CHAPTER NINETEEN

Diet And Exercise

By Drs. Aubrey Pilgrim & Charles Myers

We don't know exactly what causes prostate cancer, or any other cancer, for that matter. There is strong evidence that diet may have an influence, especially a high fat diet. But if you already have cancer, going on a low fat diet now may not do much to cure your cancer. I heard of one patient who was very much concerned about his cholesterol level. He went to his doctor and asked what he should be eating. His doctor said, "Look man, you've got terminal cancer. Why the hell are you worried about cholesterol? Within reason, eat whatever you want. Enjoy yourself". If you have terminal cancer, the only thing you should worry about is that you may not have enough time to do all of the sinful and forbidden things that you would like to do.

But not all of us have terminal cancer. There are several important health benefits of diet and exercise. By diet, I don't necessarily mean a regimen to lose weight, although that is important if you are carrying too much weight. Ordinarily, when I speak of diet, I am referring to the food that is necessary to keep your body in good health. Benjamin Franklin is supposed to have said, "We should eat to live, not live to eat". There are a lot of people who fit the second part of that sentence. If you have ever seen pictures of old Ben, it is possible that he may not have followed his own excellent advice.

There are certain foods, vitamins and minerals that we need each day in order to repair and replace damaged cells, to manufacture hormones and enzymes and to maintain the chemical balance that is necessary for good health. We also need to be certain that we do everything possible to maintain our immune system. We need to be rather selective in what we eat in order to get all of the necessary elements.

Vitamins and Minerals

Many experts say that if we eat properly and eat the right foods, we don't need to take extra vitamins and minerals. But most of us don't eat properly. And many of the foods we eat are processed such as white flour so that many of the vitamins and minerals are removed. Many foods lose some of their vitamins if they are not eaten soon after harvest.

I am not sure that we can get all of the vitamins and minerals that we need unless we take supplements. Even if we don't need them, it doesn't hurt to take them. I believe that it is better to be safe. For over 40 years I have taken a hand full of vitamins and minerals every day. It didn't seem to help prevent my prostate cancer. Of course if I hadn't taken the vitamins, I may have died 20 years ago.

We are constantly reminded that we should eat lots of fruits and vegetables. But many of the fruits and vegetables are picked green and do not taste at all like they should. Millions of people will never know the taste of a good vine ripened tomato or how delicious a tree ripened peach can be. That is a terrible shame, but we can't all live on a farm.

There is strong evidence that something in the diet of the men in Japan prevents their cancers from becoming significant. Several studies indicate that it may be something in the soy products that the Japanese consume. They also eat a lot of fish and very little red meat and fat. One reason they eat very little red meat is because they have no room to grow cattle. Most meat is imported and is very expensive.

Dr. Charles Myers of the University of Virginia has done several studies. He says that genistein in soy products, when added to prostate cancer tissue cultures in a petrie dish, causes the cells to shrink up and die. There are several other products that will do the same such as the lycopenes from tomatoes and yellow vegetables. But adding testosterone to the culture will cause the cells to multiply and grow very fast. The saturated fat from red meats will also cause the cells to grow at about the same rate as the testosterone. On the other hand, adding fish oils and even olive oil will slow the growth.

We know that diet has tremendous influence on cancer. But it may take more than diet to control it. Dr. Mark Scholz answers a lot of questions on the P2P (Patient to Physician) mailing list. One man posted that he had a PSA of 10. He started a diet change to no animal products (except occasional chicken or ocean fish), lots of soy, vegetables, legumes, grains, fruit and additional supplements. His PSA dropped to as low as 6.9 a few months later, then started to climb again to his original PSA of 10ng/ml. He wanted to know why it was going up again.

Dr. Scholz answered:
My experience with dietary treatment of newly diagnosed patients with PC follows a pattern exactly like yours. In patients who make a big life style change with their diet the PSA drops down for a period of time but then later starts to rise again. I guess that diet, like a number of treatments, is active but does not cause permanent regression of the cancer.

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Easy Diet Recipes
You can take almost any recipe and make it a good low fat food. Just leave out the fat. It won’t taste quite the same, but it will be good for you. I love tomatoes, raw in salads, or from a can. A can of Campbell’s cream of tomato soup will have

about 200 calories per 8 ounce cup. You can take a can of tomatoes, add a bit of non-fat milk powder to them and have a soup that is almost as good as the Campbells, but with only about 50 calories per 8 ounce cup. You can add a bit of chicken or beef bouillon to make it taste even better with out adding more calories.

Tofu is made from soy beans and has most of the soy benefits. There are many ways that tofu can be prepared. Several recipe books have been written about it. I make a salad dressing with soft tofu that is very low in calories and is still delicious. I use non-fat cottage cheese, tofu, a bit of Hidden Valley Ranch Blue Cheese Powder, some buttermilk, a little lemon juice, and a little bit of vinegar. Sometimes I add a tablespoon of lowfat mayonnaise. Or a tablespoon of regular blue cheese salad dressing.

I don't measure my ingredients. I add a bit of something and taste it. My dressing will usually have less than 100 calories for about four ounces. The store bought regular blue cheese dressing will have about 100 calories per tablespoon. One tablespoon is equal to a half ounce, so four ounces of a regular store bought dressing will have 800 calories.

Not everyone likes tofu. One PCa survivor, Ken Lemke, on the Internet listed his favorite soy recipe. He likes to marinate the tofu or soy products overnight in good Kentucky bourbon whiskey. Then strain the soy out, throw it away, and drink the bourbon. I am not sure how much of the soy benefits are absorbed by the bourbon. But after a couple of shots, who cares.

Selenium

The Dec. 25, 1996 issue of the Journal of the American Medical Association (JAMA) reported a study that seemed to prove that selenium could prevent prostate cancer in 63% of the men who took it over a 4 ½ year period.

The recommended dose for selenium is 200mcg per day. Some are taking more than this, but selenium in high doses can be toxic and poisonous. We don't have any good studies as to whether selenium can help those of us who already have PCa. Dr. Larry Clark, the man who did the selenium studies, is a young man in his early 50s. He underwent surgery for prostate cancer, but the cancer recurred. Unfortunately, he had the cancer before he found out about the possible preventive properties of selenium.

We are very sad to report that Dr. Clark lost the battle on March 22, 2000. He did much research that will live on after him and help others stay alive. This book is dedicated to Dr. Clark and all the others who have lost the battle.

The Benefits of Exercise

Here is one of my little poems::

Gather Ye Rosebuds While Ye May

The glowing spark that was in May,
In the midst of cold December,
Begins to dwindle and decay
To just a dying ember.

And when that ember sighs its last,
And my time for sex is past,
My tired old body laments and cries,
What will I do for exercise?

Arnold Schwarzenegger was named by President Bush to help with the nation's health and fitness programs. He appeared on a PBS TV show one night promoting workouts for health. He listed several of the benefits you can get from working out. He said that when he reached a certain point during his workouts, he felt real good. He grinned and said that it made him feel just like he was coming. (There was a time when you couldn't say things like that on TV. Now almost anything goes. They can say screw, ass, crap, pissed off and many other dirty words. How times have changed.)

There are chemical substances called endorphins that are produced in your brain when you have an extensive work out. They are very similar to the opiate drugs that make you feel good. There are some people who actually become addicted to the endorphins. It is almost like a drug addict's "fix". Those who are addicted to the endorphins will do almost anything in order to get their daily fix. They won't let anything stop them. Some will go out running in all kinds of weather and even with severe illnesses and injuries.

It usually takes some very strenuous exercises such as pumping iron or long distance running to create the endorphins. I have never been able to reach the point while working out that I felt like I was having an orgasm. These same endorphins are also produced when you have a good sex session. And it usually takes a lot less energy to produce them. That is one more reason why sex is so popular. Exercise may make you feel good, almost like having an orgasm, but it can never take the place of real sex.

Exercise and Heart Disease

The heart is a muscle. It is a highly specialized muscle, but it can be strengthened by working out just like the muscles of the arms or legs. Our bodies are usually very efficient. We don't waste any more energy than we have to. If you only move from the couch to the kitchen table, then that is all of the energy that will be used. In order to strengthen the heart, or any muscle, we have to make it work just a bit more than it usually does.

The February 1, 1995 issue of the Journal of American Medical Association (JAMA) reported the results of an extensive study on exercise. They estimated that 250,000 deaths from coronary heart disease (CHD) could be avoided with just 30 minutes of moderate exercise every day. By moderate exercise, they meant walking, doing house work, and almost any physical activity. The activity didn't have to be done all at once. There is a cumulative effect.

The Men's Health Magazine, (March 1995, page 74), had this quote "People who exercise regularly are 100 times less likely to have heart attacks under stressful conditions than people who exercise once a week or less".

A study of 9777 men, reported in the April 12, 1995 Journal of the American Medical Association (JAMA) pg.1093, that men who were out of shape died at a rate three times greater than those who were fit. This same journal cites a Rand Corporation study that said "An average of 21 minutes of life is gained for each additional mile walked by a sedentary person". The average person can walk at about three miles an hour, so one could add about an hour onto their life for each hour spent walking.

Of course the more strenuous exercises, such as jogging is definitely more beneficial because it makes the heart work more and strengthens it.

CPR

When the heart stops beating, the tissues are no longer supplied with blood and nutrition. Many specialized cells start dying immediately. CPR (cardiopulmonary resuscitation) can keep enough blood flowing to keep you alive until other treatments are available. You should learn CPR and make sure that someone near you also knows it. I heard of one man who was driving and realized that he was having a heart attack. He pressed his chest against the steering wheel again and again, just as if someone was giving him CPR. He was able to drive himself to a nearby hospital.

Strenuous coughing may also help if you feel a heart attack coming on.

Stationary Bicycle

You have to constantly challenge the body to work harder. It is a very efficient machine. It could be called lazy because it will not waste any energy that it does not have to. To make the muscle larger and stronger, it must be made to work just a bit harder than it did before. Otherwise, if it can do the job with what it has, it won't create any new muscle tissue. When you exercise a bit beyond the usual, you are also causing your heart to work a bit harder. The heart is a muscle and can be strengthened just like the muscles of your arms. If you have a stronger heart, it may be able to withstand a minor attack.

I have a treadmill but I have recently developed swollen knees and arthritis. The treadmill is not very kind to arthritic knees so I have recently bought a stationary bicycle. It has handlebars which work in conjunction with the pedals. Pulling or pushing the handlebars back and forth while pedaling helps to exercise the upper body. This type of exercise is not possible with the treadmill.

One other plus for the stationary bicycle is that it doesn't weigh much, does not use any electricity, so it can be moved and set up almost anywhere.

Some advantages of the indoor exercise:
1) I can use this machine every day, no matter what the weather is like outside.

2) Walking, or jogging is usually boring. A half hour can seem like ages. You can buy a small radio with earplugs but that is not nearly as good as being able to watch TV or listening to a good stereo sound system while working out. If you are watching something funny or interesting, it is surprising how fast the time goes.

3) Since I am inside my house, I don't have to worry about being attacked by dogs, gangs or muggers.

Sore Muscles
When you first start to exercise, if you overdo it, you may be very sore the next day. One of the by-products of the breakdown of the sugar is lactic acid. The soreness is due to the lactic acid that builds up in the muscles. If you exercise slowly, the blood can carry away all the end products produced by the exercise. But if you are not in condition, and do heavy exercise, the body will not be able to keep up.

You may also tire rather quickly. But if you extend the exercise period just a little each time, push your body to do just a little more, it will become easier as your body gets into shape and you form more muscle. When you first begin, it is better to exercise every other day. This will give the body a chance to build new tissue on the day off.

The Venous and Lymph Systems
Another very important benefit from exercise is to the venous and lymph system. If you have ever had to lay in bed for three or four days you may feel very weak. You will appreciate how necessary and important it is for exercise of some sort.

If you have ever scraped or abraded your skin, you may have seen a clear liquid oozing out of the injury. This clear liquid is lymph fluid. The lymph fluid fills the spaces around all of the cells. After a cell digests its food, the waste is thrown out into the lymph fluid. The lymph system is made up of vessels, similar to the venous system. It carries waste from cell processes to one of the large veins. This blood with the waste is then carried to the liver and other organs which filters and cleans it.

When blood leaves the heart in the arteries, it is under considerable pressure. But by the time it passes through all of the small capillaries into the veins, there is little or no pressure left. The venous blood depends to a large degree on the pressure of muscles around them to force the blood back to the heart. The veins have several one way valves or flaps of tissue at various points. When a muscle in your leg squeezes on a vein, it will cause the blood to move upward. When the muscle relaxes, the blood will fall backward but the movement of the blood will cause the valve to close. The next time a muscle contracts and squeezes on a vein, the blood will move up a bit more. The lymphatic vessels have the same type of one way valves.

Lymph Nodes

Lymph nodes are filters in the lymph vessel system that helps trap bacteria, cancer cells and other foreign materials. The lymph nodes produce lymphocytes and monocytes to help fight and stop any foreign material from getting into the blood system. There are hundreds of lymph nodes throughout the body. The lymph nodes may be as small as a pin head to as large as a small olive.

When treating prostate cancer, the nearby pelvic lymph nodes are often checked. If cancer cells are found in the lymph nodes, it may indicate that the cancer has already metastasized.

Miracle Foods, Drugs & Herbs

There are some people who believe that there are all kinds of magic and miracle foods, drugs and natural herbs. These are the type of people who may believe in Santa Claus, the Easter bunny, the tooth fairy and UFOs. These people believe that there are panaceas that can cure every ailment known to man. (Panacea was the goddess daughter of Aesculapis, the god of medicine and healing. He also had another daughter, Hygea, the goddess of health. Hygea gave us the word hygiene.)

Many of the “health nuts” often believe that there are conspiracies among the Government, big business and the drug companies to prevent the widespread use of these miraculous products. Usually, there is no way to reason with these people. Their minds are made up. If you try to tell them anything that they don’t already believe, they will consider that you are one of the band of conspirators.

One group has tried for years to have the artificial sweetener aspartame, or NutraSweet, banned. They have made outrageous claims that it is a poison and has caused many diseases. I have used it for many years with no ill effects. I love sweets. I have saved thousands and thousands of calories. I know of no one who has been made ill by aspartame sweeteners.

Another product that they have tried to have banned is the artificial fat Olestra or Olean used to fry some brands of potato chips and corn chips. It is made from a

carbohydrate that has been modified so that the molecules are so large they cannot be digested. It has the taste of fat and could be used as a substitute for butter and many other things, but the FDA at this time has only approved it for limited uses. Except for diarrhea in a few people, the artificial fat seems to be something that could save untold thousands of calories.

Natural Foods

There are a lot of people who believe that most of our illnesses and diseases are caused by pesticides, fertilizers and modern day methods used to grow foods. There is no doubt that many of the pesticides and fertilizers are harmful. This is not a perfect world. There are a lot of things that we just have to live with, if we are to live.

At the time of Christ, all food was grown organically. They had no pesticides or inorganic fertilizers. The average life span was 19 years. It is true that a few people lived to be octogenarians, but there was a high rate of infant death. Even if the person made it to adulthood, there were deaths from wars, disease, pestilence, malnutrition and starvation.

Even during the early 1900s, the average life span was just a little over 40 years. A large number of the population lived on farms and ate organically grown food. I was born on a farm. I drank warm milk fresh from the cow. I ate fresh garden vegetables and hand picked fruit. My grandfather did the same. He died at 42 years old of a ruptured blood vessel. One of his sons died at 38 of a brain tumor. Another son died at 52 from a heart attack. My mother died at 56. The country doctor was unable to determine the exact cause of my mother's death, but it was probably cancer. Another relative developed diabetes, became blind and died at 32. All of these people lived on a farm all their life and had good organically grown food. But it did not protect them.

Of course I had some relatives who lived to a ripe old age. My grandmother lived more than twice as long as my grandfather and died at 88 years old. The point is that we are all different. What works for some, may not for others. Today in spite of all the horrible things that we eat, our average life span is more than 70 years. If we had to resort to organic farming today, food would be so expensive that few could afford it. Even if they could afford it, not enough food could be organically grown to feed half the population of the world. Starvation would be rampant.

If no fertilizer is used to grow organic vegetables, the vegetables may be lacking in several elements. If the elements are not in the soil, then the vegetables will not have them. People who insist on organic products are paying more for these products yet may be getting much less than if they bought the regular products.

For the last 40 years, I have been a semi-vegetarian. I eat meat once in a while, mostly chicken and fish. But I eat a lot of fruits, raw vegetables, cooked beans, cereal grains, nuts and non fat dairy products. I make sure that I get all of the

essential amino acids that I need every day. I worry a bit that some strict vegetarians don't get enough of the essential amino acids that are needed daily. The body must have a certain amount of quality protein every day in order to manufacture hormones, the digestive and other enzymes, the bodily fluids, repair tissue damage and many other essential body products and functions.

Seed products have everything in them to start a new life, so most of them are very nutritious. However, some may lack a few of the essential amino acids. An egg is an almost perfect food. Of course, the yolk has a lot of fat and cholesterol. The white of an egg has the same high quality proteins, but no fat. There are several foods, such as egg beaters that are made from the egg whites. They add a bit of coloring to make them look like whole eggs. Beans are almost perfect, but lack some of the essential amino acids. Eating bread with beans fills in the missing amino acids so that it is all you may need.

It is proper to be concerned about what we eat. But we shouldn't be so concerned as to become a fanatic.

Survival and Marriage

At Dr. E. David Crawford's 7th International Prostate Cancer Update, Dr. Ian Tannock presented a paper on survival and quality of life. One of the studies he quoted said that prostate cancer and the length of survival had very little effect on whether a man was single and had never married. PCa had a slight effect on those men who were divorced. In some cases the men may have lived longer because they had got out of an unhappy marriage. But for those men who had been widowed, there was a significant decrease in survival time.

My wife died in 1986. I have been too busy to bother getting married again. Dr. Tannock's data worried me a bit. I asked him if he would give me a prescription to get married again. He said, "Absolutely."

DIET AND PROSTATE CANCER

This part of the chapter was written by Charles E. Myers, M.D., Professor of Medicine and Urology at University of Virginia. He is also editor of the Prostate Forum Newsletter. This newsletter has brief updates on most of the ever changing developments in prostate cancer. For subscription information, tel. 804-982-4190 or Fax 804-982-0918. Dr. Myers is also a prostate cancer survivor.

From autopsies performed on men who have died of other causes, we now know that small deposits of cancer can be found within the prostates of many men. These lesions can first be detected shortly after the onset of puberty with the frequency increasing steadily with age. By the time men reach the age of 70 and above, 80 - 100% will have these lesions. While these numbers are impressive, only about one third of this percentage of patients will develop metastatic prostate cancer in any given year. Because it is only metastatic prostate cancer

that is potentially lethal, it is important to understand what stimulates the cancer to spread beyond the confines of the gland.

One clue to the puzzle of why some cancers metastasize comes from studies done in Japan and other Asian countries. There localized prostate cancer increases with age just as it does in the United States and Europe. However, the occurrence of metastatic disease in Japan is approximately 1/10th that in the United States. The incidence of prostate cancer varies by 120 fold when third world countries are compared with the United States and Europe.

Naturally, such dramatic differences in occurrence attract attention and many questions. One answer might be that the tendency to develop metastatic prostate cancer is simply a racial trait like skin color. However, when Japanese men move to America, their risk of developing metastatic prostate cancer increases in proportion to the number of years they have lived here.

Furthermore, the risk continues to rise with each succeeding generation born in this country. For this reason, most investigators share the opinion that some aspect in the environment rather than genetics, explains the large variation in the incidence of metastatic prostate cancer seen around the world. The implications of this finding are profound: it suggests for example, that if Americans could adopt aspects of the Japanese life-style, we might reduce the death rate from prostate cancer by as much as 90%.

Another clue to the puzzle of why some cancers metastasize was discovered when death rates from prostate cancer were compared with the annual fat consumption of men in a wide range of nations around the globe. The nations included in the study ranged from modern Western industrialized nations to third world countries in which a majority of the population lived a rural agrarian existence. The surprising finding was that the death rate from prostate cancer directly correlated with the fat content in the diet.

All dietary fats are built upon a backbone of glycerine. Glycerine itself has three carbon atoms with an oxygen attached to each carbon. In fat, one fatty acid molecule is attached to each of the oxygens of glycerine. All fats in the diet have this structure. Fatty acids can be saturated, monosaturated or polyunsaturated. They typically contain anywhere from 16 to 22 carbon atoms. The differences between butter, olive oil, corn oil, lard or canola oil depend upon which fatty acids are attached to the carbon and oxygen backbone of glycerine. It is the fatty acid that determines whether a fat is saturated or unsaturated, whether the fat is a liquid in the case of corn oil or a solid in the case of butter. For example, in the case of olive oil, the monosaturated fatty acid, oleic acid, accounts for about half of all the fatty acids in this fat. With our current understanding of the nature of fats, it seems likely that this increased risk is the result of the kinds of fatty acids found in these fats, not with the glycerine backbone.

Now we come to the heart of the problem: most dietary fats are mixtures of fatty acids. Furthermore, the specific fatty acids in the fat can be altered by how the plant and/or animals were raised. For example, the fatty acids in egg yolk can be altered by feeding the chicken chow containing different fatty acids. For this reason, it can be very difficult to determine with accuracy what fatty acids a patient has been eating just by taking a dietary history. This is undoubtedly one of the major reasons why studies linking diet with risk of prostate cancer have yielded conflicting results.

Fortunately, it is possible to take a very direct approach to this problem: measure the specific fatty acids in the blood, the fat, and even the prostate glands of patients and correlate the results with the risk of prostate cancer.
Various attempts have been made to understand the relationship between fat intake and prostate cancer by improving aspects of study design and how dietary fat intake information is gathered.

The results of these newer studies have varied also. A majority showed some increased risk related to dietary fat intake, but some interesting studies failed to confirm a role for fat. In truth it is extremely difficult, if not impossible, to design a perfect population study of dietary fat.

There are two studies, however, that I have found very convincing: the Physician's Health Study by Gann et al and the Health Professionals Follow-up Study by Giovannucci et al. Consequently, I have altered the way I approach my patients.

These were prospective studies, which means that the populations were first identified and then followed over time. Additionally, dietary intake was recorded regularly and not based on patients' some times faulty memory. Both studies contained a fairly large number of individuals, nearly 15,000 in the Physician's Health Study and over 50,000 in the Health Professionals Follow-up Study.
The Health Professionals Follow-up Study showed that the risk of prostate cancer was directly related to total fat intake. The risk was associated with animal, not vegetable fat. The sources of animal fat with the highest correlations of prostate cancer deaths were bacon, butter, mayonnaise, creamy salad dressings, beef, pork, and lamb.

In the Physicians' Health Study, blood had been stored at the beginning of the study. Thus, in this case it was possible to go back and measure directly the specific fatty acids in the blood of men on this study. When this was done, two fatty acids emerged that were specifically associated with an increased risk of advanced prostate cancer. As with the previous study, alpha linolenic acid was associated with the greatest risk, in this case a 2.1 fold increase. A second fatty acid, arachidonic acid, showed a weaker association with risk. None of the other fatty acids appeared to increase risk.

What do we know of these two fatty acids, alpha linolenic acid and arachidonic acid? Arachidonic acid has been repeatedly shown to stimulate the growth and invasiveness of human prostate cancer cell lines under laboratory conditions. Furthermore, human prostate cancer biopsies have been shown to consume arachidonic acid ten times faster than surrounding normal tissue. In addition to stimulating the growth and invasiveness of human prostate cancer cells, it may also help the tumor defeat the immune system.

Prostate cancer cells convert arachidonic acid to a compound called PGE2 that is well known to suppress the immune system. Foods such as butter and red meats are rich sources of arachidonic acid and its precursors. Given these findings, I would actually have guessed that high blood arachidonic acid levels would have been associated with much higher risk of prostate cancer.

Alpha linolenic acid is more of a puzzle. High alpha linolenic acid diets appear to protect against heart disease and may lessen the risk of cancers of the breast and colon. Until these two papers, there had been no suggestion of a link between alpha linolenic acid and prostate cancer. Unlike arachidonic acid, there are no reports of alpha linolenic acid stimulating growth and invasiveness of prostate cancer cells in the laboratory. There have been no suggestions of how alpha linolenic acid might cause prostate cancer to grow or invade more rapidly. Furthermore, these two papers were published in 1993 and 1994, respectively. Given these unexpected results, I would have expected that other researchers would have checked to see if alpha linolenic acid had dramatic effects on prostate cancer biology, but I can find no evidence of this in the literature.

What would be a prudent course of action given the incomplete information we have? The table below lists oils high in alpha linolenate or arachidonic acid precursors. In addition to this list, I should note that nuts such as walnuts and almonds are high in both alpha linolenate and arachidonic acid precursors.

Dietary Oils

High Arachidonate	High Alpha Linolenate Precursors	Low in Both
Linseed (50%)	Safflower (74%)	Coconut
Canola (12%)	Corn (58%)	Palm
Soybean (6.8%)	Cottonseed (52%)	Soybean (51%)
		Peanut (32%)

Flax seed or linseed oil (its other name) is one of the richest sources of the fatty acid, alpha-linolenic acid. Alpha-linolenic acid is an omega 3 fatty acid that contains 18 carbon atoms. It can undergo conversion in the body to EPA and DHA, the two fatty acids in fish oil.

We humans are relatively inefficient in converting alpha-linolenic acid to EPA and DHA. For this reason, eating flax seed oil or other high alpha-linolenic acid containing oils will lead to high blood levels of alpha-linolenic acid.

There are many health benefits associated with alpha-linolenic acid. It helps prevent atherosclerosis or hardening of the arteries. There is also evidence that alpha linolenic acid may slow the growth of some cancers such as breast cancer. Thus, there are sound reasons why a physician might recommend flax seed oil to patients with atherosclerosis or certain other cancers. However, it would seem prudent for patients with prostate cancer to avoid flax or linseed oil.

What about the other omega 3 fatty acids, EPA and DHA, that are common in fish oils? In the Physicians' Health Study, blood levels of these two fatty acids were not associated with an increased risk of prostate cancer nor of an increased risk for the development of metastatic prostate cancer.

Can you go too far in reducing fat in the diet? This possibility is at least theoretically possible. Both alpha linolenic acid and arachidonic acid precursors are listed as essential fatty acids. A diet completely lacking in these fatty acids would eventually have serious health consequences. While essential fatty acid deficiencies have been studied in detail in animals, deficiencies in humans appear largely confined to infants placed on formulas lacking these fatty acids. These infants exhibited skin sores and scaly patches as well as repeated infections. This situation is rare in humans because these fatty acids are so widely distributed in foods. For example, all whole grains, most vegetables such as lettuce or cabbage, and most beans contain sufficient essential fatty acid content to prevent a deficiency.

In summary, it appears that the risk of metastatic prostate cancer is associated with dietary fat intake. However, as a physician, I still lack information that I need. The first question is how low is a low fat diet? In the Health Professionals Follow-up Study, total fat ranged from 53 to 90 grams of fat a day, representing a range of 20% to 40% of total calories from fat. Low fat diets have been tested in the treatment of heart disease.

Individuals such as Dean Ornish and Nathan Pritiken have championed diets in which fat content ranged from 10-15% of total calories. We do not know whether such stringent diets offer added protection. Also, we really do not have a clinical trial that shows that altering someone's diet will make a difference. To demonstrate this will require identifying a large group of men with no evidence of prostate cancer, then randomly assigning them to a "normal" American diet or a "low" fat diet. Until this type of clinical trial is completed, both physicians and patients will make decisions based upon incomplete information.