A RATIONALE FOR THE ABDOMEN

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A guide to the diagnosis of diseases that may cause abdominal symptoms.
INTRODUCTION

SECTION ONE
Abdominal Symptoms Diagnostic Chart
A chart that leads the user through the location of abdominal symptoms to possible diagnoses.

SECTION TWO
Diagnostic Algorithm for Abdominal Symptoms
Symptoms involving the abdomen and the conditions that may be responsible

SECTION THREE
Abdominal Conditions
The symptoms, signs, investigation and treatment of medical conditions that may cause an abdominal symptoms.

Appendices
The interpretation of selected pathology tests
INTRODUCTION

This book is designed for both the medical student and the doctor who is not a specialist. It will take the user through a logical rationale in order to diagnose, and then treat, virtually every condition causing abdominal symptoms likely to be encountered outside a specialist practice.

There are two ways to reach a diagnosis, using the chart in Section One, or the Diagnostic Algorithms in Section Two.

In Section One, a chart will guide the user through the location of presenting symptoms for most abdominal conditions to a selection of possible diagnoses.

As an alternative, the algorithms in Section Two will indicate the diagnoses possible with a variety of abdominal presenting symptoms.

Once a diagnosis has, or number of differential diagnoses have been made, a detailed explanation of the various diagnoses can be found in the largest part of the book, Section Three. This has been written in a style that should be easy to understand by even junior medical students, with technical terms explained in each monograph, but should still be useful to the non-specialist doctor. The symptoms, signs, investigations and treatment of a very wide range of conditions are explained, along with pictures of the more common conditions.

I trust that you will find it useful.

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Section ONE

ABDOMINAL SYMPTOMS

DIAGNOSTIC CHART
A common causes of pain in regions of the abdomen

A Right Upper Quadrant:
Acute cholecystitis, biliary colic, hepatitis, pneumonia.

B Epigastrium:
Peptic ulcer, gastritis, pancreatitis, Crohn’s disease, heart disease.

C Left Upper Quadrant:
Splenomegaly (? cause), irritable bowel syndrome, basal pneumonia.

D Right Loin:
Ureteric colic, pyelonephritis, duodenal ulcer.

E Periumbilical:
Early appendicitis, small bowel obstruction, perforated peptic ulcer, ruptured aortic aneurysm, mesenteric artery occlusion, Crohn’s disease, Meckel’s diverticulitis.

F Left Loin:
Ureteric colic, diverticulitis, irritable bowel syndrome, pyelonephritis.

G Right Iliac Fossa:
Appendicitis, mesenteric adenitis, ureteric colic, unruptured ectopic pregnancy, ovarian cysts, Meckel’s diverticulitis, salpingitis, inguinal and femoral hernia, testicular torsion.

H Hypogastrium:
Large bowel obstruction, ruptured ectopic pregnancy, cystitis, uterine cramps, endometriosis, pelvic inflammatory disease.
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1. **Left Iliac Fossa:**
   - Gastroenteritis, colonic carcinoma, ureteric colic, diverticulitis, unruptured ectopic pregnancy, ovarian cysts, ulcerative colitis, constipation, salpingitis, inguinal or femoral hernia, testicular torsion.
Section Two

DIAGNOSTIC ALGORITHMS FOR ABDOMINAL SYMPTOMS
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DIAGNOSTIC ALGORITHMS FOR ABDOMINAL SYMPTOMS AND SIGNS

FORMAT

Presenting Symptom
(Alternate Name)
Explanation of terminology
System or other group of symptoms
Diagnoses that may present with this symptom
[alternate name of diagnosis] (other symptoms of each diagnosis, or a discussion of the diagnosis)
Other entries to consider

Clinical Sign
(Alternate Name) [Abbreviation]
Exp: An explanation of the sign, with its methodology described in sufficient detail to enable the practitioner to perform the test.
Int: The interpretation of the sign.
(+): The diseases, syndromes etc. that should be considered if the test is positive.
(++) The interpretation of an exaggerated or grossly positive test.
(−) Ditto for a negative test result.
(AB) Ditto for an abnormal test result.
Phys: The pathophysiology of the sign to enable its significance to be better understood.
Other entries to consider

Abdominal Colic
Severe, spasmodic, remitting pain
Gastroenteritis (diarrhoea, vomiting)
Food poisoning
Constipation
Gastric cancer
Peptic ulceration (epigastric, eased by antacids)
Small bowel obstruction (eg. postsurgical, stricture, hernia)
Large bowel obstruction (eg. volvulus, diverticulitis)
Intussusception (child, red currant jelly faeces)
Small or large intestinal neoplasm or tumour
Uterine colic (eg. missed abortion, period pain)
See also Abdominal Pain

Abdominal Distension
(Abdominal Bloating)
Giardial intestinal infection
Irritable bowel syndrome (pain, irregular bowel habits)
Severe constipation
Nervous swallowing of air
Depression (poor sleep, loss of interest)
Eating disorders (eg. anorexia nervosa)
Ileus (nausea, pain, silent abdomen)
Premenstrual syndrome
Peritonitis (pain, fever)
Intestinal obstruction (pain, borborygmi)
Sigmoid volvulus (colic)
Ascites (shifting dullness)
Denervation syndrome (diarrhoea, oesophageal surgery)
Gas bloat syndrome (can't vomit)
Gaseous drinks and fermentable foods (eg. legumes, grains)
Hormone replacement therapy
See also Ascites

Abdominal Mass
Superficial mass
Lipoma
Sebaceous cyst (subcutaneous, punctum)
Umbilical hernia
Inguinal hernia
Incisional hernia
Post-traumatic scarring
Rectus sheath haematoma
Divarication of the recti

Deep mass
Carcinoma of bowel or stomach
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Crohn's disease (epigastric pain, tender, diarrhoea)
Hodgkin's disease
Other lymphomas
Metastatic carcinoma
Appendiceal abscess (right iliac fossa mass)
Pancreatic tumour
Aortic aneurysm (pulsatile, central)
Pregnancy
Uterine fibroid or tumour
Ovarian tumour or cyst
Hydatid cyst
Distended gall bladder (Murphy’s sign +)
Hepatomegaly
Splenomegaly
Enlarged kidney
Pyloric stenosis (male infant)
Bladder carcinoma
Vertebral tumours
Neuroblastoma

Abdominal Noise
See Borborygmi

Abdominal Pain

Cardiovascular
Aortic aneurysm (pulsatile mass, shock)
Haemolytic anaemia (jaundice, malaise, pallor)
Sickle cell anaemia (jaundice, fever, negroid)
Thalassaemia major (hepatosplenomegaly, lethargy, jaundice)
Rheumatic fever (arthralgia, chorea, fever)
Mesenteric artery occlusion (nausea, melaena, diarrhoea)
Subacute bacterial endocarditis (fever, malaise, arthralgia)

Gastrointestinal
Gastritis (anorexia, haematemesia, nausea)
Peptic ulcer (us. epigastric, tender, nausea)
Irritable bowel syndrome (dyspepsia, varied bowel habits)
Crohn's disease (us. epigastric, tender, nausea)
Small intestine tumours (melaena, anorexia, nausea)
Meckel's diverticulitis (melaena, anorexia, nausea)
Gut obstruction (colic, vomiting, constipation)
Ileus (precipitating factor, distension, vomiting)
Appendicitis (us. RIF, anorexia, nausea)
Diverticulitis (us. LIF, diarrhoea and constipation, melaena)
Coeliac disease (anaemia, underweight)
Ulcereative colitis (diarrhoea, fever, weight loss)
Intussusception (child, brief attacks)

Infantile colic (4 to 16 weeks of age)
Constipation (cause should be determined)
Pseudomembranous colitis (diarrhoea)
Intestinal perforation (? after trauma)
Sphincter of Oddi syndrome (RUQ pain, nausea, diarrhoea)
Volvulus (severe colic, distension)

Hepatobiliary-pancreatic
Hepatitis (us. RUQ, jaundice, nausea)
Cirrhosis (us. RUQ, fatigue, nausea)
Cholecystitis (us. RUQ, nausea, jaundice)
Biliary colic (intermittent, tender, shock)
Pancreatic carcinoma (symptoms vary with site)
Pancreatitis (nausea, tender, shock)

Genitourinary
Testicular torsion (tender testicle, nausea, <40 years)
Endometriosis (dysmenorrhoea, dyspareunia)
Salpingitis (cramps, fever, leucorrhoea)
Ovarian cyst or teratoma (sudden onset)
Mittelschmerz [ovulation syndrome]
Ectopic pregnancy (abnormal vaginal bleeding)
Abortion (vaginal bleeding, hypogastric cramps)
Cystitis (dysuria, frequency, hypogastric pain)
Pyelonephritis (loin pain, nausea, headache)
Renal and ureteric colic (nasea, haematuria)
Nephrotic syndrome (proteinuria, oedema)
Pelvic inflammatory disease (vaginal discharge, dysuria)

Infections
Protozoal or metazoal intestinal infections
Tuberculosis (symptoms vary with organs involved)
Mumps pancreatitis (tender and swollen parotid glands)
Viral, bacterial and toxic enteritis
Typhoid fever and other salmonelloses
Brucellosis (fever, fatigue, arthralgia)
Leptospirosis (fever, myalgia, nausea)
Actinomycosis (fever, colic, sinuses in skin)
Infectious mononucleosis (adenitis, fever)
Septicaemia (fever, tachycardia, malaise)
Bilharzia (diarrhoea, urticaria, fever)

Syndromes
Afferent loop syndrome (relief by vomiting, steatorrhoea)
Budd-Chiari syndrome (hepatomegaly, ascites)
Carcinoid syndrome (cramps, flush, neck oedema, facial oedema)
Dumping syndrome (epigastric, postprandial)
Fitz-Hugh-Curtis syndrome (vaginal discharge, perihepatitis)
Henoch-Schönlein syndrome (purpura, excess
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bleeds)

Other
Muscular strain
Peritonitis (acutely tender, ileus)
Adhesions (colic)
Intestinal spasm (intermittent)
Mesenteric adenitis (nausea, anorexia, fever)
Polyarteritis nodosa (nodules, rash, arthritis)
Depression (insomnia, changed mood)
Addison disease (fatigue, pigmentation)
Hyopoparathyroidism (tetany, wheeze, stridor)
Phaeochromocytoma (headache, hypertension, sweating)
Porphyria (nausea, tachycardia, changed bowel habits)
Pleurisy (rapid, shallow respiration)
Basal pneumonia (cough, short of breath)
Splenomegaly (determine cause)
Inguinal or femoral hernia
Vertebral lesions and nerve root compression
Nerve entrapment syndromes
Diabetic ketosis and hypoglycaemia
Omental torsion
Anaphylaxis
Emotional (daytime only, often child)
Abdominal trauma (eg. car accident)
Drugs (eg. NSAIDs)

See also Abdominal Rigidity; Groin Pain; Loin Pain; Pelvic Pain

Abdominal Rigidity
Appendicitis (right iliac fossa tender, anorexia)
Pancreatitis (acute central abdo. pain)
Perforated viscus (eg. peptic ulcer)
Acute Crohn's disease (diarrhoea)
Intraperitoneal haemorrhage
Ectopic pregnancy (severe lower abdo. pain)
Ruptured ovarian cyst
Peritonitis
Pelvic inflammatory disease (hypogastric pain)

See also Carnett's Test

Anal Examination
See Rectal Mass

Ascites
Excess peritoneal fluid
Cirrhosis (jaundice, nausea, RUQ pain)
Hepatoma (cachexia, anorexia, asthenia)
Lymphoma (hepatomegaly, cachexia)
Other gastrointestinal malignancies

Bilharzia (diarrhoea, urticaria, fever)
Congestive cardiac failure (dyspnoea, oedema, cough)
Chronic renal failure (nausea, pruritus, lethargy)
Hepatitis (jaundice, hepatomegaly, malaise)
Pericarditis (chest pain, friction rub)
Pancreatitis (abdominal pain, diarrhoea)
Protein losing enteropathy
Malnutrition (cachexia)
Hepatic vein obstruction (hepatomegaly)
Hypothyroidism (fatigue, cold intolerance, dry skin)
Tuberculosis
Trypanosomiasis (myocarditis, anaemia)

Syndromes
Budd-Chiari syndrome (abdominal pain, hepatomegaly)
Meigs syndrome (ovarian fibroma, hydrothorax)
Nephrotic syndrome (oedema, proteinuria, anorexia, striae, hypertension)
Ashtenia
See also Shifting Dullness; Thrill, Fluid

Bloating, Abdominal
See Abdominal Distension

Borborygmi
Excessively noisy bowel peristalsis
Gut obstruction (pain, constipation, vomiting)
Gastroenteritis (diarrhoea, nausea, vomiting)
Food poisoning
Toxic enteritis
Excess swallowed air (rapid eating, nervous swallowing)
Aerated drinks

Cachexia
Exp: Widespread muscular wasting, grey pallor, dry and wrinkled skin
Int: (+) Malignant diseases (eg. carcinoma of lung, stomach, ovary), Hodgkin's disease, leukaemia, anorexia nervosa, chronic renal or hepatic disease, advanced diabetes, chronic TB, malnutrition, chronic cardiac failure, chronic malaria, ancylostomiasis, sprue, scurvy, Addison's disease, fluorosis, thyrotoxicosis, Simmonds' disease, lead or mercury poisoning
Phys: Many serious diseases, particularly when chronic, cause the loss of protein and ketones through the urine. A loss of muscle tissue and anaemia results
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Carnett’s Test
Exp: In cases of abdominal tenderness, locate point of maximal tenderness, ask patient to cross arms and sit half way forward, and palpate area again. Positive if tenderness increases
Int: (+) Abdominal wall tenderness, not visceral pain
Phys: Differentiates intra-abdominal source of pain from abdominal wall pain in cases of acute abdomen
See also Abdominal Rigidity

Chaussier’s Sign
Exp: Epigastric pain in a pregnant woman with pre-eclampsia
Int: (+) Imminent imminent eclampsia

Cholestasis
See Jaundice

Clay Stool
See Faeces, Abnormal Colour

Coffee-Grounds Vomitus
Dark brown granular vomitus
Peptic ulcer
Stomach carcinoma
Oesophageal varices
Portal cirrhosis
Yellow fever

Colic
See Abdominal Colic

Constipation
Physical inactivity and low residue diet
Dehydration (nausea, thirst, weakness)
Piles (pain, rectal bleeding, pruritus ani)
Fissure-in-ano (pain, anal bleeding)
Colonic or rectal tumour (melaena)
Gut obstruction (vomiting, pain)
Diverticulitis (alternating diarrhoea, LIF pain)
Neurogenic colonic disease
Hirschsprung’s disease (chronic impaction, abdomen distended)
Pregnancy (amenorrhoea, breast fullness)
Hypothyroidism (growth reduced, dry skin)
Typhoid fever (alt. diarrhoea, fever, abdominal pain)
Ulcerative colitis (changed bowel habits)
Rectal prolapse
Perineal descent syndrome
Hypercalcaemia (chronic form)
Electrolyte disturbances
Diabetes (polyuria, polydipsia, nausea)
Porphyria (abdominal pain, vomiting)
Irritable bowel syndrome (abdominal pain, bloated, alt. diarrhoea)
Lightwood syndrome (weight loss, vomiting, child)
Depression (insomnia, lack of interest)
Neuroses and other psychiatric disorders
Drugs (eg. codeine, antacids, anticonvulsants, antidepressants, diuretics, iron)

Courvoisier’s Law
Exp: A distended gall bladder (found by palpation) in the presence of jaundice is due to some cause other than gallstones
Int: (+) Carcinoma of head of pancreas, cholelithiasis not absolutely excluded
Phys: Chronic gallstones cause fibrosis of the gall bladder, thus preventing its later expansion
See also Hepatomegaly

Cullen’s Sign
Exp: Spontaneous umbilical bruising
Int: (+) Ruptured ectopic pregnancy, carcinoma of pancreas, haemorrhagic pancreatitis, other causes of haemoperitoneum
Phys: Tracking of free intraperitoneal blood to umbilicus

Dance’s Sign
Exp: Palpable right iliac fossa depression in a distressed infant
Int: (+) Intussusception
Phys: Intussusception causes large bowel (normally present in right iliac fossa) to be drawn into centre of abdomen

Diarrhoea
Gastrointestinal
Food poisoning (toxin or infection - see below)
Lactose intolerance
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Faecal impaction with overflow
Allergy (eg. milk, eggs)
Diverticulitis (LIF pain, colic, tender)
Irritable bowel syndrome (abdominal pain, bowel habit changes, colic)
Appendicitis (RIF pain and guarding)
Crohn's disease (pain, anorexia, flatus)
Ulcereative colitis (bloody faeces, colic, fever)
Colonic or rectal carcinoma (melaena, pain)
Dietary anomalies and marasmus
Pancreatic insufficiency or tumours
Coeliac disease (chronic, flatulence, weight loss)
Tropical sprue (foul faeces, weight loss)
Inflamed perirectal tissues
Ischaemic bowel disease (abdominal pain)
Intussusception (bloody diarrhoea, child)
Postvagotomy
Small bowel resection
Cirrhosis (fatigue, nausea, RUQ pain)
Pseudomembranous colitis
Anal sex

Infections
Viral enteritis or food poisoning
Bacterial enteritis (eg. typhoid, other salmonelloses, shigellosis, yersinia)
Clostridium difficile infection (chronic, severe, post antibiotic)
Amoebiasis (abdominal cramps, foul stools)
Septicaemia (fever, malaise)
Tuberculosis, intestinal
Histoplasmosis
Meningitis (headache, neck stiffness, fever)
Urinary tract infections (dysuria, frequency)
Melioidosis (cough, chest pain, sores)
Cholera (liquid and odourless stools, vomiting)
Giardiasis (foul stools, flatulence, cramps)
Bilharzia (urticaria, abdominal pain, fever)
Other metazoal and protozoal infections

Syndromes
AIDS (fever, adenitis, rash)
Carcinoid syndrome (flush, abdominal cramps, oedema)
Cori syndrome (glycogen storage disease)
Denervation syndrome (bloating, oesophageal surgery)
Dumping syndrome (postgastrectomy, postprandial)
Gay bowel syndrome (homosexual, tenesmus)
Haemolytic-uraemic syndrome (haematuria, thrombocytopenia)
Nezelof syndrome (infant, fever, rashes)
Toxic shock syndrome (nausea, fever, hypotension)
von Gierke syndrome (hypoglycaemia, hepatosplenomegaly)
Weil syndrome (leptospirosis)

Zollinger-Ellison syndrome (recurrent peptic ulcers)
Other malabsorption syndromes and enteropathies

Other
Anaphylaxis
Psychogenic (psychiatric changes, depression)
Neuropathies (eg. tabes dorsalis)
Hyperthyroidism (weakness, sweating, weight loss)
Pernicious anaemia (glossitis)
Vitamin B deficiency
Folate deficiency
Diabetes (polyuria, weakness, neuropathy)
Addison's disease (skin pigmentation)
Carcinoid tumour (sweating, abdominal pain)
Pellagra (depression, red skin and tongue)
Uraemia (fatigue, headache, anaemia)
Adrenal insufficiency (fatigue, nausea, headache)
Ciguatera poisoning (paraesthesiae)
Laxative abuse
Alcoholism
Antibiotics and other drugs (eg. antacids, colchicine, methyldopa, propranolol, theophylline, digoxin, indomethacin, antibiotics, quinidine)

See also Tenesmus; Melaena and Rectal Bleeding

Dyspepsia
Abdominal pain made worse by meals
Peptic ulcer (epigastric pain, burping, nocturnal)
Irritable bowel syndrome (abdominal pain, bowel habit changes)
Psychological (secondary to stress)
Gastritis (anorexia, nausea, malaise)
Duodenitis
Oesophagitis (dysphagia, waterbrash)
Cholecystitis
Pancreatitis (sweating, nausea, abdominal tenderness)
Gastric carcinoma
Food allergy and drug intolerance (eg. NSAIDs)

Faeces, Abnormal Colour

Dark
Red wine
Certain fruits
Iron or bismuth medications

Green/yellow (excess bile)
Intestinal hurry
Bowel infections
Starvation

Canary yellow
Diet primarily of dairy products
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Clay
Lack of bile from biliary obstruction

Pale yellow
Steatorrhoea (excess fat)

Red
Blood from lower intestine (eg. haemorrhoids, cancer, polyps)

Black
Melaena
Excess iron
See also Melaena and Rectal Bleeding

Flatulence
Passing of gas per rectum
Aerophagia (eg. with terror or rapid eating)
Gaseous foods (eg. carbonated drinks)
Fermentation
Coeliac disease (chronic diarrhoea, weight loss)
Crohn's disease (diarrhoea, pain, anorexia)
Diverticulitis (alt. diarrhoea & constipation, pain)
Bacterial or protozoal bowel infections

Fluid Thrills
See Thrill, Fluid

Groin Lump
Inguinal hernia (male, may be reducible)
Femoral hernia (usually female, may be reducible)
Inflamed or scarred lymph node
Femoral artery aneurysm (tender)
Psoas abscess (tender)
Lipoma or hydrocele of cord
Undescended testicle (empty scrotum)
Saphena varx (varicose vein)
Lymphoma
See also Abdominal Mass

Groin Pain
Strained ligament or tendon
Testicular torsion or infection
Osteoarthritis of hip
Osteitis pubis
Ovarian tumours
Endometriosis (cyclical, menorrhagia)
Abdominal abscess (tender, fever)
Inguinal hernia (above inguinal ligament)

Femoral hernia (below inguinal ligament)
Obturator hernia (female, hip kept flexed)
Nerve root entrapment
Neuralgia
Prostatitis
See also Abdominal Pain; Pelvic Pain

Haematemesis
Vomiting blood
Peptic ulceration of stomach or oesophagus (epigastric pain, nausea)
Oesophageal varices (splenomegaly, cirrhosis)
Gastritis (pain, anorexia, nausea)
Oesophageal or stomach carcinoma (fullness, nausea, pain)
Cirrhosis (fatigue, anorexia, nausea)
Mallory-Weiss syndrome (excess vomiting, forceful vomits)
Yellow fever (jaundice, muscle pain, purpura)
Portal hypertension gastropathy
Leiomyoma
Lymphoma
Vascular malformation
Oesophageal or stomach foreign body
Osler-Rendu-Weber disease (telangiectasia)
Drugs (eg. NSAIDs, warfarin)

Hepatomegaly
Enlarged liver
Congestive cardiac failure (dyspnoea, ankle oedema)
Hepatitis (jaundice)
Infectious mononucleosis (fever, adenitis)
Malaria (fevers, malaise)
Other infectious agents
Primary or metastatic tumour
Cirrhosis
Fatty liver
Lymphoma
Leukaemia
Bile duct obstruction (epigastric pain)
Amoebiasis (diarrhoea)
Hepatic abscess (tender liver)
Actinomycosis
Polycystic disease
Hepatic fibrosis
Tuberculosis (TB)
Sarcoid
Haemosiderosis
Amyloidosis
Diabetes mellitus (polyuria, thirst, malaise)
Myelofibrosis (splenomegaly, anaemia)
Glycogen storage diseases
Hypogastric Pain

See Pelvic Pain

Incontinence of Faeces

Normal Sphincter
Diarrhoea (see separate entry)
Ulcerative colitis (abdo. pain, diarrhoea)
Diverticulitis (abdo. pain, diarrhoea)
Haemorrhoids (pain on defaecation, bright blood)
Mucosal prolapse
Diabetes mellitus (thirst, polyuria, malaise)

Abnormal Sphincter
Fissure-in-ano (pain on defaecation)
Recent childbirth
Neurogenic (demented)
Neurological conditions
Rectal prolapse
Anal or perianal infection
Sphinicter trauma
Anal sexual intercourse

Indigestion

See Abdominal Pain; Burping, Excessive; Dyspepsia

Inguinal Pain

See Groin Pain

Jaundice

(Icterus)

Yellow skin
Hepatobiliary
Biliary tract obstruction (pain, pruritus, fever)
Cholecystitis (pain, nausea, fever)
Cirrhosis (pruritus, RUQ pain fever)
Carcinoma of head of pancreas (pain, pruritus, cachexia)
Cholelithiasis (colic)
Primary or secondary hepatic malignancy
Alcoholic liver disease
Hepatic vein stenosis
Gaucher's disease (hepatosplenomegaly, anaemia)
Primary sclerosing cholangiitis

Infections
Hepatitis, infectious and serum (anorexia, nausea,
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fever)
Malaria (paroxysmal fevers, nausea, headache)
Clostridial gangrene (pain, foul smell, tissue crepitations)
Yellow fever (purpura, muscle pain, oliguria)
Pancreatitis (severe pain, shock)
Cytomegalovirus (neonate, purpura, haematuria)
Syphilis (variable symptoms)
Echinococcus (wheeze, urticaria)

Syndromes
Bard-Pic syndrome (carcinoma of pancreas)
Crigler-Najjar syndrome (kernicterus, neonate)
Dubin-Johnson syndrome (neonate, asymptomatic)
Gilbert syndrome (benign asymptomatic jaundice)
Lissencephaly syndrome (fits, hypotonia)
Patau syndrome (neonate, asymptomatic)

Other
Neonatal icterus
Familial causes
Hodgkin's disease (adenitis, fever, weight loss)
Sickle cell anaemia (fever, abdominal pain, negroid)
Post upper abdominal surgery
Haemolytic anaemia (fatigue, malaise, pallor)
Thalassaemia major (hepatosplenomegaly, leathargy)
Galactosaemia (infant, vomiting)
Drugs (eg. chlorinates, chromates, sulfonamides, halothane)
Carotenaemia (excess ingestion of orange coloured food, headache, white conjunctivae)

Kehr's Sign
Exp: Left shoulder tip pain, acute abdomen
Int: (+) Ruptured spleen
Phys: Referred pain via phrenic nerve, caused by irritation of diaphragm

Liver, Enlarged
See Hepatomegaly

Loin Pain
Renal or ureteric stone (severe pain radiates to groin)
Pancreatitis (nausea, acute pain)
Pyelonephritis (fever, polyuria)
Renal tumour
Hepatobiliary disease (eg. cholecystitis)
Nerve root pain
Lumbar hernia

Colonic disease (eg. diverticulitis, ulcerative colitis)
Splenic disease
See also Abdominal Pain; Groin Pain

Malabsorption
Thyrotoxicosis (heat intolerance, proptosis, tachycardia)
Cystic fibrosis (pulmonary disease, steatorrhoea)
Gastric or intestinal surgery
Gastric or intestinal tumour
Lactase deficiency
Lipase deficiency
Crohn's disease (colic, pain, diarrhoea)
Chronic pancreatitis or carcinoma of pancreas
Irradiation to abdomen
Hepatic diseases (eg. cholestasis, cirrhosis)
Cholelithiasis (intermittent RUQ pain)
Scleroderma (skin thickening, arthritis)
Diverticulitis (varied bowel habits, pain)
Amyloidosis (pulmonary symptoms)
Diabetes mellitus (polydipsia, polyuria)
Coeliac disease (foul faeces, weight loss, anaemia)
Tropical sprue (travel history, diarrhoea)
Giardiasis (diarrhoea, flatus, often asymptomatic)
Mesenteric vascular disease (postprandial pain)
Lymphomas
Hypogammaglobulinaemia
Whipple's disease (pain, diarrhoea, melaena)
Postgastrectomy syndrome
Pernicious anaemia (fatigue, sore tongue)
Zollinger-Ellison syndrome (peptic ulcer)
Hartnup disease
Afferent loop syndrome (abdominal pain relieved by food)
Bassen-Kornzweig syndrome (low weight, ataxia)
Alcohol dependence
Drugs (eg. neomycin, cholestyramine, metformin)
See also Cachexia

Melaena and Rectal Bleeding
Melaena (Dark, Altered Blood)
Peptic ulcer (epigastric pain and tenderness, nausea)
Carcinoma of stomach or oesophagus (fullness, pain, anorexia)
Small intestine tumours and disease (pain, nausea)
Portal hypertension (hepatomegaly)
Lymphoma
Leiomyoma
Cowden disease (stomach hamartomas)
Cronkhite-Canada syndrome (abnormal hand & foot pigmentation)
Gardner syndrome (sebaceous cysts, colonic adenomas)
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Fresh Blood Loss
Ulcerative colitis (colic, diarrhoea, fever)
Colonic polyps (often painless)
Diverticulitis (diarrhoea, abdominal pain)
Colonic carcinoma (alt. diarrhoea and constipation)
Haemorrhoids (pain, discharge, pruritus)
Fissure-in-ano (pain, constipation)
Salmonellosis
Dieulafoy's disease (massive haemorrhage)
Amoebiasis (diarrhoea, colic)
Peutz-Jegher syndrome (pigmented mouth and fingers)

Variable Blood Form
Endometriosis (dysmenorrhoea, dyspareunia)
Crohn's disease (abdominal mass & pain, diarrhoea)
Infective colitis (fever, malaise, diarrhoea)
Defibrination syndrome (generalised excessive bleeding)
Henoch-Schoenlein syndrome (purpura, abdo. pain)
Vascular malformations
Haemophilia and other coagulation disorders
Intestinal foreign body
Drugs (eg. warfarin, salicylates)

Murphy's Law
Exp: Jaundice due to cholelithiasis is preceded by colic. Jaundice due to neoplasm or external obstruction of the biliary tract has no history of colic

Murphy's Sign
Exp: With the examiner's fingers pressed firmly over the patient's abdominal RUQ, the patient inhales slowly and deeply. A momentary interruption of inhalation occurs due to pain
Int: (+) Cholecystitis
Phys: The inflamed gall bladder is pressed against the examiner's fingers by the descending diaphragm

Nausea and Vomiting
Infections
Bacterial and viral gastrointestinal and systemic infections (eg. cholera, salmonelloses, actinomycoses)
Metazoal and protozoal infestations (eg. malaria, trichinosis, leptospirosis)
Meningitis (headache, fever, neck stiffness)

Gastrointestinal
Gastritis (anorexia, pain, haematemesis)
Peptic ulcer (epigastric pain and tenderness, melena)
Stomach carcinoma (fullness, heartburn, melena)
Intussusception (bloody diarrhoea, infant)
Small intestinal tumours (melena, pain)
Mesenteric artery occlusion (pain, diarrhoea)
Gut obstruction and ileus (colic, distension)
Appendicitis (RIF pain, anorexia, fever)
Mesenteric adenitis (pain, anorexia, fever)

Hepatobiliary
Cholecystitis (RUQ pain, jaundice, fever)
Hepatitis (anorexia, jaundice, fever)
Cirrhosis (RUQ pain, anorexia, fatigue)
Biliary colic (RUQ pain, shock)
Pancreatitis (severe pain, shock, fever)

Cerebral
Migraine (headache, photophobia, vertigo)
Cerebrovascular accident (neurological signs)
Intracranial tumours (headache, neurological signs)
Increased intracranial pressure (various signs)
Cerebral hypoxia (anoxia or circulatory causes)
Epilepsy (convulsion, amnesia, micturition)
Menière's disease (tinnitus, vertigo)
Motion sickness
Labyrinthine disease (vertigo, pain)

Endocrine
Hyperparathyroidism (polyuria, polydipsia, bone pain)
Hyperthyroidism (sweating, cold intolerance)
Adrenal insufficiency [Addison's disease]
( headache, fatigue, diarrhoea)
Phaeochromocytoma (hypertension, headache, sweating)
Diabetes mellitus (polyuria, paraesthesiae, blurred vision)
Hypercalcaemia (anorexia, constipated)

Urinary
Acute renal failure (oliguria or diuresis, haematuria)
Urinary tract infections (fever, dysuria, pain)
Renal colic (severe pain, haematuria)

Syndromes
AIDS (fever, arthralgia, rash)
Chinese restaurant syndrome (face pressure, chest pain)
Dandy-Walker syndrome (craniomegaly, cleft palate)
Diencephalic syndrome (cachexia, pallor, sweating)

Sinusitis and catarrh
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Dumping syndrome (postgastrectomy, postprandial)
Haemolytic-uraemic syndrome (haematuria, thrombocytopenia)
Leigh disease (encephalitis)
Lightwood syndrome (weight loss, child, constipation)
Mallory-Weiss syndrome (haematemesis, forceful vomiting)
Premenstrual syndrome (mastalgia, headache)
Serotonin synd. (tremor, antidepressant drugs)
Xiphoid syndrome (sternal pain)

Other
Bulimia (deliberately vomits meals)
Morning sickness of pregnancy
Myocarditis (asthenia, vertigo, dyspnoea)
Haemolytic anaemia (fever, abdominal pain, jaundice)
Altitude sickness (vertigo, headache, fatigue)
Polyarteritis nodosa (arthritis, nodules, rash)
Porphyria (abdominal colic, sweating, tachycardia)
Severe hypertension (headache)
Alcohol dependence (liver disease)
Acidosis or alkalosis
Myocardial infarct (chest pain, shock, dyspnoea)
Glaucoma (eye pain, visual disturbance)
Congestive cardiac failure (oedema, dyspnoea)
Electrolyte disturbances
Severe pain, fright or shock
Anaphylaxis
Psychogenic
Ciguatera poisoning (paraesthesia)
Radiotherapy
Effects of hormones and toxins
Drugs (eg. digoxin, theophylline, narcotics, cytotoxics)

Noise, Abdominal
See Borborygmi

Obesity
Diet, exercise and lifestyle
Familial or genetic
Diabetes mellitus
Insulinoma
Hypothalamic lesions
Hypothyroidism (fatigue, cold intolerance, dry skin)

Syndromes
Cushing syndrome (amenorrhoea, hirsute, central obesity, moon face)

Fröhlich syndrome (obese genitals and buttocks)
Laurence-Moon-Biedl syndrome (retinitis pigmentosa)
Mauriac syndrome (dwarf, diabetes, hepatomegaly)
Menopausal syndrome (weight gain, menstrual changes)
Pickwickian syndrome (cyanosis, cardiac failure)
Prader-Willi syndrome (hypotonia, mental retardation)
Reaven syndrome (hypertension)
Stein-Leventhal syndrome (amenorrhoea, hirsute)

Ovarian Mass
Exp: Enlarged ovary found on bimanual examination or ultrasound scan
Int: (+) Simple cyst, follicular cyst, cystadenoma, polycystic ovarian syndrome, adenocarcinoma, teratoma, tubal abscess, stromal tumour
See also Pelvic Mass

Pelvic Mass
Pregnancy
Faecal impaction
Uterine fibroids
Urogenital uterine abnormality
Lymphoma
Endometriosis
Pelvic malignancy
Pelvic inflammatory disease
Ovarian cyst or malignancy
Teratoma
Ectopic pregnancy
Hydrosalpinx
Pelvic abscess
Rectal carcinoma
Bladder carcinoma
Pelvic kidney
See also Ovarian Mass

Peristalsis, Visible
Peristaltic waves seen moving vaguely across abdomen
Pyloric stenosis (male infant)
Acute gastrointestinal obstruction at any level
Congenital adrenal insufficiency
Thin children

Polyphagia
See Hunger, Excess
Rebound Tenderness, Abdominal
Gentle pressure on the abdomen followed by rapid removal of pressure causes sudden, acute pain
Peritonitis
Peritonism due to any inflamed intra-abdominal viscus (eg. appendicitis, pancreatitis)
Perforated ulcer
Cholecystitis
Crohn's disease
Diverticulitis
Cystitis
Mesenteric adenitis
Intraperitoneal haemorrhage (eg. ectopic pregnancy, leaking aneurysm, endometriosis)
See also Abdominal Pain

Sister Mary Joseph's Nodule
Exp: Raised umbilical nodule, often erythematous and painless
Int: (+) Disseminated intra-abdominal malignancy (eg. ovarian or gastric carcinoma)
Phys: Retrograde lymphatic spread of carcinoma to form an umbilical deposit

Spleen, Enlarged
See Splenomegaly

Splenomegaly
Enlarged spleen
Systemic infection (eg. infectious mononucleosis, hepatitis, AIDS, septicaemia, subacute bacterial endocarditis, malaria, TB, brucellosis, typhoid fever)
Portal hypertension (due to cirrhosis, portal or splenic vein thrombosis or obstruction)
Gaucher disease (soft bones, fat accumulation)
Niemann-Pick disease (intellectual disability, cachexia)
Congestive cardiac failure (dyspnoea, oedema)
Letterer-Siwe disease (fever, muscle wasting)
Sarcoidosis (bizarre symptoms)
Leukaemias
Lymphoma
Various haemoglobinopathies
Thalassaemia major (anaemia)
Myelofibrosis
Kala-azar
Systemic lupus erythematosus (SLE)
Polyarteritis nodosa (fever, artery pain)
Polycythaemia rubra vera (headache, dizziness)
Spherocytosis
Thrombocytopenia (purpura)
Haemolytic anaemias
Splenomegaly
Hand-Schueller-Christian disease (diabetes insipidus)
Amyloidosis
Budd-Chiari syndrome (hepatomegaly, ascites)
Felty syndrome (peptic ulcers, hepatomegaly)
Hunter syndrome (stiff joints, grotesque face)
Hurler syndrome (short, stiff joints, abnormal face)
Plummer-Vinson syndrome (oesophageal web)
Pompe syndrome (glycogen storage disease)
Sanfilippo syndrome (excess hair, intellectual disability)
Schiele syndrome (respiratory infections,
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hepatomegaly
Sly syndrome (respiratory infections, hepatomegaly)
Protein deficiency
Starvation

### Tenesmus
**Abnormal desire to defaecate**
Diarrhoea from any cause (see separate entry)
Haemorrhoids (blood on faeces, pain)
Rectal carcinoma
Ulcerative colitis (bloody diarrhoea)
Rectal polyps
Pelvic inflammatory disease (abdominal pain, vaginal discharge)
Carcinoid syndrome (flushes, asthma, oedema)

### Thrill, Fluid
**Exp:** The patient or a third person places his or her hand vertically on edge along the linea alba. Examiner places flat of hand on one side of abdomen and sharply taps opposite flank. A sudden change in abdominal pressure is noted by the palpating hand

**Int:** (+) Intraperitoneal fluid (ascites) (due to cirrhosis, cardiac failure, hepatitis, carcinoma of liver, pericarditis, nephrotic syndrome, etc.)

**Phys:** Fluid thrill may be felt due to subcutaneous fat transmission of impulse unless this is obstructed by hand on linea alba

*See also Ascites; Shifting Dullness*

### Vomiting
See Nausea and Vomiting; Haematemesis

### Yellow Skin
See Jaundice
Section Three

MEDICAL CONDITIONS WITH ABDOMINAL SYMPTOMS
MEDICAL CONDITIONS
Common diseases that cause abdominal symptoms

ABSCESS
An abscess is a collection of pus in a tissue cavity. There are two main types of abscesses - those under the skin, and those that occur in internal body organs (called an empyema on the surface of the lungs or brain). It is caused by the destruction of normal tissue by a bacterial, or rarely fungal, infection. If significant tissue destruction occurs, the destroyed cells accumulate as pus, and an abscess forms.

An abscess may be a complication of a skin infection (cellulitis), follow surgery, appendicitis or similar internal infection, or be due to a penetrating injury.

A skin abscess appears as a red, painful swelling that is initially hard to touch, but as the pus formation increases, becomes soft and obviously fluid-filled. Eventually a head forms that bursts and allows the pus to escape. Particularly nasty abscesses may develop around the anus (pilonidal sinus) and require quite major surgery to drain the pus.

An internal abscess can occur in almost any organ, and may not be found until they are a large size. They cause a fever and a general feeling of being unwell. The organs most commonly affected include the brain, liver, breast, lung, tonsils (causing quinsy) and teeth. Internal ones may require an ultrasound scans or laparoscopy (operation) to confirm the diagnosis.

Skin abscess are treated in the early stages by antibiotics given by mouth or injection, and hot compresses are applied to the area. Once pus is present, the abscess is drained by piercing it with a scalpel, scraping pus and debris out of the cavity, and the drain hole is kept open by a small piece of cloth (a wick) to allow further pus to escape quickly.

With an internal abscess, antibiotics are used to stop the spread of the infection but will not cure the abscess and the pus must eventually be removed by an open operation under a general or local anaesthetic.

Most abscesses will slowly reduce in size and heal. If left untreated, a patient may become severely ill, with new abscesses forming in surrounding tissues.

ACQUIRED IMMUNE DEFICIENCY SYNDROME
See AIDS

ACTINOMYCOSIS
Actinomycosis (lumpy jaw) is an uncommon infection of the skin, particularly the face, caused by the bacteria Actinomyces which normally lives in the mouth and assist with food digestion. If the bacteria enters into damaged tissue in other parts of the body they may cause an infection.

The symptoms include hard, inflamed lumps in the skin that develop into abscesses and discharge pus. Other areas that may be infected include tooth sockets after an extraction, and the gut. Other symptoms include a fever, and constant severe pain in any infected area.

Swabs are taken from the discharging pus in an attempt to identify the responsible bacteria, but the bacteria are often difficult to identify.

The infection is resistant to simple treatments, and a 6-week or longer course of penicillin and other antibiotics, initially by injection, is necessary. Abscesses are surgically drained and affected tissue may need to be excised (cut out). Cure is difficult, but usually possible, although permanent scarring may be left behind.

ACUTE HEPATIC PORPHYRIA
Acute hepatic porphyria is one of a number of different uncommon types of porphyria, which is
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a liver disease.

It is an inherited disease that passes from one generation to the next but causes symptoms in only 10% of those affected.

Symptoms develop at the time of puberty with vague abdominal pains, nausea, vomiting and abnormal sensations. As the disease progresses, the abdominal pains may become severe, but nothing abnormal can be found in the abdomen. In advanced cases, nerve pain, paralysis, personality changes and fits may occur. The urine turns a dark purple colour, then brown, if left standing. Some patients may have the otherwise quiescent disease triggered by severe infections, starvation, some drugs or steroids. Complications include liver damage, which may progress to liver failure or liver cancer (hepatoma), and nerve damage which may cause varying forms of paralysis.

It is diagnosed by special blood tests. Treatment involves careful genetic counselling of families and avoiding factors (eg. crash diets, emotional stress, alcohol, certain drugs) that may precipitate an attack, and it is controlled by the use of a complex drug regime.

Acute hepatic porphyria may be controlled, but not cured, and death may occur due to the paralysis of the muscles of breathing.

ADDISON DISEASE

Addison disease is also known as adrenocortical Insufficiency and chronic hypoadrenocorticism. It is a rare underactivity of the outer layer (cortex) of the adrenal glands that sit on top of each kidney, and produce hormones (chemical messengers) such as cortisol that control the levels of vital elements in the body and regulate the breakdown of food. In most cases, the reason for adrenal gland failure is unknown, but tuberculosis is a possible cause.

The symptoms include weakness, lack of appetite, diarrhoea and vomiting, skin pigmentation, mental instability, low blood pressure, loss of body hair and absence of sweating. Complications include diabetes, thyroid disease, anaemia, and eventual death. A sudden onset of disease is known as an Addisonian or adrenal crisis, which may be rapidly fatal.

It is diagnosed by special blood tests that measure the body's response to stimulation of the adrenal gland (synacthen stimulation test).

Treatment involves a combination of medications (eg. steroids such as cortisone) to replace the missing hormones, and dosages vary greatly from one patient to another. Frequent small meals high in carbohydrate and protein are eaten, and infections must be treated rapidly. Patients must carry an emergency supply of injectable cortisone with them at all times. Treatment can give most patients a long and useful life, but they cannot react to stress (both physical and mental) adequately, and additional treatment must be given in these situations. The ultimate outcome depends greatly on the patient’s ability to strictly follow all treatment regimes.

The condition is named after the English physician Thomas Addison (1793-1860).

ADHESIONS

Adhesions are a relatively uncommon but potentially serious and disabling complication of any surgery within the abdomen.

During an operation, minor damage to tissue in the abdominal cavity occurs. If two areas of damaged tissue come into contact they may heal together and form an adhesion, which is a tough fibrous band that can later stretch across the abdominal cavity between the two surgically damaged points. Adhesions are more common if there is an infection in the abdomen (eg. peritonitis, burst appendix), but sometimes occur after relatively minor surgery. They are also more common in short, fat females, but the reason for this is unknown.

Many adhesions produce no symptoms, but if a loop of bowel is trapped or becomes twisted around an adhesion (volvulus) it can become obstructed. Sometimes adhesions cause a persistent colic in the gut as the intestine winds tightly around the fibrous bands, or the adhesion may tear and bleed, leading to more pain. A bowel obstruction may rarely occur, and lead to gangrene, perforation and peritonitis.

No totally diagnostic tests available, but sometimes abnormalities are seen on an ultrasound.
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scan of the abdomen.

The only treatment is more surgery to cut away the adhesions, during which extreme care must be taken to prevent any bleeding into the abdomen and any unnecessary injury to the bowel. A few months or years after treatment the adhesions may re-form, and the symptoms start again. It is a very difficult problem to deal with, and often there is no permanent solution.

See also VOLVULUS

ADRENAL INSUFFICIENCY
See ADDISON DISEASE

AFFERENT LOOP SYNDROME

The afferent loop syndrome is a complication of major surgery to the stomach that only occurs after a Bilroth II gastrectomy or a gastrojejunostomy which are performed for severe peptic ulcers or cancer and leave a redundant loop of bowel. The operation results in a failure of the bowel to move food along and subsequent distension of the bowel.

Affected patients experience belly pain after eating which is relieved by vomiting, poor food absorption and fatty faeces. Pernicious anaemia may develop because of failure of vitamin B12 absorption. A barium meal x-ray is abnormal, and the fat level in the faeces is high.

Treatment involves tetracycline or lincomycin antibiotics, and further surgery to the bowel, but the condition is difficult to treat.

AIDS

AIDS is an acronym for the acquired immune deficiency syndrome, which is an infection caused by a retrovirus known as the human immunodeficiency virus (HIV) which destroys the body's defence mechanisms and allows severe infections and cancers to develop. In the very early days of research into the virus responsible for AIDS, it was described as human T-cell lymphocytotrophic virus 3 (HTLV3).

The story begins in central Africa, where it is now believed a form of AIDS has existed in apes for thousands of years. These animals come into close contact with humans in this area, and are butchered and eaten by the local population. At some stage in the early part of the 1900s, the virus spread from apes to humans. In apes, due to natural selection over many generations, the virus causes few or no symptoms, and is harmless.

The AIDS virus has been isolated from old stored tissue samples dated in the 1950's, found in Kinshasa hospital, Zaire. From Africa, AIDS spread to Haiti in the Caribbean. Haiti was ruled by a vicious dictator (Papa Doc Duvalier), and many Haitian Negroes fled to Africa to avoid persecution.

Once "Papa Doc" and his son "Baby Doc" were removed from power, these exiles returned, bringing AIDS with them. The virus mutated in humans and became more virulent, causing a faster and more severe onset of symptoms. Viruses mutate routinely (eg. different strains of influenza virus every year).

American homosexuals frequented Haiti because it was very poor, and sexual favours could be bought cheaply. A man known as "patient zero" by the US Centre for Disease Control has been identified as the person who introduced AIDS to the United States. He was an airline steward who infected more than 50 other men before dying of AIDS in 1984. It has spread around the world from the USA since then. The first cases were diagnosed in California in 1981, although cases occurred in Sweden in 1978 in the family of a sailor who had visited Haiti, but the disease was not identified as AIDS until years later. There may also have been some movement of the disease directly through Africa to Algeria and France.

Fortunately for most of us, it is a relatively hard disease to catch. AIDS is spread by the transfer of blood and semen from one person to another. It was initially only a disease of homosexuals and drug addicts, but although these remain the most affected groups in developed countries, it is promiscuous heterosexual contact that is the most common method of
transmission in poorer countries. In the early days of the disease, some unfortunate recipients of blood transfusions and other blood derived medications were inadvertently given the AIDS virus. Tests are now available to allow blood banks to screen for AIDS.

AIDS can NOT be caught from any casual contact, or from spa baths, kissing, mosquitoes, tears, towels or clothing. Only by homosexual or heterosexual intercourse with a carrier of the disease, by using contaminated needles, or blood from a carrier, can the disease be caught. If someone does come into sexual or blood contact with an AIDS carrier, it is possible for the virus to cross into their body. The body’s defence mechanisms may then fight off the virus and leave the person with no illness whatsoever, or the AIDS virus may spread throughout the body to cause an HIV infection.

Studies have shown that circumcised men (those whose foreskin has been removed) are six to eight times less likely to be infected with the HIV virus that causes AIDS because of biological reasons and not less risky behaviour. The protection is due to the removal of the foreskin, which contains cells that have HIV receptors which scientists suspect are the primary entry point for the virus into the penis.

In 2005 there were 42 million people in the world with an HIV infection, over 30 million of them in sub-Saharan Africa, 8 million in Asia (over 5 million of these in India) and 95% in developing countries. There are 7 million deaths worldwide every year from AIDS, and every day 20,000 people are infected with HIV. The incidence of HIV infection varies from 10 in every 100,000 people in China, to 115 in Australia, 2100 in Thailand, 20,000 in Uganda and over 50,000 in every 100,000 people in Botswana (the world’s highest rate). Almost 1% of the entire adult population of the world is infected by HIV. The rate of infection is increasing in under developed countries in Africa and Asia, but dropping in developed western countries.

Those who are infected with the human immunodeficiency virus are said to be HIV positive. Once the HIV virus enters the body it may lie dormant for months or years. During this time there may be no or minimal symptoms, but it may be possible to pass the infection on to another sex partner, and babies may become infected in the uterus of an infected mother.

The disease has been classified into several categories. A patient can progress to a more severe category but cannot revert to less severe one. The categories are:

- HIV category 1 - a glandular fever-like disease that lasts a few days to weeks with inflamed lymph nodes, fever, rash and tiredness.
- HIV category 2 - no symptoms.
- HIV category 3 - persistent generalised enlargement of lymph nodes.
- HIV category 4 (AIDS) - varied symptoms and signs depending on the areas of the body affected. May include fever, weight loss, diarrhoea, nerve and brain disorders, severe infections, lymph node cancer, sarcomas, and other cancers. Patients are very susceptible to any type of infection or cancer from the common cold to pneumonia, septicaemia and multiple rare cancers (eg. Kaposi sarcoma) because the body’s immune system is destroyed by the virus.

Blood tests are positive at all stages of HIV infection, but there may be a lag period of up to three months or more from when the disease is caught until it can be detected.

There is no cure or vaccine available for AIDS or HIV infection at present. Prevention is the only practical way to deal with AIDS. Condoms give good, but not total, protection from sexually catching the virus, and drug addicts may be educated not to share needles.

Once diagnosed as HIV positive patients should not give up hope, because they may remain in the second stage for many years. Prolonging this stage can be achieved by the regular long term use of potent antiviral and immunosupportive medications, stopping smoking, exercising regularly, eating a well-balanced diet, resting adequately and avoiding illegal drugs. The antiviral drugs used to treat AIDS include abacavir, delavirdine, didanosine, efavirenz, indinavir, lamivudine, neflinavir, nevirapine, ritonavir, saquinavir, stavudine, tenofovir, zalcitabine and zidovudine.

Patients may remain at the category 2 level for many years, possibly even decades. Up to half of those who are HIV positive do not develop category 4 disease for more than ten years. On the
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other hand, no one with category 4 HIV (AIDS) has lived more than a few months, and sufferers develop severe infections and cancers that eventually kill them.

ALCOHOLISM

Alcohol abuse may be a temporary problem as a reaction to anxiety or stress, but it may lead to the chronic medical condition of alcoholism (sometimes referred to by the slang term “dipsomania”).

Alcoholism affects up to 3% of the adult population in developed countries. It is a disease in the same way that infections and cancer are diseases. It does no good to tell an alcoholic to “pull yourself together” or “stop drinking before it kills you”. They need professional counselling and treatment. The biggest problem faced by families and doctors is the denial by so many alcoholics that they have a problem.

When alcohol is swallowed, it is absorbed very rapidly from the stomach, and commences its actions on the brain and other organs. This of course is one of the attractions of alcohol - it can make you very happy very quickly, and this can lead to addiction in some people. The children of alcoholics are more likely themselves to become alcoholics, and should be very wary when using alcohol.

Blood tests on liver function and alcohol levels may confirm diagnosis, and an ultrasound scan of the liver may show damage (cirrhosis).

Alcoholism has two stages of development - problem drinking, and alcohol addiction. Problem drinking is the use of alcohol intermittently to ease tension and anxiety. It may be associated with the use of prescription drugs to control emotional problems. Alcohol addiction is more serious.

An alcoholic is someone who has three or more of the following symptoms or signs:-
- drinks alone
- tries to hide drinking habits from others
- continues to drink despite convincing evidence that it is damaging their health
- disrupts work or social life because of alcohol
- craves alcohol when none is available
- appears to tolerate the effects of alcohol well
- blacks out for no apparent reason
- binges on alcohol
- averages six standard alcoholic drinks a day
- has abnormal liver function blood tests.

The social complications of alcohol are obvious and vary from the disruption of family life to poor performance at work and the risks of drink-driving.

The medical effects of alcoholism can be serious to the point where they can significantly alter the quality of life and shorten the life of the alcoholic. They include:-
- Cirrhosis. In this, the soft normal liver tissue is replaced by firm scar tissue that is unable to process the waste products of the body adequately. The other vital actions of the liver in converting and storing food products and producing chemicals essential to the body are also inhibited.
- Wernicke-Korsakoff psychosis. This syndrome causes brain damage with symptoms of depression, irrational behaviour and insanity. These conditions are related to vitamin deficiencies caused by an inadequate diet while on alcoholic binges.
- Degeneration of the cerebellum (the part of the brain that is at the back of the head) caused by alcoholism can cause permanent incoordination, difficulties in walking and performing simple tasks.
- Peripheral neuropathy is damage to the nerves supplying the body. It causes muscle cramps, pins and needles sensations and muscle pains.

Treatment involves counselling, professional treatment programs in hospital, supportive groups (eg. Alcoholics Anonymous), medications to ease withdrawal and prevent relapses (eg. acamprosate, calcium carbimide, disulfiram, naltrexone). Withdrawal from alcohol may cause
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delirium tremens.

The medical effects of alcoholism can be serious to the point where they can significantly alter the quality of life and shorten the life of the alcoholic, and adversely impact on other members of the family.

ALTITUDE SICKNESS

Altitude or mountain sickness (called soroche in Peru and Bolivia) is caused by lack of oxygen from ascending rapidly to heights over 3000m. A slow ascent is less likely to cause problems than a rapid one. It is impossible to predict who will be affected, how rapidly or at what altitude. Ascending at a rate of no more than 300m a day at altitudes over 3000m is less likely to result in problems. An extra rest day with every 1000m above 2500m is also useful.

Symptoms starts with a headache, shortness of breath, and excessive tiredness, followed by inability to sleep, nausea, vomiting, diarrhoea, abdominal pains and a fever. Fluid fills the lungs, patients start coughing up blood, the heart races, and they may eventually drown as blood fills the lungs. Permanent lung and other organ damage may result from a severe attack.

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A rapid descent to a lower altitude is the only effective treatment for severe cases, although mild cases may recover with rest at high altitude. Fluid removing drugs (diuretics) may be used in an emergency to remove fluid from the lungs, and acetazolamide (125 mg, twice a day from the day before ascent for three days after ascent) or dexamethasone (4 mg, twice a day from from the day before ascent for three days after ascent, then 2 mg a day for two days) may be given during the climb for prevention. Oxygen in cylinders is used by very high altitude climbers.

The condition may be life-threatening unless a lower altitude can be reached.

AMOEBIASIS

Amoebiasis (amoebic dysentery) is an infestation of the gut with single-celled animals (amoebae) that is relatively common in many third-world countries. The swallowed amoebae usually infest the gut and liver, and very rarely the brain and lung. Amoebae are passed out with the faeces, and if this contaminates food or water, they can be picked up by others. Some people have very mild infections and act as carriers, steadily infecting more and more people.

The symptoms include abdominal pain, diarrhoea, mucus and blood in the faeces, fever, and in severe cases the bowel may rupture, leading to peritonitis and death. If the amoebae enter the liver from the gut, an abscess can form in the liver and cause severe pain.

It is diagnosed by finding the amoebae in the faeces when examined under a microscope, or by special blood tests that detect antibody changes caused by amoebae. Gut infections do not cause an antibody reaction, but the test will remain positive for many years with an infection in the liver or other organs.

Spread of the infestation is controlled by strict attention to personal hygiene, cooking food and boiling water. It is treated with one or more of a number of drugs (eg. tinidazole, metronidazole) to kill the amoebae, but some have significant side effects and may need to be used for several weeks. An abscess needs to be drained surgically. If left untreated, severely affected patients will die, but modern treatment methods lead to the total recovery of the majority.

See also ABSCESS

AMYLOIDOSIS

Amyloidosis is a rare disease in which millions of microscopic fibres made of a dense amyloid protein infiltrate and replace the normal tissue of different parts of the body. The kidneys, lungs, heart and intestine are commonly involved. The disease may be triggered by another disease, such as tuberculosis, rheumatoid arthritis, cancer or drug abuse, but in many cases no apparent cause can be found. There symptoms are extremely variable, depending on which organs are involved. Microscopic examination of a sample taken from an involved organ reveals a dense jelly formed by the protein fibres, rather than normal tissue.

No treatment is available, and death occurs within three years of diagnosis on average from
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pneumonia, kidney infections or heart failure.

**ANAL FISSURE**
An anal fissure (fissure in ano) is a split in the anus. It develops when the anus has over stretched and torn during an episode of constipation.
Symptoms include intermittent pain and bleeding similar to that of a pile. Treatment involves keeping the motions soft and using a medicated ointment on the anus. Rarely scarring and narrowing of the anus may occur. Generally the prognosis is good if constipation is controlled.

**ANDERSEN SYNDROME**
See GLYCOGEN STORAGE DISEASES

**ANOREXIA NERVOSA**
Anorexia nervosa is an eating disorder that usually occurs in young white women in Western society. It is almost unknown in American Negroes and British Indians, and totally unknown in third-world countries. About one in every 200 women between 13 and 30 in developed countries may be affected.

It may start with a psychological shock (eg. rejection by a boy friend, fear of a new situation, stress at school, bad sexual experience) and is due to an inappropriate body image which makes the patient feel grossly overweight, or have an abnormal fear of becoming overweight, when they may be normal or underweight.

Patients develop an extreme dislike of food accompanied by excessive exercising, a cessation of menstrual periods, diffuse hair loss, intolerance of cold, slow pulse, irregular heart beat and complex hormonal disorders. They may practice deceit to fool their family and doctors by appearing to eat normal meals but later vomit the food, use purgatives to clean out their bowel, or hide food during the meal. With time, they may become seriously undernourished and emaciated, to the point of death, if adequate treatment is not available.

No specific blood or other test that can confirm the diagnosis, but tests may be undertaken to ensure that there is no other cause for the weight loss or lack of appetite.

Treatment is very difficult, prolonged and requires the attention of expert psychiatrists and physicians. Initial hospital admission is almost mandatory, and any relapses should be treated by hospitalisation. Punishment for not eating must be avoided, but friendly encouragement and persuasion by family and friends is beneficial in both improving the patient's self-esteem and food intake. Medications (eg. tricyclic antidepressants) are not successful without accompanying psychiatric help, which is required for many years.

Relapses are common, and suicide frequently attempted. The long term outcome can vary from complete recovery to death within a year or two. Statistically, 30% suffer some long term adverse health effects, and as many as 25% eventually die from the disease.

See also BULIMIA NERVOSA; REFEEDING SYNDROME

**AORTIC ANEURYSM**
The aorta is the main large artery that takes blood from the heart to the abdomen and legs, and is between 2 and 3 cm. in diameter. If the thick wall of the aorta develops a weak spot, sometimes due to deposits of hard cholesterol in its wall, the artery may start to balloon out at one point to form a firm, pulsing lump known as an aneurysm. This aneurysm is at imminent danger of bursting, and if this occurs there is severe pain, and even in the best hospitals, half the patients die. Surgical correction of an aortic aneurysm at the earliest opportunity is therefore vital.

**APPENDICITIS**
Appendicitis is infection of the appendix, which is a narrow dead end tube about 12 cm. long that attaches to the caecum (first part of the large intestine). It is an almost unknown condition in
poorer countries for dietary reasons, and the lack of fibre in Western diets is often blamed for the infection, although its incidence is steadily falling due to better dietary education. In other mammals, particularly those that eat grass, the appendix is an important structure that aids in the digestion of cellulose, but in man it serves no useful purpose.

If the narrow tube of the appendix becomes blocked by faeces, food, mucus or some foreign body, bacteria start breeding in the closed-off area behind the blockage. Pain develops around the navel, but soon moves to the lower right side of the abdomen just above the pelvic bone and steadily worsens. It is often associated with loss of appetite, slight diarrhoea and a mild fever. Depending on the position of the infected appendix, appendicitis can have variable symptoms, and sometimes, when it lies behind the caecum (retrocaecal appendicitis), its symptoms may be so misleading that the diagnosis is easily missed by a doctor. If untreated, the appendix becomes steadily more infected, full of pus, and eventually bursts to cause peritonitis.

There is no specific diagnostic test, but blood and urine tests and sometimes an ultrasound scan, are done to exclude other causes of pain.

The only effective treatment is surgical removal of the appendix in a simple operation (appendectomy).

See also MECKEL’S DIVERTICULITIS; PERITONITIS

ASCITES

Ascites (or hydroperitoneum) is the accumulation of excessive amounts of fluid in the abdominal cavity. It is sometimes noticed by patients as a gain in weight or dull, heavy discomfort in the belly. If there is a lot of fluid, the abdomen will become swollen and distended. The fluid may come from inflammation of the belly lining (peritoneum), increased pressure in the veins draining blood from the belly or inflammation of the organs within the abdomen.

Common causes include cirrhosis, hepatitis, liver cancer, blockage of the vein draining the liver and other forms of liver damage. Cancer anywhere in the abdomen (eg. bowel, uterus, ovaries, pancreas), or spreading to the belly from other areas (eg. breast, lung) will inflame the peritoneum and allow fluid to escape through this membrane and into the belly cavity.

If the heart fails to pump effectively (congestive cardiac failure), it may be unable to adequately circulate blood around the body, and the pressure builds up in the veins of the belly, allowing serum (the clear fluid part of blood) to seep out of the veins and into the abdominal cavity. The feet and hands are also swollen, and the patient may cough because of a fluid build up in the lungs.

Uncommon causes include hypothyroidism (underactive thyroid gland), lymphoma (cancer of the lymph nodes), nephrotic syndrome (kidney failure), pericarditis, malnutrition, Meig syndrome and bilharzia (schistosomiasis).

Fluid can be taken from the abdomen by a needle for analysis, while ultrasound and CT scans, and blood tests are used in an attempt to identify the cause.

The treatment depends on the cause of the ascites.

BARD-PIC SYNDROME

The Bard-Pic syndrome is a complication of advanced cancer of the pancreas. The enlarging pancreas puts pressure on the bile duct that runs nearby, preventing bile from leaving the liver and entering the small bowel. Patients develop a progressively worsening jaundice (yellow skin), and have no appetite and lose weight.

Blood tests show increasing levels of bilirubin, and CT or ultrasound scans show the cancer of the pancreas. Surgery to relieve pressure on bile duct is the only treatment available for this almost invariably fatal condition.

See also PANCREATIC CANCER

BARRETT SYNDROME

Also known as Barrett oesophagitis, this condition causes narrowing at the lower end of the
oesophagus (gullet) from long term reflux of acid from the stomach up into the oesophagus. It occurs in 10-15% of people with acid reflux.

The syndrome is named after the English surgeon Norman Barrett, who noted this abnormality in the early 1950s.

Reflux oesophagitis causes inflammation and ulceration of the lower part of the oesophagus, and if left untreated for years, repeated irritation causes scarring and narrowing. The patient suffers from difficult and painful swallowing as well as the symptoms of reflux oesophagitis. The diagnosis is confirmed by a barium meal x-ray or preferably by gastroscopy and biopsy of the affected tissue.

Medication can be used to control the acid reflux, or the stricture can be dilated by passing gradually larger dilators down the throat while the patient is anaesthetised. Occasionally more radical surgery is required. The syndrome predisposes to cancer of the oesophagus.

See also OESOPHAGEAL CANCER; OESOPHAGITIS

BILHARZIA
See SCHISTOSOMIASIS

BLADDER CANCER
Cancer of the bladder is relatively common, with three times as many men developing the problem than women. It usually occurs as multiple deposits in the bladder wall that often recur after removal. The risk of developing bladder cancer is higher in smokers, after repeated and prolonged bladder infections, and those who are exposed to chemical used in the paint, dye and rubber industries. There are several different types of bladder cancer, but by far the most common being a transitional cell carcinoma (urothelial carcinoma).

The symptoms include a large amount blood in the urine, frequent passage of urine, pain with passing urine and recurrent urinary infections. Fortunately the symptoms start early and most patients present early in the disease process.

Investigations used to detect the cancer include examining the urine for the presence of cancerous cells, x-rays of the bladder after inserting a dye through the urethra, a CT scan and examining the bladder through a cystoscope.

There are several different types of cancer that can occur in the bladder and their severity is judged by the extent to which they have spread through the bladder wall and to nearby lymph nodes. It is also possible for the cancer to spread to other organs.

Treatment involves repeatedly burning away the cancerous deposits through a cystoscope (tube into the bladder), surgically removing all or part of the bladder, irradiation or chemotherapy (eg. 5-fluorouracil, adriamycin, valrubicin). The chemotherapy may be given by placing the medication directly into the bladder, or by giving it as a tablet or injection so that it spreads throughout the body. If the bladder is totally removed, an ileal conduit is fashioned to act as a new bladder.

The prognosis depends on the thickness of the cancer and the degree of spread to surrounding lymph nodes and distant organs when the cancer is initially diagnosed.

BOWEL OBSTRUCTION
The passage of food or faeces through the bowel may be blocked in many different ways. The obstruction may be due to a tumour, polyp, foreign swallowed object, intussusception (infolding of the bowel within itself), stricture (eg. from scar tissue), adhesion band, abscess or Crohn disease.

The obstruction initially has symptoms of severe intermittent abdominal pain, a swollen bloated abdomen, nausea, loss of appetite, no faeces is passed and may vomiting may occur. Once established the bowel is silent and the pain may ease. Dehydration and fever usually develop with time.

The cause must be found urgently by appropriate investigations such as x-ray, CT scan,
endoscopy or surgery, and appropriate treatment started.

See also ILEUS

**BRUCELLOSIS**

Undulant fever or brucellosis is a bacterial infection of cattle, goats and pigs, which can spread to man, and most commonly infects meat workers, veterinarians and farmers. The bacteria *Brucella abortus, Brucella melitensis* or other species of *Brucella*, enter a human through a cut or graze in the skin, or is swallowed. It is found in raw meat and unprocessed milk.

Patients initially experience a fever, tiredness and intermittent sweats. After several weeks, further symptoms of headache, swollen painful joints, loss of appetite and abdominal pains (from a large spleen and/or liver) develop. The fever may come and go for many months in a low-grade chronic form of the disease (thus undulant fever).

Specific antibody blood tests are used to make the diagnosis.

Treatment involves taking antibiotics (eg. tetracycline) and rest until all symptoms have settled. Animals may be vaccinated to prevent them from catching the disease, but not humans. Occasionally the infection may spread to involve the lung, brain and heart, causing specific problems in those areas. Long-term complications include arthritis, and bone weakness.

There is a good response to treatment, but symptoms may recur over several years and require further courses of treatment.

**BUDD-CHIARI SYNDROME**

The Budd-Chiari syndrome is a rare syndrome affecting liver function, caused by a blood clot blocking the main vein leading from the liver, because of a liver tumour or blood clotting disease.

The liver and spleen become dramatically enlarged, and abdominal pain and fluid accumulates in the belly. There may be significant bleeding into the upper intestine. The syndrome is diagnosed by CT and ultrasound scans, liver biopsy and radionucleotide scans. Liver transplant is the only treatment option, and the syndrome is usually fatal within two years of diagnosis unless a liver transplant can be performed.

**BULIMIA NERVOSA**

Also known as the binge-purge syndrome, this is a psychiatric disturbance of body perception almost invariably occurring in middle to upper class young females, that may be associated with anorexia nervosa. The main difference between these diseases is the way in which the patients see themselves - the bulimic has a fear of being fat, the anorexic has a desire to be thin.

There is no known specific cause, but patients tend to be high achievers, perfectionists, desperately eager to please others and have an anxious personality.

Symptoms are characteristically a voracious and continuous consumption of huge quantities of food followed by purging, vomiting and the use of fluid tablets in order to maintain a normal weight. Patients are secretive, and appear to eat normally in public, but binge eat and vomit in private. Other symptoms may be menstrual irregularities, sore throat, bowel problems, dehydration, lethargy, and dental problems due to the repeated exposure of the teeth to stomach acid. Suicide can be a risk in severe cases.

Close family support, psychotherapy and careful medical monitoring over a period of several years are the main forms of treatment.

Most patients recover, and go on to lead normal lives

See also ANOREXIA NERVOSA

**CARCINOID SYNDROME**

Carcinoid syndrome (argentaffinoma) is a rare cancer that starts in argentaffin cells inside the small intestine, stomach or lung. Argentaffin cells are responsible for producing a number of essential hormones (eg. serotonin) for the functioning of the gut and body in general. When these cells become cancerous, they produce excessive amounts of these hormones, which causes
unusual symptoms.

The syndrome may develop very rapidly, and patients can become severely ill in a few days. Symptoms include hot flushes of the face, swelling of the head and neck, diarrhoea and stomach cramps, asthma and bleeding into the skin. Blood or urine tests can be carried out to find the high levels of serotonin and other hormones. The site of the cancer is often very difficult to find, as it is usually very small and slow growing. It also tends to spread at an early stage to other areas, so even if the original is removed, the syndrome may continue due to the production of hormones in high levels by newly formed and very small cancers in multiple sites.

Prednisone (a steroid) is used in the emergency treatment of the disease, and other medications are given to control the other symptoms. Drugs such as interferon can sometimes be used to destroy the cancer cells.

Because of its slow growth rate, it may take 10 or 15 years for the disease to progress from the stage of being a nuisance that requires constant medication, to being life-threatening.

CHAGAS DISEASE

Chagas disease (American trypanosomiasis) is an infestation by the protozoan (single celled) parasite Trypanosoma cruzi that is widespread in tropical America from Texas to Bolivia. It is transmitted from wild animals to humans by bug bites to the skin or bug faeces in the eye.

The disease goes through three stages - acute, latent and chronic. Initially a sore develops on skin at the site of a bite or in the eye, and in many patients, no other symptoms ever occur until after a latent stage lasting 10 to 30 years when a chronic stage with heart disease occurs causing irregular heart rhythm, congestive heart failure, and pulmonary thromboses (blood clots in lung). A minority of patients go through an acute illness, which causes enlarged lymph nodes near the bite, fever, tiredness, headache, and enlarged liver and spleen. Acute heart or brain infection may be rapidly fatal. Long-term infection may cause severe heart disease. The disease is diagnosed by specific blood tests, but may be undetectable in the latent stage.

Treatment is generally unsatisfactory. Medications may be tried in the acute stage, but are of no use in the chronic stage.

Chagas disease is fatal in 10% of acute illnesses, and death from heart disease may occur in the chronic stage.

The condition is named after the Brazilian physician Carlos Chagas (1879-1934).

CHINESE RESTAURANT SYNDROME

The Chinese restaurant syndrome is an abnormal reaction to food preservatives caused by the overuse of monosodium glutamate in food and aggravated by alcohol. Victims develop facial pressure, a headache, nausea, chest pain and a burning sensation of the head and chest. It settles spontaneously after 12 to 48 hours, while the symptoms may be eased by aspirin or paracetamol.

CHOLANGITIS

An inflammation or infection of the bile ducts is called cholangitis. It may be caused by a bacterial infection, a gallstone or a tumour. The bile is unable to escape easily (or at all) from the liver and gall bladder, and the patient becomes generally unwell, feverish, jaundiced and nauseated with severe pain in the upper right part of the abdomen. The condition can be confirmed by an ultrasound of the gall bladder and bile ducts. Treatment involves surgery and/or antibiotics.

See also CHOLECYSTITIS

CHOLECYSTITIS

Choledochitis is an inflammation of the gall bladder that almost always occurs in the presence of gallstones. Many different bacteria can be responsible for the infection.
Patients develop pain in the upper right abdomen and behind the lower right ribs that often goes through to the back. They also have a fever, indigestion, nausea and sometimes irregular bowel habits.

Ultrasound scans can detect gallstones, and sometimes thickening of the wall of the gall bladder, which is characteristic of infection. Rarely there may be spread of the infection to the liver and other surrounding tissues, and sometimes an abscess forms in or around the gall bladder. Blood tests are often normal, but sometimes show non-specific signs of infection or liver stress. Antibiotics are used to settle the gall bladder infection, then surgery is necessary to remove the stones (cholecystectomy).

**CHOLELITHIASIS**

Cholelithiasis is the medical term for the presence of gallstones in the bile ducts or gall bladder. Cholecystolithiasis is their presence only in the gall bladder.

See also CHOLECYSTITIS

**CHOLERA**

Cholera is a severe infection of the bowel that occurs in areas with poor hygiene. The responsible bacterium, *Vibrio cholerae*, may be swallowed with contaminated water or food. The bacteria multiply rapidly in the body to irritate the gut, cause diarrhoea, and then pass out in faeces, contaminate water supplies, and infect others.

*Countries where cholera may be caught*

Patients develop very severe diarrhoea with blood in the faeces and rapid dehydration that may lead to death. A huge amount of fluid is lost from the body in a short time. The patient also shivers, has a below normal temperature, shallow breathing, muscle cramps and becomes comatose. Samples of faeces cultured in a laboratory can identify the responsible bacteria.

Replacing fluid loss by a drip into a vein (preferable) or an electrolyte mixture by mouth is imperative to prevent death. An emergency mixture to rehydrate a patient can be made by mixing a level teaspoon of salt and eight level teaspoons of sugar or glucose into a litre of boiled water. This should be given freely to more than replace the fluid lost in the diarrhoea. A course of tetracycline antibiotic will kill the infecting bacteria in the gut, but will not relieve symptoms. A vaccination against cholera is available.

Untreated, the death rate varies from 35% to 80%, but with proper care, 98% should survive.
A RATIONALE FOR THE ABDOMEN

From the time of onset to death from dehydration can be a matter of a day or two in adults and only a few hours in children.

An oral vaccine is available against cholera but it is not effective against all forms of cholera, and additional care in selection of food and drink and in personal hygiene also essential. It was introduced in 2000 as a replacement for a far less effective injected cholera vaccine. It is used only in travellers to affected areas of Asia, Africa and tropical America who may be living in primitive conditions.

See also GASTROENTERITIS; SHIGELLOSIS; TYPHOID FEVER

CIGUATERA POISONING

This is a form of seafood poisoning caused by eating reef fish that contain the ciguatera toxin. The fish itself is not affected, and there are no tests for differentiating safe from toxic fish. Generally the larger the fish, the more likely it is to be toxic. The poison is produced at certain seasons by a microscopic animal (Dinoflagellida) that proliferates on tropical reefs. This is eaten by very small fish, who are then eaten by bigger fish, who are then eaten by still bigger fish. There may be a dozen steps along this chain, with the poison being steadily concentrated in the fish tissue at every step. Ciguatera is present in a low concentration in most reef fish, but only when it exceeds a certain concentration does it cause problems in humans. There are far higher concentrations in the gut, liver, head and roe of reef fish, which should never be eaten or used to make fish soup. The toxin cannot be destroyed by heat or cooking.

Symptoms vary dramatically from one patient to another, depending on the amount of toxin eaten, the size of the victim, and the individual reaction. They may include unusual skin sensations and tingling, diarrhoea, nausea, abnormal sensation, headaches and irregular heartbeats. Unusual tingling sensations may persist for years, and subsequent serious attacks may be triggered by eating tiny amounts of ciguatera that may be present in fish that others can eat without adverse effects.

There are no diagnostic tests, and no specific treatment or antidote, but medication may be used to control symptoms.

Patients with a mild reaction usually recover in a few days as the toxin is naturally eliminated from the body, but severe attacks may cause symptoms for a couple of months. Death is rare, but possible, usually occurs within 36 hours of the onset of the attack, and is caused by the effects of the toxin on the heart and blood vessels.

See also FOOD POISONING

CIRRHOSIS

Cirrhosis is a slowly developing form of damage to the liver, which results in it becoming hard and enlarged, as normal tissue is replaced by fibrous scar tissue. There are many possible causes including recurrent attacks of hepatitis A, one attack of hepatitis B, other liver infections, excess alcohol intake, gall stones, a number of rare diseases that affect the liver (eg. haemochromatosis, Wilson's disease, Gaucher's disease), toxins, poisons (eg. arsenic) and drugs (eg. methotrexate, isoniazid). The diagnosis is confirmed by blood tests, and ultrasound and/or CT scans of the liver.

The symptoms may include itchy skin without a rash, jaundice (yellow skin), diarrhoea and abdominal discomfort.

Other than a liver transplant, there is no cure for cirrhosis. Patients must stop all further alcohol intake to reduce further damage. Vitamin supplements and nutritious diets are recommended, and medication can be prescribed to slow the progress of the disease (eg. ursodeoxycholic acid) and ease some symptoms. The liver tends to become steadily more damaged until it ceases to function completely.

See also HEPATITIS A; HEPATITIS B; PORTAL HYPERTENSION

CLOSTRIDIUM
The bacterial genus *Clostridium* is responsible for a wide variety of very serious infections. The different species within the genus are responsible for different infections thus:
- *Clostridium botulinum* - botulism (serious food poisoning).
- *Clostridium difficile* - pseudomembranous colitis (serious lower bowel infection).
- *Clostridium tetani* - tetanus.
- *Clostridium welchii* (or *perfringens*) - gas gangrene.

**COELIAC DISEASE**

Coeliac disease (spelt celiac in the USA) is also known as coeliac sprue and non-tropical sprue. It is a congenital disease of the small intestine that usually starts in childhood, and persists into early adult life, often settling in middle age. It is caused by a genetic error that prevents the small intestine from absorbing fats and, to a lesser extent, carbohydrates and protein, because the intestine becomes sensitised to gluten. Gluten is a protein found in wheat, oats, barley and rye cereals, and may be used as a bulking agent in prepared foods such as sausages.

Patients are unable to tolerate any form of gluten in their intestine. If it is eaten they develop large, foul-smelling, frothy, fatty motions. This causes weight loss, anaemia and generalised weakness due to lack of nutrition and a failure to absorb vitamins A, D, E and K (the fat soluble vitamins). Rashes and weak bones, as well as a failure to grow and foul diarrhoea may occur if untreated.

It is initially diagnosed by a series of blood and faeces tests (endomysial and gliadin antibody tests), but the final diagnosis can only be confirmed by taking a biopsy (sample) of the lining of the small intestine.

Patients respond to a diet free of gluten, high in calories and protein, and low in fat.

In most patients coeliac disease is completely controlled by diet. Once they reach adult life, many patients find they can slowly introduce products containing gluten to their diet without ill effect.

See also [TROPICAL SPRUE](#)

**COLITIS**

Colitis is any form of inflammation or infection affecting the colon, which is part of the large intestine.

See also [COLLAGENOUS COLITIS; COLOPROCTITIS; DIVERTICULITIS; PSEUDOMEMBRANOUS COLITIS; ULCERATIVE COLITIS](#)

**COLLAGENOUS COLITIS**

Collagenous colitis and lymphocytic colitis are uncommon inflammations of the large bowel (colon). Their cause is not known, but they may be autoimmune conditions in which the body rejects its own tissue inappropriately. They usually affects middle aged females to cause long-term intermittent watery diarrhoea with mucus.

Colonoscopy and biopsy of the bowel show characteristic changes. The lymphocytic and collagenous forms only vary slightly when biopsies are examined under a microscope. Medications (eg. sulphasalazine, prednisone) can control the symptoms although these conditions usually settle and flare spontaneously for many years before settling in old age.

See also [COLITIS; ULCERATIVE COLITIS](#)

**COLORECTAL CANCER**

Colorectal cancer is cancer of the large bowel, which forms the last two metres of the intestine.

The absolute cause is unknown, but a low fibre and high fat diet may be a factor and there is a definite family tendency. It is more common in men, and most develop in the last 10 cm of the gut. Finding polyps on a routine colonoscopy or CT scan, ulcerative colitis and chronic bowel infections are also risk factors. Any polyps found are always removed to prevent them from
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becoming cancerous.

Screening for colorectal cancer can be done by performing a colonoscopy every five years over the age of 50 in all those at high risk, and by testing the faeces on at least three occasions for the presence of blood on all those who wish to have the test.

Symptoms include alteration in normal bowel habits, passing blood with the faeces, weight loss, colicky pains in the abdomen and constant tiredness. A large cancer can be felt as a hard lump in the abdomen. If left untreated, a gut obstruction, or perforation, which allows faeces to leak into the abdomen and causes peritonitis, will occur.

A colonoscopy and/or barium enema x-ray will confirm the diagnosis. Blood tests may show anaemia due to the constant slow leaking of blood from the cancer. People with a bad family history can have a faeces sample tested for blood.

Treatment involves major surgery to remove the cancer, the bowel for some distance above and below the cancer, and the surrounding lymph nodes. Up to 3% of patients may die during or immediately after surgery. Chemotherapy (drugs - eg. levamisole, tegafur, uracil) and radiotherapy may also be used. Regular examinations of the colon are then required lifelong to detect any recurrence.

If the cancer has not spread away from the large intestine, two out of three patients will survive for more than five years, and are probably cured as most recurrences occur within four years. If the cancer has spread, the survival rate drops steadily, depending on the degree of spread.

Colorectal cancers are staged by the Dukes system thus -

- Stage A - Cancer limited to lining of gut - over 95% cured.
- Stage B1 - Cancer extends into muscle surrounding gut - about 85% cured.
- Stage B2 - Cancer extends through full thickness of gut wall - about 80% cured.
- Stage C - Cancer has spread to surrounding lymph nodes in the pelvis - cure rates vary from 35% to 60%.
- Stage D - Cancer has spread to distant organs (eg. liver, lung) - less than 10% cured.

Cancers closer to the anus are more difficult to treat and more likely to result in a colostomy.

CONGESTIVE CARDIAC FAILURE

Congestive cardiac failure (CCF) is also known as congestive heart failure or left ventricular failure. It is a failure of the heart to pump blood effectively.

Many conditions may be responsible for CCF, including heart attacks, heart infection (endocarditis, myocarditis, pericarditis), narrowing or leaking of heart valves, high blood pressure, narrowing of the aorta (aortic stenosis), irregular heart rhythm, alcoholic heart damage, severe anaemia and an overactive thyroid gland (hyperthyroidism). In many elderly patients, there can be a multitude of causes, or no specific cause at all for heart failure. In these cases, the condition is treated as a disease in itself.

Patients complain of being short of breath when exercising or climbing stairs, or in more advanced cases they may be short of breath constantly or only when lying down at night (paroxysmal nocturnal dyspnoea). Other symptoms include a hard dry cough, passing excess urine at night, general tiredness and weakness, a rapid heart rate, weight loss, chest and abdominal discomfort and swelling of the feet, ankles and hands. Severely affected patients may be unable to speak a full sentence without taking a breath and a blue tinge develops on and around the lips. Angina and a heart attack may occur.

The diagnosis can often be made without resorting to any tests. The exact cause of the CCF may be found by blood tests, chest X-rays and electrocardiograms (ECG). Echocardiograms and cardiac catheterisation (passing a tube through a vein into the heart) are sometimes undertaken if surgical treatment is being contemplated.

Treatment involves correction of any specific cause for the heart failure if possible, lowering high blood pressure and controlling any irregular heart rhythm. Sometimes surgical correction of a heart valve deformity is possible. A diet low in salt, and avoiding strenuous exercise can often be beneficial. Medications to remove excess fluid from the body (diuretics) and to strengthen the
action of the heart (eg. digoxin, ACE inhibitors) are in common use. More sophisticated drugs are available for use in difficult cases. Oxygen may be supplied to seriously ill patients.

Unless an underlying correctable cause can be found, heart failure cannot be cured, only controlled. The condition usually slowly worsens with time, but it may take many years before serious incapacitation or death occurs.

**CORI SYNDROME**  
See GLYCOGEN STORAGE DISEASES

**COWDEN DISEASE**

Cowden disease is also known as the multiple hamartoma syndrome. It is an inherited condition that causes the development of multiple non-cancerous lumps of overgrown blood vessels (hamartomas) in the stomach. Those affected experience abdominal discomfort, vomit blood, have black motions and anaemia from bleeding hamartomas. Continued severe bleeding may necessitate removal of part or all of the stomach. It is diagnosed by gastroscopy and biopsy. Treatment involves destruction of the hamartomas by coagulation (electrical burning or laser) through a gastroscope.

**CRIGLER-NAJJAR SYNDROME**

Crigler-Najjar syndrome is the congenital lack of an enzyme from the liver that results in liver failure and severe jaundice (yellow skin) in newborn infants. It may result in permanent brain damage and premature death. Blood tests will show the abnormal liver function and lack of enzyme.

Phenobarbitone can sometimes be used to slow the progress of the disease, but the prognosis is poor.

**CROHN’S DISEASE**

Crohn's disease (regional enteritis) is a chronic inflammation and thickening of the wall of the intestine that usually occurs in the lower part of the small intestine (ileum), but may occur anywhere between the stomach and the anus. It usually affects young adults, and despite treatment, often continues for the rest of the patient's life. When the intestine of these patients is examined at operation, segments of bowel from a few centimetres to a metre or more in length are found to have a wall that is several times thicker and much firmer than normal. It may vary from a minor irritation to being a very serious disease as patients have episodes of relatively good health for months or years, then become acutely ill again. The cause is unknown.

The symptoms include moderate to severe intermittent lower abdominal pain (colic), alternating diarrhoea and constipation (with the diarrhoea being more common), intermittent fever, loss of appetite, passing excess wind and weight loss. In severe cases the bowel may rupture into the bladder, vagina or through the skin around the anus, bowel obstruction may occur, as may bowel perforation and, in rare cases, death.

The diagnosis is confirmed by a barium meal X-ray and follow through, or if the lower intestine (colon) is involved, a barium enema or colonoscopy. Treatment involves surgically removing the worst affected segments of intestine, and controlling diarrhoea and pain with medication, followed by a high-calorie, high-vitamin, low-residue diet with calcium supplements. Vitamin injections are sometimes necessary if food absorption is very poor. Anaemia, dehydration and diarrhoea are signs of a poorly maintained diet. Antibiotics are given to treat bowel infections, and steroids to control flare-ups of the disease.

There is no permanent cure. Even after extensive surgery, 60% of patients develop new affected segments of intestine. Although the mortality rate of patients is slightly increased, most live relatively normal and long lives.
CRONKHITE-CANADA SYNDROME
The rare Cronkhite-Canada syndrome is the thickening of the lining of the stomach, small bowel and colon to form non-cancerous polyp-like lumps. The cause is unknown. The symptoms include abdominal discomfort, irregular bowel habits and bleeding from the bowel to give dark or black motions. Other symptoms may include abnormal skin pigmentation (particularly of the palms and soles), poorly developed finger and toenails, hair loss and diarrhoea. It is diagnosed by gastroscopy and/or colonoscopy. No treatment is available.

CUSHING SYNDROME
Cushing syndrome is also known as adrenocortical hyperfunction and hyperadrenocorticism. It is a syndrome resulting from excessive amounts of steroids in the blood.

The hypothalamus is the part of the brain that decides how much natural steroid is required. It sends nerve messages to the pituitary gland, which sits under the centre of the brain and it in turn sends a chemical message to the adrenal glands that sit on top of each kidney. The adrenals produce the steroids required by the body. Tumours or overactivity (may be triggered by pregnancy or stress) in the hypothalamus, pituitary gland or adrenal gland can result in the overproduction of steroids.

Cushing syndrome may also be due to taking excessive amounts of steroids (eg. prednisone) for medical reasons.

Patients develop a fat face (moon face), fatty deposits on the upper back (called a buffalo hump), obesity of the abdomen and chest with thin arms and legs, high blood pressure, impotence, cessation of menstrual periods, skin infections and pimples, headaches, backache, excess hair growth on the face and body, mood changes, excessive bruising, thinning of the bones (osteoporosis - which can cause bones to fracture easily), stretch marks on the breasts and abdomen, kidney stones, and generalised weakness. Strokes, heart attacks, broken bones, diabetes, increased susceptibility to infections (particularly of the skin and urine), and psychiatric diseases may be complications.

Complex blood and urine tests can confirm the diagnosis, but finding the cause of the syndrome can be very difficult, and CT scans and magnetic resonance imaging (MRI) may be used to find very small tumours.

If a tumour can be found in the adrenal or pituitary gland, it is surgically removed. Other treatments include irradiation of the pituitary gland, or removal of both adrenal glands. Drug treatment is generally unsuccessful, but if both adrenal glands are removed it is necessary to supply steroids and other hormones by taking tablets or having injections regularly. If the Cushing syndrome is due to taking steroid medication, the dosage of this should be reduced if possible. Nelson syndrome (skin and tongue pigmentation, and enlargement of the pituitary gland under the brain) is a complication of treatment.

The prognosis depends on the cause. Some tumours of the adrenal or pituitary glands are very aggressive and spread to other areas to continue the syndrome, and these patients have a poor life expectancy. In others, a lifelong cure may be obtained by removing a localised tumour. If caused by excessive steroid medication, the syndrome is cured by stopping the medication, but the patient may require the steroids for control of asthma, rheumatoid arthritis or other diseases, and they must tread a very narrow path between the side effects of the medication and the necessary treatment of a disease.

Harvey Cushing (1869-1939) was an American neurosurgeon and physiologist.
See also HYPOPITUITARISM

CYSTITIS
Cystitis is an infection of the urinary bladder that usually occurs in women, with less than 10% occurring in men because the longer length of their urethra (the tube leading from the bladder to the outside).

A bacterial infection can enter the bladder by coming up the urethra from outside the body, or
through the bloodstream to the kidneys and then the bladder. Entry from the outside is far more common, and often due to irritation of the urethra with sex. Slackness of the muscle ring that controls the release of urine from the bladder can also allow bacteria to enter the bladder. This damage may be caused by childbirth or prolapse of the womb, and may eventually cause incontinence with a cough or laugh.

The symptoms include burning pain on passing urine, pain in the pelvis, the desire to pass urine very frequently and blood may be seen in the urine. The infection may spread up the ureters to the kidneys to cause acute pyelonephritis.

The urine can be cultured to identify the responsible bacteria and correct antibiotic. Further investigations such as X-rays and ultrasound scans of the bladder and kidneys may be performed to exclude more serious causes of recurrent cystitis.

Appropriate antibiotic tablets for a week or two, and urinary alkalinisers (in the form of a powder that makes a fizzy drink) result in a rapid cure in most patients. Drinking extra fluid will help wash the infection out of the bladder, while passing urine immediately after sex sometimes prevents infections.

Commercial urinary alkalinisers or cranberry juice may be used regularly to prevent cystitis in women who have this problem regularly.

**DANDY-WALKER SYNDROME**

The Dandy-Walker syndrome is a rare brain developmental abnormality, in which there is failure of the central portion of the cerebellum (lower back part of brain) to develop.

Children with the condition have a very large head, vomiting, irritability, poor head control, cleft palate, and abnormal side-to-side eye movements (nystagmus). Some patients have an abnormal way of walking (gait), headaches, multiple cysts in the kidneys, abnormal lumbar vertebrae, subnormal mentality and delayed muscle control.

MRI and CT scans of the skull are abnormal and can be used to confirm the diagnosis.

Brain surgery may prevent further deterioration of symptoms, but there is no cure.

**DEFIBRINATION SYNDROME**

The defibrination syndrome is an uncommon life threatening abnormality of blood clotting.

It may be caused by a very severe infection, or shock after an accident may cause inappropriate blood clotting within arteries and veins. This causes the level of fibrinogen in the blood to drop to a low level. Fibrinogen is essential for the clotting of blood, so patients with this critical problem, then start to bleed profusely. Rarely it may follow childbirth.

After suffering excessive internal clotting which may affect their brain, heart, lungs, limbs and other organs, patients start to bleed excessively internally (eg. into the gut and kidney), externally (eg. intractable nose bleeds) and into the skin (eg. massive bruises). The condition can be diagnosed by specific blood tests.

Treatment involves the rapid transfusion of freshly donated compatible blood and other blood concentrates to stop bleeding, heparin given intravenously to stop abnormal clotting, and treating the underlying cause of the syndrome if possible. Unfortunately, permanent organ damage is common in the few survivors.

**DEMON-MEIGS SYNDROME**

See MEIGS SYNDROME

**DENERVATION SYNDROME**

The denervation syndrome is a rare complication of surgery to the stomach or oesophagus caused by damage to the vagus nerve that supplies the stomach. Patients develop the gas bloat syndrome, diarrhoea, stomach dilatation and failure of the stomach to empty at the normal rate. The diagnosis is confirmed by a gastroscopy. Management is difficult but a specific diet and further surgery to open the valve (pylorus) that controls drainage from the stomach (pyloroplasty)
DIABETIC KETOACIDOSIS
Ketoacidosis is a severe complication or initial presentation of diabetes mellitus. It is due to a build-up of waste products and glucose in the bloodstream because of untreated or under-treated diabetes. Patients who are careless about their treatment, diet and self-testing may be affected. Almost invariably, it is the juvenile insulin dependent diabetics that develop this complication.

The symptoms include mental stupor, nausea, vomiting, shortness of breath and eventually coma. Blood sugar levels are very high and other blood and urine tests are abnormal.

Treatment involves the emergency injections of insulin, but urgent hospital treatment is necessary to control the situation adequately. If left untreated, death will occur due to kidney, heart or brain damage.

The prognosis is good with prompt medical care, but permanent organ damage may occur if treatment is delayed.

DIENCEPHALIC SYNDROME
The diencephalic syndrome is an abnormal reaction to a brain tumour in the part of the brain known as the anterior hypothalamus.

Those affected have significant weight loss, a pale complexion, vomiting and abnormal side to side eye movements (nystagmus). Patients may also develop wasting of the nerves to the eyes (optic atrophy) and blindness, tremor, sweats, low blood sugar and pass urine frequently. The condition is diagnosed by a CT or MRI scan.

Sometimes surgery is possible, but the tumour is often inoperable and the prognosis is poor.

DIVERTICULITIS
Diverticulitis is infection or inflammation occurring in diverticulae (outpocketings) that develop on the colon (large intestine). When no infection or inflammation is present, the condition is called diverticulosis or diverticular disease of the colon. It is very common in older people, but the incidence is slowly decreasing in developed countries as the amount of fibre in the diet is increasing.

If fibre is lacking in the diet, almost everything eaten is absorbed, and there is little to pass on in the faeces. If there is no bulk in the motions, there is a tendency towards constipation, and pressure builds up in the colon as the hard, dry food remnants are moved along towards the anus. The pressure increases in the last metre or so of the bowel to cause ballooning out of the bowel wall between the muscle bands that run along and around the gut. With time, these outpocketings become permanent and form small diverticulae in which faecal particles can be trapped to cause infection and inflammation.

Patients experience intermittent cramping pains in the lower abdomen, alternating constipation and diarrhoea, excess flatus (wind), and noisy bowels. A barium enema x-ray or colonoscopy of the large bowel can confirm the diagnosis.

Acute attacks are treated with antibiotics and medications that reduce gut spasm. Sometimes treatment must be continued long term to prevent recurrences. Fibre supplements are added to the diet, and faecal softeners prevent constipation. In severe cases, surgery may be necessary to remove the affected sections of bowel, particularly if the bowel starts to bleed from chronic irritation or if an abscess forms. If fibre is added to the diet once the disease is present, it will not lead to a cure, but will prevent the formation of more diverticulae and therefore limit the severity of the disease.

Uncommonly, an abscess may form in one of the diverticulae, and this may rupture causing peritonitis.
Acute attacks normally settle quickly with treatment, but once diverticulae are present, they are permanent, and periodic infections usually occur.

See also COLITIS

DUBIN-JOHNSON SYNDROME
The Dubin-Johnson syndrome is a congenital developmental abnormality of the liver that causes jaundice (yellow skin) in a newborn infant. Blood tests show high levels of bilirubin, a liver biopsy is abnormal and the gall bladder cannot be seen on special x-rays (cholecystogram) as it does not contain any bile. No treatment is necessary as the condition settles slowly.

DUMPING SYNDROME
The dumping (or postgastrectomy) syndrome is a complication of gastrectomy, an operation in which part of the stomach is surgically removed for diseases such as cancer and incurable peptic ulcers. It occurs in 10% of postgastrectomy patients because of sudden over stretching of the now small stomach by food, and stimulation of the vagus nerve, which supplies the stomach, intestine and heart.

Patients experience sweating, rapid heart rate, pallor, belly discomfort and cramps, nausea and weakness. Some develop fainting, vomiting and diarrhoea. All symptoms occur within 20 minutes of eating.

Frequent small meals with low carbohydrate content and no fluids with meals, is the main treatment. Sedatives and anticholinergics (stomach muscle relaxing medication) are sometimes used. There is no cure.

ECLAMPSIA
See PRE-ECLAMPSIA AND ECLAMPSIA

ECTOPIC PREGNANCY
A foetus normally grows within the womb (uterus). An ectopic pregnancy is one that starts and continues to develop outside the uterus. About one in every 200 pregnancies is ectopic. Conditions such as pelvic inflammatory disease and salpingitis increase the risk of ectopic pregnancies, as they cause damage to the Fallopian tubes. Other infections in the pelvis (eg. severe appendicitis) may also be responsible for tube damage.

Symptoms of an ectopic pregnancy may be minimal until a sudden crisis from rupture of blood vessels occurs, but most women have abnormal vaginal bleeding or pains low in the abdomen in the early part of the pregnancy. Many ectopic pregnancies fail to develop past an early stage, and appear to be a normal miscarriage. Serious problems can occur if the ectopic pregnancy does
continue to grow.

The most common site for an ectopic pregnancy is the Fallopian tube, which leads from the ovary to the top corner of the womb. A pregnancy in the tube will slowly dilate the tube until it eventually bursts. This will cause severe bleeding into the abdomen and is an urgent, life-threatening situation for the mother. Other possible sites for an ectopic pregnancy include on or around the ovary, in the abdomen or pelvis, or in the narrow angle where the Fallopian tube enters the uterus.

If an ectopic pregnancy is suspected, an ultrasound scan can be performed to confirm the exact position of any pregnancy. If the pregnancy is found to be ectopic, the woman must be treated in a major hospital. Surgery to save the mother's life is essential, as a ruptured ectopic pregnancy can cause the woman very rapidly to bleed to death internally. If the ectopic site is the Fallopian tube, the tube on that side is usually removed during the operation. With early diagnosis and improved surgical techniques, the tube may not have to be removed. Even if it is lost, the woman can fall pregnant again from the tube and ovary on the other side.

It is rare for a foetus to survive any ectopic pregnancy.

**ENDOMETRIOSIS**

The term endometriosis is derived from three Greek words: “Endon” which means within, “Metra” which means uterus, and “Itis” which is a suffix used for any form of infection or inflammation.

Endometriosis is the presence of cells that normally line the uterus (womb) in abnormal positions in the pelvis and abdomen. 2% of all women are affected at some time.

The uterus is lined with endometrial cells that during the second half of a woman's monthly cycle may accept a fertilised egg and allow it to grow into a baby. If no pregnancy occurs, these cells degenerate, break away from the inside of the uterus, and are carried out of the body in a woman's period. From the top of the uterus, a Fallopian tube leads out to each of the two ovaries. In a small number of women, the endometrial cells go into and through these tubes to settle in abnormal positions around the ovary, on the outside of the uterus, or in the pelvic cavity, where
they can start growing and spread further. These cells still respond to the woman's hormonal cycle every month, and will bleed with every period, releasing blood in places where it can cause symptoms. The abnormally positioned endometrial cells can also irritate the bladder, settle on the outside of the intestine, or they may block the Fallopian tubes to cause infertility.

The symptoms depend on the site of the endometrial deposits, but pelvic pain, often worse at the time of a period, is usual. They may also cause uterus and bowel cramps, diarrhoea and frequent passage of urine due to bladder irritation. The condition can only be diagnosed by examining a woman's pelvis by means of an open operation or laparoscopy.

Various medications (eg. hormones, danazol) taken as tablets, implants or nasal sprays for many months, settle mild to moderate cases. Removal of endometrial deposits is normally possible by laparoscopy (passing a number of small tubes into the abdomen), but open operation may be necessary to remove large amounts of abnormal tissue. As a last resort, a hysterectomy may be performed.

Most patients are cured with medication and/or surgery, but some will be left permanently infertile. Artificial means of fertilisation can help these women conceive, as their ovaries still function normally.

**ENTERITIS**

Enteritis is any infection or inflammation of the small intestine.

See also CROHN'S DISEASE; GASTROENTERITIS; SHIGELLOSIS

**FELTY SYNDROME**

Felty syndrome results in the premature destruction of red and white blood cells by the spleen and is often associated with advanced rheumatoid arthritis. Patients have a very large spleen and a low level of both red and white blood cells in the bloodstream.

Significant discomfort is felt in the abdomen because of the enlarged spleen, which may put pressure on veins that pass through it. This pressure can cause dilation of the veins that surround the upper part of the stomach, and these dilated veins may be attacked by the acid in the stomach, put under stress by vomiting, and damaged by food entering the stomach, ulcerate and bleed. Other symptoms may include a fever, leg ulcers, darkly pigmented skin patches, and tiny blood blisters under the skin. Patients may become quite ill, very anaemic and vomit blood, and if the bleeding continues, patients may die from loss of blood into the stomach.

The diagnosis is confirmed by blood tests that estimate the type and age of cells in the bloodstream. Surgical removal of the spleen is the only treatment, but after removal of the spleen patients react more slowly to infections, and must ensure that they are treated early in the course of any bacterial or viral infection. Regular influenza and pneumococcal vaccinations are recommended.

**FEMORAL HERNIA**

A femoral hernia is a hernia due to a small piece of intestine being forced through a point of weakness in the groin, just underneath the skin, where the femoral artery passes through a small hole as it leaves the abdomen and passes to the front of the thigh. They are much more common in women than men and are caused by pressure in the abdomen from heavy work, lifting or childbirth.

A small lump is felt under the skin of the groin that may be intermittently painful. It is very easy for the trapped intestine to become pinched, twisted, and gangrenous. It is a clinical diagnosis, and no tests are normally required, but an ultrasound scan may be necessary in fat patients.

Routine surgical repair of the hernia is necessary, but if constant pain occurs in the hernia, urgent surgery is necessary. The recurrence rate after surgery is about 5%.

**FIBROIDS OF THE UTERUS**

The uterus (womb) is made up of muscular, fibrous and glandular tissue. After childbirth, the
A RATIONALE FOR THE ABDOMEN

When the uterus contracts to force out the blood and wastes during a period, the fibroids distort the uterus causing painful cramps and sometimes heavy menstrual bleeding. Fibroids can usually be detected on pelvic examination, but the diagnosis may be confirmed by an ultrasound scan of the abdomen, laparoscopy or special x-rays of the uterus.

The treatments available include a hysterectomy to completely remove the uterus, or if the woman wishes to have more children, the individual fibroids can be removed from the uterus.

FISSURE IN ANO
See ANAL FISSURE

FITZ-HUGH-CURTIS SYNDROME
The Fitz-Hugh-Curtis syndrome is an infection and inflammation of tissue around the liver caused by the bacterium Chlamydia trachomatis. It is a complication of a sexually transmitted infection of the Fallopian tubes (salpingitis) that lead from the ovaries to the uterus.

Patients experience upper abdominal pain that is worse lying down and turning, a vaginal discharge, vulval itch, and pain on passing urine. Infertility may result from the salpingitis. A sample of fluid in the abdominal cavity is examined for presence of the responsible bacteria to confirm the diagnosis.

Treatment involves tetracycline antibiotics for the patient and her partner(s). This is usually successful in curing the infection.

See also SALPINGITIS
FOLATE DEFICIENCY
Folate is an essential nutrient found in many foods in the form of folic acid, but is converted to folate in the body. The amount present in the body can be estimated by blood tests.

The normal amount present in blood is 3.6 to 20 µg/L (7 to 40 nmol/L), while in red blood cells the normal range is 225 to 800 µg/L. The test is normally done as part of the investigation of anaemia.

The recommended daily total folate dietary intake is 50 µg. in infants, 100 µg. in children and 200 µg. in adults.

Low levels may be present in the elderly, infancy, poor diet, pregnancy and breast feeding, alcoholism, scurvy (lack of vitamin C), kwashiorkor (protein starvation), tropical sprue, coeliac disease, malabsorption syndromes, Crohn's disease, partial removal of stomach, heart failure, blood infection (septicaemia), Whipple's disease, scleroderma, chronic haemolytic anaemias, cancers, multiple myeloma, leukaemia, myelofibrosis, TB, psoriasis, haemodialysis for kidney failure, active liver disease, malaria, premature babies and with some drugs (eg. barbiturates, oral contraceptive, trimethoprim, tetracyclines, nitrofurantoin, primidone, methotrexate)

A false low blood level may occur with severe vitamin B12 deficiency, while a false normal level may follow a blood transfusion.

Blood folate levels reflect folate absorption from the diet in the past week only. Red blood cell folate is a more accurate measure of total body folate levels and is less affected by diet than blood folate levels. Folate is stored mainly in the liver.

FOLLICULAR CYST
See also OVARIAN CYST

FOOD POISONING
Food poisoning is an illness involving the intestine caused by eating food contaminated by bacteria, or a toxin produced by bacteria. Many different types of bacteria may be responsible. Foods that are particularly likely to be responsible are dairy products, fish, chicken or other meat that has been inadequately refrigerated, fried foods, meat dishes that have been reheated, and stale bread.

Patients develop nausea, vomiting, diarrhoea, a fever and stomach cramps, and small amounts of blood may be vomited or passed in the motions. Most attacks develop suddenly within one to eight hours of eating the contaminated food, but may take up to 24 hours.

No specific investigation can diagnose the cause in an individual, but a suspect food can be tested to see if it is contaminated. Food poisoning is strongly suspected when a number of people are affected simultaneously, but it may be confused with gastroenteritis.

Usually no treatment is necessary other than a clear fluid diet. In the very young and elderly, dehydration may be a problem, and intravenous drips in hospital may be required. Antibiotics are rarely necessary, and most attacks settle within six to twelve hours

See also GASTROENTERITIS

FRÖHLICH SYNDROME
Fröhlich syndrome (dystrophia adiposogenitalis or adiposogenital dystrophy) is a rare condition that has its onset after puberty when there is a loss of sexual function and libido due to a lack of sex hormones, which in turn may be due to a tumour of the pituitary gland in the centre of the brain.

The symptoms are a lack of sexual development and activity, the skin becomes thin and wrinkles prematurely, body hair is scanty, scalp hair becomes very fine, and fat may deposit around the buttocks and genitals. All hormones must be checked by blood tests, and a CT or MRI scan of the pituitary gland is performed. There is no cure, but long-term control possible by sex hormone supplements and surgery for any pituitary tumour.
GALACTOSAEMIA
Galactosaemia is a congenital lack of the liver enzyme galactokinase that is responsible for the metabolism (break down) of galactose, which is one of the sugars in milk. These infants vomit, fail to thrive, and develop liver disease, intellectual disability, frequent infections and eye cataracts. A specific diagnostic test can be performed on red blood cells. A strict dietary avoidance of all milk products will prevent all the symptoms except intellectual disability.

GARDNER SYNDROME
Gardner syndrome is an inherited inflammatory condition of the large bowel. Patients have multiple polyps in the large bowel that may bleed and progress to bowel cancer, multiple skin cysts, bony growths on the jaw, and other tumours of soft tissue throughout the body. A colonoscopy or barium enema x-ray is used to make the diagnosis.

Regular colonoscopy is necessary to remove bleeding and cancerous growths, and it is sometimes necessary for part or all of the large gut to be removed. The prognosis is good, provided regular colonoscopies prevent cancer or detect it early.

See also COLORECTAL CANCER; POLYPOSIS COLI

GAS BLOAT SYNDROME
The gas bloat syndrome is an inability to burp or vomit that is a complication of surgery to the stomach. It causes significant discomfort when swallowed air builds up in the stomach. Medications and diet are used to reduce gas build up, and further surgery may be considered to relieve the obstruction. Management is usually successful, but the problem may persist despite treatment.

See also DENERVATION SYNDROME

GASTRIC CARCINOMA
Stomach cancer (gastric carcinoma) is one of the less common cancers in Europeans (4% of all cancers), but very common amongst Japanese. It is more than twice as common in men than women, and usually occurs over the age of 60 years. The consumption of green and yellow vegetables decreases the risk, but it rises in lower socio-economic groups and in those who have pernicious anaemia.

Often it has mild symptoms such as indigestion and heartburn, so patients frequently do not attend a doctor until the cancer is quite advanced. Other symptoms include burping, feeling very full in the upper belly, nausea, weight loss and a loss in appetite. Vomiting blood and passing black faeces are late complications. The liver is a common site for the spread of the cancer, but once this is involved, a cure is most unlikely.

The diagnosis is confirmed by gastroscopy and biopsy of any suspicious areas, but the investigator must be very careful as stomach cancer often looks like, and may be confused with, a peptic ulcer.

Surgical removal of the stomach, and surrounding lymph nodes to which the cancer may have spread, is the primary treatment. Irradiation may be used as additional treatment. The five-year survival rate is about 20%.

See also LEATHER-BOTTLE STOMACH; PEPTIC ULCER

GASTRITIS
Gastritis is an inflammation of the stomach that may be caused by many factors including stress, gut infections, drugs (particularly aspirin and anti-arthritis drugs), alcohol excess, overindulgence in food, stomach cancer and allergies.

Patients develop intermittent symptoms of nausea, vomiting, loss of appetite, a feeling of fullness, upper abdominal discomfort or pain, and possibly indigestion for a few hours or days, or constant discomfort for weeks or months. Sometimes it can progress to a peptic ulcer and rarely
stomach cancer. Gastroscopy reveals the inflamed red stomach lining.

The treatment depends upon the cause. Antacids or anti-ulcer drugs (eg. H2 receptor antagonists, proton pump inhibitors) will ease the inflammation, and anti-anxiety drugs may be used when appropriate. Drug-induced gastritis will require the removal of the drugs, substituting other drugs, or if the medication is essential, adding anti-ulcer or antacid medications to control the continuing symptoms.

See also PEPTIC ULCER

GASTROENTERITIS

Gastroenteritis is a viral infection of the gut. The rotavirus is one of the most common viruses responsible, particularly in children, and it often appears in epidemics, and usually in spring or early summer. It passes from one person to another through contamination of the hands and food. Another virus that may be responsible is the Astrovirus amongst many others.

Patients develop an uncomfortable feeling in the stomach, gurgling, cramping pains and then vomiting. A few hours later the vomiting starts to ease, and diarrhoea develops. The infection lasts from one to three days and young children may become rapidly dehydrated and require urgent hospitalisation.

Usually no investigations are necessary, but faeces tests may be performed if another cause is suspected and blood tests are sometimes necessary for dehydration.

The treatment involves a specific diet to replace the fluid and vital salts that are rinsed out of the body by the vomiting and diarrhoea, and then careful reintroduction of foods. In adults, medications can be used to slow diarrhoea, and paracetamol can be used for belly pain at all ages. Some children develop intolerance to milk sugar (lactose) after the infection, and this may prevent them from returning to a normal diet for weeks or months.

GAUCHER DISEASE

Gaucher disease is an inherited condition that is more common in eastern Europeans and Jews, that causes the excess accumulation of fat in cells throughout the body due to the lack of a liver enzyme. The symptoms include enlargement of the spleen, anaemia, damage to bones in the back and thigh, and bone pain. Fractures of softened bones and poor liver function may occur, and sometimes there is lung involvement. It is diagnosed by a specific blood tests and tissue biopsy, but no treatment is available. Patients can expect a reasonable life expectancy unless the lungs become damaged.

GAY BOWEL SYNDROME

Homosexuals who practice frequent anal sex can develop a chronic inflammation and infection of their lower bowel (rectum) called gay bowel syndrome. It results in diarrhoea, a constant feeling of wanting to pass faeces when none is present, and a mucus discharge from the anus. Treatment involves using an appropriate antibiotic to cure the bowel infection after the bacteria causing it has been identified by a faeces test.

GIARDIASIS

_Giardia lamblia_ is the parasite responsible for a very common protozoan (microscopic single celled animal) infection of the intestine, that is far more common in children than adults.

The parasite can enter the small intestine via the mouth and pass from one person to another by poor personal hygiene. Eggs are found in the faeces, and faecal contamination of water supplies is a common method of infection.

From the time Giardia eggs are swallowed, it may be one to three weeks before symptoms develop or the adult parasite (trophozite) which is only 0.00014 centimetres (14 micrometres) long, can be found in the faeces.
Most patients have no symptoms, but in more severe cases, mild diarrhoea, foul-smelling stools, smelly flatus (farts), general tiredness, an uncomfortable feeling in the abdomen, nausea, vomiting, burping and cramping pains in the abdomen may occur. In persistent cases, particularly amongst indigenous people (eg. Aborigines) and children in third-world countries, malnutrition occurs from the constant diarrhoea which prevents proper food absorption. People with the parasite but without symptoms can easily pass on the infection.

It is diagnosed by examining a sample of faeces under a microscope and identifying the eggs or live giardia.

Most cases clear spontaneously after many weeks or months, but a number of different single-dose treatments are available as tablets (eg. tinidazole) or mixtures to cure the infestation. It is essential to treat all members of the patient's family, and any other close contacts at the same time, and the vast majority of cases settle rapidly with treatment. The only form of prevention is scrupulous personal hygiene.

**GILBERT SYNDROME**

Gilbert syndrome is an uncommon inherited cause of poor liver function due to the lack of a specific enzyme (glucuronyl transferase) that breaks down proteins in the liver. There are usually no symptoms, but it may cause a dark complexion (mild jaundice) from a persistent excess level of bilirubin in the blood. Liver function blood tests are abnormal long term and patients are more susceptible to other forms of liver damage (eg. from excess alcohol).

No treatment is normally necessary, but in selected cases medication can be given to trigger the activity of the missing enzymes. There is no cure, but usually there are no adverse effects suffered by the patient.

**GLYCOGEN STORAGE DISEASES**

The glycogen storage diseases are a number of rare inherited or congenital conditions including McArdle syndrome, von Gierke syndrome, Cori syndrome, Hers syndrome, Pompe syndrome, Tarui disease and Andersen syndrome. The enzymes and other natural chemicals in the liver that are necessary to process carbohydrates in food into glycogen and make it available to the body as a form of energy fuel, are missing or inactive in all these conditions.

The different diseases vary in their symptoms and effects depending upon which enzymes and chemicals are affected. Most patients have low blood sugar, large livers, short stature, subnormal mentality, and may bleed excessively and fail in their development to progress through puberty. Other forms cause muscle pain and weakness.
The diagnosis can be confirmed by appropriate blood tests and a liver biopsy. Special diets and liver transplant sometimes assist in relieving the symptoms. The prognosis varies from minimal effects throughout life to death in infancy, depending on which type of glycogen storage disease is present.

**HAEMOLYTIC ANAEMIA**

Haemolytic anaemia is a form of anaemia caused by the excessive destruction of red blood cells because of an uncommon complication of many diseases including kidney failure, liver failure, transfusion with incompatible blood, cancer, both viral and bacterial infections, and exposure to some drugs and poisons.

Tiredness and weakness are the usual symptoms, but fever and jaundice (yellow skin) may also be present. In severe cases, the patient may become semiconscious, have severe abdominal pain, and bruise easily. It is diagnosed by blood tests and examining the red blood cells under a microscope.

Emergency treatment involves transfusing the patient with concentrated red blood cells. Prednisone (a steroid) is the usual drug used, but some patients do not respond, and more exotic and toxic drugs are then required. The spleen is responsible for destroying red blood cells, and if this becomes overactive, surgical removal may control the disease. Some patients require years of treatment, and in a small number the condition is resistant to treatment and fatal. Most cases respond well to treatment and recover in a few months.

**HAEMOLYTIC-URAEMIC SYNDROME**

The haemolytic-uraemic syndrome (uraemic syndrome) is a serious condition of red blood cell destruction resulting in kidney failure. Microscopic damage to, and clogging of, the tiny blood vessels in the kidneys occurs due to excessive destruction of red blood cells, resulting in poor filtration of the blood and failure to remove waste products that then build up in the body. It may be a side effect of severe gut infections, or an inappropriate response to pregnancy or drugs.

The symptoms are the passing of bloody urine, tiredness and weakness due to anaemia, and excessive bruising and bleeding due to a drop in the number of platelets (cells in the blood essential for clotting) which in turn may cause extensive internal bleeding.

The condition is diagnosed by blood tests and kidney biopsy, but treatment is difficult and usually involves blood transfusions, but in about 30% of patients the kidneys fail, and dialysis (artificial kidney machine) is required. Although most patients recover, even in the best hospitals, some patients do not survive.

**HAEMORRHOIDS**

See PILES

**HAND-SCHUELLER-CHRISTIAN DISEASE**

Hand-Schueller-Christian disease is one of a group of congenital diseases known as histiocytosis X or Langerhans cell histiocytosis, that occur in children. The disease causes diabetes insipidus, patchy bony absorption in the skull, protruding eyes, lung damage and outer ear inflammation. Other symptoms may include skin rashes and gum inflammation and in advanced cases numerous organs may fail.

The diagnosis can be made by skull x-rays, biopsy of skin rashes, bone marrow biopsy and chest x-rays, then treatment involves irradiation of the bone lesions, very potent medications to prevent further bone and lung damage and conventional management of the diabetes insipidus, but no cure is possible.

**HARTNUP DISEASE**

Hartnup disease is a rare inherited disorder of body chemistry that leads to a deficiency of
niacin (vitamin B3). The symptoms are similar to those of pellagra and include poor coordination, emotional personality, mental confusion and a sun sensitive red scaling rash. The disease is diagnosed by blood tests and treated with niacin supplements. Satisfactory control of the symptoms is normal, but no cure is possible.

HENOCH-SCHÖNLEIN SYNDROME

The Henoch-Schönlein syndrome (anaphylactoid purpura) is a generalised inflammation of small blood vessels resulting in the formation of small red spots in the skin (Henoch-Schönlein purpura). It may be a complication of a number of different diseases (e.g. after a Streptococcal bacteria infection), but its cause is often unknown, although it is more common in children.

Small, slightly raised dilated blood vessels (purpura) appear on the skin as red or purple patches about five to ten millimetres across. There may also be bleeding into the intestine, lungs, kidneys and joints to cause belly pain, coughing of blood, blood in the urine and arthritis.

It is diagnosed by biopsy of one of the purpura in the skin, but no treatment is normally necessary as the condition is self-limiting and usually settles without serious long-term problems in one to six weeks. If the kidneys become involved medical treatment is necessary, as long-term kidney damage may occur.

Eduard Henoch (182-1910) and Johannes Schönlein (1793-1864) were German physicians.

HEPATITIS A

Hepatitis A (infective hepatitis) is a viral infection of the liver caught by eating food that has been contaminated by someone who has the disease. The virus lives in the liver, but large numbers pass down the bile duct and into the gut, and into the faeces. If sufferers are not careful with their personal hygiene, the virus may be passed onto someone else. When hepatitis A virus particles are swallowed, they are absorbed with the food into the bloodstream and migrate to the liver, where after an incubation period lasting two to six weeks they start multiplying and cause damage to liver cells. Patients may pass on the virus for a week or two before they develop any symptoms. The vital preventative factor is the standard of hygiene in the community.

The liver is used by the body to process food and eliminate waste products through bile, which passes into the gut. If the liver is damaged, it cannot work efficiently, and the main constituent of bile (bilirubin) builds up in the bloodstream. Because of the yellow colour of bilirubin, the skin slowly turns a dark yellow (jaundice). The whites of the eyes are affected first, and this may be the only sign of the disease in a dark-skinned person. Other symptoms are nausea, vomiting, marked tiredness, loss of appetite, generalised aches and pains, fever and a large tender liver.

Blood tests are available to detect antibodies against the various hepatitis viruses and diagnose the type of hepatitis and monitor its progress.

Hepatitis A can be prevented by a vaccine that may be combined with the vaccine against hepatitis B. Two injections at intervals of six to twelve months give at least five years, and possibly far longer protection. It is not designed to be used in pregnancy, but unlikely to cause serious adverse effects if given inadvertently. It may be given with caution in breastfeeding and children over five years. The first injection takes effect after 14 days, and lasts for at least six months, while boosters gives long-term protection. The most common side effect is local reaction at injection site, while unusual reactions may include a headache, fever, tiredness, nausea, loss of appetite and general unwellness.

The main treatment is bed rest, and a diet that is low in protein and high in carbohydrate, and alcohol is forbidden. Sometimes it is necessary to give medication for nausea and vomiting and to feed severely affected patients by a drip into a vein for a short time. If it continues to worsen, drugs may be used to reduce the liver damage. In rare cases (2 in 1000), the disease may progress despite all efforts of doctors and result in death, but this is more common in the elderly.

There is usually an initial worsening of the symptoms, followed by a slow recovery period that may take from one to four months. In children, it may be present, and recovery occur, with no symptoms ever being present. Permanent liver damage is uncommon.

See also HEPATITIS B; HEPATITIS C; HEPATITIS D; HEPATITIS E
HEPATITIS B

Hepatitis B (serum hepatitis) is a viral infection of the liver that can only be caught by intimate contact with the blood or semen of a person who has the disease or is a carrier of the disease. Examples include receiving blood from a carrier, using a contaminated needle, rubbing a graze or cut on an infected person's graze or cut, being bitten by an infected person, or most commonly by having sex (homosexual or heterosexual) with them. 90% of babies born to mothers who are carriers catch the disease. The highest incidences are amongst homosexual men, drug addicts who share needles, Australian Aborigines, and the disease is widespread in Southeast Asia. Blood banks screen all donations for hepatitis B. Splashes of blood into an eye or onto a cut or graze can spread the disease, and doctors, dentists, nurses and other health workers are therefore at risk.

There is a long incubation period of six weeks to six months, and the infection cannot be detected during this period. Once active it causes the patient to be very ill with a liver infection, fever, jaundice (yellow skin), nausea and loss of appetite. Some patients develop only a very mild form of the disease but they are still contagious and may suffer the long-term effects.

Blood tests are available to detect antibodies against the various hepatitis viruses and diagnose the type of hepatitis and monitor its progress.

It has been possible to vaccinate against hepatitis B since 1986. Three injections at intervals of one month and six months gives at least five years protection. It should not be used during pregnancy unless essential, but accidental vaccination during pregnancy is unlikely to cause any significant problem. It may be used in children from birth onwards. Local soreness, swelling, redness and tissue hardness are the most common side effects. Unusually headache, dizziness, fever, muscle aches, tiredness, nausea, diarrhoea, joint pain and a rash may occur.

Treatment involves bed rest, and a diet that is low in protein and high in carbohydrate, and alcohol is forbidden. Sometimes it is necessary to give medication for nausea and vomiting and to feed severely affected patients by a drip into a vein for a short time. If it continues to worsen, drugs may be used to reduce the liver damage.

Patients must ensure that they are no longer infectious before having sex with anyone and have regular blood tests throughout their life to detect any liver damage. Nine out of ten patients recover completely after a few weeks, but one in ten become chronic carriers. 10% of patients develop cirrhosis, failure of the liver or liver cancer, and about 1% of patients develop a rapidly progressive liver disease that causes death.

See also HEPATITIS A; HEPATITIS C; HEPATITIS D; HEPATITIS E; HEPATOMA

HEPATITIS C

Hepatitis C is a viral infection of the liver transmitted from one person to another through blood contamination such as the sharing of needles by drug users, home tattooing or from mother to foetus. All blood donations are now screened for this virus and sexual transmission is rare. The incubation period is six to seven weeks.

The symptoms are usually mild, and the patient may only be vaguely unwell for a few days, but a minority progress to develop jaundice, liver enlargement and nausea. Permanent liver damage may occur, often after many years.

Blood tests are available to detect antibodies against the various hepatitis viruses and diagnose the type of hepatitis and monitor its progress.

Treatment involves injected and oral antiviral medications such as ribavirin, tribavirin and interferon, which significantly reduce the severity of the disease, particularly if used early. In the acute stage bed rest, and a diet that is low in protein and high in carbohydrate is given, and alcohol is forbidden. Sometimes it is necessary to give medication for nausea and vomiting and to feed severely affected patients by a drip into a vein for a short time. If it continues to worsen, drugs may be used to reduce the liver damage. Unfortunately it is not yet possible to vaccinate against hepatitis C.

The incidence of hepatitis C is higher than average in central and West Africa, Egypt, China...
and central Asia where the total population incidence exceeds 2.5% (over 10% in Egypt, Mongolia, Gabon and Cameroon).

No cure is available, but many patients lead normal long lives. Untreated about 45% of patients have no serious problems, 45% develop progressive liver damage, 6% develop cirrhosis and 4% develop liver failure or cancer.

See also CIRRHOSIS; HEPATITIS A; HEPATITIS B; HEPATITIS D; HEPATITIS E

HEPATITIS D

Hepatitis D is a viral infection of the liver that can only be caught by patients who already have hepatitis B. The two diseases may be caught at the same time or separately. Hepatitis D is much more common in intravenous drug users with hepatitis B than in patients who have caught hepatitis B in other ways, and it is also more prevalent in countries around the Mediterranean.

If hepatitis D is caught at a later time than hepatitis B, there are usually no symptoms, but infection increases the risk of developing serious liver disease in those who already have hepatitis B. Blood tests are available to detect antibodies against the various hepatitis viruses and diagnose the type of hepatitis and monitor its progress.

Usually no treatment is necessary, but in severe cases, drugs may be used to reduce the liver damage. There is no specific vaccine against hepatitis D, but vaccination against hepatitis B will effectively prevent both diseases.

No cure is available, and most patients lead normal lives, but many eventually develop cirrhosis, liver failure or liver cancer.

See also CIRRHOSIS; HEPATITIS A; HEPATITIS B; HEPATITIS C; HEPATITIS E

HEPATITIS E

Hepatitis E is a viral infection of the liver caught from contaminated food and water in the same way as hepatitis A. It is rare in western countries with the highest incidence being in central Asia, Algeria and Mexico. Patients become jaundiced, are nauseated and tired, vomit, have no appetite, and develop aches, pains, a fever and a large tender liver. Blood tests are available to diagnose the type of hepatitis and monitor its progress.

The immediate death rate from hepatitis E is far higher than in other types of hepatitis, and may occur within a day or two of symptoms appearing. The death rate is far higher in pregnant women. Even so, most patients recover completely, and there are no long-term liver problems. There is no vaccine available, but a gammaglobulin injection will give short-term protection. Scrupulous personal hygiene is vital.

See also HEPATITIS A; HEPATITIS B; HEPATITIS C

HEPATOMA

Liver cancer (hepatic carcinoma or a hepatoma) is a form of cancer that starts in the liver and has not spread to the liver from some other organ. It occurs most commonly in patients who have long-standing alcoholic cirrhosis, hepatitis B or C, liver parasites and malnutrition, and is far more common in developing countries.

Often there are no symptoms until the cancer is well advanced, at which point the liver begins to fail and the patient becomes jaundiced (yellow), nauseated, very weak, loses weight and is unable to eat. At a late stage of the disease the abdomen may become swollen with fluid. The diagnosis is confirmed by blood tests, liver biopsy, ultrasound and CT scans.

No surgical or medical treatment available in most cases, as almost invariably the cancer has spread too far by the time it is diagnosed, and unfortunately death within a short time of diagnosis is the usual result.

See also CIRRHOSIS; HEPATITIS B; HEPATITIS C

HERS SYNDROME

See GLYCOGEN STORAGE DISEASES
HIRSCHSPRUNG DISEASE
Hirschsprung disease is a congenital disease of the large intestine, which is far more common in boys than girls, caused by a failure of the nerves supplying the large intestine (colon) to develop correctly. Without these nerves, the intestine cannot contract to move along the faeces, and it collects to dilate the colon to an enormous size (megacolon). There is also a tendency for the disease to occur in successive generations.

It is usually diagnosed soon after birth as the baby is severely constipated, has a distended belly, refuses to feed, is lethargic, small in size, and is very irritable. Foul smelling diarrhoea may develop as a late symptom. The diagnosis is confirmed by an X-ray of the gut (barium enema), and by taking a biopsy of the colon.

Initially, excess faeces is removed by a tube placed up through the anus, but in due course an operation to remove the affected section of gut is necessary. Without treatment most affected babies will die, but after the operation, these children progress very well and have only minor long-term problems.

See also MEGACOLON

HISTIOCYTOSIS X
Histiocytosis X or Langerhans cell granulomatosis, are a group of diseases of no known cause that result in replacement of lung, bone and intestinal tissue by fibrous scar tissue. Hand-Schueller-Christian disease and Letterer-Siwe disease are the main types of histiocytosis X. They tend to occur in young smokers to cause worsening shortness of breath, chronic cough, and gradual destruction of the lungs, with a spontaneous pneumothorax being a possible complication. The diagnosis can be confirmed by chest x-ray, CT scan and lung biopsy.

Patients must stop smoking. Numerous treatments have been tried with varying success including medications normally used for asthma, the drug penicillamine (not the antibiotic penicillin), irradiation and lung transplant. The condition is usually slowly progressive despite treatment.

See also HAND-SCHUELLER-CHRISTIAN DISEASE; LETTERER-SIWE DISEASE

HISTOPLASMOSIS
Histoplasmosis is an uncommon infection of the lungs caused by the fungus *Histoplasma capsulatum*, which is present in soil and can be inhaled to cause a form of pneumonia. Most cases are very mild and may pass unnoticed or cause mild flu-like symptoms, but sometimes a moderately severe lung infection may develop, and in rare cases a severe and fatal pneumonia occurs. It is most common in Southeast Asia, South America and Africa, and very rare in developed countries.

The symptoms depend on the severity of the infection but in severe cases resemble those of a normal pneumonia with a cough, wheeze, shortness of breath, marked tiredness and a fever. The lung damage from a severe pneumonia may be permanent.

It is diagnosed after examining a sample of sputum and culturing it to determine the infecting organism. There is also a specific blood test, and X-rays of the chest show a characteristic pattern. Minor cases require no treatment, but more severe ones are treated with specific antifungal medications. With correct treatment, only the elderly or invalids are likely to die or develop long-term complications.

HODGKIN’S LYMPHOMA
Hodgkin’s lymphoma or disease is a form of cancer of the lymph nodes. The cause is unknown, but it tends to occur more in males, young adults and the elderly, and there may be a genetic tendency. The group of lymphomas that do not fulfil all the criteria to be called Hodgkin’s disease are called “non-Hodgkin’s lymphomas”.

Patients develop painless swellings of the lymph nodes, often in the neck, armpit and groin.
A RATIONALE FOR THE ABDOMEN

Other symptoms include tiredness, fever, weight loss, night sweats and a generalised itch, and it may spread to other lymph nodes and organs in other parts of the body. The diagnosis is confirmed by removing an involved lymph node and examining it under a microscope.

Most patients can be classified into different stages (1 to 4) depending upon the degree of spread of the disease. The treatment varies depending on the stage of the disease and involves various combinations of irradiation, cytotoxic (anticancer) drugs (eg. lomustine, procarbazine), and surgery. Survival depends upon the staging, and the higher the staging the worse the outcome.

The condition is named after the English physician and pathologist Thomas Hodgkin (1798-1866).

**HUNTER SYNDROME**

The Hunter syndrome (mucopolysaccharidosis type II) is a rare inherited abnormality of the metabolic system in which patients are unable to eliminate certain substances (mucopolysaccharides) from the body. Stiff joints, grotesque facial appearance, enlarged spleen and liver, heart abnormalities and mild intellectual disability are the usual characteristics, while deafness may also be a problem. It is diagnosed by specific blood and bone marrow tests and x-rays. Surgery may be performed for heart and facial abnormalities, but no cure is possible, although patients have a reasonable life expectancy. It is named after the Canadian physician Charles Hunter (1873-1955).

See also HURLER SYNDROME

**HURLER SYNDROME**

Hurler syndrome (mucopolysaccharidosis type 1) is a rare inherited abnormality of the metabolic system in which patients are unable to eliminate certain substances (mucopolysaccharides) from the body. These children have a grotesque facial appearance, short stature, stiff joints, spinal deformities, intellectual disability, heart abnormalities, blindness and enlarged liver and spleen. Heart failure often occurs early in life. It is diagnosed by specific blood and bone marrow tests and x-rays. Surgery is possible for heart and facial abnormalities, but no cure is possible. It is similar to, but more serious than, Hunter syndrome, and patients usually die in childhood. It is named after the Austrian paediatrician Gertrud Hurler (1889-1965).

See also HUNTER SYNDROME; SCHEIE SYNDROME

**HYDATID DISEASE**

Hydatid disease or echinococcosis, is an infestation of human tissue by the larva of the tapeworm *Echinococcus*. The normal life cycle of *Echinococcus* requires infested meat to be eaten by a dog or other carnivore. The larva enters the gut and grows into a tapeworm, which then passes eggs out in the faeces to contaminate grass and soil. The normal hosts are cattle, sheep and other grazing animals, which eat the contaminated grass and are eventually killed by the *Echinococcus* infestation in their body. This allows the carcass to be eaten by meat-eating animals, and the life cycle of the parasite starts again. If a human eats food that has been contaminated by the faeces of an infected animal (usually dogs or other meat-eating animals), the larva migrates to the liver, lung, spleen or brain, where it forms a cyst that remains lifelong. The disease is rare in developed countries, but widespread in South America, around the Mediterranean, in east Africa and central Asia.

After the cyst forms in the body, it usually remains dormant for many years, often causing no symptoms. Over a decade or more the cyst slowly enlarges, until the pressure it exerts on its surroundings causes problems. With liver cysts, there may be pain in the upper part of the abdomen, nausea, vomiting and jaundice. In the lung, the cysts may cause part of the lung to collapse, pain and shortness of breath. In the brain symptoms occur earlier, and even a small cyst may cause convulsions or severe headaches. If a cyst ruptures, the reaction in the body to the sudden release of a large number of larvae may cause sudden death or severe illness and
the formation of multiple cysts in other parts of the body. If multiple cysts are present, the long-
term outlook is grave.

The condition is diagnosed by seeing the cyst on a CT or ultrasound scan. Specific antibody
blood tests can be performed to determine whether or not a person has a cyst somewhere in their
body, but discovering the actual site of the cyst may then prove very difficult. The blood test
remains positive long term after an infection.

If possible, a cyst should be removed surgically. It is vital for the surgeon not to rupture the
cyst during its removal, because the spilled larvae can then spread through the body. In other
cases, or as an additional form of treatment, potent medications (eg. albendazole) may be
prescribed to kill the larvae, but the cyst will remain. Provided the disease is not widespread, the
results of treatment are good. Dogs in affected areas can be treated regularly to prevent them
carrying the disease.

HYDROSALPINX

Hydroosalpinx is the accumulation of fluid in one or both of the fallopian tubes that connect the
ovaries to the uterus. It is usually due to chronic infection, but may follow other forms of damage
to the fallopian tube.

HYPERCALCAEMIA

Hypercalcaemia is excess calcium in the body and blood. Causes include cancer directly or
indirectly (eg. metastatic breast or prostate cancer) affecting bone that releases calcium,
hyperparathyroidism, sarcoidosis and excess vitamin D.

The symptoms include a loss of appetite, nausea, vomiting, constipation, passing excess
urine, muscle weakness, confusion, tremor, psychiatric disturbances and tiredness. Abnormal
nerve conduction in the heart may lead to significant abnormalities of rhythm. Blood tests can
demonstrate high calcium levels.

It is necessary to treat any cause if possible. Fluids given by a drip into a vein can dilute high
calcium levels, followed by diuretics (fluid tablets) to wash it out of the body. Other medications
(eg. diphosphonates such as disodium pamidronate) can then be used to bind calcium and
reduce inflammation (eg. prednisone).

HYPEREMESIS GRAVIDARUM

See MORNING SICKNESS

HYPERTHYROIDISM

Hyperthyroidism is overactivity of the thyroid gland, which sits in the front of the neck and is
responsible for secreting a hormone called thyroxine. More severe forms may be called
thyrotoxicosis or Grave’s disease or Basedow’s goitre.

Thyroxine acts as the accelerator for every cell in the body. If the level of thyroxine is high, the
cells function at an increased rate - if the level of thyroxine is low, the cells function at a less than
normal rate. The most common cause is an autoimmune disease, in which antibodies attack the
thyroid gland and over stimulate it, but there are numerous other rarer causes.

Patients sweat excessively, lose weight, are nervous, tired, cannot tolerate hot weather and
have a mild diarrhoea. Other effects include a rapid heart rate, slightly protruding eyes, warm
skin, and a slight tremor. Patients also tend to fidget, dart quickly in their activity, and speak
rapidly. The thyroid gland may be grossly enlarged (a goitre) or normal size.

The complications are serious. The weight loss and muscle wasting may become permanent,
liver damage and heart failure may be fatal, psychiatric disturbances may lead to hospitalisation,
eye scarring may lead to blindness, and infertility may occur.

The level of thyroxine and gland activity can be measured by blood tests, antibodies (eg.
TRAB) can be detected in the patient’s blood and abnormalities may also be seen on an
electrocardiogram (ECG).
The overactivity can only temporarily be controlled by medication (eg. propylthiouracil), but a cure can be obtained by surgically removing most of the thyroid gland or destroying it by giving the patient radioactive iodine (sodium iodide or iodine 131), which concentrates in the gland as it is an essential component of thyroxine. Because there is usually insufficient thyroid gland left behind after these procedures to produce adequate amounts of thyroxine, it is necessary for most patients to take thyroxine tablets on a daily basis.

If treated early, the prognosis is excellent, but if treatment is delayed until complications occur the outcome is far less favourable.

HYPOADRENOCORTICISM
See ADDISON DISEASE

HYPOPARATHYROIDISM
The four parathyroid glands behind the thyroid gland in the neck regulate the amount of calcium in the blood and bones. In hypoparathyroidism, the glands secrete inadequate amounts of the hormone calcitonin, which results in excessive amounts of calcium to be taken from the blood and into the bones. It is a rare condition that may occur after thyroid gland surgery, or may be spontaneous for no apparent reason.

Symptoms may include spasms of the small muscles in the hands and feet, tingling lips, tiredness, wheezing, muscle cramps, fungal infections, abdominal pains, anxiety attacks, and behavioural alterations. If present for some time, the nails will become thin and brittle, the teeth will be deformed, cataracts may develop in the eyes, and the skin becomes dry and scaly. Untreated, it may cause irregular heartbeat, reduced growth in children, anaemia and intellectual disability.

The diagnosis is confirmed by measuring the amount of calcium in the blood, and x-rays show very dense bones and calcium deposits in abnormal areas (eg. brain).

Treatment may be an emergency in serious cases. Calcium injections and tablets, and vitamin D tablets are used, and once stabilised on treatment, the long-term outlook is good, but damage already done to eyes, teeth and other tissues may be irreversible. Very regular blood tests, follow-up visits, and lifelong medication are essential.

HYPOPITUITARISM
The pituitary gland sits in the centre of the brain and secretes hormones into the blood stream that control every other hormone producing gland in the body (eg. thyroid gland, adrenal gland, ovary, testes). Hypopituitarism (Simmonds disease) occurs if the pituitary fails to produce the appropriate regulating hormones. If the gland fails to produce all the possible hormones it is called panhypopituitarism. The causes include a tumour or abscess of the pituitary gland, head injury, stroke, swollen blood vessels, malnutrition or other rare and complex reasons.
A RATIONALE FOR THE ABDOMEN

When the pituitary gland is underactive, every other gland it controls will also become underactive and the patient will have reduced sexual desire and activity, lose pubic hair, men will stop growing a beard and women will stop having monthly periods. Infertility may be a problem in both sexes. Other problems include weakness, tiredness, poor resistance to infections, low blood pressure, vision defects, and becoming stressed easily. Sometimes only part of the pituitary gland is underactive, so only some glands will malfunction. The diagnosis can be confirmed by blood tests, CT and MRI scans.

Treatment involves correcting the cause, if possible, by surgery or irradiation, and giving hormone supplements by tablet or injection. The prognosis depends on the cause, but in most cases the condition can be well controlled.

HYPOTHYROIDISM

Hypothyroidism is underactivity of the thyroid gland, which sits in the front of the neck and is responsible for secreting a hormone called thyroxine. This acts as the accelerator for every cell in the body. If the level of thyroxine is high, the cells function at an increased rate - if the level of thyroxine is low, the cells function at a less than normal rate. In children, hypothyroidism causes cretinism. The thyroid gland tends to fail with advancing age, particularly in women, it may be associated with an enlarged thyroid gland (goitre), and less commonly cysts or tumours may destroy the gland tissue.

Tiredness, weakness, muscle cramps, constipation, dry skin, headaches, nervousness, intolerance to cold weather and a hoarse voice are the most common symptoms. In more severe cases additional symptoms may include thinning of the hair, skin thickening, brittle nails, weight gain, shortness of breath, a thick tongue and a slow heart rate. The symptoms are referred to as myxoedema. The drop in thyroxine levels is usually gradual over many years and the symptoms may be overlooked until the disease is quite advanced. It is diagnosed by blood tests that measure the amount of thyroxine, and other thyroid-related substances.

Thyroxine or liothyronine tablets are taken long term to replace that not being produced by the gland. Patients usually notice a remarkable improvement in their quality of life as the thyroxine replacement tablets start to work. With adequate treatment the patient should lead a normal active life, but untreated, there is an increased risk of developing severe infections and heart failure, and premature death will occur.

ILEUS

Ileus is paralysis of the bowel due to obstruction (eg. tumour, adhesions) or disease (Crohn’s disease, diverticular abscess). It is usually preceded by severe intermittent abdominal pain, but once established the bowel is silent and pain may ease. The abdomen is usually also swollen and bloated, the patient will be nauseated, unable to tolerate food, will not pass faeces and may vomit. Dehydration and fever usually develop with time. The cause must urgently be found, and appropriate treatment started.

See also BOWEL OBSTRUCTION

INCISIONAL HERNIA

In older, obese or debilitated people, the deeper tissue may break down after an operation on the belly, allowing part of the bowel to escape through the deeper layers of the wound to the area just under the skin to cause an incisional hernia. A wound infection may be responsible, but often the deeper tissue gives way after a fit of coughing or under the strain of supporting the belly after an operation.

A lump is seen and felt under the skin of the belly, and other symptoms are usually minimal, but sometimes intermittent discomfort, and occasionally pain at the site of the hernia may occur. Rarely, intestine may become caught and twisted in the hernia, causing severe pain, and eventually gangrene of the intestine.

A corset is usually all that is required to control the hernia, but in some circumstances, further
surgery, often with insertion of some surgical mesh to strengthen the area, will be required. There is a significant risk of recurrence after further surgical repair. Most cause no serious problem, but may be annoying.

**INFANTILE COLIC**

Infantile or six-week colic is probably caused by spontaneous spasms of the small intestine, but no reason for these spasms has ever been proved. Some experts blame anxiety in the mother, particularly in a family without extended family support, for causing anxiety in the infant, and subsequent gut spasms.

The baby starts screaming for no apparent reason, draws the legs up and looks pale. After a few minutes, the attack subsides, and the infant appears normal, then after a short interval, the screaming starts again. This pattern repeats itself several times a day. No tests can be performed to confirm the diagnosis.

Changes in diet and formula, different foods for the mother of breastfed infants, alterations to feeding times and positions, increases or decreases in the degree of attention paid to the child, and antispasmodic drugs and paracetamol can all be tried, with varying degrees of success. The problem always goes away in due course, usually at 12 to 16 weeks of age.

**INGUINAL HERNIA**

Inguinal hernias occur only in men.

The testicles develop inside the abdomen, and before birth they migrate down into the scrotum. Behind them as they move down, they leave a tube called the inguinal canal. Through this canal run the arteries, veins and nerves that supply the testicles, and the vas deferens (a duct that carries the sperm from the testicle to the base of the penis). Shortly before birth, the inguinal canal closes, leaving just enough room for the vital supplies to pass to and from the testes. The inguinal canal remains a source of weakness in the strong muscle wall of the abdomen, and it may tear open again, allowing some of the gut to protrude under the skin of the groin as a hernia.

These hernias may be caused by excess pressure on the lower part of the belly by heavy lifting, prolonged coughing or some other form of strain. Men who are overweight and have their muscles weakened by fat deposits are more likely to develop them, and the slackening of muscle tone with advancing age can also lead to a rupture. There is also an hereditary tendency, so that if your father had a hernia, your chances of developing one are increased. In some little boys, the tube does not close properly, and this allows a small amount of fat or intestine to move down the tube from the inside of the abdomen, to form a hernia just under the skin beside the penis.

Usually the only symptom is a small lump in the groin that may be only mildly annoying after exercise, or may become intermittently painful. Occasionally the gut inside the hernia may become strangled in the inguinal canal, causing severe pain and the trapped section of gut becomes gangrenous. This requires urgent surgery.

In fat men an ultrasound scan may be needed to confirm the diagnosis.

Surgical repair of the hernia as is usually performed as an elective procedure, but up to 20% of repaired inguinal hernias will recur. A tight sensation in the groin, that may be occasionally painful, may follow the surgery. Those who are too frail for surgery or who do not want surgery may wear a truss to control the discomfort of the hernia.

**INSULINOMA**

An insulinoma is an uncommon tumour of the insulin producing beta cells in the pancreas gland. Insulin is a hormone that lowers the level of sugar (glucose) in the blood to cause hypoglycaemia. 90% of tumours are benign, while the remaining 10% are cancerous. They usually occur between 50 and 70 years of age, but may occur at any age. The cause is unknown.

Symptoms may include tiredness, headaches, slurred speech, visual disturbances and confusion relieved by eating, which may result in weight gain. If food is not eaten, tremor,
palpitations, irregular heart rhythm, coma and death may follow. A cancerous tumour can spread to other organs (metastasise).

Blood tests show low glucose and high insulin levels, and the tumour may be found by a CT or MRI scan.

Treatment involves surgical removal of the tumour, and chemotherapy for the spread of any cancer. Good results are obtained from surgery, but cancerous tumours eventually kill about half those affected. If left untreated, both forms are eventually fatal.

**INTUSUSCEPTION**

An intussusception is an uncommon type of obstructions of the small or large gut that is usually occurs in children.

A polyp growing in the gut is picked up by the waves of muscular contraction that normally move food along. As the polyp moves down the gut it pulls the piece of gut it is attached to along with it, to cause an infolding of the gut into itself. This is an intussusception.

![Diagram of intussusception](image)

The child has obstruction of the gut, severe intermittent waves of pain, red jelly motions and paralysis of the intestine. The intussusception can be relieved by a barium enema (special x-ray) or colonoscopy (passing a flexible telescope in through the anus) if the large bowel is involved, but in the small intestine surgery is necessary.

It is usually completely cured by appropriate treatment, but bowel perforation may rarely occur.

**IRRITABLE BOWEL SYNDROME**

The irritable bowel syndrome (IBS or functional indigestion) has many other names including functional indigestion, mucus colitis, nervous dyspepsia and spastic colon. It causes abnormal spasms of the muscles in the wall of the large intestine.

The gut is a long tube with bands of muscle running along and around it. The movement of the food from one end to the other is the result of rhythmic contractions of these muscles, which send waves and ripples along the gut to push food along. Nutrients are removed from the gut, and only non-absorbable fibre and roughage remains to be passed out through the anus. Up to 20% of adults have symptoms of the irritable bowel syndrome at some time, but only a fraction of these people require medical treatment.

If the diet consists of large amounts of refined foods with little fibre content, the bulk of the faeces is reduced. When the muscles in the large intestine contract, they may have very little to push along, and this may lead to spasms of the gut. People with tense personalities or continuing stress will find that their intestine acts more rapidly than normal due to over stimulation. Over a number of years, the combination of a low-fibre diet, anxiety, stress and hereditary factors may lead to the development of this syndrome which is more common in women.

Abdominal pain occurs due to intense spasms of the bowel muscle, and patients experience alternating constipation and diarrhoea, excess passage of wind by mouth and anus, nausea, loss of appetite and mucus on the stools. Once established, the pattern may be very difficult to break, as the symptoms cause further anxiety in the victim, which in turn exacerbates the original symptoms.

No definite tests can prove the diagnosis, but all other causes must be excluded by exhaustive investigations such as an X-ray of the large intestine (barium enema) or colonoscopy.
A RATIONALE FOR THE ABDOMEN

Treatment requires a diet high in fibre and low in dairy products and processed foods, plus high-fibre dietary supplements in some cases. Regular meal and toilet habits should be established, and tobacco and alcohol intake should be restricted. Reassurance is very important, and anti-anxiety drugs, antidepressants and psychotherapy may all prove useful. In severe cases, antispasmodic drugs are used to alter the activity of gut muscles, and occasionally painkillers are also necessary. IBS usually persists intermittently for many years.

KALA-AZAR
Kala-Azar (visceral leishmaniasis) is a widespread internal infection by the protozoan (tiny single celled animal) *Leishmania donovani* that is transmitted from one person to another by sand fly bites. It is found throughout the tropics in America, Asia and Africa.

The disease has a slow onset with fever, enlarged spleen and liver, anaemia, weight loss, pigmentation of skin on face (mainly forehead) and hands. Bleeding from the nose and mouth, and warty skin ulcers sometimes occur. It is diagnosed by blood tests and biopsy of the liver or spleen.

Quite toxic medications must be given regularly by injection for a long time to control the infection, which is fatal without treatment. Recurrences are common for years after apparent successful treatment, and a permanent cure is difficult.

KIDNEY FAILURE, CHRONIC
See RENAL FAILURE, CHRONIC

KIDNEY STONE
See RENAL STONE

KWASHIORKOR
Kwashiorkor is a severe form of malnutrition caused by a lack of protein in the diet, although adequate amounts of carbohydrates and fatty foods may be eaten.

The symptoms may include a swollen belly, tiredness, thin limbs with swollen ankles, wasted muscles, a dry dermatitis, sparse hair, conjunctivitis and inflamed gums. Protein levels in the blood drop to a very low level, which allows water to escape from blood and into tissues to give the characteristic bloated belly appearance. Permanent organ damage may occur if malnutrition is prolonged.

Small amounts of nutritious food must be given frequently over several weeks before returning to a normal diet as an imbalance of chemicals in the blood may occur if too much protein is given quickly. Good recovery is possible with an appropriate diet, but it is fatal otherwise.

See also MARASMUS

LACTOSE INTOLERANCE
Lactose intolerance is an inherited, or acquired, inability to digest lactose, the sugar found in milk, due to a lack of the enzyme lactase. There is a marked racial variation, with northern Europeans having an incidence of only 2% lactose intolerance, while African Negroes have an incidence of up to 98% in Zambia, and more than 50% of Asians having lactose intolerance. The ability to digest lactose is present in all races equally at birth, but the enzyme lactase fails to be produced by about three years of age in those who have a genetic tendency to lactose intolerance.

It may temporarily follow an episode of gastroenteritis, or may gradually develop from four or five years of age and last lifelong. The symptoms include bloating, diarrhoea, nausea, excess wind and belly cramps. It is controlled by removing dairy products from the diet. The severity varies, and some patients may tolerate some dairy products, while others cannot eat any at all.

See also GASTROENTERITIS
LAURENCE-MOON-BIEDL SYNDROME

The Laurence-Moon-Biedl syndrome is an inherited condition of the eye, brain and genitals that causes night blindness due to excessive amounts of pigment in the retina at the back of the eye, obesity, intellectual disability, extra fingers and toes and underdeveloped genitals. Examination of the back of the eye through an ophthalmoscope (magnifying light) will show the excess pigment. There is no treatment available and no cure.

LEAD POISONING

Lead (Pb) has been widely used in industry including batteries, paints (particularly dangerous in flaking old paint), crystal glass, ceramics, old plumbing fixtures, leaded petrol and some old-fashioned medications. Swallowing or inhaling lead compounds may lead to lead poisoning (plumbism) which causes belly pains, irritability, tiredness, loss of appetite, anaemia, poor coordination, slurred speech, convulsions, coma and death. Permanent damage to nerves (neuropathy), brain (encephalopathy) and kidneys is possible in survivors.

Lead can be detected in the body by specific blood tests. The normal range is less than 1.2 μmol/L. 95% of whole population should have levels less than 0.8 μmol/L. Higher results should be interpreted thus:-

1.3 to 1.9 μmol/L Retest adults three monthly, risk of mental damage in children
1.9 to 2.4 μmol/L Retest adults monthly, check sources of exposure.
Greater than 2.4 μmol/L Remove adults from exposure, treat children with aggressive elimination therapy.

Lead can also be detected in a urine sample. The normal range is 5 to 105 μg/24 hours (less than 0.5 μmol/L or less than 0.25 μmol/day).

If lead has been recently swallowed, induce vomiting and give activated charcoal. In chronic cases, medications can slowly remove the lead from the body. The prognosis depends on age, health and weight of the patient, and the dose of lead.

LEIGH DISEASE

Leigh disease (subacute necrotising encephalomyelopathy) is a rare disease of brain metabolism that affects children between 6 months and 6 years of age. It is caused by an inherited inability of the body to deal with specific waste products in the brain, that slowly build up until the brain becomes inflamed and symptoms occur. The child appears normal until s/he suddenly starts vomiting, losing weight, fitting, becomes mentally unstable, blind and then dies. This can occur in a matter of weeks, or may progress slowly over several very distressing months.

Blood tests show abnormal levels of waste products, but no treatment available, and the condition is invariably fatal.

LEIOMYOMA

A leiomyoma is a firm, round, grey coloured, benign tumour consisting of an overgrowth of muscle cells in the wall of the uterus (leiomyoma uteri). Rarely they become cancerous to form a leiomyosarcoma. Sometimes they can occur in the wall of the stomach, duodenum or oesophagus. If fibrous tissue is also found in the tumour they are described as a leiomyofibroma.

Normally there are no symptoms present, but if large or cancer develops, it may cause pain. Irregular enlargement of the uterus or intestine occurs resulting in painful menstrual cramps, infertility, and in the intestine, colic. the tumour can be seen on an ultrasound scan of the uterus, or a barium meal or gastroscopy of the stomach and intestine.

They can be surgically removed if causing symptoms such as pain or indigestion. The prognosis is very good.
LEPTOSPIROSIS

Leptospirosis is a bacterial infection of the liver and other organs caught from infected cattle and pigs by abattoir workers, veterinarians and farmers. In third-world countries, dogs and rats may also be carriers. The spirochete bacteria Leptospira interrogans enter through minor abrasions or by being swallowed. The incubation period varies from three days to three weeks. Patients develop a sudden high fever, headache, stomach pain, muscle aches and inflamed eyes. After a couple of days, these symptoms disappear, and the second stage of the infection commences which lasts for one to four weeks, and the patient complains of swollen lymph nodes, a generalised rash, eye pain, and in severe cases yellowing of the skin (jaundice). The second stage may cause permanent liver damage and Weil Syndrome. The diagnosis is confirmed by a specific immunoglobulin found on a blood test.

Antibiotics such as penicillin are prescribed as treatment, but sometimes they have remarkably little effect. Careful nursing is important. The disease can usually be prevented by taking a doxycycline antibiotic tablet once a week.

It is usually cured by correct treatment, but if jaundice develops, the death rate may be as high as 10%.

Leptospirosis is thought to be the oldest disease caused by civilisation as it probably first affected humans at the same time that they domesticated cattle and pigs about 5000 BC.

LETTERER-SIWE DISEASE

Letterer-Siwe disease is one of a number of rare diseases grouped together as histiocytosis X, which are lung diseases in which normal tissue is replaced by abnormal fibrous tissue. The cause is unknown, but it occurs in infants under two years of age who develop a fever, muscle wasting, a raised itchy rash, enlarged lymph nodes in the neck, armpit and groin, and enlargement of the liver and spleen. There are three stages of the disease, depending on its severity. The outcome is very good in stage one of the disease, but worsens in the other two stages, with a 70% mortality rate in stage three when it may spread to bone.

It is diagnosed by x-rays, CT scans and blood tests, and treatment involves potent chemotherapy drugs and radiotherapy.

LIGHTWOOD SYNDROME

Lightwood syndrome (or idiopathic renal acidosis) is a rare syndrome of kidney damage and deterioration in children of no known cause. The symptoms include weight loss, vomiting and constipation. It can be diagnosed by blood tests and kidney biopsy. A kidney transplant may be possible, but it progresses inevitably unless successful transplant is possible.

LIPOMA

A lipoma (fat cyst) is a discrete collection of fat under the skin. They often appear for no apparent reason, but may be due to injury to the area months before the lump is noticed. It is felt as a soft, movable lump under the skin, and may be very small or several centimetres in diameter. Surgical excision can be performed if it is cosmetically unacceptable or worrying. Pressure on overlying skin rarely causes irritation and an ulcer.

LISSENCEPHALY SYNDROME

The lissencephaly syndrome is a rare brain and developmental disorder. It is an inherited condition, but only if both parents are carriers of a defective gene. Epileptic seizures, poor muscle tone, jaundice, cataracts in the eye, and wrinkled forehead skin are the symptoms. No treatment is available, and seizures are difficult to control with normal epilepsy medication. An early death is normal.

LYMPHOMA
Lymphomas are any form of cancer involving the lymphatic system, stem cells, white blood cells and lymph nodes.
See also HODGKIN’S LYMPHOMA

MALLORY-WEIS SYNDROME
The Mallory-Weis syndrome is a serious inflammation of, and damage to, the lower end of the oesophagus (gullet) caused by a patient vomiting forcibly for a prolonged period of time, resulting in a tear at the lower end of the oesophagus where it joins the stomach, and massive bleeding occurs from the tear.
There is persistent vomiting of fresh blood, sometimes associated with pain behind and below the lower end of the breast bone. Massive blood loss may lead to other organ damage or death.
Gastroscopy is essential to confirm the diagnosis, then medications are given to stop the vomiting, and gastroscopy, surgery or a balloon device used to stop the tear from bleeding. Most patients recover with good treatment, but there is a significant mortality rate.

MALNUTRITION
See KWASHIORKOR; MARASMUS

MARASMUS
Marasmus is a severe form of malnutrition caused by starvation, with a lack of both protein and carbohydrates in the diet. Some elderly and intellectually handicapped people become malnourished because they are unable to care for themselves adequately.
Victims have wasted muscles, retarded growth, no fat under the skin, dry skin, and look far older than their years. If weight loss exceeds one third of normal body weight, heart, liver, kidney and other organ damage becomes significant and sudden death may occur. Resistance to infection is reduced, and severe lung and skin infections may also cause death. Blood tests show widespread chemical abnormalities.
Small amounts of nutritious food given frequently over several weeks before returning to a normal diet is essential to prevent an imbalance of chemicals in the blood.
See also KWASHIORKOR

MAURIAC SYNDROME
The Mauriac syndrome is a complication of inappropriate insulin usage in children and teenagers.
If a short acting insulin is given in a high dose, once daily, blood sugar levels will vary widely from normal to abnormal during the day to adversely affect body chemistry. The result is a diabetic patient with reduced stature, obesity, enlarged liver and abnormal blood sugar and insulin levels. A correct diet, and insulin dose modification are the treatments, and the prognosis is good once diagnosed, but existing damage to body cannot be reversed.

MECKEL’S DIVERTICULITIS
Meckel’s diverticulitis is a bacterial infection or inflammation of an outpocketing (Meckel’s diverticulum) on the last part of the small intestine (ileum) that is left over from the individual’s life as a foetus before birth when the diverticulum was attached to the umbilicus. In 2% of people it remains after birth, and may become blocked with food or other debris.
When infected the patient feels pain in the belly and develops a fever. Blood tests may show inflammation or infection but not its location. The diagnosis is often confused with appendicitis and it is usually not diagnosed until operation when a normal appendix is found, and further examination of the bowel reveals an infected Meckel’s diverticulum. The problem is easily remedied by surgery, but if left untreated, may burst to cause life threatening peritonitis, or an abscess that results in long-term illness.
Meckel’s diverticulum is named after the German anatomist Johann Meckel (1781-1833). See also APPENDICITIS

MEGACOLON
A megacolon is a massive distension of the descending and sigmoid colon, the last parts of the large intestine.

Causes include long-term constipation and retention of faeces stretches the large bowel, or it may be a complication of ulcerative colitis, associated with some psychiatric and low intellect disorders, a symptom of an underactive thyroid gland (hypothyroidism), due to excessive use of narcotics, or a birth defect (Hirschsprung disease).

The symptoms include severe constipation, sometimes associated with lower abdominal pain and watery diarrhoea as liquid faeces flows around the blockage. Rarely the bowel may rupture causing life threatening peritonitis.

It is diagnosed by colonoscopy (passing a flexible tube up the bowel through the anus) or x-rays. Doctors then treat any underlying disease, remove faeces build up, recommend a special high fibre diet, and advise the careful use of laxatives. Surgery in the form of a colostomy (opening bowel onto skin) is a last resort, but it is often a persistent condition that requires constant and repeated treatment.

See also DIVERTICULITIS; HIRSCHSPRUNG DISEASE; ULCERATIVE COLITIS

MEIGS SYNDROME
Meigs syndrome (Demons-Meigs syndrome) is a fibrous growth in an ovary that causes abnormal levels of sex hormone production and swelling of the belly from fluid retention. Surgical removal of the ovarian tumour is necessary and infertility is a complication.

MELIOIDOSIS
Melioidosis is an uncommon infection of the lungs caused by the bacterium Pseudomonas
pseudomallei, which occurs throughout south and East Asia, and has been reported in Aboriginal communities in northern Australia. It is widespread in soil, and is caught by inhaling dust, while person-to-person spread is rare. Occasionally wounds, the gut and other internal organs can be infected by dirt contamination of a wound or food.

It is usually a low-grade persistent infection with minimal symptoms, but in a minority it develops rapidly with symptoms similar to pneumonia such as a cough, fever, muscle pains, loss of appetite and chest pain. It is diagnosed by examination of sputum and specific blood tests.

Treatment is only necessary if the patient has symptoms, and involves long-term use of antibiotics and relapses after treatment has been completed may occur. No form of prevention or vaccination available. The prognosis is good with appropriate treatment, but without treatment, patients who develop pneumonia usually die.

See also PNEUMONIA

**MERCURY POISONING**

Mercury poisoning (Minamata or pink disease) can be caused by swallowing mercury (Hg) or mercury-containing compounds, or inhaling mercury vapour. Mercury is used in industry in thermometers, batteries, thermostats, dental fillings and chemical processing. Contamination of the food chain (particularly fish) from mercury containing industrial wastes may lead to poisoning in humans, and a serious series of poisonings occurred in Minamata, Japan by this route. Mercury used to be present in medications such as teething powders until the 1950s.

If a large amount of mercury is swallowed at one time symptoms include a metallic taste, thirst, burning in the throat, excessive saliva formation, belly pain, vomiting, bloody diarrhoea, collapse and kidney failure. Inhaling mercury vapour can cause an intractable form of pneumonia. Chronic mercury poisoning, in which small amounts of mercury are swallowed over a long period of time, causes “pink disease” with red and swollen hands and feet, irritability, fever, hair loss and damaged nails. Later problems include tremor, convulsions, brain damage and death. Mercury may cause birth defects in the children of mothers with chronic lead poisoning (Minamata disease).

The presence of mercury can be detected by specific blood and urine tests.

If mercury is swallowed, induce vomiting, give egg whites and milk, then take the patient to hospital for stomach wash out. Mercury can also slowly be removed from the body by some medications in a process known as chelation.

In the eighteenth century mercury was widely used as a medication to treat everything from colic and leprosy to rheumatism and syphilis. It was not particularly efficacious.

**MESENTERIC ADENITIS**

The mesentery is a thin membrane that connects the small intestine within the abdomen to the back wall of the abdomen and contains the arteries, veins and nerves that supply the intestine. Scattered through the mesentery are numerous lymph nodes that may become infected or inflamed to cause mesenteric adenitis.

It is almost invariably a viral infection that is far more common in children than adults, and is often preceded by another infection such as a bad cold or bronchitis. The symptoms are identical to those of appendicitis, and many patients at operation for acute appendicitis are found to have mesenteric adenitis. Blood tests are unable to differentiate between the two diseases, as an infected appendix causes the same changes in the blood as infected lymph nodes. Both cause severe abdominal pain, nausea, diarrhoea and fever.

No specific treatment is available and symptoms usually settle without treatment after five to ten days.

**MESENTERIC ARTERY THROMBOSIS**

A mesenteric artery thrombosis causes a reduction in the blood supply to the small intestine, which is loosely attached to the back wall of the belly by a fine membrane (the mesentery), which
contains the two mesenteric arteries. If one of the mesenteric arteries is partially blocked by a plaque of cholesterol, a blood clot (thrombosis) or pressure from another organ or adhesion, the small intestine will not receive sufficient blood to function properly.

After a meal the patient experiences belly pain and aches that vary with the size of the meal, and so they eat very small infrequent meals, and lose weight. When an artery becomes completely blocked, severe belly pain and tenderness occurs, the patient will collapse and the intestine supplied by the thrombosed artery may become gangrenous. X-rays of the abdomen will show abnormal bowel patterns.

This is a surgical emergency, as the blocked artery must be cleared and the affected intestine removed as quickly as possible. The prognosis depends on the severity of bowel damage at time of surgery, but even in good hospitals there is significant mortality.

**METABOLIC SYNDROME**

The metabolic syndrome is also known as insulin resistance syndrome, syndrome X and Reaven syndrome (after American Prof. Gerald Reaven). It has so many names because its criteria are still being defined as it was first described in only 1988. It affects up to 20% of the population in developed countries and is diagnosed by the presence of the following characteristics:-

- central body obesity with a waist measurement of over 94 cm. for men and 80 cm. for women (reduced measurements apply to Asians),
- Plus any two of the following characteristics:-
  - raised blood triglyceride level above 1.5 mmol/L when untreated
  - low high density lipoprotein cholesterol below 1.0 mmol/L in men and 1.3 mmol/L in women untreated
  - high blood pressure (hypertension) or on treatment for hypertension
  - high fasting blood glucose level of over 5.6 mmol/L.

Patients with the metabolic syndrome are strongly predisposed towards developing or having diabetes and hypertension, whether or not they already have these conditions. There is a significantly increased risk of stroke and heart attack.

The causes are a genetic tendency, a sedentary lifestyle, hormonal factors and a poor diet rich in fats, sugar and alcohol.

It can be treated by weight loss and medication that is prescribed to control blood pressure, diabetes and cholesterol levels. The diabetes medication may be useful in preventing the onset of diabetes. No cure is possible, but good control normally achieved.

**MITTELSCHMERZ**

Mittelschmerz (middle pain in German - ie. pain in the middle of the menstrual cycle) is pain associated with ovulation (release of an egg from the ovary) that occurs in about 20% of women. The woman feels a sudden sharp pain occurring on one side or other of the lower belly half way between menstrual periods that lasts a few minutes or an hour or two. Sometimes it is associated with a small vaginal bleed, which is light and brief. No treatment is normally necessary, but simple pain relievers may be used, and the contraceptive pill will prevent ovulation and thus the pain.

See also OVARIAN CYST

**MORNING SICKNESS**

The nausea and vomiting that affects some pregnant women between the sixth and fourteenth weeks of pregnancy is called morning sickness (hyperemesis gravidarum), but it can occur at any time of the day. Its severity varies markedly, with about one third of pregnant women having no morning sickness, one half having it badly enough to vomit at least once, and in 5% the condition is serious enough result in prolonged bed rest or even hospitalisation, when it is called hyperemesis gravidarum.

Morning sickness is caused by the unusually high levels of oestrogen present in the mother's
A RATIONALE FOR THE ABDOMEN

bloodstream during the first three months of pregnancy. Although it usually ceases after about three months, it may persist for far longer in some unlucky women. Severe cases may be associated with twins, and it is usually worse in the first pregnancy.

Because morning sickness is a self-limiting condition, treatment is usually given only when absolutely necessary. A light diet, with small, frequent meals of dry fat-free foods, is often helpful. A concentrated carbohydrate solution (Emetrol) may be taken to help relieve the nausea. Supplements of vitamin B6 and ginger (either as pieces or capsules) have also been shown to help. Only in severe cases, and with some reluctance, will doctors prescribe more potent medications. In rare cases, fluids given by a drip into a vein are necessary for a woman hospitalised because of continued vomiting.

Morning sickness has no effect upon the development of the baby.

MYEOFIBROSIS

Idiopathic myelofibrosis is an uncommon condition in which white blood cell producing bone marrow is replaced by fibrous scar like tissue. The cause is unknown in most cases, but it may follow a severe infection of the bone marrow, cancer that spreads to the marrow, or be a complication of a lymphoma (cancer of lymph tissue) or leukaemia.

Often there are no symptoms until the disease is well advanced when a large spleen and liver, and anaemia are noticed. Later, night sweats, weight loss and fevers occur. Complications may include fluid accumulation in the belly, bone overgrowth and nerve pinching, severe infections that do not respond to antibiotics, lymphatic cancers, leukaemia and destruction of the body's immune system.

Blood cell tests and bone marrow biopsy are abnormal, and bone x-rays may also show marrow damage.

Unfortunately no specific treatment is available, although medications such as busulfan may slow the disease, and the average survival time is five years from time of diagnosis.

NEPHROTIC SYNDROME

The nephrotic syndrome is a form of kidney failure resulting in symptoms that are a result of the kidney's inability to remove fluid and waste products from the body. It is usually caused by glomerulonephritis, but may be a complication of diabetes, multiple myeloma, poisons or other diseases. It is far more common in places where there are poor standards of nutrition and hygiene.

Symptoms include a dramatic swelling (caused by fluid) of the body - the feet, abdomen and hands being the most commonly affected areas. If the chest is affected, the patient becomes very short of breath. Other symptoms include high blood pressure, stretch marks (striae) on the skin of the swollen belly, loss of appetite and a pale complexion. The patient is obviously very ill and may deteriorate rapidly.

The diagnosis is confirmed by urine and blood tests, and a biopsy of the kidney is often performed to determine the severity of the damage.

No specific treatment is available, but prolonged bed rest, usually in a hospital, is essential. Steroids are often prescribed to limit further damage, and if a specific cause for the disease is present (eg. diabetes), this can be treated. Total kidney failure may require kidney transplantation or dialysis.

The outcome in children is far better than in adults, and the majority recover after a few weeks, but in adults, long-term kidney problems are more likely.

NEUROBLASTOMA

A neuroblastoma is a highly malignant and aggressive form of cancer that can arise from nerve tissue anywhere in the body, but they often occur in the kidney. One form of neuroblastoma in the adrenal glands is called Pepper syndrome. They metastasise (spread) widely at an early stage, usually to lymph nodes, the lungs and bone.
The symptoms are very varied depending on the site of the tumour, and they are notoriously difficult to diagnose until they are well advanced. If found before they metastasise they can be treated with surgery, while at more advanced stages irradiation and chemotherapy (eg. daunorubicin) are used. The progress of the tumour can be followed by serial measurement of the amount of homovanillate or dopamine in the blood. Cures are uncommon, but some neuroblastomas suddenly mature, become benign, and stabilise.

NEUROSES
Psychiatric conditions are divided into two broad classes, neuroses and psychoses. In neuroses, the patient has insight into the fact that they are mentally disturbed. The most common forms of neuroses are depression and anxiety neurosis. Patients with neuroses may be referred to as neurotic.

NEZELOF SYNDROME
Nezelof syndrome (thymic dysplasia) is named after the French physician Christian Nezelof (b. 1922) who first described it. It is a congenital form of immunodeficiency due to abnormal development of the thymus gland which sits behind the upper end of the breast bone and is responsible for the body’s immune system. Infant patients have persistent diarrhoea, severe infections, failure to gain weight, fevers, rashes and fungal infections (thrush) in the mouth. Severe infections may be fatal. The diagnosis is confirmed by abnormal blood tests and a bone marrow biopsy. Treatment involves a bone marrow transplant, and infections are vigorously treated with antibiotics. It can be cured with a successful bone marrow transplant, but is fatal otherwise.

NIEMANN-PICK DISEASE
Niemann-Pick disease is a rare congenital (present from birth) disease is caused by an inability of the body to process some types of fat due to the lack of an enzyme in the liver. It causes enlargement of the liver, failure to gain weight after birth, and retarded mental development. There are several different forms of the disease, which vary in their severity, depending on the precise enzyme deficiency. The disease can be diagnosed by specific blood and bone marrow tests, but there is no treatment available.

OESOPHAGEAL CANCER
Excess alcohol (particularly whisky) consumption, smoking, eating very large quantities of pickled vegetables, maize overcooked in iron pots and persistent reflux of stomach acid (Barrett syndrome) are known risk factors for cancer of the gullet (oesophagus). It is uncommon in western society, but relatively common in central Asia and southern Africa.

Patients develop difficulty and pain with swallowing that steadily worsens, and there is associated weight loss. Food that the patient attempts to swallow may be vomited and inhaled, causing pneumonia.

It is diagnosed by oesophagoscopy (passing a flexible tube into the oesophagus), or a barium swallow x-ray, then radical surgery may be performed to remove the cancer. The prognosis is unfortunately very poor with only 5% surviving five years.

See also BARRETT SYNDROME; OESOPHAGITIS

OESOPHAGEAL SPASM
Spasms of the oesophagus can cause a severe pain behind the breast bone (sternum). Because this type of chest pain may be due to sinister causes, it is necessary for the doctor to exclude any heart or lung disease that may be responsible for the pain. Common causes of oesophageal spasm include an injury to the oesophagus from hot foods, reflux oesophagitis, cancer or sometimes stress and anxiety may be responsible (globus). A gastroscopy is normally
performed as part of the investigation. Once the diagnosis is established, the problem may be treated with a number of medications. Glyceryl trinitrate or isosorbide dinitrate are used under the tongue for acute attacks, while hyoscine butylbromide or benzodiazepines may be used regularly to prevent attacks. If the spasms are uncontrolled, surgery to release the tension in the muscle ring at the lower end of the oesophagus may be performed.

**OESOPHAGEAL VARICES**
Varicose veins can occur not only in the legs, but also in the lower oesophagus (gullet), when liver disease (eg: cirrhosis from alcohol or hepatitis) increases the pressure in the veins that drain from the gut into the liver. The dilated veins in the oesophagus (oesophageal varices) can be damaged and bleed torrentially because of vomiting, reflux of acid into the oesophagus (eg: with a hiatus hernia when part of the stomach slips up into the chest), straining with heavy lifting, or swallowing hard or sharp objects.

The varices can be treated in an emergency with a Sengstaken-Blakemore tube, and at a later time they can be removed surgically.

**OESOPHAGITIS**
Oesophagitis (esophagitis in the USA) is an inflammation of the oesophagus (gullet) due to any one of a number of diseases. The usual symptom is a burning pain behind the breast bone. The most common cause is reflux oesophagitis in which acid in the stomach comes up into the oesophagus to damage its lining. Irritation from a tube that is introduced through the nose and into the stomach to allow feeding (nasogastric tube) is another possible cause.

See also BARRETT SYNDROME; OESOPHAGEAL SPASM

**OSLER-RENDU-WEBER DISEASE**
Also known as hereditary haemorrhagic telangiectasia (HHT), this inherited blood vessel disorder starts in childhood, but only becomes serious in adult life. It is more common in Mormons but generally rare, occurring in one in every 10,000 people.

The symptoms include widespread red dots and lumps caused by dilated small blood vessels (telangiectasia) just under and in the skin of the face, forearms, lips, tongue, palms and toes. The moist membranes lining body cavities (eg. nose, mouth, gut, lungs, vagina) may also be affected, resulting in serious internal bleeding and blood noses. Uncommonly the brain may also be affected.

The disease is diagnosed by a skin biopsy, but the only treatment is surgical removal of bleeding internal or large skin telangiectasia. Liver involvement may occur, causing damage to the organ’s blood supply and replacement of normal liver tissue with scar tissue. Blood loss may lead to anaemia.

There is no cure, but provided bleeding is not serious, life expectancy is normal.

**OSTEITIS PUBIS**
Osteitis pubis (osteosclerosis pubis) is an inflammation of the pubic bone, at the centre and front of the pelvis, where the two halves of the pelvis join (pubic symphysis) caused by injury or stress to the region, pregnancy or nearby surgery. Patients experience pain in the front of the pelvis that is worse with walking or any pressure on the pelvis. There are no specific diagnostic tests and x-rays are usually normal.

Treatment involves anti-inflammatory medication, pain relievers and physiotherapy to strengthen the supporting muscles. Steroid injections into the area may be used in persistent cases. Rarely the condition may become chronic and unrelieved, but it usually settles slowly and completely.
OVARIAN CYST

An ovarian cyst (fluid-filled sac) is usually less than 5 cm across, but rarely they may form giant cysts the size of a football. Several types are known including follicular cysts, luteal cysts, cysts caused by infections of the ovary and tubes, cysts associated with endometriosis, and in rare cases cysts associated with some types of ovarian cancers.

Every time a woman releases an egg from her ovary it is surrounded by a tiny sac of fluid, and some women experience a slight stab of pain (mittelschmerz) as the fluid around the egg is released with ovulation in the middle of each month. If these normal tiny cysts re-form and enlarge after releasing the egg, a follicular cyst of the ovary results. Luteal cysts tend to be larger and are due to persistence of the tissue that is designed to nurture any growing embryo in its first few weeks of life.

The woman is often not aware that a follicular cyst is present unless it is discovered at surgery, or bursts. They cause some irregularity of the periods, but if a cyst bursts, the woman experiences sudden, severe pain on one side, low down in her abdomen. The pain eases slowly over several hours or days, as the irritating fluid contained in the cyst disperses. They are quite common in teenage girls and young women.

Luteal ovarian cysts cause delayed or irregular periods and rarely any other trouble.

The cyst may be diagnosed by an ultrasound scan of the lower abdomen.

Women who develop follicular cysts frequently can be given the oral contraceptive pill, which will prevent ovulation, and therefore the formation of further cysts. The pill will also shrink existing cysts, but large cysts need to be removed surgically.

No treatment necessary for luteal cysts unless the cyst is very large, when it must be surgically removed.

Infertility may occur until a large cyst is removed, and the fluid from a ruptured cyst may cause inflammation of the bowel and other abdominal organs, which results in adhesion formation.

See also ENDOMETRIOSIS; POLYCYSTIC OVARIAN SYNDROME

OVARIAN TORSION

Ovarian torsion is an uncommon cause of sudden severe ovarian pain and tenderness low down in the abdomen on one side due to the twisting of an ovary on the stalk of tissue that supplies it with blood and nerves, cutting off the blood supply and inflaming the nerves. An ultrasound scan may show some abnormalities, but the condition is often diagnosed at surgery. The torsion usually results in the loss of the affected ovary, and inflammation in the abdomen that may cause adhesions. Although one ovary may be lost, the remaining ovary can maintain fertility and normal production of female hormones.

PANCREATIC CANCER

The pancreas is an organ that sits in the centre of the belly behind the umbilicus and secretes digestive enzymes that are discharged through a duct, that it shares with the gall bladder, into the small intestine. Cancer usually occurs in the end nearest the discharging duct (the head of the pancreas), but its cause is unknown.

The enlarging cancer puts pressure on the adjacent duct from the gall bladder, preventing bile from escaping. The build up in bile results in liver damage and jaundice (yellow skin), which is often the first symptom. Other symptoms include vague belly and back pain, weight loss, poor food digestion, diarrhoea and blood clots in veins. Liver failure and spread of the cancer to adjacent lymph nodes and other organs may be complications.

The diagnosis is confirmed by blood tests and a CT or MRI scan, then treatment involves major surgery to remove the cancer and re-route the duct from the gall bladder to the gut. Follow up radiotherapy and chemotherapy may be undertaken. The prognosis depends upon the type of cancer (eg. cystadenocarcinoma) and how far it has spread, but is generally poor.

PANCREATITIS
Pancreatitis is a well-recognized but uncommon complication of alcoholism causing inflammation or infection of the pancreas gland, which sits in the centre of the abdomen directly behind the navel. Its main task is to produce the digestive enzymes that attack food. A tiny duct leads from the pancreas to the bile duct and then to the small intestine to transport enzymes to the food.

In pancreatitis, the gland may become infected, damaged by excess alcohol intake, injured in an accident, or the duct leading from it may be blocked by a gallstone. The digestive enzymes then leak out of the pancreas ducts and start dissolving the gland itself, the intestines and other abdominal organs.

Patients develop excruciating pain in the centre of the abdomen that may also be felt in the back and sides, nausea, vomiting, weakness, fever and sweats. Recurrences of attacks, particularly in alcoholics, are common. The diagnosis can be confirmed by specific blood tests.

Treatment is difficult, and often involves long hospital stays for resuscitation, prolonged bed rest and pain relief. The cause of the pancreatitis must also be treated, with antibiotics and occasionally surgery. Despite the best treatment, there is a significant death rate, which rises with subsequent attacks.

**PATAU SYNDROME**

Patau syndrome (trisomy 13-15) is a rare congenital defect affecting numerous parts of the body, caused by the presence of three copies of chromosomes 13 and 15 instead of two. The infant has extra fingers and toes, abnormal heart structure, cleft lip and palate, small eyes and brain malformations. Tests are performed on heart and brain function (e.g., CT scan, echocardiogram) to confirm the diagnosis. No treatment is available, and the prognosis is poor.

The incidence of Patau syndrome increases with the age of the mother.

**PELLAGRA**

Pellagra is caused by a lack of nicotinic acid (niacin or vitamin B3) in the diet. Nicotinic acid is essential for the normal functioning of the body, and is found in many foods including rice, meats, vegetables and dairy products. Pellagra occurs in countries where the diet is primarily corn, which has minimal amounts of niacin.

In the early stages patients have a poor appetite, general weakness, irritability, sore mouth, fissured tongue and weight loss. More advanced cases develop dermatitis, diarrhoea, and become demented to the point where severe psychiatric disturbances occur in advanced cases.

The diagnosis can be confirmed by blood tests, then the disease is easily cured by vitamin B supplements given by mouth. If left untreated, death will eventually occur.

**PELVIC INFLAMMATORY DISEASE**

Pelvic inflammatory disease (PID) is an infection of the uterus (womb), Fallopian tubes, ovaries and the tissues immediately around these organs, usually associated with the sexual transmission of bacteria from one person to another, although less commonly it may occur as a result of non-sexually transmitted infections. It is most common in young, sexually promiscuous women. The use of intrauterine devices (IUD) doubles the risk of developing PID, while condoms provide significant protection. A wide range of different bacteria may be responsible, and frequently two, three or more different types are present.

Symptoms may include pain low in the abdomen, fevers, a vaginal discharge, abnormal menstrual periods, pain with intercourse, and infertility. The pain may become very severe, and the patient appears extremely ill. One quarter of all women who develop PID will have long-term problems including repeat infections, infertility (10% after one attack of PID, 55% after three attacks of PID), persistent pain in the pelvis or with sex, and ectopic pregnancy (pregnancy that develops in the wrong position). There may be no symptoms in the male partner of the patient, although a discharge from the penis is sometimes present.

Swabs are usually taken from the vagina and cervix (opening into the womb) to determine the
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responsible bacteria and appropriate antibiotic. Treatment involves antibiotics by mouth or injected in severe cases. Sex should be avoided until complete recovery, which may take several weeks or months. If an abscess develops in the pelvis, an operation will be necessary to drain it. Fortunately, many women are completely cured by early treatment.

See also SALPINGITIS

PEPTIC ULCER

Ulcers of the duodenum (first part of the small intestine), stomach or pylorus (muscle ring separating the stomach and duodenum) are known as peptic ulcers. A gastric ulcer is an ulcer of the stomach.

Ulcers are caused by hydrochloric acid, which is a potent acid naturally produced in the stomach to aid food digestion. The stomach protects itself with a layer of thick mucus. If there is excess acid or insufficient mucus present, the acid may eat into the stomach wall. The most common causes for excess acid or reduced mucus are smoking, stress, anxiety, alcohol, aspirin and the nonsteroidal anti-inflammatory drugs used to treat arthritis. The bacterium Helicobacter pylori may damage the mucus lining of the stomach to allow an ulcer to form.

An ulcer may penetrate into a blood vessel to cause bleeding, anaemia and weakness before any pain is felt. Most ulcers cause pain high up in the belly, which is often worst just before a meal and relieve by eating. Other symptoms include a feeling of fullness, excess burping and indigestion.

The diagnosis can be proved by a barium meal x-ray or gastroscopy. During gastroscopy a biopsy can be taken of an ulcer to exclude cancer, and a test can be performed to identify the presence Helicobacter pylori. The bacteria can also be detected by a test on a sample of breath (carbon-14 urea breath test) that is collected in an airtight container, and there is also a blood test, but this is less accurate.

A sensible diet, stopping smoking and relaxation can all help. If Helicobacter pylori is detected, a specific course of antibiotics and anti-ulcer medication (triple therapy) can be given to eradicate it, heal the ulcer, and prevent a recurrence. Numerous tablets are available to control and often cure peptic ulcers, and because of the effectiveness of these medications, surgery for peptic ulcers is now rarely required.

Excessive bleeding from an ulcer can cause serious anaemia, and a very small percentage of ulcers can be cancerous.

See also GASTRITIS; ZOLLINGER-ELLISON SYNDROME
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PERICARDITIS
Pericarditis is an uncommon inflammation or infection of the pericardium, the fibrous sack that surrounds the heart. It may be caused by a viral (common - often secondary to mumps, hepatitis or influenza) or bacterial (rare) infection, and may also occur if the pericardium is affected by the spread of cancer cells from the lung, lymph nodes or other organs. Other causes include heart attacks, tuberculosis, kidney failure and irradiation.

All forms cause chest pain, shortness of breath and a fever. The secretion of fluid by the damaged pericardium into the tiny space between the pericardium and heart (pericardial effusion) puts pressure on the heart, and scarring of the pericardium from infection may contracts and constricts the heart. In both these cases, the heart may not be able to expand fully between each beat, and becomes steadily more constricted (constrictive pericarditis), causing the heart to fail as a pump.

It is diagnosed by a combination of X-ray, CT scan, electrocardiogram (ECG), blood tests and biopsy examinations.

There is no specific cure for a viral infection, and treatment involves aspirin, anti-inflammatory drugs and prednisone. Bacterial pericarditis can be treated with antibiotics. A pericardial effusion (collection of fluid within the pericardial sac) can be treated by inserting a long needle through the chest wall and draining the fluid. Patients with constrictive pericarditis (fibrous sack becomes scarred and contracts tightly around the heart) may require surgery on the heart to cut away the scarred part of the pericardium.

The prognosis depends upon the cause and severity of the infection, and the age and health of the patient. Death occurs in a significant number of cases, particularly if the patient is elderly or debilitated.

PERINEAL DESCENT SYNDROME
The perineal descent syndrome is a weakness of the muscles in the pelvic floor (perineum) caused by old age, difficult labour or chronic constipation. Excessive slackness of the muscles that form the floor of the pelvis results in bulging of the tissue in front of the anus when attempting to pass faeces. The slack pelvic floor muscles cause constipation, straining at stool and incontinence of urine. Persistent straining and constipation may result in over dilation of the colon (megacolon). It is diagnosed by an x-ray of the lower bowel while passing a barium stool. Surgical tightening of the slack muscles gives reasonable results, but this depends on age.

See also MEGACOLON

PERITONITIS
Within the belly (abdomen) is a large membranous sack called the peritoneum that contains the intestine and other organs. Peritonitis occurs if this sack becomes inflamed or infected.

A wide range of diseases of any organ within the abdomen may be responsible for peritonitis. Examples include gut infections such as appendicitis or diverticulitis, a hole in the gut from an ulcer that allows the gut contents to escape into the abdominal cavity, liver infections such as hepatitis and cirrhosis, pancreatitis, pelvic inflammatory disease, bleeding within the abdomen from injury, a ruptured ovarian cyst, cancer of any organ in the abdomen, mesenteric adenitis, or it may be a rare side effect of some drugs and poisons.

Patients have severe abdominal pain, nausea, fever and sometimes diarrhoea. As the infection progresses, they may become shocked and collapse, and further complications such as temporary paralysis of the gut, abscess formation in the abdomen, liver damage and adhesions may occur.

It is essential that the cause of the peritonitis be determined by further investigations before treatment is started. These investigations may include blood tests, X-rays, placing a needle into the abdomen to sample any fluid that may be present, vaginal and rectal examinations, or an operation to explore the abdomen. Treatment will include appropriate antibiotics by injection, as
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well as dealing with the cause. With good treatment, recovery is normal, but without adequate medical care, death can occur.

PERNICIOUS ANAEMIA

Pernicious (megaloblastic or macrocytic anaemia) is due to a lack of vitamin B12 (cyanocobalamin), which is essential for the formation of haemoglobin, the red oxygen-carrying substance in red blood cells. For vitamin B12 to be absorbed from the stomach and into the blood a substance called intrinsic factor is required. Patients with pernicious anaemia lack intrinsic factor and therefore develop a lack of vitamin B12, which in turn leads to an inability to produce haemoglobin. It is common in middle-aged women and is given its name because of its very gradual and “pernicious” onset over many years.

In addition to tiredness and pallor, patients have a smooth and sore tongue, indigestion, lack of appetite, and occasionally jaundice (yellow skin). Atrophic gastritis may be a complication.

It is diagnosed by seeing characteristic large red blood cells (megaloblasts or macrocytes) in a blood film, measuring the level of vitamin B12 in a blood sample and the presence of parietal cell autoantibodies.

Regular injections of vitamin B12 are necessary for the rest of the patient's life. The injections may be weekly at first, then reduced to one every two or three months. Although pernicious anaemia cannot be cured, it can be very effectively controlled. Untreated, the disease is fatal.

PHAEOMOCYCTOMA

A phaeochromocytoma is a rare black-celled tumour in the adrenal glands (which sit on top of each kidney), which releases a substance into the blood stream that causes very high blood pressure (hypertension). It is sometimes a hereditary tendency, but most arise for no apparent reason.

Patients have extremely high blood pressure, severe headaches, palpitations of the heart, abnormal sweating, nausea and vomiting, abdominal pains, blurred vision, and brain damage that may result in loss of speech, blindness or unconsciousness. Other symptoms may include increased appetite, nervousness and irritability, shortness of breath, weight loss, light-headedness and chest pain (angina). Some patients have multiple tumours in other parts of the body, and an unexplained sudden death may be due to a heart attack caused by an undiagnosed tumour. Some forms are associated with cancer, but a phaeochromocytoma is not a cancer itself.

The diagnosis is confirmed by special blood tests that measure excessive levels of catecholamines (the chemical released by the tumour). A CT scan or a magnetic resonance imaging scan (MRI) is performed to locate the tumour.

Controlling the high blood pressure with medication is the initial aim of treatment, and then surgically removing the tumour. Long-term management with medication, but without surgery, is not practical.

The prognosis depends on the damage caused by the high blood pressure before diagnosis, and how many tumours are present. If the tumour is removed early, a complete recovery is expected. Without treatment, the disease is invariably fatal, and even in the best medical centres, a small percentage of patients will die from complications of the disease or the surgery.

PICKWICKIAN SYNDROME

The Pickwickian syndrome is named after the extraordinarily obese Dickens character, and is a complication of being seriously obese that usually occurs in women. Patients have significant shortness of breath, gross obesity, tiredness, blue skin (cyanosis), shallow breathing, cor pulmonale, high blood pressure (hypertension) and heart failure. Pneumonia and other serious infections are common.

Blood tests show abnormal levels of acidity, oxygen, carbon dioxide and red blood cells, and respiratory function tests and a chest X-ray show abnormal results.

The only treatment is significant weight loss while medications are used to control heart failure.
and hypertension. The prognosis is poor unless the patient succeeds in losing a large amount of weight.

PILES
Haemorrhoids (also known as piles) are caused by dilation, damage to, bleeding from and blood clot formation in, veins around the anus. Internal and external versions depend on whether veins inside or outside the anus are damaged.

A vein circles around the anus close to the skin surface. When a motion is passed, the anal canal dilates, but if this dilation is excessive, these fine veins can be stretched, then rupture and form piles. They may be intermittent, painless swellings, or they can be excruciatingly tender and painful, and bleed profusely. Excessive bleeding from the pile may cause anaemia. Once formed, a weak area will always be present, and even though one pile may settle, the same one may flare up again and again. There is an inherited predisposition to develop piles.

Constipation is by far the most common cause of a pile. Passing a large hard faecal motion overstretches the anal canal to cause bleeding from the surrounding vein.

Straining to lift a heavy weight while squatting is another common cause, as excessive pressure builds up inside the anal veins. Advanced pregnancy has a similar effect.

Obesity may also place excessive pressure on the veins around the anus.

Portal hypertension is an increase in the blood pressure in the veins of the abdomen that take nutrition from the intestine to the liver. Many different liver diseases may be responsible, and piles are a common effect.

Proctoscopy (passing an examination tube through the anus into the rectum) can be performed to examine the piles in greater detail, and see internal piles.

Keeping the bowels regular and soft prevents piles. Initially, ice packs and simple soothing creams can be used in treatment, but if relief is not obtained, steroid and antiseptic creams or soothing suppositories are prescribed. If there is a clot of blood in the haemorrhoid, it is cut open to allow the clot to escape. If it persists, further treatment may involve clipping a rubber band around the base of the pile, injected or electrically coagulating the pile, or an operation to cut away part of the anal canal. The operation is normally successful in permanently removing the problem.

PLEURISY
Pleurisy is an infection, while pleuritis is inflammation, of the pleura, which is the smooth, slippery, shiny membrane that lines the inside of the chest cavity and allows the lung to move freely within the chest as it contracts and expands with every breath. The pleura is covered with a very thin layer of fluid that acts as a lubricant.

Pleurisy may be caused by a viral infections of the chest, a fractured rib that damages the pleura, and bacterial infections associated with acute bronchitis, pneumonia and tuberculosis.

Patients experience severe pain that can often be localised to one point on the chest or back.
and is worse with breathing, sneezing, coughing, laughing or any movement of the chest. A pleural effusion may be a complication. A chest x-ray may show an area of fluid accumulation or inflammation on the lung.

Viral and inflammatory pleurisy will settle with rest and minor pain killers or anti-inflammatory drugs (eg. indomethacin), while bacterial pleurisy associated with pneumonia requires antibiotics and stronger painkillers. The prognosis is generally good, but depends on the underlying cause.

**PLUMMER-VINSON SYNDROME**

The Plummer-Vinson syndrome is known as the Paterson-Brown-Kelly syndrome in the United States. It is an inflammatory condition of gullet (oesophagus) of no known cause, but it tends to occur in middle-aged women. Patients develop difficulty and pain on swallowing, fibrous web formation across the oesophagus, an enlarged spleen, iron deficiency anaemia, inflamed mouth, their finger nails curve upwards, and in some patients the lips are thin and the mouth is beak shaped. It often leads to cancer of the oesophagus.

An X-ray barium swallow and oesophagoscopy (passing a flexible tube down the oesophagus) are both abnormal, and blood tests show anaemia.

Treatment involves swallowing oesophageal dilators under sedation, iron supplements, and a good diet, but the problem often recurs after treatment.

**PNEUMONIA**

Pneumonia is a bacterial, or rarely fungal, infection of the lung alveoli (tiny air bubbles that form the major part of the lung and enable the oxygen to cross into the bloodstream), which fill with pus. Usually only one part of the lungs, often at the bottom of the chest, is affected, but it may spread to other parts of the lung. Once one type of bacteria are present, a second type may also infect the lungs as well to cause double pneumonia. Almost invariably the bronchi (main air tubes) are also infected, so the disease should correctly be called bronchopneumonia.

The infection starts when bacteria are inhaled into the lungs, and overcome the body's defence mechanisms, particularly if the patient is tired, run-down, overworked, elderly, bedridden or suffering from other illnesses. Aspiration pneumonia occurs if phlegm, vomit or other material is inhaled into the lungs.

The symptoms of pneumonia may be obvious with fever, productive cough and chest pains, but some infections are more insidious and cause minimal symptoms for some months while the patient feels tired, short of breath and has intermittent sweats.

Chest X-rays are diagnostic, and are repeated at regular intervals to ensure that the infection is resolving. A sample of sputum is taken before treatment is started, and is sent to a laboratory to identify the infecting bacteria.

There are many different types of pneumonia, defined by the different bacteria responsible for the infection. These include *Streptococcus pneumoniae* (also known as pneumococcal pneumonia), *Streptococcus pyogenes*, *Mycoplasma pneumoniae* (the usual cause of atypical pneumonia), *Staphylococcus aureus*, *Klebsiella pneumoniae* (Friedländer’s pneumonia), *Pseudomonas aeruginosa* and *Haemophilus influenzae*. Rarer forms of pneumonia may be caused by *Legionella pneumophila* (Legionnaire’s disease), *Bacillus anthracis* (anthrax) and *Bacteroides*.

One or more antibiotics are given by tablet, injection or drip into a vein to treat the infection. Expectorants to open up the airways and loosen the phlegm are also prescribed, along with cough mixtures and painkillers. Regular physiotherapy is very important to drain phlegm and pus out of the chest, while rest and the cessation of smoking are vital. Occasionally oxygen is required for seriously ill patients, and in rare cases, surgery to drain out collections of pus or remove areas of chronically infected lung is required. Some forms of pneumonia can be prevented by a vaccine (Pneumovax).

Inadequately treated pneumonia can cause chronic ill health, an abscess may form in the lung and lead to permanent lung damage. Once the lung is damaged, the chances of developing a subsequent attack of pneumonia is increased, and smoking will accelerate this process.
Pneumonia puts a great strain on the heart, and it may fail in older or debilitated patients. With correct treatment the majority of patients recover in a couple of weeks, but some may take months, and there is a small mortality rate amongst the elderly and debilitated, even in the best hospitals. Up to half of all patients affected died before the advent of modern antibiotics in the 1940s.

**POLYARTERITIS NODOSA**

Polyarteritis nodosa (PAN or periarteritis nodosa) is an inflammation of small to medium-sized arteries. The damaged artery may become weakened and balloon out to several times its normal diameter, it may scar and shrink down, or the blood passing through the inflamed section of artery may clot and completely block the artery (a thrombosis). The arteries affected may be anywhere in the body, but the gut, liver, heart, testes, kidney, and muscles are most commonly involved. The cause is unknown, but it is more common in drug abusers and in patients with hepatitis B. Rarely it may be a side effect of medication. Men are three times more likely to develop the disease than women, and it is most common in young adults.

The symptoms are very varied, depending on which arteries and organs are involved. The patient is usually feverish, and has pain in the area involved. Specific complaints may include muscle pain, palpitations, arthritis, skin ulcers, spots in the vision, abdominal pain, nausea, vomiting, diarrhoea and high blood pressure.

There are no diagnostic blood tests, and the diagnosis must be confirmed by a biopsy (sample) taken from an involved artery. Taking steroids (eg. prednisone) in high doses for a long period of time is the main treatment, and immunosuppressive drugs may also be used.

The prognosis varies markedly from one patient to another, depending upon the areas and arteries involved. Some patients do recover, but the majority slowly deteriorate to die within a few months or years.

**POLYCYSTIC OVARIAN SYNDROME**

In the polycystic ovarian syndrome (PCOS) or Stein-Leventhal syndrome, multiple small cysts form in one or both ovaries. It occurs in about 7% of women.

The cause is unknown, but is probably a combination of genetic and environmental factors. The cysts interfere with the production of sex hormones (eg. oestrogens) by the ovaries and the patient develops facial hairs, develops adult acne, gains weight, stops her menstrual periods, is infertile and a losses breast firmness. These patients have an increased risk of developing type two diabetes mellitus.

Abnormal levels of hormones can be measured in the bloodstream, but the syndrome is often discovered on an ultrasound scan while investigating infertility. The presence of cysts in an ovary on ultrasound is not PCOS unless accompanied by the other symptoms of the syndrome associated with hormonal abnormalities.

Treatment involves encouraging the patient to lose weight, using hormones to stimulate the ovary to restart its correct function, and sometimes surgically cutting away part of the affected ovarian tissue. Specific medications (eg. spironolactone or progestogens) are used for excessive hair growth. The diabetes medication metformin may be used to assist in weight loss. Some women find the discomfort of the condition and the side effects of medication unacceptable and decide to have a total hysterectomy.

See also OVARIAN CYST

**POLYCYTHAEMIA RUBRA VERA**

Polycythaemia rubra vera (the “rubra” is sometimes omitted) is an excessive production of red blood cells that is most common in middle-aged to elderly, overweight men, but may occur in both sexes. It is rare under 40 years of age.

Red blood cells are made in the spleen and bone marrow, primarily of the breastbone (sternum), pelvis and thighbone (femur). If the marrow becomes overactive, excessive numbers
of cells may be produced, and the patient develops a headache, dizziness, tiredness, blurred vision, generalised itching, noises in the ears, high blood pressure and an enlarged spleen. Blood clots may occur in vital organs (eg. brain to cause a stroke), and some patients develop a form of chronic leukaemia.

The diagnosis can be confirmed by finding excess red blood cells in a blood test, and further tests on bone marrow determine the severity of the disease.

The disease can be controlled, but not cured, by draining large quantities of blood out of a vein initially, and smaller amounts on a regular basis long term. Medications (eg. busulfan) to reduce the activity of the bone marrow may also be used. The average survival time after diagnosis is twelve years.

**POLYPOSIS COLI**

Polyposis coli or familial polyposis is the presence of multiple polyps in the colon (large intestine). The condition is often familial (runs in families), but may arise for no apparent reason. Symptoms include vague abdominal pain, irregular bowel habits, bleeding from the bowel, anaemia and a significantly increased risk of bowel cancer. It is diagnosed by colonoscopy or barium enema x-ray.

Treatment consists of removing as many polyps as possible through a colonoscope, and anti-inflammatory agents such as celecoxib may be used to prevent polyp formation. In severe cases, sections of, or the whole large intestine may need to be surgically removed.

See also COWDEN DISEASE; CRONKHITE-CANADA SYNDROME; GARDENER SYNDROME; PEUTZ-JEGHER SYNDROME

**POMPE SYNDROME**

See GLYCOGEN STORAGE DISEASES

**PORPHYRIA**

See ACUTE HEPATIC PORPHYRIA

**PORTAL HYPERTENSION**

Portal hypertension is an increase in the blood pressure in the portal veins of the abdomen that take nutrition from the intestine to the liver. It may be caused by many different liver diseases including cirrhosis, a blood clot (thrombosis) in the portal vein or spleen, and schistosomiasis.

There are no symptoms other than piles until severe bleeding occurs from massively dilated veins around the lower oesophagus (gullet) and in the stomach. Torrential internal bleeding into the stomach may be fatal.

Angiography (x-rays of arteries) of the portal veins in the abdomen is diagnostic, and liver biopsy and blood tests may be abnormal if liver disease is responsible for the problem. Gastroscopy shows enlarged veins in the oesophagus and stomach.

Surgery is necessary to bypass any blockage in the veins or liver, and the spleen may be removed if veins in this organ are thrombosed. The prognosis depends on the cause, but is often poor.

See also CIRRHOSIS; SCHISTOSOMIASIS

**POSTGASTRECTOMY SYNDROME**

See DUMPING SYNDROME

**PRADE-WILLI SYNDROME**

The Prader-Willi syndrome is a rare congenital (present since birth) brain condition caused by a chromosonal defect that affects only boys. The syndrome is characterised by a small infant who develops into an obese child due to compulsive overeating from an abnormality in the part of
the brain that controls hunger. The child is usually short, has underdeveloped genitals, is mentally retarded, muscles are weak and have very poor tone, and the belly is very flabby. There is no effective treatment, and they tend to develop diabetes later in life.

**PRE-ECLAMPSIA AND ECLAMPSIA**

Eclampsia (toxaemia of pregnancy) is a rare but very serious disease that occurs only in pregnancy. In developed countries it is very uncommon, because most women undertake regular antenatal visits and checks. Pre-eclampsia is a condition that precedes eclampsia, and this is detected in about 10% of all pregnant women. The correct treatment of pre-eclampsia prevents eclampsia.

The exact cause of pre-eclampsia is unknown, but it is thought to be due to the production of abnormal quantities of hormones by the placenta. It is more common in first pregnancies, twins and diabetes. Pre-eclampsia normally develops in the last three months of pregnancy, but may not develop until labour commences, when it may progress rapidly to eclampsia if not detected.

The early detection of pre-eclampsia is essential for the good health of both mother and baby. Doctors diagnose the condition by noting high blood pressure, swollen ankles, abnormalities (excess protein) in the urine and excessive weight gain (fluid retention). Not until the condition is well established does the patient develop the symptoms of headache, nausea, vomiting, abdominal pain and disturbances of vision.

If no treatment is given, the mother may develop eclampsia. This causes convulsions, coma, strokes, heart attacks, death of the baby and possibly death of the mother.

Pre-eclampsia is treated by strict rest (which can be very effective), drugs to lower blood pressure and remove excess fluid, sedatives, and in severe cases, early delivery of the baby. The correct treatment of pre-eclampsia prevents eclampsia, and the prognosis is very good if detected early and treated correctly.

**PREGNANCY**

See MORNING SICKNESS; PRE-ECLAMPSIA AND ECLAMPSIA

**PREMENSTRUAL TENSION**

Premenstrual tension (PMT, premenstrual dysphoric disorder or premenstrual syndrome) may vary from a slight discomfort for a couple of hours before the onset of a woman's menstrual period to a severely distressing condition.

![Schematic representation of hormone changes during menstrual cycle](image)
During the two weeks leading up to a menstrual period, the body retains fluid. If the balance between the sex hormones oestrogen and progestogen is not quite right, an excessive amount of fluid may be retained in the pelvis, brain, breasts, hands and feet to cause gradually increasing discomfort in the pelvis and breasts, with swelling of the hands and feet, pounding headaches and depression. The worst sufferers will experience abdominal pain, swollen tender breasts, anxiety, irritability and clumsiness, and may be unable to concentrate, work or exercise effectively. The most severe form is known as premenstrual dysorphic disorder when symptoms seriously interfere with a woman’s lifestyle, mental and physical functioning, and relationships. Depression, very rarely severe enough to lead to suicide, and a psychosis that has been used in court as a defence for murder, can be extreme complications. The symptoms usually disappear within a few hours when the period starts.

The oral contraceptive pill or similar hormones can be used to regulate the hormonal balance and prevent excess fluid retention, and diuretics (tablets that remove fluid from the body) may be used alone or in combination with the contraceptive pill. Other medications that may be beneficial include antidepressants (eg: citalopram), vitamin B6, mefenamic acid, naproxen, indomethacin and evening primrose oil. Other approaches include a sensible balanced diet, and avoiding coffee, chocolate and rich foods in the two weeks before the period.

The majority of women can be helped adequately by good treatment.

**PROSTATE CANCER**

Prostate cancer is the commonest cancer in humans, while breast cancer comes a close second.

Prostate or prostatic cancer describes any one of several different types of cancer of the prostate gland, depending on which cells in the gland become cancerous. The cause is unknown, but those who have sex infrequently may be more susceptible. It is rare before 50 years of age, but up to 20% of all men over 60 may have an enlargement of the prostate. The percentage of these men whose enlargement is due to cancer steadily increases with age, with virtually every male over 90 years of age having some degree of prostate cancer.

This is a very slow-growing cancer that may give no symptoms until many years after it has developed. Symptoms usually start with difficulty in passing urine and difficulty in starting the urinary stream. In advanced stages there may be spread of cancer to the bones of the pelvis and back.

Specific blood tests can detect most cases, but it is often diagnosed by feeling the gland using a gloved finger in the back passage. The blood tests are unreliable as there is both a significant false negative and false positive rate. A series of blood tests measuring the PSA (prostate specific antigen) over a number of months, and measuring different subtypes of PSA can give a more reliable reading. Only one in three men with a raised PSA will have prostate cancer, and some men with cancer have a normal PSA.

The diagnosis is confirmed by an ultrasound scan and ultrasound guided biopsy of the gland, which is performed through the anus. The biopsy process itself may have complications including bleeding and infection. Unfortunately, a negative biopsy does not mean that cancer is not present, merely that any cancer that is present may have been missed by the biopsy needle.

There are many treatment options for prostate cancer -
- **No treatment** - in elderly or very ill patients when the patient is more likely to die with the disease than from the disease. Treatment may have an adverse effect on the man’s life.
- **Surgery** - radical prostatectomy in which the gland is surgically removed. Complications may include impotence (75%+) and urinary incontinence (25% over all, but severe in 3%).
- **Radiotherapy** - an external beam of radiation is targeted on the prostate from many different directions in order to destroy the cancer. Complications may include irritable bowel and bladder, with the frequent use of one or both.
- **Brachytherapy** - tiny radioactive particles are injected into the prostate to create
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- Radiation, which destroys the cancer. This may be combined with radiotherapy. The complications are the same as radiotherapy.
- Medication - Antiandrogens (eg. nilutamide, bicalutamide) are used to slow the progress of more advanced cases of the disease.
- Orchidectomy (removal of the testes) - this was sometimes performed to remove all testosterone from the man’s body, as this hormone stimulates growth of the cancer. It is now a rare procedure.

Many new treatment regimes are being introduced every year including new hormones, new cytotoxics and high intensity focused ultrasound.

If the cancer is localised to the gland itself, the five-year survival rate is over 90%. With local spread, the survival rate drops to about 70%, but with spread to the bone, only 30% of patients survive five years.

See also PROSTATITIS

PROSTATITIS

Prostatitis is an infection of the prostate gland, which sits behind the base of the penis, by bacteria that may enter the prostate by moving up the urethra (urine tube) from the outside, from a sexually transmitted infection (eg. gonorrhoea), or uncommonly from an infection spreading from other parts of the body.

Pain occurs behind the base of the penis, and there is a discharge from the penis, pain on passing urine, fever and patients pass urine frequently. The infection may spread to the man’s sexual partner, in whom it can cause pelvic inflammatory disease.

The diagnosis confirmed by taking a swab from the urethra, and identifying the bacteria present, and treatment requires taking a long course of antibiotics.

Acute case usually settles with treatment, but recurrences are common and a low-grade persistent infection may develop, which is difficult to treat.

See also PROSTATE CANCER

PROTOZOAL INFECTION

Protozoa are microscopic single-celled organisms like bacteria, but they are significantly larger and closer to what we normally think of as animal-like. Most protozoa are harmless but a few are parasites (ie. live on a host body) and cause disease, usually of a singularly unpleasant kind. They are found all over the world in the soil and in almost any body of water from moist grass to mud puddles to the sea.

There are various kinds of protozoa, their classification depending on how they travel, either propelling themselves by one means or another, or in the case of the type that causes malaria,
having no inbuilt means of propulsion but relying on a type of mosquito for transport. African sleeping sickness (affecting the nervous system) is caused by a species of protozoa and is transmitted by the tsetse fly, although the organism also has the ability to propel itself with a long whip-like tail.

Other diseases caused by protozoa are various gastrointestinal disorders and infections of the genitals such as vaginitis (inflammation and discharge from the vagina) or urethritis in men. A particularly unpleasant disease is called kala-azar, which is transmitted by the bite of a sand fly, and leads to anaemia and an enlarged liver and spleen. Another form of the disease attacks the mucous membrane and skin of the nose and spreads to the lips and mouth, causing ulcers, and as it progresses the cartilage of the nose may be destroyed, resulting in severe facial damage.

Toxoplasmosis, which can be transmitted by cats and raw meat, and which can cause fatal or severe damage to an unborn child if a pregnant woman becomes infected, is also caused by a protozoan organism.

Another type of protozoa is the amoeba. This is an irregularly shaped fluid blob enclosed in a membrane. There are several varieties of amoeba, one of which may live in the sockets of the teeth and give rise to gum disease, while others are a cause of brain disease. One variety is the cause of amoebic dysentery, a disorder characterised by severe diarrhoea, common in the tropics, and is frequently spread by drinking contaminated water, especially where human excrement is used as fertiliser. It can be an insidious disease in that it sometimes lives harmlessly in the intestines for many years and then, for no apparent reason, invades the intestinal wall and travels to the liver or other organs, where it forms an abscess.

See also AMOEBIASIS; TOXOPLASMOSIS

PSEUDOMEMBRANOUS COLITIS
Pseudomembranous colitis is a form of severe inflammation of the large intestine associated with a fine membrane over the gut wall caused by an overgrowth in the bowel of the bacteria *Clostridium difficile* as an adverse reaction to antibiotics (e.g. clindamycin, ampicillin, cephalosporins).

The symptoms include severe intractable watery diarrhoea, cramping belly pain and fever, and sometimes the motions become bloody. Dehydration, body chemistry abnormalities, perforation of the inflamed bowel, and rarely death may be complications.

Colonoscopy reveals the inflamed gut and false membrane. The antibiotic vancomycin is used in treatment, and fluid loss is replaced by a drip into a vein. Most patients recover with appropriate treatment.

PYELONEPHRITIS, ACUTE
Acute pyelonephritis is a bacterial infection of the kidneys. The infection may reach the kidney through the blood stream, or up the ureter from the bladder. They are more common in women, after operations to the urinary tract, during pregnancy, and in those who are very sexually active.

Symptoms start suddenly with pain in the loin, fever, nausea, headaches and sometimes nausea and vomiting. There may be associated cystitis (bladder infection) which causes pain on passing urine, and urinary frequency. The diagnosis is confirmed by examining a sample of urine to identify the responsible bacteria and the correct antibiotic. Further tests may be indicated if infections are repeated, including X-rays and/or ultrasound scans of the kidney, and cystoscopy (a fine flexible tube is passed into the bladder).

Antibiotics are the primary treatment, usually as a tablet or capsule by mouth for five to ten days, but occasionally by injection, and patients should take as much fluid as possible to flush out the infection. Some patients will require long courses of antibiotics to prevent further attacks. Passing urine after sex will reduce the incidence of recurrences in women. With correct treatment, most infections settle quickly.

See also CYSTITIS; PYELONEPHRITIS, CHRONIC
PYELONEPHRITIS, CHRONIC

Chronic pyelonephritis is a persistent bacterial infection of the kidneys. It may occur in both sexes and at any age, but those most commonly affected are elderly, incontinent (unable to control their bladder), and may have a catheter into the bladder.

Often there are no or minimal symptoms, but the infection is detected on a routine urine test. Some patients have vague loin pain, feel tired and pass urine frequently. Scarring of the kidney, high blood pressure, anaemia and functional failure of the kidney are possible complications.

X-rays, CT and ultrasound scans of the kidneys, blood tests, urine culture tests, and cystoscopy (passing a flexible tube into the bladder) are used to investigate the condition.

Treatment involves a very long course of the appropriate antibiotic, urinary antiseptics and alkalising agents (eg. Ural, Citravescent), and patients are encouraged to drink large quantities of fluids. If a kidney abnormality is found, this may be surgically corrected. One third of patients are cured by a six-week course of antibiotics, another third cured after six months of antibiotics and antiseptics, 10% progress to severe kidney damage and failure, and the remainder continue to have a chronic infection without symptoms or kidney damage.

See also PYELONEPHRITIS, ACUTE

PYLORIC STENOSIS

A congenital (present from birth) narrowing of the pylorus (the drainage valve at the lower end of the stomach) that prevents or slows food from leaving the stomach. Affected infants develop projectile vomiting soon after birth, and fail to gain weight. Boys are affected far more often than girls. On examination, a thickened ball of muscle at the site of the pylorus can often be felt in the abdomen. The problem can be corrected by a relatively simple operation (a pyloroplasty), and there are no long-term adverse effects.

REAVEN SYNDROME

See METABOLIC SYNDROME

RECTAL PROLAPSE

A rectal or anal prolapse is a slippage of part of the lining of the lower gut out through the anus. It tends to occur in babies and the frail elderly who strain at stool with constipation, and severe diarrhoea. Patients develop anal pain, discomfort and constant moistness, and a lump protrudes through the anus. Ulceration and bleeding may occur from the prolapsed bowel, and in severe cases the prolapsed bowel may become gangrenous. Proctoscopy (passing a viewing tube into the anus) may be performed to inspect the rectum (last part of the large intestine).

Surgery is the only way to correct the prolapse, and gives good results.

RENAAL FAILURE, CHRONIC

Chronic kidney (renal) failure, or uraemia, is a slow, gradual failure of kidney function. Old age is the most common cause, but it may also be due to many other conditions including a damaged blood supply to the kidney from hardened arteries (arteriosclerosis), poisons, infections, the body trying to reject the kidney in autoimmune conditions such as systemic lupus erythematosus, and many rarer diseases.

Because of its slow onset, patients may not present to a doctor until the condition is well advanced, by which time they have weakness, tiredness, lack of appetite, weight loss, nausea, headaches, passing urine frequently and at night, and in advanced cases itchy skin, vomiting, high blood pressure and anaemia. Abnormal blood and urine tests are diagnostic, but further investigations are carried out to discover any specific cause.

It is necessary to treat any cause of the condition if possible, followed by a strict diet (low in protein), and control of all fluids that are drunk. Unless the cause can be corrected, long-term treatment with an artificial kidney machine (dialysis), or a kidney transplant operation is
necessary. Patients must also be very careful with medications, as they are likely to be far more effective, last longer in the body than normal, have more side effects and may be toxic.

Kidney transplants have an 80% cure rate, while dialysis can be continued for many years if necessary.

**RENAL STONE**

The kidney acts to filter the blood, and removes excess water and wastes. If these wastes become too concentrated or altered in some way, they can precipitate out and form a crystal that slowly grows into a stone (renal calculus or nephrolithiasis). Most stones are flushed down the ureter (the tube that leads to the bladder from the kidney) and are passed out with the urine while still very small. A small number of stones slowly grow in size until they are the size of a grape or larger and completely fill the urine collection chamber of the kidney where they cause repeated kidney infections and pain. Medium sized stones from one to five millimetres in length enter the thin very sensitive ureter, and as the stone is pushed along the tube by the pressure of urine behind, it scrapes the tube wall to cause intense pain (renal or ureteric colic) that can thus come and go for several days every time the stone moves. Kidney stones are more common in men than women, and in hot climates than cold due to the higher incidence of dehydration.

Kidney stones are collected by sieving urine after symptoms of kidney stone present, or analysis of gravel in urine. Analysis of the stone may allow the cause of its formation to be determined. The following substances may form a kidney stone:

- **CALCIUM OXALATE** - 40% sole ingredient, 85% partial ingredient. Causes include excess soft drinks, oxalate foods (eg. silverbeet, rhubarb, chocolate, nuts) but often no identifiable cause.
- **CALCIUM PHOSPHATE** - 2% sole ingredient, 35% partial ingredient. Causes include over active parathyroid gland in the neck (hyperparathyroidism), excess calcium in the blood (hypercalcaemia), kidney disease (distal renal tubular acidosis), or they may be no specific cause.
- **URIC ACID** - 10% sole ingredient, 30% partial ingredient. Causes include kidney failure and excess urate in blood (hyperuricaemia), or excessively acid urine (aciduria).
- **CYSTINE** - Rare. Usually an inherited characteristic (familial amino aciduria).
A RATIONALE FOR THE ABDOMEN

MAGNESIUM AMMONIUM PHOSPHATE - 2% of stones. Caused by long-term urinary infection.

A stone that remains in the kidney may cause no or minimal symptoms. Patients who are passing a kidney stone experience excruciating, intermittent pain in the loin (side of the belly) that goes down to the groin. Patients may note blood in their urine because the stone is damaging the ureter to make it bleed. Severe intractable kidney infections may be due to an undiagnosed stone, and rarely a kidney may be so severely damaged by a stone that it fails. X-rays of the kidney after the injection of a dye (intravenous pyelogram - IVP), show the stone, its size and position, and the progress of the stone down the ureter can be seen on repeat X-rays. Ultrasound scans may also show the presence of a stone. Blood tests are done to check for the cause of the stone.

Most patients are given pain relief and lots of fluids to wash the stone down the ureter, and after a few hours or days, the stone enters the bladder and passes out without causing any further pain, but some stones get stuck in the ureter, and must be removed. This can be done in a number of ways:

- Lithotripsy uses intense sound shock waves that are passed through the body to shatter the stone, the remnants, which are the size of sand particles, can then be passed normally through the urine.
- Passing a tiny umbrella into the bladder and up the ureter to a point above the stone where the umbrella is then opened, and slowly removed, dragging the stone along with it.
- Under the control of a radiologist (X-ray specialist), a tube can be placed through the skin into the kidney, and the stone removed.
- Rarely an open operation through the abdominal wall may be necessary

Almost invariably kidney stones can be successfully treated, but up to 50% of patients will have a recurrence within five years if measures are not taken to prevent their formation.

RHEUMATIC FEVER

Rheumatic fever is a damaging inflammation of the heart valves that follows some types of bacterial infections and was common before antibiotics were readily available, but is now rare in developed countries.

Patients have two or more of a number of widely different symptoms, so every case is completely different. Symptoms include inflammation of the heart and its valves, a rapid pulse, irregular heart beat, irregular shaped red patches and rings on the skin, chorea (uncontrolled twitching of the arms, legs and face), fever, and arthritis that moves from one large joint to another. In 70% of patients it causes permanent damage to heart valves that leak and fail in later life, and are susceptible to infection (endocarditis). All patients who have had rheumatic fever must take antibiotics whenever they have any dental treatment or operation.

The diagnosis is confirmed by blood tests (eg. anti-deoxyribonuclease-B titre - Anti-DNAse-B), and an electrocardiogram (ECG), then antibiotics (commonly penicillin) are given to remove any remaining bacterial infection, aspirin to reduce fever and joint pains, and strict bed rest is ordered for several weeks or months.

The condition may last a few weeks to months, with children taking far longer to recover than adults. A significant number of patients have recurrences for years afterwards. 98% of patients recover from the first attack, but multiple repeat attacks may lead to death from heart damage.

SALPINGITIS

Salpingitis is a bacterial infection of the Fallopian tubes that lead from the ovaries to the uterus. Numerous sexually transmitted bacteria may be responsible, including Chlamydia trachomatis and Neisseria gonorrhoea.

Affected women develop a pain low in the abdomen, fevers, a vaginal discharge, abnormal menstrual periods and pain with intercourse. With repeated or prolonged infection, the Fallopian tubes may be damaged so eggs have difficulty in passing down to the uterus resulting in infertility, or fertilised eggs may implant in the tube as an ectopic pregnancy (pregnancy that develops
outside the uterus).

Blood tests and vaginal examination are performed, and vaginal swabs are taken, to determine which bacteria are present and the appropriate antibiotics that should be taken by tablet or injection to clear the infection. Sex should be avoided until the infection is cured.

Up to one quarter of affected women will have continuing problems including repeat infections, infertility, ectopic pregnancies, persistent pelvic pain and painful sex.

See also ECTOPIC PREGNANCY; PELVIC INFLAMMATORY DISEASE; PYOSALPINX

SANFILIPPO SYNDROME
Sanfilippo syndrome or mucopolysaccharidosis type III is a rare inherited abnormality of the metabolic system in which patients are unable to eliminate certain substances (mucopolysaccharides) from the body. The effects include severe intellectual disability starting at age 5 years or later, excess body hair, abnormal face structure, and enlarged liver and spleen. It may be diagnosed by urine tests, which show excess levels of heparitin sulfate. No treatment is available.

See also HUNTER SYNDROME; HURLER SYNDROME

SARCOIDOSIS
Sarcoidosis is an uncommon disease that causes damage and inflammation to a wide range of organs within the body, but most commonly to the lungs. The cause is unknown, but women are more commonly affected than men, and the usual age of onset is 40 to 60 years.

The symptoms can be very varied and sometimes bizarre because almost any part of the body may be involved as affected tissues fail to function correctly. Patients may have a fever, tiredness, shortness of breath, rashes, enlarged glands, liver or spleen enlargement, pain, arthritis, pins and needles sensation and heart failure. Gradual destruction of the lungs and other organs may occur.

Blood tests and lung x-rays show abnormalities, but cannot specifically diagnose sarcoidosis. A definitive diagnosis requires the microscopic examination of a biopsy (Kveim test).

Steroids are used to reduce the inflammation, but the disease is slowly progressive and cannot be cured, although control is usually sufficient to give the victim a relatively long life.

See also HEERFORDT SYNDROME

SCHEIE SYNDROME
Scheie syndrome is a rare inherited abnormality of the metabolic system. It is a mucopolysaccharidosis disease closely related to Hurler syndrome, and starts at one to two years of age when patients are unable to eliminate complex carbohydrates (mucopolysaccharides) from
A RATIONALE FOR THE ABDOMEN

The victims have recurrent respiratory infections, enlarged liver and spleen, excessive forward curvature of the spine, heart murmurs, eye cataracts and slow growth. Specific blood enzyme tests are abnormal and enable a specific diagnosis to be made. No treatment is available and the usual course is a steady progression to death by 10 years of age.

Harold Scheie (1909-1990) was an American ophthalmologist.
See also HURLER SYNDROME

SCHISTOSOMIASIS
Schistosomiasis (bilharzia) is a fluke infestation transmitted by a species of snail that is found in fresh water streams, rivers and lakes in Egypt, tropical Africa as far south as Zimbabwe, the Caribbean and eastern South America. It is often caught by bathing or washing in fresh water.

The cause is a microscopic animal (trematode fluke) that enters the body by burrowing through the skin, often of the foot. Three different flukes - *Schistosoma mansoni*, *Schistosoma japonicum*, and *Schistosoma mekongi* - may be responsible. Once in the blood it travels to the veins around the large intestine, where eggs are laid. These pass out with the faeces or urine to infect water supplies. Once in fresh water, the eggs hatch, and the larvae seek out and burrow into the flesh of specific species of fresh water snail. They mature in the snail, and emerge from it ready to enter and infect another human. Patients do not pass out all the eggs that are laid by the fluke, and they may spread to the liver, lungs or spinal cord to cause further symptoms. Damage caused to organs by the fluke may be permanent.

The first symptom is an itchy patch at the site of skin penetration. Varying symptoms then follow, depending on the areas affected by the fluke as it moves through the body, and the individual's reaction to those changes. Long-term symptoms include diarrhoea, abdominal pain and bloody urine. A particularly severe and rapidly progressive form of the disease is known as Katayama Fever.

The diagnosis involves blood, urine and skin tests, and liver and gut biopsies.

Treatment is difficult, particularly late in the disease, although a number of drugs (eg. praziquantel) can be used to kill the fluke inside the body. Untreated it may cause a low-grade chronic illness, or may progress to death in a matter of months. The results of treatment are good if commenced early in the course of the disease, but advanced disease may be incurable.

SEPTICAEMIA
Septicaemia, or blood poisoning, is a bacterial infection of the blood. The infection usually starts in another part of the body, such as the lungs, tonsils (quinsy) or after childbirth (now very rare), but in some cases the origin of the infection may never be found. Many different bacterial
infections have septicaemia as a complication. Patients are usually very ill, with a high fever, prostration and generalised aches and pains. A small number will have an overwhelming infection with resistant bacteria, which leads to death. Many different bacteria may be responsible for the infection, and it is important to identify them by blood tests before antibiotic treatment commences. Potent antibiotics are given by mouth, injection or drip infusion in hospital to cure the infection. The original site of infection must also be treated if possible. Provided an appropriate antibiotic can be found, most patients can be cured.

**SEROTONIN SYNDROME**

The serotonin syndrome is a rare complication of antidepressant medication use caused by interaction between different antidepressants after inadequate rest period between stopping one medication and starting another, or interaction between antidepressants and other drugs (eg. pethidine, pseudoephedrine, dextromethorphan - the last two are found in cold remedies). The symptoms include agitation, vomiting, tremor, muscle spasm, dizziness, incoordination, rapid heart rate, overactive reflexes and abnormal eye movements (nystagmus). Some patients develop a very high fever, flushing and diarrhoea. Once diagnosed, all antidepressant medication must be ceased, and medication (eg. cyproheptadine, diazepam) is given to reverse the adverse effects. The prognosis is good.

**SEBACEOUS CYST**

A sebaceous cyst (epidermal cyst or pilar cyst) is full of sebum (the oil that keeps the skin moist and supple), which is produced in sebaceous glands beneath the skin all over the body, and is discharged through small ducts. In areas that become sweaty, dirty or injured it is possible to block the duct draining the sebaceous gland. The sebum continues to be produced, and a cyst slowly forms under the skin. Cysts usually appear on the back, chest and neck, are slightly soft and often have a tiny dimple at the point where the original duct opened onto the skin. Sometimes pressure in the cyst is sufficient for its contents to be discharged through the previously blocked duct, but the cyst usually reforms. Cysts may become infected, and if antibiotics are not given soon enough, an abscess may form. Any cyst that is unsightly may be cut out, while infected cysts are treated with antibiotic tablets.

**SHIGELLOSIS**

Shigellosis, or bacillary dysentery, is a common intestinal disease in third-world countries and the poorer areas of some developed countries. A number of different bacteria from the Shigella family can infect the gut under poor sanitary conditions. The infection spreads when bacteria in the faeces of a patient contaminate the food of another person. Patients develop severe intermittent abdominal pain, copious diarrhoea, blood and mucus mixed in with the faeces, and a high fever. Severe dehydration may lead to blood clots (thrombosis) that damages the organ supplied by the affected artery. It is diagnosed by examining a sample of faeces for the presence of the infecting bacteria. Treatment involves appropriate antibiotics, adequate fluid intake by an intravenous drip in severe cases, medications to relieve abdominal cramps, and a strict diet to avoid foods that may irritate the gut (eg. milk products, eggs and fatty foods). Carers should be very careful in the disposal of the faeces and soiled linen to prevent spread of the infection. In children under three years of age and the elderly the infection may be life-threatening. In older children and adults it can be readily treated, or may persist for several weeks without adequate treatment. See also GASTROENTERITIS; TYPHOID FEVER
SICKLE CELL ANAEMIA

Sickle cell anaemia, or haemoglobin S disease is a form of abnormal red cell development that occurs only in Negroes. This inherited condition causes red blood cells to become sickle shaped (like a crescent moon) rather than round, because of an abnormal form of haemoglobin called haemoglobin S. The responsible abnormal gene is found only in Negroes.

Victims are tired and weak, have large spleens, may become jaundiced (yellow), heal poorly, develop gallstones easily and cope poorly with infections. Sometimes clumping of the abnormal red cells may block small arteries, cause severe pain in wide areas of the body and permanently damage the heart, liver and other organs.

Adults carrying the abnormal gene can be identified by blood tests, and if two carriers marry, one in four of their children will suffer from sickle cell anaemia. It can be diagnosed before birth by amniocentesis or other tests on the unborn child. After birth, examining blood under a microscope reveals the abnormal cells.

Treatment with folic acid supplements and occasional transfusions control most cases. Maintaining adequate water intake and treating infections early are important. There is no cure but its effects can usually be controlled.

Interestingly, the disease gives protection against malaria, which may explain its selective benefit in tropical areas.

SIGMOID VOLVULUS

See VOLVULUS

SIMMONDS DISEASE

See HYPOPITUITARISM

SLY SYNDROME

The Sly syndrome is a rare congenital condition in which children are unable to eliminate certain substances (mucopolysaccharides) from the body that starts at one to two years of age. The cause is an inherited abnormality of the metabolic system (mucopolysaccharidosis) that is closely related to Hurler syndrome.

The symptoms include recurrent respiratory infections, enlarged liver and spleen, excessive forward curvature of the spine, heart murmurs, eye cataracts and slow growth. Specific blood enzyme tests are abnormal an enable a diagnosis.

There is no effective treatment and the usual course is a steady progression to death by about 10 years of age.

See also HURLER SYNDROME

SPHINCTER OF ODDI SYNDROME

The sphincter of Oddi is a muscle ring around the opening of the combined bile and pancreatic ducts into the duodenum (part of the small intestine). As it opens and closes it controls the flow of bile and pancreatic digestive enzymes into the intestine.

The sphincter of Oddi syndrome is a malfunction of this muscle ring that prevents or restricts the flow of bile and pancreatic enzymes into the gut. The sphincter may be damaged by surgery or a gall stone passing through it, inflamed or be in spasm.

Patients with the sphincter of Oddi syndrome experience a variable range of symptoms including intermittent severe abdominal pain, nausea, vomiting and diarrhoea. The diagnosis is made after all other possible causes have been excluded and by gastroscopy. Treatment involves cutting open the sphincter of Oddi in a procedure known as an endoscopic retrograde sphincterotomy.

SPRUE
A RATIONALE FOR THE ABDOMEN

See COELIAC DISEASE; TROPICAL SPRUE

STEATORRHOEA

Steatorrhoea is the presence of excess fat in the faeces, which becomes a pale yellow colour. The stools tend to float in the toilet, and may be difficult to flush away. The excess fat may be due to a fatty diet, or more commonly because a lack of digestive enzymes from the pancreas or gall bladder is preventing the fat from being digested. Diseases that cause steatorrhoea may be serious, and investigation at an early stage is important.

STEIN-LEVENTHAL SYNDROME

See POLYCYSTIC OVARIAN SYNDROME

SUBACUTE BACTERIAL ENDOCARDITIS

Subacute bacterial endocarditis (SBE) is a persistent infection of the heart valves caused by Streptococci or Staphylococcus bacteria. Both natural and implanted artificial valves may be affected. Symptoms may include a fever, heart murmur and enlarged spleen. At surgery or post mortem clumps of abnormal tissue (vegetation) are found around the affected valve, which affects its function. These vegetations may break away and become emboli that block smaller arteries to cause localised tissue death (Osler’s nodes in the fingers), splinter haemorrhages (under nails), Roth spots (damage to retina), a stroke or heart attack. The infection can spread to bone in these emboli.

The infection may start on an abnormal or damaged valve after the bacteria enter the blood during a dental procedure or with intravenous drug abuse.

The diagnosis may be made by a blood culture. Treatment involves a prolonged course of potent antibiotics.

SYSTEMIC LUPUS ERYTHEMATOSUS

Systemic (or disseminated) lupus erythematosus (SLE) is a relatively common inflammatory condition affecting joints, skin, liver, and kidney most commonly, but almost any tissue in the body may be involved. 85% of cases occur in women (usually young), and it is more common in Negroes than Caucasians.

Lupus is an autoimmune disorder in which the body inappropriately rejects normal tissue for no known reason. Attacks may be precipitated by stress, some medications or chemicals. There is also a familial tendency.

Common symptoms are arthritis of several joints, a red scaly rash across both cheeks and the bridge of the nose (“butterfly rash”), rashes on other areas that are exposed to sunlight, mouth ulcers, poorly functioning kidneys and anaemia. Additional symptoms may include a fever, loss of appetite, tiredness, weight loss, damaged nails, loss of hair and painfully cold fingers. Less common complaints include conjunctivitis, blurred vision, chest pain, pneumonia, heart failure, belly pain, constipation, depression and convulsions. The symptoms vary significantly from one patient to another, and none will have them all. Many patients are free of symptoms for months before a recurrence. After each attack, there is slightly more permanent liver, kidney or heart damage, and eventually these problems accumulate to the point where the disease becomes life threatening. In rare cases it proceeds relentlessly to death within a relatively short time.

Specific blood tests can diagnose the condition (eg. lupus anticoagulant antibody, ANCA, anti-Smith antibodies, anti-DNA, anti-dsDNA).

Treatment depends upon the severity of the disease, and with mild symptoms, no treatment is required. Sun exposure should be avoided, and all non-essential medications ceased. In severe cases, a wide range of drugs, including steroids, cytotoxics, immunosuppressives and antimalarials may all be used. Regular blood tests follow the course of the condition, which is very variable, from a mild arthritic complaint to a rapidly progressive disease. There is no cure, but with careful management, compliance with treatment, and regular check-ups, 90% of patients are
alive more than ten years after the diagnosis is made.

**TABES DORSALIS**
Tabes dorsalis is a rare complication of third stage syphilis due to the development of a syphilitic deposit in the spinal cord. Patients experience repetitive, brief, severe pain in the legs, back, chest, and sometimes arms and face. Some patients develop poor coordination of the legs and difficulty in walking, loss of bladder control, vomiting, abdominal pain, and abnormal sensations.

Antibiotics can treat the syphilis and prevent progression of the disease, but there is no cure for existing symptoms.

The disease name comes from the Latin words *tabes* (wasting) and *dorsalis* (back).

**TERATOMA**
A teratoma (or dermoid cyst in the USA) is an uncommon and unusual form of cancer that occurs in the ovaries or testes. As the ovaries are the source of eggs, and the testes of sperm, that are used for fertilisation and growth into new humans, the cells (stem cells) in the ovary and testes, when cancerous may develop into many different types of tissue. All types of strange tissue may develop in the tumour, including gland tissue, muscle tissue, skin and even teeth.

In women, symptoms are often minimal until the cancer is quite large, or bleeding occurs into it to cause an abdominal lump or pain. Men feel a hard, tender lump in a testicle.

The tumour is diagnosed by x-rays, CT scans and biopsy of the tumour. Surgical removal of the cancer and surrounding tissue is usually all that is necessary, but rarely, an aggressive cancer may be present, that spreads to other parts of the body. The overall cure rate is close to 90%.

See also OVARIAN CANCER

**TESTICLE UNDESCENDED**
The migration of the testes from where they develop inside the abdomen to the scrotum occurs in 97% of boys by the time they are born, but the process may be delayed in premature babies.

If the testes remain hidden inside the abdomen (cryptorchidism) and do not descend into the scrotum, the scrotum is empty and no testicles can be felt, but in some boys the testes can be found in the groin and manipulated into the scrotum by gentle finger movements. An ultrasound scan is sometimes performed to find the missing testes.

If the testes can be manipulated out of the groin into the scrotum no treatment is usually required, but they must be checked regularly to ensure that they do eventually enter and stay in the scrotum. If the testes do not descend in the first year of life, an operation to place them in the correct position is necessary.

A testicle that remains undescended will eventually fail due to overheating, and if both testes are involved, sterility will result. Long-term problems include an increased risk of inguinal hernias, torsion of the testicle and cancer.

**TESTICULAR TORSION**
See TORSION OF THE TESTIS

**THALASSAEMIA BETA MAJOR**
Thalassaemia beta major is a familial blood disease (passes from one generation to the next) found in people who live in an area that stretches across Europe and Asia from southern Italy to Malaya, and in some Negro tribes. It occurs in two main forms, minor and major. There are a number of further subdivisions. The major form only occurs if both parents have the minor form.

Patients develop severe anaemia, generalised weakness, increased susceptibility to other
diseases, and children grow slowly, develop large livers and spleens, and may become jaundiced (yellow). The heart is put under great strain trying to cope with severe anaemia, and becomes very enlarged. It can be diagnosed by specific blood tests.

Regular blood transfusions for severe anaemia are the only treatment. Death from heart failure, infection or other complications is common in early adult life, but the outcome will depend on the severity of the disease.

**THROMBOCYTOPENIA**

Thrombocytopenia (idiopathic thrombocytopenic purpura) is a complex uncommon condition due to a lack of platelets (also known as thrombocytes), the blood cells that are responsible for controlling the rate at which blood clots. In children the condition often follows a viral illness and settles quickly, but in adults it is usually an autoimmune condition (body rejects its own cells) in which platelets are inappropriately destroyed by the spleen for no apparent reason. It can also occur as a result of adverse drug reactions, infections and other rare disorders.

Patients are unable to clot their blood as quickly as normal, and they bleed excessively. They develop purpura (red dots under the skin caused by microscopic bleeding) across a wide area, bleed internally to cause black motions, have nosebleeds that are difficult to stop, may vomit and cough blood, bruise very easily, bleed around their teeth after eating and may bleed very heavily during a menstrual period. Bleeding into the brain may cause a stroke, or very rarely, death. The diagnosis is confirmed by a simple blood test.

In some children, rest and time are the only necessary treatments. In all adults and most children, high doses of prednisone (a steroid) are given to settle the condition and allow more platelets to be made in the bone marrow. Immunoglobulin injections may also be used. As the spleen is the organ destroying the platelets, surgical removal of this can cure the disease in resistant cases. Other exotic medications may be used in severe cases.

The disease may last for a long time in adults, but the vast majority of patients respond well to treatment, although there are significant dangers before the patient presents to a doctor and in the first few days of treatment. It may occasionally recur in adults, but rarely in children.

**THYROTOXICOSIS**

See HYPOTHYROIDISM

**TORSION OF THE TESTIS**

Torsion of the testis occurs if a testicle, hanging in the scrotum from its network of veins, arteries and nerves, twists horizontally, and its blood supply is cut off.

Severe testicular pain, tenderness, redness and swelling occur. It usually occurs in teenage boys, and is almost unknown over 30 years of age.

Testicular torsion is a medical emergency, and the testis will die unless it is surgically untwisted within about 12 hours. Gangrene and death of the testicle will occur if surgery is delayed, necessitating its removal. Infection of the testes (epididymo-orchitis) can also occur, and may be confused with torsion, but the pain is usually less severe, the patient is febrile and both testes may be involved.

The prognosis depends on how quickly surgery is undertaken, but few reach surgery in time for the testicle to be saved. A man is still able to function normally sexually, and is still fertile, with only one testicle.

**TOXIC SHOCK SYNDROME**

Toxic shock syndrome (TSS) is a rare syndrome that usually affects women in which a toxin (poison) released by the bacterium *Staphylococcus aureus* (golden staph) damages tissue. It may occur after child birth, using contraceptive diaphragms, gynaecological surgery, with an abscess, or as a complication of influenza, but more than 90% of cases are associated with the use of menstrual tampons. The blood-soaked material in a tampon may become invaded by the
bacteria, which release the toxin into the bloodstream through the vaginal wall, although the woman herself is not infected by the bacteria.

Symptoms include fever, widespread red rash, headache, muscle aches, vomiting, diarrhoea and a dangerously low blood pressure. The low blood pressure may threaten the blood supply to the brain, liver, kidney and other vital organs, and eventually causes them to fail. Numerous blood tests may be performed in an attempt to identify the cause and monitor progress, but no specific diagnostic test is available.

Treatments that may be used include injected steroids, kidney dialysis (artificial kidney machine), blood transfusions and antibiotics in a hospital intensive care unit. Overall the mortality rate is 15%.

**TOXOPLASMOSIS**

*Toxoplasma gondii* is a single-celled animal that is found world-wide as a parasite of cats, other animals and birds, from whom it may spread to humans. The eggs pass out in the faeces of the animal and may then enter a human mouth (e.g. after careless handling of cat litters or soil contamination of fingers or food). Once in the gut, the microscopic egg hatches and multiplies into millions of single-celled animals.

In many patients, the symptoms are so mild that they are ignored, but in severe cases the patient complains of a low-grade fever, tiredness, muscle aches, joint pains, headache, sore throat, a mild rash and enlarged glands. In the rare severe cases, the liver, spleen, lungs, eye, heart and brain may be involved.

Patients usually recover without treatment in four to eight weeks. If symptoms are significant or complications develop, medications are available (e.g. pyrimethamine) to destroy the infection.

The worst complication of toxoplasmosis occurs in women who are pregnant. The infection may cause miscarriages, still birth, and deformities in the baby (e.g. small head, hydrocephalus, mental retardation, fits, blindness). The disease can be detected by a specific immunoglobulin blood test, and this test is often routinely performed during antenatal blood examinations. If toxoplasmosis is detected in pregnancy, treatment will be given to cure the disease. Unfortunately, because the disease has already occurred, there may still be some damage to the foetus.

There is no vaccination or other form of prevention available. Pregnant women should not associate closely with cats.

**TRICHINOSIS**

Trichinosis is a roundworm infestation found worldwide (not Australia) with a maximum incidence in North America and Europe. It is caused by an infestation of the intestine and muscle tissue of humans, pigs and a wide range of other animals by a tiny nematode (round worm). Wild pigs are the most common source, but it has been caught from eating walrus in Alaska and bear in Canada. The nematode forms a cyst in the animal meat, and if not adequately cooked, may survive and enter the human intestine where larvae are released from the cyst, mature and reproduce. The larvae pass through the lining of the gut into veins and are distributed by the blood throughout the body to form cysts in the tissue, where they may remain for up to ten years waiting to be eaten by another mammal. In more serious cases the heart, lungs and brain may be invaded.

Symptoms may include diarrhoea, muscle pain, fevers, tiredness and sometimes facial swelling. The infestation can be detected by specific blood and skin tests, and the larvae can be killed by appropriate medication (e.g. thiabendazole). The cysts remain in the tissue after the larvae they contain have been destroyed, and symptoms may continue long term.

**TROPICAL SPRUE**

Tropical sprue is a failure to absorb fat from the gut caused by an inflammation of the small intestine that develops in people used to a European diet who live for prolonged periods in
tropical countries.
  Symptoms may include explosive diarrhoea with watery stools, rapid weight loss, indigestion, burping, abdominal cramps, muscle cramps, and as a result of the failed fat absorption, a failure to absorb vitamins A, D, E and K, which are all soluble in fat.
  The diagnosis is made by examination of the faeces, which is found to contain high levels of fat, the urine which may contain 5-HIAA, and by X-rays of the small intestine. Blood tests may show a particular type of anaemia.
  Tetracycline (an antibiotic) for a week, and folic acid for several months, usually cures the condition. Further treatment may be required if severe anaemia has developed.
  See also COELIAC DISEASE

TRYPANOSOMIASIS
  Trypanosomiasis is an infestation with one of the parasites in the genus Trypanosoma, which can cause diseases such as Chagas disease and sleeping sickness.
  Infection with Trypanosoma can be detected by specific antibody tests, but false positive results are common.
  See also CHAGAS DISEASE

TUBERCULOSIS
  Tuberculosis (TB, consumption or phthisis) was originally a disease of cattle that only passed to man after these animals were domesticated many thousands of years ago. It is now a bacterial infection that affects one third of the people on the planet.
  Infection usually occurs in the lungs (pulmonary tuberculosis), but may attack bone, skin, joints, lymph nodes, kidney, gut, heart and membranes around the brain (meningeal tuberculosis). It is uncommon in developed countries, but widespread in poorer parts of Asia, Africa and South America. Because cattle and other animals may carry TB, its total eradication is difficult.
  The responsible bacterium, Mycobacterium tuberculosis, passes from one person to another in moist droplets with every breath. When inhaled the bacteria may infect the lung and the surrounding lymph nodes, or may lie dormant for years, and then start multiplying to cause an initial or subsequent attack of the disease at a time when the patient's resistance is down.
  Patients develop a productive cough, night sweats, loss of appetite, fever, weight loss and generalised tiredness. The infection may gradually spread to almost every other organ in untreated patients, when symptoms depend upon which areas are affected. Miliary tuberculosis is a form of the infection in which tiny seeds of infection are found throughout the body in many different organs and tissues.
  Chest x-rays show a characteristic pattern, and the infection may be confirmed by collecting sputum samples and identifying the bacteria through a microscope. Skin tests can determine whether the person has ever been exposed to tuberculosis.
  Treatment involves a combination of different antibiotic and antituberculotic medications for a year or more. Patients must be hospitalised and isolated until they are no longer infectious. All the other members of the patient's family must be investigated for early signs of the disease, and may be given treatment as a routine preventative measure. The BCG vaccine gives lifelong protection, and is given routinely at birth to babies in many poorer countries.
  With effective treatment regimes, a complete cure can be expected, and most recurrences are due to patients failing to complete the full course of treatment. Without treatment, death occurs in a significant proportion of victims.

TYPHOID FEVER
  Typhoid fever (enteric fever or intestinal Salmonellosis) is a widespread bacterial infection of the gut and surrounding lymph nodes, including the spleen, that occurs throughout Asia, Africa and South America.
The infection is caught by eating food contaminated with the bacterium *Salmonella typhi*, which pass out in the faeces and urine of those who have the infection, or are symptom-free carriers of the bacteria. The incubation period is 5-14 days.

### AREAS OF THE WORLD AFFECTED BY TYPHOID FEVER

Symptoms include fever, headache, tiredness, cough, sore throat, abdominal pain, red spots on the trunk (rose spots) and constipation. After a day or two, the constipation suddenly gives way to copious diarrhoea. Complications may include massive bleeding into the gut and perforation of the gut, which usually cause the death of the patient. In severe cases, it is possible for the infection to spread to the lungs, brain, kidneys and gall bladder.

The diagnosis confirmed by specific blood tests (Widal test), urine and faeces tests.

Antibiotics are prescribed to destroy invading bacteria, steroids are given to reduce inflammation, and a low-residue diet and intravenous fluids prevent gut irritation and dehydration. The bacteria may be almost impossible to eradicate from people who become symptom-free carriers of the disease. Preventive vaccines are available as three tablets taken over five days that give at least six months protection, or injections that give three years protection.

Death occurs in up to 30% of untreated cases, but only in 2% of those who are treated in good facilities. With no treatment, survivors slowly improve after about ten days, but relapses may occur for the next two or three weeks.

### ULCEATIVE COLITIS

Ulcerative colitis is a severe and potentially life-threatening inflammation and subsequent ulceration of the large intestine (colon). Repeated attacks cause thickening and scarring of the colon to the point where it cannot adequately undertake its task of absorbing excess fluid from the faeces. The cause is unknown, but it is more common in Whites than in Blacks and Orientals, and six times more common in Jews than other Caucasians. The overall incidence in developed countries is about one in every thousand people.

The symptoms are often quite mild at first, but subsequent attacks steadily worsen to cause bloody diarrhoea with severe abdominal cramps and pain. Large amounts of mucus may be present in the diarrhoea, and in severe cases the diarrhoea may occur 20 times a day, consist entirely of blood and mucus, and be severe enough to cause the patient to collapse. Occasionally, periods of apparent constipation can occur between attacks of diarrhoea. Further symptoms include fever, loss of appetite, weight loss and overwhelming tiredness.

Numerous serious complications including abscesses around the anus, a rupture of the colon
A RATIONALE FOR THE ABDOMEN

(urgent surgery necessary), colon cancer, massive over dilation of the large intestine (megacolon), or false connections (fistula) from the gut to the bladder or vagina caused by ulcers breaking through to these adjacent organs.

Inflammation in the colon may be associated with inflammation in other parts of the body, including the skin, joints, eye, mouth and liver.

The diagnosis is confirmed by a barium meal X-ray or colonoscopy (a tube is passed through the anus into the colon to allow it to be examined).

The disease passes through phases of active disease and remission, and treatment is aimed at treating the active disease when it occurs and preventing an attack from developing. Severe attacks require admission to hospital for drips into a vein, antibiotics, and steroids. Milder attacks may be treated by steroid tablets or suppositories (given through the anus).

Prevention and the treatment of mild attacks require a specific diet that is high in protein but excludes dairy products, and the regular use of sulfasalazine, which reduces gut inflammation. Uncontrolled disease may require the surgical removal of the entire colon and an ileostomy (the small intestine is opened out onto the skin of the abdomen and wastes are collected in a bag).

Although there is no permanent cure, most cases can be adequately controlled by medication. Because of the long-term complications and related conditions in other organs, the average life expectancy of these patients is slightly less than normal.

See also COLLAGENOUS COLITIS; COLORECTAL CANCER; MEGACOLON

UMBILICAL HERNIA

An umbilical hernia, or exomphalos, is a protrusion of the gut under the skin of the navel. There are two very different forms in children and adults.

In children, there is a hole between the muscle layers of the abdomen where the arteries and veins that passed down the umbilical cord from the mother entered the baby. This hole normally closes quickly after birth, but in some children the hole is very large, or is slow to close. In these cases, bulging of the intestine into the area just below the skin of the umbilicus can occur (an
omphalocele). This is more common in premature babies, as the processes involved in closing the hole behind the umbilicus are slower. The hernia bulges out while the infant is crying or active, but usually disappears when the child is lying quietly, and almost never gives pain or discomfort to the child. The vast majority close spontaneously within twelve months but may take until three years of age. If the hernia persists, surgery may be necessary.

In adults, the hernia is not strictly speaking an umbilical hernia, but a paraumbilical hernia, as the rupture occurs not immediately underneath the umbilicus but in the slightly weakened fibrous tissue just above (more common) or below the navel. They steadily increase in size with time and are common in women who have had multiple pregnancies, in the very obese and those who have other causes for excess pressure in the abdomen. Large hernias can contain a significant amount of intestine and may cause discomfort and constipation. Small paraumbilical hernias are repaired surgically when discovered, as delay may lead to a larger hernia and more difficult repair later. In older patients with particularly large hernias, surgical repair may not be practical. Rarely the intestine may become trapped in the hernia, very painful and gangrenous. If this occurs, emergency surgery is essential. The recurrence rate after surgery depends upon the original size of the hernia, but is generally low.

**UNDESCENTED TESTICLE**
See TESTICLE UNDESCENDED

**URAEMIA**
See RENAL FAILURE, CHRONIC

**URETERIC COLIC**
See RENAL STONE

**VOLVULUS**
A volvulus is a twisting of the intestine that prevents the passage of the contents of the bowel past the point of constriction caused by the volvulus. It occurs most commonly in the small intestine or the sigmoid section of the colon (large intestine). If left twisted, the affected section of bowel may become gangrenous and perforate due to an interruption of its blood supply. A spontaneous volvulus may occur in infants while in adults a volvulus is more often associated with adhesions.

The symptoms include severe intermittent but frequent abdominal pain spasms, nausea, vomiting and in due course an absence of bowel sounds and a firm distended abdomen. The diagnosis can be confirmed by a plain x-ray of the abdomen and it is treated by surgery to untwist the bowel or remove a damaged segment of the bowel.

See also ADHESIONS

**von GIERKE SYNDROME**
See GLYCOGEN STORAGE DISEASES

**WEIL SYNDROME**
Weil syndrome is a severe form of leptospirosis that causes pharyngitis (inflamed throat), muscle pains, diarrhoea with blood in the faeces, excessive bleeding internally and externally (eg. blood nose, unusual bruising), kidney and liver failure, a large spleen and severe jaundice (yellow skin). Lung involvement causes a cough, blood stained sputum, shortness of breath and the adult respiratory distress syndrome. Heart involvement (myocarditis) is also possible.

Antibiotics (eg. penicillin, tetracycline) and kidney dialysis (artificial kidney machine) are used in treatment, but there is significant morbidity (permanent organ damage), and it is occasionally fatal.
WHIPPLE’S DISEASE

Whipple’s disease is a rare disorder of the lymphatic system, which drains waste products back from cells to the heart, caused by obstruction of the lymphatic ducts draining the small intestine and a persistent bacterial infection of the gut. It is named after the American pathologist George Whipple (1878-1976).

Patients develop joint and belly pain, diarrhoea, weight loss and a slight fever. They may also have increased pigmentation of the skin and enlarged lymph nodes. Rarely, heart failure, uveitis (eye inflammation), confusion, memory loss and abnormal eye movements occur.

A faeces examination shows the presence of excess fat, and small bowel x-rays are abnormal. The diagnosis is confirmed by a biopsy of the small intestine.

There is no cure, but most cases are controlled by long-term antibiotics (eg. sulfas).

George Whipple (1878-1976) was an American pathologist.

ZOLLLINGER-ELLISON SYNDROME

Zollinger-Ellison syndrome (or gastrinoma) is a rare form of severe peptic ulceration in the stomach or small intestine caused by a tumour of the pancreas that produces high levels of a hormone, which promotes excessive acid production in the stomach.

Patients have exaggerated symptoms of a peptic ulcer with severe pain in the upper abdomen, bloating, nausea and diarrhoea. Symptoms usually start at a younger age than normal for a peptic ulcer, and severe bleeding from ulcers may lead to anaemia.

A specific blood test can measure the hormone gastrin, which is responsible for stimulating the stomach to produce hydrochloric acid. Other tests include gastroscopy and measuring the amount of acid in the stomach.

Treatment involves medications as for normal peptic ulcers, but in higher doses. Surgery is often required to control recurrent ulceration. Treatment must be continued lifelong, but is usually successful in controlling the disease.

See also PEPTIC ULCER
The interpretation of selected pathology tests

RI = Reference interval (normal range)
Ind = Indication (for performing test)
Int = Interpretation (of result)
Phys = Physiology (to explain test function or result)

Summary of Liver Function Test Abnormalities

<table>
<thead>
<tr>
<th>DISEASE</th>
<th>ALT</th>
<th>AST</th>
<th>GGT</th>
<th>ALP</th>
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</thead>
<tbody>
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<td>Primary biliary cirrhosis</td>
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<tr>
<td>Hepatoma</td>
<td>N/+</td>
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</table>

Alanine Amino Transferase, Serum [ALT]
(Alanine Transaminase, Glutamic Pyruvic Transaminase) [SGPT]

RI: 3 - 40 U/L
Pregnancy: 1 - 30 U/L
Ind: Liver or heart disease
Int: V.HIGH - Acute hepatitis (type serology, Ig?), liver necrosis
HIGH - Obstructive jaundice (AST?), chronic hepatitis, neoplastic liver disease, cirrhosis, fatty liver, haemochromatosis, myocardial infarct (Troponin, CK?), infectious mononucleosis, viraemia, Reye syn., alcohol, drugs.
ALT > AST - Extrahepatic obstruction, acute hepatitis
ALT < AST - Cirrhosis, intrahepatic neoplasm, haemolytic jaundice, alcoholic hepatitis
LOW - Renal failure, vit. B6 deficiency
Phys: Liver tissue is rich in the transferases of the Kreb's cycle, as are the heart, kidney and muscle. ALT more liver specific than AST

Alkaline Phosphatase, Serum [ALP]

RI: Adult male: 15 - 120 U/L
Adult female: 25 - 115 U/L
Pregnancy: 125 - 250 U/L
Child: 70-300 U/L
Bone isoenzyme: 10 - 20%
Liver isoenzyme: 40 - 60%
Ind: Bone and liver disease
A RATIONALE FOR THE ABDOMEN

Int: V.HIGH - Biliary obstruction (AAT?), metastatic carcinoma of liver (GGT?)
HIGH - Bone metastases, osteomalacia, rickets (Ca, vit. D?), myositis ossificans, Paget's
disease of bone (ACP?), hyperparathyroidism, hyperthyroidism, hepatitis (LFT, type
serology?), primary biliary cirrhosis, breast cancer, prostatic carcinoma, pancreatic
disease, recent fracture, transient benign hyperphosphatasia of childhood, children with
rapid bone growth, viral infection in children, late pregnancy, breastfeeding.
LOW - Hypothyroidism (T4?), congenital hypophosphatasia, growth retardation, zinc
deficiency.
Phys: Alkaline phosphatase is present in high concentrations in growing bone and liver. Also
found in intestine, and placenta. Normal levels do not exclude hepatic disease. An
isolated raised ALP with normal liver function tests is more likely to indicate bone disease.

Amylase, Serum
RI: 30 - 180 U/L (Racial differences)
Ind: Pancreatic disease
Int: HIGH - Acute pancreatitis (aldolase, lipase?), cancer of the pancreas, mumps, salpingitis,
perforated duodenal ulcer, siallectasis, hepatic disease, ruptured ectopic pregnancy,
dissecting aortic aneurysm, small bowel obstruction
LOW - Hepatitis, toxaemia of pregnancy, pancreatic insufficiency
Phys: Amylase is produced in the pancreas and salivary glands. Excess is produced in
inflammation, or is forced into the serum by pancreatic duct blockage

Aspartate Amino Transferase, Serum [AST]
(Aspartate Transaminase)
(Glutamic Oxaloacetic Transaminase) [SGOT]
RI: 4 - 40 U/L
Pregnancy : 1 - 21 U/L
Ind: Liver disease
Int: V.HIGH - Obstructive jaundice, acute hepatitis (type serology, Ig ?)
HIGH - Myocardial infarct (Troponin, CK?), myocardial inflammation, intrahepatic
neoplasm, cirrhosis, haemolytic jaundice, muscle trauma, muscular dystrophy,
alcoholism, some anaesthetics, vigorous exercise, Reye syn., paracetamol overdose,
haemolysis or refrigeration of sample
LOW - Renal failure, vit. B6 deficiency
AST:ALT RATIO >2 - Alcoholism.
Phys: AST is widely distributed with high concentrations in liver, heart, muscle and kidney.
Rises to a peak 36 hours after infarct, and returns to normal after 3-4 days

Bilirubin, Serum
RI: Total : 1 - 20 µmol/L
Direct (conjugated) : 1 - 6 µmol/L
Indirect : 2 - 13 µmol/L
Neonate :17 - 170 µmol/L
Pregnancy : 3 - 14 µmol/L
Ind: Liver disease, anaemia
Int: HIGH DIRECT & INDIRECT - Hepatitis (Ig, ALT, AST?), bile duct blockage, gall stones,
toxic reactions, Gilbert syn., malignancy, cirrhosis (LFT?), haemolysis of sample.
HIGH DIRECT - Biliary obstruction (stones, malignancy or fibrosis), intrahepatic
cholestasis, Dubin-Johnson syn., chemicals, drugs.
A RATIONALE FOR THE ABDOMEN

HIGH INDIRECT - Haemolytic disease, haematoma resorptions
HIGH IN NEONATE - Physiological jaundice, haemolytic disease, spherocytosis, sickle cell anaemia, birth trauma, hepatitis, hypothyroidism, prematurity, biliary atresia, choledocal cyst, starvation, meconium ileus, Crigler-Najjar syn., drugs
PHYSIOLOGICAL JAUNDICE (infants) - Clinical icterus is not apparent in infants until S.bilirubin is >100 µmol/L, but in older children is apparent clinically when S.bilirubin is > 40 µmol/L. Kernicterus is possible with levels >300µmol/L
Phys: Haemoglobin destruction gives bilirubin, which is conjugated in the liver and excreted in the bile. Any overload or blockage of this system raises levels. The direct van den Bergh reaction reads conjugated bilirubin
The graph shows progressive changes in serum bilirubin levels due to haemolytic jaundice, obstructive jaundice (eg. biliary atresia, cystic fibrosis, galactosaemia) and decreased liver enzyme activity (eg. prematurity, Gilbert's disease, physiological disorders, viral infections, Crigler-Najjar syn., breastfeeding).

CHANGES IN SERUM BILIRUBIN LEVELS IN THE NEONATE

Creatinine, Serum
RI: 60-140 umol/L (0.06 - 0.14 mmol/L)
Pregnancy : 40-80umol/L (0.04 - 0.08 mmol/L)
Ind: Renal disease
Int: HIGH - Acute or chronic renal insufficiency (urea, K?), urinary tract obstruction, hypertension, chronic glomerulonephritis, diabetic nephropathy, polycystic kidneys, reflux nephropathy, SLE, acute muscle wasting, elderly, toxins, large intake of meat or vit. C, drugs [eg. analgesics, NSAIDs, diuretics, ACE inhibitors, A2RB]
LOW - Pregnancy, chronic muscle wasting
Phys: Creatinine is excreted by filtration through the glomerulus; retention is an indication of glomerular insufficiency. Abnormal results (up or down) may be caused by high blood glucose or bilirubin, or by the drug cefoxitin. Comparison of results between laboratories may not be valid.

Gamma Glutamyl Transferase (Transpeptidase), Serum
[Gamma GT or GGT or SGGT]
RI: Male < 45 U/L
Female < 30 U/L
Ind: Liver disease
A RATIONALE FOR THE ABDOMEN

Int:  GGT>100, ALT<80, ALP>200 - Cholestasis, intra or extrahepatic obstruction, cirrhosis, tumour, abscess, drug or alcohol toxicity, phenytoin overdose.
GGT>100, ALT<80, ALP<200 - Excess alcohol, obesity, diabetes mellitus, fatty liver, hypertriglyceridaemia, obesity, genetic, drugs (eg. barbituates, phenytoin, warfarin, tricyclic antidepressants, benzodiazepines).
GGT>100, ALT>80, ALP<200 - Hepatocellular disease, viral hepatitis, Epstein Barr virus infection, fatty liver, drug or alcohol toxicity.
GGT>100, ALT>80, ALP>200 - Acute hepatitis, chronic active hepatitis, tumour, abscess, cirrhosis, drug or alcohol toxicity.
GGT 40-100 - Pancreatitis, myocardial infarct, fatty liver, obesity, anorexia nervosa, porphyria, some renal diseases, renal carcinoma, idiopathic
GGT >100, AST HIGH - Alcoholic liver disease
Phys: Hepatic, renal and pancreatic enzyme, released with tissue damage.

Hepatitis B, Serum Antigens and Antibodies
RI: Nil
Ind: Suspected hepatitis B, persons engaged in an at risk lifestyle
Int: See graph below

Viral antigens
Hepatitis B surface antigen (HBsAg)
Hepatitis Be antigen (HBeAg)

Viral antibodies
Hepatitis B surface antibody (anti-HBs)
Hepatitis B core antibody (anti-HBc)
Hepatitis Be antibody (anti-HBe)

Phys: For as long as HBsAg is detectable, the patient's blood and other bodily fluids are infectious for hepatitis B. The presence of HBeAg indicates very rapid viral replication. The presence of antiHBs signifies recovery or successful immunisation with seroconversion.
Occult Blood, Faeces
RI: Negative
Ind: Suspected gut bleed
Int: CHEMICAL IMMUNO INTERPRETATION
Positive Negative Upper gastrointestinal bleed (e.g.: oesophageal varices, gastric or duodenal ulcer etc.)
Positive Positive Lower gastrointestinal bleed (e.g.: rectal carcinoma, polyps, ulcerative colitis etc.)
False Positive Negative Certain foods (see Physiology below)
Phys: Chemical test detects haem molecule, while immunochemical test detects only intact Hb, allowing differentiation between upper and lower gastrointestinal tract bleeds. No red meat, cauliflower, broccoli, turnips, bananas or radishes for 3 days before test as these may interfere with chemical test. Three tests on consecutive days are necessary

White Cell Count, Blood [WCC]
(Leucocyte count)
RI: Neonate 10-30 x 10^9/L (10,000-30,000/mm3)
    Infant 6-20 x 10^9/L (6,000-20,000/mm3)
    Child 5-15 x 10^9/L (5,000-15,000/mm3)
    Adult 4-10 x 10^9/L (4,000-10,000/mm3)
Ind: Infection, blood disease
Int: HIGH (Leucocytosis) - Bacterial infection, leukaemias, alcoholic hepatitis, cholecystitis, pregnancy
    LOW (Leucopenia) - Leukaemia, viraemia (e.g. viral hepatitis), autoimmune disease, post splenectomy, elderly