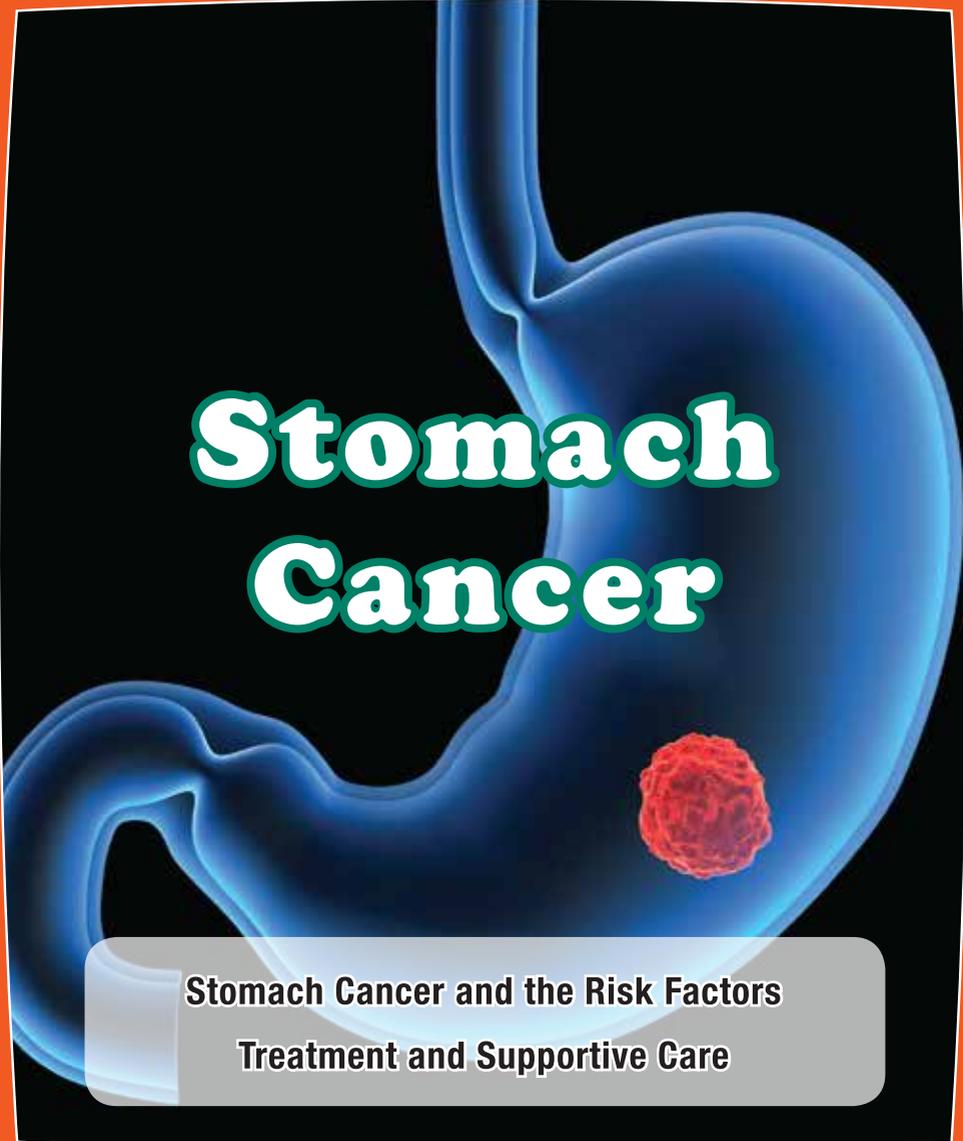


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A 3D anatomical illustration of a human stomach in a translucent blue color. A red, irregular, textured mass representing a stomach tumor is shown on the lower right side of the stomach. The background is black.

# Stomach Cancer

**Stomach Cancer and the Risk Factors  
Treatment and Supportive Care**

An Educational Initiative by National Cancer Centre Singapore

# Stomach Cancer

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# Introduction

Stomach cancer is one of the top 10 cancers affecting men and women in Singapore. It ranks 7th and 9th among males and females respectively as reported in '50 Years of Cancer Registration / Trends in Cancer Incidence 1968 - 2017', by the Singapore Cancer Registry. About 509 Singaporeans are diagnosed with stomach cancer every year and 317 people die yearly from it. It occurs most frequently in men above 40 years old and is more common among the Chinese than Malays and Indians. 1 in 50 is diagnosed with stomach cancer in Asia.

This booklet has been developed to help you learn more about stomach cancer. It discusses risk factors, signs and symptoms, how a diagnosis is made, treatment options, managing treatment side effects and supportive care. We hope this booklet will provide you with relevant information and answer some of the questions you may have.

This booklet serves only as a guide and its contents are not to be taken as medical advice. You will still need to discuss with your doctor the best treatment option for you. If you have any questions about the issues raised in this booklet, or if there is any information that you are seeking which is not addressed here, please do not hesitate to contact us.

If you have found this booklet useful, you may wish to share it with someone who you think will benefit from it.

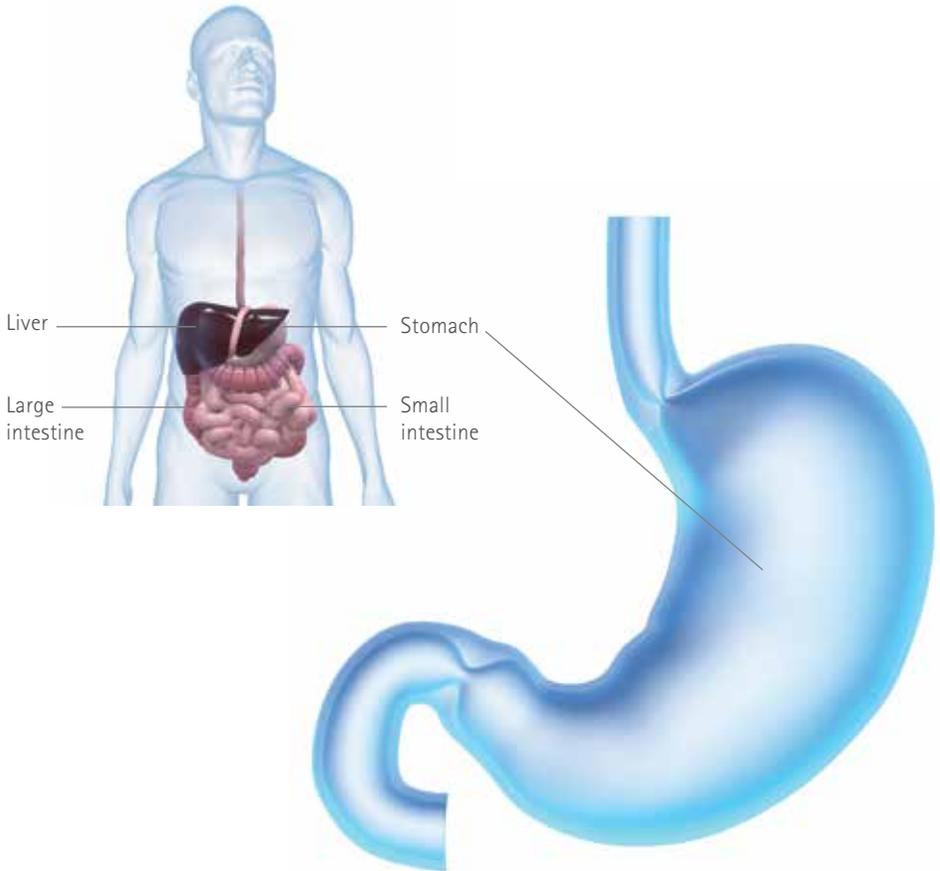
For more information about stomach cancer or other cancer information booklets, please call the Cancer Helpline on telephone: 6225 5655 to speak with a nurse counsellor or email [cancerhelpline@nccs.com.sg](mailto:cancerhelpline@nccs.com.sg).

For electronic version of this booklet, please visit National Cancer Centre Singapore's website: [www.nccs.com.sg](http://www.nccs.com.sg).

# THE STOMACH

The stomach is part of the digestive system. It is a hollow, muscular organ shaped like a large pouch and it is located in the upper abdomen, under the ribs. The upper part of the stomach connects to the esophagus and the lower part leads into the small intestine.

The role of the stomach is to break down the food we eat. When food comes into the stomach from the esophagus, the muscles in the stomach mix and mash the food. Gastric juices are released from the glands in the lining of the stomach to help digest the food. After 3 hours the food becomes liquid and moves into the small intestine where digestion continues.



# WHAT IS STOMACH CANCER?

Stomach cancer is also known as gastric cancer. It occurs when cells in the lining of the stomach grow out of control, forming tumors that can spread throughout the stomach and to nearby lymph nodes and other neighboring organs such as the liver, pancreas or colon.

Stomach cancer can also spread to distant organs, such as the lungs, lymph nodes above the collarbone, bones, brain and the ovaries. The cancer can also grow along the stomach wall into the oesophagus or small intestine.

Stomach cancer develops slowly. It may develop for many years before any symptoms appear.

# WHAT CAUSES STOMACH CANCER?

The exact cause of stomach cancer is unknown, but some of the following factors increase a person's risk of developing stomach cancer.

## Smoking and Alcohol

Smokers have 2.5 times more risk of developing stomach cancer.

## Diet

Some dietary factors are believed to play a role in the development of stomach cancer especially diets containing large amounts of smoked, salted and pickled foods. On the other hand, high intake in fruits and vegetable, Vitamin A and C appear to lower the risk of stomach cancer.

## Infection

A chronic infection by a bacteria called *Helicobacter pylori*, is the single most important risk factor causing a person to get a higher chance of developing stomach cancer.

## Diseases and Disorders

Medical conditions that may contribute to stomach cancer include:

- Anaemia (megaloblastic anaemia and pernicious anaemia).
- Previous stomach operation with partial removal of the stomach (gastrectomy).
- A stomach disorder called Atrophic Gastritis which results in lower than normal production of digestive juices.

## Family History

People who have a hereditary condition of stomach polyps are more at risk of stomach cancer. A family history of stomach cancer also increases a person's risk.

Having one or more of these risk factors does not mean that you will develop stomach cancer. However, these factors are more commonly seen in people who have stomach cancer. Stomach Cancer may develop in patients with none of the above risk factors.

# SIGNS AND SYMPTOMS

The signs and symptoms of stomach cancer are often non-specific. They include:

- Persistent indigestion and a burning sensation after meals (heartburn)
- A bloated feeling after meals
- Upper abdominal discomfort or pain, post meal
- Early feeling of fullness despite a small meal
- Loss of appetite
- Loss of weight
- Nausea and vomiting
- Bleeding (blood in the stools or black tarry stools)



Stomach cancer is very difficult to diagnose because in its early stages, the symptoms can be absent or very mild. These symptoms are also similar to those of peptic ulcer disease or gastritis. Therefore, patients can be treated for benign diseases, without the diagnosis of gastric cancers being made. This is appropriate management, as gastritis and peptic ulcer disease are much more common than gastric cancer. However, if the symptoms still persist, it is important to have them checked by a specialist so that further investigations can be done.

## HOW IS STOMACH CANCER DIAGNOSED?

The doctor will take a full medical history and perform a physical examination. Blood tests and x-rays may also be taken. The doctor may order one or all of the following examination:

### Faecal Occult Blood Test

This test is to determine the presence or absence of hidden (occult) blood in the stool. It is done because stomach cancer sometime causes bleeding that cannot be seen. The presence of blood in the stool does not necessarily mean that a person has cancer. This test also does not always have to be performed.

### Gastroscopy

This examination of the inside of the stomach uses a fiber-optic scope and with a light source attached to the end. It is called a gastroscope. The scope is passed through the mouth, the esophagus and into the stomach for direct visual examination. Samples of tissue can be removed from suspicious areas and be sent for further examination. The procedure takes about 10 to 15 minutes and can be done in an outpatient setting.

### Barium Swallow

During this examination, the patient has to swallow a thick, chalky liquid called barium. The barium will outline the stomach wall, helping the doctor or radiologist to locate any tumors or abnormal areas. X-rays of the esophagus and stomach will then be taken.

## Further Tests

When stomach cancer is diagnosed, further tests may be required to find out if the cancer has spread (metastasized). These tests will help the doctor to prescribe the best treatment for you. Below are some of the tests that may be done.

- **Computerised Tomography (CT) Scan**

A CT scan is a type of scan where x-ray beams are rotated around the body to produce a series of x-ray images photographed from different angles. A CT scan is more likely to show the stomach clearly to confirm the location of the cancer.

Before the scan, you may be prescribed with a special dye called a contrast, to be swallowed or injected first to enable the body structures to show clearly under x-ray. The x-ray information is then fed directly into the computer and this information is used to build a detailed cross-section of the stomach. This test can also be used to look for cancer that has spread into the lymph nodes, liver or abdomen.

- **Positron Emission Tomography (PET) Scan**

Positron Emission Tomography (PET) scan, also known as PET scan, uses radiation to produce 3-D images of the body. This procedure requires a small amount of radioactive glucose (sugar) to be injected into a vein, and a scanner is used to make detailed, computerized pictures of areas inside the body where the glucose is used. Because cancer cells often use more glucose than normal cells, the pictures can be used to find cancer cells in the body. Due to the unique characteristics of stomach cancer, PET scan may sometimes not be very useful in detecting certain types of stomach cancer.



# TREATMENT

It is advisable to have someone close to accompany you when visiting the doctor to discuss the result of your tests and treatment options.

Before starting any treatment, you have to discuss the treatment plan with your doctor so that you know what to expect. You may also find it helpful to prepare a list of questions before your visit to the doctor.

There are few effective treatment options for stomach cancer. In general, treatment depends on:

- the size, location, and extent of the tumor.
- the stage of the disease when the cancer is found and
- the patient's general state of health.

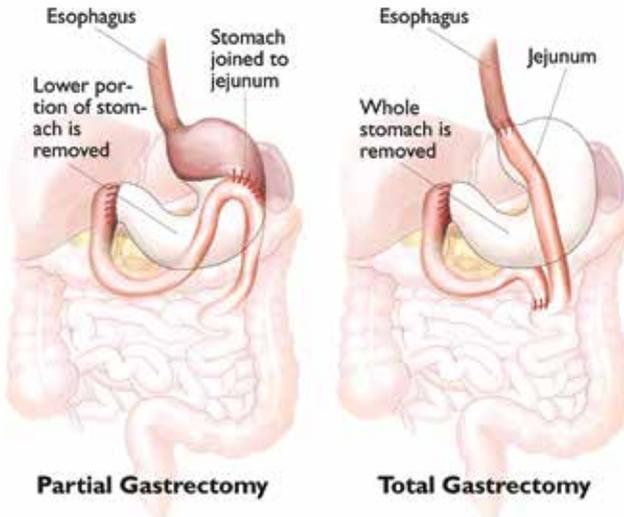
The main treatment for early stage stomach cancer is surgery, however chemotherapy and radiotherapy may also be required. The patient may have just one of these treatments, or a combination. In advanced stage disease, chemotherapy is generally used. Radiotherapy may also be employed. New treatment approaches such as biological therapy (immunotherapy) have also been shown in clinical trials to be effective in certain types of gastric cancer.

## Surgery

Surgery for stomach cancer is known as gastrectomy. There are two types of gastrectomy:

**Partial or Subtotal Gastrectomy** is the removal of a part of the stomach. After a partial gastrectomy, the surgeon will connect the remaining portion of the stomach to the esophagus or the small intestine, depending on which part of the stomach was removed.

**Total Gastrectomy** is the removal of the entire stomach, the suspicious lymph nodes near the stomach and other surrounding tissue. After a total gastrectomy, the surgeon will connect the esophagus directly to the small intestine.



## After surgery

After a major surgery, you will experience some pain for a few days. Your doctor will prescribe painkillers to help relieve the discomfort.

For the first few days after surgery, you will not be allowed to eat or drink. Activity is limited to allow time for healing. You will be put on an intravenous infusion (drip through a vein) to replace your body's fluids until you are ready for fluids, followed by soft, then solid foods.

After gastrectomy, patients may experience rumbling noises, nausea, cramps, diarrhea, or even dizziness 10 to 30 minutes after eating because food and/or fluids enters the small intestine too quickly. This is known as "dumping syndrome". These symptoms usually disappear in 3 to 12 months, but sometimes they can be permanent.

The following are ways that can help to reduce or prevent dumping syndrome:

- Have small frequent meals or snacks throughout the day
- Eating slowly and chew food well before swallowing
- Reduce sugar and other sweet snacks e.g. cakes, pastries, desserts and sweet drinks
- Avoid drinking fluids at meal time. Drink after meal (about 30 minutes later)
- Choose complex carbohydrate, such as whole-grains, oats, vegetables
- Consume foods high in protein, such as meat, fish and eggs
- Ensure adequate hydration
- Avoid overeating, stop eating when you start to feel full

## Chemotherapy

This treatment method uses anti-cancer drugs to kill cancer cells. They stop cancer cells from growing and reproducing themselves. These drugs can be given orally (by mouth) or by injection into the vein, where it enters the blood stream and travels throughout the body. It may be used alone, before or after surgery, on its own or together with radiation therapy to increase the effectiveness of treatment, depending on the stage of cancer.

Chemotherapy is given in cycles. Each cycle consists of a treatment period followed by a resting (recovery) period. As cancer drugs also affect normal cells, the resting period is to allow the body to recover before the next treatment cycle starts. You will probably have a combination of drugs over a few days, followed by a rest period of two to three weeks. Or, you may have continuous treatment where the chemotherapy is given via an infusion pump.

Patients with intermediate stage stomach cancer who have undergone surgery, receiving chemotherapy (either on its own or combined with radiotherapy) was shown to significantly reduce the chance of the recurring and therefore increase the chance of cure and increase survival rates. This is called adjuvant chemotherapy.

### Side Effects of Chemotherapy

There are side effects associated with chemotherapy. However, these are temporary and steps can be taken to prevent or reduce them. The possible side effects also depend on which drugs are used. They vary widely from one person to another. Side effects may include:

- nausea and vomiting
- temporary hair loss
- risk of infection due to lowering of white blood cells
- risk of bruising or bleeding due to lowering of platelets
- lethargy and weakness
- loss of appetite
- mouth ulcers

These side effects usually decrease gradually after treatment is completed. Medication may be prescribed to help relieve some of the discomfort.



## Radiation Therapy

Radiation therapy uses high energy x-rays to kill cancer cells or stop them from growing further. Although radiation therapy can affect both cancer cells as well as normal cells, the aim of radiation is to destroy more cancer cells and spare as many normal cells as possible. These rays are targeted onto cancer sites in your body. You will not experience any pain or discomfort during the treatment.

### Side effects of Radiation Therapy

The side effects of radiation therapy vary from one patient to another. The most common side effect is "sunburn" on the skin. The skin on the treated area may become dry, red, tender and itchy.

It is important for patients to take care of their skin during treatment. Wear loose-fitting cotton clothes to prevent friction to the skin. Inform the doctor if skin irritation occurs, so that medication can be prescribed to soothe and heal the skin.

Do not self-medicate.

Patients who receive radiation to the abdomen may experience diarrhea, nausea, and/or vomiting. The doctor may suggest dietary changes or prescribe medicine to counteract these symptoms. Depending on the specific site to which radiation is administered, there may be other side effects which your radiation oncologist will explain to you.

Rest is important, as patients are likely to become more tired and exhausted during the latter part of the treatment. If you feel excessively tired, inform your treating doctor. Resume activity at your own comfort level without over exertion.





# SEXUALITY AND CANCER

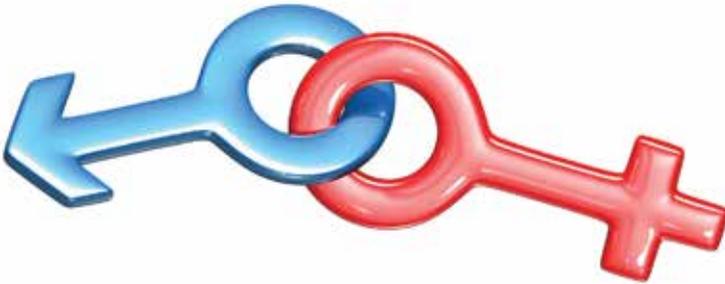
Feelings or the emotional effects of cancer may affect patients and their partner in different ways. Many will notice that their interest in sex decrease as a result of cancer or its treatment. They may feel sexually unattractive. These are all very natural feelings. But if you have trouble coping, you may find it helpful to discuss your feelings with a trained counsellor.

Some patients may withdraw due to feelings of being unable to cope with the effects of treatment on themselves or their partner. Others may feel an increased need for sexual and intimate contact for reassurance. Communication is essential in addressing any concerns or problems that may arise. It helps to talk through your feelings with your partner.

In both men and women, chemotherapy drugs can affect fertility. Discuss with your doctor, if this is an issue in your relationship.

In women: chemotherapy can alter hormone production because some of these drugs harm the ovaries. Talk to your doctor about contraception as menstrual cycles may be disrupted but may not fail altogether and you might get pregnant.

In men: chemotherapy is less disruptive. Some find that their sex drive falls, due to tiredness and nausea. But sex drive usually returns after the end of the treatment.



# QUESTIONS YOU CAN ASK YOUR DOCTOR

You and your family may find the following list helpful when thinking about questions you may want to ask your doctor.

## About your illness

- Is stomach cancer contagious?
- How extensive is my cancer?
- Which treatment is best for my cancer and why?
- Are there other treatment choices for me?
- How much will the treatment cost?
- How long will the treatment take?
- How much will it affect what I can do?
- Do I need further treatment? If so, what other treatment?
- When will you be able to tell if I need further treatment? If so, what treatment?
- I'd like to have a second opinion. Can you refer me to someone else?

It is useful to write down any other questions you may want to discuss with your doctor.



# SUPPORTIVE CARE

## Medical Social Services

The Medical Social Service Department at the hospital provides quality patient care which would enhance emotional support, financial aid, home care, transportation or rehabilitation. You will need a doctor's referral to the medical social worker.

## Patient Support Programmes

NCCS Patient Support Programmes strive to provide a holistic approach to support you and your loved ones in cancer management. The Patient Support Programmes are designed to help you and your loved ones in:

- Discussing issues, concerns, and difficult decisions in a safe and supportive environment
- Making informed and effective decisions on concerns pertaining to, and coping with your illness
- Building resilience and resources to maintain a meaningful lifestyle
- Promoting communication and bonding

Patient Support Programmes include:

- Psycho-educational Talks & Trainings
- Therapeutic Groupwork & Group Therapies
- Interest Groups
- Enrichment Programmes
- Social & Recreational Gatherings

NCCS Patient Support Programmes are open to all cancer patients, survivors and caregivers in Singapore. For more information & registration, please contact Patient Support Programmes at:

 65) 6588 0520 or Cancer Helpline at (65) 6225 5655

 [patientsupport@nccs.com.sg](mailto:patientsupport@nccs.com.sg)

 <https://www.nccs.com.sg/patient-care/specialties-services/pages/patient-support-programmes.aspx>

## Oncology Support Group

This support group is suitable to both cancer patients and their family. This is a self-help group for patients undergoing chemotherapy, radiotherapy or surgery for cancer. It is conducted primarily by cancer patients themselves. Doctors, cancer-trained nurses and cancer survivors facilitate the support group. These interactive sessions offer opportunity for new patients to interact with cancer survivors and share their experiences, voice their thoughts and fears and share coping strategies. The Oncology Support Group meets at the Singapore Cancer Society. Admission to meetings is free-of-charge and patients are encouraged to bring along one or more family members. For more information, you can call the Nurse Coordinator on telephone: 6449 9132.

## Cancer Helpline

Everyone has different needs when it comes to cancer. You may want to talk to someone about what you are going through. The Cancer Helpline at the National Cancer Centre Singapore provides a listening ear. Our aim is to help you through your cancer experience. Trained nurse counsellors operate this service. They provide cancer information, emotional and psychological support, counselling and linkage to health, welfare and cancer support services for people affected by cancer.

Each contact with a nurse counsellor is private, confidential and anonymous. They do not give medical advice and treatment recommendations but can assist in clarifying your doubts and putting into perspective the information you may have received from your treating doctor. To speak to the nurse counsellors, please call: 6225 5655.

## LOOK GOOD FEEL BETTER (LGFB)

This free program is specially developed to teach women how to restore their appearance and self-image when they experience the side effects of cancer treatment. The participants learn beauty techniques in skin care, make-up and hair care in a 3 hours hands-on class using actual products. Demonstrations on the use of wigs, hats, turbans and scarf tying techniques are also included. Participants will take home a complimentary kit of cosmetics. LGFB is supported by a reputable cosmetic company and is coordinated by Singapore Cancer Society. Sessions are held on a regular basis. However, enrollment for each session is limited and reservations must be made. Patients who are interested may call 6588 0520 / 6225 5655 to enquire about the programme.

## FOLLOW-UP CARE

Follow-up checks may cause anxiety to some. This can make it difficult to put the experience of cancer behind you. But regular follow-up with your doctor is necessary and very important in monitoring your recovery. These check-ups may include x-rays, blood tests and other physical examinations. If you have any concerns or suspicions about your health in between check-ups, make an earlier appointment to see your doctor.

### When should you call the doctor?

After treatment, you are likely to be more aware of your body and the slight changes in how you feel from day to day. If you have any of the problems listed below, tell your doctor at once.

1. Pain that does not go away, especially if it is always in the same place
2. Lumps, bumps or swelling
3. Nausea, vomiting, diarrhoea, loss of appetite, or difficulty in swallowing
4. Unexplained weight loss
5. Fever or cough that does not go away
6. Rashes, bruises, or bleeding
7. Any other signs mentioned by your doctor or nurse

## WHAT THE FUTURE HOLDS

Treatment side effects last for a few months even after you have completed the treatment. When the body cells have recovered, the discomfort will disappear. Eating a well balanced diet and keeping a healthy lifestyle will enable you to keep in good general health. Perform activities and exercises within your own limits and do not over exert yourself. You can also return to work if you and your doctor feel that you are well enough to do so. Some people prefer to return to work between treatments while some defer returning to work until after they have completed all treatments. Treatment times can be arranged to suit your needs.

## TREATMENT AND SUPPORT UNITS AT NCCS

### Department of Radiation Oncology

National Cancer Centre Singapore  
Basement 3 & 4  
Enquiry line : 6436 8600  
Registration counter : 6436 8181

Singapore General Hospital  
Blk 2 basement 1  
Enquiry line : 6436 8600  
Registration counter : 6321 4211

### Department of Upper GI and Bariatric Surgery (Blk 3, B1, CDLD Clinic, SGH)

#### Useful Contact Details

- Appointment Scheduling Unit : 6436 8088
- General Enquiries : 6436 8000
- Dept of Psychosocial Oncology : 6436 8126
- Patient Support Programmes : 6588 0520
- Outpatient Pharmacy Helpdesk : 6436 8091
- Cancer Helpline : 6225 5655

# CANCER RESOURCES ON THE INTERNET

**American Cancer Society**  
[www.cancer.org](http://www.cancer.org)

**Macmillan Cancer Support**  
[www.macmillan.org.uk](http://www.macmillan.org.uk)

**Cancer Council Victoria**  
[www.cancervic.org.au](http://www.cancervic.org.au)

**National Cancer Institute**  
[www.cancer.gov](http://www.cancer.gov)

**National Cancer Centre Singapore**  
[www.nccs.com.sg](http://www.nccs.com.sg)

**Cancer Research UK**  
[www.cancerresearchuk.org](http://www.cancerresearchuk.org)



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- Cancer of the Stomach – Research Report, National Cancer Institute, National Institutes of Health, USA.
- Understanding Cancer of The Stomach, CancerBacup, United Kingdom.



For more information on cancer, please call the  
**Cancer Helpline at Tel: 6225 5655**  
or email [cancerhelpline@nccs.com.sg](mailto:cancerhelpline@nccs.com.sg)

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