

CHIP Clinical Rounds

(D) **Hans Diehl, DrHSc, MPH**
Director & founder CHIP

6:38 min.

What are some of the impressions that you have so far? Some of you have looked through your notebook, your syllabus—what are some of the topics and subjects that jump out at you?

I cannot believe that everybody here wants to give up potato chips and red meat! How is that possible?

Apparently, you cannot believe that everybody wants to give up potato chips and meat? Is that what *you* want to do? Is that what you're *supposed* to do? Who told you *that*? . . . Oh, you read ahead, didn't you?

We are going to take a closer look tonight at why people are going to make wiser choices in life. We are going to deal with the philosophical question—do you eat to live, or do you live to eat? And when you eat in a certain way, what does it really do to you? You will be amazed as you take a closer look at the killer that comes to dinner. But the truly amazing thing is that most of us feed this killer on a regular basis. He is the ultimate parasite. He enjoys living inside of our arteries: he does not have to pay rent; he is being fed three times a day; and he is growing fat while at the same time strangling us.

I love my coffee. I drink 5-6 cups a day. Do I have to give it up?

No, you don't want to quit drinking coffee. Because if you stopped all at once, you would be hard to live with. For instance, you could develop headaches as part of the caffeine withdrawal. As you are thinking about cutting back on caffeine, do it gradually. Replace one or two cups of coffee a day with decaffeinated coffee. After 2 or 3 weeks you might be interested in even trying some of the coffee substitutes or some of the herbal drinks. Or, even better yet, you might want to switch towards drinking more water. Caffeine really is not in your best interest.

On the other hand, water is very important. All of us are probably dehydrated most of the time. And since caffeine is a diuretic, it actually takes water out of our system instead of putting it back. We need to drink much more water. Your goal should be to drink 8-10 glasses of water a day. I wouldn't be surprised if in about a week or so some of you will come sloshing into the auditorium here. That's great! Forcing plenty of water is an excellent way to get you into an exercise program: you've got to go! . . .

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Q: What about the *JumpStart* program?

(D) Some of you want to begin the *JumpStart* program. Others have already made that decision. If you are a diabetic, be sure that you start with day #3 of the *JumpStart* program. If you had an intestinal bypass, be sure you see someone on our clinical staff.

Otherwise, I hope that you will all jump on the bandwagon and begin your *JumpStart* tomorrow. This means, eating fruits and grains. It is something like a light fast, but only for a couple of days. This will help you move certain things that need to be moved. We want to help you to clean out your system—especially the colon area. This will make you feel lighter, and it will facilitate better nutrient absorption across the intestinal wall.

Take a close look at your *JumpStart* booklet. It raises important issues. Read up on them and get a feel for the *JumpStart* program. As you get into the *JumpStart* program, you can actually “jump start” the whole CHIP program.

Q: How does this program apply to elementary students?

(D) We would like to recommend that you make CHIP part of your family lifestyle. It’s an excellent way to go. When it comes to the healthier, more natural foods, you sort of slip those in. Don’t give your family a sermon every time you introduce a new and healthier food. After all, that’s the kind of foods we should have eaten all along. We shouldn’t have to make a case for the *real* food.

Tragically, too many of us rely today on mostly engineered foods and fast food items, such as Ding Dongs, Snowballs, M&Ms, hamburgers, cheeseburgers, and Cokes . . . But these are not *real* foods. It’s a commercial fare that has been sold to people. As we get back to the original foods and begin to eat more whole foods, however, it is kind of strange that we find ourselves often in a position where it seems that we have to make a case for doing so. We should have to make a case for eating those “so-called” foods that are so heavily advertised and promoted as taste sensations and convenience foods.

Q: What was our reading assignment for today?

(D) You are curious about what you were supposed to have read for tonight? Did you read anything for tonight? You read the first chapter, the first tab? By now you should be pretty much done with tab #1—*Modern Medicine: Miracles, Medicine, Money & Mirages*. These materials were prepared to give you an in-depth view and a review opportunity of what we discussed last night.

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(D) **Hans Diehl, DrHSc, MPH**
Director & founder CHIP

(W) **Alicia Williams, DO, FACC** *Invasive cardiologist*

(N) **Edwin Nebblett, MD, MPH**
Asst. Prof. Family Medicine Michigan State University

20:27 min.

How long does it take to reverse atherosclerosis? Is this process completely reversible?

We don't actually have to reverse the plaque by very much in order to see a significant improvement in the blood flow to the heart muscle. Dr. Dean Ornish, a young cardiologist, was the first investigator to scientifically demonstrate that the process of atherosclerosis leading to heart disease could be reversed by using a very low fat, vegetarian diet, plus exercise and meditation. What he found was very interesting—even though the narrowing in the coronary arteries did not change that much, the blood flow to the heart muscle dramatically increased and allowed most patients' angina pain to diminish and often disappear even within a couple of weeks. People noticed that they didn't have as much chest pain anymore. They were able to do more, even though they were taking fewer nitroglycerin tablets—within two weeks, much of their pain was gone.

Did this mean that the plaque had diminished or undergone a melt-down? *Not in two weeks!* But the blood flow had dramatically improved!

Subsequently, however, the researchers were able to document that after one year on the lifestyle medicine program the blockages in the arteries *had regressed*—the arteries had opened up again, the blockages were retreating, and atherosclerosis was regressing.

The researchers also found that heart disease and angina pain were not only a problem of arterial blockages, but it also had to do with the thickness of the arterial blood. We learned that blood viscosity played a major role.

The thinner the blood, the easier it flows through those narrowed arteries to bring oxygenated blood to the heart muscle. Think about toothpaste trying to squeeze through those small arteries! That would be tough. But now think about water trying to get through these same arteries! Imagine what thinner blood—with less cholesterol and fat—will do for you! It will flow easier not only to your heart but to all of your organs as well.

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(N) To summarize: two major things are going on. First, you are enhancing the blood flow, and that can happen within a couple of weeks. And then, secondly, you are reducing the blockages with time. Instead of taking care of *symptoms*—like taking one pill to thin down your blood, and another pill to dilate your arteries—you now attack the *causes*: how you eat, drink, and live. By doing so, you achieve both clinical improvements. That’s the beauty and simplicity of the CHIP lifestyle program!

(D) Let me add that patients on blood thinners, like Coumadin, should work very closely with their physicians. As the CHIP dietary lifestyle program reduces the blood’s viscosity—it thins the blood more naturally—the patients often need less of these blood thinners. These blood-thinning medications need to be carefully monitored and adjusted otherwise patients may bruise easily and have trouble with proper blood clotting.

(N) Working with your physician is very important. You may not only thin down your blood, but it could go, at times, in the opposite direction as well. For instance, taking large amounts of raw spinach, which contains plenty of vitamin K, may deactivate your blood-thinning medication and thus cause your blood to get thicker. If you are on a strong blood thinner, like Coumadin, be sure that you work closely with your physician. Chances are that you will be increasingly less dependent on these blood-thinning medications in that your CHIP diet will accomplish at least a part of that goal.

Q: Are both calcified and fibrotic plaques reversible?

(W) Most plaques go through maturing processes. They start off as a *fatty* streak characterized by the incorporation of cholesterol and fat into the arterial wall. In due time, these fatty streaks become *fibrotic*—they get thicker and become less pliable. And as they get older, many plaques get *calcified* as they incorporate calcium into their structure. This makes them and the arterial wall even less pliable—they harden, become brittle, get calcified, and they can now fracture and break with greater ease.

There are other plaques that can harm us without having to mature, age and harden. These are *soft plaques* that usually contain a large lipid core. These soft plaques contain plenty of cholesterol and fat. These soft materials make these plaques rather unstable; they can now rupture with great ease, and as their contents enter the bloodstream they can plug off an artery and shut down critically important blood supplies. Fortunately, we can stabilize these soft plaques and prevent them from “spilling their guts” by lowering the cholesterol in the blood and within the plaque itself.

Dr. Ornish’s study found that those patients with the most calcified plaques also had the best reversal results. This suggests that both fibrotic and calcified plaques are subject to regression and reversibility. And that’s indeed great news!

Q: I would like to begin the *JumpStart* plan tomorrow. This means that I will be eating fresh fruit and whole grains for

a couple of days before I add the vegetables and bread on Day #3. At the same time, I would also like to attend the *Applied Nutrition Workshop* on Sunday and enjoy the lasagna banquet meal that day. How can I accomplish both goals? I want to have it both ways!

Fortunately, the answer is quite simple: you can begin your *JumpStart* tomorrow. Use fresh fruit and whole grains for a couple of days. Then add the vegetables, and on Sunday attend the Applied Nutrition Workshop and enjoy its gorgeous lasagna meal. As far as the timeline is concerned, you are right on target with *JumpStart*. So, begin your *JumpStart* program tomorrow, and on Sunday, when you attend the Applied Nutrition Workshop, you can enjoy that delicious lasagna meal without feeling guilty!

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What about *Maxide*? What is it? What do we use it for? Is it safe to use? Are there some concerns?

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Maxide is a popular blood pressure medicine. It is a thiazide drug, a water pill that basically works by dumping salt thus forcing excess water from the body.

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As always, the problem is—you don't get anything for free. First you pay for the medication—usually for the rest of your life. And then, you have to be concerned about the medication's side effects, something that comes with the pharmacological territory.

As a physician, I'm particularly careful when it comes to thiazide drugs. For instance, I do not like to give these drugs to diabetics because they raise their blood sugar levels. I also cannot give them to patients with coronary risk because the thiazide drugs can raise cholesterol and triglyceride levels. Thiazide drugs, like all diuretics, can lower potassium levels in the blood. Therefore, I have to watch my patients' potassium levels in order to prevent potentially life-threatening arrhythmias, or irregular heart rhythms. In addition, I have to be concerned about the problem of causing impotence in men.

For these kinds of patients, I have to find more suitable blood pressure lowering drugs; or better yet, I prescribe the CHIP lifestyle program.

My observation has been that when people adopt the CHIP *Optimal Diet*, they eat considerably less salt. In addition, they will eat more *foods-as-grown*. These *foods-as-grown*, like string beans, however, are not only very low in sodium, but they are also quite high in potassium. This creates a more favorable potassium/sodium ratio, which promotes *low blood pressure*. But when the string beans get processed, the manufacturer usually adds salt. This causes the ratio to turn the other way—high sodium and relatively low potassium. That is the very ratio that promotes *high* blood pressure.

As you follow the CHIP *Optimal Diet*, you will eat less salt and more natural unprocessed, unrefined foods that are usually high in potassium yet low in sodium. This much more favorable potassium/sodium ratio will help you to bring much of

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your high blood pressure down, so that you do not have to rely as heavily on blood pressure medication. Be sure, however, that you let your physician know about this. As you follow the **CHIP** program, your blood pressure may drop so much that your physician may have to cut your medication and sometimes even discontinue it. But don't lower your medication on your own. Don't "play doctor." Work with your physician. Affirm and insist that you are going to be serious about this new lifestyle medicine approach, and that you would like to see if you can bring the blood pressure down in a more natural way.

Q: How do I get my physician's cooperation? Many physicians seem to be determined to have their patients stay on these pills for the rest of their lives.

(N) As you follow the guidelines of the **CHIP** program, you will find that your need for many of these medications will go down. The positive impact of the **CHIP** program will probably stun most physicians. After all, they have never seen anything like this. In their clinical experience, they usually have to progressively give more and more medication to control high blood pressure levels. But now, you come along and you want to have the medication reduced! What do you do to change your physician's attitude?

You just have to say, "Look, I have been monitoring my blood pressure lately. I now have my own blood pressure cuff and stethoscope. I have checked its accuracy against your machines and, according to your nurse, they match up quite well. I have been monitoring my blood pressure every morning and evening. Here are my results—both systolic and diastolic blood pressures. And since I've started the **CHIP** program, I've also started to take more responsibility for my health. As a result, my blood pressure numbers are coming down. They're coming down so much that I would like to have my blood pressure medication lowered. Do you have a problem with that?"

"Well, no."

"I will keep watching my blood pressure and keep track of the numbers. I plan to see you again in 2-4 weeks. Is that alright with you?"

"That's great!"

As an academic physician who deals with medical students and young physicians in a hospital setting, I want to encourage you, as patients, to negotiate with your physicians. Just remember: if you demonstrate a sense of responsibility by daily monitoring your blood pressures and by presenting the numbers to your physicians, they will have very little reason not to believe you. But if you spout off, "I want you to cut my blood pressure medication," most physicians will say, "Time out! I'm too worried about your blood pressure to cut your meds." And that will be the end of it.

You, as patients, have to help your physicians. You've got to take responsibility for your health. Purchase that blood pressure cuff. Monitor your pressure at dif-

ferent times of the day. Take it when you're feeling fine and relaxed. But also take it when you're totally stressed, like after watching the news. Record these numbers, and then take these numbers to your physician. And then, most reasonable physicians will say, "Well, OK. I cannot argue with your progress. I'll cut the meds in half. Keep watching your blood pressures. And see me again in two weeks."

That's how you get your doctor's cooperation. Work with your doctor. In so doing, many of you will see very quickly that you will have an excellent chance to get off some of these blood pressure medications.

If lifestyle medicine approaches can be very helpful in lowering blood pressure levels thus reducing the need for medication, why is it that most physicians prescribe medications right off the bat, and they never tell us about lifestyle changes as an alternative to these pills?

The simple answer is—we do not believe that you can do it. That's the bottom line.

Over the years, as physicians, we have seen many patients with good intentions. But these intentions usually don't amount to very much. In the process, many of our once idealistic physicians develop a sense of reality orientation. Over time, that idealism often turns into skepticism and sometimes even into cynicism. After all, how many times have we told patients to quit smoking, to lose weight, to take the proper medication at the right dose! And yet, if we face the facts with honesty: much of it has been an exercise in futility. The spin-off? The physicians don't believe that you can and will make those lifestyle changes!

One of the major differences between the CHIP program and medical practice is that we *tell you what* to do but CHIP *teaches you how* to do it. As physicians, we try to tell you in three minutes what you need to do. In the CHIP program, they take 40 hours to help you *understand* the disease and how it relates to your lifestyle and your habits. CHIP teaches you about cause and effect. And as you meet, day after day, with several hundred people all trying to do the same thing, you begin to realize that you have a part to play in your own recovery from these Western killer diseases. And encouraged by others, you begin to get turned on. "Hey, I can do this!" And as you step out and make the changes in how you eat, drink, smoke and live—the clinical results will usually follow: your weight drops, your cholesterol comes down, your blood pressure and blood sugar levels drop. And when you see your physician, your doctor will be absolutely stunned. "Tell me, how did you do that? Are you on some kind of new pill?"

Your next move then will be: share with your physician how you did it. Show the weight and blood pressure sheets; show the sheet with the heart rate numbers and how they have come down in response to your daily walking program! How can physicians argue with your clinical improvements?!

That's the way it will work, in most cases. Since we doctors don't believe that you can do it, we put you on medication. That's easy for us to do—it only takes a

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few minutes. And the patients are usually happy, too: they got what they came for—their magic pill! Please, also keep in mind that insurance companies don't pay us for patient education; they only pay us for procedures and pills.

CHIP'sSM intense and comprehensive educational program modifies the usual doctor-patient relationship. When I give you a pill, *I am in control*. I dominate. That's the *dominator* model of medicine. But when you take more responsibility for your health, and you get involved in better understanding your body, its anatomy and physiology, then *you are increasing control*, and we will follow more of a *partnership* model. That's where medicine should be heading for! Will that bother me? Not in the least. I know that many of my patients will follow the CHIP program, and many of them won't need to see me anymore. But, undoubtedly, many patients will not follow my recommendations to work the CHIP program religiously on a daily basis. They will fall off the wagon, and I will *never* run out of work.

CHIP Clinical Rounds

(D) Hans Diehl, DrHSc, MPH
Director & Founder, CHIP program

(W) Alicia Williams, DO, FACC *Invasive cardiologist*

(H) Suzanne Havala Hobbs, RD, MS, PhD
*Nationally respected dietitian,
 best-selling author*

4:16 min.

My husband takes cholesterol-lowering medication. His past history includes a heart attack 25 years ago and a bypass surgery four years ago. Should he consult his physician before starting on the CHIP food plan?

The CHIP program is totally safe. Anybody can do it. It is just good, wholesome eating coupled with a safe, conservatively-structured walking program. Several recently published scientific articles have only reinforced the notion that this lifestyle-related program will greatly enhance any medical program. [The results of the CHIP program have been published in the *Am Jrl of Cardiology* (1998; 82:83-87T); *Jrl Occup & Environm Medicine* (2002; 44:831-839 and 2005; 47:558-564); *Preventive Medicine* (2004; 38:432-441); *Jrl Am Dietetic Assn* (2005; 105:371-381); *Nutrition Action* (2005; Oct. Editorial); *Absolute Advantage*, the journal of the Wellness Councils of America (2004; 3:8, 1-66 “The CHIP Prescription for Health”).

Those taking cholesterol-lowering medications will greatly benefit from the CHIP program because their medication will work more effectively. The CHIP program will lower the cholesterol levels in most patients taking medication by an additional 15-20%. This would be an ideal program for your husband. On the other hand, certain patients with a history and current angina pain may want to discuss with their physicians to get clearance for participation in the CHIP daily *walking program*.

Is whole-wheat couscous a good cereal and grain for breakfast?

Yes, it is. Couscous is a form of pasta. It comes in tiny pearl-sized pieces of pasta. It cooks quickly and can be served with fruits for breakfast, or it can be served in a way that takes the place of rice. This wheat dish is very versatile, especially for cooks who are in a hurry. We suggest that you purchase the whole-wheat variety.

You may also want to try millet, another versatile grain. Many people cook it and eat it as a side dish. It looks like little yellow specks. Similar to couscous, you can serve it with fruits, or you can make a millet loaf with tomato paste, or you

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can use it as a rice substitute. You can also take a handful of cooked millet and toss it into a muffin batter, a cookie batter, or some bread batter. It does very well; it is very versatile; you cannot go wrong with it.

Q: How fast do the cholesterol plaques actually regress? How fast does the plaque build-up melt-down?

(W) You already have learned that arterial plaques take years to develop and to mature. They grow progressively and, in the process, decrease the intraluminal space of the artery. This ultimately interferes with blood flow and oxygen delivery to tissues and specific target organs and sets the stage for chronic and debilitating diseases. This progressive process of atherosclerosis, commonly found in Western lifestyle-practicing populations, can be accelerated by smoking, hypertension, obesity, and diabetes—among other factors. Even though women usually develop coronary artery disease later in life than men do, smoking can accelerate heart disease by 15 to 20 years in women. These are some of the women that I see in my cardiology practice. They may only be in their 30's or 40's, yet, they often have arterial narrowing largely because of their smoking. Smoking only two cigarettes a day, for 30 years, doubles the risk of heart disease in these young women.

Fortunately, these plaque build-ups can be reversed. I am really excited about recent scientific studies that allow me now to offer my patients the “big melt-down prospect.” This melt-down is facilitated by getting the blood cholesterol levels down to 180, or better yet, to less than 160 mg%. While the plaque shrinkage may take about a year before it is measurable, we know that many CHIP participants coming into the program with chest discomfort usually feel considerably better often within two weeks. The angina pain diminishes, and in some patients the angina disappears totally making it no longer necessary for them to take their nitroglycerin tablets. They become new people, functionally restored, able to do things again that only weeks ago caused them worry and chest discomfort.

Q: Are these atherosclerotic plaques in the arteries really reversible? And how long with this take?

(D) Yes, these plaques are reversible. It is probably not so important how fast they reverse, and to what extent. What is much more important is to realize that within 2-3 weeks your blood thickness can change so dramatically that the thinner blood (with its lower viscosity) can get more easily through these narrowed vessels to deliver the needed oxygen to your heart muscle and to all other organs of the body. This is probably one of the major reasons why 80-90% of people who go through programs, like our CHIP program, have much less angina pain within 2-3 weeks.

Of course, it is true that these arterial plaques that have been building up over 40-50 years will not melt down in just a couple of weeks. That will take some time. Data from the famous Ornish Lifestyle Trial have demonstrated that it probably takes about a year to show plaque regression. In the Ornish Study, the narrowed arterial diameters widened, on the average, about 10%. This then facilitated a lot of extra blood to flow to the heart which, in turn, made a lot of difference in the clinical symptomatology.

To summarize: when it comes to relieving coronary symptoms, at least two major mechanisms are at work:

- short term—you have a lowering in the blood viscosity and better endothelial motor function as a result of lowered cholesterol levels;
- long-term—you can expect an actual gradual regression of the anatomical plaques in the arteries.

[The following is not on the DVD but is very important after the HeartScreen results have been given out on the previous lecture date.]

What kind of diet could contribute to high cholesterol levels and low triglycerides?

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Many factors can play a role here. In general, though, lean people consuming a diet high in eggs and lean meat can develop high blood cholesterol levels, yet maintain perfectly normal triglyceride levels, especially if they are involved in a regular exercise program.

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What causes high triglycerides?

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Extremely high triglyceride levels, in the range of 1,000-3,000 mg%, usually signify some serious clinical condition, such as pancreatitis, and deserve immediate medical attention.

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High triglycerides, in the range of 200-600 mg%, however, are largely a function of overweight. It's estimated that 85% of all elevated triglycerides are related to excess weight. These elevated triglycerides, or blood fats, are largely influenced by three main dietary factors:

- an over-consumption of fats and oils;
- too much sugar;
- and excessive alcohol.

These main energy carriers in our diet are also the main contributors to overweight.

Some people are particularly sensitive in the area of triglycerides. These triglyceride-sensitive people have to be very careful of how much fat, sugar and alcohol they consume. For instance, these people may even have to restrict their use of fruit juices, such as orange and apple juices, since the juices concentrate their "natural sugars," which then can drive up the triglyceride levels.

What about starchy foods? Since the digestion of starch turns starch into sugar, don't these starchy foods also drive up the triglycerides?

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They can cause an elevation of triglycerides, especially when they are highly refined and thus devoid of dietary fiber. As you embrace more fully the CHIP *Optimal Diet*, you will be eating increasingly more whole foods (foods-as-grown). Most of these foods are starch-based. We call them complex carbohydrate foods. Because they are minimally refined foods, they are usually high in fiber. This, in turn, slows the digestive processes

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and the absorption into the bloodstream and thus minimizes the effect on the triglyceride levels. It's one of the reasons why we recommend whole wheat products, such as whole grain breads and not that white "fluff"! Or why we favor whole wheat pasta over refined pasta.

Q: What is the clinical significance of high triglycerides?

(D) Obviously, very high triglycerides exceeding 600 mg%, will need immediate medical attention in that these triglyceride levels could relate to diabetes, or to problems with the liver and pancreas. Triglycerides in the 200-600 mg% range may foreshadow the development of diabetes and obesity. As far as atherosclerosis and heart disease is concerned, these triglycerides can add significant coronary risk, but usually only if they are accompanied by cholesterol levels above 200 mg%.

For instance, we're only concerned about triglycerides of 250 mg% if the cholesterol levels, let's say, are over 200 points. On the other hand, we usually don't worry too much about triglyceride levels of 250 as long as the cholesterol is below 170. The triglyceride levels, then, derive their clinical importance from the company they keep, namely from the blood cholesterol levels.

Q: How does the *Optimal Diet* affect the triglyceride levels? Do you have any results?

(D) Yes we do. They have been published in the *American Journal of Cardiology* (Supplement, Nov. 1998). We found that 90% of our CHIP participants with triglyceride levels above 200 mg% will register a significant drop in their triglyceride levels within four weeks. For those participants who started the CHIP program with triglycerides below 100, however, their triglycerides may actually go up at times. But this is of very little clinical significance and consequence. For instance, some people's triglycerides may go from a low 44 mg% to 112 mg%. This is totally acceptable. ("Low" doesn't always mean that it is closer to zero. Ideal triglyceride levels are probably below 150 mg%. But even if they go up to 200, we're not too concerned. For one thing, triglycerides are like mercury—they can bounce around quite a bit from one day to the next. This is obviously in contrast to blood cholesterol levels which are more steady and stable.)

Sometimes CHIPpers come to me with a concerned look on their faces. They come to me and say, "Look at my triglycerides! When I started the program they were 38. And now, they're 98! I've gotten worse!!"

They really have nothing to worry about. Please remember, as long as the triglycerides stay below 200, or perhaps below 150, we have nothing to be concerned about.

In summary: the CHIP program will consistently bring the high triglyceride levels down—those over 200 points. These are the very levels that people need to be concerned about, especially when they also have high cholesterol levels above 200.

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(N) Edwin Nebblett, MD, MPH
Asst. Prof. Family Medicine Michigan State University

(H) Suzanne Havala Hobbs, RD, MS, PhD
*Nationally respected dietitian,
best-selling author*

7:01 min.

My physician said, "Just because people are vegetarians doesn't mean that they can eat as much as they want." Is this true?

Well, sure it is. Being a vegetarian does not preclude you from being a junk food eater. Coke, Black Forest cherry cakes, and French fries are all vegetarian foods; but they are loaded with calories, yet depleted of nutrition! Of course, eating a vegetarian diet is a good start, but we have to go beyond simply avoiding animal products if we want to be healthy, and if we want to maintain our ideal weight. Especially because of engineered foods, people can be vegetarians, *and* they can be overweight gluttons! If, as a vegetarian, however, you focus on *foods-as-grown*—foods that are low in fats, sugars and calories yet high in natural fiber—then you can eat as much as you want and you won't have to worry about overweight. That's why vegetarians, in general, are much more likely to have a normal weight.

My husband feels safe from heart disease because we are vegetarians. However, he lives a very sedentary lifestyle and he is carrying around 45 extra pounds. Please explain.

People who are overweight are taking in more calories than they are expending. It is obvious—they are simply eating too much food. It is virtually impossible to put on calories when eating a healthy *Optimal Diet* that is high in fiber yet very low in fat and sugar and devoid of all animal products. It is difficult to gain a lot of weight on this kind of a program because a healthy diet of *foods-as-grown* has plenty of bulk and roughage (which fills up the stomach pouch with great ease) and plenty of good nutrition yet few calories. The *Optimal Diet* then consists largely of foods with low energy density—unless you eat a lot of nuts, or nut butters, which are very calorie-concentrated food items.

The greatest safety from heart disease is found in people with blood cholesterol levels below 160 mg%. Some people view themselves as vegetarian if they leave off the meats, such as beef, pork, chicken, or fish. They may not realize that eating eggs, cheese and cookies with plenty of saturated fat could lead to higher blood cholesterol levels than a small steak. I suspect that your husband is not eating as wisely as he could even though he claims to be a vegetarian. His 45 lbs. overweight is a dead giveaway.

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Q: Will you comment on the use of honey as a natural sweetener?

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To use some honey is fine. It is no problem to drizzle a little bit of honey on your cereal or on your bread. A lot of honey, however, is piling on the calories in that honey calorically is not much different from the sugars, such as table sugar, brown sugar, molasses, rice syrup, maple syrup. Biochemically, they are *all* sugars, and all of them are highly refined. And because they are largely devoid of any nutritional value, they are considered “empty calories.” So, replacing sugar with honey still isn’t solving your sweet tooth problem! Once digested, they all become the same thing.

Perhaps the wise man Solomon was right when he counseled years ago, “It is not good to eat too much honey.” (Proverbs 25:27)

Q:

Do hormones, such as Premarin, raise Total Cholesterol levels in the blood?

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Premarin is the commercial name of an estrogen hormone that is derived from pregnant mare’s urine (PREgnant MAREs’ urINe).

Estrogen is usually prescribed at the time of menopause when a woman’s ovaries stop making estrogen. This estrogen replacement then is designed to:

- alleviate some of the hot flashes and depression experienced by some women;
- raise the good HDL-cholesterol to hopefully reduce coronary risk;
- slow down osteoporosis.

Because the use of estrogen has many undesirable side effects—from holding water in the tissues to breast cancer—some health professionals prefer that post-menopausal women obtain the benefits of estrogen in a more natural way. They believe that there are better and safer ways to protect the bones, the heart, and a woman’s well-being than by using estrogen drugs.

While estrogens usually increase the HDL-cholesterol levels, and with that the Total Cholesterol (which is the sum of HDL+LDL+ 1/5 of the Triglycerides), it is still controversial to what extent this HDL increase will be cardio-protective. It would seem much wiser and easier to lower the dangerous LDL-cholesterol levels to below 90 mg% and thus place the female patient outside of any coronary risk.

To combat osteoporosis and to increase bone density can be accomplished by involving four major lifestyle aspects, namely:

- severely reduce your intake of animal protein and salt since they rob your bones of calcium—they markedly increase calciuretic losses;
- increase calcium intake from non-animal sources, such as green leafy vegetables, grains, and tofu;
- gradually increase weight-bearing exercises.

To combat hot flashes, several alternatives to prescription estrogen are available. Unfortunately, most of these nonpharmacologic strategies are not taught in medical school. That’s why most of us physicians are poor nutritionists, and often inadequately informed.

In answer to the question, “Do hormones raise Total Cholesterol?” the answer is “Yes, they do raise Total Cholesterol levels.” “Do these higher cholesterol levels therefore increase coronary risk?” The answer is “Probably not.” Since the increase in Total Cholesterol is mediated by increasing the HDL-cholesterol—a component of Total Cholesterol—it is hoped that the increase in HDL, and thus in Total Cholesterol, may actually be cardio-protective. But, this is still an unsubstantiated assumption.

CHIP Clinical Rounds

(N) Edwin Nebblett, MD, MPH
Asst. Prof. Family Medicine Michigan
State University

(H) Suzanne Havala Hobbs, RD, MS, PhD
Nationally respected dietitian, best-selling author

5:10 min.

As a diabetic, how is it possible that the *Optimal Diet* allows me to eat unlimited amounts of unrefined starchy foods? I was taught to avoid carbohydrate foods!

Traditionally, diabetics were instructed to avoid all sugar, since it was believed that the presence of sugar found in the urine of diabetics was due to the body's inability to properly use sugar.

Since sugar and starch belong to the same carbohydrate family, it was assumed that both, sugar and starch, needed to be restricted in the diet of a diabetic. This gave rise to the *diabetic diet*, which traditionally was extremely high in fat and protein. After all, where else should the diabetic obtain calories for energy if carbohydrates could not be used? This then promoted a diet, which was centered around rich dairy and meat products.

Since then, many studies have shown that diabetics can lower their blood sugar levels and their need for medication if they follow a diet very high in unrefined complex carbohydrates—starch-centered foods like grains, potatoes, beans and lentils. Even so, the myth has persisted that “diabetics cannot eat starch since it turns into sugar, and sugar is bad for the diabetic.”

What are the physiological facts?

Starches are basically sugar, but they have a very complex structure. Think of starch as a complex biochemical unit made up of thousands of molecules, whereas sugar consists of only two linked-up molecules, where the linking bond can be broken down with great ease thus freeing the two glucose molecules and allowing them to be rapidly absorbed into the blood stream. This rapid absorption, in turn, will cause a sudden rise in the blood sugar level, which summons the pancreas to pour out insulin in order to knock down the high sugar levels in the blood by moving the circulating sugar into the cells of the body.

Since sugar needs very little digestion, it enters the blood stream rather suddenly. This makes it difficult for the pancreas to meter out just the correct amount of insulin. Almost in a panic, the pancreas now overreacts and squirts out excessive insulin; this, in turn, knocks down this sugar in the blood so low that a person can become transiently hypoglycemic (low blood sugar). To correct this low blood sugar (which can be accompanied by hunger and even bodily trembling), the per-

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son now eats more sugar to bring up the low blood sugar and to offset the ill feelings. This causes the blood sugar to spike, and the cycle starts all over again. Eventually, this may lead to pancreatic exhaustion and thus to full-blown insulin-dependent diabetes.

While refined sugar enters the blood stream very rapidly and may cause an over-production of insulin, unrefined starch-centered foods, usually loaded with fiber, elicit a more measured pancreatic response in that the digestion and biochemical breakdown of starch into sugar molecules and its absorption into the blood stream takes considerably longer giving the pancreas a better handle on metering out the correct amount of insulin. A diet consisting of many unrefined starch-centered foods apparently does not elicit the panic-driven pancreatic reaction.

To summarize: When it comes to carbohydrates, the more complex the molecules are, and the more natural and fiber-rich the foods are, the more suitable they are, especially for diabetics, to provide a steady stream of energy and to avoid the spiking of blood sugar and insulin levels. It has much to do with the rates of absorption, of how fast the food energy is taken up by the blood stream.

That's a major reason why I tell my diabetics, "Don't drink juices. Eat the fruit." The fruit takes longer to be digested, the sugars come in a lot slower, and the body doesn't get so stressed out trying to handle it all. It's at least in part, a packaging thing. Eat "*foods-as-grown*" and you're better off!

Q: How is it possible that high-starch foods with lots of fiber not only fill up the stomach fairly quickly, but they also leave the stomach quite quickly? On the other hand, a high-fat, sugar-loaded candy bar, which has very little volume, will stay in the stomach for hours?

(D) A meal high in roughage yet low in calories stays only for one to two hours in the stomach where it is digested, while the candy bar may stay four to six hours. Why? It is the fat content.

Fat takes much longer to be digested. Fatty foods take more time to be acted upon by the hydrochloric acid of the stomach lining. Therefore, fats, oil and grease slow down the emptying of the stomach. Since fats are more difficult to break down and to digest, most foods high in fat may sit in the stomach from four to six hours.

(N) That's the very reason why you can stuff yourself with a low-fat Chinese meal of steamed rice, chow mein, and lots of vegetables, and yet, after a couple of hours, you wished you had eaten more because you're hungry again. How do I explain it?

Foods and meals low in fat are processed much faster. High fat meals take longer. That's why high fat meals give you this lasting "solid" feeling in the pit of your stomach, while low-fat meal dishes often make you feel hungry again within a couple of hours.

CHIP Clinical Rounds

(D) Hans Diehl, DrHSc, MPH
Director & founder CHIP

(H) Suzanne Havala Hobbs, RD, MS, PhD
Nationally respected dietitian, best-selling author

5:01 min.

[THIS FIRST QUESTION IS NOT ON VIDEO]

Why is this dietary information not incorporated into the educational curriculum of the public schools?

That would be ideal. Most people have families. And this educationally-oriented lifestyle program works best when everyone in the family is eating the same way. It is no fun for the cook to prepare two different meals! And children can, and should, eat this way. It's the healthy way for everyone. Overweight is a major health problem, not only for adults, but also for children in this country. Teens are eating on the run. Their main food is "junk food." Lots of nutritional issues need to be aired with both—young and old.

We are not only concerned about overweight in children, we are also concerned about their high cholesterol levels. Most children, by the time they're 12 years of age, already have two or more risk factors for coronary artery disease!

Are you aware of any study that evaluated the cholesterol levels of children and then tracked these levels throughout adulthood?

The largest study ever done in this area is the Bogalusa Study in Louisiana. This famous study tracked children for a period of 10-30 years. Those who entered the study years ago are now adults. And what they found was that the level of cholesterol identified in childhood is maintained in adulthood. This is to say that if you have had relatively high cholesterol levels as a child, you can then expect to have high cholesterol levels also as an adult.

The researchers were actually surprised to find that one-third of these children in Louisiana, aged 14-15, already had elevated cholesterol levels which placed them at risk for heart disease. The researchers also found that those children who had elevated cholesterol levels usually also had parents with high cholesterol levels. So, the Bogalusa Study was actually able to identify parents with high cholesterol levels by looking at their children's relative position of cholesterol level held within their age group.

While some have suggested that this may be a genetic problem that runs in families, others have suggested that people in families share more than just their genetic material—they also share a common lifestyle and a common diet.

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Q: Could elevated cholesterol levels be related to excessive stress?

(D) I believe that we have given several examples that would suggest that stress is not a major factor in elevating cholesterol and thus contributing to heart disease. You may recall the experience during WWII: while the war raged in Central Europe, the death rates from cancer, heart disease, diabetes, and stroke dropped precipitously. We also mentioned the survivors of the Holocaust. In spite of experiencing the most intense anxiety and stress humanly possible, most of the survivors at later autopsies were found with relatively clean coronary arteries. Similarly, those American soldiers who stayed the longest in the concentration camps of Vietnam, had surprisingly the cleanest arteries.

Another example would be the high coronary death rates among American executives during the 1970s. We all assumed then that it had to be related to the stress experienced by these executives. Yet that picture had totally changed by the 1990s. Since then, executives now have one of the lowest death rates from heart disease in North America. In contrast, the highest coronary death rates are now experienced by the lower socio-economic classes. Does this suggest that executives today have less stress than those 20-30 years ago? If anything, it would seem to me that the level of stress in the American business world has intensified.

Heart disease is probably not so much a matter of stress as it is a function of education, and how we implement the education-facilitated new insights. The executives of the 1970s probably tried to catch all the gusto they could possibly grab. They lived high off the fat of the land. They smoked. They enjoyed the good life. But as they began to understand that the confluence of affluence-related risk factors creates heart disease, they began to make changes. They began to lace up their running shoes; they dropped their three martini lunches; they quit their smoking habits, and they began to move towards a dietary lifestyle characterized by less salt, less sugar, less cholesterol, and less fat. At the same time they began to eat more fresh produce—high in nutritional density and fiber.

Of course, this does not easily explain why medical students have high blood cholesterol levels as they are preparing for their national boards. It also does not explain the reason why tax consultants have high cholesterol levels around April 15. Would the excess stress explain the high cholesterol levels during that time? Or, could it be that it was not the stress *per se* but how stress influences and changes eating patterns? People under stress get into the “nervous nibbles.” Medical students, while trying to stay awake to study, are more likely to raid the vending machines in their dormitory to get the fuel they need to stay awake. Could it be that acute stress changes our eating behaviors and they, in turn, may increase our cholesterol levels and also our level of weight?

Q: What about chronic stress? Could this not affect the body's production of cholesterol.

(D) I think that this is still a very debatable issue, and I find it wiser to remain open-minded.

What becomes of all the extra miles of blood vessels once I have lost my extra 22 pounds of weight?

Your extra weight consists of billions of yellow fat cells. These cells need to be nourished and their cellular and metabolic wastes need to be removed. This requires an extensive capillary system plus small arteries and veins. As you shed pounds by depleting these fat cells, your capillaries and small vessel structures become sort of non functional. This, in turn, provides a welcome relief to an often overworked heart.

When you lose considerable weight, what happens to all that extra skin? Will I look like a shriveled prune?

That probably depends largely on the rate of your weight loss and how you tone your body. The best way to lose weight and to have the best long-term results is to lose excess weight at a rate of one to two pounds a week. With the CHIP Program and its focus on a healthy lifestyle, excess weight usually comes off as a nice side benefit. If you are overweight, you should expect an average weight loss of about 6 to 8 pounds in 4 weeks. While some of those pounds may be the result of losing excessive fat, other pounds may be shed as a result of consuming less salt thus allowing the body to lose some of its tissue-held fluid.

In general, when you lose weight at a rate of 1 to 2 pounds per week, many adjustments will come more naturally. For instance, your self image will change at a rate that you can adjust to and live with. On the other hand, if you lose weight too rapidly, you may be scared seeing yourself in the mirror, because you may not recognize yourself. This gradual weight loss is much easier on your emotions and also on your skin folds. The body will have more time to absorb those extra skin folds, particularly if you work some of the underlying muscles and you provide the skin with adequate moisture. Some moisturizing creams might be helpful.

In general then, psychologically, emotionally, and physiologically it is much wiser for you to lose excess weight at a proper pace of one to two pounds a week. If you lose it slowly, you have a much better chance of keeping it off. *Slow and steady* is best for long-term results.

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8-4 CHIP Clinical Rounds



CHIP Clinical Rounds

(D) Hans Diehl, DrHSc, MPH
Director & founder CHIP

(H) Suzanne Havala Hobbs, RD, MS, PhD
*Nationally respected dietitian,
 best-selling author*

23:00 min.

How do you handle dietary lapses?

The first thing that you do is accept the fact that you have deviated from your set of lifestyle guidelines. Don't throw up your hands in disgust and despair. Don't flagellate yourself figuring that since you have blown it you may as well blow it thoroughly! What really matters is what you do over the long haul. An occasional dietary indiscretion gets absorbed by your otherwise consistent lifestyle pattern. It's what you do consistently, every day, that truly matters. Do you eat a balanced diet *every* day? Probably not!

As you learn new habits, remember: it doesn't matter how many times you fall; it only matters how many times you get up, because you'll get stronger in the process. If for every step backwards you will take two steps forward, then you'll reach your destination. A dietary lapse, then, is not a failure of the program; it is only a mistake.

Should we use vitamins and minerals to supplement our CHIP *Optimal Diet*?

Generally speaking, it is not necessary. Most people get all the vitamins and minerals that they need—and more—as long as they eat enough calories to maintain proper weight and get enough of a variety of foods. I personally don't like to rely on getting my micronutrients from supplements. I'd rather obtain them in the form of real food. Did you know that there are over 600 carotenoids—and you want to bank on getting just one, the betacarotene in your tablet? Did you know that there are over 500 specific plant substances in a glass of orange juice, and you want to bank on getting just the one—vitamin C—in your supplemental tablet? I can get many nutritional ingredients essential for good health from my food that cannot be found even in the most complete and advanced food supplemental programs. As the nutritional sciences advance, we become increasingly aware of the fact that some of the ingredients essential for good health may not have been discovered yet!

Although I have taken this position, I have to admit that not everyone agrees with me. We all have a lot more to learn.

If you insist, however, on taking some minerals and vitamins, let me suggest that you take a balanced vitamin and/or multi-mineral tablet on a daily basis. In general, we have to be careful that we don't fall into the trap of thinking that we can eat a steak—which is devoid of fiber—and then, make it nutritionally more acceptable by sprinkling oat bran on it. To be a food junkie, and then to expect a miraculous res-

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cue from self-promoted diseases by swallowing some vitamins and minerals, is not going to cut it. We have to change the underlying diet. We have to get to the root of the problem. We have to attack the causes. We've got to eat right.

Q: How much liquid should I drink *with* my meals?

(H) Do we have to drink *with* our meals? Is it advisable to do that? By using liquids with our meals, we can actually dilute the very gastric juices that are designed to initiate the digestive processes in our stomach. People, sensitive in this area of digestion, therefore would be better off drinking their liquid, such as water, before the meal rather than during or right after the meal.

Q: How do we best relate to the "fake meats"?

(D) These are sometimes called *meat analogs*, or *meat substitutes*. These meat-look-alikes are made from soy, or wheat protein that is spun in such a way that it resembles the texture of meat. All meat analogs are cholesterol-free since they are really a processed plant product. They come frozen, and in canned and dehydrated forms. If you purchase the dehydrated form—which is very economical and usually very low in fat—then all you have to do is add some water and they begin to swell to their true size. Some of them may actually look like goulash pieces!

These spun, Textured Vegetable Proteins (TVP) can resemble anything from wieners to Swiss steaks, and everything in between. They are most versatile, such as the *Crumbles* (a *Morningstar* product of the Worthington Foods company) we used in our lasagna dish served during our Applied Nutrition Workshop banquet.

Of course, these are not *foods-as-grown*. These are highly refined products, usually high in protein and low in fiber. Some of them can also be very high in fat and salt. Furthermore, they can be relatively costly. For these reasons, we recommend that you:

- study the labels carefully, and buy the healthier ones;
- use them not for *focus* but for *flavor*; use them more as a condiment for the whole meal.

These vegeburgers, ham-, chicken-, and fish-look-alikes, or the breakfast sausages, can facilitate the transition from a meat-centered to a plant-food-centered diet. However, be forewarned: some of these "fake meats" may taste so good that some of you may become seduced to make them your meat and sausage replacement. If you do this, you will have missed the point!

In summary: Textured Vegetable Protein (TVP) comes in a variety of ways. These TVP products have a nutritional edge over meat, but they are high in protein and low in fiber, and most of them are high in salt and fat. The best way to use them is to integrate them into your CHIP *Optimal Diet* as a condiment. But don't make them the focus of your meal!

Q: Why do you distinguish between salt and sodium? The Optimal Diet allows us 5,000 mgs of salt, but it only allows

us 2,000 mgs of sodium. For that reason, I would rather have salt.

Salt's chemical name is Sodium Chloride. Clinically, it is the sodium particle that troubles us since it is the culprit that affects many blood pressure levels.

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Since the sodium particle is 40% of salt by weight, this means that 40 mgs of sodium would be equivalent to 100 mgs of salt, and 2,000 mgs of sodium would be equivalent to 5,000 mgs of salt. *Dividing* the sodium number by 0.4 will give you the salt number equivalent. Conversely, if you only have the salt number, then you can obtain the sodium number by *multiplying* it by 0.4.

Instead of eating the usual 10 to 15 grams of salt a day, the *CHIP Optimal Diet* recommends no more than 5 gms, or 5,000 mgs of salt a day. This, then, is the equivalent of 2,000 mgs of sodium, which is the salt particle listed on your food nutrition label. When you read your nutrition label next time and you see that one cup of spaghetti sauce has 1,480 mgs of sodium, it will help you to put into perspective just how high in sodium that product really is. [Of course, if you want to convert the 1,480 mgs of sodium into salt, you divide this by 0.4 and you'll get 3,700 mgs of salt, or 3.7 gms.]

The purpose of *CHIP* then is not to give you a booklet with all kinds of sodium numbers. Instead, we want to give you a conceptual understanding.

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In the area of hypertension and salt intake, just remember that you want to keep your total daily sodium consumption below 2,000 mgs. Also keep in mind that most sodium and salt does not come from the saltshaker anymore but from processed foods. In general, assume that all processed foods are high in sodium unless specifically specified on the label. This means that you need to read labels and settle for the product with the least amount. Or discuss it with the managers of your favorite food markets. If you let them know what you need and want, they're usually very accommodating. After all, they are business people; they want to help you; and they want your business.

With all these facts and figures from the lectures, I feel like I'm suffering from mental constipation. Is this normal?

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Yes, it is expected at this stage of the game. After so much information, you probably feel that you have reached your saturation point. Many of these numbers and statistics appear more like a mental blur. Some of you may feel as if you were in a mental fog. But don't become too concerned. The concepts are beginning to emerge. The picture, from now on, will become increasingly clearer, and some of the numbers critically important to your understanding of disease recovery concepts will become more meaningful to you. You are on the right track.

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Can you give me some ideas on how to eat out while following the *CHIP Optimal Diet*?

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The most important principle is to *think ahead*. Do some pre-planning. Where do

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you want to go?

- Vegetarian restaurants are a good bet; but don't forget to defend yourself against oils, cheeses, nuts, avocados, sugar, honey, and salt.
- Cafeterias with salad bars can be lifesavers. You have the advantage of seeing what you are getting. The trouble is that lots of foods are swimming in oil and sugars.
- Chinese restaurants are good because their foods are customarily cooked to order. Talk to the chef. Order a *Buddhist Delight* but ask him to hold the oil, salt and sugar.
- Italian restaurants will have pasta and spaghetti. Tell the chef that *by doctor's orders* you need a very low fat no meat sauce, that you prefer no cheese, and to hold the fatty sauces and the salty olives.
- Steer clear of fast food places, or places where the food is pre-made, or pre-dished, and where they cannot accommodate special orders.
- The finer restaurants will provide you with more choices to your liking. They will cook the food to order and they are more receptive to special requests.

Summarizing Principle #1: Plan ahead. Choose suitable restaurants and then, call in advance for special requests. This courtesy improves your chances of getting what you want. Remember—good restaurateurs enjoy making you happy. They survive on repeat business.

Summarizing Principle #2: have backbone; have a purpose; and follow through! Don't turn into a shrinking violet when the waiter comes. Learn to ask for things you want with confidence. Be pleasantly assertive. Always be polite, but be firm. When it comes right down to the nitty gritty, it's your strength of character that will determine whether the chef is going to serve you—or whether you are sheepishly going to take what is served to everyone else. For instance, be specific. Tell the chef: "I cannot have any fats and oils, cheese, and egg yolks. No meats, fowl or fish." After all, you are following *doctor's orders* for a very low fat, cholesterol-free diet. Ask for a low salt, low fat dressing to be served as a side dish. It gives you more control.

Q: What can we use to replace eggs?

(H) You can use egg replacers. Here's a product—*Ener-G*. It is my favorite egg replacer. Since I found it, I haven't bought any more eggs.

Ener-G is a mixture of starch from arrowroot, corn, and tapioca. It is a powder that comes in a one pound box which can be purchased in health food stores, and also in some supermarkets. To replace one egg in recipes, just take one and a half teaspoons of *Ener-G* and mix it with two tablespoons of water. That's it. It's very convenient.

Another egg substitute is *Egg Beater* largely made up of egg whites and some food coloring. But since I discovered *Ener-G*, I haven't bought anymore *Egg Beater* either.

(D) Mango Demo follows!

CHIP Clinical Rounds

(D) **Hans Diehl, DrHSc, MPH**
Director & founder CHIP

4:00 min.

[THE FOLLOWING QUESTION IS NOT ON THE VIDEO]

Could you possibly review some of the main dietary factors that contribute to osteoporosis?

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In the previous lecture, we suggested that osteoporosis does not have a world-wide distribution. It is commonly found only in societies where the consumption of animal protein is high. And it is rarely found in societies, such as China, where the intake of animal protein is quite low.

Scientific studies have consistently shown that high intakes of animal protein produce calcium losses via the urine that cannot be easily offset by eating more calcium. We suggested that osteoporosis is not a disease of calcium *deficiency* but a disease of dietary *excess*. And we identified four major dietary factors commonly found in Western diets that actually steal calcium from the bones. Here are four prominent calcium robbers:

- 1) **Animal Protein.** The higher the intake of meat, eggs, and dairy, the higher the rate of osteoporosis-related fractures despite high calcium intakes. Animal protein leeches calcium from the bones.
- 2) **High Salt Intake.** It is estimated that Americans consume 15 times more salt than is really needed. This, of course, is associated with the major public health problem of hypertensive disease. But it is also implicated in osteoporosis in that the sodium in salt is a prominent calcium robber—it increases the calcium excretion into the urine. It is estimated that Americans lose daily as much as 200 mgs of calcium as a result of high sodium diets. For instance, women who consume a diet high in protein and sodium, may need as much as 2,000 mgs of calcium a day just to stay in calcium balance. In contrast, the same women may only need as little as 450 mgs of calcium when their diet is low in both animal protein and sodium. Worldwide, sodium intake varies as much as 100-fold; it is considered to be an important factor in understanding the varying risk of osteoporosis among different countries. In fact, one single fast food hamburger, because of its high protein and sodium yet low calcium content, can cause a calcium loss of 22 mgs which, in turn, necessitates that a person would have to eat 100 mgs more of calcium just to make up for that one burger.



2-2 CHIP Clinical Rounds

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3) Phosphorus. This acidic mineral is found in abundance in meat. It is also found in certain cola drinks. Calcium is leached from the bones to offset the acid-based imbalance in the blood.

4) Caffeine. For every 3-4 cups of coffee a day, some 100 mgs of extra calcium would have to be consumed to make up for the losses.

Non-dietary factors contributing to osteoporosis include a lack of exercise and smoking.

We are beginning to recognize that osteoporosis may not simply be a disease of estrogen or calcium deficiency. After all, estrogen levels don't only diminish in North American women when they become post-menopausal. Estrogen levels drop in post-menopausal women all over the world—and yet, osteoporosis is strangely absent in 80% of the world's post-menopausal women. At the same time, a calcium deficiency has never been found anywhere in the world. It is much more likely that the problem revolves around calcium robbers which are largely related to dietary excesses that deplete our bones of the very substance that should keep them strong.

CHIP Clinical Rounds

(D) **Hans Diehl, DrHSc, MPH**
Director & founder CHIP

(W) **Alicia Williams, DO, FACC** *Invasive cardiologist*

11:01 min.

In coronary angiography, a catheter is threaded through arteries into the coronary artery to help visualize the extent of coronary plaque build-up. In case of advanced plaque, is it not possible for this catheter to disturb existing arterial plaque and to cause plaque breakup which could then presumably travel to the brain and to other parts of the body and cause damage if not death?

Let me first explain what angiography is and then contrast it with angioplasty. One procedure is to visualize the location and the extent of the arterial plaque, while the other procedure is an approach of how to deal with the identified plaque.

Coronary angiography, also called heart catheterization, is a procedure where a small long tube is fed—either through the groin or arm arteries—into the coronary arteries. Once in place, this catheter makes it possible for a dye to be injected into the coronary arteries, which then allows the visualization of the extent of atherosclerotic plaques.

In order to get into the coronary arteries, we usually negotiate first the groin artery and then the aorta (the body's largest vessel). As an invasive cardiologist doing the procedure, I do have some concerns about possible plaque break-off, especially when I find an aorta with a lot of narrowing and hardening due to atherosclerotic plaque buildup.

Once the aorta, however, has been negotiated, we usually don't have too much trouble getting the catheter safely into the coronary artery so that we can inject the dye for the "picture-taking." Of course, once again, I have to be very careful that I inject just the right amount of dye. Too much dye may exert excessive pressure inside the artery which could be counterproductive.

In general, these angiograms are quite safe. The risk of dying as a direct result of the procedure is about 1 in 500.

Coronary angioplasty is different. Once we have identified a particular, prominent plaque that may be responsible for angina, or chest discomfort, especially at rest, then we do the same procedure as the angiography. But now, instead of taking a picture of the artery, we are actually inserting a small, balloon-tipped wire through the catheter and bring it to the narrowed portion of the coronary artery. As we inflate

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the balloon, the pressure exerted by the balloon on the plaque can now compress the plaque and thus dilate and enlarge the arterial lumen. With the ensuing remodeling of that part of the artery, there is better blood flow to the heart muscle.

Of course, this act of plaque compression is not without some risk. The balloon pressure has to be just right as it causes microscopic fractures in the plaque, which helps to flatten it out. Some 50 to 75% of these angioplastic procedures are successful. However, they don't last forever. More than 40% of these angioplasties are no longer functional within six months unless the procedure involves a suitable stent. Many of these angioplasties need to be done over again, or other therapeutic procedures may be indicated, such as medication or bypass surgery.

What concerns me most as a cardiologist is the fact that most angina patients have not only one single, *focal* plaque which an angioplastic procedure could remedy. Instead, most patients have a very *diffuse* plaque picture. This means that the plaque is usually well distributed throughout the coronary artery tree. We're becoming increasingly aware that we rarely ever deal with just one focal plaque. Instead we usually deal with a very systemic disease that affects the entire cardiovascular system; we are dealing with diffuse disease processes.

In general, angioplastic surgery requires a lot of expertise in selecting the right patient, artery, size of balloon, and the correct pressure. Because of the expertise needed, this specialized procedure is best done by cardiologists and surgeons who do a lot of these procedures.

Q: Under what circumstances do you, as a cardiologist, recommend bypass surgery, angioplasty, medical therapy, or a CHIP lifestyle medicine approach? What role do the collateral vessels play in this deliberation?

(W) It is not always easy to be able to identify the best treatment approach for a given situation. Some of it could be a "very personalized thing." Sometimes it may depend on the treatment approaches available to the physician. At other times, it may depend on the age of the patient and, obviously, on the patient's functional status. Financial resources may also enter the picture. And, then, we have to look at *collateral reserve*.

When arterial plaques interfere with proper blood flow and thus compromise adequate oxygenation of the heart muscle, we have a hypoxic situation which expresses itself usually in angina pectoris. At that time, the patient may feel as though an elephant were sitting on his chest. Aside from the heaviness on the chest, pain may radiate down the left arm; or travel to the jaws or shoulder blades. In most cases, the pain occurs upon effort, such as climbing stairs, running after a grandchild, or just overdoing it. As arterial narrowing and its ensuing hypoxia of the heart muscle develops slowly over time, the heart usually tries to compensate by causing small, tiny feeder vessels to become larger and to provide auxiliary blood flow to the heart muscle. A well-developed auxiliary blood flow system can make all the difference, especially when it comes to surviving a heart attack in that the auxiliary system can now kick in and bring in some of the needed blood and

oxygen to the area of the heart where muscle tissue may be infarcting.

All of us have been born with an extensive collateral vessel network that augments our coronary arterial system. For most of us, this collateral system, however, is dysfunctional since our sedentary lifestyle rarely ever challenges it to call it into action. As a result, these tiny fragile “feeder vessels” have “gone to sleep.” They are there, but they have deteriorated to the point that they are no longer functional when called upon.

An extensive, well-functioning collateral system, however, can often tip the scale in favor of a CHIP lifestyle medicine approach, plus appropriate medication instead of having to resort to more invasive treatment approaches which usually are only stopgap measures with a limited lifespan. These surgical approaches rarely prolong life, but they may improve the quality of life in certain patients enabling them to do more and to walk further. Therefore, in patients with good blood output, and with a good collateral system, I am often suggesting the non-surgical approach first. Although, in some cases, bypass surgery may be absolutely necessary as an emergency procedure, I believe that the lifestyle medicine approach can also create some extra time to discuss more carefully planned long-term strategies.

It may be of interest to mention that some patients, while waiting in line for bypass surgery in Canada, were able to improve their collateral system so dramatically through our lifestyle medicine approach that they no longer needed the bypass surgery once their turn came. The bypass surgeons were amazed at the often dramatic functional improvement allowing these patients to live totally normal lives again.

(D)

If bypass surgery is an absolute necessity, would you still think that patients should go through a lifestyle medicine program *after* the surgery?

:Q

Absolutely yes! To go through bypass surgery and not make the lifestyle changes advocated by the CHIP program puts the benefits of the bypass surgery in doubt. Would it really make sense to go through a heart-stopping \$100,000 bypass operation only to continue with a kind of lifestyle that created the need for the surgery in the first place?

(W)

You mentioned that evolving atherosclerotic plaques can gradually interfere with proper oxygen delivery to the heart muscle, and that the ensuing hypoxia stimulates these collateral vessels to become more functional and efficient when needed. What can we do to stimulate this process of the collateral systems to become more functional?

:Q

When clinical heart disease has been diagnosed, a carefully structured cardiac physical fitness program is essential to promote this process of enhanced collateral function. Such a rehabilitation program will show you how you can gradu-

(W)

12-4 CHIP Clinical Rounds

ally improve your endurance level, and how you can work within your expanding limits of capability. As your walking program pushes your heart closer to your pulse rate at which hypoxia sets in, these collateral systems will become increasingly challenged and stimulated to open up, more and more, and to become more functional. These collateral vessels will become your auxiliary system of blood flow—ready to help whenever the need arises.

CHIP Clinical Rounds

(D) **Hans Diehl, DrHSc, MPH**
Director & founder CHIP

8:50 min.

Why is this important information about dietary lifestyling not incorporated, let's say into the seventh grade curriculum? And why don't our children get more optimal diet served in school cafeterias?

The answer is a very obvious one: The Optimal Diet, a more plant-food-centered diet is not being served in cafeterias in public schools because the schools receive free food from the US Department of Agriculture (USDA). And their surplus foods are the building blocks of the menus that are prepared and served.

Did you know that our nation spends every day millions of dollars just to keep warehouses air conditioned in order to keep huge amounts of cheese and butter that we couldn't sell and now need to be stored from spoiling? These kinds of surplus foods are readily available to school systems, and they are free of charge! That often is the main reason why it is so difficult to change the greasy spoon cafeterias of our public schools. It's an economical and political issue.

You asked the question, "Why don't we build these health and nutrition concepts into the teaching curriculum?" Where is the money coming from to revise the textbooks, to bring the new concepts of nutrition to the teachers? And who is going to teach the teachers? Up until now, almost all nutrition education materials used by teachers have come from the dairy council and the meat industry. They provide all these teaching aids, such as felt boards, colorful graphs, and all the descriptive materials free of charge for the teachers. It's an obvious conflict of interest. Those who stand to gain from the teaching of these concepts should not provide the materials, especially when many have assumed that these are government sanctioned concepts. After all, the Basic Four Food Groups were never a program sanctioned, promoted or pushed by the government. Instead, this was a concept that was disseminated with obviously self-serving interest by the dairy council and the meat industry. Very few organizations are as well organized and have as large a war chest as these two lobby groups. It reminds me of *the golden rule*: "the one who has the gold makes the rules." This golden rule works very effectively in a democratic society, although the persuasive means have to be quite sophisticated so as not to be too obvious. Tragically, big dollars can buy exposure and influence which facilitates the dissemination of concepts that may not be in the best interest of the society-at-large.

Q

(D)



13

Q: I am jealous of the CHIP participants who have daily “moving experiences.” Despite all of the fiber I have eaten during the last three weeks, I am not getting any results. Could too much fiber be blocking my intestines?

(D) That is a very distinctive possibility. If you have too much fiber and you don’t drink enough fluids, then you can create “cement.” Without sufficient water, the high fiber content could develop into a fiber plug. As you make the transition from a typically low fiber American diet to the *CHIP Optimal Diet* with its desirable high fiber content, be sure that you drink plenty of water.

Q: Is it true that people in France who eat rich foods and drink red wine have a low incidence of heart disease?

(D) What’s the number one complaint of Americans eating out in France? They complain about the microscopic portions! The truth is: the French actually don’t eat as much of those fatty foods as we may think they do. Their portions of fatty foods, such as meat, are rather small.

Of course, that contrasts with our way of eating here in North America. We usually have a big steak that takes up the center of our plate, then we add a couple of peas, and some mashed potato, and then we finish it up with a big Haagen Daz ice-cream special with everything added to it that we can possibly find!

You also want to keep in mind that the French eat a lot of fruits, plenty of vegetables and lots of fresh produce. Granted, the amounts may be small, but they add up. And the French sit down for a meal and make it a social occasion. In our society, eating is now more of a functional type thing. More often, many of us no longer eat, we “graze”—going from patch to patch all day long.

In addition, when we hear about the low incidence of heart disease in France, we have to be concerned about the way that French physicians code and record the *cause of death* on their death certificates. Dying from a heart attack in France is viewed by most physicians as a normal, natural way to die. Therefore, dying from coronary heart disease is usually not considered to be a specific cause of death. This suggests that heart disease, as a cause of death, is probably under-reported in French statistics.

That still leaves the issue of “red wine.” Some call it the *French Paradox*: Eat all the rich food, and drink plenty of wine—and you’ll have low coronary rates! Isn’t that a great idea!?

Ever since *60 Minutes* ran this program on national television, the wine industry has mightily cashed in on this idea that drinking red wine and a healthy heart go together. And they may be correct: eating red grapes helps the heart. But it’s probably not so much the alcohol in the wine; it has to do with certain constituents found in the skin of red grapes.

Here’s my recommendation: Follow the *CHIP Optimal Diet*, and make sure that you don’t forget to eat your red grapes!

CHIP Clinical Rounds

(D) Hans Diehl, DrHSc, MPH
Director & founder CHIP

4:02 min.

I have heard that I should eat more fish to protect my heart. Please comment on studies that show a large reduction in heart disease for people who eat fish weekly.

Several studies more recently have shown that eating fish, at least once a week, may be protective against heart disease and strokes. Research began to surface some 15 years ago which led to the great “fish rush” with everyone rushing about to buy certain fish oils. These fish oils, once a marketers dream, are no longer allowed by the Food & Drug Administration to be sold with the claims that they may reduce heart disease and stroke.

Yet, even if we accept that eating fish at least once a week may be cardio-protective, we still have to look at the total effect of fish on overall health. We cannot only look at heart disease; we have to look at total health.

Since fish is usually quite low in fat and devoid of starch, the majority of fish calories comes from protein. Fish, then, is a rich and concentrated source of animal protein. Have we not discussed the fact that Americans consume probably two to three times more protein than the body requires, and that 70% of today’s protein comes from animal sources? Have we not discussed powerful associations between animal protein and osteoporosis, kidney disease, and the promotion of tumors? And what about the contamination of fish with heavy metals and poisonous chemicals, which thus can enter the human food chain?

As we read and hear about these kinds of studies, we have to try to keep the larger picture in mind. To make a wise decision usually demands more information than looking at merely one slice of the picture. Some studies may indeed show that eating fish may protect us from strokes. But we have to look at the total picture of health and disease.

How can we make sure that our vegetables and fruits are grown in soil with optimal nutrition?

The answer is that you don’t know unless you grow your own produce, and you have your soil tested on a regular basis.

There are probably at least two parts to this answer. First of all, you will have a minimum of nutrients in the soil if the produce grows as it should. For instance, if an orange tree produces an orange, then you are assured that there are enough

:Q

(D)

:Q

(D)



14

14-2 CHIP Clinical Rounds

ingredients in the soil that will cause the orange tree to produce an orange. On the other hand, you can argue that your orange may contain more vitamin C if it had been grown in a soil with a more optimal nutrient composition.

As the world is shrinking to a global village, the food supply today comes from different parts of the world. We can have kiwis grown in New Zealand, mangoes from Guatemala, apples from Michigan, and broccoli from California. The chances that the soil is deficient across the board in all these different areas is rather remote. Therefore, as you eat a diet of produce with a lot of variety, the chances are probably quite good that you don't have to worry too much about nutritional variations. Because, foods come different parts of the world, the chances are very good that there is some kind of complementation of nutrients taking place. The key is to eat a wide variety of produce as recommended in the CHIP program.

Q:

(D)

Q:

(D)

CHIP Clinical Rounds

(D) **Hans Diehl, DrHSc, MPH**
Director & founder CHIP

14.00 min.

This time I want to turn the tables around: *I am* going to ask the questions, and *you are* going to answer them.

Which contains the most calories?

- A: A five ounce potato
- B: A five ounce beef steak
- C: A third of a loaf of bread (5 oz.)

1B

What percentage of essential hypertension can be reversed and normalized with lifestyle changes?

- A: 10%
- B: 30%
- C: 50%
- D: 80%

2D

Scientific studies have shown that 75% to 85% of those patients with essential hypertension can normalize their blood pressure and be off medication within less than four weeks, if they make the appropriate changes in their lifestyle.

Are high fat diets related to the following diseases? Please answer yes or no (Y or N)

- | | |
|---------------------|----------|
| Prostate Cancer? | Y |
| Breast Cancer? | Y |
| Colon Cancer? | Y |
| Lung Cancer? | N |
| Diabetes? | Y |
| Hypertension? | Y |
| Obesity? | Y |
| Heart disease? | Y |
| High triglycerides? | Y |

(D)

:Q1

:Q2

:Q3



Q4: The national cholesterol level in America now is 209 mg%. The National Cholesterol Education Program (NCEP) considers cholesterol levels above 240 as high. The committee however, views cholesterol levels below 200 as more “desirable.” What cholesterol levels does the CHIP Program consider ideal or optimal for Americans?

- A: 100 mg% (2.5 mmol/L) plus your age
- B: below 200 mg% (5.0 mmol/L)
- C: below 240 mg% (6.0 mmol/L)

4A

Q5: What are the three most important risk factors in heart disease?

- A: Stress
- B: Hypertension
- C: Diabetes
- D: Obesity
- E: Smoking
- F: High cholesterol

5B, E, F

Q6: How many minutes of life are lost with every cigarette smoked?

- A: 3 min.
- B: 6 min.
- C: 13 min.
- D: 20 min.

6C

Q7: A hundred years ago, what percentage of Americans died from coronary heart disease and stroke?

- A: Under 10%
- B: 20%
- C: 30%

7A

Coronary heart disease was extremely rare at the turn of the century. Those who developed heart disease usually suffered from rheumatic heart disease, which has a totally different origin. Coronary heart disease emerged in the 1920s. Shirley Mostler suggested in his Textbook of Medicine published in 1928, “It should be possible to find one heart attack per year in a medium sized city.” That’s the way it used to be. When a heart attack patient was admitted, all the medical students were called to take a look at this unusual disease. Today it would be difficult to find a third-year medical student interested and wanting to see one more heart attack patient! They have already seen too many.

Currently, what percentage of North Americans die of cardiovascular disease?

- A: 20%
- B: 45%
- C: 60%

8B

A recent article released by the World Health Organization says, “Cancer deaths will double in many countries, and heart disease will go world wide over the next 25 years. The rise in these chronic diseases will be especially troublesome for developing countries already battling infectious diseases like tuberculosis and malaria. The projected increase in these diseases is largely due to the dissemination of cigarettes and a fatty, sugary diet, which has been pushed and promoted by the United States.”

The WHO Report says, “We know what is happening in these populations. They are eating more calories, switching to fatty, sugary foods, living sedentary lifestyles, and they smoke more.”

An accompanying news release calls on the United States to become a role model for a healthy lifestyle.

“Just as North America has exported negative aspects of its culture, we hope it will export positive aspects of its culture as well.”

The report then discusses the expansion of diabetes. It says, “Diabetes will afflict 300 million people by the year 2025; this will be a tremendous increase from the current numbers. These cases will more than triple in the developing world and will increase by 50% in the industrialized world.”

Is America practicing a form of dietary colonialism?

How will the Optimal Diet affect my grocery bill?

- A: Increase
- B: No effect
- C: Decrease

9C

At times people have the idea that eating a healthier diet with more fresh produce would involve spending more money. Exactly the opposite is true. You will be able to lower your food bill by 35-40%. You may not realize these savings at this time since you are now stocking up on all those new foods. Now you have brown rice on the shelf, and beans, and lentils. Now you have seven-grain cereals, and bulgar wheat for your favorite tabouli dish. Perhaps your food bill hasn't come yet. But that will change in a couple of months when you are no longer buying the M&Ms, the Oreos, the ice creams, the steaks and the crinkly bags. Instead, you will be buying apples, not apple pies; you'll be buying corn, not corn chips; and you will be eating hot cereals for breakfast and not pre-sweetened cereals.

:Q8

:Q9

As you begin to eat more foods-as-grown you will often find dramatic savings in your food budget; and you will experience a higher level of health.

Q10: Is the consumption of caffeine associated with sleep disturbances? T or F

10T

A person approached me complaining about insomnia. I asked, “Do you drink any coffee?” She said, “Yes, I do.” I said, “How much do you drink?” She said, “35 cups a week.”

I queried, “Is this real, regular coffee?” She said, “Yes, it is.”

“Well,” I suggested, “Do you think it might help you to sleep better if you were to cut back on the caffeine?”

Q11: Is caffeine intake associated with stomach ulcers? T or F?

11T

Although this concept is being tossed around nowadays, we thought we had fairly good evidence in the past that stomach ulcers were aggravated by caffeine and also by the caffeols—the oils in coffee. (You find them even in decaffeinated coffee.)

Q12: Does caffeine intake have a bearing on calcium loss from bones? T or F?

12T

The answer is “yes.” Caffeine causes calcium losses from the bone. A six-ounce cup of coffee causes a loss of about 5 milligrams of calcium. This means that the consumption of four cups of coffee causes you to lose 20 mgs of calcium a day. With an absorption of about 20%, this means that you will have to consume an extra 100 mgs of calcium a day just to make up for caffeine-related calcium losses. To reduce caffeine intake then becomes particularly important for women entering post-menopausal age.

Q13: Which foods contain the most salt?

- A. A cheeseburger
- B. A milk shake
- C. A slice of apple pie
- D. A bag of French fries

13A

The number one source of salt, by far, is the cheeseburger. The item with the least amount of salt are the French fries. Milkshakes and apple pie are in the second and third position. Salt can be masked in a marvelous way in processed foods. Most people would give the nod for the most salt to the French fries, since salt is very easily tasted, because it is usually found on the surface of the fries.

The least amount of cholesterol is found in which food?

- A. 5-ounce steak
- B. 5-ounce chicken
- C. 4-ounces of peanut butter
- D. 1 cup of custard

14C

The answer is very obvious: peanut butter contains the least amount of cholesterol. It has none at all, since cholesterol is only found in animal products. "If it doesn't have a mother, it won't have any cholesterol."

Advertising strategies sometimes can lead to some confusion. For instance, some peanut butter carries the special label: "Cholesterol-free." By deduction, the consumer may reason that this is a superior brand of peanut butter since it is cholesterol-free assuming that other peanut butter brands may have cholesterol. But don't be misled; this is just a marketing trick.

NOTE:

Following these 14 questions, you'll find three short interviews. You'll want to use them. They inspire, and they only take an additional 2 minutes.

This is followed by a 4-minute info-mercial, which you can consider as optional.

:Q14

15-6 CHIP Clinical Rounds



CHIP Clinical Rounds

(D) **Hans Diehl, DrHSc, MPH**
Director & founder CHIP

12:59 min.

Is non-alcoholic beer allowed in the CHIP program?

A non-alcoholic beer is basically an empty calorie drink. It's a designer food. It's not unlike a soft drink. If you want to have an occasional drink like this, then I wouldn't worry about it. It fits into the big picture. It's one of those choices that you can make. Of course, if you are overweight, then perhaps that non-alcoholic beer may not be in your best interest, especially if you cannot keep it to one a week.

What about portion and serving sizes?

The CHIP program distinguishes itself from other dietetic programs in that it does not spend much time talking about portion and serving sizes. Instead, CHIP recommends that you eat all you can, but of the right foods. Eat *food-as-grown*. Don't refine them too much. Don't add too much fat and oil. Don't fry them. Stay away from the butter, margarine and mayonnaise. Eat food in its natural state! Eat more beans, wheat, corn, fruits and vegetables—foods that are naturally high in fiber and roughage.

Remember, once your stomach is full, you're usually satisfied. That stomach is a muscular bag. It can hold about four cups of food. For those who overeat on a regular basis, the stomach can become stretched and that person may be able to cram five cups of food in. In contrast, those who usually only eat small amounts of food, their stomach may actually shrink and only hold three cups of food.

In general, the stomach holds about four cups of food. If you are going to eat natural, whole foods with plenty of fiber and roughage you are actually consuming foods with low caloric density. This frees you from the worry about calories. You can eat until you are full, and when you are full, you are full!

So, fill up that pouch. Eat to your stomach's content. And that will be good for your heart as well. Pack in all the vitamins, minerals, and antioxidants, all the different fibers, good tasting food, and you don't have to worry a bit about the calories. Your stomach's stretch reflex will let you know exactly when you are full. The volume and roughage of the food will be a natural physical barrier preventing you from overloading calorically.

But once you introduce designer foods, usually low in fiber and roughage but high in calories because of the fat and sugar, then you can get into trouble. These engineered, highly processed and refined foods are like caloric bombs—they are

:Q

(D)

:Q

(D)



16

small in volume and size but because of their caloric density, their impact is devastating. The same holds true for animal products and nuts. They are devoid of fiber but loaded with fatty calories.

Serving size? You only have to worry about that when you deviate from the guidelines of the *CHIP Optimal Diet*. Because then, you have to worry about those concentrated calories. And you shouldn't have to worry about calories. After all, good eating should be very simple, fun, colorful and delicious, and it *can* make the difference in staying young, active and healthy.

Therefore, choose wisely what you eat. It can often make all the difference!

[THE FOLLOWING IS NOT ON THE DVD, BUT IS VERY IMPORTANT]

Q: Please review with us how we can convert the percentages of fat into grams of fat.

(D) Perhaps a couple of illustrations will help us here.

Let us assume that a woman consumes 2,000 calories a day and she eats 45% of her calories as fat. On such a 45% fat diet, she would get 45% of 2,000 calories, or 900 calories, from fat. Since every gram of fat has 9 calories, a total fat consumption of 900 calories would come from eating 900 divided by 9 calories/gram—or, 100 grams of fat. Since one ounce of fat has close to 30 grams, 100 grams of fat would be the equivalent of three one-third ounces of fat for that day.

If this same woman, who eats 2,000 calories a day, would only consume 9% of her calories as fat, then she would get 9% of 2,000 calories, or 180 calories from fat. As these 180 calories are again divided by 9, this would give us 20 grams of fat a day, or two-thirds of an ounce of fat.

Let us assume that a man consumes 3,000 calories a day, and he eats 40% of his total calories as fat. On such a 40% fat diet, he would get 40% of 3,000 calories, or 1,200 calories, from fat. Since every gram of fat has 9 calories, a total fat consumption of 1,200 calories, divided by 9, would give us 133 grams of fat, or four and a half ounces of fat on that day.

If this same man, once again consuming 3,000 calories a day, however, ate only 10% of his calories as fat, then he would only get 10% of 3,000 calories, or 300 calories from fat. These 300 calories of fat, once more divided by 9, would amount to 33 grams of fat, or slightly more than an ounce of fat for that day.

As a general rule, an average woman on a preventive *CHIP* diet, should probably not eat more than 40 grams of fat a day. If she wants to reverse chronic disease processes, and she wants to follow a reversal diet, then it would be wiser for her to stay under 20 grams of fat.

Similarly, an average man on a preventive *CHIP* diet should probably not eat more than 60 grams of fat a day. If he wants to reverse disease and follow a *CHIP* reversal diet, then it would be wiser to stay under 30 grams of fat a day.