UNITED STATES OF AMERICA

DEPARTMENT OF AGRICULTURE
AND
DEPARTMENT OF HEALTH AND HUMAN SERVICES

DIETARY GUIDELINES ADVISORY COMMITTEE

THIRD MEETING

WEDNESDAY, APRIL 29, 2009

The meeting came to order at 1:30 p.m., Dr. Linda Van Horn, Chairperson, presiding.

PRESENT:

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

ALSO PRESENT:

CAROLE DAVIS, CO-EXECUTIVE SECRETARY AND DFO, USDA
KATHRYN McMURRY, CO-EXECUTIVE SECRETARY, DHHS
RADM PENELOPE SLADE-SAWYER, PT, MSW, DHHS

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P R O C E E D I N G S

(1:30 p.m.)

MS. DAVIS: Ladies and gentlemen, good afternoon from Washington, D.C. Thank you for standing by. I'm Carole Davis, the Designated Federal Officer, and a USDA Co-Executive Secretary to the Dietary Guidance Advisory Committee.

I'm speaking on behalf of Dr. Robert Post, who could not be here with us today. Dr. Post is the Acting Executive Director of the Center for Nutrition Policy and Promotion of the United States Department of Agriculture.

At this time, I would like to recognize Rear Admiral Penny Slade-Sawyer representing our partnership with the U.S. Department of Health and Human Services in working with the Committee.

We want to welcome you to this webinar for the third meeting of the 2010 Dietary Guidance Advisory Committee. I would

like to give you a few reminders before we get started.

This Committee is governed by the Federal Advisory Committee Act or FACA. FACA was established to assure that Advisory Committees provide advice that is relevant, objective, and open to the public, act promptly to complete their work, and comply with reasonable cost controls and recordkeeping requirements.

Therefore, each public meeting has been and will continue to be announced in the Federal Register through a public notice.

As part of the open and transparent process, the meetings of the full Committee are open for observation by the public. And any deliberations that occur between meetings such as those in topic-specific subcommittees are brought back to the full Committee at a public meeting as you will hear today and tomorrow.

During the meeting all public

participants will be in a listen-only mode. The public has opportunities to participate in the process by providing written comments to the Committee through our online database at www.dietaryguidelines.gov.

In addition to the rules of the FACA, I would like to review some rules of engagement for the Committee. The Dietary Guidelines Advisory Committee members will refer any individuals who contact them personally to solicit information about their work on the Committee to the Dietary Guidelines Management Team.

Committee members are not able to give presentations as a member of the Committee about the Committee's work or speak as a representative of the Committee as this would be inconsistent with Advisory Committee operations and would preclude the requirement that the Committee's work is transparent to the public.

We are very excited to be

broadcasting this message live via the web. This new medium enables us to reach a more varied audience of interested parties. We have individuals from across the nation as well as internationally participating today and tomorrow.

I would like to review a few technical points for the public. On your screen, you see some relevant information. If you experience technical difficulties, you may contact WebEx Technical Support toll free at 1-866-229-3239. This information was also e-mailed to all registrants as well as was a technical assistance number for our international participants.

The event staff here in the room with us will be monitoring an e-mail line, so to speak, where public participants can send notes of any technical difficulties while the meeting proceeds. As you see on the screen, this e-mail address is tech_issue@yahoo.com. So please note that the staff will not respond

to these e-mails. It is simply one of several ways we are monitoring the streaming efficiency of the meeting to the public.

This presentation is being recorded. It will be available for replay for approximately a year. All registrants will receive information following the meeting about how to access the archive.

After the meeting, you can also visit our website, www.dietaryguidelines.gov to request the archive.

We value your feedback on this webinar meeting and after the meeting, registrants will receive a follow-up survey.

As in that past, a transcript and a written summary of this event will also be posted to our website when available.

Because this meeting is being streamed live to the public, I would like to ask that the Committee members clearly state their name before speaking. This is particularly important to facilitate clear

deliberations to the public who are following the discussion.

With that said, I'd now like to turn the meeting over to the Chair of the Dietary Guidelines Advisory Committee, Dr. Linda Van Horn.

CHAIR VAN HORN: Thank you, Carole. And this is Linda Van Horn. And I would like to offer my welcome and thanks for participation to the Committee as well as those who support the Committee. And good afternoon to our public participants who are viewing on the internet today.

Since the second meeting of the Dietary Guidelines Advisory Committee in late January, the Committee has met several milestones. Each of the seven topic area subcommittees has prioritized their research questions for scientific review of the literature.

We also identified several areas where outside expertise is needed. And we are

going to hear from those experts today and tomorrow.

Each subcommittee has been diligently working to move their scientific reviews forward by gathering pertinent information and clarifying their review plans. In some areas, literature reviews have already been completed and that information is now being extracted and organized.

We will hear an update on the status of their work from each of the seven subcommittees over the course of the next two days. Our Food Safety and Technology Subcommittee will present later today and the remaining six groups tomorrow.

We continue to have lively discussions on several cross-cutting issues, which we will cover throughout this meeting as well as during the time that has been set aside at the end of the day tomorrow.

To remind the Committee members, because this meeting is open to the public,

again, please introduce yourself when you are speaking so people can become familiar with your voices.

We're on a very tight timeline today and tomorrow so we're going to do our best to stay on that timeline to be important in assisting the public in following along with this agenda.

With that, I'd like to plunge right in to today's agenda. This afternoon, we have the benefit of hearing from four individuals on topics where the Committee felt outside expertise would be highly valuable. And I'd like to pay special thanks to these four presenters who, on relatively short notice, agreed to be here with us today. And we truly appreciate this time and energy.

Our first presenter is Dr. Adam Drewnowski. He is a world-renowned leader in innovative research approaches for the prevention and treatment of obesity.

He is the Director of the

Nutritional Sciences Program at the University of Washington in Seattle and Professor of Epidemiology with an adjunct appointment in medicine and is a joint member of the Fred Hutchinson Cancer Research Center.

Dr. Drewnowski is also Director of the Center for Public Health and Nutrition and the Center for Obesity Research.

Dr. Drewnowski's current research is focused on the relationship between poverty and obesity and the links between obesity and diabetes rates in vulnerable populations and access to those healthy foods.

He has conducted extensive studies on taste function and food preferences in relation to food choices and the overall quality of the diet and has also conducted epidemiological studies on dietary quality both in the United States and abroad.

We are very grateful for your willingness to join us here today. Thank you and please begin.

DR. DREWNOWSKI: Thank you.

Good afternoon everyone. I want to express my thanks to the Committee for inviting me here to share my thoughts about food, health and incomes. And to present evidence on the economics of food choice behavior in satiety that I hope will help guide your deliberations in the future.

I think this is a historic occasion. I think this Committee really has unprecedented power to change the way that Americans think about food, purchase food, and use food to create healthier diets. But with power comes challenges. And this Committee faces also an unprecedented challenge.

I think in the past, many committees looked at scientific evidence and tried to point the way to healthiest, most nutritious, most nutrient-dense foods.

The economic crisis has really changed all that. There are many people sliding into poverty. There are people trying

to make ends meet. There are people who cannot afford many of the foods that are recommended. What are we to do about them?

So we need to think not only about nutrient-dense foods. This is a given. We need to think about affordable nutrient-dense foods and how they can be used by all segments of the population to build healthier diets.

So I would like to bring a variety of evidence to support my views. But I want to start with full disclosure.

My research on food prices has been funded by the U.S. Department of Agriculture.

My research on diet quality and diet cost was funded by the National Institutes of Health and by the French government.

Research on affordable nutrient-dense foods has been funded by the Nutrient-Rich Foods Coalition.

And research on satiety, which I

was asked to talk about as well, was funded by a variety of industry sources both national and international, Danone France, Sudzucker Germany, General Mills, and the American Beverage Association and the American Beverage Institute.

I am about to answer the Committee's five questions. I took the liberty of rearranging them in the reverse order because the fundamental question really is: Is it possible to improve diet quality while maintaining lower a diet cost?

And then I have evidence to show the relation between food prices and diet quality, further evidence to demonstrate links between food costs, poverty, and obesity because it is actually possible to be hungry and overweight. It is not a contradiction in terms.

And then I want to deal with the relation between specific macronutrients, sugar and fat, health outcomes, and body

weight.

And then one question that was asked whether or not sugars, especially in liquid form, contribute to obesity and is the amount or the type of sugar responsible in increasing national obesity rates. So I'll deal with that issue as well.

But I want to take the broader picture here. As you obviously realized, food choices are driven by a variety of factors. Yes, we do have taste, cost, and convenience. Any marketer will tell you that. But there are a number of other factors that come in.

Some segments of our society are acutely sensitive to the issue of money, time, and access. Simply, some foods are too dear, not accessible, not available in given neighborhoods. What are we to do to change all that?

And then I say it with some regret as a public health nutritionist, not enough people have nutrition knowledge concerned with

health or let's not forget cooking skills. So nutrition advice and dietary guidelines are a hugely important part of the picture but we need to take other factors, notably incomes and prices and so on, into account.

And the various experts presenting here today and coming in tomorrow will address those issues. I'm actually encouraged that the Committee is taking these broader issues into consideration.

So this is my logic flow. This is what my research shows. Research shows that energy-dense foods, energy density defined as calories per 100 grams, actually cost less per calorie. They are cheap sources of calories. They may be cheap sources of empty calories -- more about that later -- but they are certainly cheap sources of calories.

Such foods may contain added sugars and added fats. Diets composed of such foods are cheaper. It is not too much of a leap to suggest that such diets are not only

cheaper but they are preferentially selected by lower income groups who are obese and increasing diabetic and increasing suffering from metabolic syndrome.

So you see a connection here between energy density of foods, food prices per calorie, energy cost, the quality of the diet, the type of the diet selected by given consumers. And then, not surprising, poverty and obesity are very closely linked.

So to support my viewpoint, I'm going to use data from the U.S. Department of Agriculture. And I actually I commend the USDA for having come up with two datasets, which I have been analyzing for the past year.

First of all, I have been using the Food and Nutrition Database for Dietary Studies, which lists nutrient composition of all foods consumed by Americans in the National Health and Nutrition Examination Survey. This is the dataset for what we eat in America, an exhaustive, good quality,

nutrient composition dataset from the USDA.

And then last year, the Center for Nutrition Policy and Promotion released another dataset of food prices, national food prices from 2001/2002 linked to that dataset. So by linking those two datasets, you can actually start looking at the relation between food quality, nutrient density of foods, nutrient quality of diets, and their costs. And this is what I want to present to you here today.

I believe tomorrow Andrea Carlson and Brian Wansink, who are actually at CNPP developing these very data I will talk about will present before you tomorrow.

So we have nutrient composition data, which allows us to calculate energy density and energy cost. And then those same data can be used to calculate not only nutrients per calorie but also nutrients per unit cost. So this actually does open the door to nutrient- and price-related research.

Now this is a slide which shows you for three food groups, as defined by USDA, the relation between energy density on the vertical axis and energy cost. Now much has been said about energy density of foods. Let me demystify it for you.

Energy density of foods is related inversely to the water, water content. Simply put, energy-dense foods are dry. Foods of low-energy density are hydrated. The range goes from water, zero energy density per unit weight to oil, 900 calories per 100 grams with sugar in between.

So you have oils, 900 calories per 100 grams, spreads and butter, other spreads -- - mayonnaise, salad dressings, and so on. And here you have sugars, dry cereals, cooked pasta, and low-energy density but sweetened beverages. Notice on this axis, you have cost per 1,000 calories on algorithmic scale so that each increment equals a tenfold increase in cost.

So what you have here is oils and sugar providing you with 1,000 calories for approximately 20 cents or less at retail according to the USDA. And more costly desserts and other sweets over here.

But notice how this relation shows you the link between energy density and energy costs. When you start putting in other food groups here, notice that you have lower cost beans and eggs and nuts over here, meat in the center, fish and shellfish over here, and dairy products -- lower energy density yogurt and milk and higher energy density cheeses.

You go to the next group of foods and here you have vegetables and fruit. Notice that energy density is lowest for salad greens, mostly water. It goes here to fruit, canned fruit in syrup, dried fruit with higher energy density, white potatoes, fried potatoes over here, higher energy density. But notice again the issue of cost per 1,000 calories.

So when you put all food groups

together, you see an inverse relation between energy density and energy cost of foods. You can actually present it in a different way. Rather than energy cost dollars per 1,000 calories, you can also show how many calories you can get for a dollar.

Suppose you go to a supermarket. You have a dollar in your pocket. What is the food that gives you most calories for your dollar? It is going to be obviously something that contains added sugar and added fat. You know it. I know it. There is a relation here that is an inverse relation.

This relationship comes out more strongly in the next few slides. The point I want to make here is that we know about this relationship but we usually talk about foods on the left in terms of the added sugars, the high fructose corn syrup, the high glycemic index, the added fats, the trans fatty acids, the energy density, the minimal nutritional value.

And in many cases -- not all cases but in many cases -- this is not far from the truth. But we want to bring people over to the right side, towards the fiber, the vitamins, the minerals, the antioxidants, the phytochemicals, all the good stuff. But very often we forget that there is a huge disparity in energy costs in the order of 1,000 percent.

So my suggestion is this. First of all, we need to recognize the existence of the cost barrier and somehow include it in our dietary guidelines and recommendations. And then live in the middle.

There are many foods here in the center which actually do have high nutrient density and are, in fact, affordable. And foods in the middle include foods from every food group. So, in fact, there are choices to be made within every food group. They do exist.

This is actually brought out better on the next slide if you like log/log

plots. This one shows you a nice linear relation between energy density on the log scale and energy cost, also on the log scale. Notice that yes, there is an overall inverse relationship, which means energy-dense foods on the whole are less expensive.

But if you look here in the center, you can see that for any one level of cost, you can go from high energy sweets to low energy vegetables and fruits and dairy products. At the same level of energy density, you can go from less expensive foods to more expensive foods. So there is really plenty of choice within each food group. And there are ways of pointing to and identifying the affordable nutrient-dense foods within each food category and food group. It does not have to be all or nothing. And changing the public's behaviors from over here to over here.

A couple more things, all those foods are not necessarily equally frequently

consumed. They are not all equally acceptable. Some of them need to be cooked. Some of them may require preparation. Some are not part of the mainstream American diet. All of those connections need to be made in order to help people use these foods to create and construct healthy diets.

So let me now move from foods to diets because as I said before, some of these foods are used to construct lower cost energy-dense diets. And here what I want to show you are some data from France, which actually illustrate the point that low cost diets are likely to be both energy rich and nutrient poor.

What we did here was to take mean French national food prices, attach them to dietary intake data from 2,000 French adults, calculate the cost of the diet at the individual level, and then split the population into equal quartiles.

So here we essentially followed

the same procedures as the epidemiologists do. Just think of the cost of the diet as an index of monetary exposure. This is not what people paid for the diet. This is what the diet intrinsically cost.

And once you start doing that, you come across something quite interesting. These are the diets -- let me just go back here -- which cost four-and-a-half Euros per day, five Euros per day, six Euros per day, seven-and-a-half Euros per day. And this is the cost per ten megajoules.

We go from lower cost diet -- here's a reference diet -- least cost diet -- to the highest cost diet. The highest cost diets are nutrient rich. They do have lower energy density. And you eat less. So you pay more to eat less or you pay less to eat more. But what you are paying less to eat more of are going to be the added sugars and the added fats.

And so the French study was just

replicated in two studies conducted in the U.S., one in California, one in Seattle. The California study was published last month in the American Journal of Clinical Nutrition. The Seattle study is getting published in a few days in the Journal of the American Dietetic Association. These French data were essentially replicated.

The diets over here do have more added fat and added sugar and saturated fat. They are, in fact, cheaper and they are consumed with people by lower education and lower means.

But my studies are based on relatively few people -- there are better data that illustrate this issue. Economic pressures drive consumer food choices towards cheaper, more energy dense foods. And let's not forget sweetened beverages.

Added sugars and fats do provide more calories per dollar. Lost cost, energy-dense diets naturally lead to overeating and

weight gain. So paradoxically, spending less may mean eating more.

And the Committee has the question about adherence to dietary guidelines. Diet quality is, in fact, measured through adherence of dietary guidelines.

The measures of diet quality, we measure diet quality in terms of adherence of dietary guidelines. Think of the healthy eating index. That's what it measures.

So here this is our model which was published a while back in a paper co-authored with Steve Specter. We're saying that as food costs go up or if food spending diminishes, consumers or healthy Americans do not want to eat less. They don't want to be hungry.

So as a result, what they do is to buy cheaper foods to get you the same number of calories. So that immediately forces them towards more energy-dense foods which provide calories at a lower cost. But it also forces

them towards less nutrient-rich foods.

So in the end, they end up consuming sugars and fats, higher energy-density diets. And actually with higher energy-density diets it is easy to overeat. So rather than eat less, they end up eating more. But those are, in fact, cheaper, empty calories.

So the question then becomes what can we do about it and how can we intervene? This is the critical issue. And few people have data showing that lower quality diets are consumed by lower income groups. The best data on this topic actually do not come from my laboratory or from my center. They come from Tom Frieden, the Health Commissioner for the City of New York.

The New York City Community Health Survey surveys approximately 10,000 people regarding their diets and health. And so what I have here are data from this study published in the Journal of Urban Health. They studied

asked about frequent consumption of soda defined as consumption of at least one serving -- 12 ounce serving -- of soda per day.

And what we have here is fairly instructive. Notice that consumption -- frequent consumption of soda in New York City was linked to being male, young, minority -- Puerto Rican, Mexican, U.S.-born African American. Consumption of soda was linked to poverty, high poverty, low poverty, to low education, high prevalence of TV watching and yes, it was linked to obesity.

But the socioeconomic gradient is, in fact, stupendous. So adjusting for demographics, frequent soda consumption was associated with TV viewing and less physical activity. Adjusting for demographics and behaviors, frequent soda consumption was associated with higher BMI for women but not for men.

But what was interesting here is that the demographics of soda consumption,

demographics of obesity or the location of obesity and those of poverty were, in fact, identical.

So now I want to show you something unusual because no one really has data of specific consumption by geographic location. I suspect the industry does that but I have not seen it myself.

So here is now prevalence of frequent soda consumption in New York City by New York City boroughs by geographic location. What you see, obviously, is that highest prevalence of frequent soda consumption was in East Harlem, Harlem, Morningside Heights, Brooklyn, and Bedford-Stuyvesant. These are the areas of deprivation and poverty.

These were, of course, areas of highest obesity prevalence, as indicated by the same study. Again, you see Harlem, South Bronx, Bedford-Stuyvesant, and parts of Brooklyn and Queens. So you have geographic location of soda consumption, poverty, and

obesity.

And I just have maps of Manhattan showing you poverty distribution of Manhattan in relation to obesity. Take a look at data from an earlier New York City Department of Health and Human Hygiene dataset.

What you see here is that the prevalence of obesity quadruples the moment you cross 96th Street. So going from the Upper Eastside, prevalence of obesity at seven percent to East Harlem, obesity prevalence quadruples.

There is a direct relation between obesity and poverty, percent of families below poverty and obesity rates over here. And then when you come to diabetes, you see a relation that is even stronger. Diabetes rates increase sevenfold by going from the Upper Eastside to Harlem.

And the relation here is extremely strong just from Manhattan. R^2 is .87. So as a result, you see a complete continuity

between consumption of a specific diet, poverty, and obesity.

And Manhattan and New York City are not exceptions. I have similar data now for Seattle, where we're now able to plot rates of obesity, diabetes, and metabolic syndrome by census tract. And the social disparities are immense.

So let me now move to the logic on how we're thinking about those things because it seems to me that in trying to link specific macronutrients or specific foods to ill health outcomes, to ill health and adverse health outcomes, we are forgetting the important contribution of poverty, social disparities, unemployment, lack of health insurance, under-served neighborhoods. All of those things are part of the picture and part of the package.

It actually reminds me some years ago USDA came under attack from Doug Besharov on the pages of Washington Post because he accused the USDA of fattening the poor. You

may remember that.

The argument was kind of strange. The argument was that poor people receive food assistance. Poor people are obese. Therefore, food assistance must have made them obese.

Now I, of course, disagree with that but I'm thinking to some extent, we're following similar logic. We're saying okay, poor people do buy energy-dense diets. Yes, they do. They do drink low cost sweetened beverages. Yes, they do. They are obese. Yes, they are.

Did a specific macronutrient make them obese? Or was it really something else? And there are two possibilities. The Committee wanted me to address the issue of satiety. One theory is that liquid sugars fail to promote satiety. My theory is more economic and more addressed in the next slide.

Take a look at this. This is in the paper that was circulated in the

epidemiologic reviews. Notice that the foods or the beverages on the top have become in the popular mind associated with obesity. Cola, sweetened drinks, calorics of drinks, and so on.

The beverages on the bottom, the 100 percent fruit juices, the freshly squeezed fruit juices have been associated with good health. And in some cases, Slimfast -- this is the original Slimfast formula and the current one, they have been associated with weight loss.

The eye-opening thing is that the amount of sugar is exactly the same. The price of sugar isn't. The economic access isn't. The amount of sugar is exactly the same.

So my thought is to not forget the issues of economics, the price of various foods, the limitations of who buys what foods and beverages and why, and what the combination of those factors has on their

health.

So let me just digress here for a minute to answer specifically the question on satiety because the alternative mechanism suggested by a number of people has been that liquid beverages promote excess calorie intake because they have no satiating power. And the human body is incapable of proceeding liquid calories.

So here, all of us who work in this field use the same type of a research design. This is the well-known preload study design. What generally happens is that subjects -- these are experimental studies done in the laboratory -- come into the laboratory, consume a solid or a liquid preload. And then they are given a meal immediately afterwards or maybe two hours later.

The size of the meal presented immediately afterwards is a measure of satiation. The size of the meal presented two

or three hours later is a measure of satiety. In rare cases, subjects go home and record what else they ate during the rest of the day.

And if we're looking at satiety, we're also measuring appetitive behavior, in other words hunger and fullness and these are to eat and thirst at 20-minute intervals until the next meal.

Now I think it is probably fair to say that the issue is unresolved. Studies conducted by Harry Kissileff at Columbia showed about 20 years ago that soups, liquids, were more satiating than solids.

Sometimes I kind of feel those studies were underappreciated and not sufficiently credited at the time. They are classic studies on satiety and how to measure satiety.

Then about 15 years later, there came out reports that solids, jelly beans, were more satiating that sugared liquids cola so that complete compensation was observed

following ingestion of jelly beans and no compensation whatever was observed after drinking soda.

Since that time, this same lab, the Dr. Mattes' Lab at Purdue, came out with some other studies on watermelon juice versus solid watermelon, solid apples versus apple juice. And the results were somewhat inconclusive.

In some cases there was an effect on intake but no effect on hunger rating. In other cases, there was an effect on hunger rating and no effect on intake. And then the difference between the solids and the liquids was no longer seemingly zero versus 100 percent. It was more like six versus 24 percent compensation, which is really not the same thing.

So I just want to show you very briefly two of our own studies where we compared cola and cookies. The thing to notice here is that calories are exactly the

same -- 300 calories. Volume is vastly different -- 87 grams, 700 milliliters, mostly sugar. The cookies were fat free so there is no fat. Small amounts of fiber and protein over here but nothing very much.

And then we'll look at hunger, satiety, and thirst profiles. And an exceptional finding here, cola did suppress thirst, cookies did not.

But this just goes to show that the scales worked. Subjects were correctly recording their thirst.

And so it gives us confidence that when we come to fullness and hunger, the same subjects, the same condition, the same scales, are telling us correctly that there was absolutely no difference in satiety between the liquid cola and the solid cookies. Both spoiled appetite if given just before lunch.

The next study we did on this topic compared cola, juice, and milk. The advantage here is that all those beverages

have the same energy density and provide the same number of calories per 100 grams. We usually give a lunch to our subjects.

And let me just show you here, the bottom line is there was no difference whatsoever between the three caloric beverages. Soda, juice, and milk, one percent milk, suppressed hunger and promoted fullness to the exact same extent.

But, of course, notice that subjects were sensitive to the calories in caloric liquids as opposed to just plain sparkling water with no calories. So the human body's desire to eat is actually sensitive to calories provided in solid or in liquid form.

We have now found similar results with liquid yogurts which contain more protein and there may be a higher satiating impact of yogurts. Our subjects are clearly capable of perceiving the calories in yogurt.

But -- and this is where more

research does need to be done -- none of those beverages led to any suppression at lunch. Our subjects came in, ate as they always do. So that at the end of the day, a caloric beverage plus lunch led to more total calories than lunch and plain water.

But there was no difference between the different kinds of beverages. And no difference between the cola, the orange juice, and the milk.

So let me now move on to this other issue, trying to bring back the economics, the macronutrients, and the food choices together in a kind of cohesive way and in a way that may be useful to you.

And here I want to say -- take a step back and say well, if we accept that there is this confound between the consumption of cheap macronutrients, inexpensive macronutrients, added sugar and added fat, poverty, and ill health, will limiting access to those, by itself, automatically lead to

healthier diets?

Or should we take a more direct approach and try instead to identify foods that are nutrient dense, affordable, accessible, and let's not forget appealing? So do we approach things by removing and limiting? Or do we approach our task by pointing to appropriate options?

And so here I have some recent data which is about to be submitted for publication from Victor Fulgoni, my colleague who has been working on looking at the quality of diet of participants in the National Health and Nutrition Examination Survey from two standpoints.

What we did here was to create an avoidance index based on the diet content of added fat -- no, of added sugar, saturated fat, and sodium. We called it an index or a score based on nutrients to limit. And then we used the nutrient density approach which was more mixed. We're using nutrients to

encourage and nutrients to limit, both.

So what I want to show you here is the type of diets that -- I want to show you how the two types of scores discriminate between the quality of the diets of participants in the NHANES study.

We calculated mean scores for each person and the participants were split into five equal groups based on their scores. So here let me just take you through the first slide.

This score is based on avoidance. It does have the added sugar and the saturated fat and sodium.

So the bottom quintile, these are the people who had least added sugar, least saturated fat, and least sodium in their diet. And these are people who have the most. And this is the score based on nutrient density of foods, which includes nutrients to encourage and nutrients to limit.

So a score which is low in sugar,

low in saturated fat, is higher in vitamin C intakes but not by much, which means that limiting problematic nutrients does not, by default, necessarily lead to healthier diets.

On the other hand, the other approach does reliably discriminate between diets which are low in vitamin C and those that are high in vitamin C.

And here we have the same picture for vitamin A. Again, better discrimination in terms of diet quality and adherence to dietary guidelines. We see the same thing for calcium intakes, the better step-wise approach, again reflecting better compliance with dietary guidelines and higher diet quality.

The same thing appears for food groups. Notice again that diets which are lowest in saturated fat and lowest in added sugar are not necessarily that much higher in vegetables. This score does a better job.

And then here we have fruit

consumption. Those scores do a nice job. And what's interesting here, moving past no consumption is that the total energy consumption is actually lower for the most nutrient-dense diets.

So this is interesting because that confirms the French data and it also confirms the data from Seattle and from California. The more nutrient dense a diet is actually the less you eat.

So let me just kind of start wrapping here. Going here from energy density to nutrient density, we can focus our dietary guidelines and dietary advice on nutrient-dense foods.

Nutrient density provides a better approximation of diet quality and extra calories that people consume than, in fact, scores or indices or advice based on saturated fat, sugar, and salt. The avoidance approach has been telling people what not to eat.

What I'm suggesting is that we

rephrase our approach and actually focus on constructing affordable, healthier diets. We cannot assume that limiting access to any one nutrient, complicated as it is by incomes, cost, poverty, and so on, will result in healthier diets.

What we need to do is to show the public the way to identify affordable, accessible, nutrient-rich foods. So, yes, going back to my initial fundamental question, yes, it is possible to improve diet quality while maintaining or reducing diet costs but only if we help the public identify affordable, accessible, appealing foods within each food group. And also tell them what to do with it.

I cannot overemphasize the importance of nutrition education and cooking skills. To some extent, it does come down to access, money, knowledge, and time.

And limiting low-cost foods may not necessarily give us the answer that we

seek. Rather promoting affordable choices is where we want to go.

So thank you for your attention. I'll be very happy to answer the Committee's questions.

CHAIR VAN HORN: Thank you very much for that excellent presentation. Thank you very much. This is Linda Van Horn speaking.

We have about ten minutes. If it is all right, we'll just open the floor to questions from the Committee members.

Mim, you look like you have a question.

MEMBER NELSON: This is Mim Nelson. Thanks, Adam, very much.

I guess two questions. First is I'm thinking of, you know, your graph with the cost per 1,000 calories. And that, you know, green leafy vegetables get a really bad score there.

But is that the -- I'm not

questioning -- I think that -- I completely buy into your argument. But when we think of something like green, leafy vegetables, we may not want to be eating a thousand calories of them. That we're only going to get 100 calories of them or 50. That, you know, the cost of the 50 calories of a green, leafy vegetable is actually not that -- maybe that expensive.

So is that something that should enter --

DR. DREWNOWSKI: Yes.

MEMBER NELSON: -- that's sort of the first --

DR. DREWNOWSKI: Of course. You are a step ahead of me because we're now joining the nutrient composition data and the food price data to actual diets of participants in the National Health and Nutrition Examination Survey.

MEMBER NELSON: And then you can look more at that.

DR. DREWNOWSKI: Then we can look at --

MEMBER NELSON: Got it. Right.

DR. DREWNOWSKI: Exactly. The diets with higher consumption of different types of vegetables and fruit and look specifically at their costs.

MEMBER NELSON: Right.

DR. DREWNOWSKI: We're in the process of doing that. And I believe USDA is also in the process of joining those two datasets together for similar type research.

MEMBER NELSON: Okay. So -- thanks, that's great.

The next one is more a sort of -- I don't know -- we've been talking a lot in our committee about the effect of the environment in its fullest sort of range.

And thinking about the data in New York that you presented and with sodas -- and I'm not saying I'm an advocate of sodas necessarily but is it -- how -- if there are

so many factors that go into what foods are in those environments that are beyond sort of the personal choice of, you know, I want a soda versus I want something else.

And so how influential is poverty or low income versus literally, you know, the schools are different in that part because, you know, the parents have advocated to get the soda machines out of the other schools. So availability becomes an issue.

And so is it that simplistic to think of it from an economic point of view versus there are so many other factors of what foods are in those neighborhoods?

DR. DREWNOWSKI: That's an excellent question. It's not simplistic at all. It is very, very complex.

Environment has much to do with it for a number of reasons from the purchasing power of the neighborhood to the type of foods which are stocked in a given neighborhood, to access and transportation, to the quality of

schools, and so on.

And this is for this reason that our Center for Public Health and Nutrition in Seattle is very closely working with urban planners, urban designers, economists, transportation specialists who have taken things out of nutrition and epidemiology, really moving into public health and policy.

But what you are really fundamentally saying is that these choices are beyond any individual control.

MEMBER NELSON: Right. It's not about personal choice.

DR. DREWNOWSKI: It's not about personal choice.

MEMBER NELSON: Right.

DR. DREWNOWSKI: We're completely together on that. And I would actually go further and say to some extent, some segments of our society actually have no choice or very limited choice. And what can we do to make sure that they do, indeed, have access to --

MEMBER NELSON: Right.

DR. DREWNOWSKI: -- nutrient-rich foods. How can we do that? Because merely suggesting‘‘have leafy greens’’ may not do it.

MEMBER NELSON: Right.

DR. DREWNOWSKI: We need to be much more subtle and nuanced about that and say this is the way really to go step by step, taking into account preferences, culture, access, cost, transportation. All of those things are hugely important.

MEMBER NELSON: So it may be that the cost issue is more related to just the fact that they live in those environments versus that they have limited income themselves? I mean if they had limited income and they lived down, you know, in the 50s midtown, maybe the -- if they, for some --

DR. DREWNOWSKI: Did you say that people with limited incomes who live on Park Avenue --

MEMBER NELSON: No, but I'm just

saying that -- I mean I'm using a hypothetical example but if that person with limited income actually lived in a different neighborhood, their food intake might be quite different.

DR. DREWNOWSKI: They would have access to better foods, which --

MEMBER NELSON: Yes.

DR. DREWNOWSKI: -- means they would have physical access in --

MEMBER NELSON: Yes.

DR. DREWNOWSKI: -- terms of proximity. What we're doing right now in Seattle is trying to distinguish between physical access and economic access --

MEMBER NELSON: Yes.

DR. DREWNOWSKI: -- because you may be living next door to Whole Foods --

MEMBER NELSON: Right.

DR. DREWNOWSKI: -- or to another --

MEMBER NELSON: Yes.

DR. DREWNOWSKI: -- excellent

store but it doesn't really help you if you can't afford to walk through the door. And many people can, some people cannot. Again, what to do.

So it is a question of differential access. I agree with that. I think it is an issue for agricultural economists and the issue of what food supply system --

MEMBER NELSON: Yes.

DR. DREWNOWSKI: -- to assure access to healthy foods.

MEMBER NELSON: Right.

DR. DREWNOWSKI: I think it is a very important issue.

CHAIR VAN HORN: Thank you.

I think Larry has a question. And then Eric.

MEMBER APPEL: Yes, this is Larry Appel. Great presentation.

I want to follow up on that access issue. Janet King, who led the Committee five

years ago, commented that, you know, they set up, you know, farmers markets in Berkeley, you know. And so there was access. But there was very limited uptake.

I live or I work across the street from a market that has the best food in the world as well as the worst food in the world and so there is access. But I see very stark differentials.

So I'd like to have you comment more about this access issue because I actually think that that might be perhaps overblown as a solution to this problem.

DR. DREWNOWSKI: Now thank you for the question. My specific bias here is that I believe in assuring economic access. I think we've all talked about physical access and proximity. Physical proximity to either fast foods or supermarkets will determine your health.

I really don't think so. I really think that economic access and being able to

walk through the door really is what matters. I really do think that in Seattle, for example, we do not have food deserts. And there are supermarkets serving both low income groups and upper income groups.

And they buy different foods just like you say, because they have access to different -- it is a differential economic access.

But let me again emphasize the notion of knowledge, money, and time. My belief is that you can eat well if you have some combination of knowledge, money, and time.

If you have knowledge and time, you can do with less money. So nutrition education and cooking skills will get you by. If you have time and money, you have no problem.

But a number of people in our society are zero for three. And that's a problem. What can we do? And how can we then

make sure that they do not fall outside of our recommendations and guidelines. We want to include everybody. How do we do that?

So knowledge, money, and time. And dietary guidelines do provide the knowledge, the information. They don't provide the money. But that can be taken care of through other ways.

CHAIR VAN HORN: Eric, did you have a question?

MEMBER RIMM: Yes, this is Eric Rimm.

I was going to add something very similar to Larry because I thought I had heard anecdotally or seen pilot studies where they tried to make fruits and vegetables essentially free through a food stamp program.

DR. DREWNOWSKI: Yes.

MEMBER RIMM: And people still didn't access them. And it's sort of what Larry is saying. And I guess it ties into what I thought you were implying initially is

that people buy soda because they need cheap calories. Or soda was your example. But I think it may be a lot more than that.

I mean you started to say that. But I'm hoping we don't walk away from here saying the only reason people buy soda is because they have to and they need cheap calories. It seems like it is much --

DR. DREWNOWSKI: Well --

MEMBER RIMM: -- much more complicated than that.

DR. DREWNOWSKI: Of course.

MEMBER RIMM: And if you give people free spinach and you give people -- even if you may teach them how to use it or give them food stamps or access to it, that there still is a differentiation of what people desire based on culture or based on access to television, based on all sorts of other cultural exposures.

DR. DREWNOWSKI: There are, of course, issues of food preference and taste.

And let's face it, some of the energy-dense foods do taste good. I can't deny that. Yes, they do.

And I want to say that the USDA pilot program for schools providing free vegetables and fruit was actually, by all accounts, a great success at least in the state of Washington.

And now the new WIC program is allowing certain amount of fresh vegetables and fruit as part of the WIC package. And we'll see what success that has. So yes, there are programs. And I wouldn't be pessimistic. They do have some degree of success.

But in some cases, it really is the knowledge and cooking skills. People get their kale but they don't necessarily know what to do with it. And other foods become cheaper, tastier, more available.

MEMBER RIMM: Are those data published yet? The success of some of those

programs?

DR. DREWNOWSKI: I have not seen those. I have seen one report from USDA about this topic. I think it is time to publish those. The evaluations are very important.

MEMBER RIMM: I think that would be very important.

CHAIR VAN HORN: Thank you so much.

We're going to need to move on to our next speaker.

DR. DREWNOWSKI: Thank you.

CHAIR VAN HORN: But that was an excellent presentation. And so that we don't burst the eardrums of people listening in, we will not applaud. But please accept our gratitude.

It's my pleasure to introduce our next speaker, Dr. Frank Sacks. Dr. Sacks is Professor or Cardiovascular Disease Prevention in the Department of Nutrition at Harvard School of Public Health.

He is a Senior Attending Physician at Brigham and Women's Hospital and Professor of Medicine at Harvard Medical School.

Dr. Sacks is involved in research and public policy in nutrition, cholesterol disorders, hypertension, and cardiovascular disease.

He is the Chair of two NHLBI-sponsored trials, the POUNDS LOST trial that we'll hear about today and the OmniCarb Trial.

He is a member of the new NHLBI Clinical Guidelines for Cardiovascular Risk Reduction first expert panel.

And it is my pleasure to introduce Dr. Frank Sacks who will tell us more about POUNDS LOST.

DR. SACKS: Okay. Thank you, Linda.

I appreciate the opportunity to be here. And to share with you some new findings on dietary macronutrients and weight loss, and to just cover some previous trials, an

overview of the state of the macronutrients weight loss topic, discuss the behavioral components of success in weight loss.

And then I was asked, at the end to discuss the issue of sodium and particularly the dose effect of sodium on blood pressure and issues relating to what the appropriate target would be for sodium intake.

So I am going to go through some of these slides very fast. So I guess I'm told that we have an absolute limit on time. So excuse me for some of that.

All right. So first I'm going to discuss low-fat diets, the background to that. Now the longtime paradigm is that low fat, high carbohydrate diets will promote weight loss or prevent weight gain for a variety of metabolic reasons.

Now that paradigm has been called into question but I do think there is some validity to it. For example, vegetarians eat low fat but lots of -- but the carbohydrate-

rich foods are full of vegetables, whole grains, and so forth.

And they are much -- they lose weight. And there is no question this kind of diet can promote weight loss even if you aren't even trying to lose weight because this population was not trying to lose weight. They just lost weight. And so that paradigm can work in certain, you know, with a certain type of high carbohydrate, low fat diet.

The same sort of thing in coronary patients in San Francisco, remarkable sustained weight loss, 22-pound difference against the control group. Again, very low fat, high carbohydrate vegetarian diet full of foods that I suppose are very nutrient-rich but also very rich in fiber.

And the carbohydrate is low glycemic index for a lot of the carbohydrate-rich foods. So in certain selected populations, I think this paradigm works very well.

Now in the larger population or when you just select from the general population, it doesn't necessarily work so well. So here is also a strict vegetarian, vegan study, by Neal Bernand in that group.

And they randomized patients to a vegan group or a standard low fat group for weight loss, gave some of them support, a lot of sustained support and contact, encouraged them to be on the diet, and the vegan group lost a little more weight than the standard low fat group did, but only if they were given sustained support.

So I just want to make that point that certainly in these researchers' hands, the vegan group did a bit better than the standard low fat group. However, the second dimension of these results are that without any support, neither group did well at all. So that support is extremely important.

So now let's move to the opposite type of diet, a low carbohydrate diet. And

we've had a lot of different studies. And you can see a pattern where in the first few months, the low carb -- Atkins -- this is an Atkins diet, the low carb Atkins diet promotes weight loss but then that weight is regained faster than a conventional low fat diet. And at the end, there was no significant difference at the 12-month point.

Okay, another study, similar, rapid weight gain of the Atkins diet, regain from six to 12 months such that at the end, there was no difference in weight loss between the Atkins and the conventional diet.

In fact, if you carry out those trajectories, you would imagine that in another few months there would be really no difference between groups. And they might even cross over and give an opposite result.

So very important to continue these studies until we can get some sense of the long-term results.

Now here, comparison of four

diets. The Atkins diet is the bottom line compared to three other types of diets, including its opposite diet, the Ornish high carbohydrate, low fat diet. Again, as you see, there's rapid weight loss in the Atkins diet. More regain.

And at the end of that study, there was no significant difference, according to the author's original protocol, between these different diets.

Okay, so now how about yet another type of diet, a Mediterranean high fat diet. All right. This is a study that I did with Kathy McManus. And wanted to see whether people could lose weight on a high fat Mediterranean-style diet. And indeed they did.

Compared to a low fat diet, weight loss was the same at six months. Pretty much the same at 12 months. But at 18 months, the Mediterranean group sustained the weight loss whereas the other group regained a lot of the

weight.

Now also adherence at 18 months was much better and participation was much better in the Mediterranean group. And here's a result that other weight loss trials have found that it is good to stay in these programs.

The drop outs, regardless of whether they were on low fat or Mediterranean, had a gain of nine pounds over 18 months. Those staying in the program, regardless of whether it was low fat or Mediterranean, lost 11 pounds. So, again, participation seems to be very, very important in these studies.

Very recently yet another study compared three diets. The lower curve here is the Atkins diet. And, again, just like the previous studies, you see rapid weight gain at about six months. But then rapid regain.

So that at the end of the study, at two years, you see an absolutely similar weight loss in two very different diets, the

Atkins diet and the Mediterranean diet, somewhat superior to a low fat diet. There were more dropouts in the Atkins diet so that is an interesting result.

Okay, so how do we interpret this big collection of findings? Well, one, the certainly divergent results that each diet type in the hands of some investigators showed the superiority of other types.

There is no obvious pattern of results across this collection of studies. And with the Atkins diet, superiority in the first few months was often not sustained by one to two years. In fact, in no study was there truly a statistically significant difference between Atkins and the comparator studies that went out to a year.

All right. So what were some limitations in some of these studies? Here is a whole host of limitations that were discussed and written about by colleagues. But I'll say I think what is very important to

say I think lack of information on adherence is one of the most important problems in some of these studies. If you don't know what their participants were eating, you really don't know if the recommended diet did anything. Or whether it was some other aspect of the program.

A large percentage of dropouts, some had 50 percent dropouts. So it's no longer a valid randomized trial if you lose half the participants. It becomes something else, some other kind of research design like observational.

And, very important: novelty of one of the diets, media attention. It is marketing. There are certain biases that can enter into a trial that may not be so well intended and may not be perceived. And I've had that happen with a study I did on the Mediterranean diet some time ago. There were subtle biases that fit in so that I do think that regardless of a researcher's good

intentions, sometimes equipoise is not achieved in weight loss trials. And sometimes that leads to a result that's, you know, in line with the researchers' hypotheses, but it may not be a generalized result.

All of these considerations lead us to propose to the National Heart, Lung, and Blood Institution a trial that we call the POUNDS LOST trial. And that was done at Harvard and also done at Pennington. And George Bray was my partner in doing this study along with a very, very terrific group of researchers at both institutions.

So we randomized 811 people to four diets. So I'd like to describe this trial in some detail and give you a sense of, I think, where we're at with the macronutrient hypothesis and what future directions might be.

So two of these diets were low in fat, 20 percent, and two of the diets were high in fat, 40 percent. So there were 400

people in low fat and 400 in high fat.

Now within those categories of fat, half of them were taught a diet that is 15 percent protein. Half of them, 25 percent protein. And then if you look at the carbohydrate content, embedded in this design is a dose response study of carbohydrates from 65 percent down to 35 percent of calories.

Now in designing these diets, we designed them with similar foods but in different proportions. And no diet was a control diet. No diet was considered a bad diet. All diets were done -- were composed with healthful guidelines such as those of the American Heart Association's guidelines.

So if we look at the comparisons then, this is a factorial study, about 400 per group, dietary fat level, 20 versus 40, dietary protein 15 versus 25. Carbohydrate, 65 down to 35 with a linear dose effect hypothesized.

All right. Now I'd like to

describe in some detail what the program is for weight loss -- the macronutrient targets with a paramount teaching objective. We wanted participants to hit the macronutrient targets.

So we specified menus for two week cycles for each group. They knew they were going to do this. We showed them examples coming in.

We gave them motivational, psychological questionnaires, and so forth -- really wanted people who were fully informed about what they were getting into, knew what it was about, and were motivated. And we had behavioral psychologists like Don Williamson devise that.

Participants were taught to follow meal plans exactly. Energy reduction bills 750 kilocals, doubly-labeled water showed that it was about 300 to 400 calorie reduction achieved at six months.

Okay, physical activity goal, 90

minutes per week, same technique and intensity was used in all groups. And this is what we did -- a lot -- to keep these people in.

We had group sessions three out of every four weeks for six months then two out of four weeks for the remainder. Individual counseling sessions every eight weeks for two years. The Pennington people devised a web-based system for participants to record diet and exercise and obtain rapid feedback daily about whether they reached their macronutrient or calorie goals.

Contact among the groups were avoided. And it is very important to say that the investigators taught the staff and the staff taught the participants that each diet had an equal chance of success in line with divergent results of previous studies that I have summarized. And the goal was trial-wide equipoise.

And I think we did achieve that in a sense. The investigators had different

opinions about which diet would work best. And we really were committed to this concept of equipoise.

The baseline characteristics then of the study, 800 were randomized, 645 completed the study; that is, provided a body weight at the end, 80 percent. And that's truly the best we could do.

It is very difficult to bring patients back for weight measurements when they were unhappy with their weight loss. That's basically the reason. It's a very different kind of study than other kinds of nutritional studies.

We had 64 percent women and 27 were in the overweight category, 73 percent in the obese category.

Okay, so here was the primary trial outcomes. So pre-specified primary outcome, change in weight from time zero to two years, all randomized participants, the 20 percent that did not come in for a body weight

measurement, we imputed their data using Tom Wadden's approach.

So, this is it. There's two years. Absolutely no difference based on protein, fat, or carbohydrate.

Now the completers, the 80 percent, showed the same type of result. The average weight loss was about four kilograms at two years across all of the groups and diet comparisons.

Okay, now this graph shows the six, 12, 18, and 24 month results for each of the four dietary types. So you can see, for example, at the six-month point, you see four symbols. And these represent the four diets.

You really don't need to know which is which because it is quite obvious that there's absolutely no difference in weight loss. The average weight loss is about six kilograms at six months.

The adherence was very good at six months. There were 93 percent that came back

for measurements at six months. So we feel this is a very solid result for a six-month time point.

And then there was -- that was sustained to 12 months, so we didn't see any regain from six to 12 months like other studies generally did, I think because we had a sustained program. But then they had some regain from 12 to 24 months similar in all the groups.

These are the same data for completers. Again, very clearly at six months no difference, and no significant differences here whatsoever.

Now waist circumference, we know where fat is is a relevant factor for metabolic abnormalities. So waist circumference was our secondary outcome. You can see weight loss -- I mean loss of waist circumference at six months, absolutely identical across all four groups.

Reduction in waist line continued

to 12 months, no difference among groups. And there was a small amount of regain of waist circumference -- less that regain of total body weight.

We've done some body composition analyses. It looks like abdominal fat did not return quite as much as fat in other locations. That's very interesting. We'll have a report on that sometime in the future.

Now cut points for weight loss, whether it is a five percent weight loss or a ten percent or greater or 20 kilograms or greater, you can see there is really no difference at all across any of these groups.

Very interestingly, even though on average most patients gained weight after six months or after a year, about a quarter of the participants continued to lose weight after six months.

That was a very successful group -- lost 9.3 kilograms with no difference across the diets. So there are people who will

continue to lose weight and get a very, very good result at two years. We shouldn't give up in that regard.

There are a number of theories and evidence about different macronutrients and satiety and satisfaction and food craving and whatnot and our behavioral psychologists at Pennington are experts in this, they included a number of standard questionnaires in this study relating to food craving and dietary restraint and so forth.

There were absolutely no differences by diet group at six months or at 24 months, to their great surprise. You know whatever that data early on about satiety, very good experiments, they just didn't seem to carry through in this study to the six month point or to the two year point.

Now just speaking about adherence, the Danziger study compared these four diets from Atkins out to Ornish and this is self-reported adherence levels. And you see they

started fairly high but by six months, self-reported adherence decreased dramatically.

And it was the same in all four of the groups -- no particular diet type promoted adherence in this particular population-based study. And that's what we found in our own study as well.

This is what really did have a -- seemed to have a lot to do with the weight loss result and that's group session attendance. And here on the X axis, we have number of sessions attended, and the Y axis, weight change in kilograms at two years. And you can see participants, on average, lost 0.2 kilograms per session attended over two years.

That's the -- and -- but you notice that there is a huge difference across -- there's a huge difference among people. We had people who attended sessions and lost 30 kilograms. We had patients who attended most of the sessions and actually gained a few kilograms.

Then we had patients who came to the first couple of sessions and then left. And never came back except at two years. Most of those patients didn't do so well. But a few of them did extremely well. Just didn't need us. So I'm very interested in these kinds of individual variables -- differences in participation and weight loss.

Now what I just described to you for the total group is exactly the same in all four of the diet groups. Other studies have showed that sustained interaction with something -- with the research team had a lot to do with weight loss.

This looked at Weight Watchers. It's certainly better than two dietitian consultations to have a sustained program. Internet behavioral e-counseling also is successful. The Premier study follow-up shows, again, it was very important to have sustained interaction.

Now I'd like to mention adherence

to the macronutrient goals because we found that over time, patients that are participants tended to converge on their pre -- their pre-study macronutrient goals or macronutrient intakes.

For example, the low fat diet that had its target of 65 percent -- and that's what participants did very early on -- but by six months, their carb intake decreased closer to what they usually ate. And the low carb, 35 percent, increased as well. Kind of they converged toward what their population average is. And by two years, convergence on it occurred further.

So it seems to me that ambitious macronutrient goals in a population-based study are not achievable even though weight loss is achievable. And they will -- participants will gravitate to their usual intake over time.

Even at two years, there was a difference here. And this is not unique to

our study. In all previous studies, this kind of phenomenon has been found.

Okay, finally with regard to the study, there were some dietary differences on risk factors. For example, the low fat diets had -- their LDL levels went down more -- not that much -- six percent compared to one percent in the higher fat group.

But in the higher carb, low fat groups, insulin did not go down as much, HDL did not go up as much. So if you look at this total risk factor picture, you'd say well, maybe it is a tie between everything. But in people who have dyslipidemia, may have some insulin resistance, perhaps the highest carb diet is not the best choice even though it did just as well for weight loss.

So in summary then, reduced calorie diets achieve similar weight loss after two years regardless of macronutrient emphasis, that satisfaction, satiety, and cravings were similar, average weight loss

nine pounds by intention to treat, and two inches of waist circumference. And overall, all groups had favorable changes in risk factors.

So how do we translate the findings? Well, successful diets for weight loss can emphasize a large range of macronutrient intakes. And these diets are made with foods that reduce risk of cardiovascular disease. Risk factors improved. Low fat may not be the best for metabolic syndrome or diabetes.

Ongoing counseling sessions, very important to achieve and maintain weight loss no matter what group they are in and that successful diets for weight loss, I think, can be tailored to individual patient's personal and cultural preferences to achieve long-term success.

And maybe that's really the key to go after in the future rather than pushing people to eat a particular amount of carb or

protein or whatnot.

So, thank you for that, for paying attention to that. And now I'm going to briefly go over some aspects of the sodium hypertension thing from mostly data from the DASH sodium study.

Okay, so prior to DASH sodium, McGregor did a double blind sodium study. It's a beautiful study in moderate hypertensives. And what he showed is that going from 200 millimoles to 100 millimoles reduced blood pressure the same as going from 100 to 50. And that really suggested a lot of linear effect or an intensification on a linear scale of the sodium-blood pressure relation.

So in the DASH sodium study, we wanted to do this on a much larger scale, more population applicable. We then looked at 150 millimole to 100 to 50 or 3.5 of sodium, 2.3 grams or 1.2 grams of sodium. So those were the ranges that we tested in 412 people.

And here is the effect of sodium reduction in the control diet that is basically a typical U.S. diet. And you see this intensification of blood pressure reduction as sodium is reduced down to 50 or 60 millimoles.

That also happened in the DASH diet to somewhat of a lesser extent but sodium reduction did effect the DASH diet.

Now here's a really clinically important population, you know these are patients over the age of 45 and mildly hypertensive. And you see a real accentuation of blood pressure lowering at low sodium.

So at the top bar, it's the sodium reduction in the control diet. It goes down 2.1 -- blood pressure reduction, 2.1 from high to medium and six from medium to low. Low being proximately a one and a half gram goal that you're looking at. And in the DASH diet, same sort of thing. An accentuation of blood pressure reduction when you go from medium to

low down to around 1500.

Okay, now let's look at some subgroups here. So this is African-Americans, hypertensive and normotensive. And non-African-Americans. And this is the sodium change from 150 millimoles to 100. That's the upper row. And the middle row from 100 to 50.

And here you can see that 50-millimole difference, from 100 to 50, it produces at least double the blood pressure reduction in African-American hypertensives and normotensives, non-African-American hypertensives and about the same in non-African-American normotensives. So a lot of rationale for going down to the lower level or at least trying to.

Okay, now there's an age interaction also. There's a big effect of sodium reduction in middle age and beyond. So, okay, the red bars are blood pressure reductions of sodium reduction with the control diet. Okay, this is 23 to 41, middle

age, middle age, older.

You see blood pressure -- sodium is reducing blood pressure in the lower red bars more and more as people get older. And with the DASH diet, that would be in the orange bars, you see the same sort of thing. You see an accentuation of the effect in patients, people who are in their 40s and 50s and beyond.

So how do I sum this up? Well, certainly evidence from the DASH sodium study agrees with other evidence that there is an accentuation of blood pressure lowering in the 1,500 milligram to 2,500 milligram range compared to 2,500 to 3,000 or 3,500.

Most population groups are responsive. It is about 70 percent of the U.S. population would be in this responsive group; that is over the age of 45, anybody, African-American, any age, mild hypertensives, any age, and this whole age thing, well, you know, people under the age of 40 or 45

hopefully will at some point become more than the age of 40 or 45 and become responsive to sodium. So there is a potential for sodium down to 1,500 milligrams to affect basically everybody or everybody's potential.

So thank you very much for your attention. I'd be happy to take questions.

CHAIR VAN HORN: Thank you very much. We have about ten minutes. I'm going to take executive privilege and ask just one quick question in terms of what you've presented in both cases. Certainly the compelling data recognizing that 70 percent of the population could be responsive, are there any downsides that you can think of for reducing the recommended level to somewhere around 1,500 milligrams?

DR. SACKS: I am not aware of any downside. There are long-term studies, long-term follow-up of sodium reduction trials showing benefit to cardiovascular events after they showed benefit to blood pressure without

any adverse effects identified.

So, no -- and then, of course, there is a global natural experiment going on because different locales around the world eat different sodium levels. So nothing bad has come up in that regard.

CHAIR VAN HORN: The other quick question, then we'll open up to everyone else, relates to the POUNDS LOST study and everything that you so eloquently described as far as choosing -- making it possible for people to choose their approach. And with ongoing support, which seems to be the key factor in terms of both attendance at sessions and/or ongoing tailored feedback to people who manage to make these kinds of changes and sustain them long term, it would seem that that type of approach would, as long as calories are reduced, be appropriate in terms of helping people to make these energy reductions in terms of their dietary intake. Would you agree?

DR. SACKS: Yes, I think really the emphasis now should be on people finding their way to a healthy diet that is within guidelines for reduction of heart disease or diabetes that they can stick with and learn how to keep the calories down. And they need some type of support. Now, of course, we did it in a very expensive way, but there have to be ways devised that are going to do it cheaply.

CHAIR VAN HORN: Excellent.

The group? Eric?

MEMBER RIMM: This is Eric Rimm. If I could lead the witness a bit more, just -- you know, I think -- and it is not fair, Frank, you haven't -- I mean you talked about the Israeli study, but I wanted to dwell on your study and the Israeli study together because they were both, you know, probably the best, well done, long-term trials of diet composition and weight loss.

And if you look at the 2005

Dietary Guidelines that specifically say that fat intake should be between 20 and 35 percent of calories from fat. And since that time, now your study has published and the Israeli study has published, and both studies used intervention arms or experimental arms that use 40 percent of calories from fat. And both of those were successful in weight loss when there was support. So do you think there are still grounds to have a 20 to 35 percent of calories of fat range for the amount of fat that is consumed?

DR. SACKS: Well, personally, I think maybe we don't need any type of range, you know, for recommended fat intake or even macronutrient intake, that really we could work our recommendations based on foods. But specifically what you're saying, is there a problem with 40 percent fat? No, I don't think so. In fact, there are benefits for the risk factors if it is the right fat obviously. And that's the key. If you recommend high

fat, will people really eat the beneficial fats.

CHAIR VAN HORN: Tom?

MEMBER PEARSON: This is Tom Pearson. Thanks for that presentation, Frank.

I had a question about the physical activity part of the POUNDS LOST study. You had 90 minutes per week recommended. And I was just wondering the extent to which you saw compliance with that and if there was any specific interaction with compliance with exercise and the effectiveness of those four diet arms, which, of course, had different components, which may, in fact, have a little different responsiveness to physical activity.

DR. SACKS: Well, that is an interesting question. And we're actually looking into that kind of thing now. But I can just tell you that different adherence measures, for example group participation, individual participation, use of the computer

web-based thing, physical activity, they are all very inter-correlated. So I suppose that they all would be related to weight loss. But we're looking into that.

CHAIR VAN HORN: Cheryl?

MEMBER ACHTERBERG: Cheryl Achterberg. You intimated in your presentation that your patients tended to drift back to the dietary pattern that they had before the intervention. And I was just wondering how you might reconcile those data with immigration studies where people, in changing residencies, dramatically change their dietary patterns. So what do you do with that?

DR. SACKS: Well, I think -- okay, so maybe I overstated it. So they did -- they drifted toward their previous macronutrient intake. But they didn't go get to that point. So you might say there is partial movement toward the previous.

Now, you know, if they were

assigned, let's say, to high fat but they are used to eating a low fat diet, that's where they kind of drifted to. So that's -- you know, it just worked that way in any of the groups. Now that doesn't mean we don't know whether they ate the same foods because we recommended healthy foods on all the diets. But in terms of macronutrient intake, they drifted toward that because that was the focus of the study.

CHAIR VAN HORN: Larry?

MEMBER APPEL: Yes, thanks, Frank.

I have two questions, different fronts. You know, in some of the studies we've done we've calculated Framingham risk as an outcome variable. And I didn't see that in your paper. And I was wondering if it was done and if all four diets led to the same, you know, change in Framingham risk.

And the second question is distinct having to do with satiety. You mentioned you didn't see any changes in

ratings. And yet, you know, we did OmniHeart where we see very distinct, you know, changes in satiety. So I'm just wondering, you know, was there -- can you explain?

DR. SACKS: Okay. Well, let's see. Yes, Framingham risk, yes, we were thinking about doing that. The problem with Framingham risk is it doesn't -- you know, our outcome variable, body weight change, doesn't really figure into Framingham risk. So that's sort of a problem.

And it would deal with the cholesterol, the HDL, the blood pressure, and using those changes, the diets would probably do more or less the same. But it is a good thought.

And there are other risk -- there are other, for example, PROCAM has triglycerides in it and Reynolds has CRP. We're going to get CRP measurements. So we'll kind of wade into that.

And the second one was --

MEMBER APPEL: The satiety --

DR. SACKS: Oh, the satiety --

MEMBER APPEL: -- ratings where you didn't see a difference but other studies where you actually control -- you know, typically smaller study or controlled feeding studies do. So, you know, what is the explanation?

DR. SACKS: Well, I don't know, you know, if we had done satiety studies very early after a week or two weeks, we might have seen differences like these. But all I can say is they didn't carry through to six months.

And the difference between this study, say, and the OmniHeart study is OmniHeart we fed them to constant weight. So we had plenty of obese people who we didn't let lose weight. In this case, the whole emphasis was losing weight. And there wasn't any satiety difference at six months.

CHAIR VAN HORN: Rafael?

MEMBER PEREZ-ESCAMILLA: Yes, Rafael Perez-Escamilla. Consistent with your follow-up support data showing, you know, that it is important to support people in maintaining the benefit in weight reduction, you know we have found the same whether it is a breast-feeding promotion, whether it is Latinos improving their self-management of diabetes at home. And for low income people, it is very important to think about models based on peer counselors, people from the community that have successfully been able to deal with the problem to become part of the system.

Now the problem that we encounter is the reimbursement issue. Like who is going to pay for these. So the question is about cost effectiveness. And what would be your recommendations in terms of the type of cost effectiveness research that we should do to include these findings as part of a healthcare reform in the country?

DR. SACKS: Yes, I think that is a tough topic. But I think it is very, very important because our study and others say that really that is the key. I mean it is participation. It is counseling.

But now actually, I mean maybe one could just do that in peer groups or neighborhood groups or groups that people are just doing it on their own that they don't have to pay for anybody. Or maybe with the internet they could do it.

But I don't know. I think your idea of looking for models that could be done at very low cost or no cost maybe after, you know, the first couple sessions, may be the way to go. I think that's probably where the future is in the whole behavioral side of this.

CHAIR VAN HORN: I'd like to just go back to one issue related to your comment about it doesn't matter what fat level, only from the point of view of blood lipids and

concerns about risks for cardiovascular disease and juxtaposing what you were saying related to weight control and the fact that we do, of course, have a significant population at risk for cardiovascular disease. And we need to weigh and balance not only the total fat but the qualitative nature of the fat. I know from the Women's Health Initiative, for example, we discovered that a recommendation to lower total fat to 20 percent doesn't necessarily achieve the lipid lowering benefits unless there are qualitative changes in the type of fat.

And it would appear from the slide that you showed showing the differences in lipids and insulin, et cetera, that, indeed, you know, the group that had the lower total fat and presumably lower saturated fat would have lower LDL lowering. So I just wondered if you would like to make just a further comment related to that issue in addition to what you said about the weight control issue.

DR. SACKS: Oh, sure. Well, you know, taking up -- you know, in comparison with the OmniHeart study that Larry Appel mentioned earlier, so I mean OmniHeart study showed very clearly that unsaturated fat, you know, lowers LDL very nicely.

So let's, so in our higher fat group in our POUNDS LOST weight loss study, if they had really eaten unsaturated fat, then their LDLs would have gone down very well, just as much or better than the low fat group. So obviously they weren't quite doing that. I mean they were probably having a little more saturated fat than the low fat group. And that's why there was a 6 percent LDL differential between those groups.

So, you know, education on good fat/bad fat -- I mean we really -- we worked hard at it. And certainly there wasn't a 20 percent difference. But there was still a small difference. So still that's an issue that we have to work on.

MEMBER APPEL: This is Larry Appel. Frank, I didn't see actually what happened in terms of saturated fat by diet in your paper or your slides. So could -- you know, there is this sort of mantra and maybe it is knee jerk and wrong that if you reduce, you know, as total fat goes, so does saturated fat. Is that what you found?

I know you were trying to emphasize the, you know, the better fats. But in reality, were people, you know, was it accomplished? You know you could sustain a better fat profile even with higher -- even at of higher fat.

DR. SACKS: Well, you know, you got me on that. I just can't pull the numbers out of my head.

MEMBER APPEL: Okay.

DR. SACKS: But they're published actually in the article, the saturated fat content on the four different diets.

CHAIR VAN HORN: Thank you again

for an outstanding presentation. We really appreciate all of your excellent comments.

And at this time, the group will take a 15-minute break. And please return so that we can hear Dr. Crawford promptly at 3:20. Thank you.

(Whereupon, the above-entitled matter went off the record at 3:05 p.m. and resumed at 3:24 p.m.)

CHAIR VAN HORN: All right. Thank you for standing by. We are now ready to proceed with our next presenter, Dr. Patricia Crawford.

Dr. Crawford is Director of the Robert C. and Veronica Atkins Center for Weight and Health, an adjunct professor in the Department of Nutritional Sciences and Toxicology and the School of Public Health at the University of California at Berkeley.

Dr. Crawford served as the Chair of the Nutrition Subcommittee for all ten years of the NHLBI Growth and Health Study, an

epidemiologic study on the development of obesity and heart disease risk factors in African-American and white Girls.

Currently she is directing two studies evaluating changes in children's school lunch intake in the Berkeley School Lunch Initiative Project and the Kansas City Healthy Schools Partnerships Program. Further, she is leading studies evaluating the impact of legislation to improve the foods in California schools examining implementation of school wellness policies and evaluating the impact of large-scale community interventions to create healthy food and activity environments for children.

Thank you.

DR. CRAWFORD: Thank you, Linda.

And I'm truly honored to be here. And I applaud the Committee for your interest in hearing the voices from the community in your deliberations.

The Center's mission is to develop

the science-based solutions to pediatric overweight, particularly using the environment and policy solutions. And over the last ten years, we've conducted nearly 100 studies with hundreds of community partners.

So today, rather than talking about the findings from these studies, I'm actually going to talk about the community partners and their thoughts about the Dietary Guidelines, the pyramid, and the guidance that you all are providing. And these partners include people from cooperative extension, from WIC, teachers, school nutrition directors, advocates, food stamp folks, advocates, various coalition members and leaders, and groups throughout the community.

So I thought I'd throw this in to show you how we get information from our partners. We all go jogging on the California coast.

Okay, so I have four questions to answer today. And the first one is rather

elaborate. In what ways does my work suggest that the current nutrition guidelines are problematic when applied at the school or community level? In what ways are they effective? For example, how can school food service managers and other settings distinguish between foods that are the most healthy and those that are the least? How useful is the discretionary calorie allowance for the lay public and food service manager in planning amounts of various foods that should be consumed?

So that's where we're going to start. So in talking to those community members, the first thing that came out is that the current Dietary Guidelines are believed to be credible and they are current and they are comprehensive. And at many times in many circumstances, they are very clear. At other times, they are less clear.

And the community members that I spoke with wanted to be sure that you

understood that you are providing an invaluable resource for them. And their concerns really deal with the application and the transmission and the translation of this information.

And so I'm going to focus, for the rest of the talk, not on all of the wonderful things you are doing but on the concerns that they have to make them even more useful at the community level. So the first concern, and I'm going to list four now, the first is the lack of specificity. People want food-based specifics for the translation of nutrient-based guidelines. They want quantities, types, classifications. They want to know how they can meet the guidelines, not -- they understand what the guidelines are.

And a good example are fruits and vegetables. They said that they truly understand. So if you can model, you know, other guidelines based on that fruit and vegetable one, it would be very helpful to

them.

They said they understand consuming a sufficient amount of fruits and vegetables while staying within their energy needs, two cups of fruit, two-and-a-half cups of vegetables per day are recommended for this reference intake with higher and lower amounts, depending on the calorie levels, choose the variety from the five vegetable subgroups, all of that is very clear.

Then it falls apart with the other groups. And largely that is because of processing, how difficult that is. And I know you all know that better than anyone. But even in the example of the lean and low fat foods, when selecting and preparing meat, poultry, dry beans, and milk or milk products, make choices that are lean, low fat, or fat free, that sounds very clear. But the questions that were raised are well, you know, what about turkey hot dogs?

And what about bean? And, you

know, people where I work don't drink milk. So, I mean, should we really be using cheese often? And those low fat cheeses aren't, you know, aren't the ones that people eat. And so there's just all kinds of questions about how to get to that place. They don't -- they can't translate what they are supposed to do with that information.

So it's possible that as a result, the fruit and vegetable messages are more often transmitted and more often discussed. For example, in nutrition education, the primary topic in most of the nutrition education in schools is fruits and vegetables. So it is possible because of that clarity that that is one of the reasons. I'm sure it is not the only reason. But that is possibly one of them.

And another situation, I did many focus groups with WIC mothers a few years back and found that through hundreds of pages of transcripts, when they talked about healthy

foods, they talked about vegetables. And we know that the WIC messages cover all of the groups. But they truly understood that message.

And I don't know how much of that might be because of that specificity. Obviously there are other factors at work. But I think it behooves us that those messages are getting out, you know, strong to the community. And we see it in different ways.

So another concern is the complexity of the messages. We hear that especially with nutrition education they cannot seem to figure out how to take the Guidelines or the pyramid into nutrition education. It's complicated. You need a computer for the pyramid. Five-a-day was just simple and useful.

But the last one I think is particularly interesting. A national set of benchmarks and standards would be helpful in developing nutrition curriculum. And I'm

going to come back to that one again a little bit later.

But people are really calling for very concrete guidance. You know they don't want to be out developing their own curriculum. As much as we think they want to do it, they want to adapt. They want to take one, I mean they are busy doing what they do. And so the more guidance that we can provide for them on how to get from the guidelines down to nutrition education would really be helpful.

Another one, concepts regarding the Dietary Guidelines include too much focus on nutrients. So that one came out over and over again. We eat foods and you talk about nutrients. And clearly that's not completely fair because foods are a very big part of the Guidelines as well.

But take, for example, the effort required by school personnel to decide on and to monitor the competitive foods in California

schools after we passed two important pieces of legislation in 2005. Let me show you the two pieces of legislation.

The first is Senate Bill 12, which is for competitive foods. Snacks may have, according to our legislation, and this is K through 12 in California, no more than 35 percent calories from fat, 10 percent of its calories from saturated fat, 35 percent sugar by weight, 250 calories for a specific portion. So very clear. Right?

Now this is a brief summary of California Senate Bill 965. This is for competitive beverages. They were passed at the same time, K through 12. Beverages sold to students must be from the following list: fruit-based, vegetable-based drinks that are at least 50 percent fruit juice without added sweeteners, drinking water without added sweeteners, milk products, electrolyte replacement beverages with a cap on the amount of sweetening.

So completely different guidelines for these two pieces of legislation. One more related to the nutrients. One more related to the foods. And we're doing a study right now evaluating compliance with these two pieces of legislation. And these are very common foods and beverages that are sold in California schools as competitive foods.

And which do you think -- the beverages or the foods, when we've been out surveying, are the most compliant to that legislation? In 2007, we were supposed to have 50 percent of the beverages were supposed to be compliant to the legislation and 100 percent of the foods. When we went out, it was much more likely that the beverages would be compliant than the foods. Now there are a lot of reasons.

There are more foods than there are beverages, you know, more choices out there. But one of them could have been it is very simple to follow that legislation with

the beverage categories, and it is really hard to follow it with the food nutrient categories.

Now look at this list. These are some of the foods that we found when we were out surveying competitive foods in schools to see whether they were meeting the actual legislation. So can you guess which one of these, I mean you saw the criteria, might be compliant and which are not or what percentage of these might be compliant with California's legislation?

And remember that was the fat limits, that was the sugar limits. All of them might be compliant, yes. Well, in fact, it is even worse than that. Exactly half of them are adherent, the yellow ones are adherent and the red ones aren't.

And it behooves us to look and see -- I mean say you are a school food service director and you are out there and you have to decide between Nature Valley strawberry yogurt

granola bar and Nature Valley crunchy oats and honey granola bar. No way.

So they're out -- these are in the vending machines, they're in the school stores, they are all over the campus in high schools. And sometimes we have different groups that are responsible for different stores or different venues.

So this is really difficult for schools to get to the place -- and they are trying. I mean they really are out there working very hard to get there. So I think that it really helps us understand the kind of things that they are up against because the food supply is so complex now.

So also on too much focus on nutrients, I wanted to share with you a quote that I got from a school food service director who is a dietitian in one of our large school districts in California. She said, "As a food service director, we now serve foods that simply taste okay. It's low fat. It's high

fiber. It's low sugar. It's trans fat free with high nutritional value. It no longer resembles real food. It no longer tastes great or even good. We used to be able to make small, fresh, satisfying chocolate chip cookies. That has now been replaced by things like fun-shaped whole wheat chocolate flavored crackers."

"When food is not satisfying to one's palette, the consumer is left wanting. First we took out the fat, compensated with more sugar. People considered the result to be diet food and ate more resulting in an equal or greater caloric intake. Next we got excited about the sugars and made sugar the villain, then trans fats, and now sodium."

So this is pretty difficult to take. But she, being a dietitian, she said ''I am part of this problem.'' But I'd like you to share it with the Committee.

"We've become so nutrient focused we've forgotten how to enjoy, appreciate,

savor real food. There are far too many confusing, conflicting rules and recommendations. People trying to eat healthily buy processed foods covered with health claims. More defined nutrition rules will not solve our problem. They will only exacerbate it."

So this is, you know, this is from somebody on the front line who has been doing the job she has been doing for 30 years. And I think it really expresses very clearly the kinds of things that we hear when we're out talking to people working in the schools and working in the community.

So their concerns about the Dietary Guidelines include a fourth issue. And that's the use of discretionary calories. And this one is quite different from the other three because this was something that was, you know, included in the Dietary Guidelines last time that those working in the community really love.

So this is such a positive thing. Now they're not using it much, and that's because they are totally confused by how to use it. But they know there is great opportunity if they understood it more.

So this came out -- several people mentioned that they've just begun to hear about it, and it actually makes so much sense. That foods -- some foods are core foods. And then they have additional discretionary calories added to them so they can begin to explain that to the public and use examples.

The problem is trying to use the examples. I've been using this example in a class that I teach in community nutrition. And I'm not sure. I've actually vetted with somebody on the Dietary Guidelines Committee last year. I vetted it with somebody at USDA. And each one had slightly different opinions of exactly how you calculate.

I mean should I be doing extra calories from a doughnut by comparing it to a

grain product that doesn't have the fat and sugar? Now would that be the like toast?

I mean, so I put this in here because I've tried hard to understand myself how we get to those extra calories. And I'd like, you know, I think that if you could provide more guidance in this area, that we can translate this kind of information for the consumers.

And one of our advocate groups, the California Food Policy Advocates said we are using it, we're trying to understand it, it is really working, and tell the Committee that we would love to have a better, you know, translation of this concept.

So question number two that I was asked to answer. Have school wellness policies utilized information from the Dietary Guidelines? We're working -- a study we have is Team Nutrition Local Wellness Demonstration Project with the Department of Education and two other states, Iowa and

Pennsylvania.

And so I'm going to just summarize briefly and say absolutely. This is really a phenomenal way to get the Dietary Guidelines information out to the community in a way that it hasn't been out before. So by getting that wording from the Dietary Guidelines into the wellness committees in every school district that receives federal funding, we are actually putting out information that people at the community level are talking about now.

So there are four summary points here that the school wellness policy requires schools to set goals for nutrition education. So while many mention the Dietary Guidelines or MyPyramid, interview data suggests that they are having difficulty using that information in nutrition education. But it is in their wellness policy so they are trying to make that leap and translate it.

Number two, they are using it, many of them for competitive foods to put

guidelines into their wellness policies. Some schools are actually using the information to set higher nutrition standards than USDA requirements for school lunch.

And then the fourth point, many policies are based on model policies. And so that was where I wanted to come back to. The more that you all, as a body, can create models, they love lifting those models and putting it into their own wellness policies.

And what that means is they will then have to, and they will begin to really work on, you know, translating that into practice. But they do use policies. You can see that they actually are using the language that is similar in many, many of the districts.

So while not a representative sample, we are measuring and looking at 31 school districts in this Team Nutrition Local Wellness Demonstration Project. And 30 of them mention the Dietary Guidelines either

explicitly for education or competitive schools or at least referenced it.

And here's a chart showing you how many did that. And this is with schools in California, Iowa, and Pennsylvania. So the largest part of the circle is with references to the Dietary Guidelines information. But the blue ones specifically mention the Dietary Guidelines. And then there was just that one school that didn't include Dietary Guidelines at all, the information or the specifics.

So it does show that this is a real opportunity to get the information out there and to be discussed. And I will -- I won't go over all these examples, but I'll tell you that the wording is all over the map. We just gave you some examples here of the different kinds of wording that is in the Wellness Policy.

The first one is very general wording. The second one has some daily recommendations, you know, the sodium issue.

The next one here I thought was interesting because in the Wellness Policy, the school is trying to actually operationalize it. They said that fat served on the side, no more than twice a week.

And then the next one talks about the variety and limiting certain things, the wording right out of the Guidelines. And two more examples, one of them on nutrition education that they can use the MyPyramid or they can link it to other kinds of education. This is a California Wellness Policy.

And then the last one down here is an example of another policy where nutritional integrity is the level of performance that assures that school-sponsored foods meet recommended dietary allowances and dietary guidelines.

So you can see it is all over the map. But there are definitely patterns in schools where certain language is picked up by different states, and many of the schools

within that state will have the same type of language.

So a real opportunity with those wellness policies. And we'll have a conclusion to that study pretty soon. And we'll have more information on it.

Question three, how can government nutrition guidelines convey usable information applicable to the school and community settings? For example, how is the pyramid being used? Has it been adapted? Or have alternatives been developed by community groups?

Well, we hear a lot about the Guidelines and pyramid when we're talking to our community partners. And I wanted to help you focus here on the third one. The pyramid is not helpful on a social marketing level. So that was one of the messages that came out that was very important, I felt.

And down here, it is reiterated in a similar way. The pyramid is helpful for

motivated individuals who want tailored messages but it is hard to use to write a curriculum. So I think this is a very clear message about the application.

So alternatively, many, many community folks are developing other ways to take the information from the Guidelines and the pyramid and to actually translate them into tools that they feel are more applicable. This one was developed by U.C. Cooperative Extension and has been tested with the Expanded Food Nutrition Education Program as well as Food Stamp Education Program. The staff just love it, and the clients love it. And an article is coming out on the use of this plate curriculum.

The Coalition of Food Banks in California like the plate so much but they wanted to add foods, pictures of foods, words about foods. And you can see that this one was adapted for Asian foods so they still like the symbolism of the plate and they use it in

their, you know, their education with the food bank recipients.

This is another one that is being used in California, Healthy Kids Meal Wheel. And this one is interesting because of the beautiful graphics you'll see. And then you can see how meat is -- red meat is pulled out from the lean protein group. And you can see all the different sources of calcium here.

But I want to point out the desserts over here on the little spoon and the little pat of butter on the knife. Isn't that cute? So -- but it is, it's being used in a large school district. And, you know, kids can really understand how it all fits together.

And I must say, years ago when I first saw the plate, I was working with the Growth and Health Study where we were working with adolescent African-American girls, and I found that it was sort of irrelevant to the kinds of foods that were being eaten for lunch

by these teenage girls. They were having chips and soda. And how does that fit on a plate?

And now I've come full circle working in these new studies with schools and with other community groups that if we don't continually show how foods can fit on a plate, pretty soon we won't be eating foods that go on a plate. And I have a beautiful picture, which I didn't bring, of an actual school lunch in one of the studies that we're doing that shows a child bringing from home four little packages that fit on the plate at school.

And they just pulled apart each package. And that was the meal. So you can imagine how surprised we all were that you can, you know, go and buy packages and create a meal from these packages. So lots of interest in this area.

Okay, so question four, so drawing on my experience, what do you think the needs

-- needs to be done at the level of the federal nutrition guidelines to optimize nutrition for Americans in the school and community settings? And so at the end here, I'd like to just provide a few recommendations. One is to provide guidance on what constitutes a healthy food. Be simple. Be specific. Be clear. Give examples.

Because what I've been learning from working with these community partners is that if we don't provide that very specific information for them on what is a healthy food, that they will do it themselves. And let me give you just a couple of examples. So one of my students did a survey of restaurants, chain restaurants to look at health claims. And out of 124 chain restaurants, and this is just looking at the websites, 33 say they have healthy menus or items designated as healthy.

Seven say they have low calories,

19 have health claims about low fat, eight had health claims about low carb, four about sugar, and one just says their entire menu is healthy. Now it's not so much that they all have different ways of determining what healthy foods are, but it's that all of the cutoffs and all of the criteria are different.

So think about you as a consumer trying to make a choice between restaurants. You're not sure which cutoff is better. And, you know, so I think it is that kind of confusion out there.

Another example of a healthy food definition, I thought this was so original. I was speaking to an elementary school teacher in Oregon who wanted her students to bring a healthy snack every Friday. She said but how do I know what a healthy snack is? I mean I could tell them just to bring a fruit and vegetable because that one I understand. But I wanted to broaden it to a healthy snack.

So finally she said, "I talked to

everybody, and I came up with a definition that worked for me." She said, "I taught the kids how to read the ingredient labels on all their packages. And I taught them all the ways to describe sugar. And then I said if that is one of the first three ingredients, then it is not called a healthy snack in my classroom."

So it's a very practical way to do it. It doesn't hit the fat issue at all. But it definitely worked for her. And she said the snacks have been pretty good.

So another example was -- this was in the newspaper. After voting to introduce increased lunch prices next year in Kentucky, a school board member said you can cut lots of costs in a food service program by getting prepackaged foods and stuff that is not healthy out.

So this is somebody who has decided that it is more the packaging. The foods that come in packages are less healthy.

So different definition.

And this is a school nutrition director who said children will eat real whole foods. And she's saying that that is healthy. So lack of processing is healthy.

So you can look at this in any different way. This is an adoption of sort of the Dietary Guidelines that have been adopted into a food guide by the Central Food Bank of New York. And now food banks in California are adopting it for their use because they are struggling with trying to bring healthier foods into the food banks.

And then to get -- to reduce donations of the least healthy. So they said we can encourage fruits and vegetables. That's the green. And we can discourage sodas and candy. We can sort of understand that.

But all the foods in the middle, they have no idea where to -- you know, many, many discussions -- I mean this is just an enormous problem for somebody working in the

community.

We can do the red part a little bit. We can do the green part a little. But we don't know what to do with all that yellow. I mean is there some way we can figure out which are the healthiest foods? So their goal is right on target but they don't know how to operationalize it.

So all suggested we want help defining healthy foods. Can you use colors? Can you use checkmarks? And can you even use a system like we rate restaurants with A for best choice, B for okay, C for worst choice?

We need prompts to change behaviors. And we need guidelines that will actually guide dietary practice.

This is Armando Valdez, who works with the Latino population in California. And he said, "We really need help on how to guide those choices."

And, finally, the last one is near and dear to my heart as a researcher. Someone

from the community said last week when I was asking about these questions, "We need more translational research for the Guidelines and the pyramid."

I love that. So -- and he ended by saying, "If schools are serving 30 million students per day and meeting regulations crafted from the Guidelines, how can only two percent of the children be meeting it?"

Somebody had better research and figure out exactly what is happening? You know why do we have such a disconnect here. So I thought that was a very interesting quote to end with.

So thank you again for the opportunity to come and share some of the voices from the schools and communities. I know they appreciate your interest in what they're doing and the problems that they are having. And really look forward to the new Guidelines.

CHAIR VAN HORN: Thank you so

much, Pat.

And in the interest of time, we're just going to take maybe one or two questions now. But then open after Mike gives his presentation, to see if we have further questions.

Tom?

MEMBER PEARSON: The whole field of guideline development obviously has evolved over the years. Certainly we have been provided descriptors of the strength of evidence supporting recommendations.

You've provided a number of models here. Your healthy plate, the Local Wellness Policy, et cetera. How many of those have really been subjected to rigorous randomized evaluations so that we can, in fact, generalize them beyond California or wherever?

Because what we've been doing for 30 or 40 years is anecdotal discussion of things that look nice for which there is no evidence to say they are worth our time and

effort.

DR. CRAWFORD: No, I think that they really do want that research. And they do want the evidence because they are just struggling in the community to do what staff say works, what people say they love, you know what they understand. But we want those trials.

CHAIR VAN HORN: Chris, go ahead.

MEMBER WILLIAMS: I think it is interesting that children get about 30 percent of their calories from snacks. But the problem is that they don't always want something that we might consider to be healthy.

I recall a little boy whose mother had just gone apple picking. And every day for five days he got an apple. And finally on the fifth day, he said, "Mom, do you think just one time I could have something that is not healthy?"

And I think we have to find a

balance somehow between sometimes healthy snacks and sometimes snacks that are pretty good but not quite as top of the line, maybe thinking about healthy, you know, children having two snacks a day, maybe one healthy one and one free one or getting a little more balance there because I think all of us don't want to be totally restricted to a certain category of foods or beverages.

DR. CRAWFORD: And that's what they would love. They would love a checkmark system or a color system. Have these every day. Have these on some days. Have these once a month. I mean that is exactly what they want to operationalize it.

They said we can take that message to the community. But nobody is willing to go out there and say well, which foods fit on that first level? And on that second level?

So you are right on target.

CHAIR VAN HORN: Thank you again, Pat. That was excellent.

We're going to move right along to give time for our next speaker who is Dr. Michael Hamm. He is the C.S. Mott Professor of Sustainable Agriculture at Michigan State University.

He is currently affiliated with the Departments of Community Agriculture, Recreation, and Resource Studies, Crop and Soil Sciences, and Food Science and Human Nutrition.

At MSU, he is co-founder of the C.S. Mott Group for Sustainable Food Systems, which engages communities in applied research and outreach to promote sustainable food systems.

Dr. Hamm's active research areas include community food security and sustainable food systems.

Thank you so much for coming.

DR. HAMM: Well, thank you so much for having me. I really appreciate it. And I'm honored to be here.

You can tell there have been a lot of mergers in academia because I'm in three departments and every one has a conjunction in the title. So welcome to my world.

So what I wanted to do today was kind of step back a little bit and talk about the relationship of the Dietary Guidelines to sustainability. And maybe think about how they relate to one another.

And one of the things -- one of the questions -- I was asked to address four questions. And I'll just kind of take them more or less in order. And one of the questions was does sustainability of our food supply relate to the Dietary Guidelines?

And I'd like to just think a little bit about fruits and vegetables for a second because that's one where it is pretty clear that Americans, on average, eat far less than they should. And I'd like to just run a scenario by you which is tomorrow morning, 300 million Americans wake up and all decide you

know what, we've been doing it wrong. We're going to follow the Dietary Guidelines and eat all the fruits and vegetables we're supposed to.

Three things would happen. The first thing that would happen is there would be a run at the produce section of every grocery store in the country. And they'd be divorced of everything.

The second thing that would happen is that every dietitian in the country would faint.

(Laughter.)

DR. HAMM: And the third thing that would happen is that we'd find out we are 13 million acres short of production.

So the reality is is that -- and this is ERS data actually that came out soon after the 2005 Dietary Guidelines were brought out. And so what we know is that there is a disconnect in reality between our agricultural production and our Dietary Guidelines for a

healthy diet.

So 13 million acres, just to give you an idea of what that is, 13 million acres is two to three Californias of production. And California currently produces 50 percent of our fresh produce that we domestically produce. It is a lot of produce.

Now if we step back from that for a second and say okay, so let's say we wanted to get to the Dietary Guidelines with respect to production. Let's say we can create the demand. Now we've got to create the supply. What would it take to do that?

Well, one thing to keep track of is is that it is not a static issue and it is a consistently moving target. This is a graphic out of the American Farmland Trust. All those areas in red on the map of the United States are areas of highly productive farmland and under high threat of development.

Now that map came out prior to the current economic crisis. And so development

actually across the country has slowed down quite a bit. And so it's put less pressure on it.

We can anticipate, though, as the economy recovers that those pressures are going to be back on to a large extent.

In fact, they estimate that right now 86 percent of the fruits and vegetables that are produced in this country are produced in the path of development.

That is the land that they are produced on is under threat of development, 86 percent. Sixty-three percent of our dairy is in the path of development.

In other words, right now we under produce what we need for a healthy diet by 13 to 14 million acres. And what we do produce is in danger of not being there at some point down the road.

Now right now, we produce half of our domestic fruits and vegetables in California. And I would argue we need

California right now because we need that production.

And what we also know is is that California, if we step back even a little bit further, California's production is under threat right now, too. The Central Valley, in the New York Times about three weeks ago, they indicated the Central Valley is going to have about 800,000 acres less production this summer. Why? Because they've had a drought for three years.

If climate change scenarios are anything close to right, there is anticipation that they could lose as much as 70 percent of the snowpack runoff that services irrigation for California agriculture.

That snowpack runoff in other water supplies also services the population in California, a population that tomographers say may grow from 36 million to 50 million by 2050. Another 14 million people needs water, needs land to live, needs land for roads to

move around, and needs land for businesses.

All of those things do two things. They take land out of production. And they take water out of production.

And so one of the things that we can anticipate, that we can project, is that 20, 30 years from now when my ten-year-old daughter is 30, 40, 50 years old, California may well not be doing what California is doing now.

So what that means is from a standpoint of ensuring a healthy food supply now and into the future, we have to think not just about where we're getting our food now and what we may need to do to boost that production but how are we going to think about a sustainable food supply ten, 20, 30 years down the road.

And I would argue that one of the things we need to think about right now is how do we go about preserving that production in places that are highly productive right now.

And how do we think about redistributing production across the country?

If you go back to a census of agriculture from the `30s or `40s, you would find that just about any county in the United States had a more diverse agricultural production system than it does today. We've concentrated our production into production centers across the country for a whole lot of economic and logistical reasons and climatic reasons.

But the reality is is that many, many places in the country have the potential to produce a much broader array of fruits and vegetables, a much broader array of animal products than they currently do. And in many of the advocacy groups that I work with, that's called local food systems.

In one vernacular, we can think of that as national security. In another vernacular, we can think of that as economic development potential. There's all kinds of

ways we can think about it.

I think from our standpoint, the way that we should think about it is how do we think about enhancing the public health of the American population, not just now but for the next 20, 30, 40, 50 years.

So that brings us to the next question, which is should we think about more than food as nutrition but also consider other food attributes? And there's a lot of attributes that people want to put into food today.

You can go out and get coffee certified five different ways. You can go out and get food that is organic and it is fair trade and it is bird friendly and it is environmental and there is animal welfare characteristics. There's all kinds of attributes that different consumers in the marketplace are looking for.

And I'm not really concerned about that right now. And I'm not really sure that

is a concern of this Committee. But what I do think is is that when we think about the food system and we think about the food supply, what we think about as moving towards a greater sustainability that can enhance the public health of the population, we think of it not as a simple problem because it's not a simple problem.

In fact, it is what we think of as a wicked problem. A wicked problem is a problem for which there is not a solution. There are improvements in the situation. It is a problem in which it is not a linear science problem because human values, morals, perspectives, culture, religion, all kinds of human attributes and things that make up the human community come into play. So there's differences of opinion.

If I asked you all to define what sustainability was, we'd come up with a whole bunch of different answers to that question. We'd start about the triple bottom line and go

through all kinds of scenarios about what sustainable is.

And so to a large extent, I don't think defining a sustainable food system is actually possible. What I do think is possible to do is to think about what kinds of attributes, what kinds of characteristics would we look for in moving that food system towards something that was more sustainable over the long term and that could help enhance the health of the population.

I think it would look locally integrated. I think we have to re-disperse our food production across the landscape of the United States. I think we need to do that and I think we need to do it fairly quickly.

I think it would be community based and I'll talk about that in a second with respect to economic development. I think there are ways to use the food system and the food supply as tools for other issues that we have in our communities that allow public

health people to participate in things like economic development and community development and youth education to a greater extent than we probably are right now.

I think we would try to have food-secure communities. I mean I am in Michigan. I've been there six years. There's never been a balanced budget since I've been there.

I do a lot of work in Detroit which has a very high unemployment rate. And I look at the upper part of the Lower Peninsula in Michigan which has actually the highest unemployment rate in the state at 18 percent.

You know our state has an official unemployment rate of 13 percent. That's very high. And it's not going to get any better in the near future.

I think it is an -- we would see it as an opportunity to connect to other issues, which I'll talk about more directly in just a second.

I think it would focus on health and on healthy. From an agricultural standpoint, how do we build healthy soils so that those soils can nurture plants now and into the future? How do those healthy soils build healthy plants, grow healthy plants, et cetera, down to healthy people? And I think it would be diverse, which is another topic for another day.

So many people -- I know the Oxford Dictionary in 2008 declared localvore the word of the year which is kind of interesting in many ways and kind of fun. And also unknowable in terms of what that word really means.

For many people in the local food movement, their idea of local is is that everything should come from local sources. If it is coming from a global source, it's probably bad. If it is coming from across the country, it's probably bad. And I actually don't think that is true whatsoever.

I think for a whole lot of reasons, that we don't have time to go into here, we should have a dynamic blend in our food system that includes local, direct source local like farmers markets and CSAs, indirect local source like what we might see at a farm-to-school programs in our K through 12 school meals program, in restaurants, in grocery stores.

But we also want to get stuff from regional, from national, and from global sources. The issue, I think, and where I sit is is that we've tipped the scales so far that we've forgotten about that local piece. Now it is, of course, hot in the literature -- the locals, the new organic, everybody wants to buy local. It's a big topic.

And so the trick is how do we rebalance the portfolio of where our food comes from and use that in such a way that we can, in fact, improve the healthfulness of the food supply?

Now, I live in Michigan. I was in New Jersey for 20 years. I was in New York for six years before that. But I grew up in the Midwest. But I'm from Michigan. We're seasonally challenged.

You know we have about a six-month growing season at best. And so the question is is okay, this whole local stuff, are there ways from a production standpoint, in fact, to generate fresh fruits and vegetables in a time of year when we really shouldn't be doing that because there is that on the ground.

Well, and the answer to that is -- and can you do it sustainably? And the answer to that is probably yes. What you are seeing there is -- would probably -- you would say that's a greenhouse. But the reality is is that greenhouse has no fossil fuel energy being used for heat. Any heat that is in there has come from the sun and it's stored heat down in the ground.

That hoop house has a double layer

of plastic on it with about a 40-watt fan that blows air between those two layers. Think of it as double pane glass on your windows and the insulation value.

Then inside there is another layer of plastic over the beds. Inside there, in Michigan, the environment of those plants is about my hometown of St. Louis, Missouri. And so you've moved about three growing zones south. And you can grow about 30 crops in there year round.

So this picture is actually taken from the student organic farm at MSU where they have a community-supported agriculture farm of 75 families. And they provide them fresh produce 48 weeks a year. The four weeks is not because they can't grow it. It's because they are taking time off because the students are all gone.

So we can do that. So the point is is that we can expand the season and think about this in a way around economic

development that I'll talk about in a minute.

Now here's the one that is a big one for some people and that I was asked to address. Is local healthier or more nutritious? And the answer is I haven't got a clue. There is absolutely no data to answer that question.

I've seen a lot of literature that says the ten reasons to buy local. And one of them is always because it is more nutritious. I can construct scenarios for you in which local is more nutritious or less nutritious. It all depends on how that crop is handled from the moment it is harvested until the moment it goes in your mouth.

So post-harvest management, as you all know, once you harvest a crop, it starts to die. And cellular senescence is the thing that destroys fruits and vegetables. And so how you manage that post harvest is critically important. Okay?

Now all else being equal, it is

traveling a shorter distance. It should be a little bit more nutritious. The reality is the percentages are probably not that significant. If people actually went from what they are consuming now to what they should be consuming, that would be far more significant than kind of any small bump you'd get from the differences between local and distance if they are all handled the same.

So I actually think that's kind of a red herring of an issue in local versus distant food. There's other things that probably aren't. But I think that is one that is.

Okay, the big one. Because, again, I'm in Michigan and the only reason that's relevant I think here is because we went into the economic recession before anybody else did.

And if I were a betting man, I'd say we'll come out of it after everybody else does because Michigan really did run for 100

years on the auto industry. And now we've got to recalibrate who we are as a state economically.

Now what does that mean? That means that our State Department of Community Health, which is the Public Health Department, essentially has no money for preventative health. If you take away the kind of federally-mandated expenditures, there's nothing left.

So what that means is is can we think about -- and the other point to make there is that in Michigan, as it is across the country right now, if you're not having a conversation about economic development, there really is no conversation. That is the conversation.

And so the question is is can we think about this relationship of 14 million acres needed in more production, which, if you take us as three percent of the population, that's a lot of acres, and relate that to

landscape and land preservation for the future and relate that to economic development and public health.

So we asked ourselves that question. And what we did was we said okay, let's look at that public health gap, that difference between what we do consume and what we should consume. And let's just run a scenario and say what would it mean to the state economy if we could bridge that gap?

And we did it in a way in which we said okay, let's assume -- you know, when you run models, you make whatever assumptions you want, you just have to justify them -- so our assumption was was that people didn't drastically change their diets. They just ate more of everything they are currently eating: more apples, more oranges, more bananas, et cetera, et cetera.

And we threw out the things that we don't grow in Michigan: apples, oranges, et cetera. And then we took the things that we

do grow in Michigan, which we grow a lot of different things because we have a lot of microclimates in the state -- the things that we do grow and said how much of the year are they available fresh?

So we get about a month of strawberries. We get about two-and-a-half months of tomatoes without season extension technology. We get about ten months with apples because of post-harvest and low atmosphere storage -- controlled atmosphere storage.

We said let's take that small piece, which is about 15 percent of the total bump in need that there is, and say what would it mean to the economy if we actually produced that in Michigan and ate that in Michigan with ten million people.

And what it means is is that we'd need to produce about 37,000 more acres of produce in the state of Michigan to get that 15 percent increase in consumption. That 15

percent -- that 37,000 acres of production adds 200 million dollars to the pockets of farmers. And that 200 million dollars in the pockets of farmers generates about 1,800 off-farm jobs and at least twice that many on-farm jobs for the production.

So the reality is by just bridging about 15 percent of that public health gap, we can generate a few hundred million more dollars of economic activity and we can generate about five or six thousand more jobs in the state.

So in other words, we can -- we firmly believe, and this is actually getting some traction in the state, we can firmly link increasing public health with local production for local consumption with economic development and job creation. And it is not just job creation. It's all small business creation because those farms that are producing that are either small- or medium-scale farms. And those are each businesses

that we desperately need in the state.

Now we can then think about taking and expanding that opportunity quite dramatically because we can now take with these high tunnels and say okay, that was just seasonal availability without doing anything special. We can now expand the season.

With these kinds of devices right here, with those high tunnels, we can, for example, normally where I live in Michigan, we'll start getting field-grown tomatoes sometimes after the 4th of July. And we'll quit getting them sometime between October 3rd and 10th when the first hard frost comes in.

With these high tunnels, we can start tomato plants in there right now and start getting tomatoes in early June. And we can keep getting tomatoes until early to mid-November. So we add about two months to the fresh market for tomato season.

We can produce lettuce greens. We can produce Asian greens. We can produce most

root crops 12 months a year inside there because we've got a research project right now that's going on in three points in Michigan with USDA money up in the Upper Peninsula with Sioux St. Marie, Muskegon on the western side of the state, and Ann Arbor.

Each of those are farmers markets. And each of those has three farmers that has one of those 30 by 96 high tunnels sited on their farm. And they are producing to produce for an early and a late market with the idea that let's see if we can expand the season under which people can get stuff fresh. And early and late in the season can we expand the diversity that is in the marketplace?

So we know that we can do the production and the farmers are doing that. The question is is if you grow it, will they come? Will there be demand for it?

So David Conner in our group, who leads this work, has gone out and surveyed consumers at these farmers markets. And said

okay, right now, when is the earliest you come to the farmers market. Most of them say May or later. And that's about right. May is when you start getting in things like broccoli and greens and early root crops like radishes and things like that.

He said well, if there were these high tunnels all over the place and there was a lot of product coming in, when would you be willing to come? And they said well, we'd come a lot earlier.

He said well, what is the latest you come right now? Well, September, sometime between September and December depending.

What's the latest you would come, again if there was product available? Much later.

So we actually think that there is an opportunity there to think about linking up this extension of production in a sustainable way with a market, okay.

Now the final question around that

then is well, who has access to that product? Because one of the things that was talked about earlier is the fact that in many cases, people on food stamps, in the SNAP program, people with limited resources -- and with a 13 percent unemployment rate in Michigan, the number that have limited resources is climbing, how does everybody get access to it?

Well, of course, one of the problems when we went away from paper food stamps to electronic is the use of food stamps at farmers markets collapsed overnight long ago and now that is starting to come back.

And there's a lot of programs around the country to basically get the card readers at various farmers markets and make that accessible. And there's various strategies for doing that.

That still doesn't necessarily allow for adequate resources to purchase what people would like to purchase at those farmers markets. And so just to give you an idea of

the kind of thing that is going on out there and one of the programs that is going on in Michigan is to think about ways that we can increase local fresh produce at corner grocery stores.

For example, in Detroit, there's something like a thousand places to purchase food to take home inside the city of Detroit; 92 percent of those are liquor stores, filling stations, and 7-11-type stores. There are only 80 -- something like 80 corner grocery stores, corner full-service grocery stores in the city of Detroit and none of those are supermarkets. There's not one supermarket in the city of Detroit, okay?

So, the idea then with using youth and youth farm stands and giving them some entrepreneurial training so we start to break this cycle of thinking that I can go from high school to a lifelong union job that gives me great wages and great benefits and retire, which is now broken in Michigan, we need to

think of other things.

So we train youth in how to sell produce. And then they get produce from farmers and sell it in the community.

There's now a thing called the Michigan Farmers Market Association, MIFMA, in Michigan which has done something really wonderful, which is create an insurance program so that farmers can get a million dollar liability insurance at any farmers market they sell at for only 200 dollars a year.

If you check at many farmers markets across the country, you'll find that no farmer and no farmers market has liability insurance. And they're just praying nobody slips on a head of lettuce.

And then you need to link that to all those farmers markets being EBT, electronic benefit transfer accessible, many of which aren't. And there is a program in the state right now going on to try to get

them card readers.

Then you've got to ask yourself, okay, now there's product and there's accessibility from the standpoint of people who can use SNAP cards. Do they have enough resources to do it?

Well, there's a program that started with a foundation in Connecticut, which is now moving into Michigan, of pooling money from the philanthropic world to essentially double the value of the bridge cards at farmers markets for fresh produce.

So if somebody spends five dollars of a SNAP card, they actually get ten dollars worth of produce. And the farmer is paid out of that philanthropic pool of money to help to make up the difference so the farmer is not the one that is not out in doing that. And so that's going on right now.

And finally, and one of the big issues here is in all of this, who is going to grow the food? I mean if you look at the age

of the farming population and if you look at the traditional way that we generated farmers in this country, which is kids coming off of farms, going to the land grant, getting a scientific basis for agriculture, and going back to the farm, it's broken. And it's not coming back any time soon.

To the extent that it is not broken, there are kids going back. At MSU, I just lectured yesterday in a class on crop and soil science and about half those kids are going back to their farm. But these are three, four, five, six thousand-acre corn, wheat, and soybean farms for the most part.

And so figuring out, in fact, strategies for creating the next generation of farmers is there, and there are things going on in Michigan at Michigan State and in other parts of the state. And there are things going on in other places to recognize that we have a large pool of immigrants that are in this country either as migrant farm workers or

former migrant farm workers or as refugees, many of which have farming backgrounds and want to go into agriculture.

We need different kinds of training programs to work with these populations and to allow them to become part of the American fabric that produces food for our tables.

The second group is we have a lot of kids in colleges and universities very interested in the environment. And they are translating that interest into an interest in farming.

It is primarily organic farming because it comes from an interest in the environment and everybody thinks that is more environment. That's another discussion.

But I found at Rutgers we started a student organic farm there and we never had anybody with a farming background come there. They were all interested in organic. And my feeling was was that six weeks at 90-degree

temperatures in July and August kind of burned out the romanticism. And what was left was a reality that it is hard to grow food. It is a lot of work.

And so what these young people came out of it with, if they didn't want to farm, they came out with a profound appreciation for people who did it. And if they did want to farm, they came out with a profound appreciation of what they needed to do to get themselves ready.

And the third group is there are some young people that live on farms today that want to go into farming. And so there are some programs out there with FFA and with some other things that are engaging these young people in looking at other things they can do besides growing corn, wheat, and soybeans. And that's, again, another discussion.

So my point is is that there are ways in communities and in states right now

that strategies are being developed to help create these linkages so that we don't just say well, we need 13 million acres of fruits and vegetables. Good luck. But, in fact, ways where we can think about reinvigorating our local economies and providing access for everybody in the communities to these things.

So in summary, and I'll end, is I think it is fair to say that most of the activity around enhancing sustainability of the food system in the U.S. can be considered an opportunity with respect to the Dietary Guidelines and can help achieve America's goals in this regard.

And on that note, I will quit. And say thank you.

CHAIR VAN HORN: Excellent.

Can we jump into questions, Mike?

Yes, Rafael?

MEMBER PEREZ-ESCAMILLA: Thanks, Mike, for what I think is a very important presentation.

I think that the idea of free trade agreements and the whole idea of globalizing trade and so on, that was that we shouldn't be so much concerned about these issues because what we cannot grow here, somebody else will grow it somewhere else in the world. And we will be able to get it that way.

Can you illuminate us a little bit as to why, in spite of having that model in place, we should be worried about local food production?

DR. HAMM: Well, I don't know if I can illuminate but I'll answer the question -- I'm not sure I'll illuminate.

Here's one thing to keep in mind -- and, again, I think that we can't just think about where we are right now but think about what are likely scenarios down the road over the next ten, 20, 30 years? And recognize that we could be wrong about those scenarios.

So I'm a big proponent of

maintaining as many options as we can. Okay. We import a tremendous amount of fresh produce now. Every year we increase the percentage of our domestic fresh produce that we import from non-domestic sources.

Much of that is coming from tropical areas of the world. If you look at climate change scenarios, the ones that are going to be the hardest hit are those in the tropical regions of the world.

And so the probability is is that places where we're sourcing a lot of that fresh produce from now are going to experience an increase in extreme events of climate, are going to experience an increase in drought events, and finally, those places are also seeing an increase in population. And they need a food supply for their own population, too.

So, again, I'm not opposed to global trade. I think it is an important thing. But I think that we need to not lose

track of our ability to produce a domestic food supply at the same time.

And I think the only way we're going to be able to ensure a domestic food supply down the road is to spread it back out across the countryside.

MEMBER PEARSON: As I've disclosed, I may be the only farmer on this board. But I'll tell you, Concord grapes in upstate New York, a ton is 160 dollars, and that's not the production costs.

DR. HAMM: Right.

MEMBER PEARSON: And one of the reasons it's 160 dollars a ton is is that a converted oil tanker from Asia will pull up with -- loaded with grape juice, and basically undercut the entire market. So I don't think you can have it both ways.

We make beautiful table and juice grapes, and most of my farmer friends are basically converting to wine grapes. I think we've got probably enough wine in this country

-- my own view -- and it doesn't necessarily fit into the Guidelines perfectly.

But certainly the fruit would. And so I think you're going to really have to break out of this cycle. It's a vicious cycle, and the vicious cycle has to do with market creation.

DR. HAMM: Right.

MEMBER PEARSON: And so I think the Dietary Guidelines does have a role in there. But the implementation of guidelines, you know the Five-A-Day or whatever the messages are, because certainly my farmers at all ages are basically telling me that they can't go ahead and continue to produce fresh fruits and vegetables in the State of New York.

DR. HAMM: Was that just a comment, or would you like a response, as well?

MEMBER PEARSON: Well, I was just wondering how are you going to really create,

because at some point, you're going to have to talk about subsidization of price here, which of course would get into a variety of NAFTA and a variety of trade agreements, which -- but currently the global market for fruits and vegetables does not favor the American farmer.

DR. HAMM: In some products, that's true. And Michigan experienced the same thing with apple juice. About seven years ago, Chinese concentrates started coming in, and it killed about half of Michigan's apple market overnight.

And now they're in the middle of transitioning to a fresh market apple, which of course is a different tree, and so it takes time to do that.

That said, one example that I can give you is is that out of the last farm bill, there was a rule -- there's been a ruling put out by USDA that it is not -- I don't want to use the word, illegal, but let's just say it's okay to use geographic preferencing as one of

your characteristics when you're bidding for the K through 12 school lunch program for under 100,000 dollars.

Now what we just did last fall in our state was work with the state legislature, because what had happened in the past was -- and states can be more restrictive on that, and so can locals -- so the way it worked previously is the feds was 100,000 dollars, Michigan put an 18,000 dollar cap on it, and many local school districts put a cap of zero on it. Everything had to be competitively bid, with no preferencing.

We got two bills passed in the Michigan legislature last session that raised the Michigan threshold to the federal threshold. So the state's not a barrier.

And now we're working with -- we've got a state farm-to-school coordinator in my group. And she's working with school districts across the state with food service directors to learn how to work with farmers,

and with farmers to learn how to work with food service directors, recognizing that, for a given bid, they've got 100,000-dollar cap, which for the vast majority of the school districts in the state, you're never going to get to a 100,000-dollar cap on a single bid.

And in fact, there's a lot of local product that's going to start flowing into the school districts next year. There's some now, and in Genesee County, for example, right now there's two schools doing things. There's 20 that are interested in doing it next year.

So I think that there are -- we have some leeway inside the federal regulations right now to start doing some of this. And I think we're going to end up having to go further, and I think we are going to end up having to make a decision of whether we think that a healthy diet is, in fact, something that we, as a population and as a citizenry, think that everybody in our country

should have access to. And that's a whole other discussion.

But I think there are ways right now that we can think about helping improve viability of farms. And it's not going to cover everything. The juices, I think, is a real problem right now. But I think the fresh market stuff is much less of a problem right now.

CHAIR VAN HORN: Excellent points. We have really got to move ahead, I'm afraid.

DR. HAMM: Yes.

CHAIR VAN HORN: But thank you so much for your presentation, and I'm sure we can talk a little bit later, as well.

At this point, we'd like to move forward with our first of the seven subcommittee updates. And first on the agenda is Food Safety and Technology, which is chaired by Roger Clemens.

MEMBER CLEMENS: I'm from California. Where water flows, food grows.

Thank you very much for your patience. And thank you very much, Pat. And Mike, thank you for those wonderful presentations. We could definitely spend more time with you. I know all of us have more questions, more than time allows today.

It's our fortune to talk about food safety -- I actually had some food safety questions for Mike, but they'll have to wait until on sidebar, I'm afraid.

Our group has been working together, Rafael, with the excellent support by USDA and DHHS, wonderful staff. Thank you so much for your tremendous work and support to bring this to where we are today.

Right now, a number of issues in terms of behavior we'll want to address. We also want to address a very hot topic in the news in methylmercury in terms of fish consumption. This will be in part a collaborative effort with Dr. Pearson's team with Fatty Acids to look at food consumption,

and fish consumption in particular, and the impact of methylmercury on other outcomes.

And lastly, we want to look at the role of food allergies. Right now, with some expertise from Rafael, I will turn the lavalier over to Rafael to make a presentation on this important topic.

MEMBER PEREZ-ESCAMILLA: Thank you, Roger, very much.

What we're going to do is to give you an update as to where we stand in terms of the questions that we are working on and the approaches that we are using together with the staff.

First of all, what you see on this slide are four questions for which we have already developed PICO charts, and for which the lit review has begun, especially those labeled as priority level one, it means that the work is currently underway, and those questions labeled as priority level two, what it means is that we are in the process, or at

the early stage of the review, the lit review process.

The first set of questions is related to in-home food safety behaviors, a lot of which fall within the framework. And the second set of questions are related to the risk of fish consumption. And in terms of the priority level two questions, Roger will give us an update on the new technologies related to food safety and where we stand with regards to food allergies.

First of all, with regards to in-home food safety behaviors, we are documenting and going very systematically through the literature on describing what actually USA consumers are doing at home in terms of food storage, food preparation, handling, hand-washing, which as we know has become a major thing in the news lately, and also on washing and cleaning techniques for the food preparation utensils, equipment, food surface preparation areas and so on, as well as on the

washing and cleaning techniques for different foods that are prepared at home.

The second set of sub-questions related to in-home food safety behaviors actually relate to understanding the evidence behind different food safety behaviors, and what impact they actually have at reducing pathogen loads and subsequent risk of home-based foodborne illnesses.

So it's not only documenting what people are doing, but does it matter. Is there scientific evidence to make recommendations to the public at large as the best way to store foods, prepare foods, wash their hands, wash and sanitize their kitchens and the foods that they consume.

We have developed the search and sort plans, and we have made a strategic decision, at least for now, that with regards to describing the actual behaviors -- not only behaviors, but also knowledge and attitudes, we will concentrate mostly on studies done in

the U.S., because it is the main target population for the Guidelines.

But when it comes to the evidence behind the different consumer behaviors, food safety behaviors at home, and the changes in food-safety outcomes, we will look at the literature from both the U.S. and abroad. And whenever we have to make a decision, we will try to compare with evidence of countries that are at the similar level of development as the U.S.

We are not including in our search the literature related to food safety issues in the health care clinical settings, or concentrating on specific food safety issues surrounding a clinical condition, such as renal disease, because the Guidelines are supposed to target the healthy American population over two years of age.

So with regards to in-home food safety behaviors, the conclusion statements will be drafted based on the review of

information from two sources: the Federal Consumer Food Safety Survey data from the FDA, and the NEL, Nutrition Evidence Library review that is being conducted.

And I must say that the staff has already had a number of conference calls and meetings with key people in the federal government that are in charge of food safety at different agencies. So we're also gathering a lot of information that way.

So in terms of the Federal Consumer Food Safety Survey data, it comes mostly from the Food and Drug Administration and Food Safety and Inspection Service.

And the survey, which is based on a nationally representative sample, is applied over the phone, was initiated in 1988, and the latest data available is for 2006. The next survey is planned for 2009.

So we do have an opportunity to look at circular trends as to how food safety attitudes, knowledge, and behaviors have been

changing in the U.S. since the last Dietary Guidelines were issued.

And we have received a lot of support from the FDA to do additional data that we request. And with having this goal in mind, we had a teleconference with Amy Lando from FDA, where she presented fairly recent data to the subcommittee on food safety trends, and we will continue working with her to break down these results by socioeconomic, demographic, and other type of characteristics of the population.

So the first question that we're concentrating on related to what consumers are actually doing at home, we will have a good snapshot as to what is happening at the country level by different ethnic groups, socioeconomic groups, and so on based on these data from the CFSAN and the FDA.

The NEL literature review is proceeding very well, I would say, and there are already 16 studies that have been

identified related to in-home consumer behaviors in the U.S., 16 studies related to food storage, food preparation and handling, and seven studies related to favorable food safety techniques, and how they relate to different food safety outcomes. So we do have enough work to do -- enough materials to read already.

In terms of next steps, we will conduct additional literature searches and get the sort list approval for in-home consumer behaviors related to hand-washing and the washing and sanitation of food preparation areas, food preparation utensils, and washing and cleaning of foods at home. And also with regards to the influence of several of these techniques or behaviors on food safety outcomes.

In terms of the federal programs that are very key for understanding food safety recommendations in the country, we know that the 2005 Dietary Guidelines Advisory

Committee Report basically fully endorsed the four key messages from the FightBAC!(c) campaign regarding the prevention of food cross-contamination, proper storage of foods, and so on.

And the 2005 Committee also looked at topics that were not included, specifically as part of FightBAC!(c), such as the consumption of high-risk foods. So we're following a very similar approach.

The FightBAC!(c) campaign, for those of you that are not familiar with it, is mostly based -- its origin dates back to the Clinton Administration. It was launched in 1997.

And the scientific evidence behind it is basically the application of the HACCP principles -- HACCP stands for Hazards Analysis and Critical Control Points, that came from the food industry, and how that was translated into the home setting. That's the origin of FightBAC!(c).

So the scientific evidence behind it is fairly solid, and we anticipate that we will continue endorsing that framework.

So a couple of federal agencies within FDA, USDA, and the Partnership for Food Safety Education have been contacted by staff to get updates on what has happened since 2005 with regards to these campaigns and federal initiatives, and if there is any published or unpublished documents to show how they have worked with consumers.

So we will concentrate on the literature since 2004. And we may have to go a little bit before then if we identify relevant systematic reviews that we know some of which we already know were published, one of them, for example, in 2003.

But by most part, we will start our search with 2004, and try to explain to the public, you know, what is the scientific evidence for the program FightBAC!(c) and the other recommendations that are made with

regards to food safety.

And very importantly, to identify emerging issues related to food safety in the -- according to the people that are running those federal programs. And you will see that we have identified some of them already.

There are a number of very useful websites that you can check if you are more interested in initiatives that are above and beyond FightBAC!(c). And you have those in front of your screen. The FDA launched a safe handling of fruits and vegetables mini campaign, and BACdown was an initiative launched in response to the risk of Listeria.

And a lot of interest because of Listeria on more emphasis on teaching consumers how they can check their refrigerator temperature, and which are the ones, the temperatures that they should have their refrigerators at.

So what are some of the emerging issues related to food safety that have come

up as a result of the interviews with key individuals, or individuals in key positions in federal agencies running food safety programs? One of them that everybody mentioned is related to microwave safety.

This is something that had not been included before, and quite frankly, we had not identified until these conversations took place. There's lots of issues related to how to safely microwave uncooked frozen foods all the way to the sanitation of the microwave ovens. And a lot of households have microwaves now in the U.S.

Consumption of raw foods related to the whole foods movement is an issue that was identified by several of these key individuals as an area that needs more attention from us. And recommendations for time and temperature relationships for different foods.

Again, the consumers do understand that it's important to store foods at the

right temperature. And they know there are time limits in terms of how long foods can be left out and so on.

But when you put the two together, the time and temperature, we need more specific guidance. They need more user-friendly information to be able to understand and follow the recommendations.

So moving on from in-home food safety behaviors, we have continued our work on the benefit-risk analysis literature for fish consumption. And as we know, the main issue, the main concern is related to the methylmercury levels in fish.

We have identified a number of reports, some of them that have already been published like the IOM Seafood Choices Report published in 2007, that was devoted completely to reviewing the literature, integrating the literature, and making recommendations about what people should do with regards to their seafood choices, and what researchers should

be concentrated on based on information that still needs to be sorted out.

We also -- all of us know that the FDA has issued a draft report that until recently was available for public comment where they are actually doing a quantitative risk and benefit assessment of commercial fish consumption based on the very interesting issue that, on the one hand, fish consumption has been associated with improvements in neurological development in children and reduction in risk of heart disease and stroke. But on the other hand, methylmercury has been associated with the opposite risk of slowing down neurological development, and perhaps risk for heart disease and stroke.

The two reports -- the IOM Report and the FDA analysis are very much linked with each other, because what the IOM Report did was to endorse the 2004 recommendation or advisory from the FDA and EPA with a caveat that they could not do themselves a

quantitative benefit risk assessment to answer more precisely the question, and they recommended for another agency to do so. And that's why the FDA decided to take on this task.

We had further contacts with the FDA, and Mike Bolger, from their Risk Assessment Unit, was kind enough to have further conversations and a formal presentation with our subcommittee for us to further understand the methodology that they used in their assessment, and where they were going with it.

And the picture that is emerging from reading these reports and having had conversations with experts is that fish consumption is, indeed, a healthy practice, that it should be recommended, but that, at the same time, the risk of methylmercury contamination in fish is real, and the public needs to be well informed, especially about the fish species that are very high in

methylmercury, and the amounts of fish that would be safe to consume for different segments of the population, with special attention being paid to pregnant women and young children.

In the U.S., the level of fish consumption is quite low, and in terms of the top fish species consumed, none of them are in the high methylmercury category.

So the main concern right now pretty much among all the experts and the reports that we have read is pretty much related to the concern that it seems that, as a result of the 2004 advisory, a number of groups took it upon themselves to recommend -- for example, pregnant women, to don't eat fish at all during pregnancy.

So this has really become an issue as to how best to communicate the benefits, the risks, and for people to be able to make an informed decision. So we believe that that is going to be the challenge for us as we

write this section of our Dietary Guidelines Advisory Committee chapter.

So what we are planning then is to base our section on risk of fish consumption based on the IOM Report. And if it's made available to us in a more complete fashion, perhaps take into account some of the findings from the 2009 FDA Report.

And to do an NEL literature review on the benefit risk analysis of fish consumption, but starting in 2006, because the IOM Report has actually summarized all the literature until then.

We believe it's very important for us to better understand how to make more available to the public at large data on fish species specific methylmercury content, so that people can actually decided by themselves and understand what are the different methylmercury levels in different fish.

And we also want to better understand the fish consumption patterns of

different species of fish by socioeconomic, demographic, and individuals with different physiological status.

This is going to require collaborating -- a collaboration between the Food Safety Subcommittee and the Fatty Acid Subcommittee. And I'm sure we will be soon meeting to discuss how to go about it, because the Fatty Acid Subcommittee, we understand, will be addressing the benefits related to fish consumption.

And now I will turn the presentation to Roger, who will talk about new food safety technology.

MEMBER CLEMENS: Thank you, Rafael.

You should note, too, that it's more, as Rafael spoke about methylmercury, is more than just content of that in fish. We want to be looking at some of the nutrients, other nutrients found in fish that actually may offset some of the negative impacts.

Therefore, it's important that we conduct this risk analysis and risk benefit analysis on the fish.

Thank you, Rafael, very much for that insight.

We looked at the data on new technologies since our last meeting. Our research thus far has not shown any differences from what we reported last time, so we will continue to explore other opportunities and technologies that might be available to ensure a safe management of food supply in the home.

What we have learned, however, is that we want to look more at this important topic of food allergies. Clearly the topic of food allergies has extended beyond the basic eight.

Through the excellent work from Kellie and her team, we've actually explored some additional programs with a number of agencies, one within CFSAN, and one under

NIAID here in Washington. One deals with food allergy, food allergy labeling, food allergy implications from the food allergy labeling of 2002.

We're exploring that in terms of regulatory, and has it made a difference in food selection in the home, as well as for commercial entities.

We should note that there will be a public hearing on this topic later this year. Don't know if that's going to make it for the Dietary Guidelines, though. It may be just too late for us to consider. But we want to keep our eyes open to see where that lands for us, Linda.

It was really quite intriguing. We're very pleased that Katie was able to give us some additional information. So we're working with the folks in CFSAN to see if there's additional behavioral and choice information that we might be able to use in terms of selection of foods that might be

reducing our exposure to food allergens.

The work by Marshal Plaut, both at NIAID, information that was shared in the last conference call with our team, looking at what issues there are in food allergy research, and beyond just the basic eight. We're excited about sharing some of the mechanisms, as well as some of the food implications beyond the basic eight -- how some of those guidelines have actually transformed into clinical practice so that, in fact, physicians and health care providers are better informed about food allergies.

Under -- oh, this is the development of the piece I just shared with you. So we're excited that we will be working with the agency to explore this in greater detail. And part of the greater detail, we want to do additional evidence-based review, and thank you very much for, Donna Kellie, for initiating the kind of work that we see here to look at the evidence and say, have we

changed behaviors, have we changed the choice of the food supply to reduce our exposure to various food components?

As we indicated just moments ago, that we're excited about seeing the public comment period, and hopefully some of us will be able to attend that comment period to incorporate the data and perhaps our Guidelines.

So at the end of the day, we looked to invite some folks from NIAID, perhaps we'll get Mike or Marshall on board with this at one of our subcommittee meetings, certainly at one of our conference calls, to include what's going on, and see what we actually include in our recommendations for the future.

We're really quite excited about this -- really -- that agencies working together for a common issue. It goes back to our priorities here.

Clearly the issues on food safety

and behavior, we're looking at food safety behaviors in the home. We're not here to look at the food safety issues that we've all experienced in the press of late. Keep that in mind.

We clearly want to continue to look at the risks and benefits of food fish consumption, so we're working with Dr. Pearson's group on food analysis on fish consumption.

Then we'll continue to explore food technologies. The food technologies that might be incorporated into the home at nominal expense. And of course, we'll hit the very popular topic of food allergies.

That's it for here.

Any questions?

Shelly?

MEMBER NICKOLS-RICHARDSON: This is Shelly Nickols-Richardson. Related to the in-home food safety behaviors, it does relate to what's been in the press lately that, in

two different states, I've had extension agents share with me that they have received an increase in the number of phone calls related to home canning and long-term storage of food.

So not just sort of the short term, are you getting the refrigerator temperatures correct. I don't know how much information there might be related to home canning, long-term preservation of foods.

But it is a concern. And even if it's not something that can be addressed in the 2010 Guidelines, perhaps it's an emerging issue for later.

MEMBER CLEMENS: Actually, we are addressing that. Thank you for sharing that, Shelly.

Rafael?

MEMBER PEREZ-ESCAMILLA: Yes, it's in the PICO chart.

CHAIR VAN HORN: Tom, go ahead.

MEMBER PEARSON: Rafael, I had a

question for you relative to the FightBAC!(c) Program, so I was pleased you are going to look at that and see. But I guess one of the questions I had is whether or not you're going to look at it relative to its evidence base for effectiveness. And if not, when we could really put in some of the same criteria that we use for all of our other guidelines of what class and grade of evidence we have that these things work.

You know, we have the U.S. Preventive Services Task Force. We have a variety of things that are very, you know, evidence oriented now, and this is such an important area, this home food safety, that I think it should be held to the same standards.

CHAIR VAN HORN: Larry? Oh, I'm sorry.

MEMBER PEREZ-ESCAMILLA: The answer is absolutely yes.

CHAIR VAN HORN: Larry?

MEMBER APPEL: Larry Appel. I

wanted to find out if there's sort of a question that comes before these, because it looks like these are focusing on sort of things that we think are important.

But I was wondering is, you know, is there any sort of compilation of, you know, where is the problem here? You know, is it, you know, is it gastroenteritis? Is it hemolytic-uremic syndrome from undercooked meat?

I mean, so that you actually then target, you know, your questions to the big public health problems. I mean that's what we do on these other committees. You know, like what effects blood pressure? What effects heart disease?

And I see a different sort of structure here, sort of like topical rather than top down where is the problem. So I just -- is there some data that should guide us? I'm just sort of curious.

MEMBER PEREZ-ESCAMILLA: Yes,

unfortunately, the surveillance of home-based food illness outbreaks is not great for a number of issues -- the nature of them plus, you know, I guess the word is the lack of investment in terms of trying to answer -- to put the resources to answer your question.

There are some attempts at trying to actually quantify the home-based outbreaks, and what are the causes of them. But it's not at the same level, I think, as it is for other topics that are being addressed by the Committee, unfortunately.

But we will -- if that literature exists, if any evidence is out there, we will find it.

MEMBER APPEL: Okay. Let me follow up then. Maybe, you know, the preface to each of these should be, how big is the problem. So I was listening to your comments about methylmercury, you know, so how big is that problem, you know, so that we can sort of put the recommendations in the context. And

you know, that may be more of a comment than a question.

MEMBER CLEMENS: We actually -- thank you for the questions on that, Larry -- we are actually examining the methylmercury implications, as well as the other issues to which Rafael referred. If some of those things pop up, then we will pursue on the clinical basis, or any other of the health consequences through the CDC and other resources.

CHAIR VAN HORN: Cheryl?

MEMBER PEREZ-ESCAMILLA: And I just want to follow up on that because, in terms of the methylmercury issue, one big concern in OB/GYNs telling pregnant women to don't eat fish during pregnancy. Nobody has ever made that recommendation. It seems that the evidence will not support at all making that recommendation.

So your point is very well taken that we need to have a better estimate of --

within the context of the U.S., how big is the problem, yes.

MEMBER ACHTERBERG: This is Cheryl Achterberg. An entirely different kind of question, different subject area.

But in the Nutrient Adequacy Subcommittee, one of the issues that we talked about that probably needed to be examined -- and I'm not sure this is the best phrasing yet for it -- but with the new interest or larger interest now in organic foods, local foods and such, that it felt like some subcommittee needed to look at the implications there.

And I don't know if you were aware that your subcommittee was nominated to do that.

(Laughter.)

MEMBER CLEMENS: Thank you very much, Cheryl. You may recall that, in the first meeting we had, that we addressed the "O" word. And it was agreed at that time maybe we wouldn't address it.

But it sounds like from your group that perhaps we should put it back on our plate. And they also came up with that wild -- - on the fish side, wild versus farmed. And we actually -- that is one of our PICO questions.

So we'd be glad to embrace that new question and put it back on. Thank you very much, Cheryl.

MEMBER NELSON: Well, I -- this is Mim -- I respectfully may disagree, because I'm not sure -- there are so many different -- I mean there's local, there's organic -- I'm not sure that -- I'm sorry that, you know, Dr. Hamm just left.

But I'm not sure that -- I'm concerned that, if we deal with it from a food -- in the food safety section, that somehow, just by default, that then there's some kind of worry and question about, you know, local food, and organic food, and all this other stuff which -- I mean we just have

a whole range of the food supply.

And I think that dealing with the home is the right way to go with it. And I think -- I'm just -- I think it may be the wrong approach for putting organic -- I mean, what's the question?

If there's a question about local foods, sustainable foods, organic foods around, you know, nutrient quality, that's another question.

But if there is really a serious concern about organic foods, which I don't know the safety literature as much, but I don't think there is, because it's being dealt with elsewhere.

As you said, it's about the home that you guys are dealing with. I guess I would just opt for that's the right -- we've got a lot of work to do, and that would be the way to go. But --

MEMBER CLEMENS: Where does the local fit? What bucket should it fit in? We

do know that the local farms -- there's guidelines at the USDA that indicate there are some farms, some volumes that, in fact, do not fall under the FDA/USDA guidelines for food safety. And maybe we have an opportunity to educate the consumers about these kinds of issues.

And the question I was going to give to Dr. Hamm was, in fact, what measures are the local farmers using to be sure that the food supply is safe? There aren't any guidelines right now.

MEMBER ACHTERBERG: And to follow up on Mim's comments, I think in our subcommittee we were well aware of some of the issues raised, Mim. Part of it, frankly, is a workload issue, as this particular subcommittee has so many questions to sort through.

So we recognize that there are issues around this that perhaps go beyond the traditional food safety perspective, but that

there's also an opportunity here, even if it's very brief, to correct some misconceptions, and that a function of the Dietary Guidelines might be to do just that.

CHAIR VAN HORN: Right. And any of the speakers that we had already, and including those tomorrow, have agreed, you know, that if we have follow-up issues, follow-up questions, we can certainly go to them.

Chris?

MEMBER WILLIAMS: Chris Williams. It looks like you're trying to categorize things in terms of foodborne illness, and then food contaminants, which mercury would be one.

Have you considered other contaminants, such as pesticides and other things that could contaminate the foods?

MEMBER PEREZ-ESCAMILLA: Yes, specifically with regards to fish, that is a very important question. Over 75 percent of

the fish advisories, local and federal and so on, are related to methylmercury in fish.

Some of the experts that we have contacted believe, or their data suggests to them that, for example, persistent organic pollutants, the POPs, are not a big issue in the U.S., that if methylmercury is addressed, essentially that would address the biggest concern.

Others, essentially their concern is related to how complex the data is. So the combination of perhaps having more data available for methylmercury, and that it appears that it is a much larger problem than other known contaminants, lead us to choose this path of concentrating mostly on the methylmercury in fish.

If your question is about contaminants in general for all sorts of foods, pesticides and so on, we've had some conversations as to how this probably would fall within the jurisdiction of EPA, and

we're not sure how far we would be able to get if we took that path. But any comments are more than welcome, because it is an important issue.

MEMBER RIMM: Yes, this is Eric Rimm.

I do worry about dropping pesticides from the list for fish, because I think if you ask anybody in this room, would you rather have wild salmon or farmed salmon, I know you just said it's on your PICO chart, everybody would say, wild, likely. And the reason is because they're worried about pesticides in the feed in the farmed salmon.

So you know, while I believe that I would have salmon of either kind, because I think it's going to have plenty of omega-3 fatty acids, and that's what I'm concerned about, I think you may run into the same problem with pregnant women who are trying to decide whether to eat fish or not based on the mercury content.

Salmon has no mercury, but there might be a difference in persistent pesticides. So if the perception is out there, I think we should address it either way.

MEMBER PEREZ-ESCAMILLA: And the response from the FDA related to POPs and dioxin, dioxin-like compounds in farmed salmon, which the concern is through the feed --

MEMBER RIMM: Yes.

MEMBER PEREZ-ESCAMILLA: -- that almost -- that evidence came from studies done outside the U.S. And that, as far as they know, it is not an issue for farmed salmon in the U.S.

MEMBER RIMM: Well, yes, but three-quarters of the salmon --

MEMBER PEREZ-ESCAMILLA: Or Chile.

MEMBER RIMM: All the salmon comes from Chile.

MEMBER PEREZ-ESCAMILLA: So I will

qualify my statement. So they said the U.S. or the suppliers for salmon in the U.S., such as Chile.

So according to their data, the evidence related to farmed salmon and dioxin, it does not apply to the situation in the U.S.

MEMBER RIMM: I mean, with all due respect, I disagree, because there are data --

MEMBER PEREZ-ESCAMILLA: Okay.

MEMBER RIMM: -- that suggest that there's quite a distribution of it. And again, I don't think there's -- I know there are studies showing that if pregnant women have substantial amounts of pesticides, that there is neurological effects in their children.

It's not generally from fish. It's usually from eating other foods that are very high in pesticides. But the perception is out there, I think, that people choose

wild over farmed because of this perception of pesticides.

And there are plenty of studies, and there have been many over the last five years sort of monitoring differences in pesticides between fish from Chile, and from Scotland, and from Canada, and from the U.S., and there are differences.

You know, whether there are important health differences related to that, I don't know. But I think -- I'm sure that it wouldn't come up if we just focus on mercury, because mercury doesn't -- mercury is not part of anything -- any fish like salmon or any of the smaller species. Mercury is mostly for tuna, and shark, and swordfish.

So I just worry that we're sort of missing out on a whole half of the misperception related to fish consumption by just focusing on mercury.

CHAIR VAN HORN: All right. Well,

excellent points, and outstanding presentations. I think we've all learned a lot today.

And certainly appreciate the time and energy that our guest speakers took, as well as all of the groups that came bright and early this morning to begin really hashing through some of these issues.

So we will now adjourn for the day, and plan to reconvene tomorrow morning bright and early at 8:30 with another couple of presentations, and then continue with our scientific reports.

Thank you all for coming.

(Whereupon, the above-entitled matter was adjourned at 5:11 p.m.)

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