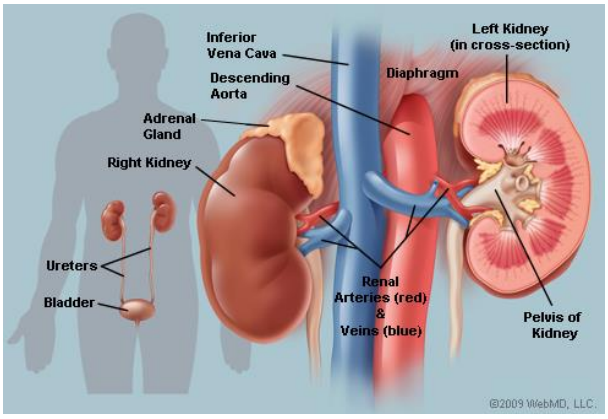
Cancer Association of South Africa (CANSA)

Research • Educate • Support

Fact Sheet on Nutritional Guidelines for Individuals Diagnosed with Kidney Cancer

Introduction

The kidneys are two bean-shaped organs that extract waste products from blood, balance body fluids, form urine, and aid in other important functions of the body.



[Picture Credit: Human Kidneys]

The kidneys reside against the back muscles in the upper abdominal cavity. They sit opposite each other on either side of the spine. The right kidney is situated a little bit lower than the left to accommodate the liver.

When it comes to components of the urinary system, the kidneys are multi-functional powerhouses of activity. Some of the core actions of the kidneys include:

- Waste excretion - the kidneys filter out toxins, excess salts, and urea, a nitrogen-based waste created by cell metabolism. Urea is synthesised in the liver and transported through the blood to the kidneys for removal.
- Water level balance - as the kidneys are key in the chemical breakdown of urine, they react to changes in the body's water level throughout the day. As water intake decreases, the kidneys adjust accordingly and leave water in the body instead of helping excrete it.
- Blood pressure regulation - the kidneys need constant pressure to filter the blood. When blood pressure drops too low, the kidneys increase the pressure. One way is by producing a blood vessel-constricting protein (angiotensin) that also signals the body to retain sodium and water. Both the constriction and retention help restore normal blood pressure.
- Red blood cell volume regulation - when the kidneys do not get enough oxygen, they send out a distress call in the form of erythropoietin, a hormone that stimulates the bone marrow to produce more oxygen-carrying red blood cells.
- Acid base balance - as cells metabolise, they produce acids. Foods we eat can either increase the acid in our body or neutralise it. If the body is to function properly, it needs to keep a healthy balance of these chemicals. The kidneys do that, too.

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Most people are born with two kidneys, but many people can live with just one. Kidney transplant surgeries with live donors are common medical procedures today.

Because of all of the vital functions the kidneys perform and the toxins they encounter, the kidneys are susceptible to various problems.

Kidney Cancer

Cancer is when cells in the body grow out of control. These cells can form a tumour or damage tissue. Kidney cancer is also called Renal cell carcinoma (RCC), hypernephroma, renal adenocarcinoma, or renal or kidney cancer. If cancer cells grow in the kidney, it is generally called kidney cancer.

- The most common kidney cancer in adults is renal cell carcinoma. Renal cells form in the lining of very small tubes in the kidney.
- Cancers found in the centre of the kidney are known as transitional cell carcinoma.
- Wilms tumour is a kidney cancer that very young children can get. On average, people are diagnosed with kidney cancer at around age 64. It is rarely found in people younger than age 45. The risk for kidney cancer is higher in men than in women.

It is not clear what causes renal cell carcinoma.

Doctors know that kidney cancer begins when some kidney cells acquire mutations in their DNA. The mutations tell the cells to grow and divide rapidly. The accumulating abnormal cells form a tumour that can extend beyond the kidney. Some cells can break off and spread (metastasise) to distant parts of the body.

The different types of RCC are generally distinguished by the way that cancer cells appear when viewed under a microscope. Keep reading to learn about the five different subtypes.

Clear Cell RCC - is the most common type of RCC, called clear cell or conventional, the cells have a clear or pale appearance. Around 70 to 80% of individuals with renal cell cancer have clear cell RCC. The growth of these cells can be either slow or fast.

Papillary RCC - after clear cell RCC, papillary RCC is the next most common form of renal cell cancer. Using a microscope one can see the cells have projections that look like fingers. Approximately 10% of people with RCC have this type. Papillary RCC is divided into two further subtypes, known as type 1 and type 2. Papillary RCC is generally treated in the same way as clear cell RCC. However, targeted therapy may not work as well for patients with papillary RCC.

Chromophobe RCC - only about 5% of patients with RCC have the chromophobe subtype. Although these rare cancer cells may look similar to clear cell RCC, they tend to be bigger and have other distinguishing microscopic features. Chromophobe RCC tends to be a less aggressive form of the disease. That is because the tumours can grow to be quite large before spreading to different parts of the body.

Oncocytoma RCC - another rare form of renal cell cancer is oncocytoma. This type accounts for around 5% of kidney tumours. Like with chromophobe RCC, oncocytoma tumours only rarely spread beyond the kidney, making it less deadly than other forms. The tumours are also very slow growing and are more likely to be benign or non-cancerous. The tumours can grow quite large, however, but can be removed through surgery.

Collecting Duct RCC - another rare subtype is collecting duct RCC. This type accounts for less than 1%. It appears most often in young adults. In this form of the condition, the cells can appear as irregular tubes under a microscope. While collecting duct RCC is uncommon, it can be aggressive. It can also be resistant to traditional treatments that are effective for other tumour types.

Unclassified RCC - in addition to the five main types of RCC, there are kidney tumours that do not fit in any of the other categories. This can be because a tumour might have more than one cell type visible under a microscope.

Eating Tips Before, During and After Cancer Treatment

There is no way to know if one will have eating problems and, if so, how bad they will be. One may have just a few problems or none at all. In part, this depends on the type of cancer one has, where it is in one's body, what kind of treatment one has, how long treatment lasts, and the doses of treatment one receives.

Things to do and think about before starting cancer treatment

Until treatment starts one will not know what, if any, side effects or eating problems one may have. If you do have problems, they may be mild. Many side effects can be controlled. Many problems go away when cancer treatment ends.

- Think of the cancer treatment as a time to get well and focus just on self.
- Eat a healthy diet before treatment starts. This helps to stay strong during treatment and lowers one's risk of infection.
- Go to the Dentist. It is important to have a healthy mouth before starting cancer treatment.
- Ask the Doctor, Professional Nurse, or Registered Dietitian about medicine that can help with anticipated eating problems.
- Discuss fears and worries with the Doctor or Professional Nurse. He or she can discuss ways to manage and cope with these feelings.
- Learn about kidney cancer and its treatment. Many people feel better when they know what to expect.

Ways to get ready to eat well

- Fill the refrigerator, cupboard, and freezer with healthy foods. Make sure to include items you can eat even when you feel sick.
- Stock up on foods that need little or no cooking, such as frozen dinners and ready-to-eat cooked foods.
- Cook some foods ahead of time and freeze in meal-sized portions.

- Ask friends or family to help you shop and cook during treatment. Maybe a friend can set up a schedule of the tasks that need to be done and the people who will do them.
- Talk with a Doctor, Professional Nurse, or Registered Dietitian about what to expect.

Ways to get the most from foods and drinks during cancer treatment

During treatment, one may have good days and bad days when it comes to food. Here are some ways to manage:

- Eat plenty of protein and calories when possible. This helps one keep up one's strength and helps rebuild tissues harmed by cancer treatment.
- Eat when one has the biggest appetite. For many people, this is in the morning. One might want to eat a bigger meal early in the day and drink liquid meal replacements later on.
- Eat those foods that one can, even if it is only one or two items.
- Stick with these foods until one is able to eat more.
- One might also drink liquid meal replacements for extra kilojoules and protein.
- One must not worry if one cannot eat at all some days. Spend this time finding other ways to feel better, and start eating when one can.
- Inform the treating Doctor if unable to eat for more than 2 days.
- Drink plenty of liquids. It is even more important to get plenty to drink on days when no feeling like eating. Drinking a lot helps one's body get the liquid it needs.
- One should take between 30 and 35ml of fluid per kilogram of body weight per day. Environmental factors such as heat may affect the amount of fluid needed.

Taking special care with food to avoid infections

Some cancer treatments can make one more likely to get infections. When this happens, one needs to take special care in the way one handles and prepares food. Here are some ways:

- Keep hot foods hot and cold foods cold. Put leftovers in the refrigerator as soon as one has done eating.
- Scrub all raw fruits and vegetables before eating them.
- Do not eat foods (like raspberries) that cannot be washed well. One should scrub fruits and vegetable which have rough surfaces, such as melons, before cutting them.
- Wash hands, knives, and counter tops before and after preparing food. This is most important when preparing raw meat, chicken, turkey, and fish.
- Use a different cutting board for meat and one for fruits and vegetables.
- Thaw meat, chicken, turkey, and fish in the refrigerator or defrost them in the microwave immediately before preparing them. Do not leave them sitting out.
- Cook meat, chicken, turkey, and eggs thoroughly. Meats should not have any pink inside. Eggs should be hard, not runny.
- Do not eat raw fish or shellfish, such as sushi and uncooked oysters.
- Make sure that all of juices, milk products, and honey are pasteurised.
- Do not use foods or drinks that are past their freshness date.
- Do not buy foods from bulk bins.
- Do not eat at buffets, salad bars, or self-service restaurants.
- Do not eat foods that show signs of mould. This includes mouldy cheeses such as bleu cheese.

Special diets, vitamins, minerals and supplements

- Talk with the treating Doctor, Professional Nurse, or Registered Dietitian before going on a special diet or taking any vitamins, minerals or supplements.
- To avoid problems, be sure to follow their advice.

(National Cancer Institute).

Nutrition, Diet and Kidney Cancer

The precise relationship between diet and kidney cancer is unknown. However, diet has been estimated to be a causal factor in about 35% of all cancers. Some people think a high protein diet might be a risk factor. Obesity also may play a role in kidney cancer, as it does in other cancers. There is little hard research providing evidence that changes in diet will prevent a recurrence of cancer or cure cancer.

A healthy, well-balanced diet helps the patient maintain strength, prevents body tissues from breaking down, prevents infection, and promotes the regeneration of normal tissues. Eating right is especially important if one is undergoing cancer therapy. Many foods can be beneficial; for example, nutritionists recommend eating foods rich in vitamins C and A as well as fibre and including plenty of fruits, vegetables, and whole grains in one's diet. Take the time to learn about good nutrition, and if helpful, consult with a registered dietitian.

Some patients become vegetarians or adopt a macrobiotic diet. Such a diet may be beneficial as long as it is properly balanced and meets one's nutritional needs. Adhering to a specific diet regimen may make one feel like one has more 'control' over one's disease.

There is little evidence that change in diet will affect cancer growth and some diets can be harmful or distracting at a time when one needs every bit of energy to fight the cancer. Maintaining kilojoules is one of the most important things one can do during times of intense treatments such as surgery, radiation therapy, and systemic therapies. It is important to discuss any modifications in one's diet with the healthcare team, especially that of a registered dietitian.

If one is overweight, be sure to discuss it with the oncologist before starting a weight-loss plan - the doctor may feel that it would be detrimental to the treatment plan to pursue losing weight at specific times during one's illness and treatment.

Patients often wonder if they can drink alcoholic beverages after having a kidney removed for kidney cancer. Some sources may say "yes", however, alcohol is classified as a Group 1 carcinogen (cancer causing agent) by the International Agency for Research on Cancer (IARC) and is best avoided.
(Kidney Cancer Association; NutritionFacts.org; American Cancer Society).

Nutrition and Diet Guidelines for Individuals Diagnosed with Kidney Cancer

When one discovers that one has any form of kidney damage, it is time to make some lifestyle changes, particularly dietary ones. One's kidneys may still work well in early kidney disease. The focus of the following guidelines is to provide information on nutrition and diet that will be of benefit in preserving remaining kidney function.

This information aims to help kidney cancer survivors understand more about the foods one needs to eat and avoid as a kidney patient. Healthy eating should be important in everyone's life, but sadly not everyone thinks this is so.

It is never too late for anyone to make positive changes that benefit health and wellbeing. The sooner this happens, the stronger the long term benefits will be.

Where one carries one's fat is also important as those individuals with a waist measuring more than 102cm in men and 88cm in women are at greater risk of becoming ill and having a shorter life. It is better to be a 'pear', having a narrower waist and larger hips than be an 'apple' where the waist is large and the hips narrower. This is certainly true for those with renal disease. Changes to diet in response to advice from medical professionals can make a difference to the progression of disease as well as helping to prevent complications.

Huang, J., Leung, D.K., Chan, E.O., Lok, V., Leung, S., Wong, I., Lao, X.Q., Zheng, Z.J., Chiu, P.K., Ng, C.F., Wong, J.H., Volpe, A., Merseburger, A.S., Powles, T., Teoh, J.Y. & Wong, M.C.S. 2021.
Background: Kidney cancer is a major urological disease globally, with more than 400 000 new cases diagnosed every year.
Objective: To investigate incidence and mortality trends for kidney cancer and their associations with modifiable risk factors for kidney cancer.
Design, setting, and participants: The most up-to-date figures on kidney cancer incidence and mortality were collected from the GLOBOCAN database and the Cancer Incidence in Five Continents (CI5). Data on total alcohol consumption and the prevalence of smoking, overweight, diabetes, and hypertension were extracted from the World Health Organization Global Health Observatory data repository.
Outcome measurements and statistical analysis: Age-standardized rates (ASRs) for incidence and mortality and their correlations with potential risk factors for kidney cancer were investigated. Multivariable linear regression analysis was also conducted. The 10-yr temporal patterns for incidence are presented as the average annual percent change with 95% confidence interval using joinpoint regression analysis.
Results and limitations: Globally, there is wide variation in kidney cancer incidence and mortality. There were positive correlations between rates of smoking, alcohol consumption, and overweight and ASRs of kidney cancer incidence and mortality. Multivariable regression analysis revealed that alcohol consumption and overweight were significant risk factors for kidney cancer incidence, while smoking and alcohol consumption were significant risk factors for kidney cancer mortality. There was an increasing trend for the incidence of kidney cancer globally, with a particularly prominent trend for European countries. Of note, increasing incidence of kidney cancer is evident even for younger individuals aged <50 yr. However, cancer registries vary by country and period and there is a lack of data regarding the severity of risk factors and disease characteristics such as the distribution of histological groups, tumor grading, and staging.
Conclusions: There is an increasing trend for kidney cancer incidence globally, particularly in European countries and the younger population. Modifiable risk factors for kidney cancer incidence and mortality have been identified. The increasing incidence of kidney cancer among younger individuals is worrying and warrants early action on possible preventive measures.
Patient summary: The incidence of kidney cancer has been increasing globally, particularly in European countries and the younger population. Risk factors include smoking, alcohol consumption, overweight, and hypertension, and these factors are all modifiable.

- Avoid alcohol consumption – alcohol has been classed as a Group1 carcinogen (cancer causing agent) by the International Agency for Research on Cancer (IARC) and is best avoided.

- Stop smoking - smoking is unhealthy for everyone, but for people trying to preserve residual renal function, quitting is crucial to slowing the progression of kidney damage and maintaining a healthy blood pressure.

- Control blood pressure - if diet and exercise are not sufficient to keep one from developing hypertension, one's doctor may prescribe medications.
    - The most effective drugs are Angiotensin-converting enzyme inhibitors (ACEIs) or angiotensin receptor blockers (ARBs). Aside from reducing blood pressure, ACEIs and ARBs prevent protein loss in urine and consequently swelling of the body.

- Keep a close look on sodium intake - too much sodium can elevate one's blood pressure, causing hypertension, and one needs a healthy blood pressure to preserve one's kidney function. Bypass the salt shaker whenever possible, and, in addition:
    - Choose fresh or frozen vegetables rather than canned foods. Canned foods are high in sodium. If using canned vegetables, rinse them under running water to remove as much of the salt as possible.
    - Avoid salty snacks, frozen meals, and processed meats – they not only contain a lot of sodium but is preserved with chemicals like nitrates and nitrites that are cancer causing chemicals.
    - Replace salt with a salt substitute and/or lemon or other seasonings, but check with a registered dietitian first: some salt substitutes are very high in potassium and there should be a balance between sodium and potassium intake.

    - Ask a registered dietitian or doctor about calcium and Vitamin D supplements – patients with kidney disease often experience calcium loss and low Vitamin D production. Calcium and Vitamin D are crucial to bone formation, so as a registered dietitian or doctor whether to take them in supplement form.

        - Calcium supplementation can be especially critical, since one needs calcium but, at the same time, need to avoid consuming too much of some of the best calcium sources – milk and cheese – because they are also high in phosphorus. Consult a registered dietitian.

- Reduce fat intake - keeping fat consumption in check will improve cholesterol blood levels, helping one's arteries stay clear so that more blood can reach the kidneys. Choose lean meats, trim off excess fat, and remove any skin; bake, roast, stew, grill or broil these meats rather than frying them.

    Additionally:

- Use egg whites rather than using whole eggs.
- Choose low-fat or fat-free dairy products whenever possible.
- Buy low-fat or fat-free mayonnaise and salad dressings.
- Replace fats like butter and vegetable oil with healthier fats like olive oil and canola oil, or use non-stick cooking spray instead. Discuss the use of cooking spray with a registered dietitian.

- Minimise consumption of potassium-rich foods - some patients need to avoid foods high in potassium: talk to the treating physician or registered dietitian to see if this is applicable. If so, avoid bananas, apricots, white beans, spinach, yogurt, salmon, mushrooms, and other potassium-rich foods.

  Even though potassium is an essential nutrient used to maintain fluid and electrolyte balance in the body. Check food labels.

  Potassium-rich foods include:

Avocado	Dried apricots, prunes, Zante currents and raisins	White beans
Apricots	Most nuts	Spinach
Paprika	Seeds (pumpkin, squash, sunflower and flax)	Yogurt
Bananas	Fish	Salmon
Cocoa		Mushrooms
Chocolates		Dates

- Watch phosphorus intake - excess phosphorus in the body can cause calcium reabsorption from bone, leading to fractures. In patients with kidney dysfunction, phosphorus levels are already elevated, so avoid eating too many phosphorus-rich foods, like milk, cheese, nuts, and sodas.

  Foods rich in phosphorus include:

Liver	Chocolates	Milk
Beans	Yoghurt	Cheese

- Eat as healthy as possible as allowed by the digestive system - Fruits, vegetables, lean protein, and whole grains are all nutrient dense foods. Nutrient dense foods are foods that contain protein, complex carbohydrates, healthy fat, vitamins, and minerals all needed by the body to function optimally. Consult a registered dietitian for specific recommendations based on one's level of food tolerance.

  No single food will supply all the nutrients a body needs, so good nutrition means eating a variety of foods. It is important to eat foods from each group at each meal every day.

  Foods are divided into five main groups:

  - Fruits and vegetables (oranges, apples, bananas, carrots, and spinach)
  - Whole grains, cereals, and bread (wheat, rice, oats, bran and barley)
  - Dairy products (milk, cheese, and yogurt)
  - Meats and meat substitutes (fish, poultry, eggs, dried beans, and nuts)
  - Fats and oils (oil, butter, and margarine)

It is important to eat foods from each food group at each meal every day. Meals and snacks should include starch/grains, protein, dairy, fruits, vegetables and fats. By eating foods from each food group at each meal, an individual ensures that the body has a proper balance of all nutrients it needs to function. Eating meals and snacks at regular times is also necessary for controlling blood sugar levels.

- Eat whole grain foods when possible - Cereals, breads, brown rice, whole wheat pasta, and crackers are good whole grain choices. Whole grain foods will have "whole grain flour", "whole wheat flour" or "oats" as one of the first 3 ingredients. If diarrhoea is an issue, one may need to avoid whole grains due to their higher fibre content. A registered dietitian can provide guidelines for following a low residue diet for diarrhoea.

- Consume moderate amounts of good quality protein - excess protein can strain one's kidneys unnecessarily, but one do need some protein – ideally about 1 gram of protein per kilogram of body weight. In general, aim for moderate portions of protein rich foods like fish and meat. Talk to a registered dietitian in connection with consuming adequate amounts of good quality protein.

- Try to eat with others when possible - Typically this makes meal times more enjoyable and may encourage one to eat more than eating alone.

- Eat slowly and chew food really well - Digestion begins in the mouth. Smaller food particles are much easier to digest and are less likely to cause discomfort during the digestion process.

- Sit up after eating - Wait at least 1 hour before lying down. Lying down after eating encourages acid to from the stomach to flow back into the oesophagus leading to symptoms of heartburn. Stay in an upright position while food digests. This will keep the acid from the stomach in the stomach. It is not uncommon for pancreatic cancer patients to have heartburn, gas, bloating, and belching. Ask a registered dietitian for guidance on which foods to avoid when experiencing heartburn, gas, bloating, and belching.

- Drink sufficient fluids to avoid dehydration - Choose beverages that contain nutrients and kilojoules. A good starting point is to strive for several glasses of nutritious beverages per day. Only take small sips with meals to avoid excessive bloating, gas or feeling too full to eat. The best time to drink fluids is an hour before or after a meal. Choose beverages that contain kilojoules and nutrients such as juices, smoothies, and liquid nutrition supplements.

    - A registered dietitian can provide recommendations for which liquid nutrition supplement and how much is best.

- Lower overall kilojoule intake - even when eating healthy foods, patients with kidney disease need to practice portion control and limit their daily kilojoule consumption. Read nutrition labels carefully, and stick to the suggested serving size. And do not eat mindlessly: eat slowly, pay attention to how much one is consuming, and stop as soon as one does not feel hungry any longer.

    - Keep in mind that it can take 20 minutes or more for one's brain to register that one actually feels full. Eating slowly and listening to one's body can prevent one from consuming excess food.

- Exercise - staying active will help one control one's blood pressure and one's body weight. One does not need to join a gym or do anything fancy: even just walking can be excellent, low-impact exercise. Talk to a doctor about the right exercise plan, and consider asking for a referral to a physical therapist, especially if participation in exercise programmes is new: this person can help create an exercise program with one's particular health needs in mind.

    - Start slowly. To begin, try exercising for 15-20 minutes three days a week; once one can do that, work up to 30 minutes five days a week.
    - Stretch before and after exercise. Careful stretching warms muscles, increases blood flow, and minimises cramping.

- Maintain a healthy weight - being overweight or obese places increased strain on one's kidneys. Work with the treating doctor or health professional to determine an ideal weight, and strive to stay at or near it. The diet and exercise suggestions offered here will help in doing that.

- Avoid nephrotoxicity - nephrotoxicity happens when ibe's kidneys are exposed to a medication that may be toxic to the kidney cells, resulting in serious health consequences. Talk to the treating doctor or oncologist about all medications that you may be taking, and discuss alternatives. Some drugs known to be nephrotoxic include:
    - Cyclosporines (immunosuppressant drugs used to prevent organ rejection and treat severe rheumatoid arthritis and severe psoriasis).
    - Aminoglycosides (antibiotics used to treat bacterial infections).
    - Chemotherapy medications (drugs used to treat cancerous tumours). Brand names include Cisplatin and Ifosfamide.
    - NSAIDs (drugs, including over-the-counter drugs, used to treat inflammation, pain, and fever).
    - Some herbal preparations, including Chinese herbal preparations with wild ginger and aristolochic acids.
    - Contrast dyes (dyes containing iodine, which are used in diagnostic procedures like CT scans).

- Prevent kidney stone formation - to prevent kidney stone formation, avoid the intake of oxalates. Oxalates are di-anions with a formula C_2O_{42-}. Many metal ions form insoluble precipitates with oxalates, a good example being calcium oxalate, the primary constituent of the

most common kind of kidney stone. The following are oxalate-rich plants and food that should be avoided:

- Sorrel and related plants
- Rhubarb
- Buckwheat - a cereal grain that is related to rhubarb and sorrel
- Black pepper
- Parsley
- Poppy seed

[Picture Credit: Amaranth].

- Amaranth - a moderately tall, broad-leafed, bushy type of plant that grows about two metres in height and produces a brightly coloured flowery head containing a very large number of seeds. (Amaranth plants can produce as many as 60 000 seeds.) These seeds are the amaranth grains found in amaranth cereal and flour. Amaranth is a member of the Chenopodiaceae family of plants and therefore is a relative of beets, Swiss chard, spinach, and quinoa.
- Spinach

- <u>Take medication as prescribed</u> – All medicines must be taken as prescribed. In the instance of diabetes as a comorbidity, it is essential to maintain a balanced glycaemic state.

Consultation with a Registered Dietitian

Patients on any type of cancer treatment (oncology surgery, radiation therapy and/or chemotherapy) should, if at all possible, consult a Registered Dietitian (RD) whenever they experience any issues with nutrition or diet. The same applies to cancer survivors between cancer treatments and upon completion of their cancer treatment.

[Picture Credit: Ask the Dietitian]

For individualised nutritional advice, consult a Registered Dietitian (RD) in your area by visiting: http://www.adsa.org.za/Public/FindARegisteredDietitian.aspx

Medical Disclaimer

These Nutritional Guidelines are intended to provide general information only and, as such, should not be considered as a substitute for advice, medically or otherwise, covering any specific situation.

Users should seek appropriate advice before taking or refraining from taking any action in reliance on any information contained in these Guidelines. So far as permissible by law, the Cancer Association of South Africa (CANSA) does not accept any liability to any person (or his/her dependants/estate/heirs) relating to the use of any information contained in these Guidelines.

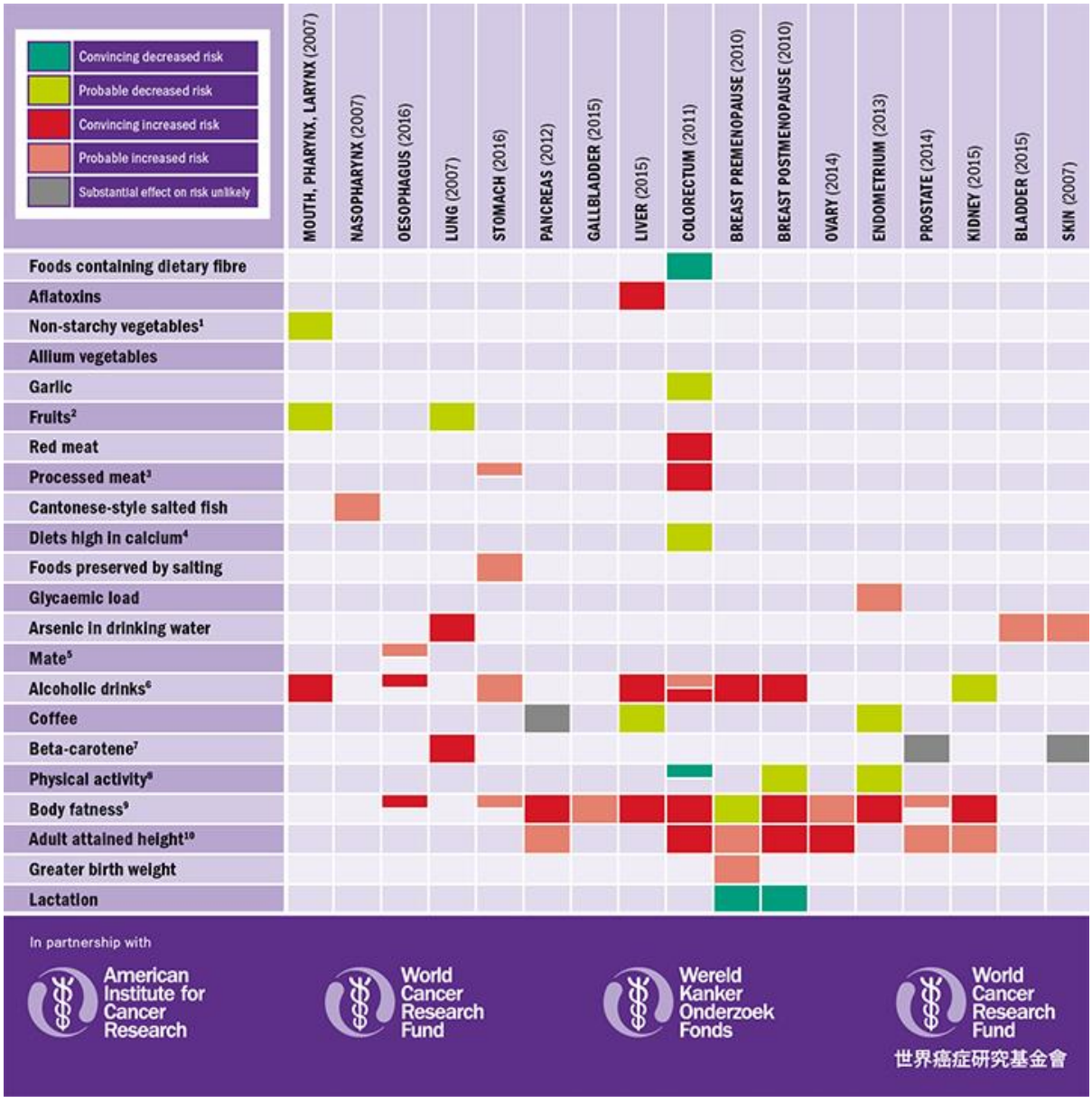
Whilst CANSA has taken every precaution in compiling these Guidelines, neither it, nor any contributor(s) to these Guidelines can be held responsible for any action (or the lack thereof) taken by any person or organisation wherever they shall be based, as a result, direct or otherwise, of information contained in, or accessed through, these Guidelines.

ADDITIONAL SUPPORT

For individualised nutritional advice, consult a registered dietitian in your area by visiting:
http://www.adsa.org.za/Public/FindARegisteredDietitian.aspx

1 Includes evidence on foods containing carotenoids for mouth, pharynx, larynx. 2 Includes evidence on foods containing carotenoids for mouth, pharynx, larynx and lung.
3 For stomach, probable increased risk of non-cardia cancer only. 4 For colorectum, evidence is from milk and studies using supplements.
5 Probable increased risk for oesophageal squamous cell carcinoma only.
6 For oesophagus, convincing increased risk for oesophageal squamous cell carcinoma only. For liver and stomach, based on evidence for alcohol intakes above around 45 grams per day (about 3 drinks a day). For colorectum, convincing increased risk for men and probable increased risk for women. For kidney, based on evidence for alcohol intakes up to 30 grams per day (about 2 drinks a day).
7 For lung, evidence is from studies using high-dose supplements in smokers. 8 Convincing decreased risk for colon not rectum.
9 For oesophagus, convincing increased risk for adenocarcinoma only. For stomach, probable increased risk of cardia cancer only. For prostate, probable increased risk for advanced prostate cancer only.
10 Adult attained height is unlikely to directly influence the risk of cancer. It is a marker for genetic, environmental, hormonal and nutritional factors affecting growth during the period from preconception to completion of linear growth.

(World Cancer Research Fund International).



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