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Introduction

This guidebook provides men with prostate cancer with information about body weight, diet, vitamin and mineral supplements and complementary therapies, as well as answers to frequently asked nutrition questions. The information is based on scientific evidence reviewed in 2014 and will need to be updated as new information is available. If you are following a special diet or are taking medications, check with your Doctor before making any changes.

• If after reading this guidebook you still have questions discuss them with your Dietitian or Doctor at your cancer centre. See How to Find a Registered Dietitian (page 70).

• If you have concerns about how to manage nutrition-related side effects of prostate cancer or its treatment, contact a Dietitian at your nearest cancer centre.

• The guidebook Eating Well When you Have Cancer: A guide to good nutrition from the Canadian Cancer Society may be helpful to you or your caregiver(s). For a copy or more information visit www.cancer.ca or call 1-888-939-3333.

After Diagnosis

A diagnosis of prostate cancer commonly raises many questions. Some men may have questions about the reasons why prostate cancer develops or have interest in how to prevent it in other family members. Prostate cancer is a complex disease and its cause is not entirely known. It’s development is likely related to several risk factors. Diet and other lifestyle factors may be one of many possible causes of prostate cancer – and one of the few that can be modified. However there are certainly men who eat healthy diets who develop prostate cancer.

Ongoing research is studying how body weight and dietary factors may affect the risk of prostate cancer recurrence and progression. Early findings suggest that some of the same foods and nutrients that are related to the development of prostate cancer may also affect the risk of cancer recurrence and the risk of other health conditions. The dietary recommendations within this guidebook are based on scientific evidence and are designed to help men to reduce the risk of prostate cancer recurrence as well as the risk of other forms of cancer, heart disease and Type 2 (adult onset) diabetes. Heart disease and diabetes are common in men with prostate cancer and the risk of developing these conditions may be increased with the use of some cancer treatments, such as hormone therapy. Therefore, for men with early and curable prostate cancer, the risks of other chronic diseases are equally if not more important to long-term health. This is an important fact that is often overlooked when prostate cancer is diagnosed.

Some of the same foods and nutrients that are related to the development of prostate cancer may also affect the risk of cancer recurrence and the risk of other health conditions.
Lifestyle Factors and Prostate Cancer

Lifestyle factors can have an important effect on overall quality of life and the risk of common chronic diseases such as heart disease and diabetes. For men with prostate cancer lifestyle factors (diet, body weight and physical activity) can also help to lower the risk of cancer progression and minimize the common side effects of cancer treatment.

Making changes to your lifestyle is very individual. After a diagnosis of prostate cancer some men may find it is the right time and make changes easily, while other men may find it easier to make smaller, more gradual changes. Keep in mind that any amount of positive change in lifestyle habits is likely to offer health benefits.

Body weight
Achieving and maintaining a healthy body weight is important for men who have been diagnosed with prostate cancer for several reasons. A healthy weight may decrease the risk of prostate cancer recurrence and improve survival and it benefits overall health by decreasing the risk of health conditions such as heart disease, diabetes and other new cancers.

A healthy body weight is defined as a Body Mass Index (BMI) of 18.5–24.9. See Calculating your Body Mass Index (BMI) (page 48).

A BMI of greater than 25.0 (“overweight”) and a BMI greater than 30.0 (“obese”) are associated with a number of health risks. A higher waist circumference is also important in predicting health risk and men are recommended to maintain a waist circumference less than 102 cm (40 inches). Weight loss is recommended if your BMI is greater than 25.0 and/or waist circumference is greater than 102 cm (40 inches). See Body Weight (page 46) and What is a Healthy Weight (page 47). If you are overweight or obese prevention of further weight gain is the first step.

Physical Activity
Men with prostate cancer are recommended to follow the Canadian Physical Activity Guidelines (pages 16-17). The guidelines recommend accumulating at least 150 minutes of moderate to vigorous intensity aerobic physical activity per week, in bouts of 10 minutes or more. It is also beneficial to add muscle and bone strengthening activities using major muscle groups, at least 2 days per week. More physical activity provides greater health benefits.

In men with prostate cancer regular physical activity can increase overall well being and quality of life (Keogh et al, 2012). It may also help to minimize the side effects of prostate cancer treatments such as hormone therapy (Gardner et al, 2014), improve bone health, prevent or minimize loss of muscle mass and help to maintain a healthy body weight. See Nutrition Advice for Managing Treatment Side Effects (page 42), Bone Loss and Osteoporosis (page 42) and Muscle Loss and Weight Gain (page 46).

What you need to know

Being a healthy body weight (BMI = 18.5–24.9) is associated with many health benefits including a lower risk of prostate cancer recurrence and improved survival. The risk of prostate cancer recurrence increases in men who are overweight and obese and also can lower the rate of survival.

If your Body Mass Index (BMI) is more than 25.0 and/or your waist circumference is greater than 102 cm (40 inches) then weight loss is recommended. Ideally it is best to prevent weight gain, and to achieve a healthy weight using a balanced diet that is reduced in calories along with regular physical activity.

Aim for at least 150 minutes of moderate to vigorous aerobic physical activity per week plus muscle and bone strengthening activities at least 2 days per week. This is beneficial for overall health, to minimize the side effects of hormone therapy used to treat prostate cancer and to help with weight loss or maintenance.
Summary: What Does the Evidence Say?

Prostate Cancer Recurrence

Diet and Dietary Supplements

This section is a summary of pages 18-33 and is based on a review of evidence from randomized controlled trials conducted in men with prostate cancer (see references on pages 67-69).

Men with prostate cancer are recommended to follow Eating Well with Canada’s Food Guide (pages 11-14) as many of the healthy eating habits that promote overall health also appear to protect men from prostate cancer progression.

Some specific foods and nutrients may be beneficial to include to lower Prostate-specific Antigen (PSA) and possibly lower the risk of prostate cancer recurrence and improve survival.

The risk of prostate cancer progression may be lowered by:

- **Comprehensive lifestyle programs** that emphasize diet, regular physical activity and a healthy body weight. These programs often have broad health benefits beyond prostate cancer and lower the risk of chronic diseases.
- **Foods rich in lycopene** such as cooked tomatoes or a lycopene supplement (up to 30 mg).
- **Soy foods** such as soybeans, soy beverages and tofu consumed as whole soy foods. These have additional health benefits over soy isoflavone supplements.
- **Ground flaxseed** added to the diet. Whole ground flaxseeds have the greatest nutritional value (including fibre) compared to whole flaxseed or flaxseed oil.
- **Foods rich in selenium** such as Brazil nuts or a selenium supplement (up to 200 µg).

Vitamin, mineral and other dietary supplements may have risks. There is a greater chance of health risks when supplements are taken in larger doses than are found in common foods or when taken for prolonged periods of time. See the following sections for supplements that have potential for harmful effects: β-carotene (page 27), vitamin E (page 30) and selenium (page 28). Also see Should I take antioxidant supplements? Are they safe during treatment? (page 59).

What you need to know

Some foods and/or nutrients can lower PSA as a marker for prostate cancer progression. However, more evidence is needed on the long-term effects to determine if changes in PSA affect prostate cancer recurrence and survival. Also, most of the above diets, foods or nutrients have been evaluated in combination and it is difficult to determine if they have benefits when used alone.

Foods are the preferred source for nutrients and have additional nutritional value including a rich variety of phytonutrients and fibre that are not found in supplements. In general for supplements it is best to avoid doses that are greater than the Recommended Dietary Allowances (RDA) unless under medical supervision.

Selenium is a popular nutrient and should not exceed 400 µg from all sources.

The use of vitamin E supplements has been shown to reduce the risk of prostate cancer progression. However, vitamin E supplements of 400 IU or greater have been associated with adverse effects. It is important to check with your Doctor before using vitamin E supplements.
Eating Well with Canada's Food Guide

Men with prostate cancer are recommended to follow *Eating Well with Canada's Food Guide*. It outlines the recommended number of servings from each of the four groups, based on gender and age. This plan is flexible and offers a wide range of choices within each of the food groups. Use it along with the recommendations on diet and dietary supplements in the following chapters to lower your risk of prostate cancer progression and recurrence.

Having the amount and type of food recommended and following the tips in *Eating Well with Canada’s Food Guide* will help:

- Meet your needs for vitamins, minerals and other nutrients
- Reduce your risk of obesity, Type 2 diabetes, heart disease, certain types of cancer and osteoporosis
- Contribute to your overall health and vitality

*Eating Well with Canada's Food Guide* provides specific advice for overall health and for men at different ages. The need for vitamin D increases after the age of 50. In addition to following *Eating Well with Canada's Food Guide* everyone over the age of 50 should take a daily vitamin D supplement of 400 IU. Include a small amount - 30 to 45 ml (2-3 Tbsp) - of unsaturated fat each day. This includes oil used for cooking, salad dressing, margarine and mayonnaise. For example, vegetable oils such as canola, olive and soybean or soft margarines that are low in saturated and trans fats.
What is One Food Guide Serving? Look at the following examples.

Vegetables and Fruit
- **Males 19-50 years**
  - need 8-10 servings a day
- **Males 51+**
  - need 7 servings a day
- Fresh, frozen or canned vegetables
  - 125 mL (½ cup)
- Leafy vegetables
  - Cooked: 125 mL (½ cup)
  - Raw: 250 mL (1 cup)
- Fresh, frozen or canned fruits
  - 125 mL (½ cup) or 1 fruit
- 100% Juice
  - 125 mL (½ cup)

Grain Products
- **Males 19-50 years**
  - need 8 servings a day
- **Males 51+**
  - need 7 servings a day
- Bread
  - 1 slice (35 g)
- Bagel
  - ½ bagel (45 g)
- Flat breads
  - ½ pita or ½ tortilla (35 g)
- Cooked rice, bulgur or quinoa
  - 125 mL (½ cup)
- Cereal
  - Cold: 30 g
  - Hot: 175 mL (¾ cup)
- Cooked pasta or couscous
  - 125 mL (½ cup)

Milk and Alternatives
- **Males 19-50 years**
  - need 3 servings a day
- **Males 51+**
  - need 3 servings a day
- Milk or powdered milk (reconstituted)
  - 250 mL (1 cup)
- Canned milk (evaporated)
  - 125 mL (½ cup)
- Fortified soy beverage
  - 250 mL (1 cup)
- Yogurt
  - 175 g (¾ cup)
- Kefir
  - 175 g (¾ cup)
- Cheese
  - 50 g (1½ oz.)

Adapted from Eating Well with Canada's Food Guide (2007), Health Canada.
Health Canada does not assume the responsibility for any errors or omissions which may occur during adaptation.

Recommended Number of Food Guide Servings per Day for Adult Men

Meat and Alternatives
- **Males 19-50 years**
  - need 3 servings a day
- **Males 51+**
  - need 3 servings a day
- Cooked fish, shellfish, poultry, lean meat
  - 75 g (2½ oz.)
- Canned milk (evaporated)
  - 125 mL (½ cup)
- Fortified soy beverage
  - 250 mL (1 cup)
- Yogurt
  - 175 g (¾ cup)
- Kefir
  - 175 g (¾ cup)
- Cheese
  - 50 g (1½ oz.)
- Shelled nuts and seeds
  - 60 mL (¼ cup)

Adapted from Eating Well with Canada's Food Guide (2007), Health Canada.
Health Canada does not assume the responsibility for any errors or omissions which may occur during adaptation.
To find out your calcium and vitamin D requirements and safe intake levels see Appendix A (page 63).

To help meet requirements for calcium or vitamin D see Sources of Calcium (page 44), Sources of Vitamin D (page 45) and Bone Loss and Osteoporosis (page 42) and Frequently Asked Questions (page 56).

For a copy of the entire Eating Well with Canada’s Food Guide contact Publications, Health Canada at 1-866-225-0709 or visit their website:

www.healthcanada.gc.ca/foodguide
**Canadian Physical Activity Guidelines**

**FOR ADULTS - 18 – 64 YEARS**

**Guidelines**

To achieve health benefits, adults aged 18-64 years should accumulate at least 150 minutes of moderate- to vigorous-intensity aerobic physical activity per week, in bouts of 10 minutes or more.

It is also beneficial to add muscle and bone strengthening activities using major muscle groups, at least 2 days per week.

More physical activity provides greater health benefits.

**Let's Talk Intensity!**

Moderate-intensity physical activities will cause adults to sweat a little and to breathe harder. Activities like:
- brisk walking
- bike riding

Vigorous-intensity physical activities will cause adults to sweat and be 'out of breath'. Activities like:
- jogging
- cross-country skiing

**Being active for at least 150 minutes per week can help reduce the risk of:**
- premature death
- heart disease
- stroke
- high blood pressure
- certain types of cancer
- type 2 diabetes
- osteoporosis
- overweight and obesity
And can lead to improved:
- fitness
- strength
- mental health (mood and self-esteem)

**Pick a time. Pick a place. Make a plan and move more!**

- Join a weekly community running or walking group.
- Go for a brisk walk around the block after dinner.
- Take a dance class after work.
- Bike or walk to work every day.

**Now is the time. Walk, run, or wheel, and embrace life.**

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**Canadian Physical Activity Guidelines**

**FOR OLDER ADULTS - 65 YEARS & OLDER**

**Guidelines**

To achieve health benefits, and improve functional abilities, adults aged 65 years and older should accumulate at least 150 minutes of moderate- to vigorous-intensity aerobic physical activity per week, in bouts of 10 minutes or more.

It is also beneficial to add muscle and bone strengthening activities using major muscle groups, at least 2 days per week.

Those with poor mobility should perform physical activities to enhance balance and prevent falls.

More physical activity provides greater health benefits.

**Let's Talk Intensity!**

Moderate-intensity physical activities will cause older adults to sweat a little and to breathe harder. Activities like:
- brisk walking
- bicycling

Vigorous-intensity physical activities will cause older adults to sweat and be 'out of breath'. Activities like:
- cross-country skiing
- swimming

**Being active for at least 150 minutes per week can help reduce the risk of:**
- chronic disease (such as high blood pressure and heart disease)
- falls
And also help to:
- maintain functional independence
- maintain mobility
- improve fitness
- improve or maintain body weight
- maintain bone health and
- maintain mental health and feel better

**Pick a time. Pick a place. Make a plan and move more!**

- Join a community urban walking or mild walking group.
- Go for a brisk walk around the block after lunch.
- Take a dance class in the afternoon.
- Train for and participate in a run or walk for charity.

**Now is the time. Walk, run, or wheel, and embrace life.**

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What Does the Evidence Say?

This chapter provides information on how various foods and nutrients affect prostate cancer progression. In particular it gives priority to the evidence from so called randomized controlled trials (RCTs), conducted in men with prostate cancer. In randomized controlled trials Prostate-specific Antigen (PSA) has been used as a marker to assess prostate cancer progression. PSA, while a good marker, is imperfect and may not always predict if a cancer is progressing. Even when a diet or lifestyle intervention affects progression of prostate cancer by lowering PSA it may not necessarily affect cancer recurrence or survival. Therefore, we can't be certain whether cancer recurrence is reduced or whether cancer survival is improved using this evidence alone.

Long-term studies that evaluate the effect of diet and specific nutrients on prostate cancer that measure actual recurrence and survival rates are needed before definite links can be made. Until that time, the following recommendations are provided as a guideline.

There are numerous types of studies other than randomized controlled trials. These other research designs as well as studies that use animal models and test tubes have been used to study how various foods and nutrients affect prostate cancer growth.

These studies each have strengths but generally do not provide the type of findings that can be used to make dietary recommendations for humans. In some cases, studies are designed to be exploratory only. In other cases, the study design can have important limitations. Studies that use randomization (to balance factors that can affect the study outcome) or are “controlled” (using a placebo or comparison group) are often seen as a “gold standard”. Therefore randomized controlled trials have been used as the main source of evidence in this guidebook.

The second edition of this guidebook (2014) includes evidence from many new studies that have evaluated diet and dietary supplements in men with prostate cancer.

The following sections discuss evidence on:

- lifestyle programs
- tomatoes and lycopene
- soy
- flaxseed
- β-carotene
- selenium
- vitamin E
- vitamin D
- pomegranate

For a list of references see Randomized Controlled Trials in Men with Prostate Cancer (pages 67-69).

Future Directions

The study of diet and prostate cancer is an active area of research. There are currently dozens of trials in progress that will help to further develop nutrition recommendations for men diagnosed with prostate cancer. These trials include the investigation of several of the diets and dietary supplements that are included in this guidebook as well as new areas of study. In particular there are a number of upcoming studies that are evaluating the effect of weight loss in men with prostate cancer who are overweight or obese (see page 46-47 for risks of being above a healthy weight).

For more information on research in progress visit the www.clinicaltrials.gov website (and search “diet and prostate cancer”).
Lifestyle Programs

Diet and Physical Activity
For many years it has been known that a lifestyle program that includes a combination of diet and physical activity is beneficial in the prevention and treatment of chronic diseases including heart disease (commonly referred to as "cardiac rehab" programs) and diabetes.

In 2005 a similar lifestyle program was studied in men with prostate cancer who had selected to undergo active surveillance. This study evaluated the effect of a vegan diet that was in low fat with added soy, as well as a variety of dietary supplements, combined with moderate aerobic activity and stress management (Ornish et al, 2005). After 1 year men following the lifestyle program had a modest decrease in PSA and there was an increase in PSA in men in the control group (receiving standard care). This study suggests that combined lifestyle factors may slow prostate cancer progression in men with early stage prostate cancer on active surveillance. After 2 years of follow up fewer men in the lifestyle program compared to the controls required prostate cancer treatment (Frattaroli et al, 2008). Lastly, men following this program had modest weight loss and improvements in their blood cholesterol and therefore the potential for important health benefits beyond prostate cancer.

Since that time two additional randomized controlled trials have evaluated lifestyle programs in men with prostate cancer. The studies included men with rising PSA after treatment (Hebert et al, 2012) and men with more advanced cancer (Bourke et al, 2011). While these studies did not show the same improvements in PSA as a marker of cancer progression they resulted in significant improvements in eating and exercise habits of men with prostate cancer as well as improvements in muscle strength and fatigue (Bourke et al, 2011). Lifestyle programs therefore have the potential for important benefits to overall health in men with prostate cancer. It is important to note that in the above studies there were several differences in the diet and physical activity programs, their duration and in how the intervention was delivered and therefore it is difficult to make direct comparisons between the studies.

Plant-based diets
Other studies in men with prostate cancer have included a plant-based diet, without including physical activity or stress management. In these studies the plant-based diet was typically rich in fruits, vegetables, whole grains and legumes (beans) and was often lower in total fat. The findings showed some improvement in PSA that was not large enough to be statistically significant (Carmody et al, 2008) or a decrease in other markers associated with cancer progression (Li et al, 2008), or had no effect on PSA (Parsons et al, 2008).

While the results of plant-based diet studies did vary, overall they have shown some benefits to cancer progression and improvements in eating habits and overall health. At least one study also showed improvements in cholesterol and body composition (Li et al, 2008).

Recommendation
Choose a healthy lifestyle which includes eating a plant-based diet, regular physical activity and achieving a healthy body weight. These are modifiable factors that have the greatest effect on overall health and well being and on reducing the risk of common chronic diseases including heart disease and Type 2 (adult onset) diabetes. Studies show that these lifestyle factors may have a modest effect on PSA and lower the risk of cancer recurrence or progression and are also likely to have additional health benefits for men with prostate cancer and help to manage side effects of treatment.

Early evidence suggests that combined healthy lifestyle habits offer greater benefit to men with prostate cancer than each approach by itself but more research is needed in this area. Even small improvements in diet and physical activity habits and weight management are likely to have positive effects on health.
Tomatoes and Lycopene

Cooked tomatoes and other tomato-based foods are rich in a number of nutrients including an antioxidant called lycopene. Other foods with a red pigment such as watermelon, guava and pink or red grapefruit are also a source of lycopene.

Early on, an interest in tomatoes and lycopene developed after a study showed that men who ate 10 servings or more of tomato-rich foods per week had a lower risk of developing prostate cancer (Giovannucci et al, 1995).

In men diagnosed with prostate cancer studies suggest that a diet rich in tomatoes or a lycopene supplement (up to 30 mg) may be beneficial in lowering PSA and thus potentially slowing the progression of prostate cancer (Ansari MS and Gupta NP, 2003, Schroder et al, 2005, Kranse et al, 2005). However not all studies evaluating lycopene have found a benefit (Chan et al, 2011) or they have resulted in a reduction in PSA that was not large enough to be statistically significant (Kucuk et al, 2001). In addition, in some studies lycopene was added to the diet of men with prostate cancer in combination with a variety of other foods and/or supplements which makes it difficult to determine if lycopene is beneficial on its own.

Food Sources of Lycopene

<table>
<thead>
<tr>
<th>Foods</th>
<th>Portion Size</th>
<th>Lycopene (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomato and Vegetable juice</td>
<td>250 mL (1 cup)</td>
<td>23</td>
</tr>
<tr>
<td>Tomato juice</td>
<td>250 mL (1 cup)</td>
<td>22</td>
</tr>
<tr>
<td>Tomato sauce</td>
<td>125 mL (½ cup)</td>
<td>16</td>
</tr>
<tr>
<td>Tomato soup, prepared with water</td>
<td>250 mL (1 cup)</td>
<td>13</td>
</tr>
<tr>
<td>Tomato paste, canned</td>
<td>30 mL (2 Tbsp)</td>
<td>9</td>
</tr>
<tr>
<td>Tomatoes, sun-dried</td>
<td>60 mL (¼ cup)</td>
<td>6</td>
</tr>
<tr>
<td>Canned tomatoes, stewed</td>
<td>125 mL (½ cup)</td>
<td>5</td>
</tr>
<tr>
<td>Guava</td>
<td>125 mL (¼ cup)</td>
<td>4</td>
</tr>
<tr>
<td>Tomato, ripe, cooked</td>
<td>125 mL (¼ cup)</td>
<td>4</td>
</tr>
<tr>
<td>Watermelon</td>
<td>125 mL (¼ cup)</td>
<td>3</td>
</tr>
<tr>
<td>Salsa, ready-to-serve</td>
<td>30 mL (2 Tbsp)</td>
<td>2</td>
</tr>
<tr>
<td>Fresh tomato</td>
<td>½ medium</td>
<td>2</td>
</tr>
<tr>
<td>Ketchup</td>
<td>15 mL (1 Tbsp)</td>
<td>2</td>
</tr>
<tr>
<td>Pink or red grapefruit</td>
<td>½ grapefruit</td>
<td>2</td>
</tr>
</tbody>
</table>


Recommendation

Choose a variety of foods rich in lycopene as part of a healthy diet such as vegetable or tomato juice, tomato soup or other foods containing cooked tomatoes. Food sources of lycopene are encouraged and provide additional nutrients that are not found in supplements. While a lycopene supplement (up to 30 mg) may be used it is easy to reach the recommended amount from eating common foods.
**Soy**

Soy foods are known to have anti-cancer properties and may provide some protection both against prostate cancer development (Yan et al, 2009) and progression. Some studies suggest soy foods may lower PSA in men with prostate cancer and therefore slow cancer progression. This includes soy foods (Dalais et al, 2004, Ornish et al, 2005) as well as the use of a soy supplement containing isoflavones (Lazarevic et al, 2011, Schroder et al, 2005).

Not all studies of soy foods or soy isoflavone supplements however have shown a benefit (de Vere White et al, 2010, Aronson et al, 2010, Kumar et al, 2010, Carmody et al, 2008). In addition in several studies soy was used in combination with a variety of other foods and/or supplements which makes it difficult to determine if soy is beneficial on its own.

**Recommendation**

Choose soy foods such as soybeans (whole beans, cooked, roasted or steamed), soy beverages and tofu as part of a healthy diet. Soy foods have anti-cancer properties and other health advantages such as lowering blood cholesterol which may be an added benefit for men with prostate cancer. Soy foods are nutritious and high in protein, calcium (when fortified with additional calcium), fibre and other nutrients. They can be used as a substitute for meat, poultry, fish or dairy products. Soy isoflavone supplements vary widely in content and are not recommended at this time.

**Flaxseed**

Only one study has evaluated the effect of flaxseed on PSA in men with prostate cancer. In this study a low fat diet supplemented with ground flaxseed (30 g or 3 Tbsp) in men awaiting surgery was shown to slow prostate cancer progression (Demark-Wahnefried et al, 2008).

Flaxseed is a nutritious food and may be beneficial for men with prostate cancer to lower the risk of cancer progression and for general health. Flaxseed contains fibre and many other vitamins and minerals and is a good source of omega-3 fatty acids. Flaxseed is also a rich source of plant estrogen known also as lignans.

**Recommendation**

Choose ground flaxseed and foods containing ground flaxseed such as breads and cereals as part of a healthy diet. Ground flaxseed offers the most health benefit and has additional nutrients that may not be found in supplements or flaxseed oil. Flaxseed oil is a good source of omega-3 fatty acids but does not contain other nutrients or fibre.

1 Tablespoon ground flaxseed = 36 calories, 3 g fat, 2 g fibre
Vitamins and Minerals

Several vitamins and minerals have been of interest in the prevention and progression of cancer. Many of these nutrients have been studied in men with prostate cancer to evaluate their effect on cancer progression using PSA as a marker. Several of these nutrients were chosen because of their antioxidant properties. The term “antioxidant” refers to certain vitamins, minerals and other compounds that protect the cells in our bodies from damage from free radicals. In most studies antioxidants and other nutrients have been studied in combinations of nutrients or combined with a variety of other foods and/or supplements which makes it difficult to determine if they are beneficial on their own.

The following sections on β-carotene, selenium and vitamin E (pages 27-31) discuss studies specific to each of these nutrients related to prostate cancer. Also see Should I take antioxidants? Are they safe during treatment? (page 59).

β-carotene

Over a decade ago, a study examined the effects of a β-carotene supplement (20 mg) and vitamin E supplement (75 IU) on the risk of developing lung cancer. It received wide publicity as the first study to report the unexpected findings of an increased risk of lung cancer in male smokers associated with using these supplements (The ATBC Study Group, 1994).

In a later analysis of this same study it was suggested that there may be a modest increase in the risk of developing prostate cancer and prostate cancer mortality with the use of β-carotene supplements (Heinonen et al, 1998). However, three additional large trials evaluating a β-carotene supplement (20-30 mg) did not find an increased risk of prostate cancer (CARET Study, The Physicians Health Study and The Heart Protection Study). Since then there have been no large scale intervention studies to provide further evidence on the effect of β-carotene on either prostate cancer development or progression.

Recommendation

Foods containing β-carotene (or other antioxidants) are safe and are encouraged as part of the healthy diet. Choose a variety of foods rich in β-carotene such as cantaloupe, carrots, spinach, sweet potatoes and broccoli. Dark green, orange and red fruits and vegetables are good sources of β-carotene as well as a wide variety of other nutrients.

At this time a Recommended Dietary Allowance (RDA) has not been established for β-carotene.

Supplements containing β-carotene are not recommended.
Selenium

The initial interest in selenium resulted mainly from one large study which suggested that a selenium supplement (200 µg) could prevent prostate cancer (Clark et al, 1996). A more recent large scale study called the SELECT study however found no benefit of a selenium supplement (200 µg) in reducing the risk of prostate cancer (Lippman et al, 2009; Klein 2011).

In limited studies in men diagnosed with prostate cancer a selenium supplement (200 µg) was shown to decrease PSA (Kranse et al, 2005; Ornish et al, 2005). However not all studies have shown a benefit (Stratton et al 2010). In addition selenium supplements have been studied mostly in combination with a variety of other foods and/or supplements which makes it difficult to determine if selenium is beneficial on its own.

Early research suggests that men with low levels of selenium stand to benefit the most from a selenium supplement. Likewise, selenium supplements at higher doses could be harmful in men with already high levels of selenium in their blood. More research is needed in this area.

### Food Sources of Selenium

<table>
<thead>
<tr>
<th>Food Source</th>
<th>Portion Size</th>
<th>Selenium (µg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil nuts</td>
<td>60 mL (¼ cup)</td>
<td>637</td>
</tr>
<tr>
<td>Nuts, mixed</td>
<td>60 mL (¼ cup)</td>
<td>152</td>
</tr>
<tr>
<td>Tuna, canned in water</td>
<td>85 g (3 oz)</td>
<td>68</td>
</tr>
<tr>
<td>Halibut, cooked</td>
<td>85 g (3 oz)</td>
<td>47</td>
</tr>
<tr>
<td>Sardines, canned in oil, drained</td>
<td>85 g (3 oz)</td>
<td>45</td>
</tr>
<tr>
<td>Salmon, Sockeye, cooked</td>
<td>85 g (3 oz)</td>
<td>31</td>
</tr>
<tr>
<td>Beef, top sirloin, broiled</td>
<td>85 g (3 oz)</td>
<td>29</td>
</tr>
<tr>
<td>Sunflower seeds</td>
<td>60 mL (¼ cup)</td>
<td>25</td>
</tr>
<tr>
<td>Chicken or Turkey, breast, roasted</td>
<td>85 g (3 oz)</td>
<td>23</td>
</tr>
<tr>
<td>Noodles, cooked</td>
<td>125 mL (¾ cup)</td>
<td>19</td>
</tr>
<tr>
<td>Shiitake mushrooms, cooked</td>
<td>125 mL (¾ cup)</td>
<td>18</td>
</tr>
<tr>
<td>Greek yogurt, nonfat</td>
<td>175 g (¾ cup)</td>
<td>17</td>
</tr>
<tr>
<td>Egg, cooked</td>
<td>1 large</td>
<td>15</td>
</tr>
<tr>
<td>Bread, whole wheat</td>
<td>1 slice</td>
<td>11</td>
</tr>
</tbody>
</table>


Choose a variety of foods rich in selenium as part of a healthy diet. A diet rich in selenium or a selenium supplement (up to 200 µg) may be beneficial for men with prostate cancer.

The selenium content in food varies considerably depending on the selenium content of the soil where the animal was raised or the plant was grown. Selenium is found in many foods including meat, fish, poultry, eggs, dairy products, grains and some nuts particularly Brazil nuts. Fruit and vegetables however are relatively low in selenium. Selenium is also found in many “once-a-day” multiple vitamin and mineral supplements. Most popular brands contain between 55-200 µg of selenium (check the label).

For general health the Recommended Dietary Allowance (RDA) for selenium is 55 µg per day (from all sources) and no more than 400 µg should be consumed per day.

The use of selenium supplements is not recommended to prevent prostate cancer.
Vitamin E

There are mixed results in studies that have examined vitamin E and prostate cancer development in healthy men. In the first known study, called the ATBC study, it was suggested that the use of a vitamin E supplement (75 IU) may decrease the risk of developing prostate cancer (Heinonen et al, 1998). A more recent and large scale study called the SELECT study however found an unexpected increased risk of developing prostate cancer with a vitamin E supplement (400 IU) (Lippman et al, 2009, Klein et al 2011). Thus vitamin E supplements are not recommended for prostate cancer prevention at any dose.

In men diagnosed with prostate cancer vitamin E supplements (ranging from 75-400 IU) were found to have beneficial effects on PSA as a measure of prostate cancer progression. Two of the available studies showed a possible benefit (Kranse et al, 2005, Ornish et al, 2005) while a third study found no effect of vitamin E supplements (at a dose of 250 mg) (Hoenjet et al, 2005). There were no studies which showed a harmful effect. In all studies however vitamin E was used in combination with a variety of other foods and/or supplements which makes it difficult to determine if vitamin E is beneficial on its own.

Vitamin E exists in many forms. Emerging research in vitamin E and cancer suggests that both the form and the dose of vitamin E may be important and help to explain some of the mixed results. More research is needed in this area.

Vitamin E supplements of 400 IU or greater have been associated with an unexpected increased risk of developing prostate cancer and with adverse effects in those with a history of heart disease and diabetes. It is important to check with your Doctor before using vitamin E supplements.

For general health the Recommended Dietary Allowance (RDA) for vitamin E is 22 IU or 15 mg per day (from all sources).

Food Sources of Vitamin E

<table>
<thead>
<tr>
<th>Food Source</th>
<th>Portion Size</th>
<th>Vitamin E (IU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunflower seeds, oil roasted</td>
<td>60 mL (¼ cup)</td>
<td>18</td>
</tr>
<tr>
<td>Almonds, oil roasted</td>
<td>60 mL (¼ cup)</td>
<td>15</td>
</tr>
<tr>
<td>Almond beverage</td>
<td>250 mL (1 cup)</td>
<td>10</td>
</tr>
<tr>
<td>Sunflower oil</td>
<td>15 mL (1 Tbsp)</td>
<td>8</td>
</tr>
<tr>
<td>Hazelnuts</td>
<td>60 mL (¼ cup)</td>
<td>6</td>
</tr>
<tr>
<td>Nuts, mixed</td>
<td>60 mL (¼ cup)</td>
<td>4-6</td>
</tr>
<tr>
<td>Canola oil</td>
<td>15 mL (1 Tbsp)</td>
<td>4</td>
</tr>
<tr>
<td>Peanut butter</td>
<td>30 mL (2 Tbsp)</td>
<td>4</td>
</tr>
<tr>
<td>Spinach, cooked</td>
<td>125 mL (½ cup)</td>
<td>3</td>
</tr>
<tr>
<td>Avocado</td>
<td>125 mL (½ cup)</td>
<td>3</td>
</tr>
</tbody>
</table>


Vitamin E is also found in many “once-a-day” multiple vitamin and mineral supplements. Most popular brands contain between 25-50 IU of vitamin E (check the label).
Vitamin D

Vitamin D is a popular topic of interest in men with prostate cancer but only one randomized controlled trial has measured the effect of vitamin D on PSA as marker of cancer progression. In this short-term study of men awaiting surgery for prostate cancer there was no effect of vitamin D supplements on PSA using doses of 400 IU, 10,000 IU or 40,000 IU per day (Wagner et al, 2011).

Although the role of vitamin D and prostate cancer progression remains largely unknown, it is important for men to have adequate levels of vitamin D for overall health and strong bones. This is true for all men with prostate cancer and in particular men treated with hormone therapy. Many Canadians, particularly those over 50 years of age, will not be able to meet vitamin D needs through food alone. Health Canada recommends that in addition to following Canada's Food Guide everyone over the age of 50 should take a daily vitamin D supplement of 400 IU. For more information see www.hc-sc.gc.ca (search vitamin D for people over 50: Background). The Canadian Cancer Society recommends a daily vitamin D supplement of 1,000 IU. For more information see www.cancer.ca (search "vitamin D recommendation).

See also Sources of vitamin D (page 45) and Appendix A (page 63).

Pomegranate

Only one randomized controlled trial has examined the effect of pomegranate on PSA in men with prostate cancer using PSA as marker of cancer progression. It evaluated the effect of a pomegranate extract (capsule) taken by men awaiting surgery for prostate cancer using a dose that was described as equivalent to about 1 cup of pomegranate juice. In this short-term study the pomegranate supplement had no effect on PSA.

Recommendation

Pomegranate like other fruits is a rich source of antioxidants and other phytonutrients that have health benefits.

Choose a variety of fruit including pomegranate as part of a healthy diet. The whole fruit is preferred and provides fibre and overall greater nutritional value compared to the juice.
Complementary Therapies

Complementary therapies are a wide range of therapies that may be used together with conventional cancer treatment. Choosing whether or not to use a complementary therapy is a personal decision. The answer is not the same for everyone.

The effect of the vast majority of complementary therapies on prostate cancer recurrence is not well known. This makes it difficult to weigh the possible benefits and risks. If you’re thinking about trying a complementary therapy during or after treatment, be sure to make an informed decision and to discuss it with your Doctor.

Many complementary therapies make use of natural health products (NHPs) including vitamins and minerals in several forms such as teas, capsules, powders and tablets. They are often perceived as safe because they may be labelled as “natural”. However some complementary therapies can cause potentially harmful effects.

The use of NHPs, including large doses of antioxidants, while you’re being treated with conventional treatment is generally not recommended because of the risk of drug interactions. The effect of taking NHPs during your cancer treatment can’t always be predicted. They could lower the effectiveness or interact with your cancer treatment and affect test results used to track your disease. In addition, men with prostate cancer should avoid any NHPs which contain male hormones or androgens as they may stimulate cancer growth.

The number of supplements on the market is vast and increasing all the time. For information on specific complementary therapies and for guidance on evaluating information about therapies see the websites listed on page 61 and obtain a copy of the Canadian Cancer Society’s Complementary Therapies: A guide for people with cancer.

More information on vitamin and mineral supplements can be found in the previous chapter on What Does the Evidence Say? (pages 18-33).
Complementary Therapies

Many men think about using complementary therapies after a diagnosis of prostate cancer or they may be suggested by well-meaning friends and family. Some men feel that these therapies are helpful whereas other men may not find a benefit.

Choosing whether or not to use a complementary therapy is a personal decision. The answer is not the same for everyone. If you’re thinking about trying a complementary therapy during or after your conventional cancer care, be sure to make a safe and informed choice.

Making a safe and informed choice means:

- Understanding the differences between conventional, complementary, integrative and alternative therapies
- Finding out as much as you can about the complementary therapy you are thinking about, including possible benefits and risks
- Talking to your healthcare team about the complementary therapy and how it may interact with the care you are receiving

Conventional cancer treatments are those accepted and widely used today to treat people in the Canadian healthcare system. Conventional cancer treatments, such as surgery, chemotherapy and radiation, focus on interfering with the cancer’s ability to grow and spread.

Complementary therapies are a wide range of therapies and remedies that may be used together with conventional cancer treatment. The purpose of a complementary therapy is not to treat the cancer itself. Complementary therapies may help a person cope with cancer, its treatment or side effects and to feel better. Complementary therapies may include massage, acupuncture, meditation, various diets and natural health products such as herbal remedies and dietary or vitamin or mineral supplements.

Integrative cancer therapy is a comprehensive approach to treating people. It offers the best of both complementary and conventional medicines. At cancer centres with integrative care, complementary therapies are offered along with conventional cancer treatments by a team of health professionals from both fields.

Alternative therapies are those used in place of conventional treatments. They are considered scientifically unproven therapies. You may have heard the words complementary and alternative used to mean the same thing, but they mean something very different. While complementary therapies are used together with conventional treatment, alternative therapies are used instead of conventional treatment.

For example, a complementary therapy can be choosing care from a Naturopath Doctor or using herbal medicine together with conventional cancer treatment. An alternative therapy is deciding not to use conventional care and using only these therapies for cancer.

This is a personal decision. But relying on alternative treatments alone for cancer may have serious health effects. If you decide to postpone or refuse conventional treatment in favour of an alternative treatment, stay in touch with your cancer Doctor. It’s important to keep track of how you are doing, and you may decide to have conventional treatment later on.

Natural Health Products (NHPs)

Many complementary therapies make use of natural health products (NHPs). Natural health products include:

- Vitamins and minerals
- Herbs
- Homeopathic medicines
- Traditional medicines such as traditional Chinese medicines
- Probiotics (healthy bacteria)
- Other products like amino acids and essential fatty acids

These products come in many forms, including:

- Teas
- Liquid extracts
- Capsules
- Powders
- Tablets
The number of supplements on the market is vast and increasing all the time. Health Canada has rules that govern NHPs, but they do not cover NHPs bought in other countries or over the Internet. The Canadian regulations help to make sure that NHPs are well prepared, safe to use, helpful and come with instructions on how they should be used. When buying a NHP, look for either a NPN (Natural Product Number) or DIN-HM (Drug Identification Number-Homeopathic Medicine).

Potential harmful effects

Some people assume that because a health product is labeled “natural”, it is safe. NHPs, like drugs, may have side effects that can be serious. Examples with known harmful effects are chaparral, comfrey, ephedra and lobelia. Be sure to tell your Doctor or Nurse if you are considering using any herb or other preparation, either during or after your cancer treatments.

Complementary diets

Studies on the use of diet to lower the risk of prostate recurrence have included low fat, vegan and plant-based diets and have often been used along with various vitamin and mineral supplements. This makes it difficult to determine the effect of the diet alone. Furthermore studies have been short-term and have only measured changes in PSA. As a result, longer term studies are needed to determine whether a lower PSA may be associated with a reduction in cancer recurrence or improved survival.

Popular diets used by some men with prostate cancer may include a macrobiotic diet, Gerson therapy, food combining, low acid/alkaline diet or a diet based on blood type. The effects of these diets on prostate cancer recurrence or survival have not been evaluated. These diets vary widely. There may be risks associated with following certain diets if they eliminate or limit various foods such as meat, milk and eggs or specific fruits and vegetables. In some cases, diets that are restrictive can lead to unwanted weight loss and possibly nutrient deficiencies. If you have questions or are considering following a diet that requires you to make substantial changes to the way you eat, consult a Dietitian for help.

When considering complementary therapies

There are many things to think about as you decide whether to use complementary therapies. When you are trying to decide, first ask yourself some basic questions: Why do I want to use this complementary therapy? What are my goals and expectations? Are they realistic?

It is important to make an informed choice and to be sure that whatever you plan is safe. The following questions will help you evaluate complementary nutritional therapies.

Does the therapy recommend that you avoid certain foods?

Learn all about the therapy. If it eliminates one or more of the four food groups in the Canada’s Food Guide (pages 11-14), you will miss important nutrients. Ask the person promoting the therapy to explain how your nutritional needs will be met without these foods.

Does the therapy include vitamin or mineral supplements? If so, are the prescribed levels safe?

If you are considering using vitamin or mineral supplements, it is important to know that large amounts of supplements can have drug-like effects on the body or interact with your cancer treatment. Even if you plan to take amounts considered safe, you should check with your Doctor before taking supplements. Your Doctor may advise you to avoid certain supplements or to use them for only a limited time. For more information on vitamin and mineral supplements, see pages 26-32.
Are there any side effects to watch for with the therapy?
Some people may lose weight as a result of using special diets. Undesired weight loss can slow down healing and delay recovery from treatment. Also side effects can occur with some products just as they can with high doses of vitamins.

How expensive is the therapy?
Special diets may be more expensive than a regular diet. As well, therapies using vitamin and mineral supplements or herbal preparations can become costly over time. These therapies are not covered by health plans. If you decide to use one of them, check its price at several stores, as prices can vary widely.

Does the therapy mean giving up things that are important to you, for example, family dinners?
Some therapies may be hard to follow for a long time. To use the words of one man, “regardless of what you are doing with complementary or alternative therapies, you still have to be able to live your life in a way that has meaning for you”. In other words, the therapy should not deprive you of things you really enjoy.

Have other men been helped by the therapy?
Ask to speak to men who have used the therapy. As well, ask for written information about results with the therapy. Be sure that you hear or read enough to decide that the therapy is right for you.

For further information on different complementary therapies and for guidance on evaluating information about therapies contact the Canadian Cancer Society toll-free at 1-888-939-3333 to request a copy of Complementary Therapies: A guide for people with cancer.

Finding information on the Internet can be a quick way to learn about all sorts of health issues. The Internet offers millions of pages of information about therapies for cancer, but it isn’t perfect. There are no regulations as to what can be posted on a site. It’s often hard to know whether the information is accurate, complete or relevant to your situation. The list of websites on page 61 is a good starting place for reliable information on a variety of complementary therapies.

Nutrition Advice for Managing Treatment Side Effects

Prostate cancer treatment may cause a number of side effects including bone loss, muscle loss and weight gain. These side effects may be reduced by a combination of a healthy diet and regular exercise. To start, men are recommended to follow Eating Well with Canada’s Food Guide (pages 11-14) and the Canadian Physical Activity Guidelines (pages 16-17).

Achieving a healthy body weight is important for men with prostate cancer and is associated with a number of other health benefits. A body mass index (BMI) of 18.5 to 24.9 and a waist measurement of less than 102 cm (40 inches) is recommended.

Some men, however, may experience side effects from hormone therapy or radiation therapy that make it difficult to eat a healthy diet and exercise regularly. See the sections on managing hot flushes and diarrhea for more specific advice (pages 49-50).

If you are having ongoing difficulties eating related to the side effects of your treatment, or experiencing unwanted weight loss, contact a Dietitian at your cancer centre.

See How to Find a Registered Dietitian (page 70).

The guidebook Eating Well When you Have Cancer: A guide to good nutrition from the Canadian Cancer Society may be helpful to you or your caregiver(s). For a copy or more information visit www.cancer.ca or call 1-888-939-3333.
Nutrition Advice for Managing Treatment Side Effects

Men undergoing cancer treatment may experience some of the side effects listed below. However, not all men will experience side effects in the same way. The following information may help in managing these side effects. If you are having ongoing difficulties eating related to the side effects of your treatment, or experiencing unwanted weight loss, contact a Dietitian at your cancer centre. See How to Find a Registered Dietitian (page 70).

For more information on managing treatment side effects contact the Canadian Cancer Society toll-free at 1-888-939-3333 to request a copy of Eating Well When You Have Cancer: A guide to good nutrition. Or visit their website: www.cancer.ca.

Bone Loss and Osteoporosis

Men on long-term hormone therapy may experience bone loss and with time this could develop into osteoporosis. The following guidelines are provided to reduce the risk of bone loss during treatment. If your bone density at the start of treatment indicates that you are at increased risk of osteoporosis you may be advised to use medications in addition to following the guidelines below.

Calcium and vitamin D are essential for strong bones. Men with prostate cancer up to 50 years are recommended to consume 1000 mg of calcium daily and men over 50 need 1200 mg. This includes calcium found in a variety of regular and fortified foods in the diet and from supplements. Calcium intake from all sources should not exceed 2000 mg per day for men over 51 years of age and not exceed 2500 mg per day for men 19-50 years of age. A daily supplement of vitamin D containing 400-1,000 IU is recommended for bone health.

Vitamin D from all sources should not exceed 4000 IU per day. See Appendix A (page 63) for your calcium and vitamin D requirements and safe intake levels and Sources of Calcium and Vitamin D (pages 44-45).

Vitamin and Mineral Supplements

If you can not meet the recommended amounts of calcium and vitamin D with food alone, consider taking a supplement. Calcium carbonate is the least expensive calcium supplement and is well tolerated by most people when taken with food. The absorption of calcium from supplements is most efficient at doses of 500 mg or less. Some calcium supplements also include Vitamin D (check the label for the exact amount). A standard multiple vitamin and mineral supplement provides approximately 175 mg of calcium and 400 IU of vitamin D as well as other nutrients.

Protein

Adequate protein is required to maintain bone health. Include one of the following protein rich foods at each meal: meat, fish, poultry, beans (a variety of types including soy), lentils, nuts, eggs, milk, yogurt or cheese.

Caffeine and Salt

Excess caffeine and salt can have a detrimental effects on bone. Caffeine is found in coffee and also tea, chocolate (cocoa) and some soft drinks. For optimal bone health limit coffee to 4 cups per day (or equivalent).

Foods high in salt generally include processed foods such as canned soups, snack foods, crackers, packaged pastas, condiments and sauces. Read the Nutrition Facts Table on processed foods and limit sodium to less than 2300 mg per day.

Physical activity

Being physically active maintains optimal bone health and decreases the risk of bone fracture by improving bone mass and increasing muscular strength, coordination and balance and thereby reducing falls. Physical activity that is weight bearing is best, examples include walking, dancing, stair climbing, aerobics, skating and weight lifting.

Smoking

Smoking is related to poor bone and general health. If you smoke, ask your Doctor for assistance to stop smoking.
### Sources of Calcium

<table>
<thead>
<tr>
<th>Food Sources of Calcium</th>
<th>Portion Size</th>
<th>Calcium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheese, Parmesan, grated</td>
<td>50 g (1½ oz)</td>
<td>555</td>
</tr>
<tr>
<td>Cheese, Swiss</td>
<td>50 g (1½ oz)</td>
<td>480</td>
</tr>
<tr>
<td>Cheese, mozzarella</td>
<td>50 g (1½ oz)</td>
<td>480</td>
</tr>
<tr>
<td>Cheese, cheddar</td>
<td>50 g (1½ oz)</td>
<td>360</td>
</tr>
<tr>
<td>Sesame seeds</td>
<td>60 mL (¼ cup)</td>
<td>350</td>
</tr>
<tr>
<td>Sardines, with edible bones</td>
<td>85 g (3 oz)</td>
<td>300</td>
</tr>
<tr>
<td>Milk (skim, 1% MF, 2% MF or whole)</td>
<td>250 mL (1 cup)</td>
<td>300</td>
</tr>
<tr>
<td>Buttermilk</td>
<td>250 mL (1 cup)</td>
<td>300</td>
</tr>
<tr>
<td>Eggnog</td>
<td>250 mL (1 cup)</td>
<td>300</td>
</tr>
<tr>
<td>Rice beverage, fortified</td>
<td>250 mL (1 cup)</td>
<td>300</td>
</tr>
<tr>
<td>Soy beverage, fortified</td>
<td>250 mL (1 cup)</td>
<td>300</td>
</tr>
<tr>
<td>Tofu, firm, prepared with calcium</td>
<td>150 g (¼ cup)</td>
<td>300</td>
</tr>
<tr>
<td>Yogurt, plain</td>
<td>175 mL (¾ cup)</td>
<td>200-300</td>
</tr>
<tr>
<td>Milk powder, instant, dry</td>
<td>60 mL (¾ cup)</td>
<td>280</td>
</tr>
<tr>
<td>Cheese, feta</td>
<td>50 g (1½ oz)</td>
<td>250</td>
</tr>
<tr>
<td>Salmon, canned with edible bones</td>
<td>80 g (3 oz)</td>
<td>180</td>
</tr>
<tr>
<td>Beans, white, canned</td>
<td>175 mL (¾ cup)</td>
<td>145</td>
</tr>
<tr>
<td>Spinach, frozen, boiled</td>
<td>125 mL (¾ cup)</td>
<td>145</td>
</tr>
<tr>
<td>Cottage cheese, 2% MF</td>
<td>125 mL (¾ cup)</td>
<td>100</td>
</tr>
<tr>
<td>Almonds</td>
<td>60 mL (¼ cup)</td>
<td>95</td>
</tr>
<tr>
<td>Figs, dried</td>
<td>3</td>
<td>95</td>
</tr>
<tr>
<td>Orange, raw</td>
<td>1 medium</td>
<td>50</td>
</tr>
<tr>
<td>Chickpeas, canned</td>
<td>175 mL (¾ cup)</td>
<td>50</td>
</tr>
</tbody>
</table>


### Sources of Vitamin D

<table>
<thead>
<tr>
<th>Food Sources of Vitamin D</th>
<th>Portion Size</th>
<th>Vitamin D (IU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmon, Sockeye, cooked</td>
<td>85 g (3 oz)</td>
<td>700</td>
</tr>
<tr>
<td>Trout, rainbow, cooked</td>
<td>85 g (3 oz)</td>
<td>645</td>
</tr>
<tr>
<td>Tuna, light, canned in oil</td>
<td>85 g (3 oz)</td>
<td>225</td>
</tr>
<tr>
<td>Halibut, cooked</td>
<td>85 g (3 oz)</td>
<td>200</td>
</tr>
<tr>
<td>Sardines, canned in oil</td>
<td>85 g (3 oz)</td>
<td>150</td>
</tr>
<tr>
<td>Almond beverage, fortified</td>
<td>250 mL (1 cup)</td>
<td>100</td>
</tr>
<tr>
<td>Rice beverage, fortified</td>
<td>250 mL (1 cup)</td>
<td>100</td>
</tr>
<tr>
<td>Soy beverage, fortified</td>
<td>250 mL (1 cup)</td>
<td>100</td>
</tr>
<tr>
<td>Orange juice, fortified</td>
<td>250 mL (1 cup)</td>
<td>100</td>
</tr>
<tr>
<td>Milk (skim, 1% MF, 2% MF and whole)</td>
<td>250 mL (1 cup)</td>
<td>100</td>
</tr>
<tr>
<td>Buttermilk</td>
<td>250 mL (1 cup)</td>
<td>100</td>
</tr>
<tr>
<td>Eggnog</td>
<td>250 mL (1 cup)</td>
<td>100</td>
</tr>
<tr>
<td>Chocolate milk</td>
<td>250 mL (1 cup)</td>
<td>100</td>
</tr>
<tr>
<td>Milk powder, instant, dry</td>
<td>60 mL (¼ cup)</td>
<td>75</td>
</tr>
<tr>
<td>Mushroom, morel</td>
<td>125 mL (¾ cup)</td>
<td>70</td>
</tr>
<tr>
<td>Egg, cooked</td>
<td>1 large</td>
<td>40</td>
</tr>
</tbody>
</table>

Muscle Loss and Weight Gain

Men with prostate cancer treated with hormone therapy can experience a loss of muscle and strength. Weight gain, particularly excess fat around the waistline, is also common. The side effects of hormone therapy and their severity may vary between men and likely depend on the length of time the hormones are used. Men on long-term hormone therapy (greater than one year) are most likely to notice muscle loss and weight gain.

Physical activity is an important part of a healthy lifestyle and has many advantages for men with prostate cancer (Gardner et al, 2014). Physical activity can help to maintain a healthy body weight, strengthen muscles, prevent bone loss and reduce fatigue. Physical activity is also important for vitality and improving quality of life (Keogh et al, 2012). Men are encouraged to use weight training and aerobic exercises (e.g. brisk walking, swimming, cycling) under the supervision of their Doctor. If weight gain is a concern, physical activity combined with a reduced calorie diet may be needed to lose weight. Early evidence suggests that weight training exercise can help to minimize loss of strength associated with prostate cancer treatments and maintain muscle mass. Regardless, most men of all ages will experience health benefits from being more physically active.

The Canadian Physical Activity Guidelines recommend to start building physical activity into your daily routine slowly and gradually increase the intensity of activities. For more information see pages 16-17.

Body Weight

Achieving a healthy body weight is important in men with prostate cancer. Over the past two decades there have been an increasing number of Canadians who are overweight and obese, and this includes men with prostate cancer. Weight gain is common with aging and often occurs with hormone therapy. Evidence suggests that men with prostate cancer who gain weight, and those who are overweight or obese, have a higher risk of recurrence after prostatectomy or radiation therapy (Freedland et al, 2004, Freedland et al, 2005, Palma et al, 2007, Joshu et al, 2011) and an increased risk of mortality (Cao et al, 2011).

See What is a Healthy Weight (page 47) and Calculating Your Body Mass Index (page 48). If you have started hormone therapy as part of prostate cancer treatment, take steps to prevent weight gain.

What is a Healthy Weight?

A healthy weight is defined for persons between the ages of 18 and 64 years as a Body Mass Index (BMI) in the range of 18.5-24.9. For persons 65 years and older, the “normal” range may begin slightly above 18.5 and extend into the “overweight” range.

You can use the chart to plot your height and weight to determine your BMI (page 48). For example, if you are 5’10” (178 m) and weight 160 lbs (73 kg), your BMI is 23 and within the recommended range.

<table>
<thead>
<tr>
<th>BMI category (kg/m²)</th>
<th>Classification</th>
<th>Risk of developing health problems</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;18.5</td>
<td>Underweight</td>
<td>Increased</td>
</tr>
<tr>
<td>18.5–24.9</td>
<td>Normal weight</td>
<td>Least</td>
</tr>
<tr>
<td>25.0–29.9</td>
<td>Overweight</td>
<td>Increased</td>
</tr>
<tr>
<td>&gt;30.0</td>
<td>Obese</td>
<td>High</td>
</tr>
</tbody>
</table>

Adapted from: Canadian Guidelines for Body Weight Classification in Adults – Quick Reference Tool for Professionals, Health Canada (2003).

Men who are overweight or obese are at higher risk of developing various health problems including some types of cancer, Type 2 diabetes, heart disease, high blood cholesterol and other fats, insulin resistance, gall bladder disease, high blood pressure and osteoarthritis.

Weight loss is recommended for men with a BMI 25 or greater. Excess weight at the waistline, also called “middle-age spread” or a “spare tire”, is also an increased health risk for the development of heart disease and diabetes. Men are encouraged to maintain a waist measurement of less than 102 cm (40 inches) in addition to a BMI in the healthy range. If you have not been physically active, consult with your Doctor before starting an exercise program. Eating fewer calories by reducing portions sizes and consuming less high fat foods (fried foods, desserts, butter, cream sauces or dressings) and drinking less alcohol, will help to maintain a healthy body weight. Weight loss is safe and healthy if it occurs gradually, with no more than 0.5-1 kg (1-2 pounds) per week. Achieving a healthy weight is likely to have a number of health benefits well beyond the benefits in reducing the side effects of cancer treatment.
Diarrhea

Radiation therapy will affect the healthy cells in the bowel and bladder (which are located near the prostate gland). As a result, most men who are treated with radiation therapy will experience a change in bowel habits and an increase in urinary symptoms during pelvic radiation therapy. After about ten treatments (or about two weeks of treatment) common side effects include an increase in the number of bowel movements per day, smaller stools that can be either hard, or loose (or a combination), abdominal gas and bloating, rectal pain and discomfort and possibly an increase in bowel urgency.

Mild symptoms such as an increase in the number of bowel movements per day or size or consistency such as a softer than normal stool may not need to be treated. However, moderate or severe symptoms such as abdominal cramping, frequent, loose or watery stools, or an increase in urgency may be controlled by decreasing certain foods in the diet and with the use of medications.

Suggestions for managing diarrhea and cramps:

- Eat more often. Try eating 4-6 small meals per day.
- Drink plenty of fluids. Diarrhea can cause dehydration so it is important to drink often. Choose clear fruit juices, water, weak tea or clear non-caffeinated carbonated beverages.
- Avoid drinks such as alcohol, coffee, strong tea, cola beverages and prune juice as they may make your diarrhea worse.
- Avoid high fibre foods. Limit use of whole grain breads and high fibre cereals. Remove skins and seeds from fruit and vegetables. Try to limit nuts, bran, corn, broccoli, beans, peas, berries and dried fruit as they are high in fibre.
- Avoid fried, greasy foods.
- Avoid strong spices (e.g. chili peppers, cayenne pepper, curry)
- Avoid extremely hot or cold foods and fluids as they may make your diarrhea worse.
For a limited number of men, it may be helpful to cut back temporarily on dairy products. However, if you have always tolerated milk, yogurt and cheese, these foods should not cause any bowel problems during treatment. If you find that drinking milk makes the diarrhea worse try lactose-reduced milk, for example Lactaid® (available at most supermarkets).

An over the counter anti-diarrheal medication may be advised by your Doctor to help reduce diarrhea during radiation therapy. Use these medications as directed. One caution, if you are following a low fibre diet and using anti-diarrheal medication regularly, you may experience constipation.

Continue with a low fibre diet and avoid foods that irritate your bowels for an additional three to four weeks after your radiation therapy treatment has finished. After about one month, gradually add back high fibre foods to your diet over several weeks. If you continue to experience bowel symptoms, contact your Doctor or Dietitian. Once bowel function has returned to normal, a diet that contains high fibre foods is recommended. In particular, men who have a history of hemorrhoids should follow a high fibre diet.

Hot Flushes

One of the main complaints that men who have been treated with hormone therapy have is hot flushes. While this side effect varies from man to man, some men may notice that some foods may act as hot flush triggers. These include: hot foods or drinks, spicy foods, caffeine, and alcohol including red wine. There has been some early research into natural remedies, such as plant estrogens, in the treatment of men with prostate cancer with hot flushes. However at this time there is no evidence to suggest there is a natural remedy that is effective for hot flushes. There are prescription medications available that can reduce the frequency and severity of hot flushes. Talk to your Doctor or Pharmacist about these options.

<table>
<thead>
<tr>
<th>Instead of . . .</th>
<th>Try . . .</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butter on a baked potato</td>
<td>Light sour cream or plain yogurt</td>
</tr>
<tr>
<td>Butter on cooked vegetables</td>
<td>Lemon, garlic and/or herbs</td>
</tr>
<tr>
<td>Cream in coffee or tea</td>
<td>Skim or low fat milk</td>
</tr>
<tr>
<td>Regular salad dressing</td>
<td>Low fat or fat-free dressing</td>
</tr>
<tr>
<td>Cream sauce for pasta</td>
<td>Tomato-vegetable sauce</td>
</tr>
</tbody>
</table>
What do food labels tell me about fat?

First, labels list the ingredients in a food. This list tells you whether fat has been added to a food during processing and if so, the kind of fat added. You can use this information to compare products. For example, peanut butter which is naturally rich in fat may or may not have added vegetable oil (or sugars).

Second, food labels list the amount of fat in one serving. For example, a serving of four crackers (25 grams) may contain 4 grams of fat. You can use this information to compare similar products and choose the one that is lower in fat.

Third, labels may make claims like “low fat”. Unfortunately, these claims can sometimes be confusing. For example, the claim “cholesterol-free” does not mean that a food is fat-free. For a discussion of the different types of fat see pages 53-56.

I recently heard that butter is better for us than margarine. This surprised me.

Which is better?

Small amounts of either butter or soft margarine do not cause health problems. Regardless of whether you choose butter or margarine, the important thing is to be moderate in the total fat in your diet. Both butter and margarine contain the same amount of fat—4 grams of fat in 5 ml (1 tsp).

There is an important difference in quality between hard and soft margarines. Hard margarines (the kind sold in bricks) contain trans fatty acids. Whereas, soft margarines (the kind sold in a tub) are made mainly from vegetable oils and contain little or no trans fatty acids (especially if label states “non-hydrogenated”).

Are some fats “good” and others “bad”?

Any fat by itself is neither good nor bad. What is important is how much fat you eat, how often and what food source it comes from. All types of fat have the same number of calories but there are important differences in the quality and how it affects your health. The main types of fats are monounsaturated fats, polyunsaturated fats, saturated fats and trans fats. You may be used to reading these words as they are found on many food labels.

It is recommended to reduce the amount of saturated fats and trans fats in your diet. These may be replaced with monounsaturated or polyunsaturated fats. Monounsaturated and polyunsaturated fats are referred to as unsaturated fats and come mainly from plant foods.

Monounsaturated fats are highest in:
- Vegetable oils, especially canola and olive oils
- Avocados
- Olives
- Nuts, especially almonds, hazelnuts and macadamia nuts

Health experts consider these fats to be beneficial to health.
Polyunsaturated fats are found in:

- Vegetable oils such as corn and sunflower. This does not include coconut and palm oils.
- Seeds and nuts
- Fatty fish such as salmon, trout, mackerel, herring and sardines

Omega-3 and omega-6 fatty acids are types of polyunsaturated fatty acids. Most Canadians get enough omega-6 fatty acids, but not enough omega-3 fatty acids. Your nutritional need for omega-3 fatty acids is small – only a few grams daily. You should get enough if you eat a food high in this family of fatty acids every day.

Omega-3 fatty acids are highest in:

- Flaxseed and canola oils
- Some brands of eggs (check product labels)
- Omega-3 enriched foods, for example yogurt and soy beverages
- Flaxseeds (ground) and walnuts
- Fatty fish such as salmon, trout, mackerel, herring and sardines
- Wheat germ

Omega-6 fatty acids are highest in:

- Safflower, corn, sunflower and soybean oils
- Sunflower, sesame, poppy and pumpkin seeds
- Wheat germ

Polyunsaturated fats are also considered to be beneficial to health, but monounsaturated fats are preferred.

Saturated fats are found in:

- Processed vegetable fats like shortening and hard margarine
- Animal fats like lard, the fat in meat and gravy made from meat
- Dairy fats like butter, cream, ice cream, sour cream and cheeses
- Tropical fats like coconut oil, palm oil and cocoa butter

You can usually recognize saturated fats easily as they are solid at room temperature. Studies show that eating less saturated fat is best and also when saturated fats are replaced with unsaturated fats. It is unclear whether saturated fats can have different long term effects on health depending on the food sources (eg. coconut versus animal fats) and more research is needed.

Cholesterol is a waxy, fat like substance that is made by the body as well as obtained through the diet. It is only found in animal products, like liver, kidney, eggs, shrimp and dairy products. Cholesterol has many uses including insulating nerves, maintaining cell walls, and production of vitamin D, digestive juices and certain hormones. Most of the cholesterol in your body is made by your liver rather than obtained through food.

Trans fats or trans fatty acids are found in:

- Processed vegetable fats like shortening and hard margarine
- Commercially prepared foods such as cookies, chips, cakes and packaged mixes
- Packaged or processed food products with “hydrogenated vegetable oil” or “vegetable shortening” as an ingredient on the food label
- A small amount of trans fatty acids are found naturally, mostly in animal foods

Trans fatty acids are formed when vegetable oils are processed to produce shortening and hard margarine, which are used in foods to extend their shelf life. Eating a diet that is high in trans fatty acids may raise blood cholesterol and risk of heart disease.
What kind of fat should I use for cooking and in salads?
Vegetable oils are a better choice than shortening, lard or butter. Even in baking, oil is a better choice. The recommended cookbooks provide recipes using healthy fats for cooking or baking (see page 60).

Which oil is best?
Olive oil and canola oil are the best choices. Olive oil has an appealing flavour that is richest in the oil that is extracted first from the olives - the “extra-virgin” oil. It is particularly tasty when used as a dressing for salads or in marinades or for dipping bread instead of butter or margarine. Canola oil is less expensive than olive oil. It has a milder flavour so may be used in baking.

Flaxseed oil and walnut oil are also good choices, and are now available in some specialty stores. Because of their distinctive flavour, they are well-suited to salads and other dishes where their flavour can be appreciated. If you use one of these oils, buy a small quantity and store it in the refrigerator. It should keep well for up to 2 months.

I've heard that phytochemicals help. What are they?
Phytochemicals (or phytonutrients) are naturally occurring substances found in plants. (The prefix “phyto” comes from the Greek word phyton, meaning “plant”). Phytochemicals may help prevent cancer and possibly delay cancer progression. At present, scientists are studying these substances. Phytochemicals are found in many fruits, vegetables and legumes – for example broccoli, brussels sprouts, garlic, onions, citrus fruits and soybeans. Eating a diet rich in plant foods will provide a variety of phytochemicals.

Should I follow a vegetarian diet?
A well planned vegetarian diet can be healthful and enjoyable. As well, diets focusing on plant foods are typically rich in phytonutrients and fibre and can be lower in fat. Increasing the amount of fruits, vegetables, whole grains, legumes (beans) and lentils you eat is a good choice whether or not you chose to follow a vegetarian diet. You may find you need extra time when starting a vegetarian or plant-based diet to learn how to plan meals and how to cook with less or without animal foods. If you decide to make this change, a Dietitian can help you get started. You can also get ideas from some of the cookbooks on page 60.

What about growth hormones in meat?
Growth hormones are approved for limited use in beef cattle in Canada. They are used in the United States (US), and are banned in the European Union (EU). Public concern about the use of growth hormones relates to questions about their impact on human health, in particular, whether these compounds may be cancer-causing and could adversely affect human health.

Due to the limited use and current practices in Canada, the health risk associated with growth hormones appears small. All cattle treated with growth hormones undergo a withdrawal period. As a result, meat from treated animals has similar hormone levels to meat from untreated animals and these levels are regularly monitored. Growth hormones may be used in milk production in the US, but are not approved for use in Canada and therefore pose no health risk.

I'm concerned about pesticides in the food supply. Is buying organically grown food the answer?
There is evidence both for and against a link between pesticides and the risk of developing cancer.

Canadian standards for allowable levels of pesticide residues in foods are among the strictest in the world. This testing includes foods coming into Canada, which are tested before they may be sold. For more information about the standards used in testing foods for pesticides, call the Health Protection Branch or Agriculture and Agri-Food Canada, listed under the Government of Canada in the blue pages of your phone book or on the internet.

Canadian farmers today use fewer chemicals than 20 years ago. If you buy foods that are grown locally and are in season, you will enjoy the benefits of this change. In addition, common household practices such as peeling and washing vegetables and fruit reduces pesticide residues, if they are present. Some people prefer to buy organically grown foods.

In 2009, under new regulations in Canada an organic food has to be certified as organic, and will bear a logo if the organic content is greater than 95%. Many stores carry organically grown foods, however they are more expensive than conventionally grown foods.
Does sugar cause cancer cells to grow?
Sugar is a known source of energy or fuel for many types of healthy cells (such as brain, muscle, heart) and also cancer cells. Just like healthy cells, cancer cells require blood supply, oxygen and fuel to grow. Restricting foods containing sugar, to potentially slow down cancer growth, can have negative effects on healthy cells.

Several foods naturally contain sugar. These include fruits and vegetables, which are also a good source of vitamins, minerals and fibre required for good health.

The recommendation is to eat a variety of fruits and vegetables and to limit table sugar (white or brown), soft drinks, baked goods (such as cookies, cake, doughnuts) and processed foods which can contain sugar in large amounts.

Are foods with plant estrogens safe for men with prostate cancer?
Soy foods and flaxseed are known to contain a natural plant estrogen. At the present time the estrogen found in foods has not been shown to have any adverse effects and is safe to consume. Men are recommended to choose soy foods (such as soybeans, soy beverages and tofu) and ground flaxseed and foods containing ground flaxseed as part of a healthy diet.

I've heard that men who have had prostate cancer should avoid milk products. Is this true?
There have been a limited number of studies linking milk consumption and/or calcium to the development of prostate cancer. Men with prostate cancer may be at an increased risk of bone loss, particularly with the use of long-term hormone therapy and therefore maintaining bone health is important. Milk and other dairy products such as yogurt and cheese provide a good source of calcium and other nutrients to maintain bone health.

Whether or not milk products are consumed, it is important for men to obtain the recommended amount of calcium, vitamin D and other nutrients to maintain bone health. Eliminating milk product, without replacing the calcium, may increase the risk of osteoporosis. See Bone Loss and Osteoporosis (page 42).

Should I take antioxidant supplements? Are they safe during treatment?
The term “antioxidant” refers to certain vitamins, minerals and other compounds that protect the cells in our bodies. Some examples of antioxidants are β-carotene, vitamin C, vitamin E and selenium. The effect of antioxidant supplements during cancer treatment is an area of long-standing controversy partly due to conflicting evidence. One theory is that these antioxidants are beneficial and may protect healthy cells from damage, enhance recovery from cancer treatment, or possibly enhance cancer treatment itself. Another theory is that antioxidants may interfere with radiation therapy or chemotherapy, making cancer treatments less effective. At present there is no clear evidence to support any of these possible effects in humans.

The amounts of antioxidants that are naturally found in food as well as those in multiple vitamin and mineral supplements (“once-a-day”) are considered to be safe. Large doses of antioxidant supplements however are not recommended during cancer treatment. For more information see sections on β-carotene, vitamin E and selenium (pages 27-31) or speak with your Doctor or Dietitian.

Overall, obtaining vitamins and minerals from food sources rather than supplements is recommended.

A multiple vitamin and mineral supplement (“once-a-day”) may be needed for men who are unable to eat the foods recommended in Eating Well with Canada’s Food Guide. Speak with your Doctor or Dietitian for more information.
Additional Resources

Nutrition and Prostate Cancer

Other Guidebooks (available as a free download from the listed websites)

Challenging Prostate Cancer: Nutrition, Exercise and You
Research-based nutrition and fitness guidelines from
The Prostate Centre at The Princess Margaret
www.prostatecentre.ca
(Click on the image of the guidebook )

Nutrition, Exercise and Prostate Cancer
Prostate Cancer Foundation
www.pcf.org/prostatecancer/guides

Prostate Cancer: Nutrition Sheets
12 information sheets on popular nutrition topics from
Men’s Health Initiative of BC
www.aboutmen.ca
(Select “Resource Centre”, then “Print Resources/Brochures”, and see “Nutrition Sheets”)

Cookbooks for Healthy Eating

The following popular cookbooks provide recipes on healthy eating with a focus on heart health. The internet is also a great source for recipes. Try searching for healthy recipes including the foods recommended in this guidebook and be inspired to cook!

Lighthearted at Home: The Very Best of Anne Lindsay,
by Anne Lindsay, 2010

The Best of HeartSmart Cooking: Revised and Updated with 100 New Recipes,
by Bonnie Stern, 2006

New Light Cooking: Over 200 Healthy and Delicious Recipes,
by Anne Lindsay, 2006

The New Lighthearted Cookbook: Recipes for Heart Healthy Cooking,
by Anne Lindsay, 2005

Complementary Therapies

<table>
<thead>
<tr>
<th>Name and Website Address</th>
<th>Website Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>BC Cancer Agency</td>
<td>Information on specific complementary therapies and tips and questions to ask about complementary therapies.</td>
</tr>
<tr>
<td><a href="http://www.bccancer.bc.ca">www.bccancer.bc.ca</a></td>
<td>(Click on Complementary Therapies under ‘Patient/Public Info’)</td>
</tr>
<tr>
<td>Health Canada</td>
<td>Information on Canadian Natural Health Products (NHP) regulations.</td>
</tr>
<tr>
<td>Natural Health Products</td>
<td><a href="http://www.hc-sc.gc.ca">www.hc-sc.gc.ca</a></td>
</tr>
<tr>
<td><a href="http://www.hc-sc.gc.ca">www.hc-sc.gc.ca</a></td>
<td>(Select ‘Drug and Health Products’, then ‘Natural Health Products’)</td>
</tr>
<tr>
<td>American Cancer Society</td>
<td>Definitions and descriptions of various complementary and alternative therapies. There are also guidelines for using complementary and alternative therapies during cancer treatment and a database to search for information on herbs, vitamins and minerals.</td>
</tr>
<tr>
<td><a href="http://www.cancer.org">www.cancer.org</a></td>
<td>(Click on ‘Find Support and Treatment’, then ‘Treatment and Side Effects’ then scroll down to ‘Complementary and Alternative Medicine’)</td>
</tr>
<tr>
<td>Memorial Sloan Kettering</td>
<td>A free database to search for a large selection of herbs, botanicals and other products for information including the common uses, how the therapy works, warnings and herb-drug interactions for each product.</td>
</tr>
<tr>
<td><a href="http://www.mskcc.org">www.mskcc.org</a></td>
<td>(Enter ‘Integrative Medicine’ in the search box then select ‘About Herbs, Botanicals &amp; Other Products’ to access the free database)</td>
</tr>
<tr>
<td>National Institute of Health</td>
<td>Information on background, evidence and dosing and safety for a number of complementary therapies.</td>
</tr>
<tr>
<td><a href="http://www.nlm.nih.gov/medlineplus">www.nlm.nih.gov/medlineplus</a></td>
<td>(Click on ‘Drugs and Supplements’ for the free database)</td>
</tr>
<tr>
<td>Natural Medicines Comprehensive Database</td>
<td>A database of natural health products and information on product effectiveness, safety and potential drug interactions. It is available in a printed version in some libraries as well as on the Internet. A subscription fee is required.</td>
</tr>
<tr>
<td><a href="http://www.naturaldatabase.com">www.naturaldatabase.com</a></td>
<td>(Click on ‘Drugs and Supplements’ for the free database)</td>
</tr>
</tbody>
</table>

Website links may change over time making it difficult to find these resources. If this happens try searching the internet using the title and/or author of the resource.
Osteoporosis

<table>
<thead>
<tr>
<th>Name and Website Address</th>
<th>Website Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osteoporosis Canada</td>
<td>Information on diagnosis, nutrition, physical activity, drug treatment, osteoporosis in men, a calcium calculator and recipes.</td>
</tr>
<tr>
<td><a href="http://www.osteoporosis.ca">www.osteoporosis.ca</a></td>
<td></td>
</tr>
<tr>
<td>HealthLinkBC</td>
<td>Information on general nutrition including osteoporosis.</td>
</tr>
<tr>
<td><a href="http://www.healthlinkbc.ca">www.healthlinkbc.ca</a></td>
<td>(Click on 'Health Topics A-Z' and Search 'Calcium' or 'Bone Health')</td>
</tr>
<tr>
<td>Physical Activity Line</td>
<td>Information and resources on physical activity, FAQs and fact sheets (See also their phone line below).</td>
</tr>
<tr>
<td><a href="http://www.physicalactivityline.com">www.physicalactivityline.com</a></td>
<td></td>
</tr>
<tr>
<td>Canadian Society of Exercise Physiology</td>
<td>Physical activity guidelines including recommended amount and types of physical activity for Canadians and its benefits. There is a guide for adults 18-64 years and 65 years and older.</td>
</tr>
<tr>
<td><a href="http://www.csep.ca">Canadian Physical Activity Guidelines</a></td>
<td>(Select ‘Guidelines’)</td>
</tr>
<tr>
<td>Health Canada</td>
<td>Practical tips to help follow Canada's Food Guide as well as interactive tools and resources.</td>
</tr>
<tr>
<td><a href="http://www.hc-sc.gc.ca">Canada's Food Guide</a></td>
<td>(Click on the 'Canada’s Food Guide' icon )</td>
</tr>
</tbody>
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<thead>
<tr>
<th>Name and Website Address</th>
<th>Website Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia Resources</td>
<td>Resources on prostate cancer are available through your cancer centre, your local hospital and the Canadian Cancer Society offices.</td>
</tr>
</tbody>
</table>

Telephone Information Services

- HealthLinkBC - Ask to speak to a Registered Dietitian
  Phone: 8-1-1 Health advice 24/7
- Canadian Cancer Society Cancer Information Service
  Phone: 1-888-939-3333
- Physical Activity Line (PAL)
  Phone: 604-241-2266 or toll free in BC 1-877-725-1149

Appendix A: Nutrient Requirements and Safe Intake Levels

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Recommended Daily Amounts (RDA) for Adult Men</th>
<th>Tolerable Upper Intake Level (UL)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitamin C</td>
<td>90 mg</td>
<td>2000 mg</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>15 mg (20 IU)</td>
<td>1000 mg (2200 IU)</td>
</tr>
<tr>
<td>Selenium</td>
<td>55 µg</td>
<td>400 µg</td>
</tr>
<tr>
<td>Calcium</td>
<td>1000 mg (19-70 years)</td>
<td>2500 mg (19-50 years)</td>
</tr>
<tr>
<td></td>
<td>1200 mg (&gt;70 years)</td>
<td>2000 mg (&gt;51 years)</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>600 IU (19-70 years)</td>
<td>4000 IU</td>
</tr>
<tr>
<td></td>
<td>800 IU (&gt;71 years)</td>
<td></td>
</tr>
</tbody>
</table>

Dietary Reference Intakes, National Academies Press
[www.nap.edu](http://www.nap.edu) (search Dietary Reference Intakes)

Health Canada

* The Upper Tolerable Intake Level (UL) is the highest average daily nutrient intake level likely to pose no risk of adverse health effects to almost all individuals in a given life stage and gender group. The UL is not a recommended level of intake. As intake increases above the UL, the potential risk of adverse effects increases.

Applies only to synthetic vitamin E (supplemental; or used as a fortificant in foods)

Vitamin E may be measured in either milligrams (mg) or International Units (IU). To convert synthetic forms of vitamin E (as found in many supplements) from mg to IU multiply the number of milligrams by 2.2. To convert natural forms of vitamin E (as found in natural supplements and food sources) from mg to IU multiply the number of mg by 1.49.
Selected References

Prostate Cancer Prevention

Diet


Giovannucci E et al. Intake of carotenoids and retinol in relation to risk of prostate cancer. Journal of the National Cancer Institute 1995; 87:1767-76.


Vitamin and Mineral Supplements


Prostate Cancer Treatment

Diet and Complementary Therapies (Review Papers)


Body Weight and Obesity


Exercise


Randomized Controlled Trials in Men with Prostate Cancer

The following references are for studies that have used a type of research design called a randomized controlled trial. These have been judged to be of highest quality from the available literature and were used to form the guidelines on pages 18-33.


How to Find a Registered Dietitian

A Registered Dietitian (RD) is a health professional with a university degree in nutrition, additional clinical training and a key member of your health care team.

All BC Cancer Agency centres have Registered Dietitians on staff that can help you with nutrition questions you may have.

If your treatment centre does not have a Registered Dietitian, try these options to locate one near you:

- Ask your healthcare team
- Ask your family doctor
- Contact HealthLinkBC at 8-1-1 to speak with a Registered Dietitian or visit their website: www.healthlinkbc.ca
- Contact Dietitians of Canada at 1-416-596-0857 or visit their website: www.dietitians.ca
BC Cancer Agency Centres

Abbotsford Centre
32900 Marshall Road
Abbotsford, BC V2S 1K2
604.851.4710 or toll-free 1.877.547.3777

Fraser Valley Centre
13750 96th Avenue
Surrey, BC V3V 1Z2
604.930.2098 or toll-free 1.800.523.2885

Centre for the North
1215 Lethbridge Street
Prince George, BC V2N 7E9
250.645. 7300 or toll-free 1.855.775.7300

Sindi Ahluwalia Hawkins Centre for the Southern Interior
399 Royal Avenue
Kelowna, BC V1Y 5L3
250.712.3900 or toll-free 1.888.563.7773

Vancouver Centre
600 West 10th Avenue
Vancouver, BC V5Z 4E6
604.877.6000 or toll-free 1.800.663.3333

Vancouver Island Centre
2410 Lee Avenue
Victoria, BC V8R 6V5
250.519.5500 or toll-free 1.800.670.3322

BC Cancer Agency Research Centre
675 West 10th Avenue
Vancouver, BC V5Z 1L3
604.675.8000 or toll-free 1.888.675.8001

BC Cancer Foundation
150 - 686 W. Broadway
Vancouver, BC V5Z 1G1
604.877.6040 or toll-free 1.888.906.CURE/2873