

Will an apple a day keep the urologist away?

Dietary considerations in urology

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“Should I drink 8 glasses of water a day?”

“Can I barbeque? Will it give me cancer?”

It's hard to come up with a solid diet to make a difference in your urological health. Everyone has their own opinion on diet, you get some advice from grandparents, parents and friends. All this needs to be taken with caution. In this chapter, we demystify the diet maze for you. We identify dietary changes that may improve your urological health, based on the best available research.

Two things to keep in mind when you've listening to other advice:

1. If two factors are related this does not mean that one caused the other (this is the “causation versus correlation” difference).
 - Research shows that diet soft drinks “cause” obesity compared to regular soft drinks. On the surface, this does not make sense because there are fewer calories in diet soda and therefore it should not increase body fat. What was not well studied by researchers were the other foods that people ate in addition to their choice of soft drink. We have all experienced this when we step up to our favourite fast food restaurant counter, order up a greasy meal, and top it off with a diet soda, perhaps either subconsciously or consciously to make us feel better about our health. Multiply this by “100 billion served” and we may have a bias that the research has not taken into account. Diet soda does not cause obesity, rather it is more likely associated with it.
2. Our natural tendency is to base future decisions on either our own direct experiences or experiences of members of their family or friends. For researchers to come to a “true” conclusion about a study, they need to have enough patients to mathematically show that their results are strong enough to recommend one thing over another. Sometimes, this may mean hundreds of thousands of patients are required to show a difference in one thing over the other, particularly if the benefit to patients is small. If you want to improve your urological health, you should discuss recommendations with those familiar with diet research and search out the “best evidence” before taking on the advice.

What parts of a diet are important to consider?

The food and beverages we eat and drink constitute our daily diet. Our diet is influenced by our personal preferences, cultural background, health status, economic status and a variety of other factors. Our food choices have different amounts of energy (measured in calories), nutrients and other substances.

The goal of a healthy diet is to meet the needs for energy, vitamins, minerals and other nutrients and reduce the risk of diseases and have a healthy lifestyle.

- **Macronutrients** are nutrients required in large amounts that can be used to provide our body with energy. There are 3 types of macronutrients: carbohydrates, fats and proteins.

- Micronutrients, such as vitamins and minerals, are nutrients required in small amounts that do not provide our body with energy. Water is also an important nutrient our body needs. Micronutrients and water help with a lot of activities and reactions in the body.

Macronutrients

1. Carbohydrates

- About half of all the energy our body uses on a daily basis comes from carbohydrates in our body, glucose and its storage form, glycogen.
- Dietary carbohydrates can be simple (sugars) or complex (starches and fibers).
- Complex carbohydrates are found in whole grains, whole-wheat bread, beans, legumes, vegetables and fruits.
- Simple carbohydrates include soft drinks, candies, desserts and white and processed grain products.
- Complex carbohydrates are preferred over simple carbohydrates.
- Dietary fibers can either dissolve in water (soluble fiber; associated with lowering of cholesterol and glucose levels) or cannot dissolve in water (insoluble fiber; promoting bowel movements and alleviating constipation).
- The recommendations for fiber are 25 g per day for women and 38 g per day of men. See below for the recommended amount of daily carbohydrates and other macronutrients.

2. Fats

- The other half of the body's energy comes mostly from fats. Fats exist in different forms: saturated, *trans*, and unsaturated.
- Saturated fats are most often believed to raise bad (LDL) cholesterol and come mostly from animal products, such as meat, dairy, butter, and from vegetable sources, such as coconut and palm oils.
- *Trans* fats also raise bad cholesterol, and they also lower good (HDL) cholesterol.
- Therefore, saturated and *trans* fats should be limited; go for lean meats and low-fat dairy products. Unsaturated fats are present in olive, canola, and other vegetable oils.
- Omega-6 and omega-3 fats are essential *polyunsaturated* fats that our bodies cannot make and thus must be supplied by the diet. The requirements of omega-6 fats are usually met through a regular diet. However, you need to eat omega-3 rich foods, such as having two servings of fatty fish, such as salmon, mackerel, and tuna, per week.
- The recommendation for omega-3 fats is 1.1 g per day for women and 1.6 g per day for men.

3. Proteins

- Proteins, or amino acids, have many roles.
- Our body cannot make some amino acids in sufficient quantity to meet its need so they must be supplied by the diet.
- Most people in North America ingest more protein than they need. Proteins are not just found in meat, but can also be found in milk, eggs, legumes, and many grains and vegetables.
- Since everyone consumes different amounts of calories, there are recommended macronutrient distribution ranges (see Table 1).

Recommended macronutrients for a 2000-calorie diet

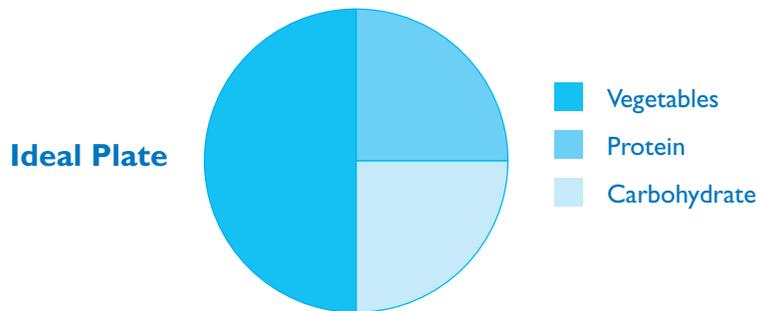
Macronutrients	% of total energy intake	Number in grams
Carbohydrates	45-65%	225 to 325 g
Fats	20-35%	44 to 78 g
Proteins	10-35%	50 to 175 g

Note that 1 gram of carbohydrate or protein is equal to 4 calories, and 1 gram of fat is equal to 9 calories.

A simple way to think of these ranges is to have meals consisting of:

- $\frac{1}{4}$ protein
- $\frac{1}{4}$ carbohydrates
- $\frac{1}{2}$ vegetables

This is also known as the “Ideal Plate”. Fruits should be consumed as snacks or desserts.



Micronutrients

Vitamins and minerals

Vitamins can either dissolve in water (water soluble) or dissolve in fat (fat soluble).

- Water soluble vitamins include the B vitamins (thiamin, riboflavin, niacin, biotin, pantothenic acid, vitamin B₆, folate, and vitamin B₁₂) and vitamin C. These are removed in the urine if consumed in excess. Fat soluble vitamins are vitamins A, D, E and K, and are stored in the cells associated with fat.
- Minerals include sodium, potassium, calcium, phosphorus, magnesium, iron, zinc, selenium, copper, manganese, and more.
- Some vitamins and minerals act as antioxidants, defending the body against damage caused by free radicals that cause diseases and cancer. Dietary antioxidants include vitamin C, vitamin E, beta-carotene (a form of vitamin A), selenium, copper, manganese, and zinc.
- Sodium (found in salt) is necessary for the body, but we tend to eat way too much of it! A typical North American diet goes beyond the upper limit level of 2300 mg (some people eat up to 6000 mg per day!), while the daily recommended intake is only 1500 mg. In addition, North Americans have a low potassium intake, which is related to high blood pressure and kidney stones. By eating more whole, fresh foods and limiting processed, pre-made foods, potassium intake is increased, and sodium intake is decreased, respectively.

A healthy, well-balanced diet following Canada's Food Guide, which is rich in fresh vegetables and fruits, whole-grains lower in fat, sugar and salt, low-fat milk and dairy products, lean meats, meat alternatives, and fish should provide all the necessary vitamins, minerals and nutrients our body needs.

Eating Well with Canada's Food Guide

Despite our government's efforts to start us out on the right foot (remember Canada's Food Guide from elementary school?), our society is basically eating more unhealthily as time goes on. If everyone followed Canada's Food Guide each day of their life, our society would be overwhelmingly healthier, and possibly, happier.

What does the ideal diet look like? Take a look at the Health Canada's Food Guide (<http://www.hc-sc.gc.ca/fn-an/food-guide-aliment/index-eng.php>).

Even making small changes will improve your health.

Diet and Urology: How can we do better with our diet?

In this section, we'll go over specific urological concerns and describe how our diets can affect them.

A. Infections

You've heard that cranberry juice (or cranberry supplements) can reduce bladder infections. Is there some truth to this?

In 2011, 2 studies looked at 500 women who had bladder infections to see if cranberry juice or cranberry capsules reduced the number of infections. Unfortunately, cranberry juice was no better than a juice similar in flavour but having no cranberries in it for the first study, and was worse than a small dose of antibiotics daily for the second study in preventing infections.

What to do?

- Most of the time, a short course of antibiotics will fix the problem.
- Depending on your age, gender and other medical problems, you may need more tests.
- If you get bladder infections often, speak with your family doctor who may refer you to a urologist.

B. Inflammation

Two major urology conditions fall under the "inflammation" category: painful bladder syndrome or interstitial cystitis (PBS/IC) and chronic pelvic pain syndrome (CPPS) or prostatitis. For more on these, go to the specific chapter. Here we'll review the diet in PBS/IC and CPPS.

1) PBS/IC: Up to 90% of patients with this condition report difficulties with specific parts of their diet. The most common foods that may make symptoms worse are: citrus fruits, tomatoes, vitamin C, artificial sweeteners, coffee, tea, carbonated and alcoholic beverages, and spicy foods.

2) CPPS/Prostatitis: A recent study identified that patients who had a diagnosis of CPPS/Prostatitis had a higher intake of carbohydrates, milk, cheese or milk products as well as a lower intake of vegetables and fruits. Other studies suggest that some of the same foods associated with PBS/IC (see above) like spicy foods or acidic foods can worsen symptoms.

What to do?

- There is no specific diet recommended for PBS/IC or CPPS. Many health professionals recommend an “Elimination Diet.”
 - Make a diary of all food and drink items, as well as symptoms, for one week.
 - The second and third week involves eating and drinking items that are considered least bothersome (for a list, a suggested website is www.ichelp.org), recording intake and symptoms again.
 - As a last step, re-introduce foods one at a time, and keep track of your symptoms to identify potential triggers.
 - A waiting period of three days between each new test item is recommended.

C. Fertility and Sexual Function

We assume that our diets affect both our fertility and sexual function. Most people have heard that saltpeter (known by its chemistry name potassium nitrate) may have been used in institutions (such as prison) to calm down sexual drive (an interesting story but really has no scientific evidence!). But what foods do affect our sexual health?

1) Fertility

- a. Males: This is poorly understood. Studies looking at men who had difficulties getting their partners pregnant suggest that things males eat may affect their sperm quality and pregnancy success.
 - i. Factors that may impair sperm’s ability to fertilize the egg are: alcohol, coffee, weight loss diet, obesity, and frequent intake of meat (and/or processed meat).
 - ii. Factors that may enhance the sperm’s ability to fertilize the egg are: vegetables and fruits, and whole grains and cereals.
- b. Females: There has been much more research done with females who have difficulty getting pregnant, but there is still much work to be done. Several dietary factors have been identified. They can be separated into macronutrients (foods that provide energy: fat, carbohydrates, and protein) and micronutrients (small parts of the foods we eat that our bodies cannot make themselves but are required for life).
 - i. Macronutrients: Greater intake of carbohydrate foods and higher protein intake (specifically animal protein) seemed to impair pregnancy success. Fat intake overall was not shown to affect this success rate. There is a suggestion that the “Mediterranean diet” is better for pregnancy success than the common diet of North America. The Mediterranean diet typically consists of abundant plant foods such as vegetables, whole grains, legumes, beans, nuts, seeds, and fresh fruit as the typical daily dessert. Olive oil is the principal source of fat. Fish and seafood is consumed often, at least two times per week. Poultry, eggs, cheese, and yogurt, are consumed in low to moderate amounts, daily to weekly. Red meat and sweets are consumed in limited amounts, no more than a few times per month. Although wine is typically on this list, females should not drink alcohol if they are trying to become or are pregnant.
 - ii. Micronutrients: There is a suggestion that taking a multivitamin increases chances of success for pregnancy. It is well known that all women should take folic acid (in the form of a small pill) prior to trying to get pregnant as it decreases the chances of having a baby with a birth defect known as “neural tube defect” that affects a baby’s nervous system.

What to do?

For males:

- Maintaining a healthy weight
- Eat vegetables, fruits, and whole grains
- Minimize alcohol, coffee intake
- Eat low amounts of red or processed meat

For females capable of becoming pregnant:

- Take folic acid 0.4 to 0.8 mg every day (at least one month before trying to get pregnant)
- Add in a multivitamin
- Follow a similar diet to the Mediterranean diet, minimizing animal meat while maximizing vegetables and fruits

For both men and women:

- Speak to your family doctor or obstetrician (a doctor who specializes in the health of pregnant women) about what changes you can make to your diet to improve your success in having a baby.

2) Male Erectile Dysfunction:

The cause of erectile dysfunction in men as they age is still being researched. This type of erectile dysfunction is different than that seen after surgery or radiation, which has another reason. It is likely that the same cause for hardening of the arteries (atherosclerosis) is related to a man's decreased ability to get a firm enough erection to have sex. Because of this, there is a suggestion that by using the same strategy to decrease hardening of the arteries, ***you can increase the chances of hardening of the penis!***

Regular physical activity helps erectile function. The Canadian Physical Activity Guidelines suggest that healthy adults should get at least 150 minutes per week of moderate-to-vigorous activity each week in bursts of at least 10 minutes, and to add muscle and bone strengthening activities using major muscle groups, at least 2 days per week. People who have issues with their health or are older can modify their activities to make them safe to do, but some physical activity is essential for everyone.

By comparing men who have problems with erections to those that don't, common dietary factors are seen. The men who eat a high amount of vegetables, fruits, nuts, whole grains, and fish, but low amounts of red and processed meat have lower chances of having problems with erections.

What to do?

- Eat a high amount of vegetables, fruits, nuts, whole grains, and fish, but low amounts of red and processed meat
- Maintain a healthy body weight
- Speak to your family doctor or urologist about ways to avoid erectile dysfunction as you age

3) Female Sexual Dysfunction:

Up to 76% of females describe some problem with their sexual function. Researchers are only recently starting to look at factors that can affect female sexual problems. Obesity may be a cause.

What to do?

- Maintain a healthy body weight through decreased food intake
- Increase your physical activity

4) Libido

Trying to enhance the desire for sex (and performance) has a long history. Most food “aphrodisiacs” (named after the Greek goddess of sexuality and love, Aphrodite) have a colorful story behind them, but most have not been scientifically proven.

Chocolate is thought to modify women’s genital functioning. However, studies don’t back this up. We do know that alcohol decreases inhibition, or the natural restraint of acting on sexual urges. However, some studies don’t back this up either.

Other examples of “aphrodisiacs” from all over the world are kebobs (barbecued beef) in Middle Eastern culture, spicy food and chili, oysters, snakes, shark components, rhinoceros horns, dried tiger penises, snake blood, and melted camel hump fat. It is likely that they have come to be known for enhancing sexual desire because they either look like penises or vaginas, or they make you sweat and turn red, similar to the act of having sex. No scientific research has been completed to say if these do increase sexual desire and performance or not.

There are a number of remedies, not usually found in regular diets, that have been studied. These include sperm whale stomach contents (ambergris), toad skin and glands, beetles (Spanish Fly), bark from an African tree, Horny Goat Weed, Brazilian herbs, Saw Palmetto, Ginseng, South American tree roots, to name a few. Although the purpose of this chapter is to review diet and urological health, caution is the best advice if you are considering taking these. Many do have active ingredients that may have undesired effects and may interact with your current medications. You should talk to your family doctor or urologist prior to trying these remedies.

What to do?

- Speak to your doctor about using medication – some help and some don’t (and may hurt you)
- Speak to your family doctors or urologist to make sure the quality, science and safety of the remedies are validated

D. Water and Urological Health in Healthy People

- Do we need to drink 8 glasses of water a day to keep our kidneys healthy?
- Why don’t drinks that contain caffeine or alcohol count?
- When I am thirsty, am I already too late to catch up on my water intake?
- Can I tell the airport security that I am allowed to bring this bottle of water on the plane because it is necessary for my health?

For most people (those who are healthy, live in comfortable climates, and are not doing vigorous exercise), it is a myth that you have to drink 8 glasses of water a day. There has never been even one research study that supports this! Yet the advice continues to be given and followed by everyone from health care professionals to celebrities for many years. Even the diuretic (something that increases urination) effect of caffeine and small amounts of alcohol are uncertain. Other studies state that drinking when you’re thirsty is the best way to make sure you have enough fluids, rather than forcing yourself to drink all the time. It is quite unlikely that “Mother Nature” equipped us with bodies that need constant water or fluid intake.

What to do?

- Maintain a healthy diet (that also has natural sources of water like in vegetables and fruits)
- Drink moderate amounts of fluids to keep your body and kidneys healthy
- Note: If you live or visit places with extremes of weather, exercise vigorously, or have problems with your health (like in the next section!), you may need to adjust the amount of fluid you drink.

E. Kidney Stones

Many people who have suffered from kidney stones say it is the worst pain they have ever experienced. There are certainly some diet changes you can make to reduce your risk of stones reforming and causing problems. The most important part is to identify things in your diet that may cause certain types of stones to form. A simple test can be done in the lab. About 80% of all stones that form are calcium based. If you do form stones that are not calcium based, there are more specialized diet changes and medications that can help. Talk to your urologist.

What to do for calcium-based kidney stones

- 1) Drink enough fluids to make 2 liters (2000 ml) of urine per day. A good rule of thumb is to make sure that you drink enough fluids to keep your urine light yellow to clear. Experts are a little less certain as to what type of fluid you should drink, but there are some hints.
 - a. Grapefruit juice: It may increase the risk of forming calcium based stones. It is reasonable, although not completely clear, to avoid grapefruit juice to reduce your risk of stones.
 - b. Coffee, tea, and alcohol: Studies have shown that these types of fluids are linked to less kidney stones. This is the opposite of what most people believe. Therefore, patients should not try to avoid these fluids if they enjoy drinking them in moderation.
 - c. Cranberry juice: There is no research that cranberry juice reduces kidney stones. If you drink a lot of cranberry juice (greater than 1 liter per day), there is a suggestion that this may increase the risk of forming stones. Small amounts are unlikely to be harmful though.
 - d. Soft drinks: There is a suggestion from one study that reducing the amount of soft drinks in your diet may help reduce the risk of forming new stones.
- 2) Avoid large amounts of animal protein in your diet. One large study suggested that diets high in animal protein increased stones in men, but not in women. Another trial suggested that reducing animal protein in your diet can reduce the risk of kidney stones.
- 3) Eat more vegetables and fruits.
- 4) Avoid foods with a high amount of oxalate. Oxalate is a part of what usually makes up calcium kidney stones. Some foods have very high oxalate content (spinach and rhubarb). Avoid these. A list can be found at: <http://urology.ubc.ca/wp-content/uploads/2007/06/oxalate-2007.pdf>. Having said this, low oxalate diets have not been found to reduce the risk of kidney stones.
- 5) Lower your intake of salt (or sodium): Lowering salt in your diet has been shown to decrease the risk of kidney stones.
- 6) Avoid foods that are high in sugar (sucrose and fructose).
- 7) Maintain a normal calcium intake (about 1000 mg per day, for most adults). Interestingly, both high and low intakes of calcium are linked to stone forming. If you need extra calcium in the form of a pill/supplement and form frequent kidney stones, a kidney specialist would be able to help adjust the amount.

F. Cancer

There has been an explosion of research trying to identify dietary links with the risk of getting cancer. About 35% of cancers may be prevented by choosing a healthy lifestyle, including diet and exercise. Here is a list of diet recommendations for urology cancers. For more information, see the Canadian Cancer Society website:

http://www.cancer.ca/Canada-wide/Prevention/Nutrition%20and%20fitness.aspx?sc_lang=EN.

1) Prostate cancer

- a. **Meat:** Cooked meats are high in chemicals called heterocyclic amines (HCAs). Barbecuing meat causes the most HCAs to form. There are both animal and human studies that show a link that HCAs may cause prostate cancer. Although unclear, a diet high in meat, particularly well done meat, may increase your risk of prostate cancer.
- b. **Isoflavones:** Examples of foods that have isoflavones are soybeans, lentils, chick peas, kidney beans, and peanuts. Interest in these foods is due mainly to the high intake of soy in Far Eastern countries where men have lower rates of prostate cancer. A number of studies have been completed to address this. Currently, most research suggests that a diet rich in isoflavones may protect against prostate cancer.
- c. **Vegetables:** Cruciferous vegetables (for example, broccoli, cauliflower, and brussel sprouts) have a very important anti-cancer component called isothiocyanates. Studies, although limited, suggest that they may play a protective role against prostate cancer.
- d. **Omega fats:** Both omega-3 and omega-6 fats are important to get in your diet. Omega-3 fats are in oily fish such as salmon, trout, sardines, and tuna. Omega-6 fats are in eggs, avocado, and vegetable oils. These omega fats have shown to play a protective role in reducing prostate cancers in men. Even in men who have been diagnosed with prostate cancer, these foods have been shown to help fight the cancer.
- e. **Tomatoes:** Lycopenes are pigments that give the tomato its red color. Although there has been much excitement over the role of tomatoes and lycopenes in reducing the risk of prostate cancer, further study is required.
- f. **Dairy:** There is a common belief that dairy products can increase the risk of prostate cancer. The actual research on this does not show a clear link however. It is currently unknown as to whether or not dairy foods affect a man's risk of prostate cancer.
- g. **Fats:** Presently there is little research to suggest that a diet high in fat increases the risk of prostate cancer. Interestingly though, in patients who have been diagnosed with prostate cancer, a reduced fat intake combined with a healthy diet and exercise can reduce the progression of the cancer.
- h. **Sugars:** The role of sugars (or carbohydrates) and prostate cancer is unclear. There have been a number of animal studies that suggest sugars can increase the risk of prostate cancer. It is too early to say, however, whether or not this link is true.
- i. **Vitamins and minerals:** There have been huge studies looking at the role of additional vitamins and minerals in the diet in an attempt to reduce the risk of prostate cancer (for example, vitamins A, B, C, D, E, K, and selenium). There has never been a good quality study that shows that any extra vitamin or mineral intake has reduced the risk of prostate cancer. There is even suggestion that taking vitamin or mineral supplements may increase the risk of prostate cancer, although this is unclear.

2) Kidney cancer:

Diets rich in vegetables and fruits, in large studies, are linked to a lower risk of kidney cancer. Animal meat intake has shown mixed results in most studies. Fried and baked foods has shown a weak link to increased risk of kidney cancer. Daily moderate alcohol intake (beer, wine, and liquor), on the other hand, has shown a decreased risk of kidney cancer. Perhaps most importantly, maintaining a healthy weight may be the key to reducing your risk.

3) Bladder cancer:

Although no high quality studies have been completed to link diet to bladder cancer, a number of associations have been identified. Decreased risk of bladder cancer has been suggested by eating carrots, cruciferous vegetables (broccoli, cauliflower, brussel sprouts), and fruits. Increased risk of bladder cancer has been suggested in diets high in pork, barbecued meat, fat, soy, and coffee intake.

Putting it all together

Changing your diet and leading an active, healthy lifestyle is an easy thing to say but can be hard to do. Our lives and responsibilities can sometimes get in the way. If you can make changes, you will see a difference in your health (not just in your urological health). A few small changes today, next month, and next year are possible.

An apple a day, may help keep the urologist away!