# DRUG TREATMENT FOR GALLSTONES

The formation of gallstones is the most common disorder of the gallbladder, which is the storage and concentrating unit for bile, a digestive juice produced by the liver. During digestion, bile passes from the gallbladder via the bile duct into the small intestine, where it assists in the digestion of fats. Bile is composed of several ingredients, including bile acids, bile salts, and bile pigments. It also has a significant amount of cholesterol, which is dissolved in bile acid. If the amount of cholesterol in the bile increases, or if the amount of bile acid is reduced, a proportion of the cholesterol cannot remain dissolved, and under certain circumstances this excess accumulates in the gallbladder as gallstones.

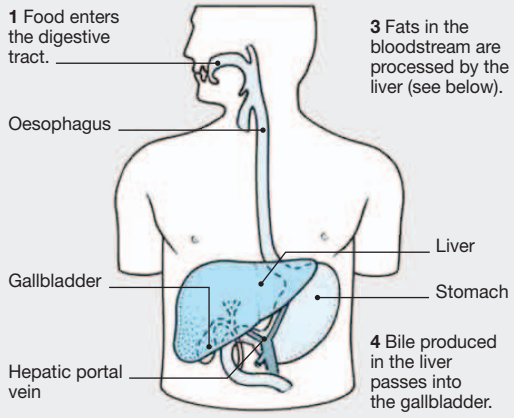
Gallstones may be present in the gallbladder for years without causing symptoms. However, if they become lodged in the bile duct they cause pain and block the flow of bile. If the bile accumulates in the blood, it may cause an attack of jaundice, or the gallbladder may become infected and inflamed.

Drug treatment with ursodeoxycholic acid is only effective against stones made principally of cholesterol (some contain other substances), and even these take many months to dissolve. Therefore, surgery and ultrasound have become widely used, especially the use of laparoscopic ("keyhole") surgery. Surgery and ultrasound treatments are always used to remove stones blocking the bile duct.

## DIGESTION OF FATS

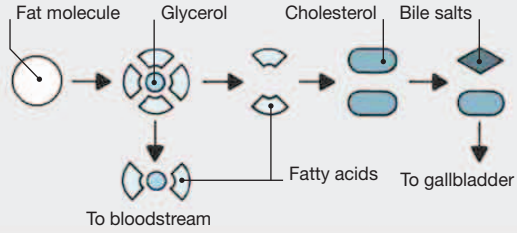
The digestion of fats (or lipids) in the small intestine is assisted by the action of bile, a digestive juice produced by the liver and stored in the gallbladder. A complex sequence of chemical processes enables fats to be absorbed through the intestinal wall, broken down in the liver, and converted for use in the body. Cholesterol, a lipid present in bile, plays an important part in this chain.

**2** Bile salts act on fats to enable them to pass from the small intestine into the bloodstream, either directly or via the lymphatic system.




### How fats are processed in the liver

Fat molecules are broken down in the liver into fatty acids and glycerol. Glycerol, as well as some of the fatty acids, pass back into the bloodstream. Other fatty acids are used to form cholesterol, some of which in turn is used to make bile salts. Unchanged cholesterol is dissolved in the bile, which then passes into the gallbladder.




## Why they are used

Even if you have not experienced any symptoms, once gallstones have been diagnosed your doctor may advise treatment because of the risk of blockage of the bile duct. Drug treatment is usually preferred to surgery for small cholesterol stones or when there is a possibility that surgery may be risky.

## How they work

Ursodeoxycholic acid is a substance that is naturally present in bile. It acts on chemical processes in the liver to regulate the amount of cholesterol in the blood by controlling the amount that passes into the bile. Once the cholesterol level in the bile is reduced, the bile acids are able to start dissolving the stones in the gallbladder. To achieve maximum effect, ursodeoxycholic acid treatment usually needs to be accompanied by adherence to a low-cholesterol, high-fibre diet.

## How they affect you

Drug treatment may often take years to dissolve gallstones completely. You will not, therefore, feel any immediate benefit from the drug, but you may have some minor side effects, the most usual of which is diarrhoea. If this occurs, your doctor may adjust the dosage. The effect of drug treatment on the gallstones is usually monitored at regular intervals by means of ultrasound or X-ray examinations.

Even after successful treatment with drugs, gallstones often recur when the drug is stopped. In some cases drug treatment and dietary restrictions may be continued even after the gallstones have dissolved, to prevent a recurrence.

Although the drug reduces cholesterol in the gallbladder, it increases the level of cholesterol in the blood because it reduces its excretion in the bile. Doctors therefore prescribe it with caution to people who have atherosclerosis (fatty deposits in the blood vessels). The drug is not usually given to people who have liver disorders because it can interfere with normal liver function. Surgical or ultrasound treatment is used for those with liver problems.

## AGENTS USED IN DISORDERS OF THE PANCREAS

The pancreas releases certain enzymes into the small intestine that are necessary for digestion of a range of foods. If the release of pancreatic enzymes is impaired (caused by, for example, chronic pancreatitis or cystic fibrosis), enzyme replacement therapy may be necessary. Replacement of enzymes does not cure the underlying disorder, but it restores normal digestion. Pancreatic enzymes should be taken just before or with meals, and usually take effect immediately. Your doctor will probably advise you to eat a diet that is high in protein and carbohydrates and low in fat.

Pancreatin, the generic name for those preparations containing pancreatic enzymes, is extracted from pig pancreas. Treatment must be continued indefinitely as long as the pancreatic disorder persists.

## COMMON DRUGS

**Pancreatic enzymes**
Amylase
Lipase
Pancreatin
Protease

**Drugs for gallstones**
Ursodeoxycholic acid

**Other drugs**
Colestyramine ⁕

⁕ See Part 3