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HEALTHY DIGESTION & WEIGHT MANAGEMENT

When Lynette, 38, married her husband 12 years ago, she weighed 45 kg. Her weight went up to 50 kg after three years of careless eating habits and lack of exercise. After having two children, now aged eight and five, she weighed almost 60 kg. She felt tired all the time, and that extra weight on her slight build began to take a toll on her health and joints, especially her knees. Whenever she met friends she hadn't seen for a long time, the first thing they noticed was her weight gain. Over time, she grew very conscious about her weight.

Initially, Lynette tried to lose weight through crash dieting and skipping meals, but these only made her hungrier, causing her to overeat. She also tried a drink marketed as "slimming tea", but it gave her gastritis. Frustrated by one ineffective weight loss method after another, she finally went to see her doctor. He advised her to make some **lifestyle changes**. Since then, she has been exercising regularly and eating healthily, even treating herself to her favourite local dish, laksa, occasionally. To avoid having to rely overmuch on oils, fats or unhealthy seasonings, she uses lots of spices and naturally flavoursome foods to jazz up her cooking. With these sensible changes, Lynette's weight went down to a healthy 52 kg over the course of one and a half years. She looks great, and has never felt better in her life.



Maintaining a healthy weight is part and parcel of your health and wellness

UNDERSTANDING DIGESTION

Digestion is the process of breaking down the food we eat into energy. These nutrients are absorbed into the bloodstream and carried all over the body to nourish our cells and provide us with the energy we need.

Our digestive system comprises a series of organs connected to one another from the mouth to the anus, all of which help the body to break down the food we eat and absorb the nutrients that it provides. The organs that make up the digestive system are the mouth, salivary glands, oesophagus, stomach, small intestine, liver, gallbladder, pancreas, large intestine (including the colon), rectum and anus.

The Digestive Process

Digestive juices produced by glands in the mouth, stomach and small intestine help to digest food. Other organs such as the liver and pancreas also produce digestive juices that aid in the breakdown of food,

Believe It Or Not!

Depending on the age and size of the person, our small intestine measures a whopping 6–8 metres long on average, the entire length of which is compactly packed into the space beneath our stomach.

while muscle movements in the digestive tract help to break down food and move it along.

Digestion begins in the mouth when you chew your food, which breaks food down into smaller pieces. Saliva produced in the mouth begins the process of breaking down the food, which is then swallowed and passed through the oesophagus into the stomach.

Just before the food passes into the stomach, it passes through a ring-shaped muscle called the lower oesophageal sphincter (LES). The LES relaxes to allow food to pass through to the stomach. When closed, the LES keeps food from entering the stomach. If the LES misfunctions, this may result in GERD (gastroesophageal reflux disease) or acid reflux, a typically lifelong condition in which the liquid content of the stomach containing acid tends to back up into the oesophagus, causing heartburn and regurgitation.

The part digested food and liquid is then stored in the stomach, where, with the help of the muscular walls of the lower stomach, a combination of strongly acidic gastric juices and enzymes kills bacteria and reduces the food to a liquid or paste-like consistency. This is then emptied slowly into the small intestine.

Digestive juices from the intestine, pancreas and liver help to break down the food even more thoroughly inside the small intestine. The resulting nutrients are absorbed through the intestinal walls.

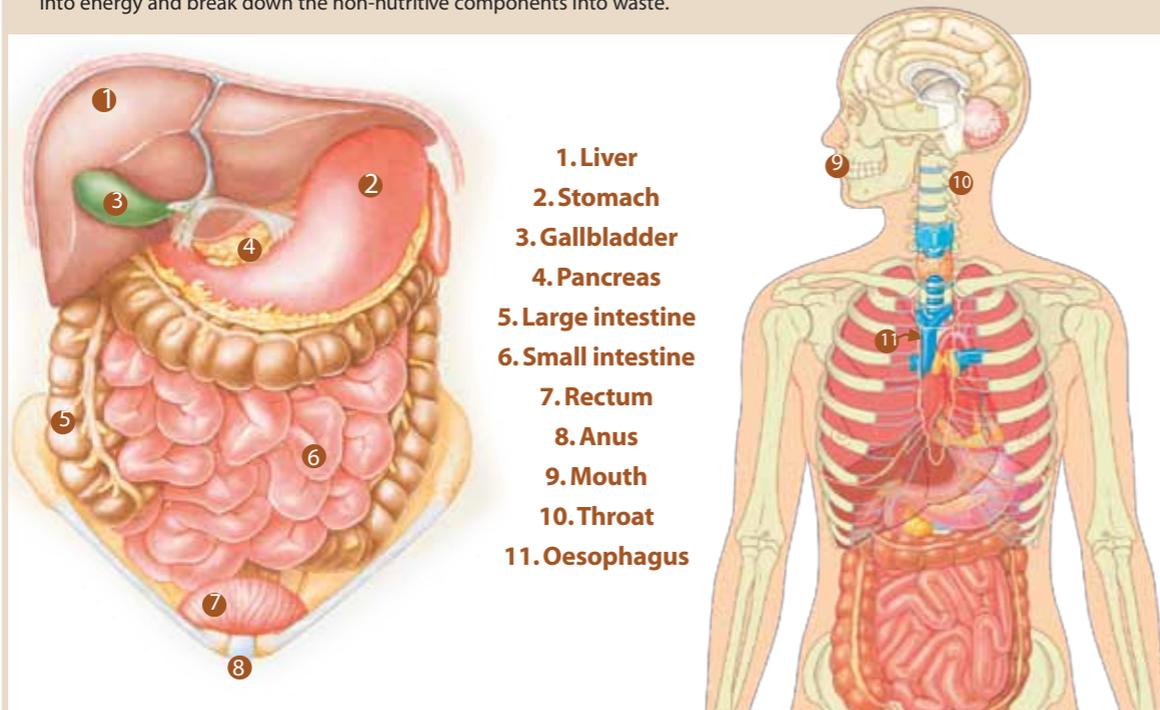
The waste products from this digestion process, including the undigested parts of food (fibre), are

What a Grrrowler!

Have you ever been embarrassed by your growling stomach? The sound – technically called borborygmi – is caused by the action of muscles of the stomach and small intestine. These hollow organs usually contain food in various stages of digestion in addition to liquid and gas, which may be produced by bacteria in the digestive system. When these muscles contract, the contents of the organs move, which may cause the growling sound you hear.

The Digestive System

The digestive system organs in the abdominal cavity include the oesophagus, stomach, large and small intestines, which are aided by the liver, gallbladder and pancreas to convert the nutritive components of food into energy and break down the non-nutritive components into waste.



bulk up on fibre

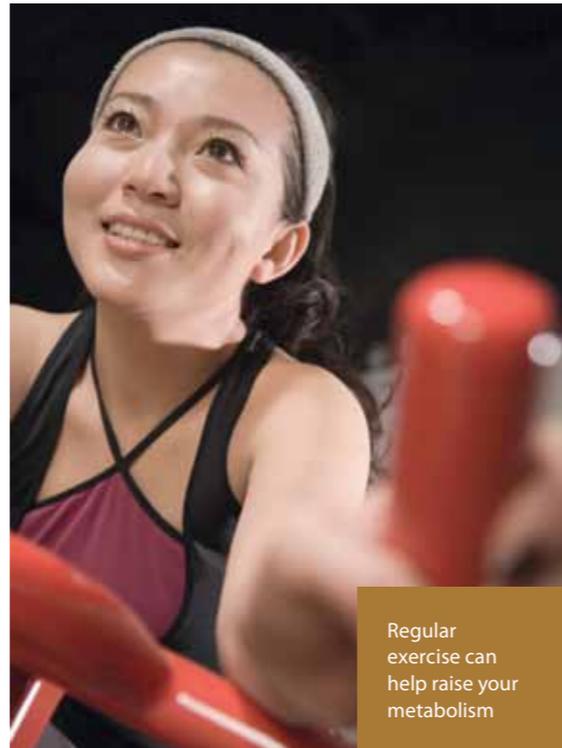
A high-fibre diet keeps the digestive system running smoothly. It helps to increase the size and frequency of bowel movements. Fibre acts like a sponge in your small intestine, absorbing water and increasing the bulk and softness of stool so that they can be easily passed out from the body. Point to note: as you increase your intake of fibre, you should also increase your fluid intake. Otherwise, you may end up constipated.

Fibre is classified into soluble (oats, beans, dried peas, and legumes) and insoluble fibre (wheat bran, whole grain products, and vegetables), both of which are needed. Fruits, vegetables, and barley are sources of both insoluble and soluble fibre. They each perform different functions: soluble fibre delays digestion and lowers cholesterol in the blood, whereas insoluble fibre speeds up digestion and has no effect on cholesterol.



how does the process of digestion change as a woman ages?

Swallowing and the process of moving digested food through your intestines tend to slow down as you get older. According to the Department of Endocrinology, Singapore General Hospital, women may experience more constipation symptoms with age as a result of reduced colon motility. The amount of gastric acid secretion may also diminish with age. Elderly patients may also be at increased risk of small bowel bacterial overgrowth, which can give rise to symptoms of bloating and diarrhoea, which may further interfere with nutrient absorption.



Regular exercise can help raise your metabolism

Daily Energy Needs

CALORIE CHART

Age Group (Women)	Height (cm)	Weight (kg)	Energy Needed (Cals)		
			Activity Level		
			L	M	H
18 – <30 years old	160	54	2000	2100	2350
30 – <60 years old	160	54	2050	2150	2350
60 years and up	160	54	1800	1900	2100

Defining Your Activity Level:

- **Light (L):** 75% of the time sitting or standing, and 25% of the time moving around
- **Moderate (M):** 25% of the time sitting or standing, and 75% of time doing some light physical work
- **Heavy (H):** 40% of the time sitting or standing, and 60% of the time doing heavy physical work

Source: "Your Personal Calorie Counter," Food & Nutrition Department, Ministry of Health (Singapore).

staying fit and fabulous



To be fit and fab, you need a good understanding of your metabolism and metabolic rate. This includes knowing what is meant by your **basal metabolic rate**, or BMR.

Your BMR is the rate your body burns up calories to maintain its basic bodily functions. It makes up approximately 60% of total energy used and decreases as you age. Even if you stayed in bed all day, your body would still burn up calories.

Then there's the **thermic effect of food** – the energy used to digest, absorb and store away nutrients from food. This accounts for about 10% of your daily energy expenditure.

Making up the rest of energy expenditure is the energy burned when you're up and about or active, which is known as the **non-resting energy usage**. This is the most variable component, which can be significantly increased by engaging in regular physical activity.

then pushed into the colon, where they remain in the rectum until they are expelled as faeces through the anus during bowel movements.

The rate at which food is digested varies with the sort of food and the strength of the muscle action of the stomach and small intestine. Carbohydrates spend the least amount of time in the stomach, while protein takes a little longer. Fats take the longest.

WHAT IS METABOLISM?

Metabolism refers to the biochemical processes in the body that convert fuel from food into energy (in calories) needed by the body to keep you going. During eating, drinking, exercising and sleeping,

Hence the not-so-magic formula to maintaining your weight would be: the more active you are, the more energy you will use up. When your body's composition (decreasing muscle mass and increasing fat mass) changes, with a corresponding fall in metabolism that comes with age, regular exercise and staying physically active can increase your BMR and improve your health and fitness.

Refer to the **calorie chart** ("Daily Energy Needs" box) for an approximation of your daily calorie needs according to your age, weight and activity level. Also, see the **calorie burner chart** on the USDA website (www.fns.usda.gov/eatsmartplayhardhealthylifestyle) for an idea of how many calories you use up according to your level of activity. For useful tips on healthy weight loss, visit the HPB website (www.hpb.gov.sg/healthyliving).

Short of obsessively counting your calories and taking the joy out of eating, you can keep your weight in check by ensuring that your calorie input doesn't perpetually exceed your calorie output. It may help to memorise this easy rhyme: "A minute on your lips, forever on your hips!"

your body is constantly burning calories.

Some hormones act directly on metabolism, while others control the rate of metabolism: insulin helps our bodies to store nutrients from food, whereas hormones such as growth hormones and adrenaline help to mobilise these stores whenever there is a need to use nutrients. Thyroid hormones control the rate of metabolism.

Turbo-Charge Your Metabolism!

A sensible, balanced diet, regular exercise and good sleeping habits will ensure that you look your best, have lots of energy, and enjoy good health at any age.

Here are some other ways to boost your metabolism:

- **Build more muscle mass.** Muscle burns more calories than fat. The more lean muscle mass you build up, the more calories you'll burn daily. Add some weight-bearing exercise two to three times a week, such as lifting weights, walking or any other form of resistance exercise. Even carrying your groceries instead of using a trolley can be considered a weight-bearing activity! Try lifting some hand weights while watching your favourite TV programme. This will help you add muscle mass and burn off some calories at the same time.
- **Avoid skipping meals.** You may think that skipping meals will help you lose weight, but that's not the case. Significantly decreasing your caloric intake will slow your metabolic rate, as your body enters into "fasting" mode and reacts by hoarding fat and burning lean muscle for energy. Keep your metabolism active by eating three healthy meals a day.
- **Exercise regularly.** An exercise regime involving activities such as cycling, walking or jogging will help increase your metabolic rate during the activity, and for several hours after. Even simple aerobic activity such as taking the stairs and housecleaning can boost your metabolism.
- **Go for an evening walk.** Although exercising at any time is good for you, light evening activity such as taking a walk around your home is particularly beneficial. The metabolism tends to slow down towards the end of the day. Half an hour of aerobic activity before dinner will increase your metabolic rate and keep it elevated for another two to three hours. What this means is that those dinner calories stand less of a chance of taking up permanent residence on your hips!
- **Get adequate sleep.** Sleep loss affects the levels of appetite-regulating hormones and the capacity to metabolise carbohydrates in the body. Your metabolic rate nosedives as less fat is burned for

energy. Your energy levels during the day may dip, and you may feel too tired to exercise, on top of a tendency to overeat and pick unhealthy foods.

- **Eat enough protein.** Protein forms the building blocks for muscle. Without adequate protein, you may actually lose desirable lean muscle mass.
- **Drink less alcohol.** Alcohol slows down the fat-burning process. Your body needs to burn off the alcohol calories first before burning off the fat that you're trying to lose through diet and exercise.

MUCH ADO ABOUT FAT

Fat is essential to life. According to the Department of Endocrinology, Singapore General Hospital, women need to have at least 8–12% of body fat for good health.

Body fat falling below these levels affects various physical functions, in particular sexual, reproductive and adrenal. Women with insufficient body fat will suffer long-term, irregular or absent menstruation (amenorrhoea), and eventually stop menstruating altogether. This means that they will be unable to conceive and reproduce, as the hormones responsible for controlling these functions are derived from fat.

Rapid weight loss, for example through extreme vigorous exercise or a very restricted dietary intake as seen in sufferers of eating disorders, also results in problems such as hair loss, abnormalities in the menstrual cycle, exhaustion and chills, even if the essential body fat level is above the 8–22% level. Other symptoms include hormonal abnormalities, such as a deficiency of oestrogen, growth hormones and an increase in stress hormones, resulting in similar reproductive and growth problems.

On the opposite end of the spectrum is **obesity**, a condition in which excess body fat accumulates to the extent that health and psychological wellbeing may be adversely affected. Obesity is associated with various chronic diseases, including cardiovascular disease, hypertension, diabetes mellitus, sleep apnoea, arthritis and cancer. According to Singapore's



the fatter sex

On average, women have 6–11% more body fat than men. A University of New South Wales research review has shown that a higher level of oestrogen in women's bodies especially in puberty and early pregnancy reduces the ability to burn energy after eating, resulting in more fat being stored around the body. This could be seen as "states of efficient fat storage intended by nature to prime women for childbearing, in preparation for fertility, foetal development and lactation."

Source: University of New South Wales. "Why Do Women Store Fat Differently From Men?" *ScienceDaily*, 4 Mar 2009.

Ministry of Health's Clinical Practice Guidelines for Obesity, obesity (BMI greater than 30 kg/m^2) is on the rise in Singapore, in parallel with the current global epidemic. It's a major public health concern.

In general, the acceptable healthy range of body fat for women is 20–32%. The acceptable healthy range of body fat for women across the different ages also varies, depending on ethnicity.

Diseases associated with obesity are not simply related to the amount of fat in the body, but more significantly, with the distribution of the fat. A higher amount of fat deposited in the abdominal region has been shown to be associated with higher risk of developing a range of medical conditions such as heart disease, diabetes, hypertension, fatty liver and obstructive sleep apnoea. Your waist measurement reflects the body fat distribution in the abdominal area, and is also a better indicator of health risks than total body fat mass or Body Mass Index (for more on BMI, see Chapter 3) alone. The healthy waist circumference for Asian women is 80 cm or less, and healthy BMI range is about $18.5\text{--}22.9 \text{ kg/m}^2$, compared to 88 cm and $18.5\text{--}24.9 \text{ kg/m}^2$ for Caucasian women. See a medical practitioner for proper body fat analysis.



the dangers of spare tyre fat

More than just a store for surplus calories, the fat tissue in your spare tyre can increase your risk of heart attack, cancer and other diseases. The American Chemical Society points to the discovery of 20 new hormones and other substances not previously known, being secreted into the blood by these fat cells.



Source: "Research Finds Role of Hormone-Secreting Fat Cells in Certain Diseases," *The Medical News*, 3 Sep 2010.

fat blasters!

Although the key to losing weight is to take in fewer calories than what you burn off, some foods can help to optimise the functioning of the body system so that your energy and metabolism stay running high:

- **Water:** Water constitutes two-thirds of a person's body weight. Yet few think of water as an essential nutrient. Water is needed to maintain normal physiological functions in the body, including respiration, circulation and excretion. Not consuming enough water leads to dehydration, which can slow down metabolism. A general rule of thumb is to drink water throughout the day, before feeling thirsty. (Thirst is a sign of the onset of early dehydration.)



contains 459 calories, while the soup version contains 293 calories.

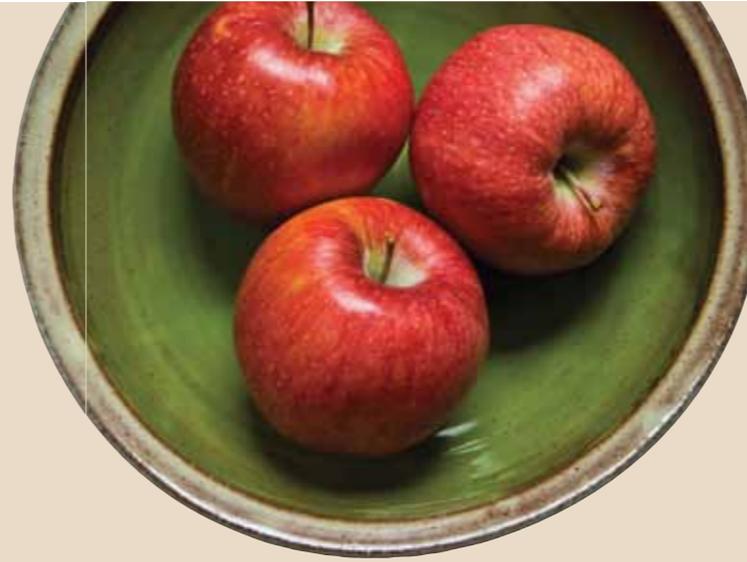
- **Low-fat yoghurt:** Natural yoghurt contains probiotic cultures that are essential for a healthy digestive tract.
- **Grapefruit:** The unique chemical properties of this vitamin C-packed citrus fruit aid in lowering insulin levels, which promotes weight loss. Check with your doctor about any potential adverse drug interactions if you're on medication.



- **Green tea:** Studies show that drinking green tea may help to raise your metabolism and speed up fat oxidation. There are other powerful health benefits, including protecting you from heart disease, cancer and stroke.



- **Soup it up:** When having dishes like noodles, choose the soup over the dry version. Because of the high liquid content, soups typically fill you up with less calories. For example, prawn noodle (dry)



- **Apples and Pears:** Overweight women who ate the equivalent of three small apples or pears a day, lost more weight on a low-calorie diet than women who didn't include fruit in their diets, according to a research study conducted by the State University of Rio de Janeiro. The fruit eaters also ate fewer calories overall. Next time you need to satisfy a sugar craving, reach for this low-calorie, high-fibre snack. You'll eat less and feel full longer.
- **Broccoli:** Apart from providing nutrients such as vitamins A and C, calcium and folate, this superfood also boosts your metabolism, while cancer-fighting phytochemicals bolster your immunity system.



- **Lean meat:** You can have your meat and eat it too, but go for lean cuts – sirloin steaks, turkey and chicken – rich in iron, the mineral responsible for the production of haemoglobin, the carriers of oxygen in the body. Lean meat jumpstarts your metabolism and energy levels, while burning more calories than the digestion of other foods.



- **Oats:** A good source of cholesterol-fighting, fat-soluble fibre, this heart-healthy favourite ranks high on the list of good carbohydrates that keep you full and provide you with the energy for your workouts.



- **Chilli Peppers:** Eating chilli peppers or any spicy food can increase your metabolism while dampening your appetite. Capsaicin, the antioxidant compound found in chillies and hot peppers, temporarily raises your body temperature, which adds a boost to your metabolism and burns off more calories. Adding an extra chilli or two to spicy Malay and Indian dishes is a simple and tasty way to boost your metabolism.





ethnicity, age and fat

Asians tend to have a higher percentage of body fat compared to Caucasians and African Americans. However, ethnicity aside, as we age, our body fat percentage tends to increase as muscle mass decreases.

Towards Healthy Weight Management

If you consume more calories than you expend, the excess will be stored as fat in your body. Where fat accumulates on the body is generally influenced by genetics and sex hormones. For women, it tends to show up on the hips and buttocks, resulting in a “pear” shape – which is mainly influenced by the ratio of oestrogen to testosterone hormones in women. As oestrogen levels drop during menopause, fat tends to accumulate more in the abdominal area, increasing a woman’s risk for heart disease.

Overall weight loss will lead to a reduction in body fat. However, there is no quick fix for losing weight. Crash dieting by skipping meals, for example, will not work in the long term and may be potentially damaging to your health. Weight loss may be quick but not permanent. For most people, the weight lost tends to come back in very little or no time at all. In general, unless prescribed by your doctor, slimming pills are not known to be safe – some may even have potentially life-threatening side effects, such as containing toxic compounds that may harm the liver.

The safest way to lose weight is to do it gradually, through a commitment to long-term lifestyle changes, most notably by keeping to a healthy diet and regular exercise regime that may help you shed the pounds and maintain your desired weight thereafter. A healthy diet means limiting the intake of saturated and trans fats, cholesterol, added sugars, salt, and alcohol, and consuming plenty of vegetables, fruits, whole grains, and a limited amount of red meat (see the Healthy Diet Pyramid on pg 32). Set yourself a realistic target of how much weight you want to lose and how quickly you can do it. Your doctor may be able to offer you some practical advice.

Get the support of your family and friends. They can help you stick to your weight loss health plan and stay motivated, especially during those days when you just feel like throwing in the towel altogether. They provide a source of support to help you avoid regular pitfalls.

disordered eating or eating disorder?

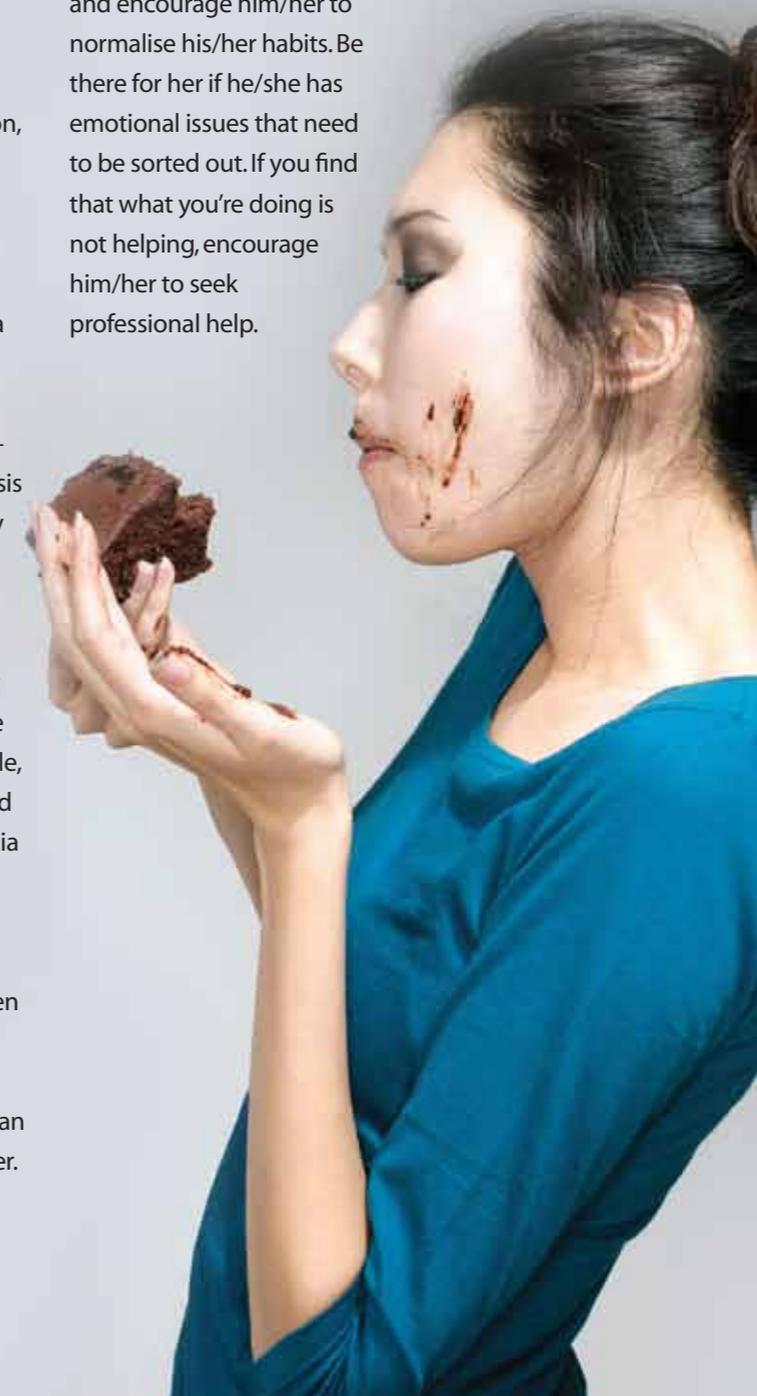
Disordered eating refers to irregular eating habits or patterns. Some people with disordered eating may exclude all fats or all carbohydrates from their diet, while others may only eat specific foods or foods of a particular texture or colour. Then, there are those who will only eat at particular times of the day. Others go further in their preoccupation, developing unhealthy habits such as self-starvation, binge eating, purging and exercising obsessively.

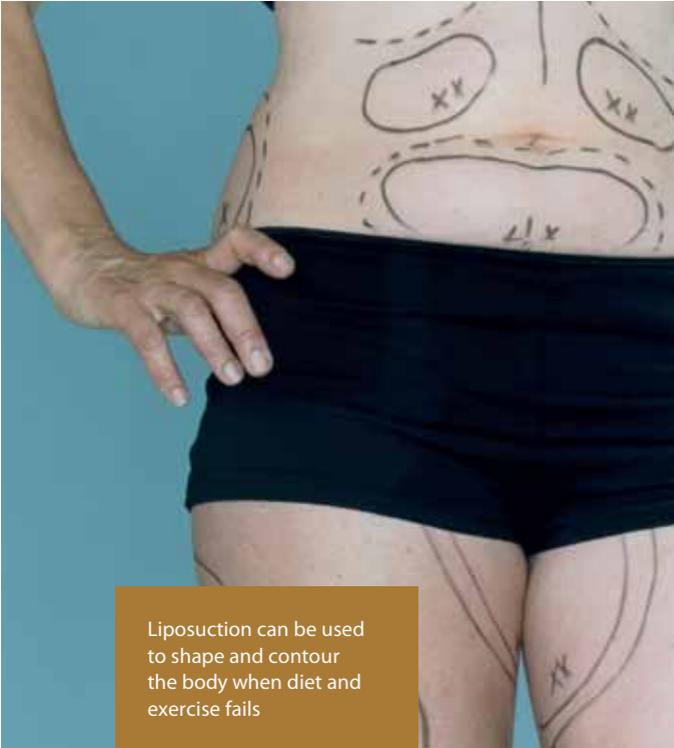
Some of these habits may have their roots in childhood – the child was probably labelled as a “picky eater”. However, there are people who develop erratic eating habits to lose weight or as a means of dealing with emotional stress.

People with disordered eating may not be clinically diagnosed as having an eating disorder – they might not fit the criteria for a specific diagnosis (see Chapter 9 on Eating Disorders), although they may be given a diagnosis of “Eating Disorder Not Otherwise Specified”. Their condition is usually considered to be atypical, or sub-clinical because the irregular eating habits do not drastically affect them physically and psychologically enough to be classified as a singular mental disorder. For example, a person may have drastically reduced his/her food intake and yet not be diagnosed as having anorexia nervosa, because his/her weight is still within a normal range or BMI.

It is common that those with disordered eating may not see these eating habits as problematic, even when they become harmful. While their condition may not necessarily develop into a full-fledged eating disorder, left unchecked, disordered eating can contribute to the development of an eating disorder. In such a situation, someone close to the affected person may need to bring it to his/her attention.

If you notice a family member or friend with disordered eating, here’s what you can do. Point out the disordered eating patterns and encourage him/her to normalise his/her habits. Be there for her if he/she has emotional issues that need to be sorted out. If you find that what you’re doing is not helping, encourage him/her to seek professional help.





Liposuction can be used to shape and contour the body when diet and exercise fails

Tackling Stubborn Fat

The number of fat cells in the body is finite – they do not increase in number or multiply after birth; they increase and decrease in size depending on the availability of fatty acids in the body. Percentage body fat can be reduced by either reducing the fat stores or by reducing the number of fat cells in the body.

If you are already on a programme of diet and exercise to lose weight, but remain unable to get rid of unsightly, persistent bulges that may be a cause of health concern, surgery may be an option for you. Here are two options you can consider:

Liposuction

Liposuction may be the most commonly performed plastic surgery in the world. The purpose of this procedure is to remove “unwanted” fat cells in specific areas of the body such as the lower abdomen, arms and hips.

This is not a method of weight loss for overweight people. Liposuction is generally used for treating fat just under the skin (subcutaneous fat). It isn't recommended for fat around vital organs such as intra-abdominal fat. The amount of fat that can be safely removed each time is also limited to less than 5 kg. The weight can be rapidly regained if one isn't

careful with food consumption after the procedure.

Liposuction can effectively shape and contour the body to the desired shape via removing the excess fat cells surgically. However, food consumption must be checked and an exercise regime kept to after the surgery in order to maintain your ideal shape.

Procedure

Liposuction can generally be performed safely and with minimal discomfort by a properly trained surgeon. A new technology using ultrasound, such as the VASER Liposelection system, can help achieve more precise body sculpting results, by selectively destroying and gently removing unwanted fat while preserving the integrity of the surrounding skin, blood vessels, collagens and nerves. Here, small probes are inserted into the body, loosening fat cells using high ultrasonic frequency. The fat cells are then removed using suction.

The treated area will be swollen and bruised for a few weeks and may be numb for a few months. You will have to wear a compressive garment to help contour the area. Your doctor may recommend massage therapy to enhance results and speed up recovery. According to the Department of Plastic, Reconstructive and Aesthetic Surgery at Singapore General Hospital, serious complications such as severe infections, bleeding and injury to vital organs such as the liver or the intestines are rare.

Bariatric Surgery

Bariatric surgery is a highly effective method to reduce weight and maintain weight loss for severe or morbidly obese people who have been unable to lose weight by other means such as dietary changes, exercise and medical treatment. These people remain at high risk of medical complications as a result of their weight. The Ministry of Health's (MOH) Clinical Practice Guidelines for Obesity states that while medical treatments have a low long-term success rate of weight loss, bariatric surgery has resulted in

sustained weight losses of between 16–35% over the same period on average.

The Ministry of Health's Clinical Practice Guidelines for Obesity recommends surgery for Asian people with a BMI higher than 37.5 kg/m² without any other significant medical condition, and those with a BMI of above 32.5 kg/m² if they have underlying medical conditions such as diabetes, hypertension and obstructive sleep apnoea.

Procedure

Bariatric surgery helps obese people to lose weight by modifying their gastrointestinal anatomy.

Minimally invasive weight-loss surgeries include:

- **Gastric balloon:** A silicone balloon is inserted into the stomach using an endoscope and is then filled with saline solution to give patients a sense of fullness, hence reducing their food-intake. Although it is an effective method of losing weight (up to 16% weight loss), the balloon must be removed after six months because of degradation by gastric acid in the stomach.
- **Laparoscopic Adjustable Gastric Banding (LAGB):** This is commonly known as a lap band. An adjustable silicone band is placed around the upper part of the stomach to reduce its size so that the person feels full faster, therefore eating less and losing weight. The pouch and the outlet created by the insertion of the band should be small enough to restrict food intake but not cause obstruction. If necessary, the band can be adjusted through a port implanted under the skin.
- **Laparoscopic Sleeve Gastrectomy (LSG):** For this surgery, the surgeon can remove up to 75% of the stomach. Early results from this relatively new procedure show that the weight loss is comparable to that of LAGB. Unlike LAGB however, this procedure is performed only once, with no adjustments needed thereafter.

- **Laparoscopic Roux-en-Y Gastric Bypass (LRYGB):** This is a combined restrictive-malabsorptive procedure in which a small gastric pouch is created along with a bypass to the small intestine. This reduces caloric intake and limits the body's ability to absorb calories through altering the mechanism of digestion. There is evidence showing the procedure's effectiveness in correcting metabolic disorders such as Type 2 diabetes and hyperlipidaemia.

Risks

Bariatric surgery is a major life-changing procedure that carries the risk of complications, including death. Patients who want to undergo this surgery are put through rigorous pre-operative evaluation, including assessment by psychologists, before they are given the go-ahead.

According to the Department of General Surgery, Singapore General Hospital, bariatric surgery can achieve more weight loss and better weight management than other methods such as medication, diet and exercise alone, but may put patients at risk of nutritional deficiency. Patients who undergo gastric-bypass surgery must take nutritional supplements for the rest of their lives.

In spite of the risks involved, bariatric surgery has been shown to improve the overall survival of the morbidly obese, and is particularly effective in controlling weight-related medical conditions such as diabetes.

However, it's important to note that even after the most radical surgical procedure, you still have to make dietary and lifestyle changes to ensure you don't regain the weight lost.

INDIGESTION

Indigestion is not a disease per se, but a term encompassing a wide range of symptoms that describes discomfort in your upper abdomen.



Healthy cooking methods such as steaming can help keep your weight under control

In Singapore, it is commonly referred to as 'gastric'.

The symptoms are caused by stomach acid irritating the lining of the oesophagus and/or stomach, most commonly as a result of functional dyspepsia (any pain or discomfort associated with eating not due to structural issues in the digestive system). A community-based study found that about 8% of Singaporeans reported having experienced indigestion.

There are several factors associated with indigestion:

- **Obesity.** Being overweight predisposes a person to acid reflux.
- **Lifestyle factors.** Missing meals, eating late at night just prior to sleeping, smoking, eating too quickly or certain foods and eating large meals can cause indigestion.
- **Psychological factors.** Indigestion can be an underlying symptom of anxiety or depression.
- **Medication.** Aspirin and certain painkillers or

analgesics such as non-steroidal anti-inflammatory drugs (NSAIDs) can irritate the stomach and cause inflammation and/or ulcer.

- **Helicobacter pylori.** This bacteria can cause inflammation in the stomach and lead to peptic ulcer disease.
- **GERD (gastroesophageal reflux disease).** Also known as acid reflux, this is a typically lifelong condition in which the liquid contents of the stomach containing acid tend to back up into the oesophagus, causing heartburn and regurgitation.
- **Gallstone disease**
- **Cancer.** Occasionally, cancer of the stomach or oesophagus can present with this symptom.

Signs & Symptoms

Indigestion is not a disease, but a range of symptoms including:

- Pain or burning sensation in the upper abdomen or chest region

- Sour taste in the mouth caused by acid reflux
- Bloating in the abdomen
- Feeling of early satiety (inability to complete a normal-size meal)

Treating & Preventing Indigestion

Mild indigestion that comes and goes infrequently is nothing to worry about. Some people may resort to taking over-the-counter antacids. Others may find that drinking herbal tea with peppermint can help settle their stomach easily.

See your doctor if the discomfort persists for more than two weeks or if the pain is severe. Here are some ways to minimise suffering from indigestion:

- **Eat right.** A well-balanced, healthy diet low in fatty foods slows down stomach emptying. Eat five to six smaller but more frequent meals at regular times daily. This helps with bloating symptoms and discomfort. Avoid overeating. Limit and/or avoid foods such as spicy or oily foods that are known triggers for your symptoms.
- **Avoid caffeine.** Sufferers should restrict or avoid caffeinated drinks as they can worsen gastric symptoms.
- **Avoid alcohol.** Having a drink or two may make you feel more relaxed, but it may also increase reflux symptoms, and should be avoided in those with gastric intolerance.
- **Avoid taking analgesics.** If these medications are needed, the concomitant use of gastric-protection medication can be helpful.
- **Exercise regularly**
- **Manage your stress**

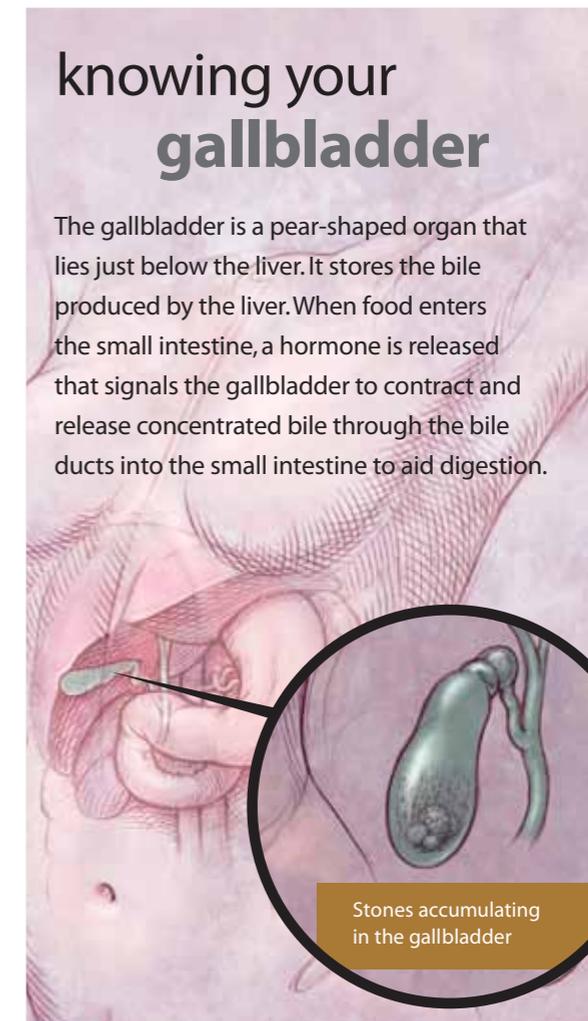
GALLSTONES

Gallstones are hard aggregates of certain minerals and salts that form inside the gallbladder. They may be as small as a grain of sand or as large as a golf ball.

Risk Factors

You are more susceptible to developing gallstones as you age. The condition usually occurs to those aged over 40 and is more common in women. Aside from age and sex, other factors that can increase your chances of developing gallstones include:

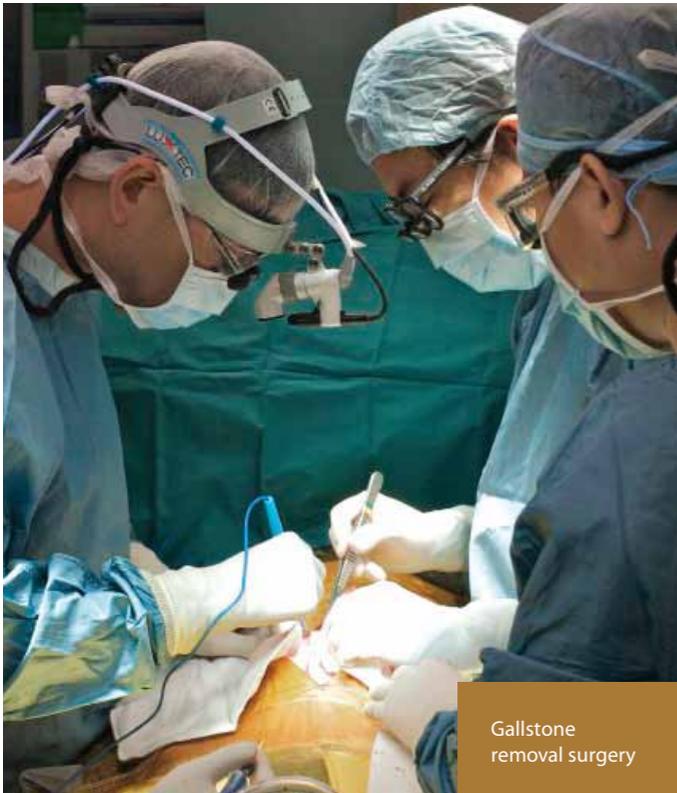
- **Pregnancy.** Due to hormonal changes during pregnancy, pregnant women are more prone to developing gallstones.
- **Medications.** Medications such as oestrogen, clofibrate (a cholesterol lowering medication) and ceftriaxone (an antibiotic) increase the risk of gallstones.
- **Family history and genetics.** Gallstones tend to run in family members. Certain racial and ethnic



knowing your gallbladder

The gallbladder is a pear-shaped organ that lies just below the liver. It stores the bile produced by the liver. When food enters the small intestine, a hormone is released that signals the gallbladder to contract and release concentrated bile through the bile ducts into the small intestine to aid digestion.

Stones accumulating in the gallbladder



Gallstone removal surgery

the inflammation of the gallbladder or pancreas (pancreatitis) caused by gallstones, or when the gallstone gets stuck in one of the ducts or tubes that drain bile from the liver or gallbladder. Pain is the main symptom of gallstones.

- **Fever, vomiting and shivering.** These symptoms may occur as a result of the inflammation of gallbladder or pancreas caused by gallstones.
- **Dark tea-coloured urine and pale stools,** which may occur if the gallstone is preventing bile from draining into the small intestine.

Treatment

The treatment for gallstones may be non-surgical or surgical:

- **Non-surgical Treatment:**
 - **Medication.** Bile acid medication is effective in dissolving certain types of gallstones. However, the treatment is very slow and it may take over two years before the stone is reduced to a size that is no longer problematic. In addition, bile acid medication is known to cause diarrhoea, raise cholesterol levels and damage the liver. Another medication, statin, can also be used for the same purpose. But the treatment also takes a long time, and is accompanied by potential side effects such as liver damage and muscle inflammation.
 - **Extracorporeal shock-wave lithotripsy.** A machine uses sound waves to break up the gallstones in the body. The disadvantage is that this treatment is suitable for only a small number of patients, and it may be difficult to target the gallstones accurately.
 - **Endoscopic (telescope) techniques.** Gallstones trapped in the bile duct can be removed with an endoscope. Large stones may be fragmented and reduced in size by extracorporeal shock-wave lithotripsy before removal. This method is not suitable for removing gallstones in the gallbladder.

- **Surgical Treatment:**
 - **Open surgery.** For many years, open surgery was the gold standard for the treatment of gallstones in the gallbladder. Although the surgery leaves a large scar and requires prolonged hospitalisation, it is still used in the event that keyhole surgery is unsuitable.
 - **Laparoscopic surgery.** This is now the main treatment used. Only three small incisions are needed for this minimally invasive treatment. It is safe and requires only a short stay in the hospital.
 - **Natural orifice transluminal endoscopic surgery (NOTES).** NOTES is a new technique where the gallbladder is removed with a flexible endoscopic telescope via natural orifices in the body such as the mouth, anus or vagina. There's no scarring and only a short stay in hospital is required. This method is not widely available at the moment.

Note that gallstones can recur (in the duct that drains the liver) after surgery, even after the removal of the gallbladder.

Preventing Gallstones

- **Statins.** These medications control fat and cholesterol levels in the blood and may prevent gallstones.
- **Blood vitamin C (ascorbic acid) level.** Women with high levels of blood vitamin C tend to have lower risk of gallstones forming.
- **Moderate coffee consumption.** This has been shown to be effective in decreasing the risk of developing gallstones.
- **Consumption of vegetable protein, polyunsaturated and monosaturated fats.** In the context of energy-balanced meals, these have protective benefits against the formation of gallstones.

IRRITABLE BOWEL SYNDROME

Irritable bowel syndrome (IBS) is a gastrointestinal disorder characterised by abdominal pain, bloating, and discomfort. It is a common condition that affects the intestines. Although the symptoms of IBS may be painful and uncomfortable, it's not a serious condition and will not damage the intestines. Women are twice as likely to suffer from IBS as men, although the reasons for this are yet unclear.

Risk Factors

The exact cause of IBS is unknown, but there is wide speculation on the possible causes of IBS, which may include:

- **Environmental or genetic factors.** One study has shown IBS to be more common in monozygotic (identical) twins, and that sufferers tend to also have parents who have had IBS.
- **Infection.** Previous infection of the bowel may alter the bowel structure, such as making nerves supplying the bowel irritable, as well as altering the bowel lining (change in the cells of the wall lining). Infection may also impair bile salt absorption, leading to altered bowel habits.
- **Change in the bacteria in the bowel lining**
- **Alteration in the brain gut/bowel axis**
- **Sensitivity to stimuli.** Certain foods such as dairy products and stress may trigger symptoms in certain patients.

Signs & Symptoms

The signs and symptoms of IBS differ from person to person, and include:

- **Chronic abdominal cramps or pain.** The pain may ease after having a bowel movement.
- **Bloating and gas.** You may experience discomfort caused by excessive bloating and pass excessive wind.
- **Change in bowel habits.** You may suffer from constipation (difficulty or inability to pass stool) or diarrhoea (frequent, loose, watery stools), or both.

groups such as Hispanics and Western Caucasians have a tendency to develop gallstones.

- **Obesity.** Being overweight increases the risk factor of developing gallstones.
- **Rapid weight loss**
- **Diabetes mellitus.** The possible reason for this is that the diabetes may impair the gallbladder from emptying properly.
- **Raised triglycerides levels**
- **Severe liver disease (liver cirrhosis).** People with severe liver disease tend to develop gallstones. This may be linked to the decline in the synthesis of bile salts that prevent gallstones in severe liver disease.
- **Decreased physical activity.** Exercise decreases the risk of developing gallstones.
- **Pre-existing medical conditions.** Diseases such as Crohn's disease (inflammation of the intestine), diabetes, and illness with high red cell turnover (haemolytic anaemia) increase the risk of gallstones.

Signs & Symptoms

- **Pain in the upper abdomen,** especially in the right upper quadrant. This may be caused by

- **Urgency.** A feeling of needing to move your bowels urgently.

Note that blood in your stool is *not* a symptom of IBS. See your doctor if you encounter this.

Treating & Preventing IBS

The main aim in the treatment of IBS is to empower those suffering from it. Although it is a chronic troublesome condition, IBS is harmless. Learning how to avoid triggers and controlling the symptoms will help you manage the condition.

Here are some useful methods to manage life with IBS:

- **Keep a food diary.** Write down what you eat daily into a food diary for two weeks. At the end of each day, make a note of whether it has been a 'good', 'bad' or 'average' day. After two weeks, you will be able to identify foods that may trigger your symptoms, such as dairy products (many Asians are lactose intolerant), aerated drinks or gas-forming food (cabbages, beans), or carbohydrates (e.g. rice), which may cause bloating in some sufferers.
- **Fibre and diet.** IBS patients with constipation should be encouraged to have a high fibre diet (e.g. fruits, vegetables, bran). Drink plenty of water to help keep bowel movements regular. A well-balanced diet also helps facilitate good bowel movement.
- **Antispasmodic medication.** Medication to relax the intestinal muscle can be used to help with abdominal pain.
- **Pain-modifying medications.** In people with debilitating pain, especially those with difficulty sleeping, low dose antidepressants can be used as pain-modifying medications.
- **Probiotics.** There have been some trials that suggest good bacteria (probiotics) can be helpful in preventing IBS.

the spice of life

Asian cuisine is known for its flavour and aroma. Apart from enhancing the flavours of food, the spices used in Asian cooking are also thought to be beneficial to health. Here are some that may help you maintain good digestive health*:

Turmeric. Often used as an anti-inflammatory agent to treat conditions ranging from rheumatoid arthritis, asthma and carpal tunnel syndrome, the carminative properties (i.e. prevents the formation of gas and induces the expulsion of gas from the gastrointestinal tract) of this yellow spice means that it is also used to relieve flatulence. A very important herb in Indian Ayurvedic medicine, it was traditionally used as a digestive aid and cleansing herb for the whole body. In traditional Chinese medicine, this spice (*jiang huang*) is used for liver and gallbladder problems, and to treat irritable bowel disease (IBS) and abdominal pain. Try a drink made by mixing some turmeric powder with salt in a glass of lukewarm water, or add some turmeric to your meals.

Black Pepper. This carminative stimulant packs a punch – it has long been used to stimulate appetite, boost digestion, and relieve flatulence, nausea, diarrhoea, gastric ailments and haemorrhoids. It also stimulates the breakdown of fat cells, helping in weight loss while providing energy. Excessive consumption may result in digestive inflammation.

Cinnamon. This bark packs a potent bite, bringing with it antifungal, antibacterial, antiviral, anti-parasitic and antiseptic properties. It's very effective in treating

infections. This excellent digestive tonic (*rou gui* in Chinese) helps with relieving indigestion, acidity, nausea, diarrhoea, upset stomach, diarrhoea and flatulence. It is also sometimes used as a natural food preservative for stopping or slowing down bacterial growth and food spoilage.

Cloves. Widely recommended for digestive complaints by herbalists, traditional Chinese physicians have long used this antiseptic, anti-inflammatory, antioxidant power-packed spice (*ding xiang*) to treat indigestion, IBS, upset stomach, intestinal worms, hiccups, vomiting and diarrhoea.

Chilli. An antioxidant and carminative spice, chilli is traditionally regarded to have many beneficial effects on gastrointestinal problems, including upset stomach, abdominal pain, and flatulence. Excessive consumption can result in gastroenteritis and kidney damage.

Fennel. This is commonly used for its digestive properties, helping to ease gas, constipation, diarrhoea, indigestion and bad breath. According to TCM, these seeds (*xiao hui xiang*) can be used to treat lower abdominal pain, indigestion, upset stomach, reduced appetite and vomiting. It can be combined with ginger for a stronger anti-nausea and vomiting treatment. A cup of tea made from concentrated extracts of fennel or fennel seeds

can help relieve intestinal cramping and wind, and promotes healthy digestion.

Cardamom. Chewing one or two cardamoms after a meal is often used to freshen the breath in India. Both traditional Ayurvedic and Chinese medicine believe this carminative, digestive stimulant also helps to aid digestion, and soothe flatulence and stomach complaints. Try a cup of tea made from seeds steeped in boiling water to help ease discomfort from heartburn.

Ginger. With its anti-inflammatory and anti-nausea properties, this warming spice is well-known for its traditional use as a treatment for a variety of gastrointestinal complaints, ranging from flatulence to ulcers. A tonic for the digestive tract, ginger has been shown to enhance normal, spontaneous movements of the intestines that aid digestion. Adding ginger to your cooking or steeping fresh slices into a drink is effective for settling an upset stomach. It is also good for nausea and morning sickness.

Sources:

1. "Trustworthy treatments for everyday health problems," in *1801 Home Remedies*, Matthew Hoffman and Eric Metcalf. *Reader's Digest*.
2. "Global Diet Poll," *Reader's Digest Asia*: Feb 2010.
3. "Spices as Remedies," *Reader's Digest Asia*.

* *Doctor's advisory: Do note that scientific trials have yet to be established to definitively support these claims. The ingestion of these spices should not replace medical advice and/or medications prescribed by your doctor. Consult your doctor about any home practices to prevent potential harmful interactions with medications.*



- **Exercise.** Engaging in regular physical activity can help to facilitate good bowel movement.

HAEMORRHOIDS

Commonly known as piles, haemorrhoids are abnormally engorged and swollen blood vessels in the anus and lower rectum. These may rupture and cause bleeding or slip out of place during defecation. Piles cause discomfort and itching, affecting a person's daily lifestyle. This is when treatment may be required, and is referred to as haemorrhoidal disease. It is a common condition, but many people are too embarrassed to see their doctor about it until the pain or discomfort becomes unbearable, or when there is bleeding, causing worry that it may be something more serious.

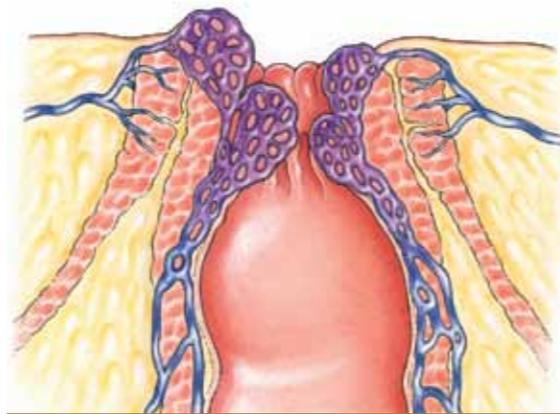
There is more than one type of haemorrhoid.

Internal haemorrhoids develop within the rectum. They may be present but cause no pain or discomfort. However, straining during bowel movement may cause them to bleed and protrude as a result of prolapse. Defecation can cause trauma and bleeding, while the presence of stool and constant moisture in the anal canal can lead to anal itchiness, although itchiness is not a common symptom of haemorrhoids. Less common – the haemorrhoid protrudes from the anus and cannot be pushed back inside, a condition referred to as incarceration of the haemorrhoid.

External haemorrhoids develop around the anus and can be felt as bulges at the anus, but usually cause few of the symptoms typical of internal haemorrhoids. When irritated, they may itch or bleed. External haemorrhoids can cause a very painful anal lump when blood clots inside them (thrombosis).

Causes

There are multiple factors resulting in a person having symptomatic piles. These are generally associated with any condition that can cause an increase in intra-abdominal pressure, including:



Cross-section illustration of human anal column showing external and internal sphincters, healthy veins, and internal and external haemorrhoids, causing inflammation of the rectum and anus veins

- **Persistent straining** during bowel movement and chronic constipation or diarrhoea, or even prolonged sitting on the toilet. The extra pressure during prolonged straining causes these vessels to swell and enlarge.
- **Inadequate fibre intake**
- **Obesity**
- **Pregnancy.** A common cause for piles for women is during pregnancy, where the growing foetus and labour exertion causes pressure on these blood vessels.
- **Genetics.** The tendency to develop haemorrhoids may run in the family.
- **Tumour.** A less common factor is the existence of an intra-abdominal or pelvic tumour.

Signs & Symptoms

The symptoms of piles can mimic and mask the symptoms of cancer. It is important for any patient complaining of symptoms that might be attributed to piles to consult their specialist surgeon for a full examination, before dismissing their symptoms as mild and haemorrhoid related.

Some signs and symptoms that patients can look out for include:

- Bleeding at times other than defecation
- Sensation of incomplete emptying that is present all the time, despite defecation
- Change in the calibre and character of the stools
- Change in bowel habits
- Obvious hard mass at the anus
- Unexplained loss of appetite and weight

Treating Haemorrhoids

The treatment of piles depends on the severity and the type of symptoms affecting the patient. Simple preventive measures include having a balanced diet and adequate water intake to allow regular bowel movement without straining.

If this doesn't help, other treatments available include:

- **Oral medications or topical suppositories.** These can be used to treat small bleeding piles.
- **Ligation.** This rubber band treatment works effectively on internal haemorrhoids that protrude with bowel movements. A small rubber band is placed over the haemorrhoid, cutting off its blood supply. The haemorrhoid and the band fall off in a few days and the wound usually

heals in a week or two. This procedure sometimes produces mild discomfort and bleeding.

- **Injection.** For this procedure, the doctor injects a chemical solution into the haemorrhoid, causing it to shrivel and subsequently fall off. This method is relatively painless and can also be used on bleeding haemorrhoids that don't protrude.

Piles that are not prolapsed can be ligated or injected. These are simple procedures that can be done in an outpatient clinic and do not require hospitalisation. But these procedures may not be extremely effective, and may require more than one treatment.

More definitive measures are needed for severe cases, such as when clots repeatedly form in external haemorrhoids, or ligation fails to treat internal haemorrhoids, or when a protruding haemorrhoid cannot be reduced, or when there is persistent bleeding. Surgical techniques under general anaesthesia include:

- **Haemorrhoidectomy:** This is surgery to remove excessive tissue causing the bleeding and protrusion. It is the best method for the permanent



Unexplained weight loss may be due to haemorrhoids

removal of large, prolapsed haemorrhoids.

Haemorrhoidectomy can be performed in the conventional manner, or through **stapled haemorrhoidectomy**. This is a form of surgery performed under general anaesthesia. A device is used to excise the piles internally and the internal wound is closed via a row of “staples”. Compared to the conventional “open” method of haemorrhoidectomy, where there is a raw wound, stapled haemorrhoidectomy causes less discomfort and a shorter duration of pain to the patient in the immediate postoperative period. It’s effective in treating large piles that protrude from the anus during defecation.

- **Transanal haemorrhoidal dearterialisation (THD):** This procedure involves using an ultrasound to locate the problematic blood vessels and stitching the piles.

As methods may vary slightly from person to person, patients are advised to consult their surgeons to figure out the right treatment for them.

GASTROENTERITIS

Gastroenteritis is an inflammation of the stomach, small and large intestines. It’s caused by viruses, bacteria, IBS, toxins and parasites, and may also be due to adverse reactions to ingested food. It can also be a symptom of indigestion or stress.

Viral gastroenteritis, or what is often referred to as stomach or gastric flu. But it is not influenza. Unlike influenza, which affects your respiratory system (nose, throat and lungs), viral gastroenteritis affects your stomach and intestines. It’s spread through contact with an infected person or from consumption of contaminated water or food such as improperly cooked shellfish (e.g. clams, oysters). Viral gastroenteritis is estimated to be responsible for 25–40% of hospital admissions for diarrhoeal illness.



Gastroenteritis can cause severe abdominal cramping

Bacterial gastroenteritis is typically caused by food poisoning. Food may be contaminated as a result of poor hygiene on the part of the food handlers, or food that may have been improperly cooked or stored.

Signs & Symptoms

In general, the condition is self-limiting and tends to resolve itself within a few days without treatment. Symptoms begin one to two days following infection with a virus and may last between one and 10 days, depending on the virus that’s causing the illness. However, if you’re still purging after three to four days or find yourself running a high fever, you should see your doctor.

Signs and symptoms of gastroenteritis include:

- Vomiting
- Repeated episodes of diarrhoea
- Abdominal cramps
- Nausea
- Headache and fever

Treating Gastroenteritis

There is no specific treatment for viral gastroenteritis. Any medication given will be

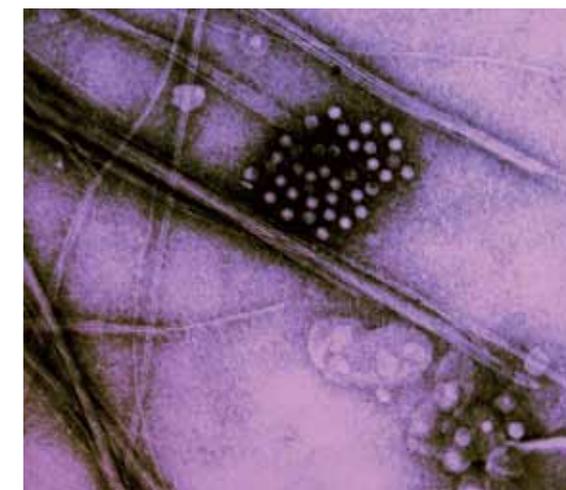
to ease your symptoms. However, treatment for food poisoning depends on the source of your illness and the severity of your symptoms. Your doctor may prescribe antibiotics for certain kinds of bacterial gastroenteritis if your symptoms are severe.

Anti-diarrhoeal agents (such as Lomotil) work by decreasing bowel contraction. They are used to lower the frequency of diarrhoea, liquidity of stool and ease abdominal cramps. They shouldn’t be used if high fever persists or blood is present in the stool. This is indicative of severe large bowel inflammation. Medication should be stopped and medical advice sought if diarrhoea continues to worsen after a few days.

The major problem with gastroenteritis is the risk of dehydration. If you have frequent diarrhoea, try keeping yourself hydrated by drinking boiled barley or rice water with a sprinkle of salt. This can help to increase water absorption in the intestines. You can also buy commercially prepared oral hydration salts in the form of tablets or sachets.

To help keep yourself comfortable and prevent dehydration while you recover, observe the following:

- **Let your stomach settle.** Stop eating and drinking for a few hours.
- **Try sucking on ice chips or taking small sips of water.** You might also try drinking clear soda, clear broths, and non-caffeinated sports drinks such as Gatorade or 100plus. Drink plenty of liquids, taking small, frequent sips.
- **Ease back into eating.** Gradually begin to eat bland, easy-to-digest foods such as soda crackers, toast, rice and chicken. Avoid foods and substances such as dairy products, caffeine, alcohol, nicotine, and high fibre, high fat or highly seasoned foods until you feel better. Stop eating if nausea returns.
- **Get plenty of rest.** The illness and dehydration may have made you weak and tired.



Colour-enhanced TEM of astrovirus from stool sample. Members of the virus family astroviridae, astroviruses are a cause of gastroenteritis in children and adults

- **Be cautious with medication.** Avoid self-medicating with antibiotics. You should only take these if your doctor prescribes them.

Preventing Gastroenteritis

The most common way to develop viral gastroenteritis is through contact with an infected person or ingestion of contaminated food or water. If you’re otherwise healthy, you’ll likely recover without complications. But for infants, older adults, and those with compromised immune systems, viral gastroenteritis can be serious if dehydration is left untreated. In bacterial gastroenteritis, prompt antibiotic treatment can prevent or decrease the risks of complications.

There is no effective treatment for viral gastroenteritis – prevention is key. Aside from avoiding food and water that may be contaminated as much as possible, thorough and frequent hand washing is probably your best defence.

Credits: The following health institution was consulted in this chapter: Department of Gastroenterology and Hepatology; Department of Colorectal Surgery; Department of Plastic, Reconstructive and Aesthetic Surgery; Department of General Surgery; Obesity and Metabolic Unit, Department of Endocrinology; Department of Psychiatry – Singapore General Hospital.