

SESSION III: THE CHALLENGE OF OVER-NUTRITION AND OBESITY

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The Challenge of Over-Nutrition and Obesity

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I want to begin by reviewing an issue that's come up during this year, which really was unfortunate, and quite distracting, regarding the urgent need you've heard about to deal with the overweight and obesity problem. I mention it because this has been used by some industries to try to derail public health efforts and has caused a huge amount of confusion. Maybe some of you saw one of the many headlines this last spring. This is Gina Kalata in the *New York Times*, "Some Extra Heft May Be Helpful, A New Study Says."

This unfortunately was a paper published in a leading medical journal by Dr. Dietz's colleagues at the Centers for Disease Control and was very naïve, and really quite misleading. And the point was that they did a study basically weighing and measuring people in NHANES Survey, and then calculated their body mass index and followed them over time to see who died and who lived. The point is that if you look at the relationship between body mass index and mortality rather naïvely, you see a U-shaped curve or a J-shaped curve. And this is what we saw in our population, the Nurses' Health Study.

While this sounds very simple and straightforward, the problem is that there is severe confounding and reverse causation. Part of the problem is that people just don't go along at a steady weight and then drop dead – people often get sick, lose weight, and often exit in a state of weight loss for even years before they die, if it's due to conditions such as chronic lung disease or cardiac failure.

Thus, many people at the lower end of body mass index range have a low body weight because they're ill. And also cigarette smoking does cause people to lose weight, and it's often used as an excuse for people not to stop cigarette smoking. That's really a very bad excuse, but it means that among people who are lean, there is a higher prevalence of smoking; and that's a very powerful risk factor for death. So unless you very carefully exclude people who are ill, who have lost weight in their recent years, and limit analysis to never smokers, you get this kind of relationship.

Interestingly, this was "discovered" by a leading researcher, Ruben Andres, back in the 1990s, and he also caused a huge amount of confusion at that time. Dr. Dietz was on the national panel that helped straighten us out, and the weight guidelines at that time in 1995 were adjusted so that a BMI of 25 was the upper limit of the healthy range. And that's the international WHO upper limit of weight guidelines as well.

If we do a more careful analysis, excluding people who are ill, looking at never smokers, then the relationship between BMI and mortality is really linear – there's no benefit for being overweight.

Mortality is an attractive endpoint to look at, but it's important to pay attention to morbidity as well. And we've looked at this in great detail while we were dealing with this issue that was raised by Ruben Andres, the idea that it's good to be overweight. And it's certainly not good to be overweight.

These are data compiled from very different reports we did in the Nurses' Health Study. And note the scale here. This is body mass index, the upper part of the scale here is 30, so people with a BMI of >30 are off the scale. Thus, we are looking at overweight and its range from 25 to 30 and then from 18½ up to 25 – this is the so-called healthy weight range. So you can see that in the overweight range there is a threefold, excess risk of coronary heart disease, gallstones and hypertension. Diabetes is the condition most closely linked with body mass index, and even within the so-called range of normal weight category, there's a very strong gradient between BMI and type 2 diabetes. So people with a BMI of 25 have about a six times higher risk of type 2 diabetes compared to people who are really lean. So the point is that just because you have a BMI of 24 or 25 doesn't mean that you're at your optimal weight by any means. It's very important to keep track of weight gain throughout midlife, as well as just looking what our BMI is at any point. The diabetes risk goes totally off scale or up to a relative risk of about 60. So the point is that we talk about obesity off the scale, but overweight is a very important condition as well.

I also want to add just a little bit of detail to some of the maps that were shown by Governor Huckabee this morning, looking at the changes over time and different patterns in different parts of the country. Unfortunately, there is this massive belt of obesity that runs down through the Midwest, down to the Gulf Coast. There is also a strong gradient by education, and I'll come back to that in a minute. But the rates of obesity among those who have less than a high school education are about twice as high as college graduates, although no group is immune from the increases in obesity that are occurring over time here. But there is a very strong socioeconomic gradient.

Again, this is looked at in a slightly different way, a strong gradient by region of the country, which was already shown on the maps, with the Midwest really being the lead, although the Mid-Atlantic and Southeast have been doing very well at catching up with the Midwest. In New England we like to think we're a little bit more clever, in controlling the obesity epidemic, and the rates are quite a bit lower. However, if you really look at it carefully, what it means is we're just ten years behind the Midwest, and if everything continues on, we will be in ten years where the Midwest is now.

I think we have accomplished a lot in the past five years. There has become a recognition of the problem, and that's really important, because if it's not recognized as a major problem, almost no one is going to do very much about it. We had this little hiccup last spring with the CDC report suggesting it was really nothing to worry about. But it is something really to worry about.

And I'll talk just a minute about some of the strategies and provide some examples of ways we can help control the obesity epidemic, taking off from where Dr. Dietz left us, where he focused primarily on the role of industry. As Governor Huckabee mentioned this morning, this is really

an issue of changing our culture, and it has to go deep. There's no single, one solution. But as he also mentioned, this is not something that is unfamiliar to us. We have had to deal with major public health challenges before that required cultural changes. Amongst those he mentioned was smoking. Smoking is still an issue, but the rates have down by much more than 50%, compared to what they were 40 or 50 years ago. So we've made enormous progress in that area. As he mentioned, we've made huge progress in seatbelts, some of the latest surveys showing approximately 80% in many groups are using seatbelts. For drunk driving, there's also been a cultural change, and we have designated drivers now that are not used a hundred percent of the time; but that wasn't a practice just ten or fifteen years ago. And issues dealing in areas with poor immunization rates we've made major progress as well.

The World Health Organization has reviewed some of the features of past, successful health campaigns. And as mentioned there, the successful campaigns have features that are fairly consistent. One is an adequate duration and persistence, and I think Governor Huckabee was exactly right – we're not going to solve this in an election year cycle. This is perhaps even a generational challenge for us.

A slow and staged approach is critical. Legislation action is an important part of it, but it can't operate on its own, and as he gave some good examples this morning, a lot has to happen before legislation action is even possible; but then it can accelerate changes. Education is critically important. Advocacy is important, and here there's been an important change in the last just two or three years that the American Cancer Society has taken on, next to cigarette smoking, a parallel effort dealing with overweight and obesity. And some of those groups can be extremely important because they are experienced in being advocates. We academics aren't experienced; that's not our role.

And, as Dr. Dietz mentioned, social change is a shared responsibility by consumers, communities, food industry and governments. It has been pointed out that if we just make one change, whether it be soda in vending machines or physical activity, that one change is going to have a small impact, but still all those changes are necessary. So there has to be an orchestrated effort where every instrument has an important part. But the full effect is not going to be seen without the full orchestra.

As Dr. Dietz also pointed out, in theory this is all very simple. We just either cut down the calories eaten or burn more calories. But clearly it's simple to say, but it's not so simple to put in to practice, and that's the real challenge.

I will mention for a minute one of the areas that was thought by the nutrition community to be a major part of the solution, and that was to reduce the percentage of calories from fat in a diet. This became the foundation of national food policy, food guidance, and it's really epitomized in the Food Guide Pyramid. And you can see, this is the old pyramid – fats, oils and sweets, to be used sparingly without any distinction between the types of fat. And if you're not going to eat fat, as everybody here knows, you're going to have to eat a lot of carbohydrates. So we recommended huge amounts of things like white Wonder Bread and Rice Krispies, and if that wasn't enough carbohydrate, we put potatoes as a vegetable, and in the national surveys count French fries as a vegetable.

So we had this huge push to increase the percentage of calories from carbohydrate, and actually we did; and interestingly enough, that corresponds in time very much to the epidemic of obesity where the focus was on reducing fat calories and not paying too much attention to carbohydrate calories. There was a belief at this time, even by many senior nutritionists that you couldn't get fat by eating carbohydrates. Farmers have actually known for thousands of years – the way you fatten up animals is to put them in a pen so they don't run around too much, then you feed them grain, even whole grain, and that's how you make them fat. And it looks like we basically created a great American feedlot.

Part of the confusion was that there was not much good research done on such a basic issue as how the macronutrient content of our diet affects our weight. There were lots of studies done, but most of them were very short term, just lasting for a few months or so. George Bray and Barry Popkin, in a meta-analysis, predicted that a 10% reduction in percentage of calories in fat by 18 months would cause a 9-kilogram weight loss. But I went to the literature and dug out all the studies that had actually lasted a year or more that I could find. None of them anywhere near approached what Bray and Popkin predicted. The reason is that if you make a major change in someone's diet, almost always, no matter what the change is, for a few months you see a few pounds of weight loss. I say you put a dietitian on someone's back and they lose two kilograms. It doesn't really almost matter what the diet is, but if you follow people on, in most of these studies they regained those one or two kilograms. So by a year, on average, there was absolutely no benefit from reducing the percentage of calories from fat in people's diets.

Just in the last few years there have been funded some good, long-term studies of how the macronutrient aspect of our diet affects our weight control. One of the most successful studies done so far by Frank Sacks and Kathy McManus at Harvard. This compared a diet with 35% of calories from fat with a low-fat diet about 20% of calories from fat. The higher-fat diet was really a Mediterranean diet with lots of fruits and vegetables and nuts and whole grains.

Interestingly, people in both groups lost about the same amount of weight during the first six months. In fact, it was a pretty good weight loss, about 13 or 14 pounds on average in the two groups. But for some reason, and we still don't understand that, people were just not able to stay on the high carbohydrate, low-fat diet, and they dropped out much more frequently from that group. And even the ones that stayed in tended to regain most of the weight. And if you included everybody – these are just the people that stayed in the study – the people in the low-fat diet actually ended on average with a higher weight than they had at the beginning of the study. The people on the Mediterranean-type diet were able to maintain most of their weight loss by 18 months, and even it went on another year, and they were still on average able to retain most of the weight loss.

So it does seem like the push to just focus on fat calories is clearly, scientifically not very sound. It wasn't really well-substantiated from the beginning, and the data that are coming in now suggest that that's not going to be a very successful solution to the obesity problem.

However, there is some indication that paying attention to the quality of a diet can have some influence on body weight. It won't be a solution to the problem, but it may have some influence on our ability to control our caloric intake over the long run. Dr. Ludwig is going to talk about that in some more detail, so I won't pursue that further.

During the last several years, I chaired a group in New England that was a consortium of academics, health departments from governments, and industry, as well as volunteer organizations, to develop a strategic plan for weight control in the New England region. I will share with you some of the conclusions that came out of that report. This represented volunteer efforts by several hundred people.

First of all was, we realized that obesity should not be conceptualized as the target. For one thing, it promotes stigmatization, and that is a real issue. It ignores much of the scientific evidence, and as I showed you earlier, it's not just obese people, conspicuously very overweight people with a BMI over 30 who have increased risk; it's also people just moderately overweight, and many of the people that are in the so-called normal range are above their optimal range.

So the reality is that there are only a few percent, maybe 5 and probably less than 10% of the adult population who really don't need to pay attention to their weight. Already two thirds are overweight or obese. A lot of the remaining one third are above their suboptimal weight, and the few people that are really at their optimal weight are mainly those who are running, exercising and paying attention to what they eat. So in some sense we're all in this boat together. This isn't an issue of "them," this is an issue of "us." And I think that is really important, that we are all part of this culture and need to pay attention to weight control.

So if we just focus on obesity, it's likely to end up more in the medical model with emphasis on treatment that's likely to involve expensive drugs and surgery. Bariatric surgery bypass is a huge growth industry in medicine now, obviously hugely expensive and not by any means going to be an adequate solution to this problem. There may be a small number of people who appropriately benefit from this. It's certainly not going to be a solution, but it's eating up huge resources at the moment.

Alternatively, we can focus on weight control as a life skill. I think this is what we really should be aiming at, and this was the consensus of our working group. For one thing, it's inclusive. Again, almost everybody needs to be paying attention to weight control as a life skill. It's consistent with the scientific evidence that focuses on prevention, and it requires a supportive environment. It's not just everybody on their own or individual responsibility. It involves a whole network of changes and solutions that need to be imbedded in our culture.

Our working group identified eight different areas where we need to be taking action if we're going to have an effective effort, and I'll mention some of these very quickly.

Schools, we talked about already, are critically important but not sufficient on their own. Healthcare providers are also key. The literature shows that most healthcare providers who see an obese patient or an overweight patient don't even say anything about it. I think Governor Huckabee gave a really great example this morning, his personal example. It probably took his physician just two or three minutes to convey the message that, for his personal health, a major change in diet and lifestyle was important.

Having been a practicing physician myself, I suspect his doctor talked about this before, but even though the chances of a patient making a major change at one point in time are small, the cumulative message ultimately has an impact. It may be that your brother had a heart attack or

something like that, but at some point that message hits home. And it is extremely important that healthcare providers be guiding their patients adequately. But again, that's not a solution in itself.

Worksites, as Dr. Dietz mentioned, are extremely important. The media can be very important and is a critical part of any solution. The physical environment is very much an important part of the solution. Again, with Dr. Huckabee's example, not everyone can be a governor with a nice walk around their house, and fortunately he took good advantage of that. But a lot of people live in neighborhoods where it's not friendly, it's even sometimes dangerous, to walk around your block.

Interestingly, in rural areas this is a huge challenge. For the state schools to take this on will be a really great contribution. And the greatest prevalence of obesity is not in the urban areas, it's in the rural areas, ironically now. And in many of those areas people can't find a place to walk. They're on a busy road, there are no sidewalks, and it presents a real challenge. I don't have all the solutions for that, but we do have to find solutions.

The food environment is a major issue, and I think Dr. Ludwig will focus on that. Unfortunately, the food industry is doing a lot in this area, and most of it is negative. Over ten billion dollars is spent on promotion of food, on research on food promotion by the food industry. And most of it is how to get people to eat more food. We are in a system where capitalism drives all these companies to sell more of their product and to compete with each other in doing so. And that has created an environment where food is everywhere, it's attractive, it's salty, it's sweet, it's packaged in a sexy way. And clearly that has been one of the reasons that people do eat more. It's just too easy. And as was mentioned by Dr. Dietz, there has to be a re-orientation of what kind of foods we do promote.

There, I think, is a major area in the food environment that the present national government doesn't want to talk about, which is the exploitation of children by the food industry. I think it is criminal that there's aggressive advertising to children to eat foods that are not good for them – foods that are high in sugar, most of the breakfast cereals that are advertised for children, and soft drinks, for example. These are foods that you wouldn't feed to your dog, but yet we're feeding them aggressively, promoting them aggressively, to children. Somehow there has to be a level playing field there. Even if Kellogg's wants to only promote healthy foods for children, if they only do that, they're going to be out of business because General Mills will fill that void very quickly.

Somehow we have to have rules that everybody plays by. Clearly, children are going to eat breakfast and that can be a healthy food. But we have to figure out a way so the companies compete with each other promoting healthy foods, not compete with each other promoting junk. This is an issue that we really have to come to grips with if we're going to have a satisfactory solution.

Data for action involves good monitoring. CDC is doing some good work on that, and we also learned this morning at the breakfast table that Arkansas and some other states are creating data resources to carefully monitor what's going on in at least children in their states. Having good

data is really necessary for making focused and effective interventions, and then finding out where we need to make adjustments in the process.

The economic analysis needs to be done further, and we realize that we only scratched the surface here. We identified the economic problem, but there's a huge amount that needs to be about cost effectiveness of various interventions. Since state schools almost all have good agro-economic departments, this would be an area where they could contribute importantly.

Governments and community organizations can play a very vital role in promoting healthy weights. Again, Governor Huckabee mentioned some of these. Unfortunately, there is very little national leadership on this now, which is important because transportation is something that can't be done on an individual level. Providing the funds for building bike paths, safe places to walk, safe places to have fun and enjoy sports and recreation is a role that really only government can play, obviously supported by community advocacy groups and individuals.

Building codes need to be examined, and there are some experiences going on, providing financial incentives to use bikes and to walk. And clearly that can make a difference. We usually subsidize driving by providing free parking spaces, but there's not an equal subsidy for people who walk and bicycle.

The obesity situation is now out of control, and getting worse fast. Is it possible to control the epidemic? Like Governor Huckabee, I am an optimist. I think it's possible if we would really do it. And you could say, "Well, how is it possible? Can you show me?" Unfortunately, we don't have many positive examples for controlling this epidemic, but there are some.

And one is to go back to the socioeconomic data where the obesity rate is twice as high in people with lower income and education. This says that something about our knowledge and our ability to act upon that knowledge is very important in helping control weight, and this gives some hope.

If we look around the world, there are some interesting examples. While the obesity epidemic is affecting many countries, including developing countries, it's not universal. And while the obesity rate in women in the United States is over 30%, in Japanese and Swedish women, it's still around 6 or 8%. It's going up a little bit, but there's still a huge difference. And these are not poor countries. But I think trying to understand better what are the important differences or why these differences are so great would be something to learn from. But it gives a clear indication that this is not hopeless. It is possible for populations to control their body weight.

There are also some interesting school-based interventions. Singapore has really taken the lead in this area. They have had programs in their schools that include an integrated curriculum and provide healthy food and physical activity, and they actually did see some decreases in weight. These are sort of small changes, you might say, but they're going in the right direction, where in this country they're going in the wrong direction. So this is not hopeless.

To conclude, the focus on a low-fat, high carbohydrate diet has been a lost opportunity for Americans to improve our health. We put a lot of eggs in that basket, unfortunately. To address the epidemic of obesity that is engulfing our country, a comprehensive approach will be needed that includes nearly all members and institutions in our society. We should not assume that this

will be without cost. However, the price of not doing something is huge, and if we're going to be serious, we are going to have to make some real investments, both energy and money, in prevention.