really have evidence on a specific age group in the lifespan, you are welcome to. We just gave like broad age groups. So as you know, the DRIs are really cut up into much smaller age groups as well. So definitely, we would love to hear if there is information on that.

Thank you. That's a good point.

MEMBER MAYER-DAVIS: It's Beth Mayer-Davis again.

So thinking about subgroups, something that has been on my mind just over the last day or so is issues around health equity and thinking particularly about vulnerable populations and you can think about that in any number of ways. So is that an example of the kinds of subgroups that we might pay attention to within each of the various topics and questions? Is that an expectation or, from my perspective, a hope?

MS. DE JESUS: Yes, so within these questions if there are outcomes in that subpopulation, like absolutely report on that.
Thank you.

MEMBER STANG: Jamie Stang.

I have a question about the timing of the overall modeling and data analysis compared to the other reviews because it seems like you almost need those reviews to inform some of what is going to go on with the modeling and the data analysis. Is that correct or are they going on simultaneously?

MS. DE JESUS: So the data analysis has already begun, as TusaRebecca presented yesterday and she is going to present some today. So you will have a lot of the data analysis up front.

The food pattern modeling is actually informed by the committee. So it's kind of driven by the evidence. So what is the evidence telling us? You know what do we want to model utilizing the existing food patterns that we have?

So it's really a crosscutting. So data analysis and food pattern modelings
definitely are crosscutting across all of the subcommittees.

Great. Terrific. Thank you very much.

Okay. So now I'm going to introduce our next speaker, Dr. TusaRebecca Pannucci, who joined the Center for Nutrition Policy and Promotion in 2015 as the lead nutritionist for Nutrition Economic Analysis Team, she led a multidisciplinary team conducting analysis for the USDA food patterns, Healthy Eating Index, the USDA food plans, and expenditures on children by families. She will be supporting the work of the 2020 Advisory Committee and the Working Group on Data Analysis and Food Pattern Modeling, which she will be discussing today.

So join me in welcoming Dr. Pannucci.

DR. PANNUCCI: Good morning. So it is my pleasure to talk to you today about a selection of analyses that describe the current dietary intakes in America.

The 2015-2020 Dietary Guidelines,
which included recommendations for ages 2-plus, will be used as a metric for which I am going to compare some data about dietary intakes today. So of course, moving forward, we will be discussing the birth to 24 population but today, my focus will be on the population that was relevant for the 2015-2020 Dietary Guidelines, ages 2-plus.

Yesterday I emphasized the interagency collaborations that make this data analysis possible. So again, I will mention that federal scientists at the USDA Center for Nutrition Policy and Promotion, the Center for Disease Control and Prevention, Ag Research Service, and the National Cancer Institute are all important players in the data collection, data nutrient analysis, the supporting data bases that we use that make it possible to do this analysis, the development of analytic methods, and of course the data analysis that I am going to share today. So today I am going to be going over some of the methods for dietary data collection,
which we went over yesterday but I will remind
everybody again today, the levels or tiers of
dietary intake data that we can examine. Then, I
will share where we are with overall diet quality
using the Healthy Eating Index or HEI. I'm going
to discuss data based on food group intakes,
distribution of food group intakes, and food
category sources of calories and food groups.

So by the end, I hope that we will
paint a picture of the understanding of where
Americans stand compared to the 2015-2020 Dietary
Guidelines for Americans food group
recommendations.

The data I'm sharing come from the
National Health and Examination -- National
Health and Nutrition Examination Survey, which is
supported by the National Center for Health
Statistics of the Centers for Disease Control and
Prevention. The goal of NHANES is to provide
U.S. population-based estimates for health
conditions, awareness of treatment and control of
selected diseases, environmental exposures, and
today, we will be discussing nutrition status and especially dietary behaviors.

Also, a reminder that NHANES uses a complex sampling design and constructs sample weights that are used in the analyses that I am presenting today that make it nationally representative. A reminder, again, that this is looking at civilian non-institutionalized individuals in our population and that there are oversampled groups that help us with better estimates for some of these subgroups that some of you keep mentioning.

So remember that NHANES data collection is unique because it includes interviews as well as physical exams that, together, provide a host of information about our population. The demographic data and the dietary data can be combined so that we can look at some of those subgroups.

So today's presentation, again, focuses on the dietary data. So let's quickly review again the data collection methods.
The dietary portion of NHANES, the
What We Eat in America portion, is the interview
administered 24-hour dietary recall developed by
the USDA called the Automated Multiple-Pass
Method or AMPM. As a reminder, again, this
includes a quick list where participants are
asked to recall everything that they ate and
drank in the previous 24 hours. The forgotten
foods list includes an opportunity for them to
review the quick list and add anything they might
have forgotten, using standardized lists of nine
food categories that probe their memory.

Then, they are asked to apply a time
and day -- a time of day to each eating occasion
and name that eating occasion. That might also
prompt memories of other things that they
consumed throughout the day.

During the detail cycle, they report
the portion sizes consumed, any additions to the
foods that they consumed, and it provides another
opportunity for review and any omitted foods to
be added.
Finally, the trained interviewer goes through the final probe asking for anything else consumed, even in small amounts throughout the day. This is designed to help participants recall their diet in great detail.

What We Eat in America, again, is supported by these databases that make the analysis I am going to share today possible. The Food and Nutrient Database for Dietary Studies or FNDDS provides the nutrient values for about 9,000 foods and beverages, including energy and 64 nutrients.

The FPED or Food Patterns Equivalents Database takes those foods in FNDDS and disaggregates them into their food group components, things like cup equivalents of vegetables, fruits, dairy foods; ounce equivalents of grains, protein foods; and teaspoon equivalents of added sugars. It is really this database that gives us the unique opportunity to compare food group intakes to the recommendations in the Dietary Guidelines for
Lastly, I am going to be showing some data that utilizes the What We Eat in America Food Categories. This exists to apply analysis to foods and beverages as consumed in the American diet. There are about 150 unique food categories and I am going to try to make these databases come to life.

We are going to use peanut butter and jelly sandwich as our example. Classic. So somebody in NHANES might report a peanut butter and jelly sandwich with regular peanut butter and regular jelly on whole wheat bread. We are going to say that the sandwich is about 140 grams.

I'm just going to present some selected data, not all the information. But the FNDDS is where we would find out that such a sandwich would have about 402 calories, 14 grams of protein, 8.7 grams of monounsaturated fatty acids, and 304 milligrams of potassium.

The FPED database lets us know the foods in our food. So let us know that that
sandwich contributes two-ounce equivalents of nuts and seeds, 12.7 grams of oils, 1.3 ounce equivalents of whole grains, and 3.75 teaspoon equivalents of added sugars. You can see how these tiers of data are adding to the information that we can look at.

And finally, the What We Eat in America Food Category. This sandwich falls in the mixed dish category under sandwiches, specifically, peanut butter sandwiches.

So now that we have an understanding of the type of data we have, the tiers of dietary data that we can look at, let's look to see how we're doing. We are going to do that by using the Healthy Eating Index.

So the Healthy Eating Index is an analytic tool that we use to compare a set of foods to the key recommendations in the Dietary Guidelines for Americans. It's a unique tool that can be applied to any set of foods but today we specifically are going to be applying this to population-level diets.
So the following slides will report the latest version of the HEI, the HEI 2015, which aligns with the Dietary -- the 2015-2020 Dietary Guidelines for Americans.

HEI scores do not align with the Dietary Guidelines. The average score in America is 59 out of a total possible 100 points. This does not mean that 59 percent of Americans are meeting the Dietary Guidelines, a common misperception. This means that, on average, diets of Americans are not meeting the Dietary Guidelines, a score of 59 out of a possible 100.

We can look on the left there, how we changed over time. There has been a little bit of improvement but things have been fairly static across the past ten years. We can also look across age groups. The youngest and oldest age groups shown here, ages 2 to 5 and ages 65 plus, tend to do the best with scores of 61 for the littles and a score of 64 out of 100 for ages 65 plus. Ages 6 to 11 receive a score of 52 out of 100, as do the age 12 to 17.
So knowing that diet quality in relation to the 2015-2020 Dietary Guidelines is poor, what is contributing to the score? Why don't we unpack this a little bit with the data that we have available?

We'll first start by looking at average food group intakes compared to the recommendations. So the following data include, again, average food group intakes compared to the Dietary Guidelines recommendations. These data are published by our colleagues at the USDA Ag Research Service and are already available online. And then we will be comparing to the USDA U.S. Health Eating Style Food Pattern that was published as part of the 2015-2020 Dietary Guidelines for Americans.

In these figures, we're looking at average daily vegetable intake compared to recommended intake. There is a lot on this slide so I am just going to walk us all through it a little bit here.

Along the bottom we have age groups
starting with the youngest, 2 to 5, 6 to 11, 12 to 19, 20 to 29, 30 to 39, and so on to the far right is 70-plus. And then the blue bars show the range of recommended intakes from the calorie levels that could be assigned to those age groups in cup equivalents of vegetables and the orange dots indicate average intakes for that age group compared to the blue bars.

You can see that for all age groups, average daily vegetable intake falls short of the range of recommended intakes.

We'll look again for fruit. The same situation. The bars represent the cup equivalents and the recommended range of intakes and the orange dots represent average intake.

You can see that across all age groups, except for ages 2 to 5 -- so sorry. Ages 2 to 5 falls within the recommended intakes. And then beyond that, intakes hover just under one cup equivalent, for the most part, per day.

Here we show average total grain intake. So this is showing whole grains as well.
as refined grains combined, total grain intakes. And we see that for most age groups the intakes fall within the bars for men. For women, some of the average intakes fall below the bars.

Here we have average daily dairy intake. Remember that dairy includes cow's milk as well as cheese, and yogurt, and calcium-fortified soy beverage. And we see an interesting pattern here, where as the age groups increase, intakes tend to decrease.

For ages 2 to 5, the average intake is just shy of two cup equivalents per day. For the other age groups, average intakes for men fall between a little over one cup equivalent to around two cup equivalents and for women, starting around age 20 adult women are consuming somewhere around 1.25 cup equivalents a day.

Here we see average daily protein foods intake compared to recommended intakes. So for men we see that, starting with young adult men, ages 20 to 29 and throughout ages 60 to 69, the average intakes are above the recommended
intake bars. For women, they generally fall within the recommended intake bars.

All right, so we have seen how average food group intakes compared to the recommendations in the 2015-2020 Guidelines but we might wonder how have they changed over time. Our colleagues, again at Ag Research Service, published a nice piece looking at this comparing food group intakes from 2003-4 to 2015-16. The reference is shown here. This work was done by Shanty Bowman and colleagues and published in November of last year.

All right, we are going to go through each main food group again. So let me orient you to this slide and then most of the rest are similar. Again, we have age groups, a little bit more compact age groups. Along the bottom, ages 2 to 5, 6 to 100, 12 to 19, and then all adults over 20 and the total population there on the far right.

In the green on this slide -- there will be other colors on other slides but in the
green on this slide to the left bars, those are
data from 2003-2004 and in the blue bars, those
are data from 2015-2016. There have been no
significant changes in vegetable intake between
these two time periods.

These came out as almost purple.
There have been no significant changes in fruit
Depending on where you are looking, they are
either purple or navy blue, representing data
from 2003-2004 or kind of the orange color
representing data from 2015-16. Again here we
see that intakes hover right around one cup
equivalent of total fruit per day. That includes
whole fruit, as well as 100 percent fruit juice.

All right, well this next slide is a
little bit different. Before I showed you total
grains altogether but here, I am showing a slide
that includes whole grains as well as total
grains.

So we are looking at the intake of
whole grains in blue at the bottom of the bars,
refined grains in orange, and the two together represent total grain intake by age group, from youngest on the left to oldest adults on the right, and the total population on the far right.

The darker bars or the more opaque bars represent data from 2003-2004 and then the more translucent bars represent the data from 2015-2016. For adults, and then that translates to the total population, there has been a significant -- a statistically-significant decrease in total grain intake. But interesting, there is a statistically-significant increase in whole grain intake across the age groups, although we could see that those blue bars do not represent half of the total bar and the recommendation is that half of grains are whole grains.

All right, dairy foods, again, which includes cow's milk, cheese, yogurt, and calcium-fortified soy beverage, we see that for the very youngest children ages 2 to 5, that there was a statistically-significant decrease of total dairy
intake but across the other age groups and total population, there is no statistically-significant difference between the two time points.

For total protein intakes, adolescents have a statistically-significant reduction in total protein food intake between 2003-2004 and 2015-16. But for the total population and for most age groups, the intakes are almost identical.

All right, last little bit tricky slide, this is like the whole grain slide but this one describes the percent of calories from solid fats and added sugars. There was a substantial and significant decrease between 2003-4 and 2015-16.

Again, in this slide, added sugars -- there's a little bit of color here. Make sure I have the colors right here. Added sugars in the blue on the bottom of the bars and solid fats in the green on the top of the bars. There is a statistically-significant reduction in total percent of calories from these two elements, as
well as a statistically-significant reduction in each as an individual component of the diet.

Again, in 2015 there was a quantitative limit of ten percent of calories from added sugars and from saturated fat. So if we look at added sugars in the blue bars, we still see the intakes, as a percent of calories, exceed that quantitative limit of ten percent, where the intakes here are shown as ranging from 12 percent to 15 percent of calories in the diet.

All right so we have looked at average intakes compared to recommendations. We looked at change over time but what percent of the population is falling short of these recommendations?

Here, we are using food group intake distributions. This analysis was done by colleagues at the National Cancer Institute and represent two cycles of NHANES data 2013-2016.

For each of the main food groups, in the dark green bars going towards the left of the slide, the percent of the population that falls
short of the recommended intake. On the lime
green bars to the right of the slide is the
percent of the population that either meets or
exceeds those recommended intakes.

We see that for total vegetables,
about 90 percent of the population falls short of
the recommendation. For fruit, it is about 80
percent of the population falls short of the
recommendation; for dairy, again, it's close to
90 percent of the population; for total grains,
41 percent of the population; and for total
protein foods, about 40 percent of the population
have intakes below the recommended. And this is
-- I should have mentioned this is the
recommendations being compared are the food
patterns published in the 2015-2020 Dietary
Guidelines.

All right. So what are the food
sources for these food groups or for energy or
calories? So we are going to look at food
category sources of food groups and energy.

So the next series of figures
illustrate where, as these food categories -- remember the peanut butter sandwich example -- Americans are getting energy, calories, and then vegetables. These data were also produced by colleagues at the National Cancer Institute.

I will remind you about the What We Eat Food Categories that are developed by our colleagues at Ag Research Service. So the main categories are shown on the left, things like milk and dairy as a category, as opposed to a food group. We need to keep those different. But we will unpack mixed dishes because people often wonder gosh, what is in mixed dishes.

So then there are subcategories, including meat, poultry, and seafood-mixed dishes, grain-based mixed dishes, Asian and Mexican mixed dishes, pizza, sandwiches, and soups. Within sandwiches, we can drill down even more to burgers and frankfurter sandwiches, chicken and turkey sandwiches, egg or breakfast sandwiches, other sandwiches, cheese, and then peanut butter and jelly sandwiches. So a lot of
-- again, there are about 150 unique categories.

All right, the next slide has a lot to look at so we will take it slow. So here I am showing the main food category sources of calories or energy. So how are foods or what foods are contributing to energy intake? So by combining the FNDDS and What We Eat in America Food Category data sources, we can examine the distribution of energy intake across the major food categories.

In this figure we have ages 2-plus, so the total population, and then the age categories ranging from youngest, 2- to 5-year-olds, 6 to 11, 12 to 19, 20 to 24, and so on to 71-plus. All right, let's use this pointer to our advantage here.

So this color of green on the bottom is mixed dishes. The lime green is snacks and sweets. The lighter blue is beverages not including milk or 100 percent fruit juice. This blue, this lighter blue -- wait a minute -- darker blue is the protein foods. This darker
orange is the grains. The lighter yellow is the 
vegetables. And then we have dairy in what 
appears to be a grayish color here. Fruits and 
fruit juices, 100 percent fruit juices, and then 
condiments.

A majority of the calories are being 
consumed as mixed dishes and this is nice because 
you can kind of see across the age groups how the 
distributions shift. Again, mixed dishes include 
grain-based mixed dishes or casseroles, where I 
grew up; Asian and Mexican mixed dishes; pizza, 
sandwiches, soups, things like that.

So mixed dishes, along with snacks and 
sweets in the lime green, and beverages other 
than milk and 100 percent fruit juice make up 
almost 60 percent of calories for most of the age 
groups except for the small children.

We can look at this with a little more 
specificity. So what are the top ten subcategory 
sources of intake? A similar slide here but now 
we're looking at more specific food categories.

So in this case, the blue is the burgers and
sandwiches. The orange is desserts and sweet
snacks. This gray is rice, pasta, and other
grain-based mixed dishes. The yellow is sugar-
sweetened and diet beverages. The blue is chips,
crackers, and savory snacks. This little green
line here is vegetables, including beans and peas
not starchy vegetables. The purple is pizza,
higher fat milks and yogurts, breakfast cereals
and bars, and poultry not including deli and
mixed dishes.

So we can see with a little bit more
specificity the food categories that are the top
ten sources of contributing to energy in the
American diet. And again, it is nice to see
across the age groups how those shift from one
age group to the next.

So that was looking at energy or
calorie sources. We talked about vegetables and
vegetable intakes fall short of the recommended
intakes. But where are Americans getting their
vegetables?

So we can look at the top ten
subcategory sources of vegetables. Again, these
are categories, not food groups. So vegetables
is the food group. Categories is how the foods
are consumed.

And again, the age groups across the
bottom. In the green we've got vegetables,
basically vegetables on their own; starchy
vegetables in orange; burgers and sandwiches,
including tacos and burritos in gray -- you can
see how that changes from one age group to the
next; rice, pasta, and other grain-based mixed
dishes; chips, crackers, savory snacks; meat,
poultry, seafood mixed dishes; purple is pizza;
condiments and gravies in this kind of brown
color; and then we have soups and eggs. So you
can see that those are the top ten subcategory
sources of vegetables in the American diet.

So these are a selection of data. Of
course, there are a lot of data that I described
yesterday that are available to examine dietary
intakes of Americans. I chose to focus on food
groups that can be compared to the
recommendations in the 2015-2020 Dietary Guidelines for Americans.

Our common goal is to improve the health of our nation. That's why we are all here; the staff to support you and you are committed to the work that you are doing. We know that everything we eat and drink matters. We still fall short of eating according to the Dietary Guidelines. Circling back to the Healthy Eating Index scores, we see that Americans' diets do not align with the 2015-2020 Dietary Guidelines. Data also show that moving towards the Dietary Guidelines matters. There is reduced risk for diet-related chronic disease and major economic benefits.

So I hope that this has helped you understand the state of the American diet with this selection of data. And I am happy to take a few minutes to answer any questions.

CHAIR SCHNEEMAN: Linda, do you want to -- just to remind the committee, say your name and then the question.
MEMBER VAN HORN: Linda Van Horn.

Thank you so much. That is so full of information, I'm sure we could talk all day about this set slides alone.

DR. PANNUCCI: We probably could.

MEMBER VAN HORN: But again, I am struck with how valuable it is to be able to look at the little kids and realizing that those school-aged years are when everything seems to be at their worst. It is an opportunity I think, especially again with our new category of B-24 and going forward to really emphasize the opportunity to initiate those healthier eating patterns starting early on and then preserving those over time.

And I'm not sure, as a group, how we can do that but it would just seem to me that if there was a theme or an emphasis or something that we could do about that, it clearly means educating the adults who are caring for those children but pushing that thought further as far as maintaining those healthier eating patterns as
they get older.

DR. PANNUCCI: Thank you.

VICE CHAIR KLEINMAN: Ron Kleinman.

That was a great talk, TusaRebecca.

So in the food composition table, there's 9,000 foods. Do those include infants?

DR. PANNUCCI: There is data on baby foods, as well as infant formulas.

VICE CHAIR KLEINMAN: Great. And how about human milk?

DR. PANNUCCI: The data for human milk would have to be imputed.

VICE CHAIR KLEINMAN: Okay but we can do that? I mean -- and then the Healthy Eating Index, that doesn't go down, does it, into the birth to 24?

DR. PANNUCCI: The Health Eating Index applies to the ages 2-plus at this point because it reflects the dietary patterns that were designed for those age groups.

VICE CHAIR KLEINMAN: Yes.

DR. PANNUCCI: So the HEI 2015 is
based on the key recommendations of the Dietary
Guidelines -- or the key recommendations of the
2015-2020 Dietary Guidelines and the scoring
reflects a density basis of the patterns that are
applicable to 2-plus, since B-24 wasn't included
in that addition of the guidelines.

VICE CHAIR KLEINMAN: Yes, so to some
degree I guess we may be developing a Healthy
Eating Index. Is that --

DR. PANNUCCI: So the Healthy Eating
Index is developed through a collaboration --
CNPP, as well as the National Cancer Institute.
And that's something that occurs after the
Dietary Guidelines are released.

So traditionally, the HEI has been
published about three years after the guidelines
are released but work starts right away in that
development and evaluation process.

VICE CHAIR KLEINMAN: Yes, so what we
will be doing is influencing that, if we do our
work well.

DR. PANNUCCI: Yes, there was a -- if
we -- yes, that is right. The key
recommendations for that birth to 24 population
could be translated in something akin to a Health
Eating Index for that population.

VICE CHAIR KLEINMAN: All right. And
then this isn't specific to what you've just told
us but, as a general question, what are the
outcomes that we haven't thought about -- that I
haven't seen listed here is bone health. Is that
-- I don't know if this is a question for you or
for Eve, or for someone else, but is it in there?
DR. PANNUCCI: It's in the topics.
Yes, there are some questions.

VICE CHAIR KLEINMAN: It's there.
Great because that is very crosscutting,
certainly something we would want to talk about.

DR. PANNUCCI: Yes, and I spoke of
food group intakes but, of course, there will be
nutrient intakes to examine from food and
beverage alone, as well as food and beverage from
-- food and beverage as well as dietary
supplements. So that will be something the
committee will want to examine as well.

VICE CHAIR KLEINMAN: Thank you.

DR. PANNUCCI: Thank you.

MEMBER BAILEY: This is just a quick question. Regan Bailey.

I love the slides where you have the dots for the average and the bars for the recommended range. I'm wondering for the work of the Food Pattern Modeling Committee if we couldn't combine four survey years for that to increase the precision of estimates.

DR. PANNUCCI: We could.

MEMBER BAILEY: And while we don't have recommended ranges for birth to 24 months, if we couldn't just have a dot to see where they are currently at.

DR. PANNUCCI: Yes, that's something that we can talk about as part of the data analysis in the Food Pattern Modeling Subcommittee.

MEMBER BAILEY: Thank you.

MEMBER TAVERAS: Hi, Elsie Taveras.
So a couple of questions.

Do you have information to identify if there is a sample of pregnant or lactating women?

DR. PANNUCCI: We do, yes.

MEMBER TAVERAS: Do you have a sense of the sample of size of that?

DR. PANNUCCI: I meant to tuck that away because I was asked that yesterday and I still don't remember.

MEMBER TAVERAS: And then --

DR. PANNUCCI: I noted it and -- thanks -- 30 to 50 per two-year group. So it is a small sample size. We'll have some challenges around that.

VICE CHAIR KLEINMAN: I think you mentioned 200.

MEMBER BAILEY: If you combine all the survey years.

CHAIR SCHNEEMAN: So Regan, if you could say that into the mike. It's mainly getting it on the transcript.

MEMBER BAILEY: Sorry. So there's
about 20 to 50 in any survey year. In 1999 through 2006, pregnant and lactating women were oversampled. So there is a higher sample size in those age groups. But even combining 1999 through 2014, there is about 1200 to 1500. So about 1200 with complete dietary data.

MEMBER TAVERAS: Thank you.

And the other question I had was: Is there any level of detail of diet in some of the categories that you mentioned in surveillance of children in WIC or through other nutrition --

DR. PANNUCCI: We can look at program participation.

MEMBER TAVERAS: So other nutrition surveillance systems for example like the Pediatric --

DR. PANNUCCI: Even with NHANES, there is an ability to identify some levels of program participation. So that's something, again, we could talk about which subgroups that we want to dive into. We were talking about vulnerable populations and how you might want to examine
that.

MEMBER TAVERAS: Thank you.

MEMBER VAN HORN: Sorry, another question.

DR. PANNUCCI: Sure, Linda.

MEMBER VAN HORN: Linda Van Horn.

The other question sort of tagging onto that is it was encouraging to see that there were improvements in terms of reduction in sugar and solid fat intake. And I was just wondering if it was possible to determine where the sources of those are.

DR. PANNUCCI: Yes, we can dig down into that and determine where that is coming from.

MEMBER VAN HORN: Oh, that's great.

And then the second question is related to the fact that, again, it is encouraging to see there are segments of the population that are exceeding the recommended amounts of fruits, and vegetables, and other things of that sort. I just wondered if there
have been any attempts to analyze those populations that are meeting or exceeding some of those recommendations to determine not only what the HEI is for them but also how it relates to their own health-related criteria. In other words, the winners. We like to look at --

DR. PANNUCCI: How are the winners actually doing well?

CHAIR SCHNEEMAN: This is Barbara Schneeman. If I could add to that question, with the HEI we are looking at the single number for the total population and it might be interesting to know the distribution and then, to your question, what is related to where you are in that distribution.

DR. PANNUCCI: Yes, and the distribution at the top end of the distribution -- oh, shoot. Now I can't remember what the 95th percentile is. I have that in another presentation. We have that distribution intake data. And I am thinking to the Dietary Patterns Methods Project, which of course Dr. Boushey is
very familiar with, where we could look at even quartiles of diet quality scores but the highest quartile does not have a perfect score but we do see that there is a reduced risk for chronic disease mortality, as an example. And some of those publications would allow you to look at kind of if we call those the winners, as you said, then what are the component scores for HEI and things like that.

MEMBER BOUSHEY: This is Carol Boushey. And I'll just follow-up.

Thank you, TusaRebecca for pointing that out. That is being addressed by activity with the Dietary Patterns Methods Project, however, the sample is not NHANES.

DR. PANNUCCI: Right.

MEMBER BOUSHEY: So that is one of the cautions. You know a lot of this is NHANES and so that sample comes from three major cohorts that are actually doing exploration of the top and in what's happening. So good insight.

DR. PANNUCCI: Yes but we could do
something similar in NHANES.

MEMBER BOUSHEY: Yes, and you could then and use the same modeling, too.

DR. PANNUCCI: Yes, thank you, Linda.

MEMBER NOVOTNY: Rachel Novotny.

Hearkening back a little bit to Elsie's question about the food assistance groups and knowing that you also work with the Thrifty Food Plan, I think it's great that you are able to put together these different data sets but it makes me wonder if one is able to put prices on these food plans or, alternatively, if you could share with us the latest Thrifty Food Plan and how that may be shifting. I think there's going to be a lot of interest in the cost associated with --

DR. PANNUCCI: That's something we can have a discussion around, cost, but I think it would be outside of the scope of the questions and topics that have been outlined. But of course, that is follow-up work that happens on my team.
CHAIR SCHNEEMAN: Again, even though we may identify things outside the scope, if it becomes important in our discussion at the committee level, then we need to think about how do we incorporate it into the report, even though we may not be making a recommendation about it.

MEMBER MATTES: Rick Mattes.

So to what degree can you manipulate the categorizations that you have there? So for example, we drink some fruits and vegetables. So that would fall into the beverage category --

DR. PANNucci: Uh-huh.

MEMBER MATTES: -- even though we call them -- and beverages are often snacks but you differentiated beverages from snacks. If we want to start changing the boundaries to understand --

DR. PANNucci: When it comes to nomenclature and the way we think about nomenclature, you've brought up a good point. So in NHANES in the time and occasion step, participants self-identify what they call that eating occasion.
So we can look at data based on how people identify an eating occasion. So what foods are contributing to the eating occasion that participants have identified as a snack?

The categories that I was showing today are the What We Eat in America Food Categories that have been defined and there is one of those categories called snacks and sweets, and then it drills down further. I think it will help to see that full list of 150 food categories, to look at it from that element, and then separately to look at an element of the eating occasion labels that people self-identify and what you might want to look at within those self-identified eating occasions and keep those two concepts a little bit -- I suppose you could look at it combined but also self-identified snacks is different from the category snacks and sweets. So it's been defined in the What We Eat in America Food Categories.

Does that answer your question?

MEMBER MATTES: Yes, we'll have to
talk about that more.

DR. PANNUCCI: Yes, there's a lot --
there are a lot of things that are going to be
fun to talk about. Short answer, yes.

MEMBER HEYMSFIELD: I had a question.

Steve Heymsfield.

The source data for the Healthy Eating
Index is the NHANES questionnaires you described?

DR. PANNUCCI: The -- we -- the --
sorry. The Healthy Eating Index calculation is
on the NHANES 24-hour recall data.

MEMBER HEYMSFIELD: Right. Okay.

DR. PANNUCCI: Yes, so the same group
of people that contributed to that HEI score,
that population also contributed to the average
intake and the food category intake data that you
saw today.

MEMBER HEYMSFIELD: So I know that
there is I guess a SAS program that runs these
analyses.

DR. PANNUCCI: That's right.

MEMBER HEYMSFIELD: Is there an
individual user interface on the web where
someone could calculate their Health Eating
Index?

DR. PANNUCCI: There is work around
that. There are people who are interested in
that. We could have another larger conversation
around that idea and how people would react to
that and things like that.

But right now, it's generally used for
populations or for other groups of foods. We can
apply it to menus. We can apply it to the food
supply. We could apply it to -- there is
interesting work where they've applied it to
foods available at a food pantry, things like
that.

So it's applied in a lot of different
ways and I would be happy to share more on that.

MEMBER HEYMFSFIELD: I guess I want to
work towards 100. You know I don't know where I
stand right now.

DR. PANNUCCI: We all want to work
towards 100, I am sure.
MEMBER BAZZANO: Lydia Bazzano from Tulane.

So I guess I'm a little bit confused with I guess the same distinction in terms of what is a vegetable. And I think also for people who may be confused about how is it that eggs are in the top ten subcategory of vegetables.

DR. PANNUCCI: Okay.

MEMBER BAZZANO: Just so that you can explain that to everyone.

DR. PANNUCCI: Yes, I'd be happy to.

So eggs is not a category of vegetables, rather, the way people eat eggs. You can imagine an omelet contains vegetables. So people are getting their vegetables through egg like an omelet.

So it's one of the top ten ways that people get their vegetables. It is not a category of vegetables.

Categories of vegetables in the food groups would be things like dark green vegetables but it is a little -- it's a distinction. We
have food groups and subcategories for some of those food groups. The What We Eat in America Food Categories are categories as foods are consumed. So sandwich is not a subcategory of grains, rather a sandwich is a source of total grains in the American diet.

Does that help?

MEMBER BAZZANO: That does, a lot. Thank you and I'm sure it helps others.

DR. PANNUCCI: Because that would be confusing if you were wondering how eggs are a category. Eggs are not categories as a vegetables. Eggs are a source of vegetables when vegetables are added to something like an omelet.

MEMBER BAZZANO: I do have a follow-up question, though --

DR. PANNUCCI: Okay.

MEMBER BAZZANO: -- about the veg alone and starchy veg. So I'm assuming starchy veg is mostly potato-based.

DR. PANNUCCI: Potatoes, corn, things like that.
MEMBER BAZZANO: Okay and veg alone --

DR. PANNUCCI: Would be the other veg like -- of course now I'm drawing a blank like that's something I should know.

MEMBER BAZZANO: Like broccoli?

DR. PANNUCCI: Green beans, broccoli, tomatoes, vegetables that are not starchy. And again, those are not subcategories of vegetables but, rather, those are the What We Eat in America categories, although there are starchy vegetables as a subcategory. This gets quite confusing if we talk in circles.

MEMBER BAZZANO: Got it. Thank you.

DR. PANNUCCI: Sure.

CHAIR SCHNEEMAN: So this is Barbara Schneeman, if I could follow up on that. So you can present us data, though, of within the actual sources of vegetables --

DR. PANNUCCI: Yes.

CHAIR SCHNEEMAN: -- how they distribute across the different categories.

DR. PANNUCCI: We can do both. We can
look at intakes of vegetables and their subgroups as an example and we could look at what are the sources of dark green vegetables as categories.

MEMBER ARD: So Jamy Ard.

From an energy balance standpoint, if we take a look at the average food group intakes compared to recommendations, and if we were to say well, we move everyone up to the recommendations, then we would expect people to just gain weight, right, because we are just adding calories. No one is meeting the recommendations.

So the question is: What are the food groups that we are overconsuming. I mean you showed there is a decrease in solid fats and added sugars but if you had a comparable set of food groups that we are overconsuming so we would be able to understand what the displacement needs to be.

DR. PANNUCCI: Sure. There is an interesting analysis that has been done that we can also discuss thinking about the nutrient-
dense forms of foods. So forms of foods that are prepared in their most nutrient-dense forms would be those with the least amounts of sodium, added sugars, and saturated fat. But if we look at typical intakes within the food groups, then we know that Americans are not always making the most nutrient-dense choices. So even an average intake of vegetables doesn't mean it is the average intake of the most nutrient-dense forms of vegetables.

And so looking at that analyses, I believe, if I remember correctly, the last time that analyses was done was published in 2010 and we really saw that within those food groups like vegetables or fruits, we can see what the nutrient profile would be in the food patterns versus what the nutrient profile is of typical choices of Americans and look at the difference. I think it is that kind of analysis that would answer your question.

CHAIR SCHNEEMAN: So other questions, at this point, from the committee?
MEMBER SABATE: Joan Sabate.

DR. PANNUCCI: Yes.

MEMBER SABATE: I wanted to follow a question that you mentioned. It looks like, other than protein foods and grains in some categories were low in the foods that you have presented and, at the same time, there is good news that solid fats and added sugars there is a time frame to decrease.

So the goods news seems like the Dietary Guidelines from previous editions do have an impact. The bad news is that all these difference in energy probably comes from foods that are not categorized in a clear way. I mean they are not the measure of food groups as we understand. By that I mean you know the fruits, the vegetables, the legumes, the so on and so forth. So probably the excess of energy, because overall in America we have obesity, so basically that may come from beverages, from ultra-processed foods, from alcohol, and excess of fats and sugars.
I mean I just would like to know if there is a way that indeed quantify these because that will be useful for us as far as making recommendations.

DR. PANNUCCI: Again, I think the typical choices analyses will help to enlighten us related to both of your questions.

Heather.

MEMBER LEIDY: Heather Leidy. Just two quick questions.

In more philosophical, I guess, nature, how long does it take for guidelines to elicit change that is observed statistically?

So my question I guess is related to Healthy Eating Index. We know what Americans are eating now and we were talking about it in the context of the 2015 Dietary Guidelines but there is a time there at which those things come out where it actually has a practical change and I don't know how that actually works in the realm of -- I'm sure in the past there has been a nutrient of concern that we have been able to
target and then you can see a change over x number of years. I don't know if that is the case or not.

Please add some context around the time at which the guidelines come out versus how we can track that effectively and what that time frame would look like.

DR. PANNUCCI: That's an interesting question. I think it would take a little bit more discussion but what comes to mind related to NHANES is that within the questionnaire there are questions about familiarity with MyPlate. It previously, the Food Guide Pyramid was that question and now it's been changed to familiarity with MyPlate. So there has been some analyses to look at those who are familiar with MyPlate and difference in their diet quality scores. And those who are familiar with MyPlate or those who tried to follow MyPlate, that is another question. Their HEI scores are higher than those who are not familiar with MyPlate.

That doesn't directly answer your
question but trying to point out that there is
data -- there is data in the questionnaire
portion of NHANES that does address familiarity
with the Dietary Guidelines.

Another thing about the Healthy Eating
Index, we are often careful to say that we are
describing how diets do or do not align with the
Dietary Guidelines, not projecting on people
whether they are trying to follow the Dietary
Guidelines. So that's another distinction,
trying to understand whether or not people are
even trying to versus how their diets do or don't
align.

MEMBER LEIDY: And then just a follow-
up question along those lines. Oh, I'm sorry.

CHAIR SCHNEEMAN: I just wanted to do
a follow-up question from that because I believe
in the Dietary Guidelines process, things like
added sugars and solid fats have always been
there but I think it was maybe around 2005 that
solid fats/added sugars was really identified as
a category that could be used in thinking about
the food pattern.

And I'm wondering if any data suggests tracking from that point gets to your question, in terms of how long does it take to really get an awareness that leads to behavior change.

DR. PANNUCCI: Yes, I think those are questions that can be further discussed and thought about within the scope of the topics and questions that have been identified.

Thank you, Heather.

CHAIR SCHNEEMAN: Other questions?

Great.

This has been a wonderful discussion and very useful data. I'm sure we're going to have a lot more questions for you.

DR. PANNUCCI: I'm sure. Fantastic.

Thank you.

CHAIR SCHNEEMAN: Thank you.

MS. DE JESUS: That was an excellent discussion. Thank you, Dr. Pannucci and committee.

So we are delighted to have a guest
speaker with us today. Dr. Erick Decker is a professor at the University of Massachusetts Amherst and Director of its Industry Strategic Research Alliance. He has lent his expertise in food science in numerous leadership positions, including the Food and Nutrition Science Solutions Task Force in the Institute of Food Technologists in the National Academies of Sciences Sodium and Potassium DRI Committee, which recently concluded its work.

Dr. Decker is joining us today to provide perspective on implications that the Dietary Guidelines for Americans have in the real world of providing foods that can help consumers eat closer to the recommendations.

So please join me in welcoming Dr. Eric Decker.

DR. DECKER: Good morning, everyone, and thank you for the invitation.

So I will just go through my disclosures real quickly. I serve on a couple of advisory boards, Cranberry Institute and Sensient
Technologies, where I do a lot of evaluation of their research programs. I also do some consulting work throughout the industry. Most of these are on rancidity solutions. My expertise is in lipid oxidation and free radical chemistry. I am, obviously, an employee of UMass and I get research support from the Agriculture and Food Research Initiative, which is part of USDA, as well as some industry groups like ASM -- DSM.

So I wanted to just kind of start off a little bit about just talking about what some of the drivers are for food purchase choices amongst consumers. And you know we all hope that nutrition is the main driver but, unfortunately, there's a few other factors that go in there and one of those major ones is value, which I define not only as cost but why you would buy something you might feel like you pay a little bit more because of certain values.

And then convenience is also a big driver, as I will show you shortly. More recently, sustainability has become part of that
mixture but the one big and most important driver for food purchases is really taste. And you are not going to eat food -- you know people will go to a restaurant and if it doesn't taste good, that restaurant will be out of business very shortly. So taste is one of the main things that are driving how we make foods.

So in terms of convenience, if you look back over a century ago, we were spending about half of our time getting food onto the table. And this has dropped dramatically and seems to drop almost every year. It is down to about 37 minutes to do all food preparation. And that amount of preparation time actually decreases as you make more money because you can buy certain foods and make it easier to get it on the table quickly. And this is really being driven by the changes in what is going on with dual working families, commuting times, family demands, need for quality time, as people are spending less and less time in the kitchen.

The food industry has tried to deliver
this in many, many ways. This is a list of all different kinds of things, some of which are new, some of which have been around for a long time but these are really food products that help you get dinner on the table more quickly.

The other part of the equation here then is value. And really a remarkable thing that has happened in the U.S. is how we have been able, over the last century, to really decrease how much of our disposable income is spent on food. And we've gone from over 20 percent to down less than ten percent currently.

A couple takeaways here is that this food away from home tends to keep creeping up and up and it's almost -- we're spending almost the same amount of money on food outside of the household as inside of the household.

And then the other things is, one of the last questions is, is really what is the -- how do we look at this in terms of how much money people have to spend on food. And mean household disposable income levels now are only $31,000 for
a household and these calculate out to be less than $100 per week that people spend on food. So the food industry is one of the reasons that the amount of money that we spend on food has decreased quite dramatically. And this is first -- several different factors but one is that they can go out and they actually contract with a farmer and they can get a really good price on the raw material to make that food.

If you ever go into a food processing plant and talk to a plant manager, one of their main concerns is how much electricity they are using in their plant. So they are constantly trying to drive down and become more energy efficient. When you have a big food plant, you create a lot of byproduct. And because you have a large amount of byproduct, you can find a market for that byproduct. So the cheese industry and whey is a great example of this, where whey proteins are now more valuable than casein, as you have been able to convert that waste product into a valuable resource that helps
1 keep costs down.
2
3 And then finally lots of technologies
4 around food processing operation packaging
5 ingredients to maximize shelf life. So the
6 longer we can keep the food, the less often we
7 have to replace that food.
8
9 And just to give you a little snapshot
10 of this, we do this -- I do this exercise with
11 one of my classes, where we go through making
12 tomato paste and we do that from making it at
13 home and all the steps that you would actually go
14 through. And if you do that at home, it's going
15 to cost you about $10 a pound but if you go into
16 the grocery store, it is going to cost you about
17 $2 a pound.
18
19 So I think one of the things that I
20 think about is it really likely to try to get a
21 consumer to adapt a diet that is going to require
22 them to spend more time cooking, to pay more for
23 foods, and to sacrifice taste. And so to me, the
24 more realistic goal is to provide a healthy,
tasting food supply that is accessible to everybody.

So one of the things I want to talk a little bit about is kind of the difficulties of translating nutritional recommendations to actually change the food supply. And we have seen quite often that we end up with unintended consequences as you say let's get this ingredient out and then what that ingredient actually is replaced with.

And a lot of people don't think this but the food industry actually does react quite quickly to policy changes. And you know we've seen this. The industry is big and it can do this very fast. And if it feels like it gets a marketing advantage, it will do this. And we will see things like I'm sure most of us remember the no cholesterol craze where almost everything in the store seemed to say no cholesterol, even stuff that never had cholesterol in it from the beginning.

And then I think the other side is
this rule of substitution. If you're going to
make a recommendation to take something about,
you need to think about what's going to go back
in its place. And a good example of this is the
low fat food craze, where basically food
companies had to make the quality of the food the
same and when they took the fat out, they had to
put something in to keep the quality and that
substitute ingredient ended up being
carbohydrates.

So there are unexpected consequences
and being a fat chemist, I would like to use this
as an example that back in the '20s we were using
mostly animal-derived fats of butter, lard,
tallow. Then the first nutritional
recommendations came out on cholesterol and so
the food industry responded by taking out those
animal fats and replacing those primarily with
tropical oils. Then the recommendations said no,
it's not the cholesterol; it's the saturated fat.

And so the tropical oils were taken
out and were replaced with hydrogenated fats.
And then the recommendation was no, it's the trans fatty acids. So now hydrogenated fats have been removed and I don't know how many of you realize it, but these are being now replaced primarily with high oleic vegetable oils. So we are going to change the unsaturated fatty acid profile of our diet.

So the real challenge is how do we actually change the food supply in a way that it positively impacts health. And the thing that I always talk to people about is that it doesn't matter how nutritious a food is; if that's not incorporated into a daily diet, it's not going to change health. So we have got to figure out how to get healthy foods into the diet every day.

So I want to talk about a couple, three different examples of foods and food components that serve some challenges. And I want to just use this. This is kind of old data from USDA ERS but it just gives you an idea of how people in the vegetable category are making choices.
So you see if you look at the top five most purchased vegetables, you see things like potato being at the top of the list. Well, that's partially because potato has a lot of value. It is very cheap. It fills you up and people like it.

Tomato follows that and you can see tomato is quite a bit more expensive but people are probably buying that because they like tomato because tomato is really versatile and you find it in sauces, you find it in many, many different places.

Then you look at onion third. Well why is onion added? It's only pretty much added for taste. You're not adding it for nutrients.

Then you find things like corn, which again, more expensive but probably accepted more. And also there are food processing operations which can make frozen corn, canned corn, which have pretty high acceptability.

So then I picked out asparagus because that's my favorite vegetable. I said why aren't
people eating more asparagus? So when I looked at asparagus, it's 66 cents a serving. So now you can see where value becomes a big important part and this isn't in the top five probably because it is very expensive.

And then you look at the other side, you know eat more kale, right? And kale falls in that category up here with the corn and the tomatoes but kale is last of all the vegetables in terms of purchases. And again, probably driven a lot by taste and people just don't like this vegetable and maybe some by convenience because this is not an easy vegetable to prepare.

So some of the challenges then to delivering more vegetables is they are short shelf life. So a lot of them aren't going to last very long. That means you are going to need to shop for vegetables more often. That is going to drive up that convenience factor. It is going to take you longer to shop and prepare for that food.

Preparation time, again, a convenience
issue. You have got to wash them, you have got
to peel them, you have got to seed them. Some of
them you need to juice them, portion them, and
cook them.

So there are technology solutions and
we see these in the grocery store all the time.
One is the ability to pre-wash and package
vegetables. So all those bagged salads you come
across in the store, that's not a regular plastic
bag. That is actually a bag that creates a
controlled atmosphere that allows that lettuce to
last a lot longer. So if you think about it at
home, if you chopped up that lettuce and put it
in your refrigerator, it would be brown in a day
but this controlled atmosphere changes the
respiration of the vegetable and allows it to
last longer.

Then we have preservation techniques,
things like freezing, which is hundreds of years
old now that can create products that will last a
long time. They won't spoil. They will be very
convenient. Pull them out of the freezer and you
can eat them right away. But the downside of this is that freezing does change the texture and the quality and some people don't like those frozen vegetables.

And then of course, you know the magic of the baby carrot, just taking a big carrot and industrially making it into a little carrot with no peel makes it much, much easier to incorporate this into your daily diet.

But the downside of this is the cost. All these kind of convenience operations that you would have in fruits and vegetables tend to drive up costs, compared to the raw material, the original raw material but their popularity is huge. And I can go to the grocery store now and you've got this huge section of bagged lettuce and it's pretty hard to find the true head of lettuce, the original intact head of lettuce. You know they are there but they are not nearly as possible -- as popular as they used to be.

Another challenge with fruits and vegetables is safety. Fruits and vegetables are
now the highest food safety risk category. This is for a bunch of different reasons. You can go back in history and you can look the first E. coli outbreaks actually occurred in apple cider before we pasteurized it and that was mainly because they were using dropped apples and there was deer that were getting into the orchards and contaminating it. So most of these are enteric bacteria. So these are bacteria that only live in the G.I. tract. So if you have contamination with these organisms, it means you have fecal matter of some sort that is on the food product.

Most recently is romaine lettuce recalls that happened and this was contaminated irrigation water. We had some outbreaks with salmonella in cantaloupe and it was because they used the wrong kind of handling machines that they couldn't be properly washed. Then the highest risk food safety risk is sprouts. And some of the biggest outbreaks we've had have been around bean sprouts and this is because it is very hard to decontaminate the seeds and the
seeds actually carry the microorganisms. And
then the way sprouts are grown, high
temperatures, high moisture, it is just a perfect
environment for microbial growth.

Recently, the Food Safety
Modernization Act is becoming implemented and
that will handle a lot of this. And it's really
a lot of that is to move the control of food
safety all the way back to the farm; whereas,
before it was mostly once it left the farm that
we dealt with food safety.

So the other problem that you have
with fruits and vegetables is the inability to
control those microorganisms and the most common
way we do that is through heat. And you know so
you actually see that meat products have actually
improved food safety quite a bit but they have a
luxury in that most of those meat products are
cooked and you can kill the bacteria. And we
just can't do that for most of our fruits and
vegetables because texture changes, flavor
changes. You know kale is a great example. It
is a totally different taste from raw to cooked
and so you are going to change flavor, you are
going to change texture, and then these are going
to often be unacceptable.

So there are a bunch of new
technologies that are coming out: high pressure
technologies, these all are what they call non-
thermal, so they don't involve high temperatures;
ultraviolet technologies that can be used on a
lot of fruit juices; and then pulse electrical
field, which is the newest and not really that
much commercially-implemented at this point.

The high pressure is a good example,
all that guacamole that you can get in the store
now. You know here is you think about guacamole,
this is a pretty intensive food that you need to
prepare but now because of this high pressure
processing, you can make that in industrial
settings and have a very, very high-quality
product that is acceptable by a lot of people.

The second example I want to talk
about is solid fat. So very interesting data
that solid fat consumption is starting to be
decreased. Solid fat is very important in a lot
of different products. It builds structure into
the product. It prevents migration of fat out of
the product. And then also just more highly
saturated fat sources are much more stable
against oxidation than unsaturated.

So there are technology now to make
solid fats that are high in unsaturated fatty
acids. So a lot of the fat that is now being
made -- that is being used for products such as
baked goods and things like that that need solid
fat is produced by an interesterification
technique, where you can make the fat solid with
high amounts of unsaturated fatty acids in it.

But the problem is when these
unsaturated fatty acid levels go up, now the risk
of oxidation increases. And so you can do
things. You can try to package the food in a way
to get oxygen away from it to stabilize it. You
can use a whole series of different kinds of
antioxidants. And as I mentioned before, one of
the reasons the high oleic vegetable oils are
becoming so popular is because they are much,
much more stable.

The problem is a lot of these
antioxidants are phasing out. There's a whole
bunch of synthetic antioxidants that work
terrifically that have horrible names and nobody
wants them in their foods. But there are natural
equivalents but even those you don't see because
of clean label trends and because of organic
trends. And so I'm biased in this because I can
smell rancidity from a hundred yards away but
there are a lot more rancid food products that I
am coming across in the grocery stores,
especially on the organic side.

So just to put this a little bit in
relevance, if we give oleic acid an oxidative
stability of one, when we add the second double
bond to linoleic acid, that oxidation rate goes
up ten times and then we end up adding additional
reaction centers as we get more unsaturation. So
you see up here with EPA, the omega-3 fatty acid
is going to oxidize 40 times faster than that oleic acid.

And a couple years ago and close to my hometown, there was actually an incidence where a guy was using linseed oil. So linseed oil is from flax and this is used to finish furniture. And he cleaned up all the linseed oil with newspapers, put it in his garage on a nice hot day. The reaction of the oxidation was so fast, the newspapers spontaneously combusted and burned down his house. So these reactions are very, very fast and hard to control.

And most recently when you start to look at the products that are in these rancid fats, and this is work of Guodong Zhang in our department and he has got a mouse model on inflammatory bowel disease that when you put this in an animal with a challenged gut, these oxidation products both increase inflammation and also increase incidence of colon cancer. So this is something that could be a problem as we push more and more unsaturation into the food without
adequately protecting that oil that goes into the 
food.

So the last one I will talk about will 
be sodium, since I've spent a lot of time on 
sodium in the last year. I think the talk before 
was great to see that some of these numbers -- I 
think the big challenge is like we keep making 
recommendations and making recommendations and 
the needle doesn't move at all. And sodium is a 
great example of this.

The Dietary Guidelines have been 
around for 40 years. The first Dietary 
Guidelines says decrease sodium and here we are 
40 years later eating the exact same amount of 
sodium we ate then.

So there's a lot of challenges around 
sodium because sodium is -- most people think 
they are just putting sodium in there to make it 
taste good but that's not really true because 
sodium impacts protein functionality. It impacts 
the ability to ferment foods. It controls water 
in that food and it acts as a preservative. So
there's a lot of different roles that you have in there.

Because of these roles, it's really hard to just say let's take salt and let's take sodium out of everything across the board; let's just do a ten percent reduction across the board. And the reason that it is very hard to do this is that there just isn't technology to replace that sodium and produce the same food with the same quality.

So in some ways the recommendations would be, I think, easier to implement if we could really focus those recommendations on where are the foods that we can actually achieve this and still get that food that tastes great and has the proper value and convenience that we need.

So if there's anybody from the dairy industry here, I apologize because I'm going to pick on cheese in this section. This is the top ten sources of sodium in the diet. And you can see that cheese is in, what, one, two, three, four, five, six, seven of these categories.
So obviously, cheese is something that is delivering lots of sodium into the diet but the problem is that of all the products, salt plays the most roles in cheese. It controls the fermentation, so it lets the lactic acid bacteria grow and prevents any pathogens, which help prevent any pathogens from growing at that time. It helps take water out of the cheese curd. It makes the casein more functional so it can aggregate and form the textures that we expect in cheese. It acts as a preservative because it lowers water activity. And then, of course, it also give salty flavor.

So if we took the salt out of the cheese, what we're going to see is we're going to lose some of that salty flavor, which everybody loves, but we are also going to change fermentation. And the fermentation process produces a lot of the flavors that we expect in cheese. So there's something like 300 different kinds of cheese in France alone and all of those have different fermentation patterns. And if you
start taking the salt out, you are going to change the flavor of those cheese, not just from the salty side but from the fermentation flavors.

You are going to change shelf life because these aren't going to last nearly as long. A good example of this is stuff called squeaky cheese, which is fresh cheese curds. The cheese curds occur before the salting of the cheese and they last like a week before they are going to spoil.

It will potentially change safety because you're going to have a lower salt environment where pathogens can grow and then you're also going to change texture because you are going to change enzyme activity. You're going to change fermentation pathways and you're going to get differences in creaminess, elasticity, melting properties.

So with cheese, it's really hard to say let's just knock ten percent of sodium out of all cheeses because you're not going to be able to make a lot of those cheese products without
that salt and there's no technology right now to
do that.

But we could try to target and say
let's look at the products where we could try to
get sodium out and those would be the products
where sodium is really there mostly as a function
of flavor. Now processed foods have a lot of
sodium in it. One of the reasons for that is a
lot of the sodium diffuses into the center of the
food and so when we eat that food, we actually
swallow the sodium before we ever taste it. So
to get to the same sodium salty taste, you have
to add more sodium in there.

Now if you go back a hundred years,
even, you'll start to see that there's a lot of
culinary practices where you can add different
kinds of ingredients to get umami flavors, which
can help you decrease the amount of salt. So
using seaweed and mushrooms in soup. I mean all
ramen soups, this is the fundamental recipe to
make ramen broth, pastas with parmigiana,
anchovies with vegetables, and tomato paste in
sauces and stews.

These all actually have a common thread by how they enhance flavor and produce umami and this is the evil food ingredient glutamate, which we eat every day at very high levels. And so when you go look at these ingredients, you see that they are just naturally very high in glutamate. So they are actually producing an umami flavor that is very similar to what you would get -- probably almost identical to what you would get from MSG.

Unfortunately, even though the science says glutamic acid or MSG is not harmful, this has not been accepted by many health professionals and certainly not by consumers. So if you go to the website and look up MSG, you would think you'd drop dead the day you ate some of this stuff. But this just isn't true and here you really have a technology and a tool that you could drop sodium levels by 30 percent in some food products by using a little bit of MSG.

So in conclusion, dietary
recommendations, in my opinion, are going to be very unlikely unless they can be incorporated into the foods that will be included into a daily diet. And that -- sorry -- that ability to incorporate a food into a daily diet has got to have the matrices to say it's got to taste good; it's got to be at the right price and value; and it's got to be convenient because that's just the reality of where we are today in how people are going to be incorporating these foods into their daily diet.

So the industry can and does react to nutritional recommendations and can improve the healthy profile of the food supply but it will only do that if they can make these foods in a form that are acceptable by consumers because the company will go out of business if it's not accepted by the consumer.

And it could be that instead of making broad-based recommendations on how to make foods healthier or how to remove things from foods, it might be much more effective if you could focus
those on where the technology exists to replace
them in a way that that food still has the taste,
value, and convenience that is expected.

So the bottom line is you know
certainly going forward, as the populations swell
and we need more food on the table, but even
today, we need to think about really using
science to figure out how to best change the food
supply and make the food supply healthier so
consumers accept those healthy food products.

And I think the last presentation, one
of my takeaways from the last presentation is
hamburgers are a great vehicle to deliver
vegetables. So you know it's just the reality
that this is -- you know how do we figure out how
to get people to eat more vegetables.

So thank you very much.

CHAIR SCHNEEMAN: So we will take some
time to see if there are some questions from the
committee. Yes, please.

MEMBER BAZZANO: Well in terms of salt
reduction, I did notice that you didn't mention
the top breads and rolls, the top source. And I do know other countries have made progress in working with industry to decrease some of that.

DR. DECKER: Yes, so with the 20 minutes I had, I could have done that same graph with bread, pizza, sandwiches, bread, right? So here's an example where the reason that they need salt in bread is to actually slow down the fermentation. And so there are attempts now to change yeast genetics so that they have the proper fermentation rates without that salt. So there are technology changes but you're still going to change flavor of that product.

So you will find low-salt breads. For that matter, you'll find a low-salt product in almost every category of food in the supermarket but the reality is, nobody buys it.

CHAIR SCHNEEMAN: So related to sodium, you use glutamate as an example where sodium could be reduced. But isn't it often in a form where you have sodium -- monosodium glutamate? So does it actually result in a
reduction of sodium or just a reduction of salt use?

DR. DECKER: So MSG works by having salt and MSG in combination. It enhances -- it is a flavor enhancer. So the glutamate is not creating flavor. It's just making the flavor of the salt stronger.

So even though there is sodium on the MSG, you put so little in that you can reduce the total sodium level in some products by as high as 30 percent.

MEMBER MATTES: Rick Mattes.

I would ask you if you would just expand a little bit more on the concept of the degree to which the food industry drives preferences versus they respond to things. And it's an important point because subtle recommendations from this committee could drive the food industry to make changes which may have unintended consequences.

There's really an important message in what you were saying there that I think we have
to keep in mind as we go forward.

DR. DECKER: So you know the foods that are going to be produced in the reformulated a lot of times is going to be driven by marketing and marketing is all going to be around a competitive advantage. So if they feel the nutritional recommendation can give them a marketing advantage, they are going to change the formulation.

So I think this was a perfect example in changing dietary fats because we saw those, every one of those labels, no cholesterol, low in saturated fat, no hydrogenated fat, no trans fats. Those are all competitive advantages and reasons why that is why the food industry is going to change those formulations.

MEMBER DEWEY: Kay Dewey. Thank you very much.

Two questions. First, you mentioned interesterification as a relatively new process for solid fats using more unsaturated fats. And I'm just wondering are there any potentially
adverse consequences of that? We got burned by trans fats in a previous effort to supposedly improve the fat supply. So I'm just curious about that.

And the second question is we saw in the previous presentation that intakes of vegetables and fruits were sort of going in the wrong direction over time. And I'm wondering, of the factors you mentioned, taste, value, and convenience, which of those do you think are the major drivers of vegetable and fruit consumption that we should really focus on?

DR. DECKER: So hydrogenation is a chemical process by which you attempt to remove the double bonds from fatty acids. The problem with hydrogenation is it's not a 100 percent efficient reaction so you tend to get some back reaction that occurs where the double bond reforms. When the double bond reforms, the natural configuration is cis but it reforms. It ends up forming about 50/50 cis and trans. So that is where the trans came from in that case.
Interesterification is not a chemical modification of the fat. Interesterification is just a rearrangement of the fatty acids, the same exact fatty acids on the glycerol backbone. So in other words, you could take a very highly unsaturated fat and a small amount of saturated fat, interesterify them, and put a saturated fat say on every triglyceride molecule. And this changes the melting profile.

But the advantage of this is you can create some very high-melting fat in there that will crystallize and entrap the liquid fat. And so you've seen this. It's different processes in margarines and spreads but you know you'll see a margarine that could be 80 percent unsaturated because the liquid oil is entrapped by the solid fat. And this is kind of the same principle that you would have for interesterification, where a small amount of saturated fat can entrap and change the functionality of the unsaturated fat to allow you to put it in to something like a baked good that will give you the same properties
as that -- the lard we used to use a hundred years ago.

You know that's really a hard one because it is just so multifaceted. You know if you're really going to eat fresh fruits and vegetables every day, it's hard to do that in weekly shopping, which is what we do in the U.S. So the convenience side of that is really hard. The value side of that is hard. You know fresh fruits and vegetables are expensive so a lot of people won't incorporate them.

And then the reality is is the flavor is a big issue, right? Everybody likes broccoli better if you put some cheese on it. You know so the flavor is also an inhibitor of a lot of people just don't like vegetables. It's the same thing with seafood. Seafood is way too expensive. It spoils fast. And there's just a large population that hates seafood and will never eat seafood.

So all of those categories I think make it the reason that it's hard to get people
to eat more vegetables, at least. Maybe fruits isn't so much that same issue but certainly with vegetables, I think that is the challenge.

MEMBER TAVERAS: In your second slide, you gave the distribution of kind of the value that we place on certain things with taste driving that. But one of the things I was wondering about: Is there any information about how sustainability and environmental impact of foods are starting to change potentially those trends? And is there any indication that value is being more placed on environmental impacts and climate impacts on some of the choices that Americans are making in their diet?

DR. DECKER: So that's why I used the term value and not cost because certain people will buy something if they see some other value in it. And sustainability could be a value that is important to them and they would spend more money on a product that they figured had more sustainability.

So I think that trend is growing and
probably the place it is growing the most is on
the packaging side is how to make packaging more
sustainable, how to decrease packaging, how to
decrease packaging waste, how to make packaging
recyclable, food packaging recyclable. So I do
think that's a driver but it's a relatively new
one. The other four have been around for a long
time.

MEMBER TAVERAS: And is there any way
of tracking the trends towards that? So if
someone is making choices and the driving of food
choices and purchases, do we have any national
data on trends of that being of greater
importance, climate and environmental impact on
the choice of what foods are being purchased?

DR. DECKER: So IFIC has an annual
report and they do these surveys every year. So
there is a lot of data on that.

MEMBER TAVERAS: Thank you.

MEMBER MATTES: Thank you. Rick
Mattes.

Can you comment on the NOVA
classification of foods? This is a point of view about convenience and ultra-processing food that has influenced the dietary guidelines in Canada most recently. What are the trends? Can you expand on that for our consideration?

DR. DECKER: So the problem with just saying processed foods are bad for you is there is a lot of different ways we process foods and they are not the same.

In my mind, I would have a hard time going to the grocery store and finding a food that is not processed, even fresh fruits and vegetables. Everything is processed to some extent.

So to make broad categorizations like that does not deliver a message that helps the consumer decide what is healthy and what is not healthy. And the problem is is a lot of those things like the NOVA, they haven't really defined what ultra-processed foods are. And so I don't even -- you know I couldn't tell you the difference between a processed food and an ultra-
processed food.

    So I don't really think -- you know if
you want to talk about a food that is really
highly processed that you might not want to make
a recommendation against, it would be white wine.
Lots of processing steps. Lots of science that
goes into making that white wine. So I am not
sure that there's more processing in white wine
than there is in soda or the other way around.

    MEMBER SABATE: Joan Sabate.

    I think you make a good review for us
of the importance of the food industry and how
every one of us take advantage of some of the
conveniences.

    On your first slide that you said the
drivers for food purchase, you didn't mention
health. This committee I think is making the
connection between food and health. So do you
have any data that you would like to share as far
as how the importance of health to the American
consumer is a driver for purchase of any kind of
food?
DR. DECKER: So the first slide the first circle I had was nutrition. So that's the health component.

Generally, the order in which these come is taste is first, value is second, then over the years, convenience and nutrition have bounced around but they are usually pretty similar. And then sustainability is quite a bit below that.

MEMBER SABATE: I think nutrition may be a subcategory of health because now there is a movement, as you know, in the slow food, and cooking, and all these things that besides, I would say, taste reasons I mean is also based on the importance of health, prevention of diseases.

And I don't know if this has been in a way tracked and how relevant it is for the American public I mean all these social trends that, at least according to the media, seems very relevant. But, at least personally, I lack the statistical component of that, as far as how relevant it is.
DR. DECKER: I mean I guess to me if I think about how do foods impact health, I think about the components of those foods, the nutrients of those foods, and what they do to impact health.

VICE CHAIR KLEINMAN: Eric, Ron Kleinman. Nice to see you. Thank you for your talk.

I know we only gave you 20 minutes and you covered an awful lot in those 20 minutes. One area you didn't cover is sweetness, and added sugars, and use of non-nutritive sweeteners. Do you want to say just a few words about how the industry sees this?

DR. DECKER: You know so again, why are they there? It's the taste side, right? And it's an interesting thing in this country I think I know most of you have traveled the world and I think our foods are sweeter than anywhere else in the world, especially our desserts. We just, for whatever reason, we love sweet food.

There are some technological tools to
take away. I mean non-nutritive sweeteners and
aspartame has been around for 40 years and
everybody and their brother has tried to show
that it is unhealthy and I think generally have
been largely unsuccessful to show that there's
problems except -- you know I think one of the
things to think about, all food additives. You
could have small subsets of the population that
do have sensitivities to these.

I'll bring back the white wine
every example. Most of the time if you buy a bottle of
white wine, it is going to say contains sulfites.
And there is a small subset of the population
that is sensitive to those subsets and have to
avoid that food product.

But I think now especially there are
a lot of non-nutritive sweeteners that are out
there that have the ability to decrease our sugar
consumption. It's probably better now than it
was 40 years ago where we only had one. And so
we were eating a lot of one. And anytime you eat
a lot of one, the toxicological risk gets higher.
We now have five or six and those are spread out. So you are not going to eat any one in as high concentrations as we once did.

I think even on the other side, you know high fructose corn syrup, you another one of those hated ingredients but fructose is sweeter than sucrose. And so you could use fructose in applications to drive the total sugar number down because you could achieve the sweetness that you want at a lower sugar concentration.

And then I think what we don't see that much now you see in a few products is we don't see people doing blends of non-nutritive sweeteners and sugars because they certainly don't taste the same. And people have tried to blend the non-nutritive sweeteners to get closer to what sucrose tastes like and it's a hard achievement. But sometimes if you do a blend, you can get the flavor that you want from the actual sugar but reduce the caloric intake from the non-nutritive sweetener.

On an unrelated topic -- well kind of
related topic, it's kind of the same thing with meat. We've been doing a lot of research in our department to actually blend vegetables into meat. And there is one group of people that are trying to make 100 percent vegetable meat analogues but you can put like mushrooms into a hamburger at 50 percent of the total weight and people can't tell the difference.

So there are ways I think. You don't have to go all the way to the extreme. We can meet somewhere in-between and change dietary patterns and also maybe increase the vegetables since we now know hamburgers are a great delivery source of vegetables.

CHAIR SCHNEEMAN: We have one more question.

MEMBER ARD: It's red but it's working. Jamy Ard.

So this discussion reminds me of some of the conversations we had around the National Academy Study where we talked about the potential -- or not the potential need but a very clear
need for inclusion of food science and technology in this type of setting in the Dietary Guidelines. And I don't know if we are making a running list of like what our next set of recommendations or questions might be for future committees but I think all of the things that you have in the conclusion slide are empirically testable.

I really think like the nutritional recommendation might be more effective if focused on foods where the tools exist to maintain these different things. I mean to me, that is a very strong statement and could be really impactful because I also think about it from a subgroup perspective. I think about it across the life stage perspective. Different socioeconomic groups may value convenience and value more than taste, food-insecure individuals, et cetera, et cetera.

So to me, I don't know if we're making a running list but I would throw this on the list with also the adjunct that having some more
incorporation of food science in this deliberative group to be able to really sort of take the step beyond saying okay, here's what we should do and here's how we should do it. Because otherwise, I think we'll see the same slides that TusaRebecca put up, we'll see that for you know the next 20 years.

CHAIR SCHNEEMAN: Well thank you again, Eric --

DR. DECKER: Sure thing.

CHAIR SCHNEEMAN: -- for a great presentation and stimulating an excellent discussion amongst the committee. So please join me in thanking Eric.

MS. DE JESUS: Thank you, Dr. Decker. So we have a well-earned break. This has been a great morning.

So we will reconvene at 11:00. Thank you.

(Whereupon, the above-entitled matter went off the record at 10:42 a.m. and resumed at 11:02 a.m.)
DR. STOODY: Thank you. So this next discussion will actually be discussion among the committee and that will be facilitated by Drs. Schneeman and Kleinman.

CHAIR SCHNEEMAN: And I am going to just sit with the committee to do this discussion.

So the first thing we want to talk about before the lunch break is the subcommittees' structure and membership that the committee will be using. And just the bullets on this slide are important for everyone to understand that the purpose of the subcommittees is to review the evidence and provide advice to the parent committee. And I will remind you again, under the FACA provision, the subcommittees are not the decision-making body but they do function as a working group to bring issues back to the parent committee so that the decision-making of how we are going conclude and make recommendations will be done by the full committee. But just to get the work done, we
have to use subcommittees as working groups.

So there are six topic-area subcommittees and then we have one crosscutting working group as well. And in structuring the subcommittees, we varied the size based on the expected workload for each of those committees. So particularly in the new areas, we anticipate that there will be a significant workload for those subcommittees. And generally we have tried to target it so that members serve on no more than two subcommittees.

So this is the structure. It may be difficult to read but you have the slide in your notebooks. So you see across the top the six subcommittees: Dietary Patterns, Pregnancy and Lactation, Birth to 24 Months, Beverages and Added Sugars, Dietary Fats and Seafood, and Frequency of Eating.

And then the crosscutting subgroup is Data Analysis and Food Pattern Modeling. That is for crosscutting issues.

And we've identified a chair. We've
proposed a chair and a membership for each of those subcommittees. And I guess just so people who are here as observers can know what is on the slide, if you can't read it very well, so the chair for Dietary Patterns will be Carol Boushey; Sharon Donovan is proposed for Pregnancy and Lactation; Kay Dewey for Birth to 24 Months; Elizabeth Mayer-Davis for Beverages and Added Sugars; Linda Snetselaar for Dietary Fats and Seafood; Steven Heymsfield for Frequency of Eating; and Regan Bailey for the Data Analysis and Food Pattern Modeling.

And then we have for each of the subcommittees, Dr. Kleinman or myself will be there just as a contact point. We felt it was important just to maintain the continuity of the work and, as the issues come forward, to help then facilitate the discussion at the committee level for deliberation and decision-making if one of us functions with each of the subcommittees.

And then I'm not going to read out the membership for each of the subcommittees but I
would now open it to the committee, if you have questions. And certainly, we can ask some general questions about the subcommittee structure. And so in some cases, we may need to call on Eve to talk about how they will actually function but also, if you have any questions about the composition or membership of those subcommittees.

MEMBER BAILEY: As the proposed chair for the Food Pattern Modeling and Data Analysis crosscutting group, I am wondering. It looks like a member of each of the other subcommittees is represented except for Frequency of Eating. I think it might be beneficial that we have somebody from each of the committees function on that committee but I understand that might also put some people into more than the recommended committees. But just for your consideration.

Regan Bailey -- sorry.

CHAIR SCHNEEMAN: Okay, I understand your point. And I'm the Chair/Vice Chair Representative for that particular -- so I wind
up -- well, no, you [referring to Dr. Kleinman]

are the Frequency of Eating.

So yes, let us look at that and see if

there is a way we can adjust or if we count on

the staff to also help carry forward any issues

that come up in the Frequency of Eating Subgroup.

Eve, did you want to comment on that?

DR. STOODY: No.

CHAIR SCHNEEMAN: Okay.

MEMBER BAZZANO: This is Lydia

Bazzano.

So is the membership set in stone? Is

it flexible? I'm just curious.

CHAIR SCHNEEMAN: I think this is our

opportunity to --

MEMBER BAZZANO: This is our

opportunity. Got it.

CHAIR SCHNEEMAN: -- if we got it

wrong or if there are other things we really need

to be thinking about. Just keep in mind some of

those other conditions of not wanting to overload

one committee member with more than two.
MEMBER DEWEY: Just to follow-up on that, when there is a certain life stage being discussed within some of the other subcommittees, let's say Birth to 24 Months, there are some questions well, in all of these topic areas, but for example, for the Food Pattern Modeling group, there are some questions related to whether we can establish a dietary pattern for that age group. And that's a fundamental question.

So I'm wondering whether when the subcommittees have conference calls, would there be opportunities when on that particular day they're going to talk about that, could there be additional people from some of the other subcommittees participating just for those questions?

CHAIR SCHNEEMAN: I think -- I know that one of the things we will need to look out for is to make sure that we're always below a quorum. But we can facilitate -- when it's important that that input be exchanged, I think we can facilitate that.
I think, Regan, you were going to follow up.

MEMBER BAILEY: I was just going to propose if I move from Fats and Seafood to Frequency of Eating, that would fix the problem I identified, as one proposed. Then I would be in that as a subcommittee member for your consideration.

CHAIR SCHNEEMAN: That may be a harder one to consider because we have to make sure that there's enough people on the Fats and Seafood. So yes, we -- let us kind of -- it's basically making sure we have good balance across.

MEMBER SABATE: Yes, could either you or the chair of that Analysis Food Pattern Modeling, what is the specific purpose of this committee and how this relates to the other six subcommittees?

CHAIR SCHNEEMAN: Eve, we haven't looked at questions that are assigned to each of the subgroups yet. And I'm wondering if we should try to do that before the lunch break,
just so people understand how the workload is being distributed amongst the subgroups.

Is that possible, do you think?

DR. STOODY: So yes, the questions are at the end divided by subcommittee. And again, that's proposed. It's just looking at the topics and questions and then grouping them based on those topic areas.

So for the public, they have a Word document that has just the topics and questions that Janet reviewed divided into these different subcategories.

CHAIR SCHNEEMAN: So we are in such a cozy place, I can't turn my notebook. So if you look in your notebook, it is actually -- if you go in front of the tab that says USDA and HHS staff -- it doesn't have a page -- oh, it's page -- no, that's a date. Just before that tab.

Yes, so there you will see it shows the Food Pattern Modeling and Data Analysis Subcommittee, the data analysis questions that -- right -- oh, that's the Pregnancy and Lactation
Subcommittee. Yes.

So for each life stage, the following will be described or evaluated: current dietary patterns, current intakes of food groups and nutrients, nutrients and public health concern, prevalence of nutrition-related chronic disease.

How does the dietary intake, particularly dietary patterns -- you can see the list of questions.

So there's questions about current dietary intake and nutrients, which is part of our task, beverages, added sugars, frequency of eating, and then food pattern modeling questions around dietary patterns, and infants and toddlers from birth to 24 months.

Okay? Okay.

So other questions/comments?

MEMBER MAYER-DAVIS: Beth Mayer-Davis.

So we've mentioned a couple of times that there is some overlap in some of the questions and I don't know if this is an appropriate time to make a suggestion or maybe talk about what the process would be to sort that
out in the interest of efficiency. Okay, why not?

So for Beverages and Added Sugars Subcommittee, questions 2 through 5 talk about relationship of beverage consumption, either during pregnancy or during lactation, with respect to different outcomes. And so the question is whether that set would be better placed in the subgroup that is addressing pregnancy and lactation so that the beverage consumption could be considered as part of the rest of the dietary issues for that population.

So that's one suggestion of just moving a chunk of questions from one place to the other, which is not exactly because I am trying to get out of some work here but it just seemed like that might be a more efficient way to go with that. So, just a suggestion.

CHAIR SCHNEEMAN: Carol, you have to make sure your comments are such that they go on the record. It is a public meeting.

MEMBER BOUSHEY: Yes, this is Carol
Boushey. We probably should hide the microphone from Carol Boushey. But what we were talking about here is that particular question has very little data; thus, that will be their easiest task to handle. Thank you.

CHAIR SCHNEEMAN: Well I think what you pointed to is the dilemma that you face in creating the subgroups because the questions do cut across the life span.

So I am going to propose that we go forward maybe and include Dr. Dewey's suggestion that, as needed, we can bring someone from the other subcommittee onto the call so there is at least that opportunity for exchange of information, as long as we stay below the quorum level.

And then I think as we keep moving forward, we will adapt. And we can always, at some point, if we need to, we can have a call with the subcommittee chairs just to check in and make sure that you are confident that you are able to keep moving the work forward.
Other questions?

So we want to move to introduce some topics that we need more consideration from the committee to help guide the work of the subcommittees. And I think Julie is going to give us an introduction of that. So you will get the introduction and then you'll be able to digest it over lunch.

DR. OBBAGY: So if you started to look at the questions and you heard Janet's presentation this morning, you probably noticed that many of the questions address the same outcomes in relation to a different aspect of diet. And in many instances, those questions are addressed in different subcommittees.

And so we have highlighted two here today for your discussion: neurocognitive-related outcomes and cancer-related outcomes, which are two topic areas that we have not addressed very frequently in NESR systematic reviews in the past. And so I think there would be some benefit to having some discussion amongst
the full committee around what outcomes you might consider in those categories.

So there are ten, as is noted on the slide, ten questions address the relationship between diet and neurocognitive-related outcomes across the life span. Three questions address cancer as an outcome.

So if you go to the next slide, there's a few sort of guiding principles to think about as you consider which intermediate and long-term health outcomes might be most relevant for neurocognitive and cancer-related reviews. And I think the discussion really would recommend focusing on whether -- and you'll see as I go into the next few slides whether additional outcomes are warranted or are there some outcomes that are -- have been considered previously that may no longer be relevant to consider, always keeping in mind that the outcomes that are included in the NESR systematic reviews used from the Guidelines really need to be those of very high public health significance, which either
promote population health or well-being or reduce significant burden of avoidable disease.

They may include endpoint outcomes as well as intermediate outcomes. So it relates to a question that came up yesterday but, generally, for many outcomes, validated biomarkers are included but emerging biomarkers are typically excluded.

So those are some sort of discussion questions to keep in mind and then some guiding principles to think about as you might suggest outcomes to consider.

Now the next two slides, we have just compiled some of the outcomes in these particular areas that have been considered in previous reviews done by NESR. So for example, developmental milestones was addressed in one of our Pregnancy and Birth to 24 Months reviews, which Kay actually was a part of that. And so you can see which outcomes were considered as part of that for the very young age group, although there is a question mark there. So I
think the applicable age ranges for some of these outcomes are something you might consider discussing as well.

The neurocognitive development from birth to 18 years of age, those are some of the types of outcomes that we considered when doing a recent review in the Pregnancy and Birth to 24 Months Project.

And then finally in 2015, the committee did look at a few questions in relation to dietary patterns and the outcomes you see listed on the slide. So neurocognitive-related outcomes is a very, very broad area. And for Pregnancy and Birth to 24 Months, in particular, we really cast a wide net. But I think we would certainly appreciate your input and discussion around this outcome in particular to try to really hone in on those that might be of greatest public health significance in relation to the questions you are addressing.

And then when it comes to cancer, in 2015 the Advisory Committee did do a systematic
review or a series of systematic reviews on
dietary patterns in relation to the four cancers
you see listed on the screen. The committee did
discuss which ones to select and review and they
settled on these four because they represent the
four most common cancers in the United States.
According to the most current data, these are
still the four most current -- or most prevalent
cancers in the U.S. but I think it's also sort of
up for discussion as to which set of cancers --
whether the most common? Are there other diet-
related cancers you might want to put on the
list? Are there some here you might take off the
list?

So I think this is sort of to tee up
a discussion about some of these outcomes that I
think are crosscutting in nature and it would be
nice to have some consistency around.

CHAIR SCHNEEMAN: So I am wondering
if, since cancer was a part of it, do you have
information from the scientific review that was
done with the last committee of sort of where
they -- more in terms of the nature of the
evidence that they had available and the specific
inclusions they might have made?

DR. OBBAGY: Yes, so there were
conclusions drawn. I believe they were in sort
of that strong-moderate range of strength of
evidence around breast cancer and colorectal
cancer in relation to some dietary patterns.
There was a limited body of evidence to draw a
conclusion around dietary patterns and lung
cancer. And the conclusion statement for
prostate cancer indicated that there wasn't
enough evidence to draw a conclusion. So a grade
wasn't assigned.

So that's sort of the spectrum that
was in the evidence at the time.

VICE CHAIR KLEINMAN: Just to continue
on that theme, have you reviewed the cancers that
are common in childhood and looked to see whether
there are relationships there? And I am thinking
about acute lymphatic leukemia, neuroblastoma,
osteosarcoma.
DR. OBBAGY: Yes, so as part of the Pregnancy and Birth to 24 Months Projects, there was a group of experts that looked at a series of questions on human milk consumption. And one of the outcomes they looked at in that review was leukemia.

VICE CHAIR KLEINMAN: Yes, I wondered if it went beyond that, the human milk relationship to diet relationship in those ages.

DR. OBBAGY: Yes, so that cancer was considered in the project as well.

VICE CHAIR KLEINMAN: Okay.

MEMBER BAZZANO: Are we having a discussion about outcomes right now?

VICE CHAIR KLEINMAN: We seem to be.

MEMBER BAZZANO: This is Lydia Bazzano. If you could, go back one slide to the neurocognitive outcomes.

It is interesting that you have birth to 18 years here and you have a number of outcomes here that you don't include in the 18 years and older. For instance, I see anxiety in
there and it's not included in the 18 years and older. And if you're going to measure depression or look at that, I think you also need to consider if there is any data on an outcome like anxiety.

And then also, some of these other important things like working memory, for instance, maybe impaired long before dementia or mild cognitive impairment begins. So I think that some of those may be useful in the neurocognitive health for 18 years and older individuals as well.

CHAIR SCHNEEMAN: Mainly I wanted to be sure if we needed to clarify anything with the USDA staff about where we were that we could do that now. I think, given the time, I think we should plan for the discussion after lunch.

But no, I think anything you say now is part of the discussion. So if there were any -- we have two or three minutes.

MEMBER MAYER-DAVIS: This is Beth Mayer-Davis. So this is an outcome question,
although not neurocognitive or cancer. So just briefly, many of the question sets relate to the outcome of cardiovascular disease. So I'm assuming that it's a question. Is there a definition of what exactly is included in cardiovascular disease, with the interest of making sure that across subgroups we are looking at the same outcomes?

CHAIR SCHNEEMAN: That's a good point. We will want to make sure that we are looking at the same outcomes. And that will be a place where I think the staff and the protocols that they are developing will help us with that.

Also to be sure that when it comes to biomarkers, that we are looking at the same biomarkers that are validated for the disease.

MEMBER VAN HORN: And just to that point, I was wondering about stroke, which clearly would also potentially be considered as neurocognitive issues and whether it is included in cardiovascular or somewhere else.

CHAIR SCHNEEMAN: Okay. So I think it
would work best if we adjourn for lunch, at this point, and then we are going to reconvene at 12:45. And as you can tell, we are trying to be very prompt with our reconvene times.

So I hope you enjoy the lunch and we will see you in a bit.

(Whereupon, the above-entitled matter went off the record at 11:26 a.m. and resumed at 12:45 p.m.)

DR. STOODY: So welcome back. I hope everybody had a great lunch. Before we get back to the committee's discussion, we did want to just respond to the question that was raised about the outcomes to be considered within some of the outcomes like cardiovascular disease, body weight, type 2 diabetes. Those are also crosscutting outcomes across a number of questions in the subcommittees but the NESR has done a lot of work in those topic areas in the past, so we have more of a foundation.

So as Janet noted, the next step is the NESR is pulling together draft protocols to
bring to the subcommittees for the subcommittees
to respond to. So we kind of already have a base
for like cardiovascular disease to bring to you
all.

For the outcomes like neurocognitive
health, as well as cancer, those are ones that we
just don't have as much foundational work. So we
thought it would be good to have that discussion
here today. Now when those protocols come to
you, you obviously have the option to revise any
of the outcomes but these are ones we just needed
a little bit more foundational discussion.

CHAIR SCHNEEMAN: And I know some of
that information will be posted on the website.
So if you could maybe let people know when that
would be posted.

DR. STOODY: Absolutely. So, thank
you.

So at dietaryguidelines.gov, we walked
through this yesterday and I will talk a little
bit more about this in the closing remarks, but
there is a section on dietaryguidelines.gov under
Work under Way and it is under the review of the Science Section and there is a list of all of the questions, systematic review questions, as well as data analysis, and food pattern modeling questions. Once a month, we will update those.

So if there is a protocol that comes to the subcommittee that the subcommittee has discussed, once a month we will do kind of an update so the public can see that draft protocol, where it is. And then in the next month, if there have been revisions, we will update it and note the revisions to that protocol.

So the public can follow along in this process, once a month with our monthly updates.

CHAIR SCHNEEMAN: Great, thank you.

So we are going move then to the discussion of the neurocognitive outcomes and I have asked Dr. Kleinman to lead that discussion.

VICE CHAIR KLEINMAN: Thanks, Barbara.

So I thought perhaps we could start with the neurocognitive outcomes from the 2020 Guidelines, and these are up here now, and begin
to sort of look at it in that framework, meaning are these still appropriate for the work that we are going to be doing. Try to fill in the question marks around age. And are there additional ones that we want to add to this or are some of these not appropriate for the current work?

So I'd like to turn this over to you for your thoughts on it and we will start with the first one, developmental milestones. I think also that it is important to acknowledge that neurocognitive outcomes are a pretty large set of domains and that they are not easy to measure at all ages, so just keeping that in mind.

MEMBER DEWEY: Yes, this is Kay Dewey. For the Birth to Two Years, I'm wondering if we should consider visual acuity as an indicator because it has been measured in a number of studies and it's related to omega-3 fatty acid status.

MEMBER BAILEY: This is Regan Bailey, just following up on that. I wrote that down and
also visual evoked potential, consider them together.

VICE CHAIR KLEINMAN: Yes, I had that on my list, too. And we could potentially just put that in retina development or visual function development, I guess, and that will bring all of the ways we measure that, including evoked potentials, as well as the less accurate ones.

Okay, other thoughts?

The question mark there, birth to question years, so in part I think that relates to the tests that we have available to measure cognitive development and age or stage are mentioned there, as well as the Bailey scores. And they do have definitive time periods. Bailey scores, I think, go up to four and a half, age four and a half. And the age and stage is a little bit longer. I think it is around six years, five and a half to six years.

So any thoughts about that? Linda.

MEMBER VAN HORN: Not specifically about that but in some of the work we are doing
currently with development assets and vulnerabilities around children, and there is some work, I don't know exactly about the scores or the titles of the scores but I know at Northwestern, anyway, there is a strong department that is working on this and it relates to executive function and other behavioral characteristics that are initiated as early as age two. So that is a growing field and that is about all I can say about it.

VICE CHAIR KLEINMAN: So I think we would be safe using current measures, ASQ and Bayley scores if we say birth to two years because that is well within the scope of those tests and they are pretty commonly used in the literature.

Is there any further thoughts about that?

MEMBER DEWEY: This is Kay Dewey again.

I just want to make sure that language development is included in people's concept of
the developmental indices there because language
development during the first two years is a
really useful outcome. Do you think that is more
under communication?

Oh, receptive and expressive. They
are included within the Bayley but just so we are
clear that language development is a part of that
domain.

VICE CHAIR KLEINMAN: Okay, then why
don't we go from birth to 18 years and talk about
that a little bit?

One condition that is very prevalent
now is attention deficit disorder. And so I
don't know whether that is picked up under
executive functioning or whether we need to
explicitly ask for that but I wondered about your
thoughts.

And we could also talk about autism
spectrum disorder, since that is also frequently
now, rightly or wrongly, tied to nutrition and
diet. So I just put that out there for some more
conversation.
Anybody want to converse?

MEMBER DEWEY: I agree with you. I think those domains are really important.

There is one listed there called neurological development, which to me is not well-defined. And I would say that what you described could be called neurobehavioral development.

I think we should be pretty inclusive on this list.

VICE CHAIR KLEINMAN: Yes, it seems like we have good agreement on that. Why don't we recommend that we scratch neurological development? It meant nothing to me, either, and we are so specific about these other domains, I don't think we're going to lose anything by taking that out. But let's be explicit about ASD and ADHD, whether they fall into -- as subcategories underneath neurobehavioral development. We should be able to capture that. Good.

And then we move into neurocognitive
health 18 years and beyond. So the first thought was that Alzheimer's disease is a sub-type of dementia. And so I think it can be explicit but it ought to be specified under dementia.

And I don't know who mentioned stroke but I remember hearing that a little while ago.

Oh, Linda. So I think we would want to include all causes of dementia, Alzheimer's disease, stroke, hypertension, and other vascular issues that lead to compromise that way.

And someone mentioned working memory earlier. So do we want to put that on there specifically, in addition to dementia, or is there a way that we can describe that so that when they search, that will come up?

MEMBER BAZZANO: Well, there are any number of the adult cognitive scales that are used to describe relative cognitive function. So there is -- it's usually some type of combined battery that includes working memory, among others. There is a paper on which ones are the most commonly used tests.
I'm just surprised that there is no testing in there but there is testing in the birth to 18 years. That is what I was wondering about because it doesn't get anything subclinical. It only gets you've got dementia, you've got one of these specific things.

So is cognitive impairment broad enough to cover those things?

MEMBER BAILEY: So this is Regan. Are you suggesting we put in indicator tests, like the Mini-Mental or the Hopkins Verbal Fluency, those types of things?

I think if we want to be specific, like we are in the younger age groups, that makes a lot of sense.

MEMBER BAZZANO: Yes, and I was confused by the cognitive impairment because there is a specific diagnosis, mild cognitive impairment. So it's not that -- it's not listed as that here and it's also not listed as the test. So I wasn't sure.

MEMBER BAILEY: Yes, cognitive
function would encompass all of that.

VICE CHAIR KLEINMAN: I think cognitive function sounds very good and we could extend that to say cognitive function, as determined by standardized testing. And then perhaps we could add, e.g., and several of those that you've brought up.

So can you just tell us a couple so we've got those in the record and then they'll come back to us?

MEMBER BAZZANO: The Mini-Mental status that Dr. Bailey mentioned.

MEMBER BAILEY: The Hopkins Verbal Fluency. There's the one where you name so many animals.

MEMBER BAZZANO: That's the Boston Naming Test I think. There are a wide variety.

MEMBER BAILEY: It's ironic that I can't remember them.

(Laughter.)

VICE CHAIR KLEINMAN: I was going to say I'd comment but I think I flunked the last
Okay, so I think that's definitely getting --

MEMBER BAILEY: Digit Substitution Test, the DSST. I know all the acronyms. The DSST.

MEMBER LEIDY: Just a real quick point, we don't list the tests up in the birth to 18 years as well. So I'm just wondering, when you look at it, isn't executive function, couldn't that also be down below with neurocognitive health? Because they are actually assessing similar components in terms of working memory, planning, goal-directed behavior and within that, you have a lot of those cognitive performance tests that are within that.

VICE CHAIR KLEINMAN: Yes, so maybe that's another place where we would say cognitive functioning in that first bullet, and then there would be a sub-bullet under -- no -- e.g., academic performance, I.Q., comma, executive functioning and these other domains. So that
ought to be, I think, folded into those parentheses.

    MEMBER LEIDY: Well, I just feel like whatever is in the second one with birth to 18 could also be put down with 18 and older to keep it consistent.

    VICE CHAIR KLEINMAN: Okay.

    MEMBER LEIDY: Because a lot of those outcomes, the indices you would want to put them in the other one below.

    VICE CHAIR KLEINMAN: Yes, that makes sense. So let's change both of those.

    MEMBER LEIDY: Just for consistency, I think.

    VICE CHAIR KLEINMAN: Yes. Yes, let's change both in both of those categories, birth to 18 and then 18-plus. Let's make it cognitive functioning and give some examples of the testing that can be done for that.

    And then underneath it, expand working memory, executive function, academic performance, I.Q., and et cetera. Great.
MEMBER SABATE: Joan Sabate.

I have a semantic comment here. I think on the second group is related to the cognitive development. However, in the third one, it is preservation of these. That's why they use the word health.

So this is more related I think to the increasing in whatever functions were required and the third one is the preservation.

That's why I am saying is cognitive development in the third category probably is not the best semantics because in the third category, it is talking about clinical entities, not the development.

VICE CHAIR KLEINMAN: So how would you --

MEMBER SABATE: So probably --

VICE CHAIR KLEINMAN: Yes.

MEMBER SABATE: -- besides the clinical entities, I am making another comment.

Probably the most common in the third category is the age-related cognitive decline.
So we don't have to wait until a clinical entity appears to see there is a connection. It is the preservation of the condition, whatever it is, that probably is also relevant.

VICE CHAIR KLEINMAN: So how would we say that? Instead of cognitive impairment, say preservation of cognitive function or preservation of cognitive health?

MEMBER SABATE: That could be a way to say that.

VICE CHAIR KLEINMAN: Okay, I think that's a good point.

CHAIR SCHNEEMAN: So I'm wondering if a way to get at your question is you're looking at risk for impairment. I think you're looking at risk for impairment. So you're trying to get ahead of the clinical sign and say are there things that tell me you are now increasing risk for impairment. Is that what you're trying to get at?

MEMBER SABATE: I mixed two concepts. I think the cognitive development that was
proposed to put here I said the first concept is probably not the best way to do so because on the third paragraph, on the third category, it is not the development. By development is typically associated with growing, increasing. On the third one it is more related to preservation or less deterioration. That's the first, correct.

CHAIR SCHNEEMAN: Yes, that's why I was introducing the concept of risk sort of in that third area.

MEMBER SABATE: Yes. And in the third area, the typical thing that happens with age is age-related cognitive decline. So the preservation of the condition, assessing the risk of increasing the decline or accelerating the decline is probably the outcome that we try to measure here.

CHAIR SCHNEEMAN: Right.

VICE CHAIR KLEINMAN: So we actually, perhaps, should just say that, preservation of neurocognitive health as the title of that outcome. And then we can change cognitive
impairment to cognitive functioning and do what
we talked about with dementia, Alzheimer's and
the other causes of dementia at that age.

Does that make it better? Okay.

All right. So with that, review
questions that address neurocognitive-related
outcomes, do you want to go through these
questions or, now that we have these outcomes
specified, should we leave it to each of the
working groups to take these outcomes and match
them to their categories?

And I'm counting the nodding around
the table and I think I'm getting consensus. So
anybody who disagrees with doing it that way?

CHAIR SCHNEEMAN: Yes, and I would
like to just double-check with the staff. You
can now ask us questions, if something we've said
is not clear. So is it clear what we've agreed
to? Okay, great.

VICE CHAIR KLEINMAN: All right. I
hate to say this but I think we've done it. All
right. Thank you all.
So we are going to move on to cancer.

CHAIR SCHNEEMAN: Yes, we can move on to the cancer. And as we heard earlier that these are the four most common cancers. They were what we looked at with the 2015-2020 Dietary Guidelines and they remain the most common.

So I think what the staff is asking us: Do we have the right cancers here? Are we missing something? Does something no longer belong on the list? And so that's what we want the input from the committee on.

Carol.

MEMBER BOUSHEY: This is Carl Boushey.

And with the increase in ectopic fat, I was thinking we may want to look at liver and pancreatic cancer.

VICE CHAIR KLEINMAN: Yes, I think liver is an excellent idea. That is probably the most directly-related to body composition and body composition is pretty directly related to diet. And so that seems to definitely belong on there.
I had raised earlier the relationship of childhood cancers and diet. And I think it was Eve or somebody who mentioned that ALL and human milk or breastfeeding is being looked at in the B to 24.

But how about those other cancers that are common in childhood or are the common cancers in childhood, as opposed to these, which are the common cancers in adult years? And I was specifically thinking about leukemias but, in addition, lymphoma, neuroblastoma, bone tumors, osteosarcoma. So could we just group those as the relationship between diet and cancers that are the most common in childhood and leave it at that, so at least there is some work to do on that -- some review to do on that? Okay.

All right, so there's consensus for that, too. So, we'll plan on that.

CHAIR SCHNEEMAN: And of the four that have been listed, do those stay on the list or is there any sense that we don't need to continue?

I think what we heard from Julie
earlier is that with prostate cancer I think there was just no evidence. With lung cancer, it was limited evidence. So keep them on?

Is anyone thinking -- does anyone think we should take them off the list? Let me ask the question that way.

So we've made the list longer.

VICE CHAIR KLEINMAN: And again, I think what we don't know is if the literature has come along over the last few years that now perhaps ships the prostate back or one of them in the other direction. So we probably want to err in gathering more information.

Linda.

MEMBER VAN HORN: Just one comment about all of this in the sense that, at least from most of the major overviews of cancer literature, at least from my point of view, it so relates to the development of obesity.

And so you know I think as we go forward it is possible that we should recognize that it's that connection, regardless of what the
diet composition is it's the energy balance

issues that really promotes cancer development in
so many ways. And so, you know, attempting to
try to keep that in the back of our heads as we
look at these various dietary factors, you know
the energy balance question certainly needs to be
included.

CHAIR SCHNEEMAN: So that sounds like
something that the subcommittee will be wanting
to look at. Is there evidence around the energy
balance issue related to the cancers that we've
identified?

MEMBER BOUSHEY: Hi, this is Carol
Boushey.

And really to lay over that is diet
quality you know because you can consume 2,000
calories and it can be in high diet quality 2,000
calories and it can be the lowest diet quality at
2,000 kilocalories. So it is something that we
really, I think, need to put into the mix, since
that is really our task is dietary guidelines.

But I don't want us to lose sight of
that as part of this picture that you painted out.

MEMBER BAZZANO: Lydia Bazzano.

So I do have one question. We were talking about colorectal cancer and then we also are mentioning now liver. Are we thinking that maybe we should consider it as a system, the GI system? I mean like this is just a question.

Yes, colorectal is the most common cancer but others also have associations with certain things.

VICE CHAIR KLEINMAN: I consider myself a recovering gastroenterologist, so I will -- so I think that if we say it that way, that we lose the emphasis on the ones that most make a difference to the population. And by putting liver in there, we can draw that relationship to obesity because it is one-to-one.

And if we do all of G.I. cancers, we bring in heredity cancers. An awful lot of G.I. cancer is due to polyps, which are hereditary, or syndromes and so on. So I think in this case we
are probably better off being discrete, but just my thinking about it.

MEMBER NOVOTNY: Rachel Novotny.

So I guess this gets back I think to Heather's question from earlier that really all of -- most of the outcomes we are going to be looking at have an obesity relationship. And so maybe just to note that in the analysis we will, at some point, consider the role of obesity in the modeling. The details of that I don't know that we need to talk about right now but I would think that that would be true with most of our outcomes.

MEMBER DEWEY: Just to respond a little bit to your comment, Ron, in the Beverages Subcommittee, there are several questions about alcohol consumption and certain types of cancer. And I just wonder if stomach or any of the others might be -- I don't know enough about this subject. I just wanted to bring it up that alcohol is highlighted in some of the questions.

VICE CHAIR KLEINMAN: And so was a
thought toward being more inclusive about G.I. cancer.

Yes, I guess in that particular case but I would make it specific for alcohol and G.I. cancers. So I think there to be more focused because we are focusing on one particular toxin or potential toxin. That seems to make a lot of sense to me.

So if everyone agrees, then, in the beverage -- under the beverage topic, we would specifically relate alcohol and broaden the category to G.I. cancers and that would include esophageal, stomach, and lower tract cancers.

And I was -- when Rachel -- you must have been reading my mind because as Linda was talking, I was thinking exactly the same thing, that obesity really underpins just about every health outcome that we are talking about here. So we want that probably to be a common thread also.

And as we're thinking about this developmentally, that's clearly an important area
that is going to come up. So perhaps if we're thinking about crosscutting themes, that one ought to be in the background all the time.

CHAIR SCHNEEMAN: Do we have other comments from the committee?

So let me just -- are you guys good for where we are? Do you have any questions for any of the committee members to how to proceed?

Okay, great.

MEMBER ARD: I have one.

CHAIR SCHNEEMAN: Sure.

MEMBER ARD: Jamy Ard.

So on these cancer outcomes, I know for everything else we are talking about, risk and sort of incidence for cancer are we also going to be thinking about mortality outcomes related to cancer? Because for example, breast cancer, women who gain weight during treatment have increased risk of mortality and recurrence. So those are some important sort of considerations. It's not just the dietary pattern in the risk of the disease but it may
also be -- I mean what we care about a lot for cancer, obviously, is mortality.

CHAIR SCHNEEMAN: Right.

MEMBER ARD: And so would we include or think about outcomes related to death from cancer?

MEMBER TAVERAS: This is Elsie Taveras.

Or more generally survivorship and that's actually a very good point. I wonder if that is within the scope. Particularly I think also with pediatric malignancies is that there is an emerging literature on cancer survivorship and diet. So I think that would be good to include, if it is within the scope.

CHAIR SCHNEEMAN: I think the one place that we have to be a little cautious of is you know we've heard repeatedly that we are not looking at clinical guidelines. So I appreciate what Jamy was getting at but I would think of mortality from cancer as one of the outcomes that would be picked up through the systematic
reviews. But as soon as we start getting into
how do you manage a patient with cancer, I think
that starts to get into a different question.

And we just -- it's not that we can't
look at that literature. I think we just have to
be careful -- this microphone doesn't like me --
we just have to be careful that we don't sort of
trip over and start looking at clinical
guidelines, clinical practice for treating.

MEMBER BOUSHEY: This is Carol
Boushey.

And just a pragmatic comment exactly
to what you were saying. If we were doing
systematic reviews, the greatest number of
publications would be with mortality and then
there is now growing in survival and certainly
that would be a path to consider also.

MEMBER SABATE: In response to this,
I think the survival issue is perhaps outside of
the scope of this committee because I think the
scope of this committee is still craft dietary
guidelines for the general population, not for
the disease population, in general, although I mean it could be with some prevalent issues like obesity or hypertension. But I think particular dietary advice I mean for people with a specific disease I think is outside the scope of this committee.

CHAIR SCHNEEMAN: Other comments?

Again, Julie or Eve, do you have any questions for the committee that you would like to ask? Okay, great.

So I think that's -- is that the end of our formal agenda? Wow, okay.

So I know Eve has some comments. I'd like to just see if the committee -- and I know people have flights, so we are going to start losing people.

So Kay, I'm going to catch you first, before you walk out the door. Just it was very helpful yesterday just to have the committee's perceptions, questions, and comments, not that we're going to get responses to everything right now, but it would be useful if we could do that
again.

So before we lose everyone, I would like to do that.

MEMBER DEWEY: Thank you, Barbara.

Kay Dewey.

So actually the one point I wanted to raise, I had a very useful lunchtime conversation around some of the practical issues for the B to 24 Subcommittee. And as I brought up earlier, there are some questions for the other subcommittees and we want to work closely with those on them.

But in particular, on our list of questions in sort of the middle group, there are several outcomes, including body composition and growth, and bone health, and nutrient status but not developmental outcomes. And this has to do with four nutrients: iron, vitamin D, omega-3, and vitamin B-12. And we saw in another subcommittee for the Fats and Seafood that the relationship between various types of dietary fats and neurodevelopmental outcomes was part of
that at every stage of the life cycle.

So we just wanted to sort of flag that. That's something that is very, very appropriate to one of the areas that we need to also explore.

So it's just a general issue that, hopefully, the subcommittees can sort of discuss amongst themselves that maybe some questions will get kind of handled over here and others over there, depending on the life stage that is in question.

So that was the main thing I wanted to bring up.

MEMBER BAZZANO: Lydia Bazzano. So in terms of the dietary patterns, I did have a question that was related to the questions as listed here. On the Dietary Pattern Subcommittee, the list of dietary patterns includes Mediterranean style, Dietary Approaches to Stop Hypertension, DASH, vegetarian/vegan, low carbohydrate diets, comma, and high-fat diets. And I am wondering if they are separate -- those
are two separate things or what kind of high-fat diets are we talking about? That's usually a low carbohydrate diet so I just didn't know if that was two separate things. So I'm just wondering.

CHAIR SCHNEEMAN: Yes, so we'll just collect the questions and then we can maybe, as part of the closing, we can have those addressed.

MEMBER MATTES: I guess I'd raise two issues or questions to keep in mind. Again, when we talk about patterns, dietary patterns, we've put an emphasis on foods and nutrients but I think we really have to talk about temporal patterns as well. We have eating frequency as one of our big questions and I think we have to integrate across those.

The other is I fully endorse the idea of having obesity as sort of a covariate in everything that we do but does that raise then the question of should we be thinking about macronutrients, specifically, in each of these roles or is it just obesity?

CHAIR SCHNEEMAN: We're going to go
around. You'll get another turn.

MEMBER NOVOTNY: I'm Rachel Novotny.

The thing I've been thinking most about is in most of the questions, as phrased, combine -- well, let me back up.

Coming from the perspective of not having the birth to 24 months in the Dietary Guidelines, I think we've been very food-focused, which is the main point. But going now to the B to 24 age group, most of the questions treat breastfeeding and formula feeding equivalently. And I think it's going to be really important that we find some ways to look separately at the outcomes that involve breastfeeding separate from those of formula feeding.

I think NHANES has them combined so that probably won't be our source. We'll probably need to look to other literature. But I think it is a really critical piece of what this next phase should include.

MEMBER VAN HORN: And I would go along with Rick and what I said earlier. I do think
prevention of obesity is a key factor for
everything that we're discussing and really does
need to be infiltrated across all of these
questions, as far as a number one public health
benefit that would be derived by, potentially in
regard to what Carol was saying, a higher quality
diet and regardless of exactly what the
macronutrient composition is, since we all are
aware that the emphasis on healthy fats are good
for you and all of that, I think there is huge
confusion out there in regard to low fat, high
fat, carbs, whatever. And so to try to be able
to distinguish exactly what is being recommended
and why I think would be valuable.

I also think the only other comment I
would make based on what Rachel was just saying
is the opportunity also to look at pregnant women
and breastmilk quality and their diet
relationships does also introduce another whole
new topic area that is under-studied and if there
are data out there that would help to promote a
type of diet during pregnancy that is in fact
beneficial for childhood/infant development, I think this would be a wonderful time to start that search.

MEMBER TAVERAS: So Elsie Taveras.

Linda asked one of the questions I had, which was really the question of looking at dietary. So we, under the Pregnancy and Lactation Subcommittee, there are a number of questions on dietary patterns consumed during pregnancy with pregnancy outcomes but not with infant outcomes. And that is something that Linda just mentioned, which I think would be important to expand a bit on some of the infant outcomes of pregnancy dietary patterns.

I had two other questions and they relate to a potential expansion of what we are -- what is under each of the subcommittees which could be answered later. One of my questions was under the Subcommittee of Frequency of Eating. And I wondered if timing of eating -- and I think the question came up yesterday of kind of circadian-aligned or circadian-misaligned timing
of eating is going to be addressed there. And again, I don't need an answer now but I thought that timing, in particular, in addition to frequency might be important.

And then the other question I had under the Birth to 24 Months Subcommittee was a question about complementary feeding. And again, the questions relate to the relationship between complementary feeding and a number of outcomes but I wondered how much we are going to drill down to the questions about composition and sequencing of introduction of different foods. It does expand quite a bit that section of the subcommittee's questions but something also that I was wondering as I looked at the complementary feeding questions.

VICE CHAIR KLEINMAN: Just on the complementary foods, it just reminded me that the definition that, was it Julie -- yes -- mentioned where you expand all across childhood up to age 18 -- did I misunderstand? You didn't. Two years, okay. Because it is much more narrowly
understood and in fact it is really only in that first -- second six months of life or second eight months of life that typically we talk about complementary feeding. And it is really intended as a complement to the single food that an infant starts off on and then the diet broadens.

So if it was up to me, I would probably restrict it down to let's say ages four months to one year for complementary feeding and then not think about it after that.

Thank you.

MEMBER SNETSELAAR: This is kind of a logistics question. We've kind of brought up a variety of concepts that are related to crosscutting issues. And I just want to be sure that, as a committee chair, I keep that in mind and I'm sure the wonderful people I will be working with will help me with that but several have been brought up and I know they can relate to the subcommittee that I am a part of.

So just making sure maybe there is a mechanism in place for that.
MEMBER SABATE: I have a question for consideration.

In several dietary guidelines of other countries, they are now seriously considering the issues of sustainability. I know a little bit what happened five years ago. Nevertheless, as you know, I mean food consumption is a measure driver of the food system and the food system has an impact not only on the health of the population but the health of the planet. And it is necessary a healthy planet to continue producing food.

So given the relevance of this issue, I wonder if, despite what happened five years ago, I mean if you, as a scientist, consider that that is relevant, I mean to at least put on the table and give some consideration, despite the outcome that may happen in two years.

But I say, as a scientist, I mean I think we have the responsibility to think seriously about this issue and probably again try to incorporate into our recommendations.
CHAIR SCHNEEMAN: We're going to keep going. And things that we can comment on, we will, but others -- many of the topics being raised I think go into thinking about how we structure the work.

MEMBER DAVIS: This is Teresa Davis.

So under the Birth to 24 Months group, we have looking at the relationship between specific nutrients from supplements and bone health and looking at the relationship between complementary feeding and bone health because we are well aware the importance of building bone during early life. So basically, we can stave off osteoporosis and osteopenia later in life but I think we need to also remember that building muscle in early life is important in staving off sarcopenia.

So I think you know we need to keep that in mind, particularly when we are looking at body composition. And so when we look at body composition, we think of lean mass, and fat mass, and so forth but it is not only just lean mass
but the function of the lean mass, the muscle as well.

MEMBER LEIDY: This is Heather Leidy.

The same thing. I just wanted to reiterate that and I think that when we're thinking about sarcopenia or the progression or the prevention of muscle health, what that looks like, whether it is functionality or even the quality of the muscle. We get that with body composition from a total lean mass but it doesn't mean that the quality of the muscle is healthy.

And so I think, if it is possible within our realm of looking at that, because it is body composition is across the board but you don't really see -- we see bone health but we don't see that with muscle health, which is a critical component.

And then another comment to what Rick had said, too, in terms of you know a lot of these different areas there are some macronutrient questions that could be teased out very easily, whether it is with beverages or
eating frequency. And I don't know if the
commitee has the ability to do that. It is a
direct sub-question around the global question.
If that is the case, though, I guess my question
is, is that something that the committee as a
whole within each subcommittee would want to
tackle because it is -- I think the concern that
I have is that if we do it in, for example,
beverages as an example, that's maybe well and
good but then if it's not translated then across
the other topics, it's going to seem awkward that
maybe one topic is talking about macronutrients
and the other ones aren't.

So I just don't know if that is a
discussion for the committee in terms of if we
think it is relevant within some of these to
focus on macronutrients, to have that
discussion. I know for beverages or eating
frequency, some of those components may end up
driving that. So whether that ends up gong in
the systematic review or not, I think it's a
relevant topic.
Just a concern.

MEMBER STANG: Jamie Stang.

One comment about lactation I think. I know we are going to be looking at quantity and quality -- or quantity and composition of human milk but making sure that we have a consistent way of capturing mixed feeding and intensity of lactation because the literature can be a mess and we need to make sure that we do that thoughtfully.

And then a question that I apologize for not bringing up earlier but it just occurred to me, we didn't discuss cancer recurrence. And I know that there is kind of that fine line between the disease state and not but whether or not that is something that we would want to consider within our cancer questions.

MEMBER BOUSHEY: Carol Boushey.

And I don't really have a lot to add. I've really appreciated the comments up to this point and I'm sure the others will be really great, too. But I want to respond to Rick's
comment. He brought up this idea of frequency of eating and he said I hope that's temporal patterns, too. And then we also heard timing of eating.

And maybe I missed the memo but that's what I thought frequency of eating was. And I'm on that committee. So I will work to make sure that is blended in there. Thank you.

MEMBER BAILEY: Regan Bailey.

Just building on that, one of the things that I wrote down specific for that committee is what is an eating occasion. So it is very difficult to define what is a snack, what is a meal. In NHANES, it is participant-defined but in other trials, it may be different. So we will need to standardize the language in working under that topic area.

And I think it's great that we talked about the important influence of obesity as a crosscutting issue across a lot of these committees but there are other factors like blood pressure, physical activity, educational
attainment that will greatly influence neurocognitive questions that we have. So we might want to also consider those within that lens, as well.

MEMBER ARD: Jamy Ard.

So I'm going to sort of pick up on the obesity thing a little bit and ask or talk out loud about the idea of framing it more from an energy balance standpoint and having a unifying sort of approach across the subcommittees in terms of dietary patterns or various exposures in the context of an energy balance in being able to think about obesity is the consequence of energy and balance.

And so if we look at a dietary pattern in that state versus someone who may be consuming the same dietary pattern but in an excess calorie state, that may have different implications. And so in our literature, we need to be able to clearly help people understand that have a consistent framework across the groups because those macronutrient profiles and so forth will --
the implications of that will vary based on energy balance state.

MEMBER MAYER-DAVIS: It's Beth Mayer-Davis.

So just picking up on this a little bit, I actually do think it's really important if we could think through our overall approach relative to obesity because obesity is actually a mediator with regard to diet and not all of the other outcomes we are speaking of but many of them -- most of them.

So I'm imagining and you know when you think about this from a public health perspective and the percent of the population, including young children, adolescents throughout the life cycle -- let me stop short. Dealing with sarcopenia is another issue. But this is such a major public health problem and it has been for so long and I'm thinking that if we can think about this overall frame not six months from now, but whenever we are thinking about writing, but sooner than that because it might help our
thinking in terms of coherence, both within and
across the subcommittees.

And I have a -- this is much less
interesting but you know as a practical issue, I
just don't know if today we are going to do a
little bit of conversation about logistics and
what sort of the process, the expectations, you
know how do we move forward in terms of
subcommittees getting activated and you know that
kind of stuff. We're going to do that later?

Okay.

CHAIR SCHNEEMAN: I think Eve will

speak to that.

MEMBER MAYER-DAVIS: She'll give us

Marching orders?

CHAIR SCHNEEMAN: Yes.

MEMBER MAYER-DAVIS: Good. Okay.

MEMBER HEYMSFIELD: Steve Heymsfield.

I had a few questions.

One is I am chair of the Frequency of
Eating group and has there been something on that
written already? Are we building on something or
is this a new topic?

You might be able to answer that. No.

Okay, so it's starting from zero. Okay. All right.

And a few other minor things. To the extent that the food patterns are evaluated using new cutting-edge techniques like artificial intelligence, deep learning, I think all of those techniques are coming online very fast and I was just wondering to the extent they will be used moving forward.

And I was wondering about the boundaries of our evaluations. Do we include antibiotics in foods, hormones, chemical disrupters, and things like that that often travel with food?

CHAIR SCHNEEMAN: I mean I think those are good clarifying questions.

MEMBER HEYMSFIELD: Yes, and ultra-processed food versus and so on. All of those questions I think are very topical.

CHAIR SCHNEEMAN: Yes.
VICE CHAIR KLEINMAN: So I will throw in one last minute grenade here, a small one, and ask another crosscutting issue that is very important in public health is food insecurity and it crosscuts this issue of time of eating, frequency of eating, quality of diet, significant health consequences of it, behavioral as well as physical. And so I don't know whether I'm pushing for systematic reviews on this but I know that the least I think that we should do is to make sure that that appears in our discussion as often as we can. And it's not in an effort to balance the discussion about obesity. It's really in addition to this issue of obesity so that it doesn't get lost.

CHAIR SCHNEEMAN: Great. Well, these are excellent issues to have brought forward. And I think some of them will be addressed as the work groups start putting their work together and start working with the staff but we will be able to sort out how do these various things fit in or cut across the work groups.
But I think some of them we can ask Eve and maybe Julie to help clarify. So why don't you all -- and Janet, yes?

And I was trying to identify things that I thought could be questions clarified in this format. I think I've captured a lot of the issues, if I can read my own handwriting. You know for example, one of the questions was about how do we interpret the question on low carbohydrate/high-fat diets. I mean that is a simple question about the question itself. How are we interpreting that?

MS. DE JESUS: I think, in general, we are looking at any dietary pattern evidence that is available. So I mean low carbohydrate could be high-fat or some people do higher proteins. So there is really different variations. So we are kind of open to whatever different types of macronutrient patterns that are found.

CHAIR SCHNEEMAN: Well and maybe while you are there, you could address the questions that kind of came up about looking at the
macronutrients versus the foods and how you see
that playing out in the various questions.

MS. DE JESUS: Right. So I think that
will, again, come in the dietary pattern
evidence, so where the evidence is available on
those outcomes. We will definitely take a look.

CHAIR SCHNEEMAN: Okay, great.

And I think there were some questions
about infant outcomes in looking at pregnant
women. So is that something we can address now,
as far as --

MS. DE JESUS: Sure. Let me see.

So I believe there was a question on
-- there was on a milk composition, which is in
here, on the mother's diet and breast milk
composition.

And what was the other infant outcome?

CHAIR SCHNEEMAN: Yes, the other one
was it seemed like a lot of the outcomes were for
pregnancy and you were asking what about infant
outcomes based on dietary intake during
pregnancy.
MS. DE JESUS: So we have -- yes, I mean we're welcome to add, if we don't have the outcomes that you are looking for. We do have birth weight, gestational age, sex but we can work on this in the protocol stage, definitely, because we know that is an important output.

CHAIR SCHNEEMAN: Okay. And then there was a question about the time period that was selected for the complementary feeding --

MS. DE JESUS: Right.

CHAIR SCHNEEMAN: -- going all the way to two years.

MS. DE JESUS: Right.

CHAIR SCHNEEMAN: So is that something that you want the subcommittee to look at, that time period?

MS. DE JESUS: Yes, and I think the thought was that some women nurse past 12 months, so there's not really a -- and I know some go past 24 months as well. But definitely, the subcommittee can take that on if they want to refine it.
CHAIR SCHNEEMAN: Okay, great.

And we had the question about introducing new topics, such as sustainability, that aren't part of the topics and questions. And I don't know whether, Janet, you want to address that or Eve, do you want to address that?

MS. DE JESUS: Yes, it's similar to what we've said before. You know we've kind of laid out the major topics but if there is something that you would like to address in the report, the committee is welcome to do that.

CHAIR SCHNEEMAN: Right but it might be that we've identified something as important for the future --

MS. DE JESUS: Right. Right.

CHAIR SCHNEEMAN: -- or something that we would like the Secretaries to consider.

MS. DE JESUS: Absolutely.

CHAIR SCHNEEMAN: Okay.

DR. STOODY: Yes and just to add, the committee is asked to limit its review of the evidence to the topics and questions that were
identified by the departments that had the public and federal agency input. So the systematic review support, the Food Pattern Modeling, all of those pieces, limiting the review of evidence to those topics and questions.

But yes, to your point, is there, what we've discussed before, you know places in the report to speak to things that are also important to consider.

CHAIR SCHNEEMAN: Right.

DR. STOODY: That other topics can be relevant there.

CHAIR SCHNEEMAN: Okay and certainly within this committee, I don't think we have the expertise directly but that's another thing we can think about.

I think the cancer recurrence, that might be, again, we have to be careful to not dip into clinical guidelines and clinical practice.

And then Steve asked a set of very focused questions right at the end and we know frequency of eating is new. What about
techniques, newer techniques around food
patterns? And what about some of the other
factors that show up in foods? How should we be
thinking about those issues?

MS. DE JESUS: So I think there was --
so whatever is available in the evidence, as far
as I think the techniques for measuring food
intake, I mean if that is a technique that is
used in the evidence you know, definitely.

MEMBER HEYMSFIELD: I was thinking
more of the analysis methods --

MS. DE JESUS: The analysis, yes.

MEMBER HEYMSFIELD: -- like deep
learning, artificial intelligence is coming
online very, very fast.

MS. DE JESUS: Right. Now that's
extremely interesting. That's probably on the
like the methodology side, which would be outside
the scope but very interesting. And you know
happy to -- you can touch on it in the report --

MEMBER HEYMSFIELD: Yes.

MS. DE JESUS: -- and research gaps or
you can list it there.

CHAIR SCHNEEMAN: So are there some other questions that I didn't bring up that you all captured in your notes that you thought we could address at this level?

DR. OBBAGY: I heard a number of people mention factors that are going to be important confounders, mediators, moderators, covariates, that sort of thing, and certainly part of our systematic review process will be to have a very thorough discussion up front about all of those different factors, many of which you've mentioned here, and others that we need to really take into consideration as we start to dig into the evidence and really evaluate it.

So all of those kinds of things that got mentioned I think are very important to the process.

CHAIR SCHNEEMAN: And we didn't address the last question about some of these other factors in foods, such as antibiotics, what all did you list?
MEMBER HEYMSFIELD: Chemical disruptors, hormones.

CHAIR SCHNEEMAN: Yes.

MS. DE JESUS: That's probably out of scope but I mean for the systematic review.

CHAIR SCHNEEMAN: Yes, I think in general, those are food safety issues --

MS. DE JESUS: Yes.

CHAIR SCHNEEMAN: -- which --

MS. DE JESUS: Out of our lane.

CHAIR SCHNEEMAN: Yes.

MS. DE JESUS: Yes.

CHAIR SCHNEEMAN: We're going to have a robust other items in the report.

MS. DE JESUS: It's going to be big.

CHAIR SCHNEEMAN: So were there any other items that you had identified that we -- I think some of these will have to be addressed as the subcommittee looks at the protocol and begins to refine that but some that I thought we could deal with here, we might as well.

DR. STOODY: I will add one final
comment to Dr. Bazzano's question about the types of dietary patterns. I think the intent -- when you see the protocols, you'll see that the systematic review protocol, it casts a wide net. And we found in doing reviews over time that the labels are really tricky, you know if it's low carb or high fat. I mean what does that really mean? And so in those reviews it's often you are getting into the foods and beverages, or the macronutrient composition, or those different elements.

So I think it's we listed a list of potential dietary patterns to consider but I think it's casting a wide net, and then looking at the evidence base to identify those that are the relevant ones to include. And yes, it is the labels. I mean it is hard to define just with the label of the pattern.

So I think that will kind of flesh out more, once you see the protocol.

CHAIR SCHNEEMAN: Great. Thank you all for addressing those questions.
So Eve, I will turn it back to you for the wrap-up.

DR. STOODY: Excellent. Okay, so thank you. I want to start off by just again saying thank you to the committee. When we wrapped up yesterday, a colleague of mine said I hope they come back. So thank you for coming back.

(Laughter.)

DR. STOODY: I know that we've made a big ask. It is -- you know this is a lot of work. And several of you have been here before or your colleagues have told you it's a lot of work. So we just want to thank you again.

I hope that you've seen, over the course of the last two days, that you are not on this alone. You know you have a lot of support who can help you and help you to accomplish your goals.

In terms of immediate next steps, each of the subcommittees has specific subcommittee staff who will assist you in literally logistics,
you know getting calls on the books and things like that.

If you haven't met your respective -- the staff are going to meet their respective subcommittee chairs. If that hasn't happened yet, let's do that after the meeting, just touch base to make sure you have that connection.

So immediately we would like to begin those subcommittee discussions. So our staff will help you to set up -- work with you, the subcommittee chair, and then subsequently, the subcommittee members to set up those calls and help with logistics. And we'll just get the ball rolling pretty immediately.

And as has been discussed, what will happen is a discussion around the questions that are identified for each of the subcommittees. One of the things that will happen, I think it will kind of vary, but bringing up former systematic reviews that have been done by the Nutrition Evidence Systematic Review Team that relate to these topics and questions, and also
bringing forward draft protocols.

And so those protocols will be brought
to the subcommittees to refine, review, adapt,
but you will start with something. It is not a
blank protocol. We will provide something that
you then react to, and refine, and make the
subcommittee's. So that will be -- those are
kind of the immediate next steps.

Now, thanks everyone for being here.

Meeting 1 is done. We have four more public
meetings and I presented these yesterday but if
you weren't able to be here, these are the dates
for the remaining four meetings and we hope that
you can schedule and plan to be there.

The next meeting is in July and we
hope to see you there. That will have an
opportunity for oral comments to the committee
and there will be more information about that, as
we get closer to that meeting. And again, the
second and the fourth meetings will have that
opportunity for public comment -- oral public
comment to the committee.
Registration for those meetings, again, will be announced at our website and then through our LISTSERV.

And just one final note, again for those who were not here yesterday, the fifth meeting we have scheduled for March. We have asked for the committees to submit its report in May. So that last meeting is really the discussion bringing all the final deliberations, findings to that last meeting but there is some time after that to finish the report and submit it in May.

Okay, so as the subcommittees conduct their work, so from now until July, there will be the opportunity for the public to follow along.

As we've noted now several times, dietaryguidelines.gov is a great go-to source for information on what's happening in the process. Two key pieces there is that there will be monthly updates around the subcommittees' work. So there will be brief subcommittee updates, giving you an update on what has been happening
over the course of the month. And that will also
be the time that we will update the protocols for
the different scientific questions.

So again, if you go to
dietaryguidelines.gov, the way to follow that is
to go to Work Under Way and then to the Review of
Science Section within that. And here you can
see the link for the topics and questions to be
examined by the committee. And that's where we
see that list of questions.

And you can follow along, see which
ones are still to come. If there is not
something there, it just hasn't been addressed by
the subcommittee -- the committee yet.

And then developing the plan,
implementing the plan, and having a draft
conclusion.

And again, we encourage you to follow
along and stay engaged. There is at the bottom
of dietaryguidelines.gov a link to sign up for
our LISTSERV and that is a great way. We
definitely will continue to send out
notifications as to what is happening and so that you can follow along.

Now in addition to thanking the committee, I do want to acknowledge that there are a lot of staff involved in helping to make this happen.

You've heard a number of these individuals identified supporting the review of the evidence phase. So we have a Systematic Review Team. We have teams devoted to food pattern modeling and data analysis. There are also a lot of other people engaged who will be helping you with public comments, who help with the website, who kind of help with the other elements that are involved in the committee's work. And we just want to give a huge thank you.

Part of that also includes making meetings like this happen. And you know, we don't have meeting planners. We have nutritionists who become meeting planners. And so I do want to just give a quick shout out to Colette Rihane and Jean Altman, who really did
led up the logistics for making this meeting happen.

So overall, just thank you and these are people who have helped us to get to this point, people who are going to help us to get to the next meeting, and beyond. So just thanks for that.

And again, just acknowledging that there is really -- this is something that both departments, USDA and HHS -- you know, it is very important. And we appreciate your time and the dedication of the staff as well.

So with that, unless there are any final questions or comments --

CHAIR SCHNEEMAN: I would just make a comment that yes, I like having that tick-off on the first meeting and I do want to express my appreciation to the committee members for being here, for raising questions, for bringing forward issues so that we can, in fact, do our work and make sure we come to the point where we are making recommendations that are useful to the
government.

And a big thank you to the staff. I think they've made our time very easy and really facilitated this process. So, thank you very much. Thank you for the presentations and thank you for everything to put it all together.

VICE CHAIR KLEINMAN: Ditto.

DR. STOODY: Well thank you. And thanks to everyone who joined both in-person and online.

And again, we will have meeting materials posted in the next couple of weeks and we look forward to seeing you in July.

Thank you.

(Whereupon, the above-entitled matter went off the record at 1:57 p.m.)
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Advisory Committee Meeting

Before: USDA

Date: 03-29-19

Place: Washington, DC

was duly recorded and accurately transcribed under my direction; further, that said transcript is a true and accurate record of the proceedings.

____________________________
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