

LEVEL III

ADVANCED HEALTH ASSISTANT TRAINING HANDBOOK (MEDICAL PART)

MEDICAL EDITING

The medical editing is mainly supervised by Dr. Win Myint Than.

CONTRIBUTING PARTNERS

Organizations who have contributed to the development of this handbook include:

- National Health and Education Committee (NHEC)
- Burma Medical Association (BMA)
- Mae Tao Clinic (MTC)
- Back Pack Health Worker Team (BPHWT)
- Karen Department of Health and Welfare
- International Rescue Committee (IRC)

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BACKGROUND HISTORY

Health worker training programs was first implemented since 2000.

- Level I HW or community health worker training was developed under supervision of Dr. Alice Khin in 2010.
- Level II medic training curriculum (CCSDPT curriculum) was developed by Dr. Kate Bruck in September 2010, and TOT training has been carried out six monthly.
- Level III training curriculum development (including theory + clinical) was commenced and carried by joint action among NHEC, BMA, IRC and ethnic health CBOs.

Level III training preparation development took place for two months, including arrangements for structure, accommodation and curriculum.

Level III Curriculum Development Committee was designed by Dr Cynthia Maung. Representatives of partner organizations and attendees of the Health Worker Training (HWT) meeting held on October 15, 2010 at BMA office. Following the HWT meeting, a Committee was formed based on participants from MTC, BMA, BPHWT, and IRC. At the same time, the training curriculum development team was also organized, mostly involving medical personnel from MTC and IRC.

There have been total five meetings concerning curriculum development for Level III.

First of all, review of CCSDPT curriculum (by Dr. Kate) and firstly draft out the Level III curriculum based on it. Afterwards, Level III curriculum outline was validated by all health organizations, aiming for mid-level health workers at global level. (both for duties and curriculum topics). There are 67 additional topics added to CCSDPT curriculum and 13 additional topics to Community Medicine part. Rules and regulations for exam, practical session, trainer and trainers have also been developed and proposed. Timing schedule for part I, II and III of Level III HW training was also set up.

On review of training materials:-

- For Part I (Basic Science), there are 17 major topics
- For Part II (Medicine or Clinical), there are 18 major topics
- For Part III (Community Medicine), there are 14 major topics

Training Schedule

Part I – 1.8 months (Basic science)

Part II – 6 months (Medicine or Clinical)

Part III – 4 months (Community Medicine + Reproductive Health Care + Comprehensive Child Care

Practical I – 4 months (Surgery + Medical + Traumatology) – first 4 months

Practical II – 6 months – second 6 months

Total ----- 22 months

The Level III advanced health assistant trainees should study the following training supportive materials basically to accomplish this course.

1. Level III Advanced Health Assistant Training Handbook
2. Burmese Border Guidelines (BBG 2007)
3. Powerpoint presentation handouts from individual trainers during lecturers.

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COMMON SIGNS AND SYMPTOMS

COMMON SIGNS AND SYMPTOMS OF RESPIRATORY DISEASES

Common Respiratory Symptoms

- Cough
- Sputum
- Blood in sputum
- Chest pain - wheeze, hoarseness
- Shortness of breath
- Fever
- Night sweats

Common Respiratory Signs

- Shortness of breath
- Cyanosis (bluish colour to skin and lips)
- Cough
- Sputum
- Look at the hands- do they have cigarette staining
- Take the pulse- is it very fast?

Look at the chest

- Is the chest wall moving equally on both sides
- Palpate
- Percuss
- Use the stethoscope to listen for breath sounds

Upper Respiratory Tract Infections

URTI – DEFINITION

Upper Respiratory Tract Infections (URTIs) are infections of the upper airways - the ear, nose, throat, trachea and bronchi. Most of these infections are caused by viruses and last for a short time only. The lungs are not affected. If the symptoms are severe and/or last for more than a week, this may be a sign of a more severe bacterial infection or avian flu.

URTI COMMON SIGNS AND SYMPTOMS

- General: fever, headache, swollen neck glands, cough
- Ear: pain, discharge, redness, deafness
- Nose: discharge, facial pain, inflammation
- Throat: sore throat, hoarse voice, loss of voice, enlarged tonsils, pus on tonsils

Mild URTI

- Common cold
- Pharyngitis
- Sinusitis

Moderate URTI

- Tonsillitis
- Croup
- Pertussis

Severe URTI

- Peri tonsillar abscess
- Acute epiglottitis- this is an emergency

LRTI

- Pneumonia
- Chronic Obstructive Pulmonary Disease

DEFINITION OF PNEUMONIA

Pneumonia / Lower Respiratory Tract Infections (LRTIs) are infections affecting the lungs and smaller airways. These can be viral, bacterial, parasitic or fungal infections.

Signs and Symptoms

- Dyspnoea, fast breathing
- Cough, sputum – yellow or green
- Coughing blood (haemoptysis)
- Chest Pain (with cough and deep breaths)
- Inspection: cyanosis, nasal flaring, chest in-drawing, superficial or asymmetric breathing
- Percussion: dullness
- Auscultation: abnormal breath sounds

In addition, patients with pneumonia may have general signs and symptoms of infection.

- Fever, rigors
- Generally unwell, tired
- Tachycardia
- Dehydration
- low blood pressure

Chronic Obstructive Pulmonary Disease

Chronic Obstructive Pulmonary Disease (COPD) is a form of chronic lung disease that causes the narrowing of the airways so ventilation is poor. Smoking is the primary cause of COPD. This term covers many respiratory conditions:

- Chronic bronchitis –inflammation of the bronchi
- Emphysema - damage to the smaller airways and alveoli
- Chronic obstructive airways disease – sometimes caused by allergy and environmental factors

Signs and Symptoms

- Cough with sputum gradually getting worse
- Breathlessness and wheezing on exertion, gradually getting worse
- These symptoms will eventually occur even when the patient is at rest
- Sputum, because the damaged airways create a lot of mucus

COMMON SIGNS AND SYMPTOMS OF CARDIOVASCULAR DISEASE**COMMON SYMPTOMS**

- Chest pain
- Shortness of breath
- Palpitations
- Dizziness
- Ankle swelling

COMMON SIGNS

- Appearance – do they look like they are in pain
- Short of breath
- Cyanosis
- Low blood pressures
- Chest may have crackles at the base of the lungs

SOME DISORDER YOU MIGHT SEE IN THE CLINIC

- Heart Failure
- Stroke
- Rheumatic Fever
- Heart attack –Myocardial infarct

LEFT SIDED HEART FAILURE

Breathing difficulties when exercising, which get progressively worse, until difficulties are experienced even when at rest. Breathing is difficult when lying on the back. The patient uses more pillows to sleep (orthopnea). Dry cough is mainly at night. Crackles (crepitations at lung bases) are present.

RIGHT HEART FAILURE

- Abdominal pain, anorexia, nausea, bloating
- Hepatomegaly (enlarged liver) sometimes painful
- Jugular vein distension
- Lower leg oedema

Stroke

A stroke, also called a cerebral vascular accident (CVA), is the sudden death of cells in a specific area of the brain due to inadequate blood flow. A stroke occurs when blood flow to the brain is interrupted due to haemorrhage (artery bursts- or obstruction (an artery becomes closed by a blood clot (Ischemic Stroke). 80 % are caused by ischemia and 20 % by haemorrhage. The brain tissue beyond that artery is damaged or dies. Brain cells need blood to supply oxygen and nutrients and to remove waste products.

SIGNS OF A STROKE

Depending on the region of the brain affected, a stroke can cause paralysis, loss of vision, speech impairment, memory loss and reduced reasoning ability, coma, or death. The effects of a stroke are determined by how much damage occurs, and which portion of the brain is affected.

Rheumatic Fever**DEFINITION**

Rheumatic fever is an inflammatory disease which sometimes follows a group A Streptococcus pharyngeal infection. It follows pharyngitis / tonsillitis by 2 to 6 weeks (average 20 days). It is most common in children between 5 and 15 years old. Only 2% of people who have a Streptococcus pharyngitis (not treated or not well treated) will develop rheumatic fever.

SIGNS AND SYMPTOMS

Rheumatic Fever affects four sites (joints, heart, central nervous system and skin) and during an attack the patient can have any combinations of these symptoms:

- Polyarthritis
- Chorea
- Heart failure
- Heart murmur
- Erythema marginatum
- Nodules
- Fever, abdominal pain, nose bleeds, arthralgia

Myocardial Infarction –heart attack

DEFINITION

The blood supply to the heart muscle has been cut off by a clot or atheromatous plaque. This results in damage to the heart muscle.

SIGNS AND SYMPTOMS

Symptoms

Central chest pain, lasting >20 min often associated with:

- Nausea
- Sweating
- Dyspnoea
- Palpitation
- Syncope
- Epigastric pain and vomiting

Signs:

- Distress
- Anxiety
- Pulse increased or decreased, BP increased or decreased
- Pallor
- Sweatiness
- There may be signs of heart failure:
 - increased JVP, 3rd heart sound and basal crepitations
 - Pericardial friction rub or peripheral edema

COMMON SIGNS AND SYMPTOMS OF GASTROINTESTINAL DISEASES

SOME COMMON SYMPTOMS

- Diarrhea
- Nausea and vomiting
- Constipation
- Rectal bleeding
- Vomiting blood
- 'heartburn' dyspepsia
- Jaundice

SOME COMMON SIGNS

- Abdominal tenderness
- Jaundice
- Dehydration
- Abdominal mass
- Lymphadenopathy

DISORDERS OF THE GASTROINTESTINAL SYSTEM

Diarrhea is a symptom not a disease.

- Acute watery diarrhea no blood
 - Possible causes- cholera, viral, bacterial, parasitic - giardia
- Acute diarrhea with blood
 - Possible causes- shigella, amoebic dysentery

Hepatitis

Hepatitis is an inflammation of the liver. Several different types of hepatitis virus are known: acute hepatitis is usually caused by hepatitis A, which is spread by the faeco-oral route. Acute hepatitis also occurs in infections like leptospirosis. Non-infectious acute hepatitis can be caused by alcohol intoxication. Hepatitis B virus is a less common cause of acute viral hepatitis. It is spread by blood, body fluids and sexual intercourse. Acute viral hepatitis affects the whole body but mainly the liver. Hepatitis B infection can also cause hepatocellular carcinoma. Anti TB drugs, HIV drugs and drugs for leprosy can cause hepatitis.

SIGNS AND SYMPTOMS

- Jaundice (gets worse for 2 weeks then slowly improves)
- Malaise, mild fever, loss of appetite, nausea and vomiting
- Smooth, tender and slightly enlarged liver
- Dark urine, stools not pale
- Right upper quadrant pain

Acute Cholecystitis

Acute cholecystitis is a bacterial infection of the gall bladder mostly due to obstruction of the gall ducts. It may follow an attack of biliary colic. Cholecystitis can also be due to malnourishment or typhoid fever.

- Pain, tenderness and guarding in right upper quadrant (RUQ)
- Vomiting
- Fever, rigors
- Jaundice

COMMON SIGNS AND SYMPTOMS OF THE URINARY SYSTEM

COMMON SIGNS

- Blood in the urine
- Foul smelling urine
- Urinary stones

COMMON SYMPTOMS

- Frequency passing urine
- Burning when passing urine
- Passing urine often
- Pain when passing urine
- Difficulty passing urine
- Unable to pass urine
- Poor stream of urine
- Pain in the loin (kidney area)
- Pain referred from loin to groin (could be ureteric colic)

When associated with infection:

- Headache
- Nausea
- Vomiting

Common disorders

- Urinary tract infection

Urinary tract infection

DEFINITION

Urinary Tract Infection (UTI)- acute or chronic inflammation of one or more parts of the urinary tract:

- Cystitis- inflammation of the bladder
- Urethritis -inflammation of the urethra
- Prostatitis - inflammation of the prostate gland
- Pyelonephritis -inflammation of the kidney, but other parts of the urinary tract will be affected as well

SOME CAUSES OF UTIS

- Ordinary bacteria, usually E.Coli, can cause acute or chronic UTI
- Tuberculosis bacteria causes chronic UTI
- Sexually Transmitted Infections (STI)
- Urethral catheter
- Obstruction of urinary tract with stones or mass or congenital abnormality

SIGNS AND SYMPTOMS OF CYSTITIS

- Pain or burning when passing urine (Dysuria)
- No fever
- Cloudy urine
- Blood in urine (Haematuria)
- Frequent urination
- Pain and tenderness in the lower abdomen

SIGNS AND SYMPTOMS OF PYELONEPHRITIS INFECTION OF THE KIDNEY

- High fever, chills
- Pain and tenderness in the back or kidney area
- Cloudy urine; blood in urine (haematuria)
- Pain or burning when passing urine (Dysuria)
- Frequent urination
- Sepsis

URINARY STONES SIGNS AND SYMPTOMS

- Severe acute lumbar or pelvic pain; intermittent (renal colic: patient can not lie still and has pain that spreads to pubic area) or constant
- Blood in the urine (haematuria)
- The patient passes stones in the urine
- Signs of secondary infection- fever, chills

COMA

DEFINITION

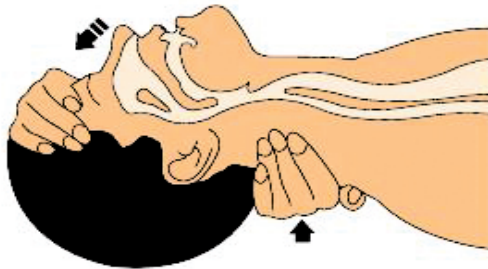
Reduced level of consciousness. There are different degrees of reduced level of consciousness and coma is the most severe.

- Drowsiness: Patient can be easily woken up by talking or touching him.
- Stupor: Patient can be woken up with strong stimulation (e.g. speaking loudly or touching firmly).
- Coma: Patient cannot be woken up.

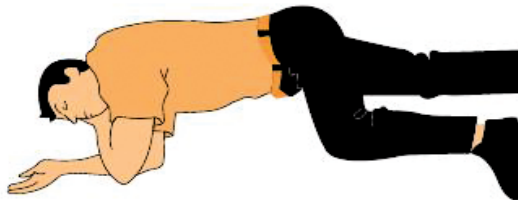
Several definitions and scales are used. In this guideline we use the Glasgow Coma Scale.

EMERGENCY TREATMENT

1) **Clear Airway** The 'chin lift' method is often sufficient to ensure adequate air entry and exit. Be aware of the possibility of neck injury. Handle the patient with care and always keep the neck in an out-stretched position. If available, use a cervical collar and consider that every patient potentially has a neck injury. Check that nothing is obstructing the throat by using your fingers as a hook and removing any foreign body.



2) **Coma Position** Put the patient on his side as shown in the following drawing. One leg is bent at the knee. If the coma is following a trauma, handle the patient with care and keep the spine straight when turning him on his side. This position prevents the patient from swallowing his tongue or drowning in his own vomit.



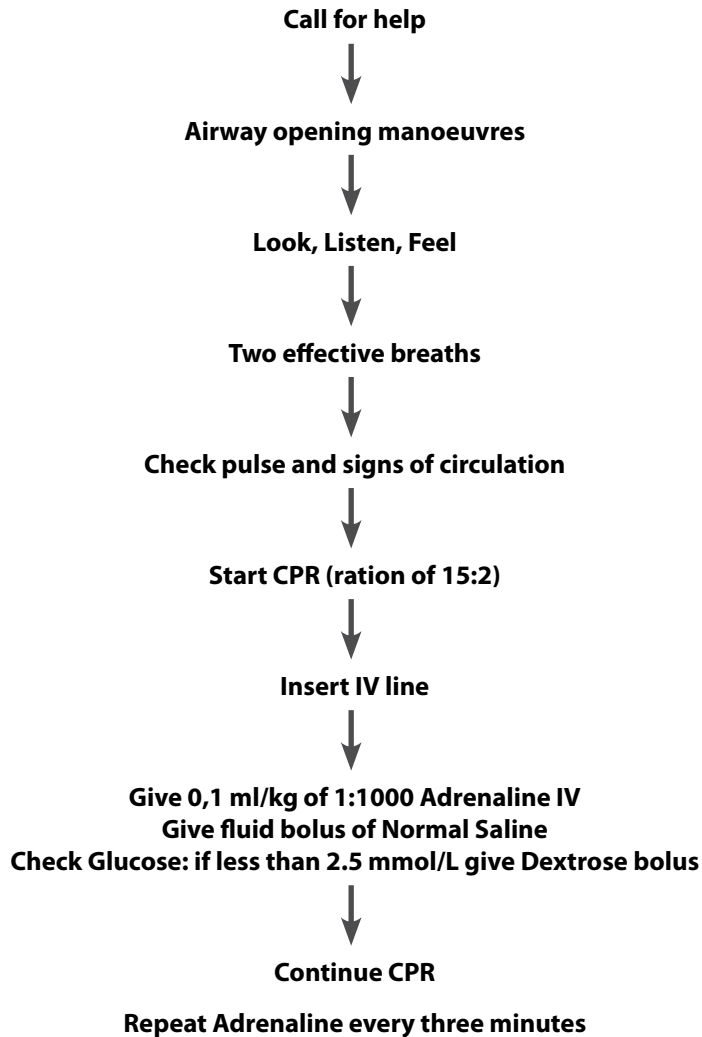
This position may be used only when the patient is breathing normally.

Respiratory rate and pulse must be checked constantly.

If heart or breathing stops, put the patient on his back and start Cardio Pulmonary Resuscitation.

3) **Check vital signs** (pulse, blood pressure, respiratory rate, temperature), blood sugar, malaria smear and haemoglobin/haematocrit. If signs of shock, see shock .

CARDIAC ARREST: CARDIO PULMONARY RESUSCITATION



IF NO SIGNS OF LIFE AFTER 20 MINUTES: STOP

SIGNS AND SYMPTOMS

Ask questions to the family

- What is the past medical history of the patient?
- Which symptoms were there before the coma (fever, headache, vomiting, convulsions)?
- Has any medicine been given?
- Has the patient had an accident? If so, when?
- Has the patient taken any poison, medicine, alcohol?

Examine the patient completely and do not forget to check

- Is the neck soft or stiff?
- Is there a wound or haematoma on the head?
- Neurological exam:
 - Glasgow Coma Scale/ Blantyre Coma Scale.
 - Check the pupils; if they are of different sizes consider cerebral haemorrhage. Refer to hospital.
 - Check that the tonus of the limbs is symmetrical (left/right) and the same in arms and legs (stroke, spine injury).
- Breath: alcohol, smell of fruit (diabetic), smell of urine (uremic coma).
- Skin: cyanosis, jaundice, pallor.

Glasgow Coma Scale	Score	Blantyre Coma Scale (child < 5 year)	Score
• Best Motor response		• Best Motor response	
– Obeying commands	5	– Localises painful stimulus	2
– Localising pain stimulus	4	– Withdraws limb from pain	1
– Flexing	3	– Non-specific or absent response	0
– Extending	2		
– None	1		
• Best Verbal response		• Best Verbal response	
– Oriented	5	– Appropriate cry	2
– Confused	4	– Moan or inappropriate cry	1
– Inappropriate words	3	– None	0
– Incomprehensible sounds	2		
– None	1		
• Eye opening		• Eye movements	
– Spontaneous	4	– Directed	1
– To speech	3	– Not directed	0
– To pain	2		
– None	1		
Total score is between 3 and 14:		Total score is between 0 and 5:	
<ul style="list-style-type: none"> • A score below 5 suggests poor outcome depending on cause, especially in trauma. • A score below 8 indicates severe coma. 		<ul style="list-style-type: none"> • A score below 2 indicates coma. 	

DIAGNOSIS

LOOK FOR A POSSIBLE CAUSE AND TREAT IT

	Possible Cause
Coma with fever	malaria, meningitis, encephalitis, sepsis, or other severe infections
Coma with or without fever	Hypoglycaemia (dextrose <3.8 mmol or 70 mg/100ml) Severe dehydration
Coma without fever	Cranial trauma (accident), poisoning, cerebral haemorrhage

TREATMENT

- Treat the cause.
- If you do not find a cause, or if you find a cause but you do not have the medicine to treat it, refer the patient to hospital.

LONG TERM MANAGEMENT OF COMA

1. Re-position the patient every 2 hours from one side to the other. Show the family how to reposition the patient. **Remind them not to let the patient lie flat on his back.** In that case the tongue might block the airway or vomit may enter the airway.
2. Put in an IV line and urine catheter. Monitor fluid balance (input/output) in order to avoid dehydration.
3. DO NOT use dextrose 5% during the first 48 hours if coma is following a head trauma (sugar can worsen the brain damage) **except** in hypoglycaemic patients.
4. Regularly reassess the patient: check the vital signs every 2 hours.
5. Check coma score on admission and then twice a day.
6. Check dextrose twice a day as the patient cannot eat or drink.
7. Wash the patient all over once a day. Clean the patient whenever urine and/or stools are passed. Wash the affected area and do not just wipe with dry cloth or paper. Help the family to do this.
8. Clean the mouth and moisten lips at least 4 times a day. Vaseline applied on the lips prevents cracking.
9. Clean the eyes with NSS and cotton wool. Apply terramycine eye ointment BID to avoid conjunctivitis, drying up of cornea, and injury. Drying up of cornea can lead to blindness. Close the eyes with a plaster if they stay open.
10. Teach the family how to do massages and perform passive limb movements every 4 hours to maintain muscle tone and prevent contraction. In some clinics 'Handicap International' could help mobilisation.
11. In prolonged coma consider N/G feeding depending on the cause and prognosis. Ask the family not to leave the patient alone.

CONVULSIONS

DEFINITION

Convulsions are **sudden loss of consciousness** with or without cyanosis and **strong movements** of the arms and legs generally lasting for a few minutes. Sometimes the patient also passes urine or bites his tongue.

If your patient regains consciousness immediately and is not disorientated after the attack, or if the patient remains conscious during the crisis, it is not a convulsion.

When the movements stop, the patient may remain unconscious and breathe deeply for up to ½ hour. Return to full consciousness is progressive and the patient may be disoriented, asking the same questions many times (about what happened to him/her, where he/she is etc). In small babies strong arm or leg movements might be absent, but their eyes or angles of the mouth move up.

EMERGENCY TREATMENT

1. Put in **coma position** (lying on left side) and in a quiet safe place to **protect** him against injury.
2. Maintain a **clear upper airway** (open the mouth and clean out secretions and vomit).
3. Give IV 50% dextrose bolus unless hypoglycaemia is excluded.
4. Give **diazepam** (See table below) to stop the convulsions or prevent another crisis: When the patient is moving, it can be easier to give first dose IM or PR.
5. Give **oxygen** and suction if available.

Table: Diazepam Injection 1 vial = 10 mg / 2cc

Weight	Dose IV (0.3 mg/kg)	10 mg / 2cc
<4 kg	1 mg	0.2 cc
4-8 kg	2 mg	0.4 cc
9-15 kg	4 mg	0.8 cc
16-35 kg	7.5 mg	1.5 cc
> 35 kg	10-20 mg	1-2 vial

Give IV injections SLOWLY (max 0.5 cc in 30 seconds).

Diazepam Rectally (PR) or IM

Age/Weight	Dose PR (0.5 mg/kg)	10 mg / 2cc
2weeks - 2 months <4 kg	2.5 mg	0.3 cc
2-<4 months (4-<6kg)	2.5 mg	0.5 cc
4-<12 months (6-<10kg)	5 mg	1 cc
1-<3years (10-<14kg)	6.25 mg	1.25 cc
3-<5years (14-19kg)	7.5 mg	1.5 cc
>5 years	10-20 mg	1-2 vial

Give diazepam rectally:

- Draw up the dose from an ampoule of diazepam into a 1cc syringe
- Base the dose on the weight of the child, where possible
- Remove the needle
- Insert the syringe into the rectum 4 to 5 cm and inject the diazepam solution
- Hold buttocks together for a few minutes

Diazepam IR or IM is NOT diluted. Maximum daily dose: 3 mg/kg

6. **Repeat the dose** after 10 min if the patient still has convulsions. Give a third dose if the convulsions remain after another 10 minutes.
7. If convulsions continue after a third dose give **phenobarbital** IV slowly:
 - 1 ampoule: 200 mg / 2 ml to dilute in 20 cc (10 mg / ml)
 - Dose: Child 15 mg/kg and Adult 10 mg/kg
 - Do not leave phenobarbital in plastic syringes because it will precipitate on its wall.
8. **Refer to Thai hospital** if the patient continues to have fits after phenobarbital injection.

Remember

After several doses of diazepam or phenobarbital, the patient will be asleep and cannot be woken for a while.

DIAGNOSIS:

- Check blood sugar for hypoglycaemia.
- Look for signs of infection (meningitis, malaria, etc).
- Ask for past and recent medical history, previous convulsion episodes, and medication taken.

When looking for causes, the next list could be helpful: **remember AEIOU**

A: Alcohol, **E:** Eclampsia, **I:** Infections, **O:** Organ failure, **U:** Uraemia (= renal failure)

Convulsions with fever	Malaria, meningitis, hyperthermia, encephalitis
Convulsions with or without fever	Hypoglycaemia, severe dehydration, head trauma, amphetamines, alcohol, renal failure (uraemia)
Convulsions in pregnant women	Eclampsia (HBP + oedema + proteinuria), malaria, hypoglycaemia
Repeated convulsions without fever	Brain tumour, cysticercosis
Convulsions without a clear cause	Epilepsy

TREATMENT

Goals of treatment are:

- Stop convulsions quickly.
- Treat fever if present and > 39°C especially in children under 5 as it can be the cause of the convulsions.
- Find and control the underlying cause.
- Prevent complications by protecting the person from injury. Try to prevent a fall. Lay the person on the ground in a safe area. Clear the area of furniture or other sharp objects.

FATIGUE / TIREDNESS / NUMBNESS**DEFINITION**

Fatigue, tiredness and numbness are common symptoms that many of us have experienced at some time in our lives. These symptoms are more common in old age or when lifestyle/work/family life is under/over stressful. When fatigue, tiredness and numbness do not go away with normal measures like sleep, rest and good diet, then they may be symptoms of disease. The problem is they are not very specific to any disease.

SPIT: STORY, PHYSICAL EXAM, INVESTIGATION and TREATMENT, assess the psychological state

STORY - age, cough, weight loss, headache, malaise, difficulty breathing, fever, constipation, diarrhoea, vomiting, menstrual history (check for pregnancy), painful menstruation, muscle and joint pain or weakness, urine quantity and number of times passing urine in the night, peripheral numbness and tingling.

Social history, including smoking and alcohol.

Mental health check: ask directly about feelings of sadness or depression, stress, worries, problems in the family, daily activities and appetite.

PHYSICAL EXAMINATION

Weight, height. Check vital signs (Pulse rate, BP, temperature, respiratory rate), pallor, lymph nodes, pulmonary and cardiac (murmur, irregular rate) auscultation, thyroid, liver (does it feel enlarged, firm, hard) and spleen, any abdominal masses, observe patient walking (foot drop) and sitting.

INVESTIGATION

Urine glucose; thin smear (differential white or red blood cell count), HB or HCT, AFB if indicated; pregnancy test if indicated. In discussion with the doctor and only if indicated: full blood count, urea and electrolytes, liver function tests, thyroid stimulating hormone (TSH), chest x-ray (CXR), malaria smear.

Look for a cause

POSSIBLE CAUSES	SYMPTOMS
Infections (viral, HIV, TB etc)	Enlarged painful lymphnodes, fever
Anaemia (iron deficiency, thalassaemia)	Pallor (enlarged spleen)
Hypothyroidism	Lethargy, constipation, stiffness, weight gain
Pregnancy	Tiredness, nausea, dizziness
Diabetes mellitus	Passing urine very often, weight loss, thirsty
Lung disease	Difficulty in breathing
Heart problems (heart failure, valvular heart disease, pericardial disease, arrhythmias)	Difficulty in breathing, slow or fast pulse rate, oedema
Stomach and intestinal problems.	Diarrhoea, vomiting, nausea, epigastric pain
Cancer	Weight loss, enlarged lymph-nodes, pallor
Vitamin B1 deficiency (especially in pregnancy)	Numbness of limbs
Psychological problems	Depression, anxiety

TREATMENT

Treat the cause if you can find it. If you cannot find a cause, the physical examination is normal and you cannot find any psychological problems: reassure the patient and reassess in 2 weeks time. Advise the patient to have a good sleep, rest and maintain a good diet. If you suspect a mental health problem explain that such problems can cause fatigue and tiredness.

PREVENTION

Tell your patient to avoid stress, have a healthy diet, and take enough rest.

FEVER

DEFINITION

Fever means increase in body temperature. Axillary temperature more than 37.5°C or 38°C rectally is considered as fever. Fever is a common symptom usually related to viral, bacterial or parasitic infection.

SIGNS AND SYMPTOMS ASSOCIATED WITH FEVER

- Chills: feeling cold even though body temperature is high.

- Rigor: a severe chill with chattering of the teeth and severe shivering.

SIGNS OF SERIOUS ILLNESS

- Sepsis and shock.
- Systemic illness: meningism, seizures, rigid abdomen, rash etc.

Special general condition: pregnancy, malnutrition, immune suppression, splenectomy, chronic disease, very young or very old.

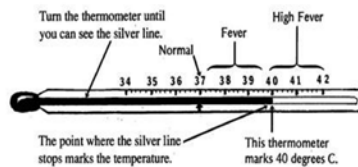
DIAGNOSIS

Clean the thermometer well with soap and water or alcohol. Shake it until it reads less than 36 degrees. Put the thermometer

- under the tongue keeping the mouth shut
- in the armpit if there is danger of biting the thermometer
- carefully, in the anus of a small child (wet or grease it first)

Leave it there for 3 or 4 minutes. Read it. (An armpit temperature will read a little lower than a mouth reading; in the anus it will read a little higher.) Wash the thermometer well with soap and water. Record in the notes if you used it in the anus.

How to read the thermometer (using one marked in degrees centigrade—°C):



TREATMENT

Look for signs of serious illness and provide appropriate (e.g. antibiotic or anti-malarial) treatment

Treat fever, when temperature is over 37.5°C in Children and over 38°C in Adults:

- Get the patient undressed (no extra clothes, no blanket, etc).
- Wet the patient's skin with tepid (cool not cold) sponging (put water on the whole body).
- Give paracetamol

Adults	500mg - 1 gram QID (max 4 gram daily)
Children	15 mg/kg (max 2 gram daily).
- Keep the patient well hydrated (drinking a lot, continuing to breast feed).

Note: For patients with fever who are comatose and cannot swallow, it is possible to give paracetamol PR or IM.

Never give aspirin to children under 12 years

TRY TO FIND AND TREAT THE CAUSE OF THE FEVER

SYMPTOMS	POSSIBLE DISEASE
Chills, headache, sweating, consciousness disorders	Malaria
Headache, neurological signs, neck stiffness	Meningitis
Respiratory signs	ARI
Urinary signs	Pyelonephritis
Diarrhoea with mucus and blood	Bacterial diarrhoea
Abscess, infected skin lesions	Skin infection
Shock, chills	Septicaemia
Painful big liver	Liver abscess
Prolonged high fever	Typhoid fever
Eschar, lymphadenopathy, rash	Scrub typhus
Prolonged fever with cough and weight loss	TB
Isolated fever, body pain, running nose	Viral Infections, common cold
Others	Cancer, HIV/AIDS

If there are no signs of serious illness and/or you cannot find an obvious diagnosis, you can send the patient home on paracetamol treatment with advice to drink plenty of fluids. Tell your patients that they should come back to your clinic if there is no improvement within 48 hours. If you think the patient cannot come back (e.g. transportation problem, poor understanding of disease) keep your patient in IPD for observation.

Do not forget to re-examine the patient after receiving the results of a blood smear, especially when it is negative.

SPECIAL CONDITIONS

1. FEVER IN PREGNANT WOMEN

Fever is always serious in pregnant women. Fever may provoke abortion or premature delivery.

Listen to the fetal heart beat and where there is fetal distress (FHB > 160 beats per minute) give the woman paracetamol, adequate fluid intake and appropriate treatment.

The most common causes are:

- Malaria: Check malaria smear.
- Urinary and pelvic infections: check urine, do obstetric and gynaecological examination.
- Respiratory infection: ask for symptoms, check RR, lungs.

If no cause can be found and the examination is normal: treat the fever with paracetamol and see the patient again after 1 day.

2. FEVER IN CHILDREN <1 Year

New-borns and Babies < 2 months

Fever is always serious in new-borns and children <2 months

- Treat in IPD. Temperature should be checked rectally.
- In case of Malaria treat with appropriate anti-malarials.
- In case of infection (e.g. respiratory infections, meningitis), new-borns can develop neonatal sepsis (infection of the whole body) within a few hours. **Refer to IPD and follow Neonatal Guidelines.**

Danger Signs in Infants

- Unable to breast feed
- Hypothermia (temp less than 36 °C)
- Convulsions
- Drowsiness or unconsciousness
- Respiratory rate less than 20/min or greater than 60/min
- Bulging fontanel
- Nasal flaring
- Grunting
- Severe chest indrawing
- Central cyanosis
- Offensive / smelly wet umbilical cord
- Skin pustules.

Children above 2 months

If no danger signs, treat in OPD, but always consider:

- Malaria: check MS
- Otitis: check ear drums
- Respiratory infection: increased RR, chest indrawing, nose flaring, noisy breathing, cyanosis, cough
- Meningitis: vomiting, sleepy, convulsions, bulging fontanel, sometimes neck stiffness
- Urinary infection: Check urine and do microscopic examination (if possible)
- Diarrhoea and signs of dehydration
- Skin infections: Get the child undressed and look at whole body
- Joint or bone infections: Move the patient's arms and legs, touch the joints: look for swollen and warm joints.

FEVER IS THE MOST COMMON CAUSE OF CONVULSIONS IN CHILDREN UNDER 5 YEARS!

3. HYPOTHERMIA**DEFINITION**

Temperature less than 35.5 °C.

Hypothermia can happen in:

- Sepsis
- Neonates, especially preterm
- Severely malnourished children
- Hypoglycaemia
- Diabetes mellitus
- Alcohol abuse

TREATMENT

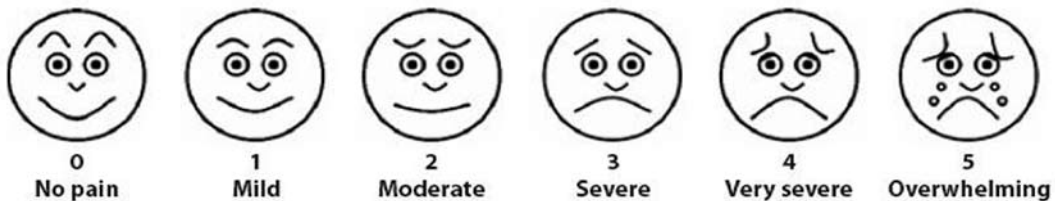
Treat the cause. Use kangaroo method. Keep patients warm with a hat (for neonates) and blankets.

PAIN**DEFINITION**

Pain is an unpleasant subjective sensation that may be a sign of injury. Pain can also be a symptom of a disease. Pain is a reason for a patient to come to the clinic. Your patient complains of pain – but pain is not a diagnosis. Try to find the disease (history, clinical examination) and **always** treat the pain. Post operative pain relief is very important for better recovery of the patient.

Take the history of the pain (ask the pain questions)

TIME:	When did the pain start?
ONSET:	How did it start? (Sudden or slowly increasing)
DURATION:	For how long: acute or chronic
QUALITY:	What kind of pain? (Words commonly used for pain include: sharp, burning, stinging, intense, shooting, dull, steady, aching, radiating, pricking, pressing, etc. If the patient has these words to choose from, he or she can pick out the ones that apply.)
ASSOCIATION:	What makes it better/worse? What time of day is the worst?
LOCATION:	Where exactly is the pain? Does it radiate to anywhere else?
SYMPTOMS:	What symptoms are associated with the pain? (fever, cough, frequent urine, diarrhoea, constipation, vomiting)
INTENSITY:	How severe is the pain? use a pain scale (0 = no pain and 10 = the most severe pain possible). For children you can use the pain scale pictures below.



Examine the patient. Patients with severe pain might need painkillers before examination. Check especially the area where the pain seems to be localised: **Look, Listen, Feel**.

TREATMENT

- Treat the cause if you find it.
- If you do not find a cause of pain and the pain is severe and recurrent, admit to IPD. Give pain relief and review the patient regularly.

Treatment ladder of pain relief

Step 1	Step 2	Step 3	Step 4
Paracetamol, ASA Amitriptyline (for nerve pain)	Ibuprofen Indomethacin	Codeine Tramadol	Pentazocine (IM,SC,IV)

- Use oral medication when possible.
- Combination of painkillers is better than increasing the dose of one medicine. E.g. combining paracetamol or NSAID with stronger medication (tramadol or codeine) provides better pain relief than giving each drug alone.
- Give painkillers at regular times, rather than on patient request. This is very important in post-operative pain management.

Treatment examples

- Moderate headache, muscle, joint or bone pain: **paracetamol or aspirin (ASA)**. If moderate muscle or joint pain does not improve with ASA, start anti-inflammatory drugs like **ibuprofen or indomethacin** if not contraindicated.

Do not give ASA in children below 12 years.

- **Amitriptyline** (high doses are used for treatment of depression) could be used for tingling pain in feet, leg or arms (commonly from diabetes mellitus or trauma) and for prophylaxis of migraine headache.
- For moderate-severe pain you can use **codeine** or **codeine-paracetamol**. If codeine is not enough, you can start **tramadol**.
- For very severe pain give **pentazocine**. Always find a diagnosis for a patient with severe pain. Relieving pain with painkiller treatment is not enough.
- Since 2006 you cannot order pentazocine in Thailand. Discuss with the doctor what pain medication is available in your clinic.

Note:

- Pentazocine can depress the respiratory system. Take extreme care using this drug in patients with existing respiratory problem or hypovolemic patients (e.g. land mine injury).
- Never exceed the maximum recommended dose of painkillers.

ADDITIONAL THERAPY

- Pain may be accompanied with other symptoms such as nausea or anxiety. Pain treatment includes management of the side effects of pain.
Medication to treat nausea: **metoclopramide** and **chlorpheniramine**.
Medication to treat anxiety: **diazepam**.
- Do not give ASA, Ibuprofen or Indomethacin for epigastric pain. These medicines worsen gastritis and peptic ulcer disease. If you do decide to treat a patient with epigastric pain with one of these painkillers, protect the stomach with H2 blockers (cimetidine, ranitidine-donation) or omeprazole.
- For patients with very severe diseases and for those who are dying, pain medication alone is usually not enough. As a health worker you should keep the patient as comfortable as possible – not just physically. See palliative care chapter .
- Corticosteroids (e.g. prednisolone) may have some pain relieving effects and reduce anorexia in palliative care patients but have many side effects. Do not start corticosteroids without discussing with the doctor.

Acute abdominal pain**DEFINITION**

The patient has one or more of the following symptoms or signs: abdominal pain, vomiting, fever, diarrhoea or constipation, abdominal tenderness and abdominal distension. Shock may follow acute abdominal pain. Good history taking and examination are essential to diagnose the correct disease. Some diseases require immediate surgery: organ rupture (e.g. ectopic pregnancy, aneurysm aorta, splenic rupture), peritonitis (e.g. perforation of stomach, intestine or gall bladder).

COMMON CAUSES



HISTORY TAKING

- Where
- Spreading or not
- If yes, where to
- What kind of pain
- Cramps, burning pain like a needle prick, colic
- When
- For how long? Chronic pain or not
- Periodicity (Day, month, year)
- Continuous pain or not
- In which occasion does the pain increase or decrease
- Other symptoms
- Nausea, vomiting, loss of appetite, dysphagia (difficulty in swallowing food and water)
- Loss of weight, fever
- Diarrhea, constipation, worms
- Jaundice, ascites
- Last menstruation; menstrual history: regular or not; how many days/cycle
- Dysuria

CLINICAL EXAMINATION

Inspection

- Scars
- Jaundice
- Ascites
- Hernia
- Abdominal respiratory movements
- Dilated veins

Palpation:

- Painful or not
- Soft belly or not (any guarding? any rigidity?)
- Splenomegaly
- Hepatomegaly
- Abnormal mass
- Big kidneys
- Appendicitis point

Percussion:

- Painful or not
- Dullness or hyper-resonance
- Ascites

Auscultation:

- Bowel sound (frequency and character of bowel sound- normal frequency 5 - 34 times per minute);

Rectal examination - may be necessary?**Gynaecological examination - may be necessary?**

Abdominal pain can be caused by surgical and non-surgical problems.

Use the following as a guide:

1. Hard abdomen with moderate to severe pain

It usually represents surgical causes like peritonitis, appendicitis, cholecystitis, intestinal perforation/obstruction, ectopic pregnancy rupture. Renal stones, incarcerated hernia and cholangitis might also need an operation.

TREATMENT

- Refer the patient to the hospital.
- Give nothing to eat or drink.
- If you cannot find a car and you have to wait one night, start IV fluids and antibiotics:
1st choice: IV ampicillin + IV gentamicin + IV/PO metronidazole
2nd choice: IV chloramphenicol + IV gentamicin.

2. Soft abdomen with moderate pain

It usually represents nonsurgical causes like pyelonephritis, worms, painful menstruation, PID, peptic ulcer (without perforation), gynaecological or obstetrical problems, hepatitis.

TREATMENT according to cause.

Gastric pain

The stomach mucosa is usually able to resist the acidity of the gastric fluid. In case of hyper-acidity you may have:

- Gastritis: inflammation of the stomach mucosa due to the hyper-acidity of the gastric fluid.
- Ulcer: destruction of the mucosa giving a wound with possible vessel destruction, which may give hematemesis and/or melena, with possible perforation of the wall which cause an abdominal surgical emergency: peritonitis. Chronic irritation of the mucosa may change the cells and result in cancer.

The oesophagus and the duodenum (initial part of the small intestine) have mucosa which is unable to resist against hyper-acidity.

- If hyper acidity:
 - Inflammation or ulcer of the duodenal mucosa;
 - If regurgitation or frequent vomiting, inflammation of the mucosa of the oesophagus.

	Regurgitation	Gastritis	Ulcer
Where	Epigastric area	• Best Motor response	
Spread	Behind the sternal bone up to the throat +++	Do not spread	
Type of Pain	More often after meals or anytime	Burning	Cramps
When	Flexions +++ Bending and lying down	After eating +++ Before eating sometimes, e.g. DU	
Factors increasing Pain		Chilly, spicy food, alcohol, deep fries, coca, coffee, tea, smoking, tomatoes, cucumbers, lemon.. Medicines: ASA, Indomethacine..	
Factor decreasing Pain		Pain decreases immediately after eating some food +++ for duodenal ulcer but food increases pain of gastric ulcer;	
How long	Few seconds to few minutes; (if esophagitis, will take longer);	– For 1/2 to 2 - 3 hours	

MANAGEMENT

Advice:

- To avoid chilly, spicy food, tomatoes cumpers, lemon, oranges, alcohol coca, coffee, tea, smoking, chewing tobacco, taking some medicines (ASA, Indomethacine, prednisolone, dexamethazone, etc.)
- To try to take sweet milk or carbohydrate, e.g. rice.
- To eat regularly a little at a time in a quite atmosphere.

ALU (Aluminium tablets)

- "One to two TID" is the official dose but in practice you have to give it after eating (just after or up to 1/2 hour after) or when the pain starts again.
- Triple therapy for PUD as outlined in the BBG

Pancreatic pain

PANCREATITIS

Inflammation of the pancreas could be acute or chronic.

- Acute pancreatitis: infection with necrosis and haemorrhage of the pancreatic tissue. High fever, nausea, vomiting, sudden severe abdominal pain radiated to the back.
- Chronic pancreatitis: chronic inflammation of the pancreatic tissue causing abdominal pain, with loss of weight general weakness, chronic diarrhoea, jaundice...

How long does it last? It could be a very severe pain for a few hours.

Associated signs:

- Jaundice
- Vomiting with bile
- Hepatomegaly with regurgitation to the jugular (signs of cardiac deficiency) increased JVP.

CHARACTERISTICS OF THE PANCREATIC PAIN

- Where? Epigastric or peri-umbilical areas? More often on the left side of these areas. Sometimes left hypochondria.
- Spreading to the back+++
- Kind of pain - Often like cramps severe abdominal pain;
- When? Occurs at any time without periodicity.
- Factors increasing the pain: after drinking alcohol or taking too much food.
- Factors decreasing the pain: Ante-flexion +++
- Strong pressure on the epigastric area.
- How long does it last? Few hours? Days?

Colic pain

CHARACTERISTICS OF A COLIC PAIN

- Where?
 - Epigastric area or both inguinal areas;
 - Periumbilical - small intestine;
 - Lower abdomen - large intestine.
- Kind of pain? Cramps starting suddenly and giving a colicky pain by spreading along the colon (colic).
- Factors decreasing the pain: emission of stools or winds after a colic.
- How long does it last? From a few minutes to a few hours.
- Associated signs:
 - Abdominal noises
 - Diarrhea.

Other abdominal pains

Other pains could be felt in the abdominal cavity, they are especially related to:

- Urinary system - See lesson on "U.T.I and kidney stone"
- Genital system - Painful menstruations.
 - Pain related to infectious processes; abnormal pregnancies (See these lessons)
- Surgical emergencies.

Liver pain

CHARACTERISTICS OF A LIVER PAIN

- Where? Right hypochondria but sometimes in epigastric area.
- Kind of pain? Liver pain is continuous. May be vague deep-seated pain or severe. Liver pain associated with gallbladder problems (stones): cramp, severe pain.
- Spread
 - Spreading to the right shoulder or right scapula.
 - Spreading to the back.
- When? More often after eating fatty food.
- Factors increasing the pain: no special factors induce the pain but the pain increases with deep inspiration.
- Palpation and percussion may be painful.

Joint Pain

DIFFERENT TYPES OF JOINT PAIN

<p>Arthritis due to infection</p> <p>Inflammation of the synovial membrane that becomes thicker and secretes more synovial fluid.</p> <p>Signs of Arthritis</p> <ul style="list-style-type: none"> • The joint is very painful. • The pain is more in the night, very often in the second part of the night (it awakes the patient, and is maximum when he wakes up). He feels better when he rests. • The joint is swollen, soft, red and hot. • Very often fever. <p>Main causes</p> <ul style="list-style-type: none"> • Infection + + + (TB) • Acute rheumatic fever + + • Trauma • Infection around the joint that spreads to the joint (e.g., myositis) • Some general diseases. <p>Treatment of Arthritis</p> <p>1. Bacterial infection</p> <ul style="list-style-type: none"> • Immobilization of the joint • ASA against inflammation and pain • Antibiotics: <ul style="list-style-type: none"> – Ampicillin (200 mg/kg/day) x 2-3 weeks (4 weeks if infection of the hip) + Gentamycin (3-6mg/ kg/ day) x 1 wk.; – Give IV; change to tablets when there is real improvement. Remark: If TB, give a TB treatment. <p>2. If acute rheumatic fever:</p> <ul style="list-style-type: none"> • PPF (IM) 100,000 gm/kg/day x 10 days • add prednisolone 2mg/ kg/day for 3-5 days, then decrease in 7 to 10 days. Only for carditis patient. • Then prevention (because you may have the disease again): Benzathine Penicillin IM: <ul style="list-style-type: none"> – If < 15 years 1 to 2 million unit every 15 days – If > 15 years 2 - 4 millions unit every 15 days, during at least 6 months. 	<p>Osteoarthritis</p> <p>Chronic disease characterized by the destruction of the cartilage and over growth of bone. There is no inflammation. There is not too much synovial fluid in the joint.</p> <p>Signs of Osteoarthritis</p> <ul style="list-style-type: none"> • Pain worsened by exercise and relieved by rest. The pain is less intense than in arthritis; remains day and night. It doesn't increase during night. If patient rests for a long time, moving the joint again is difficult. • The joint is irregular and hard, swelling (because of the bone deformation not due to liquid). • The joint is not red, not warm. <p>Main causes</p> <ul style="list-style-type: none"> • It's very often because of old age <p>Treatment of Osteoarthritis</p> <p>No treatment, only analgesic (ASA, Para.).</p> <ul style="list-style-type: none"> • Lose weight if overweight • Walking with aid of stick may help • Hot compresses.
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Headache

INTRODUCTION

Almost any disturbance of a body function may cause headache. But headache may be also the symptom of a severe disease. Headache could mean nothing or it could be a very significant symptom to establish your diagnosis. That's the reason why the clinical examination of this patient must be complete to avoid misdiagnosing a severe disease like Malaria, Meningitis, etc. Headache can be defined as "diffuse pain in various portions of the head". But headache can be localized and occipital neuralgia is confined to nerve distribution.

How to examine somebody with headache?

HISTORY TAKING

The history has to be precise on all characteristics of this headache. Headache may be:

- the main symptom or combined with other symptoms.
- acute or chronic.

If acute headache, ask for other symptoms:

- Fever
- Neurological disorders: convulsions, strange behaviour
- Vomiting
- Eye problems: photophobia
- Sinus, throat or ear pain
- Toothache
- Trauma
- Intoxication: alcohol, drugs, medicines.

If chronic headache

- For how long?
- Frequency? (every day, week, month. . .)
- Same characteristics?
- Other symptoms?

Characteristics of the headache

* Where?

- Frontal (front)

- Temporal (side)
- Occipital (back)
- Confined to one particular area (only one side of the head, immediately over one eye, behind one ear.

[If chronic headache - check is it always in the same area?]

*** What kind of pain?**

- Slight to unbearable
- Throbbing pain (pain with pulse)
- Pressure pain as if it will burst
- Penetrating pain

*** When does it occur?**

- In/after special occasions: reading, drinking, smoking, during menstruation, stress, over work.
- How long does it last?
- Is it continuous or intermittent?
- Does it increase gradually during the day / or start suddenly?
- Are there factors increasing the pain? (special activities, special occasions, other symptoms)
- Are there factors decreasing the pain? (analgesics, rest, eye closed, quiet atmosphere)
- Trauma or injury to head.

CLINICAL EXAMINATION:

It should be complete, including all vital signs and at least:

- Neurological examination + + +
- Eye examination
- ENT examination.

Inspection:

- Behaviour: normal or not? Agitation? Sleepy?
- Head trauma: Injury? Hematoma? Oedema?
- Eye aspect: Shiny? Red? Pupil size?
- Jaundice, anemia, cyanosis
- Dehydration

Neurological examination:

- Ability to answer simple questions (confusion or not?)
- Neck stiffness
- Movements (power, coordination)
- Sensation (superficial, deep)
- Reflexes (normal, symmetric)
- Hearing, balance
- Visual troubles:
 - Eye aspect
 - Visual fields
 - Double sight
 - White spots, blindness
 - Eye movements
 - Pupil size and reaction to light.

ENT examination:

- Ear: hear well or not? Tympanic membrane
- Lymph nodes
- Nose: any discharge (epistaxis, pus)
- Sinus: particular pain
- Throat: Tonsils
 - Dysphagia
 - Teeth
 - Lymph nodes

Complete examination by:

- Chest examination: lungs and heart (regular, cardiac murmur)
- Abdominal examination: pain, liver and spleen size.

You may request laboratory investigation.

MAIN CAUSES OF HEADACHE

A. Acute headache

- Acute infection:
 - Malaria + + +
 - Meningitis + +
 - Sinus
 - Ear
 - Nose
 - Throat
 - Teeth
 - Eye
 - Viral diseases +
 - Typhoid fever

- HBP, eclampsia
- Trauma
- Intoxication with alcohol, drugs, tobacco
- Side effects of medicine like Quinine, Atropine, Histamine.
- Psychological diseases: nervous tension, epilepsy.

B. Chronic headache

- Eye problems: sight + + +
- Chronic infection of ENT system + + +
- HBP (high blood pressure) + +
- Other diseases:
 - Neurological diseases +: migraine, epilepsy, tumour
 - Heart diseases
 - Diabetes
 - Gallbladder problems
 - Rheumatism.

CARDIOVASCULAR DISORDERS

Hypertension

DEFINITION

Hypertension, or high blood pressure (HBP), is an increase of systolic and/or diastolic Blood Pressure (BP) more than the normal level for the population. In general hypertension is defined as a systolic blood pressure (SBP) equal to or greater than 140 mm Hg and/or a diastolic blood pressure (DBP) equal to or greater than 90 mm Hg. Hypertension is a risk factor for stroke and renal failure.

The variation in pressure in the left ventricles (blue line) and the aorta (red line) over two cardiac cycles ("heart beats"), showing the definitions of systolic and diastolic pressure.

Reminder on taking a blood pressure

The patient should sit quietly for at least 5 minutes before measuring the BP (in the sitting position). Measure the BP always on the same arm for the same patient (write on the chart which arm you use). Traditionally, it should be the right side. Measure the BP to the nearest 2mmHg. Do not approximate measurements so that all readings end 0 or 5.

How to take a blood pressure reading

Using a sphygmomanometer and a stethoscope

A sphygmomanometer is a device for measuring blood pressure. It includes an inflatable cuff, inflating bulb, and a gauge showing the blood pressure. The stethoscope has 2 earpieces, tubing, and a diaphragm (flat disk at the end). It is used for listening to sounds from the body.

- The arm should be level with the heart.
- Put the cuff about 1 inch (2.5 cm) above the elbow. Wrap the cuff snugly around the arm. The blood pressure reading may not be correct if the cuff is too loose.
- Put the earpieces in your ears.
- Using your middle (long) and index (pointer) fingers, gently feel for the pulse in the bend of the elbow. This is the brachial artery. You will feel the pulse beating when you find it. Do not use your thumb to feel for the pulse because your thumb has a pulse of its own.
- Put the diaphragm of the stethoscope over the brachial artery pulse. Listen for the heartbeat.
- Tighten the screw on the bulb and quickly squeeze and pump the bulb. This will cause the cuff to tighten.
- Keep squeezing the bulb until the scale on the gauge reads about 160. Or, until the gauge reads at least 10 points higher than when you last hear the heartbeat.
- Slowly loosen the screw to let air escape from the cuff. Let the gauge fall about 5 points a second. Carefully look at the gauge and listen to the sounds. Remember the number on the gauge where you first heard the thumping sound.
- Continue to listen and read the gauge at the point where the sound stops.
- The number of the first sound is the systolic (top number) pressure.

- The second number is the diastolic (bottom number) pressure.
- Let the air out of the cuff.
- Write down the BP, the date, the time, and which arm was used to take the BP.

Important note on measuring blood pressure

- The patient should sit quietly for at least 5 minutes before measuring the BP (in the sitting position).
- Measure the BP always on the same arm for the same patient (write on the chart which arm you use).
- Traditionally, it should be the right side.
- Measure the BP to the nearest 2mmHg.
- Do not approximate measurements so that all readings end 0 or 5.
- BP varies with age, time of the day and physical activity. Anxiety, pain and an unfamiliar environment can also cause a temporary rise in BP. Never diagnose HBP if you have measured BP only once and the patient has no symptoms.

SIGNS AND SYMPTOMS

Hypertension could cause headache, dizziness or fatigue, but if there are no complications, most patients have no symptoms. The diagnosis is usually made during a routine examination. It is recommended that healthy adults should have their BP checked every 3 years.

Causes of Hypertension

Most of the time (95%) the cause of HBP is unknown. It is then called 'Essential Hypertension'. Only rarely (5%) can a cause be found. This is called 'Secondary Hypertension'.

Causes of secondary hypertension

Those causes include:

- Alcohol consumption and smoking.
- Pregnancy (pre-eclampsia)*
- Kidney diseases
- Diseases of the adrenal gland or other glands.
- Obesity

*Remark: pre-eclampsia is a very severe condition in pregnant women with HBP near the end of pregnancy. This condition is very different from essential hypertension and treatment is also different.

Check medicines and drugs:

- Prednisolone
- Contraceptive pill, amphetamines (YaBa)
- Pain and anxiety.
- Congenital heart disease.
- Non-steroidal anti-inflammatory drugs
- Salbutamol

LONG TERM MANAGEMENT OF HYPERTENSION

Lifestyle changes

- If overweight weight reduction is recommended
- Regular aerobic exercise (e.g., walking)
- Reducing dietary sugar intake
- Reducing sodium intake in the diet
- Stop smoking
- Stop consuming alcohol
- Reduce stress- relaxation exercises

Evaluate the person with high blood pressure

- Take a careful history
- Perform a thorough examination
- Ensure you have accurate blood pressure measurements.
- Look a risk factors and see if these are modifiable

INVESTIGATIONS

Investigations help to decide what the cardiovascular risk is, diagnose secondary HBP and identify complications. All patients should have a urine dipstick for blood, protein and glucose. If positive, discuss with the doctor. If you suspect complications or secondary HBP, take a blood sample for plasma creatinine, BUN, and electrolytes, and plasma cholesterol. If you suspect secondary HBP patients may need hospital investigations to find and treat the cause.

THERAPY

According to the BBG Chapter 8, Table 2 gives guidelines on how to choose which drug to use. Tables 1 and 3 list the medication that can be used to treat hypertension. (Page 42-44)

When starting a patient on medication:

- They must understand that HBP cannot be cured and that medication (as well as life style treatment) should be taken all the time for life.
- They should have regular follow up and check BP for life

For non-emergency situations, start with one medication only, give minimum dose and remember that most medication takes 4-8 weeks to show maximum effect. Increase the level of treatment after 2-3 months if BP does not come down.

Monitor regularly for side effects. Tell the patient to return to the clinic if there are side effects and not simply stop taking the medication. If no side effects of the drug, go up to maximum dose before changing medication or adding one more. It can be dangerous to stop medication suddenly so patient must first discuss with the clinic if they want to stop taking medication, even if they have side effects.

MANAGEMENT OF A HYPERTENSIVE EMERGENCY

Hypertensive Emergency

BP above 200/120 with 1 or more of the following signs:

- Severe headache
- Blurring of vision
- Epistaxis (bleeding from nose)
- Oedema
- Dyspnoea
- Paresis/ paralysis
- Signs of encephalopathy- headache, focal CNS signs, seizures coma

Very important points

Most patients can be managed with oral therapy except for those with encephalopathy. The aim is for controlled reduction in blood pressure over days not hours. Avoid sudden drop in BP as there is a risk of stroke, blindness, acute kidney failure, cardiac arrest.

Treatment for BP 200/120mmHg

Admit to IPD for absolute bed rest. Give furosemide 20-80 mg PO stat and repeat PRN. Monitor vital signs and urine output every hour. Give hydrochlorothiazide, propranolol and/or enalapril PO.

In the first 24 hours the DBP should be down to about 120mmHg. Over the next 2 days the DBP should be < 110mmHg. Over the next 2-4 days the diastolic BP should be <100mmHg.

Discharge the patient on medication when BP is less than or equal to 160/100 for 2 days; monitor BP daily for one week. Continue frequent follow up for 2 to 3 months.

Treatment of BP 200/120 mmHg or higher and the following;

- Symptoms of CNS and heart disorder (malignant HBP)
- Nausea and vomiting
- Headache
- Confusion
- Restlessness
- Convulsion, coma
- Vision problems
- Pulmonary oedema
- Acute kidney failure

Treatment of BP 200/120 mmHg or higher and signs of encephalopathy

Admit to IPD and consult doctor. Closely monitor vital signs, Glasgow Coma Scale and urine output. Try to reduce DBP to about 110mmHg with IV drugs

- Furosemide 40-80 mg IV
- Hydralazine: 5 mg IV STAT, then every 20-30 minutes until DBP around 110 mmHg. Maximum dose 20 mg.

Stop IV treatment when diastolic 110mmHg, start oral drugs. As soon as the patient can eat, start oral treatment. Discharge the patient on medication when BP is less than or equal to 160/100 for 2 days; monitor BP daily for one week. Continue frequent follow-up for 2 to 3 months.

COMPLICATIONS OF HYPERTENSION

- Blood vessels:
 - pain in the legs when walking
 - Ischemic heart disease (IHD)
 - Central Nervous System:
 - Stroke is a common complication of HBP and may be due to cerebral haemorrhage or cerebral infarction.

Transient ischemic attacks and subarachnoid haemorrhage are more common in hypertensive patients. Hypertensive encephalopathy is a rare condition of very high blood pressure and neurological symptoms including temporary loss of speech or vision, numbness, confusion, convulsions and loss of consciousness. All of these can be reversed if the BP is properly controlled.

- Eyes:
 - There is damage to the retina which becomes more severe if the HBP is more severe.
 - This leads to bad eyesight but blindness is rare.
- Heart:
 - There is a higher incidence of heart disease associated with HBP mainly because of coronary artery disease.
 - HBP puts a lot of pressure on the heart and may lead to left ventricular hypertrophy.
 - Severe hypertension can cause left heart failure.
 - Atrial fibrillation is common.
- Kidneys:
 - Kidney disease can cause HBP but chronic kidney failure can also be the result of long standing hypertension.
- Malignant hypertension:
 - This is a condition of very high blood pressure with rapidly progressive complications as described above.

ANTIHYPERTENSIVE DRUGS

Diuretics

Hydrochlorothiazide 12.5 mg OD (max 50 mg OD)

- Contra indication: gout, pregnancy, severe renal or liver failure.
- Side effects: hypokalemia, high glucose, Postural hypotension

Furosemide 40 mg OD, no max dose

- Contra indication: severe liver failure
- Side effects: hypokalemia

Beta Blockers

Propranolol 40 mg BD, increase by 40 mg BD every 3-4 weeks until pulse is under 60 /min (max 160 mg BD)

- Contra indications: asthma, COPD, HR < 50/min
- Side effects: slow pulse, cold extremities, bad dreams, impotency

Atenolol 25 -50 mg OD

- Contra indications: asthma, COPD, HR < 50/min
- Side effects: slow pulse, cold hands and feet, bad dreams, impotency

Angiotensin Converting Enzyme Inhibitor

Enalapril 5 mg OD, increase by 2.5 mg OD every 3-4 weeks (max 40 mg OD)

- Contra indication: pregnancy
- Side effects: very low BP, renal failure, dry cough

Centrally acting Anti Hypertensive

Methyldopa (250 mg BID-TID, max 3g / day) (old people: 125 mg BD, max 2 g / day)

- Contraindication: depression, active liver disease
- Side effects: nausea, stomatitis, dry mouth, oedema

Vasodilators

Hydralazine oral 25mg BD (max 50 mg BD)

- Contra indication: severe tachycardia, renal disease
- Side effects: tachycardia (fast pulse), nausea and vomiting

Hydralazine IV for HBP crisis - 5mg IV slowly every 20-30 minutes until DBP<110 (max 20 mg)

- Contra indication: do not use in patients with stroke
- Side effects: as above but also causes rapid and profound drop in BP

Using the medication

Start with a diuretic (like hydrochlorothiazide) or a beta-blocker (like propranolol or atenolol). Prefer diuretics for old people and beta-blockers for people who have had a heart attack or angina.

Which medication do you use first?

If one of these drugs is not enough add another. If BP is still high, change to or add an ACE-inhibitor (like enalapril). Choose an ACE inhibitor as first drug if the patient has heart failure or diabetes.

Points to remember

Most drugs take 4-8 weeks to produce their maximum affect. Don't assess if the medication is working on one reading.

Ischaemic Heart Disease

DEFINITION

Coronary artery disease is a condition in which fatty deposits (atheroma) accumulate in the cells lining the wall of the coronary arteries. These fatty deposits build up gradually and irregularly in the large branches of the two main coronary arteries which encircle the heart and are the main source of its blood supply. This process is called atherosclerosis which leads to narrowing or hardening of the blood vessels supplying blood to the heart muscle (the coronary arteries). This results in ischemia (inability to provide adequate oxygen) to heart muscle and this can cause damage to the heart muscle. Complete occlusion of the blood vessel leads to a heart attack (myocardial infarction).

Risk factors for IHD that you can change

- Exercise
- Correct body weight
- Stop smoking
- Normal cholesterol – modify diet
- Control diabetes
- Moderate alcohol consumption
- Treat hypertension

Risk factors that you cannot change

- Family history
- Increasing age
- Male
- Genetic abnormalities

Angina pectoris

Angina pectoris is the burning, squeezing, heaviness, or tightness in the chest that may extend to the left arm, neck, jaw, or shoulder blade. Typically, angina is precipitated by physical activity, lasting no more than a few minutes, and is relieved by rest. Usually angina is worse when exertion follows a meal. It is also worse in cold weather and can be triggered by walking from a warm room into the cold air. Emotional stress can also cause or worsen angina.

DIAGNOSIS OF ANGINA PECTORIS

Diagnosis of angina is a clinical diagnosis based on a characteristic complaint of chest discomfort or chest pain brought on by exertion and relieved by rest. Confirmation may be obtained by observing reversible ischemic changes on ECG during an attack or by giving a test dose of sublingual nitroglycerin that characteristically relieves the pain in 1 to 3 minutes.

General measures to treat angina

Stop smoking. Treat elevated cholesterol levels with low fat, low cholesterol diet, exercise and cholesterol lowering medications. Treat elevated blood pressure. Reduce stress. Maintain ideal body weight.

Medications used to treat angina

Four types of medications are available:

- Beta-blockers
- Nitrates
- Calcium channel antagonists
- Anti-platelet drugs

Myocardial Infarction

DIAGNOSIS

WHO criteria - 2 out of 3 of the following

- Classical history
- ECG changes
- Cardiac enzymes raised

SYMPTOMS

- Acute central chest pain lasting longer than 20 minutes
- Often associated with nausea sweating, palpitations, and shortness of breath
- May be present without chest pain
- Syncope
- Pulmonary oedema
- Epigastric pain

SIGNS

- Distress
- Anxiety
- Pallor
- Sweaty
- Decrease BP
- Increased pulse
- Signs of heart failure

TESTS

- ECG changes- ST elevation
- CXR
- Cardiac enzymes
- Full blood count
- Urea, electrolytes, and blood sugar level

MANAGEMENT

Give Oxygen. Put in an IV line. Do a brief assessment. Give aspirin 300 mg unless contraindication. Need to check with your local protocol as Morphine may not be available. If available give Morphine 5-10mg IV and metoclopramide 10mg IV.

Myocardial infarction treatment

Give GTN sublingually. Give Beta blocker e.g. atenolol (check for asthma or left sided heart failure –contraindicated). You will need to consult your local protocol and referral procedures. People who have had an acute Myocardial infarction have a very high risk of complications or death.

Subsequent Management

Bed rest for 48 hours should be given. Examine the patient every day. Check the blood and ECG daily. Continue low dose aspirin. Continue heparin if this is available. Start oral beta blocker. Continue ACE inhibitor.

Long term management

Address modifiable risk factors. If uncomplicated may be discharged within 5-7 days. Advise patient to return if angina returns. Advise patient to return for periodic checks.

Rheumatic Heart Disease

DEFINITION

An acute inflammatory complication of Streptococcal bacterial infections of the throat, characterized mainly by arthritis (inflammatory of the joints) and carditis (inflammatory of the heart), sometimes followed by permanent damage to the heart valves.

DIAGNOSIS

- Evidence of a streptococcal infection
- Recent streptococcal infection
- History of scarlet fever
- Positive throat swab
- Increase in ASO Titre

Jones Criteria

Major	Minor
<ul style="list-style-type: none"> • Carditis • Arthritis • Subcutaneous nodules • Erythema marginatum • Sydenhams chorea 	<ul style="list-style-type: none"> • Fever • Raised ESR or CRP • Arthralgia • Previous rheumatic fever

CLINICAL FEATURES

1 - 5 weeks after a Streptococcal sore throat, the patient will present with the following signs and symptoms:

Arthritis and carditis

Arthritis:

Joints are painful, red, hot, swollen. Large joints are mainly affected. The joint pain often migrates, which means swelling move from one joint to another. This migration of joint pain is one of the diagnostic symptoms of Rheumatic fever. Fever is present. There are no nodes (because no bacteria in the joint)

Carditis:

It is very dangerous. Tachycardia, arrhythmia are present. Dyspnoea can be present. Cardiac Murmur can be heard. It may have signs of cardiac failure (left or right).

MANAGEMENT

Bed rest until CRP normal is given. Benzylpenicillin IM then oral penicillin V is given. Analgesia for carditis and arthritis can be provided and Haloperidol for the chorea.

Prognosis

60% of people with carditis will develop rheumatic heart disease. Acute attacks last an average of 3 months. Recurrence may be precipitated by further strep infections

Prophylaxis

For dental or other surgery will need antibiotic cover.

Heart failure

DEFINITION

Heart failure occurs when the heart fails to pump enough blood and provide enough oxygen or energy to the organs. The two sides of the heart (left ventricle and right ventricle) could both be affected (left sided and right sided heart failure). Both have different symptoms.

Causes of heart failure

- Hypertension - Check BP
- Anaemia - Check Hct/Hb
- Beriberi (Vitamin B1 deficiency)
- Hyperthyroidism - Check lab TSH
- Alcohol, drug addiction
- Myocardial infarction (heart attack) - Check ECG
- Arrhythmia (irregular heart beating) - Check ECG
- Congenital heart disease
- Valvular disease (heart valves too tight or loose)

Differences between left and right heart failure

Left heart failure	Right heart failure
<ul style="list-style-type: none"> • Breathing difficulties when exercising, which get progressively worse, until difficulties are experienced even when at rest. • Difficult breathing when lying on the back. • The patient uses more pillows to sleep (orthopnea) • Dry cough mainly at night • Crackles (crepitations at lung bases) 	<ul style="list-style-type: none"> • Abdominal pain, anorexia, nausea, bloating • Jugular vein distension • Hepatomegaly (enlarged liver) sometimes painful • Lower leg oedema, or lower back oedema if lying flat.

MANAGEMENT OF ACUTE HEART FAILURE

Patients can present with acute pulmonary oedema. In this case, they are suddenly short of breath, anxious and refuse to lie flat on their back. Sit the patient up. Give oxygen by mask if available, starting with high concentration mask and a minimum of 6 litres per minute. Put drip (so you can have vein access if the condition is getting worse). Use as few liquids as possible.

Give diuretics: furosemide 40-80 mg IV in adults, children 1mg/kg. Repeat the same dose 30 minutes later if the patient has not passed urine and did not improve. Consider giving vitamin B1 100 mg IM injection. Record and follow the patient's vital signs every 15 minutes until stable. Then check hourly. Record the urine output closely. Put in a urinary catheter if necessary. Give digoxin if tachy-arrhythmia (irregular pulse >120 per minute). If available, first do an ECG.

Management of Chronic heart failure (CHF)

Treat the cause i.e. if arrhythmias. Treat factors that may symptoms worse like anemia, thyroid disease or infection. Avoid things that can make condition worse like NSAIDs. Stop smoking and eat less salt.

Drugs used to manage CHF include:

- Diuretics
- ACE inhibitors
- Beta blockers
- Digoxin
- Spironolactone
- Vasodilators

Stroke

DEFINITION

A stroke is the sudden death of brain cells due to a problem with the blood supply. When blood flow to the brain is impaired, oxygen and important nutrients cannot be delivered. The result is abnormal brain function. Blood flow to the brain can be disrupted by either a blockage or rupture of an artery to the brain. A stroke is also referred to as a cerebrovascular accident (CVA).

Risk Factors

Age and sex -The risk of stroke increases with age, especially after age 55. Men are at greater risk than women.

Family -People with a family history of stroke have an increased risk of stroke themselves.

Diseases -People with diabetes, heart disease, high BP, HIV or prior stroke are at greater risk of stroke.

Lifestyle -Stroke risk increases with cigarette smoking, alcohol consumption and use of IV drugs.

Ischaemic Stroke presentation

- Blurring or decreased vision in one or both eyes
- Severe headache, often described as 'the worst headache of my life'
- Weakness, numbness or paralysis of the face, arm or leg, usually limited to one side of the body
- Dizziness, loss of balance or coordination, especially when combined with other symptoms

Brain haemorrhage presentation

- Acute and intense headache
- Loss of consciousness, altered mental state.
- Seizure
- Vomiting or severe nausea
- Extreme hypertension
- Weakness, numbness, or paralysis, especially on one side of the body

Causes

The blockage of an artery in the brain by a clot (thrombosis) is the most common cause of a stroke. The part of the brain that is supplied by the clotted blood vessel is then deprived of blood and oxygen. The cells of that part of the brain die as a result. Typically, a clot forms in a small blood vessel within the brain that has been previously narrowed due to the long-term, damaging effects of high blood pressure (hypertension) or diabetes. Hardening of the arteries leading to the brain occurs. Embolism takes place to the brain from the heart or an artery.

A piece of atherosclerotic plaque (cholesterol and calcium deposits on the wall of the inside of the heart or artery) breaks loose, travels through open arteries, and lodges in an artery of the brain. When this happens, the flow of oxygen-rich blood to the brain is blocked and a stroke occurs. This type of stroke is referred to as an embolic stroke.

Rupture of an artery –haemorrhage

Cerebral hemorrhage is the bleeding within the brain substance. A cerebral hemorrhage occurs when a blood vessel in the brain ruptures and bleeds into the surrounding brain tissue. A cerebral hemorrhage (bleeding in the brain) can cause a stroke by depriving blood and oxygen to parts of the brain. The accumulation of blood from a cerebral hemorrhage can also press on parts of the brain and cause damage.

Subarachnoid hemorrhage is the bleeding between the brain and the inside of the skull. A subarachnoid hemorrhage is caused by the rupture of a blood vessel that is usually located between the outside of the brain and the inside of the skull. The blood vessel at the point of rupture is often previously

abnormal, such as from an aneurysm (an abnormal ballooning out of the wall of the vessel). Subarachnoid hemorrhages usually cause a sudden, severe headache and are often complicated by further neurological problems, such as paralysis, coma, and even death.

There are the five major signs of stroke:

1. Sudden numbness or weakness of the face, arm or leg, especially on one side of the body
 - The loss of voluntary movement and/or sensation may be complete or partial
 - There may also be an associated tingling sensation in the affected area
2. Sudden confusion, trouble speaking or understanding. Sometimes weakness in the muscles of the face can cause drooling.
3. Sudden trouble seeing in one or both eyes
4. Sudden trouble walking, dizziness, loss of balance or coordination
5. Sudden, severe headache with no known cause

MANAGEMENT

Early Treatment

Identify the stroke and exclude other causes like hypoglycaemia- REFER to a hospital. Therapeutic treatment in a hospital should be started within 4-6 hours after the stroke- after this period brain damage is irreversible.

Long term treatment (more than 4 hours)

Stroke subjects should be managed a dark, quiet room but should be regularly observed. Treat the pain. Comatose patients should be treated as per protocol. Feeding should start within 24 hours because rehabilitation is slower in those who are not fed early. Swallowing should be assessed before feeding. Give intravenous fluids if the patient cannot swallow. Anti-embolic stockings may be necessary if early mobilisation is not possible. Chronic prophylactic aspirin treatment: 150 mg OD in the first 2 weeks if bleeding can be excluded, followed by 75 mg OD lifelong in all cases.

Transient ischemic Attack

A transient ischaemic attack (TIA) is a short-lived episode (less than 24 hours) of temporary impairment to the brain that is caused by a loss of blood supply. A TIA causes a loss of function in the area of the body that is controlled by the portion of the brain affected.

The loss of blood supply to the brain is most often caused by a clot that spontaneously forms in a blood vessel within the brain (thrombosis). However, it can also result from a clot that forms elsewhere in the body, dislodges from that location, and travels to lodge in an artery of the brain (emboli). A spasm and, rarely, a bleed are other causes of a TIA. Many people refer to a TIA as a "mini-stroke".

REHABILITATION

It is very important for early rehabilitation. Referral should be made to an agency such as Handicap International for assessment and mobilization. Training will be provided on how to assess swallowing and physiotherapy. Rehabilitation refers to a program designed to regain as much function as possible and compensate for permanent losses. The rehabilitation program is based on the patient's individual capabilities.

Refer patients to the closest organization specialised in rehabilitation. Such a program should include physical and mental therapy. Strokes on the left side of the brain primarily affect the right half of the body, and vice versa.

In addition, in left brain-dominant people, left-brain strokes usually lead to speech and language deficits. Rehabilitation may be complicated by cognitive losses, including reduced ability to understand and follow directions. Poor results are more likely in patients whose strokes leave them with prolonged cognitive changes, sensory losses, language deficits, or incontinence.

Glasgow Coma Scale

This gives a reliable objective way of recording the conscious state of a person.

- Best Motor Response- 5 grades
- Best Verbal Response- 5 grades
- Eye Opening -4 grades
- AVPU - Alert, responds to vocal stimuli, responds to pain, unresponsive

PREVENTION

Control BP. Advise your patient to stop smoking, do regular exercise and avoid excessive alcohol consumption.

Shock

DEFINITION

In shock, the blood flow (and blood volume) is not enough to keep the person alive. The vital organs (e.g. brain, heart) do not get enough blood and oxygen to work.

SHOCK IS AN EMERGENCY. DELAY IN TREATMENT CAUSES DEATH DOES NOT WAIT FOR LOW BP BEFORE TREATING SHOCK.

TYPES OF SHOCK

- Hypovolaemic
- Septic
- Anaphylactic
- Cardiogenic

Hypovolemic shock

Shock due to hypovolemia- the volume, the quantity of blood has decreased so that the cardiac pump cannot work sufficiently. It occurs in:

- Severe hemorrhage (bleeding)
- Severe or extensive burn
- Severe dehydration

Septic shock (or infectious shock or toxic shock)

The sudden circulatory deficiency may be produced by the toxins released by the bacteria. It is usually associated with fever, sometimes falling or rising BP.

Anaphylactic shock

Sudden severe allergic reaction -reaction between antibodies in the plasma and some foreign substances are introduced into the body. Example: Protein (immunization, blood)

Cardiogenic Shock

Shock caused by weak pumping of heart-heart failure.

Causes

- Myocardial weakness (myocardial infarction, terminal cardiac failure, Myocarditis, Myocardial depression)
- Insufficient left ventricular filling (Tension pneumothorax, cardiac tamponade, massive pulmonary embolism, tachycardia, bradycardia)

- Chronic severe anemia
- Vitamin B1 deficiency
- Damaged heart valve

EMERGENCY TREATMENT

General treatment – in ALL patients

- A = AIRWAY
- B = BREATHING
- C = CIRCULATION

Keep the airway clear (mouth, throat, trachea, coma position). Give high flow oxygen. Put in 2 IV canulas (biggest size possible 16G or 18G). Start normal saline- monitor fluid balance (fluid IN/OUT).

Treatment of hypovolaemic shock

Stop the bleeding. Give normal saline (or Ringer’s lactate) at 1L in 15-20 minutes or 20 cc/kg STAT. Give at least 2L in the first hour. If there is still bleeding, fluid replacement must include ongoing losses. This could mean giving 2L of fluids per 1 hour. Shock from blood loss requires blood transfusion, several units may be necessary.

Treatment of Septic shock

Give IV fluids as for blood/fluid loss. Give high doses: ampicillin and gentamicin OR ceftriaxone, preferably IV. Try to find the source of the infection.

Treatment of anaphylactic shock

Drug or blood infusions should be stopped immediately. IV fluids are given as for blood/fluid loss. Give adrenaline, chlorpheniramine, and hydrocortisone. See BBG for drug dosages.

Treatment of cardiogenic shock

Treat the cause (e.g. anaemia, beri beri).

Congenital Heart Disease

DEFINITION

Congenital heart disease (CHD) is malformation of the heart or the large blood vessels near the heart. “Congenital” speaks only to time, not to causation. It means “born with” or “present at birth.”

SYMPTOMS AND SIGNS OF CHD

Symptoms and signs of CHD are related to the type and severity of the heart defects. Some children have no symptoms or signs while others may develop shortness of breath, cyanosis (blue discoloration of skin due to decreased oxygen in the blood), chest pain, syncope (passing out), poor feeding, or poor growth. It is very variable.

Atrial Septal Defect

Atrial septal defect (a hole in the wall between and left and right atria), for example, may cause few or no symptoms. The defect may go undetected for decades.

Aortic Stenosis

Aortic Stenosis (obstruction to blood flow across the aortic valve due to abnormal valve cusps) also commonly causes no symptoms, especially when the stenosis (narrowing) is mild. In the rare severe cases of aortic stenosis, symptoms can appear during infancy and childhood. These symptoms may include fainting spells, dizziness, chest pain, shortness of breath, and unusual tiring.

Ventricular Septal defect

Ventricular Septal Defect (VSD) is another example where symptoms are related to the severity of the defect. VSD is a hole in the wall between the two ventricles. When the defect is small, the children suffer no symptoms, and the only sign of VSD is a loud heart murmur. If the hole is large, the baby can develop heart failure, poor feeding and slow growth. In advanced cases with development of permanent pulmonary hypertension (severely elevated blood pressure in the arteries of the lungs), cyanosis can develop.

Tetralogy of Fallot

Tetralogy of Fallot (TOF) is a heart defect where there is a combination of VSD and obstruction of blood flow out of the right ventricle. Cyanosis is common among babies and children with TOF. Cyanosis can appear soon after birth, with sudden episodes of severe cyanosis with rapid breathing, may even become unconscious. During exercise, older children with TOF may become short of breath and faint.

Coarctation of the aorta

Coarctation of the aorta is a narrowed section of this great artery. Usually there are no symptoms at birth, but they can develop as early as the first week after birth. A baby may develop congestive heart failure or high blood pressure. Some people with coarctation may never have significant problems.

How is CHD treated?

The treatment of CHD depends entirely upon the exact type of CHD, the degree of severity of that type of CHD in a given person, and other factors (their age, their size, their general health, etc.). If the child presents at the clinic, manage the symptoms for example by giving oxygen then refer to hospital for proper investigations and appropriate treatment which includes drugs and surgery.

RESPIRATORY TRACT DISORDERS

Upper Respiratory Tract Diseases

Acute Respiratory Infections (ARI): infections of the respiratory system.

Upper Respiratory Tract Infections (URTIs) or Lower Respiratory Tract Infections (LRTIs).

DEFINITION

Upper Respiratory Tract Infections (URTIs) are infections of the upper airways - the ear, nose, throat, trachea and bronchi. Most of these infections are caused by viruses and last for a short time only. The lungs are not affected. If the symptoms are severe and/or last for more than a week, this may be a sign of a more severe bacterial infection or avian flu.

SIGNS AND SYMPTOMS

- General: fever, headache, swollen neck glands, cough.
- Ear: pain, discharge, redness, deafness.
- Nose: discharge, facial pain, inflammation.
- Throat: sore throat, hoarse voice, loss of voice, enlarged tonsils, pus on tonsils.

DIAGNOSIS

On clinical grounds you need to differentiate between MILD – MODERATE – SEVERE URTIs.

MILD URTI

- Common Cold
- Sinusitis
- Pharyngitis

Common Cold

Common cold is a mild URTI caused by a virus. It is very common, not dangerous and there is no specific treatment. In any community a lot of people can have the problem at the same time.

Sinusitis

Sinusitis is an infection of one or more of the sinuses. It commonly happens in patients with a common cold or other viral URTIs. A viral sinusitis can be complicated by a bacterial infection. Patients with a bacterial sinusitis will have more severe and prolonged symptoms of facial pain, headache and generally feeling unwell.

Pharyngitis

Pharyngitis is very common and sometimes a sore throat is the only symptom. It may also be painful to swallow. Symptoms typically get worse over 2 to 3 days and then gradually go, usually within a week.

Treatment

Treat the fever. Advise to drink a lot eats normally. Continue with breast milk. Do not give antibiotics. Advise the patient to come back if there are difficulties in breathing and more coughing.

MODERATELY SEVERE UPPER RESPIRATORY TRACT INFECTIONS

- Tonsillitis
- Croup

Tonsillitis

Tonsillitis is an infection of the tonsils at the back of the mouth. Symptoms are similar to pharyngitis but may be more severe. In particular, fever and generally feeling unwell tend to be worse than pharyngitis symptoms. Sore throat is worse on swallowing or turning the head. Swollen neck glands are common. Pus may appear as white spots on the tonsils. Most cases of viral tonsillitis start to settle after 3 to 4 days. Consider antibiotic treatment to prevent complications: peritonsillar abscess, rheumatic fever, acute glomerulonephritis .

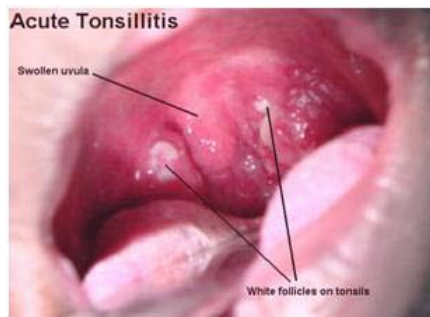
Treatment

Penicillin V PO (500 mg QID, child: 15 mg/kg QID) for 10 days (Note: shorter courses do not prevent Rheumatic Fever) or benzathine penicillin (50.000 IU/kg) IM stat dose if available or erythromycin (10 mg/kg QID) if allergic to penicillin. Treat the fever and advise the patient to drink plenty of fluids. Continue breast-feeding

If the patient cannot eat or drink, admit to IPD and give IV fluids and treat with antibiotics as follows:

- Children - Benzathine penicillin (50.000 IU/kg) IM STAT dose or Benzyl penicillin (50 mg/kg QID) IV for 10 days
- Adults - Ampicillin 1 gram QID IV or IM or Benzyl penicillin 2.4 gram QID IV.

Change to oral penicillin V (500mg QID) when the patient can swallow. Treat for a total of 10 days.



TONSILLITIS

**Croup**

Croup is caused by a swelling around the vocal cords that is mostly due to a viral infection. It leads to breathing difficulties with a 'barking' cough. More severe cases will have respiratory distress. Treatment depends on the severity. Mild croup is self limiting, but breathing the steam from hot water might help (be careful to avoid burns from the hot steam). If there are signs of increasing breathing difficulty, fatigue, blue coloration of the skin, or dehydration, admit to IPD for observation and consider giving steroids and adrenaline in the nebuliser.

Pertussis (whooping cough)

Pertussis, also known as whooping cough, is a highly contagious disease that is caused by the bacterium *Bordetella pertussis*. Pertussis is characterised by initially by mild ARI symptoms. After one to two weeks coughing is followed by an inspiratory 'whooping' sound mostly at night, and

vomiting. This disease can be complicated by pneumonia (infants and young children are at greatest risk). Erythromycin should be administered to the patient and all close contacts to treat and prevent spread of pertussis to others. Make sure the child does not become dehydrated. Pertussis vaccine could prevent severe disease in young children.

Ear Infections

Otitis externa

Definition: infection of the auditory canal, the duct, which leads to the tympanic membrane.

Presenting symptoms: pain in the ear, discharge, deafness

Signs and Symptoms of otitis externa

Pain increases with traction of the ear when you want to examine the patient with an otoscope in the auditory canal. This pain also increases when you insert the tip of the otoscope in the auditory canal. Auditory canal is red, swollen, with or without abscess or discharge. Look for a foreign body. Drum (Tympanic membrane) is normal.



OTITIS EXTERNA

Treatment of otitis externa

Clean the auditory canal (only if pus present) with lukewarm (too cold water may cause dizziness) boiled water or NSS (or water diluted vinegar).

Dry mopping done with tissue spears. NEVER put cotton wool in the ear!

It increases the risk of infection. Apply Gentian Violet twice a day. ASA or PARA can be helpful to decrease the pain. If no improvement after 5 days, give PO Cloxacillin.

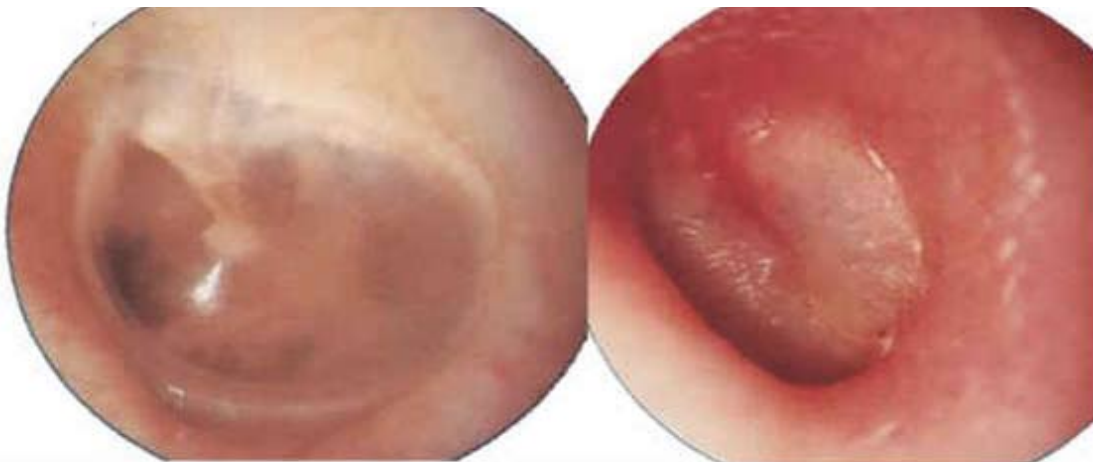
Otitis media

Definition: It is an acute infection of the middle ear. Although it can occur at any age, it is most common in young children.

Clinical presentation

- Fever
- Severe pain (earache)
- Lymph nodes (pre or retro auricular)

A normal (left) ear drum and an ear with acute otitis media (right)



Signs

Normally- grey color (the hammer) with a light reflex triangle.

With otitis media:

- The membrane becomes red (inflammation), is bulging (edema), may be perforated with or without pus discharge
- If you have no light reflex triangle on examination, look for perforation

Treatment

Clean the ears with tissue or cotton wool with sterile water or normal saline in case of pus discharge. Treat the fever and pain. Give amoxicillin for 10 days. If the patient is allergic for amoxicillin, give cotrimoxazole for 10 days.

Chronic otitis media

Definition: It is characterised by chronic discharge from middle ear with ear drum perforation.

Signs and Symptoms

- Pus discharge for more than 2 weeks.
- No fever, no pain

OTITIS MEDIA

**Treatment**

Apply antibiotic drops (e.g. Cadexcin eardrops), if available, for at least 2 weeks.

Note: the thin clear tympanic membrane (ear drum) on the left. The ear with acute otitis media has a bulging tympanic membrane (due to pus in the middle ear) and increased redness over portions of the drum.

SEVERE UPPER RESPIRATORY TRACT INFECTIONS

Epiglottitis- This is an emergency situation. Epiglottitis is a severe bacterial infection of the epiglottis. Epiglottitis is most common in children aged 2 to 5 years old. The infection usually begins suddenly and progresses rapidly. A previously healthy child rapidly develops a sore throat, and often a high fever. The child breathes quickly, and makes a loud noise while inhaling (called stridor).

Difficulty breathing often causes the child to lean forward while stretching the neck backward to try to increase the amount of air reaching the lungs. Because of difficulty swallowing, these children dribble a lot of saliva. Epiglottitis can quickly become fatal because swelling of the infected tissue may block the airway and obstructing air flow. This is an emergency situation.

Treatment

Try to avoid upsetting the child. Do not hold the child down or use a tongue depressor to look in the throat. Give adrenaline in nebuliser (5 cc of 1:1000 adrenaline). Give ceftriaxone IM/IV stat dose. EMERGENCY TRANSFER to hospital.

Diphtheria

Diphtheria is an infectious disease spread from person to person by respiratory droplets from the throat through coughing and sneezing. Diphtheria is caused by a bacteria that produces toxins throughout the body. Think of diphtheria when you have a patient with tonsillitis with grey sticky membranes in the throat, enlarged lymph-nodes in the neck, high fever and oliguria. Refer the patient quickly when diphtheria is suspected.

Treatment of Diphtheria

Immediate strict isolation and refer quickly. Nose and throat samples are taken for culture if available. If strong suspicion start antibiotic treatment

- Benzyl penicillin Adult - 2.4 gram QID IV * 14 days
Child - 50 mg/kg QID IV * 14 days OR
- Erythromycin Adult - 1 gram QID oral * 14 days
Child - 15 mg/kg QID oral * 14 days
- Give antitoxin serum

Peritonsillar abscess

Patients with fever, difficulty swallowing and tonsillar swelling on one side need antibiotics. Also consider surgical drainage.

Early Left Peritonsillar Abscess

Swelling and erythema is found above the left tonsil. The uvula is slightly swollen as well. Compare to the right peritonsillar area which looks normal.



PERITONSILLAR
ABSCESS



Lower Respiratory Tract Infections - Pneumonia

DEFINITION

Pneumonia / Lower Respiratory Tract Infections (LRTIs) are infections affecting the lungs and smaller airways. These can be viral, bacterial, parasitic or fungal infections. To define pneumonia in childhood and in adults different case definitions are used.

Case Definition Childhood Pneumonia

Fast respiratory rate in 1 minute:

- >60 breaths and infant <2 months
- >50 breaths and child 2 – 11 months
- >40 breaths and child 1-5 years

Severe pneumonia – Pneumonia + in drawing of the chest wall

Very severe pneumonia – Severe pneumonia + one of the following:

- central cyanosis (blue colour of lips)
- severe respiratory distress
- inability to drink or breastfeed

Case definition of Adult Pneumonia

Pneumonia: Fever AND cough AND abnormal chest sounds

Signs of severity in adults

- Rapid breathing (RR >30/min in children more than 5 years and adults)
- Cyanosis (blue colour of lips or nails)
- Reduced consciousness or confusion
- Low blood pressure (SBP <90mmHg or DBP <60mm Hg)
- High pulse rate (>120 beats/minute)

Sign and Symptoms

- Dyspnoea, fast breathing.
- Cough, sputum – yellow or green.
- Coughing blood (haemoptysis)
- Chest Pain (with cough and deep breaths)
- Inspection- cyanosis, nasal flaring, chest in drawing, superficial or asymmetric breathing
- Percussion- dullness
- Auscultation- abnormal breath sounds

Additional Signs and Symptoms

In addition, patients with pneumonia may have general signs and symptoms of infection:

- Fever, rigors
- General unwell, tired
- Tachycardia
- Dehydration, low blood pressure

What are abnormal breath sounds?

Breath Sounds must be compared between the left and right lung, and the different areas of each lung.

- Quantity - Breath sounds may be reduced or absent over areas of the lung where less air is entering because of disease.
- Quality - Normal breath sounds are 'vesicular' in the lungs and 'bronchial' over the trachea and main bronchi.

Bronchial breath sounds heard in the lungs are a sign of pneumonia.

Creptitations

Creptitations are crackles made when air enters the alveoli and small bronchi and makes them open. Creptitations are also the sound of air bubbling through mucus or fluid in the alveoli. If creptitations disappear after coughing, they are probably not significant.

Pleural Rub

Pleural Rub is a rough creaking sound usually heard in only one area during inspiration and expiration. It is caused by movement of the two pleural surfaces over each other when the surfaces are rough because of inflammation (e.g. pleurisy caused by pneumonia, TB).

Rales and Rhonchi

Rales are small clicking, bubbling, or rattling sounds in the lungs. They occur when air opens closed air spaces. Rhonchi are sounds that resemble snoring. They occur when air through the large airways is (partially) blocked.

Wheeze

Wheeze is a whistling sound caused by air passing through narrowed airways. Wheezes are heard in both lungs in asthma, many cases of Chronic Obstructive Pulmonary Disease (COPD) and some cases of pulmonary oedema. If wheezing is heard only in one small area of the lung, and it does not disappear after coughing, it may be caused by a tumour or foreign body causing partial obstruction of a bronchus.

Diagnosis

Clinical history and examination are done. Chest X- Ray (CXR) is done if available.

Treatment

Treatment differs depending on clinical signs, age and other factors. Please see the BBG for detailed treatment guidelines.

Bronchitis

In Acute bronchitis, patients have a productive cough (with sputum) for 1-2 weeks without (or slight) fever and without signs of rapid breathing or tachycardia. As the most common cause of acute bronchitis is viral, no antibiotic treatment is needed. Chronic bronchitis is a form of chronic obstructive pulmonary disease which will be discussed in the next session.

Bronchiolitis

Bronchiolitis is a viral infection of the tiny airways, called the bronchioles. As these airways become inflamed, they swell and fill with mucus, making it difficult for a child to breathe. Mild symptoms can present with a runny nose and a cough. In more severe cases you can see rapid, superficial breathing, chest in drawing, nasal flaring, rapid heartbeat and irritability. Sometimes you can hear the child wheezing without your stethoscope. Mild cases do not need a special treatment. Because bronchiolitis is usually viral, antibiotics do not work. When a child is severely dyspnoeic, give oxygen.

CHRONIC OBSTRUCTIVE AIRWAYS/ PULMONARY DISEASE (COPD)

Chronic Obstructive Pulmonary Disease (COPD) is a form of chronic lung disease that causes the narrowing of the airways so ventilation is poor. Smoking is the primary cause of COPD. This term covers many respiratory conditions:

- Chronic bronchitis –inflammation of the bronchi
- Emphysema - damage to the smaller airways and alveoli
- Chronic obstructive airways disease – sometimes caused by allergy and environmental factors

Chronic Bronchitis

Chronic inflammation of the bronchi causes a chronic cough (more than 2 month a year for several years) without other disease. Usually it's due to a chronic irritation (tobacco) or allergy or asthma.

Clinical presentation

Chronic cough is mainly in the morning. It's the way the lungs clean themselves. Sputum is clear. Dyspnea develops over a long period. As time progresses, your patient will have more dyspnoea with decreasing effort. Lung inspection, percussion, palpation are normal. On auscultation- ronchi are heard. If super infection, your patient may have:

- Slight fever
- Cough now with purulent sputum
- More dyspnoea

DO NOT FORGET when examining patients with a chronic cough TO EXCLUDE TUBERCULOSIS.

Treatment

No special treatment is given except stop smoking. Chest Physiotherapy every morning can be useful. No antibiotic except if super infection. In that case, use the same antibiotics as in the treatment of acute bronchitis.

Emphysema

Definition- destruction of the alveolar walls, gradual enlargement of the air spaces distal to the terminal bronchioles. Cough with sputum gradually getting worse. Breathlessness and wheezing on

exertion are gradually getting worse. These symptoms will eventually occur even when the patient is at rest. Sputum, because the damaged airways, create a lot of mucus.

Bronchiectasis

Definition: Bronchiectasis is a chronic disease of the bronchial tubes. The bronchial tubes become dilated so mucus stays in the bronchial tubes, resulting in recurrent infections. These infections lead to blockage of the tubes. The blockage causes the alveoli collapse.

Signs and Symptoms

- Cough with a lot of sputum every day
- Haemoptysis
- Wheezing
- Chronic sinusitis
- Many loud crepitations in inspiration and expiration

Asthma

DEFINITION AND CAUSES

Asthma is a chronic inflammatory disorder of the airways, with acute reversible airflow obstructions. Asthma attacks can be triggered by allergens, infections and air particles (for example, cigarette smoke)

Clinical Features

- Wheezing on breathing out
- Shortness of breath
- Chest pain
- Decreases in peak flow
- Coughing (either during the day or at night, but often worse at night and with exercise and activity)

Decide the Severity of the attack

Is it a MILD, MODERATE, SEVERE or LIFE-THREATENING attack? This is very important because the treatment is different. To decide the SEVERITY, you have to check –

- Pulse rate
- Respiratory rate
- Degree of difficulty breathing
- How many words the person can say in one breath?
- Presence or absence of wheeze
- Presence or absence of muscle retraction (chest well in-drawing)
- Peak flow value (see below)

	Mild/moderate attack	Severe attack	Life threatening attack
Difficulty breathing	When walking	On lying down	Always
Speaking	Normal – few words	Single words Child cannot feed	Cannot speak Child cannot feed
Consciousness	May be anxious	Agitated or very silent and not moving	Sleepy or confused
Wheezing	At the end of breathing out	Loud	Not heard, silent chest
Accessory muscles (indrawing)	No - minimal	Usually	Unusual movement

Respiratory rate / minute	Increased	Adult = over 30/min Child > 5yrs = over 40/min < 5yrs = over 50/min	Fast or slow
Pulse rate / Minute	Increased	Adult = over 120/min Child > 5yrs = over 120/min < 5yrs = over 140/min	Very fast or slow
Peak flow after treatment	Value is > 70% of normal	Value is 33% - 70% of normal	Value is less than 33% of normal

Peak Flow Meter

A peak flow meter is a cheap and simple device and should be available in all clinics. In the presence of one or more signs mentioned above, record peak flow measurement on admission and again after treatment with salbutamol or prednisolone. Record peak flow measurements on each consultation. Note: do not expect a child of less than 7 years to be able to perform a peak flow. By using a peak flow meter, you can decide accurately if the patient is getting better with treatment. If the patient's peak flow measurements do not improve after appropriate treatment, then it is not asthma. Consider other diagnoses.

Treatment

See BBG page 206 for appropriate dosages and guidelines.

Prevention/Long Term Management

Prevention of chronic asthma should involve using regularly inhaled steroids, if possible by inhaler, e.g. beclomethasone twice daily. Inhaler technique is important for drug delivery and will be improved by using a homemade spacer (sprite bottle). The dose will depend on the response

Treatment after discharge

- OPD patient (mild attack) with persistent symptoms:
 - Low dose steroid inhaler (e.g. one puff BID) (No inhaler: prednisolone oral) Inhaled salbutamol, via spacer when symptomatic
- Patient discharged from IPD after moderate attack:
 - Medium dose steroid inhaler (e.g. two puffs BID) (No inhaler: prednisolone oral) Inhaled salbutamol when symptomatic
- Patient discharged from IPD after severe attack:
 - High dose steroid inhaler (e.g. 4 puffs BID)
 - No inhaler: prednisolone oral
 - Inhaled salbutamol when symptomatic

Follow up

Follow up in OPD (Check peak flow value) and reduce dose step by step to the minimum dose that fully controls symptoms. If symptoms come back, increase the dose of steroid inhaler again. Review the patient every month or when the steroid inhaler is nearly empty. Check peak flow value. Increase the dose until the peak flow value is normal. Keep the patient at this dose all the time to prevent him getting wheezy. If asthma attacks reduce to < 1 per month stop steroids and give inhaled salbutamol when symptomatic. If you do not have steroid inhalers, you can use a low dose of oral steroids for patients who have symptoms very often.

Pneumothorax

DEFINITION

A pneumothorax is a collection of air or gas in the pleural cavity of the chest between the lung and the chest wall.

CAUSES

- Often spontaneous in thin young men
- Asthma
- COPD
- Trauma

CLINICAL FEATURES

There may be no symptoms. There may be a sudden onset of chest pain, shortness of breath. Patients with asthma may deteriorate quickly. Reduced chest expansion may be present. Hyper resonance to percussion and diminished breath sounds on the affected side can be found.

INVESTIGATION

- CXR
- If the diagnosis is clear do not delay treatment

MANAGEMENT

It depends on if this is primary or secondary to another disease. Pneumothorax secondary to trauma requires a chest drain. Aspiration is required. Insertion management of a chest drain should be done.



RIGHT SIDED
TENSION
PNEUMOTHORAX

Tension pneumothorax

This is a medical emergency. Air drawn into the pleural space has no means of escape during expiration.

Signs:

- Respiratory distress
- Tachycardia
- Falling blood pressure
- Distended neck veins away from the side of the pneumothorax

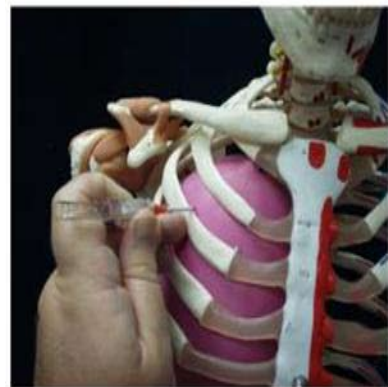
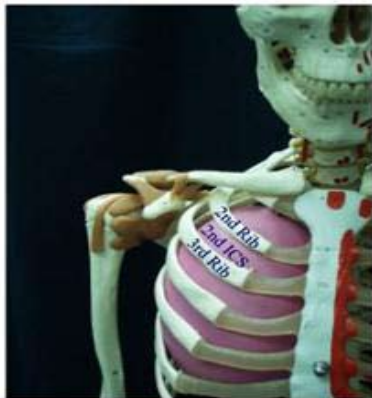
Treatment

To remove the air using a large bore needle i.e. 14G or 16 gauge with a syringe partially filled with normal saline attached. Insert needle into second intercostal space in the midclavicular line on the side of the suspected pneumothorax. Remove the plunger and allow the water to bubble through the syringe. Refer urgently and ensure chest drain inserted.



The tension pneumothorax on the right demonstrates a collapsed right lung and deviation of the mediastinum to the left.

Insert a 14 -16 gauge needle through the second intercostal space in the mid-clavicular line.



The first rib cannot normally be felt. The second rib can be felt just below the collar bone. The second intercostal space is the area between the second and third rib.

1. Identify the second rib, second intercostal space, and the mid-clavicular line (center of the collar bone).
2. Insert the needle just over the third rib, through the intercostal muscles and into the chest cavity.
3. A "hiss" of air confirms the presence of pneumothorax and is effective treatment for it
4. Slide the catheter over the needle and into the chest cavity.
5. Attach a syringe and aspirate all the free air.
6. Leave the catheter and syringe in place so you can remove more free air as it accumulates.
7. If available, administer oxygen 12 L/min using a non-rebreather mask or positive pressure with bag-valve-mask.
8. Locate the second intercostal space in the midclavicular line on the side of the pneumothorax.
9. Clean area with betadine or other antiseptic.
10. Re-identify second intercostal space in the midclavicular line.
11. Insert 14 gauge catheter over the top of the rib into the pleural space. This will avoid the blood vessels and nerves which run under the bottom of the rib.
12. Listen for a decompression air rush (hissing sound) from the needle, or aspirate as much air as necessary to relieve the patient's acute symptoms.

13. Leave the catheter in place and apply bandage or small dressing. A field-improvised one-way valve may be attached to the catheter.
14. Observe the patient and prepare for a chest-tube insertion if necessary.

Draining a tension pneumothorax

Needle thoracentesis is used to diagnose and treat a tension pneumothorax.

These patients typically experience significant respiratory distress and may also have:

- Tracheal deviation
 - Unexplained hypotension
 - Unilateral absence of breath sounds
 - Presence of distended neck veins
 - Hypertympanic percussion note over affected side.
1. A 14 Gauge Angiocath-type (catheter over needle) needle is preferred, but any hypodermic needle can be effective.
 2. For this purpose, a larger bore needle is preferable to a smaller bore needle.
 3. If available, administer oxygen 12 L/min using a non-rebreather mask or positive pressure with bag-valve-mask.
 4. Locate the 2nd intercostal space in the midclavicular line on the side of the pneumothorax.
 5. Clean area with betadine or other antiseptic.
 6. Re-identify 2nd intercostal space in the midclavicular line.
 7. Insert 14 gauge catheter over the top of the rib into the pleural space. This will avoid the blood vessels and nerves which run under the bottom of the rib.
 8. Listen for a decompression air rush (hissing sound) from the needle, or aspirate as much air as necessary to relieve the patient's acute symptoms.
 9. Leave the catheter in place and apply bandage or small dressing. A field-improvised one-way valve may be attached to the catheter.
 10. Observe the patient and prepare for a chest-tube insertion if necessary.

Pleural Effusion

DEFINITION

There is excessive quantity of fluid in pleural space. Normally, 10 to 20 mL of fluid is spread thinly over the visceral and parietal pleurae. The fluid is similar in composition to plasma except that it is lower in protein (< 1.5 g/dL)

CAUSES

- May be due to increase venous pressure as seen in cardiac failure
- Low protein levels in the blood as seen in cirrhosis, nephrotic syndrome
- Infection, inflammation – for example pneumonia

SYMPTOMS AND SIGNS

- May have no symptoms
- May have shortness of breath
- Chest pain
- Decreased chest expansion
- Stony dull on percussion
- Diminished breath sounds on the affected side

INVESTIGATIONS

- CXR

- If possible the fluid which is drained off should be tested at the laboratory.

TREATMENT

Treatment depends on the underlying cause of the pleural effusion. Therapeutic aspiration may be sufficient if the effusion is symptomatic. Larger effusions may require insertion of an intercostal drain (either pigtail or surgical). When managing these chest tubes it is important to make sure the chest tubes do not become blocked.

Tuberculosis

DEFINITION

Tuberculosis is a contagious disease caused by *Mycobacterium tuberculosis* (and occasionally by *Mycobacterium bovis* and *Mycobacterium africanum*), which also known as tubercle bacilli (TB bacilli). TB infection is transmitted by air. A major source of infection is a patient with TB disease in the lung. (Pulmonary TB), who is coughing and whose sputum smear is positive (i.e. sputum microscopy reveals TB bacilli).

Definition and causes of spread

If an infectious person coughs or sneezes, tiny infectious particles of respiratory secretion, which contain tubercle bacilli, are produced. These infectious particles can remain suspended in the air for a long period. Consequently, people in close contact with an infectious person breathe in air containing infectious particles of TB bacilli.

Categorization of TB

- Pulmonary TB (lungs) - most common site
- Extrapulmonary TB

Areas in the body where TB can affect

- Common
 - Pleural
 - Lymph nodes (commonly in neck)
 - Brain
 - Abdomen
 - Pericardium (heart)
 - Spine, other bones and joints
- Less common
 - Male genital tract
 - Female genital tract
 - Kidney
 - Adrenal gland
 - Skin

SYMPTOMS

The most important symptoms of Pulmonary Tuberculosis are as follows:

- Cough for more than 2 or 3 weeks (with or without sputum production)
- Weight loss

Other symptoms

- Respiratory- coughing up blood, chest pain, breathlessness
- General symptoms- fever, night sweats, tiredness, loss of appetite and secondary amenorrhoea

PHYSICAL SIGNS

The physical signs of pulmonary TB are non-specific and cannot be distinguished from other lung diseases. General signs are fever, tachycardia (fast pulse rate), finger clubbing. Respiratory signs - often

no abnormal signs in the chest, although you may hear crackles, wheezes, bronchial breath sounds, or amphoric breathing sounds on auscultation of the chest with a stethoscope

Signs of extra pulmonary TB

- TB pleural effusion – chest pain, dullness, reduced or no air entry on the affected side
- TB lymph adenopathy – enlargement of lymph nodes, usually in the neck and bilaterally
- TB spine or bone – deformity, chronic bone infection
- Brain – signs and symptoms of meningitis (headache, neurological deficit, loss of consciousness)
- TB Abdomen – ascites, abdominal mass

INVESTIGATIONS

Sputum

Sputum for microscopic examination of Acid Fast Bacilli (AFB) (called AFB due to the bacilli's particular feature of resistance to de-colorisation by acid) for 3 successive days – simple, rapid and reliable for sputum smear positive cases.

Culture

Culture (growing bacilli in a special media) – this is a more specific test, but it takes longer to know the result than the conventional method (4-6 weeks), it also requires high technology and skills and is expensive.

Culture recommended in case of:

- Clinically suspect cases with 3 sputum smears (-)ve
- Confirmation of treatment failure
- Diagnosis of extra-pulmonary forms
- Evaluation of treatment outcomes in drug-resistant TB

Drug Sensitivity Test (DST)

This is recommended for clinically suspected Drug Resistant and Multi-drug Resistant (DR/MDR) cases when adapted treatment (MDR treatment is available) can be implemented.

Chest X Ray – useful for smear negative pulmonary TB, and TB in children

Tuberculin skin test – indicates only exposure to infection, it does not indicate TB disease

TREATMENT

Should be referred to Burmese Border Guidelines Page No 210-215

TUBERCULOSIS PREVENTION AND VACCINE

TB can be prevented by the following means:

BCG Vaccination for children

WHO & IUATLD recommend as a routine vaccination to all infants in area of high TB prevalence. It is the protection against severe forms of TB such as meningitis, miliary TB in infants. Vaccination lasts for 15 years in well nourished children. In HIV infected children, contraindicated only in active AIDS and in TB highly prevalent countries.

Maintaining Good Hygienic Practices

Always cover mouth and nose with a tissue or handkerchief when coughing or sneezing. Keep doors and windows open during the day to provide ventilation and sunlight exposure. Spit only into a container. Proper disposal of excreta (sputum, saliva) from TB patients should be done by burning, dumping in a pit. Keep good personal hygiene – regularly wash hands, take showers, wash hair, wear clean clothing, cut nails. Improve fitness. Enough sleep, healthy diet, physical exercise should be carried out. Do not smoke.

GASTROINTESTINAL DISORDERS

Diarrhea

DEFINITION

Diarrhea is 3 or more soft or watery stools per day. It is a symptom not a disease. Acute diarrhea occurs suddenly, may be risky for your patient because of the dehydration. Chronic diarrhea occurs when your patient is complaining about diarrhea for more than 3 weeks. Sometimes your patient has diarrhea alternating with constipation. The main risk of this kind of diarrhea is developing malnutrition.

CAUSES

Food poisoning, gastrointestinal infections, other diseases outside the bowel, surgical problems are common causes. However, any kind of diarrhea can cause dehydration and death. Assessment of dehydration is very important.

Common causes are

- Intestinal infections:
 - Virus: 60% of cases, especially children
 - Bacteria
 - Parasite
 - Fungal
- Poor Hygiene and Sanitation:
 - Poor hygiene
 - Community level-Sanitation problems
 - Water source- river, well, spring
 - Contamination of the water
 - Latrines
 - Food
- Common mistakes:
 - Using unboiled water
 - Eating food not cooked enough
- Systemic infections
 - When a child has diarrhea and fever, always think of systemic diseases like malaria.
- Bad nutrition (related to feeding)
 - Sudden change in the child nutrition+++ : breast feeding suddenly stopped and powder milk started without weaning period
 - wrong dosage of powder milk
 - giving diluted condensed milk

Breast-feeding prevents diarrhea in babies. Encourage breastfeeding and discourage bottles.

- Side effects of some medicines
 - Antibiotics: Tetracycline, Ampicillin, Cotrimoxazole, Chloramphenicol, Methylodopa (Aldomet)
- Chronic disease of intestine
 - Colitis- chronic inflammation of the intestine

- Tumors
- Psychological cause- Nervous diarrhea

ASSESSMENT OF A PATIENT WITH DIARRHEA

History

- How many stool daily?
- Diarrhea for how long?
- Aspect of the stools - Soft? Liquid? Watery? Blood? Mucus?
- Diarrhea associated with any factors
- Fever +
- Abdominal cramps + or -
- Convulsions
- Vomiting +
- Worms +
- Other infections ++ (Ear pain, cough, dysuria...)
- Good appetite or not? Thirst
- Kind of food ingested - Usual food intakes
- How many persons have diarrhea in the family? - In the neighborhood
- When did your patient pass urine for the last time? Aspect of the urine.

Ask about diarrhea in ALL children:

ASK: DOES THE CHILD HAVE DIARRHOEA?

Use words for diarrhoea the mother understands. If the mother answers NO, ask about the next main symptom, fever. You do not need to assess the child further for signs related to diarrhoea.

If the mother answers YES, or if the mother said earlier that diarrhoea was the reason for coming to the clinic, record her answer. Then assess the child for signs of dehydration, persistent diarrhoea and dysentery.

ASK: FOR HOW LONG?

Diarrhoea which lasts 14 days or more is persistent diarrhoea. Give the mother time to answer the question. She may need time to recall the exact number of days.

ASK: IS THERE BLOOD IN THE STOOL?

Ask the mother if she has seen blood in the stools at any time during this episode of diarrhoea.

Examination

- Vital signs
- General examination
- Look for dehydration

Next, check for signs of dehydration. When a child becomes dehydrated, he is at first restless and irritable. If dehydration continues, the child becomes lethargic or unconscious. As the child’s body loses fluids, the eyes may look sunken. When pinched, the skin will go back slowly or very slowly.

SIGNS AND SYMPTOMS

DIARRHOEA WITHOUT BLOOD		DYSENTERIC DIARRHOEA
• Signs	Sometimes fever Slight abdominal pain Vomiting	High Fever Considerable abdominal pain Vomiting
• Stools	Watery	Blood
• Life-threatening	Dehydration	Sepsis

Assessing the patient**Inspection**

- General appearance (awake, irritable, sleepy)
- Eyes, tears, mouth and tongue, fontanel in babies less than 18 months
- Is the patient thirsty? Is there vomiting?

Examine the patient:

- Skin elasticity
- Urine output.
- Look in the table to see if the patient has signs of 'No', 'Some' or 'Severe' DEHYDRATION.

LOOK AT THE CHILD'S GENERAL CONDITION

When you checked for general danger signs, you checked to see if the child was lethargic or unconscious. If the child is lethargic or unconscious, he has a general danger sign. Remember to use this general danger sign when you classify the child's diarrhea.

A child has the sign restless and irritable if the child is restless and irritable all the time or every time he is touched or handled. If an infant or child is calm when breastfeeding but again restless and irritable when he stops breastfeeding, he has the sign "restless and irritable". Many children are upset just because they are in the clinic. Usually these children can be consoled and calmed. They do not have the sign "restless and irritable".

LOOK FOR SUNKEN EYES

The eyes of a child who is dehydrated may look sunken. Decide if you think the eyes are sunken. Then ask the mother if she thinks her child's eyes look unusual. Her opinion helps you confirm that the child's eyes are sunken.

Note: In a severely malnourished child who is visibly wasted (that is, who has marasmus), the eyes may always look sunken, even if the child is not dehydrated. Even though the sign sunken eye is less reliable in a visibly wasted child, you should still use the sign to classify the child's dehydration.

OFFER THE CHILD FLUID

Ask the mother to offer the child some water in a cup or spoon. Watch the child drink.

A child is not able to drink if he is not able to take fluid in his mouth and swallow it. For example, a child may not be able to drink because he is lethargic or unconscious. Or the child may not be able to suck or swallow.

A child is drinking poorly if the child is weak and cannot drink without help. He may be able to swallow only if fluid is put in his mouth. A child has the sign drinking eagerly, thirsty if it is clear that the child wants to drink. Look to see if the child reaches out for the cup or spoon when you offer him water. When the water is taken away, see if the child is unhappy because he wants to drink more.

If the child takes a drink only with encouragement and does not want to drink more, he does not have the sign "drinking eagerly, thirsty."

PINCH THE SKIN OF THE ABDOMEN

Ask the mother to place the child on the examining table so that the child is flat on his back with his arms at his sides (not over his head) and his legs straight. Or, ask the mother to hold the child so he is lying flat in her lap.

Locate the area on the child's abdomen halfway between the umbilicus and the side of the abdomen. To do the skin pinch, use your thumb and first finger. Do not use your fingertips because this will cause pain. Place your hand so that when you pinch the skin, the fold of skin will be in a line up and down the child's body and not across the child's body. Firmly pick up all of the layers of skin and the tissue under them. Pinch the skin for one second and then release it. When you release the skin, look to see if the skin pinch goes back:

- very slowly (longer than 2 seconds)
- slowly (skin stays up even for a brief instant)
- immediately

If the skin stays up for even a brief time after you release it, decide that the skin pinch goes back slowly.

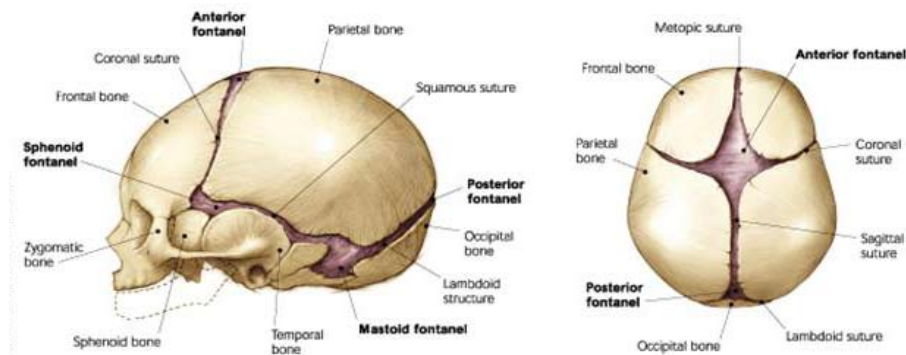
LOOK FOR SIGNS OF DEHYDRATION

Dehydration	No	Some	Severe
General appearance	Normal, awake	* Irritable restless (moving, crying)	*Lethargic, unconscious, cold hands and feet
Eyes	Normal	Sunken	Very sunken
Tears	Present	Absent	Absent
Mouth and Tongue	Moist	Dry	Very dry
Fontanel (6-18 months)	Normal	Depressed	Very depressed
Drinks thirstily	Drink Normally	* Very thirsty	* Cannot drink or refuses
Skin pinch	Goes back normally (quickly)	* Goes back slowly	* Goes back very slowly
Blood Pressure	Normal	Normal	Low or not found
Pulse	Normal	Rapid	Rapid, thready (weak)
Respiration	Normal	Deep	Deep and rapid
Urine	Normal	Little, dark	No urine
Decision	NO DEHYDRATION	If the patient has 2 or more signs including at least 1 with * mark SOME DEHYDRATION	If the patient has 2 or more signs including at least 1 with * mark SEVERE DEHYDRATION
Treatment	Use Plan A	Use Plan B	Use Plan C



Note: In a child with marasmus (severe malnutrition), the skin may go back slowly even if the child is not dehydrated. In an overweight child, or a child with oedema, the skin may go back immediately even if the child is dehydrated. Even though skin pinch is less reliable in these children, still use it to classify the child's dehydration.

THE FONTANEL IN BABIES



WHO IMCI ASSESS CLASSIFY TREATMENT

SIGNS	CLASSIFY As	IDENTIFY TREATMENT (Urgent Pre-referral treatments are in bold print)
<p>Two of the following signs:</p> <ul style="list-style-type: none"> • Lethargic or unconscious • sunken eyes • not able to drink or drinking poorly • Skin pinch goes back very slowly 	SEVERE DEHYDRATION	<p>» If child has no other severe classification:</p> <ul style="list-style-type: none"> – Give fluid for severe dehydration (Plan C). <p>OR</p> <p>» If child also has another severe classification:</p> <ul style="list-style-type: none"> – Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way. Advise the mother to continue breastfeeding. – - If child is 2 years older and there is cholera in your area, give antibiotic for cholera.
<p>Two of the following signs:</p> <ul style="list-style-type: none"> • Restless, irritable • sunken eyes • Drink eagerly, thirsty • Skin pinch goes back slowly 	SOME DEHYDRATION	<p>» Give fluid and food for some dehydration. (Plan B)</p> <p>» If child also have a severe classification:</p> <ul style="list-style-type: none"> – Refer URGENTLY to hospital with mother giving frequent sips of ORS on the way. Advise the mother to continue breastfeeding. <p>» Advise mother when to return immediately.</p> <p>» Follow-up in 5 days if not improving.</p>
<p>Not enough signs to classify as some or severe dehydration.</p>	NO DEHYDRATION	<p>» Give fluid and food to treat diarrhea at home (Plan A).</p> <p>» Advise mother when to return immediately.</p> <p>» Follow-up in 5 days if not improving.</p>

PLAN A, B OR C FOR MANAGEMENT OF DIARRHEA

Plan A

WHO plan A to treat diarrhea at home

The patient has no signs of dehydration. There is no need to hospitalize in IPD. Tell the mother to breast-feed more frequently and for longer each time. If not breastfeeding, give Oral Rehydration Solution (ORS) or other food-based liquids (soup, boiled rice water, yoghurt drinks) until the diarrhea stops.

Give the child plenty of food to prevent under-nutrition. If the child takes solid food, advise extra cereals, fresh fruit and vegetables, and add 1-2 spoons of vegetable oil to each meal for two weeks. Explain to the mother how to prepare ORS or boiled rice water. Ask the mother to quantify the intake of water a day, and follow up 2 times a week. In addition to the usual fluid intake, tell the mother to give:

- < 2 years 50-100 ml ORS after each loose stool
- > 2 years 100-200 ml ORS after each loose stool

Follow Up with Plan A

- Advise the mother to return or show the child to a health worker if the child:
 - Passes many stools

- Is very thirsty
- Has sunken eyes
- (The above 3 signs suggest the child is dehydrated):
- Seems not to be getting better after 3 days - Does not eat or drink normally.
- Has a fever

4 Golden Rules

- GIVE EXTRA FLUID (see Plan A for recommended fluids)
- GIVE ZINC SUPPLEMENTS
- CONTINUE FEEDING
- MAKE A RETURN APPOINTMENT TO THE DOCTOR

Plan B

Hospitalise IPD. The first 4 hours, give ORS as written in Table 3 BBG. If the child wants more ORS than recommended, give more. Encourage the mother to continue breastfeeding. After 4 hours, re-evaluate hydration (see Table 2) and re-evaluate the plan to follow (if still plan B: repeat Table 2 for 4 hours). After rehydrating the child, follow plan A. If still dehydrated, repeat plan B.

Table 3: approximate amount of ORS to give in the first 4 hours

AGE	< 4 month	4-12 month	12 month – 2 years	2-5 years	5-14 years	>14 years
Weight	< 6 kg	6 - <10 kg	10 - <12 kg	12-19 kg	19-29.9 kg	>30 kg
ORS in ml	200-400	400-700	700-900	900-1400	1400-2200	2200-4000

Plan C

Hospitalise IPD. Give intravenous hydration with Ringer lactate according to Table 4 BBG. Evaluate clinical condition every 15 minutes. If the full amount of IV rehydration has been given (6 hours for infant and 3 hours for adults): reevaluate hydration and apply plan A, B, or C. If no IV perfusion available, give ORS by nasogastric tube: 20ml/kg/hours for 6 hours.

Check clinical condition as for IV infusion. Keep patient in IPD for at least 24 hours and until etiologic diagnosis is made. If you suspect cholera, consider antibiotic treatment. After rehydrating the child follow Plan A.

Table 4: IV rehydration with Ringer's solution

	First give 30 ml/kg in	Then give 70 ml/kg in
< 12 months	1 hour	5 hour
> 12 months	30 minutes	2.5 hours

Remember: $\text{drops/min} = \frac{\text{cc}}{\text{Hr}} \times \frac{\text{drop in 1 cc}}{60}$

Example: I want to give 500cc in 5 hours. There are 20 drops in 1cc.
Then drops/min = $500/5 \times 20/60 = 33$ drops/min

Zinc Supplements

Tell the mother how much ZINC to give:

- < 6 months of age: 1/2 tablet of 20 milligram per day for 14 days
- > 6 months of age: 1 tablet of 20 milligram per day for 14 days

Show the mother how to give Zinc supplements:

- Infants: dissolve the tablet in a small amount of expressed breast milk, ORS or clean water; in a spoon
- Older children: tablets can be chewed or dissolved in a small amount of clean water in a cup or spoon

Remind the mother to give the ZINC supplements for the full 14 days.

Dysentery-Diarrhea with blood

TWO TYPES OF DYSENTERY

1. Bacterial- Several types of bacteria cause dysentery, the most severe form is Shigella. Associated symptoms are fever, rectal pain after passing stools (tenesmus), unwell patient.
2. Amoebic- Often not acute illness, less than 30% of sufferers have fever. Sometimes the amoebae migrate via the blood to form peripheral abscesses

Patients at risk

- Children under 2 years old
- Patient over 50 years old
- Malnourished children (<80% of the median Z SCORE)
- High fever >39°C
- Signs of severe dehydration
- Signs of confusion, seizures or coma

If there is **No fever**,

Treat dehydration using the protocol. Treat in OPD if the patient's condition stabilizes. Admit to IPD if the patient is at risk. Treat in diarrhoea ward to prevent spreading. Prescribe metronidazole:

- Child 10 mg/kg TID x 7 days
- Adult: 750-800 mg TID x 7 days

Metronidazole doses for amoeba are higher than usual. Follow the recommended dose given here. Give vitamin A to children under 12 years if not received in the past 4 months.

With fever

Treat dehydration using the protocol. Treat in OPD if the patient's condition stabilizes. Admit to IPD if patient is at risk. Treat in diarrhoea ward to prevent spreading. Treat the fever. Prescribe miprofloxacin:

- Child: 10 mg/kg BD x 5 days
- Adult: 500 mg BD X 5 days

AND metronidazole:

- Child 10 mg/kg TID x 7 days
- Adult: 750-800 mg TID x 7 days

Give vitamin A to children under 12 years if not received in the past 4 months. Ensure sufficient food intake: breast-feeding for babies and normal diet for older children and adults. Watch for complications- abdominal distension, perforation, sepsis.

COMPLICATIONS

- Fulminant Colitis with perforation and multi organ involvement
- Amoebic liver abscess
- Pericardial
- Pulmonary
- Cerebral
- Genitourinary diseases

Diarrhea without blood

- Non specific
- Cholera
- Giardia

Most cases do NOT need antibiotics. Most cases of acute diarrhoea without blood do not need antibiotic treatment. However, there are (at least) two special cases of watery diarrhoea that do need antibiotics.

CHOLERA

Cholera is an intestinal infection caused by the bacterium *Vibrio cholera*. This bacterium produces Cholera Toxin (CT), an enterotoxin which causes a massive outpouring of fluid and salts (electrolytes) into the bowel. Cholera infection is transmitted through contaminated water or food.

Cholera should be suspected when:

- a child older than 5 years, or an adult, develops severe dehydration from acute watery diarrhoea (usually with vomiting).
- or any patient older than 2 years has acute watery diarrhoea when cholera is known to be present in the area.

Signs and Symptoms

Infections range from asymptomatic to acute fulminant watery diarrhoea, often described as 'rice-water stools'. In severe cases, purging watery diarrhoea can rapidly cause the loss of 10% or more of the body's weight, with hypovolemic shock, metabolic acidosis, and potassium depletion causing death. Vomiting starts after the onset of (always painless) diarrhoea. 75% or more of initial infections with *V.cholerae* may be asymptomatic, depending on the infecting dose

Clinical

Clinically found in outbreaks, in non-epidemic situations stool-sample test for *V. cholerae*.

Treatment

Rapid replacement of lost fluid and electrolytes through immediate oral or IV rehydration should be done. A patient needs 10-15 litres of fluid the first day. Rehydrate with Ringers lactate with careful substitution of potassium after 24h fluid substitution. Check potassium if possible.

If hypokalemia, add 1-2 ampoules of 10 ml 10% in one litre Ringers lactate. Antimicrobial therapy is helpful but not essential, although it can reduce the duration of illness, the volume of stools and the

duration of passing vibrios in the faeces. The recommended antibiotic treatment on the Thailand/ Burma border is ciprofloxacin 1 gram STAT dose.

Note: It is recommended to check for resistance in your clinic before starting treatment.

GIARDIA

This diarrhea is caused by a parasite (*giardia intestinalis*). In most of the cases, there are only few clinical signs:

- nausea, abdominal pain, weight loss, (watery) diarrhoea
- There is no fever.

If the diarrhea becomes chronic (more than 14 days): treat with metronidazole (infant: 15 mg/kg divided in 3 doses for 5 days, adults: 2 g/day OD for 3 days).

Persistent and Prolonged Diarrhea

DEFINITION

Persistent diarrhea (PD) may be defined as the passage of 3 watery stools per day for >2 weeks in a child who either fails to gain or loses weight. PD identifies children with a substantial diarrhea-related morbidity and accounts for between 36% and 54% of all diarrhea-related deaths.

CAUSES

The most important trigger for PD is an acute diarrheal episode caused by an enteric infection. In areas in which HIV infection is endemic, chronic infection of the gastrointestinal tract (e.g, cryptosporidiosis) is an important cause. In the absence of an infective etiology, other specific disease entities associated with PD in children should be sought. The most common are dietary protein intolerances, celiac disease, and secondary disaccharide (lactose) intolerance. Sometimes no cause can be found.

RISK FACTORS FOR PD

The most important epidemiological risk factor for PD is malnutrition. Zinc deficiency, lack of breastfeeding, male sex, infection with *Escherichia coli* or *Cryptosporidium*, and a history of intrauterine growth retardation are other important associated conditions. A recent acute diarrheal episode (within the past 2 months) is common in PD.

TREATMENT

Malnourished children with PD should receive enteral nutrition during their rehabilitation. Continue breastfeeding. Generally, the goal is to provide at least 150 kcal/kg/day enterally.

PREVENTION OF DIARRHEA

Advice

Give the following education to all patients and/or mothers to prevent diarrhea:

- Wash hands with soap and water before eating, preparing food and after visiting the latrine.
- Breastfeed babies.
- Boil drinking water if not chlorinated.
- Cook food well and keep it covered.
- Use latrines.
- Clean children carefully after passing stools.
- Do not use chronic antacid (like aluminium); gastric acidity helps to fight bacteria.

HEALTH EDUCATION

Health education -Plays a major role in both preventing outbreak and limiting the spread of infection once one occurs. Food and water hygiene should be carried out. Measures such as disinfecting patients clothing by boiling for 5 min drying out bedding in the sun and burying stool are important. In health care center, patient excreta may mix with disinfectant or acid before disposal in pit latrine. Semisolid waste should be incinerated.

Dyspepsia and Peptic Ulcers

No specific group of symptoms is related to the upper gastrointestinal tract. These include gastritis, 'heartburn' reflux.

SYMPTOMS

Epigastric pain may be related to hunger or the time of day. It may be associated with fullness after eating. It may have retrosternal pain. i.e. 'heartburn'

SIGNS

Non specific epigastric tenderness can be present. Feel for abdominal mass in case there is a cancer.

MANAGEMENT OF DYSPEPSIA

It may respond to simple antacids. It may benefit from anti reflux medication. If the above do not work and if person has a known previous ulcer, then eradicate *H Pylori*. If the person does not have a history of an ulcer then testing for H Pylori may be useful.

DUODENAL ULCERS

Major risk factors are

- *H.pylori*
- Drugs – NSAIDS, aspirin, steroids

Minor risk factors are

- smoking

Symptoms and Signs

- Epigastric pain before meals
- Relieved by eating
- Epigastric tenderness
- Hematemesis
- Maelena
- Rarely, an ulcer can lead to a perforation

Diagnosis

Endoscopy is the way of diagnosis.

GASTRIC ULCER

It occurs mainly in the elderly. Risk factors are:

- *H Pylori*
- Smoking
- NSAIDs
- Surgery recently

Symptoms and Signs

- Epigastric pain related to eating
- May have weight loss.
- May be asymptomatic.
- Hematemesis
- Maelena
- Rarely, an ulcer can lead to a perforation

Treatment

Avoid food that makes symptoms worse. Stop smoking. Eradicate *H Pylori*- triple therapy. Treat with medication to reduce acid e.g. ranitidine or cimetidine or lanzoprazole. Stop NSAIDS.

Complications

Perforated peptic ulcer is a surgical emergency and requires surgical repair of the perforation. Most bleeding ulcers require endoscopy urgently to stop bleeding with cautery or injection.

Gastro-Oesophageal Reflux

GASTRO-OESOPHAGEAL REFLUX DISEASE (GORD)

DEFINITION

Dysfunction of the lower oesophageal sphincter (LES) predisposes to reflux of acid.

Associations

The reason some people develop GORD is still unclear. However, research shows that in people with GORD, the LES relaxes while the rest of the esophagus is working. Anatomical abnormalities such as a hiatal hernia may also contribute to GORD. Other factors that may contribute to GORD include:

- Obesity
- Pregnancy
- Smoking

Common foods that can worsen reflux symptoms include:

- Citrus fruits
- Chocolate
- Drinks with caffeine or alcohol
- Fatty and fried foods
- Garlic and onions
- Mint flavorings
- Spicy foods
- Tomato-based foods, like spaghetti sauce, salsa, chilli, and pizza

SYMPTOMS

The main symptom of GORD in adults is frequent heartburn, also called acid indigestion—burning-type pain in the lower part of the mid-chest, behind the breast bone, and in the mid-abdomen. Most children under 12 years with GORD, and some adults, have GORD without heartburn. Instead, they may experience a dry cough, asthma symptoms, or trouble swallowing.

TREATMENT

Lifestyle:

- Stop smoking.
- Avoid foods and beverages that worsen symptoms.
- Lose weight if needed.
- Eat small, frequent meals.
- Wear loose-fitting clothes.
- Avoid lying down for 3 hours after a meal.
- Raise the head of your bed 6 to 8 inches by securing wood blocks under the bedposts.
- Just using extra pillows will not help.

Medications

- Antacids
- Lansoprazole

May need surgery but only if symptoms extremely bad.

LIVER DISEASES**Amoebiasis****DEFINITION**

Amoebiasis is an infectious disease caused by *Entamoeba histolytica* that exists in two forms:

- the hardy, infective cyst
- the more fragile, potentially pathogenic trophozoite

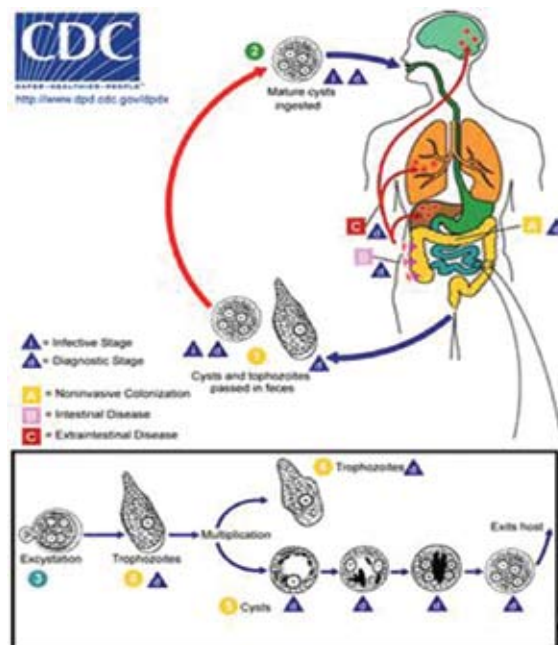
Invasive amoebiasis (trophozoite) is mostly a disease of young adults. Amoebiasis is rare below age 5 years and especially below 2 years, when dysentery is due typically to shigellae. In general, rates are higher in areas with poor sanitation.

Infectious Agent

- *Entamoeba histolytica*
- Reservoir-Humans - usually a chronically ill or asymptomatic cyst passer.

Mode of transmission

- By ingestion of fecally contaminated food or water containing amebic cysts
- Sexual transmission by oral-anal contact

Life Cycle of Amoeba

Incubation Period

Incubation period is 2 - 4 weeks.

CLINICAL FEATURES

Intestinal disease:

Amebic dysentery: see lecture earlier. Amoeboma (amebic granulomata) may occur in the wall of large intestine in patients with intermittent dysentery or colitis of long duration. Infection may also be asymptomatic.

Extraintestinal amoebiasis:

- Amoebic liver abscess (dissemination via blood stream)
- Lung abscess
- Brain abscess
- Penile lesions (in active homosexuals)
- Skin ulceration (usually in perianal region)

DIAGNOSIS

- Microscopic demonstration of trophozoites or cysts in:
 - fecal specimens
 - smears of aspirates or scrapings or sections of tissue
- Ultrasonography and CAT scanning for the presence and location of an amoebic liver abscess

TREATMENT

- Metronidazole
- Diloxanide furoate

See specific treatment for dysentery. See specific treatment for abscess.

HEALTH EDUCATION

Sanitary disposal of feces should be done. Hand washing after defecation and before preparing or eating food is important. Disseminate information regarding the risks involved in eating uncleaned or uncooked fruits and vegetables and in drinking water of questionable purity. Dispose of human feces in a sanitary manner. Protect public water supplies from fecal contamination. Sand filtration of water removes nearly all cysts Chlorination of water does not always kill cysts. Water of undetermined quality can be made safe by boiling for 1 minute. Educate high-risk groups to avoid sexual practices that may permit fecal-oral transmission. Thorough washing with potable water and keeping fruits and vegetables dry may help. Cysts are killed by drying & by temperatures above 50°C and by irradiation.

CLINICAL FEATURES OF HEPATIC DISEASE

Liver disease can manifest in many different ways.

Characteristic manifestations include:

- jaundice (a yellowish discoloration of the skin and whites of the eyes)
- cholestasis (reduction or stoppage of bile flow)
- liver enlargement, portal hypertension (abnormally high blood pressure in the veins that bring blood from the intestine to the liver)
- ascites (accumulation of fluid in the abdominal cavity)
- hepatic encephalopathy (deterioration of brain function due to buildup of toxic substances normally removed by the brain)
- liver failure

Sometimes the manifestations of liver disease are not obvious. Symptoms may include:

- fatigue
- a feeling of unwellness
- loss of appetite
- mild weight loss

However, these symptoms are also typical of many other diseases. Thus, liver disease can easily be overlooked, particularly in its early stages.

JAUNDICE

Definition

Jaundice is a yellowish discoloration of the skin and of the whites of the eyes caused by abnormally high levels of the pigment bilirubin in the bloodstream.

Symptoms associated with jaundice

In jaundice, the skin and whites of the eyes appear yellow. Urine is often dark because excess bilirubin is excreted through the kidneys. People may have itching, light-colored stools, or other symptoms, depending on the cause of jaundice. For example, acute inflammation of the liver (acute hepatitis) may cause loss of appetite, nausea, vomiting, and fever. Blockage of bile may result in abdominal pain and fever.

Acute and Chronic Hepatitis

Presentation

It may be asymptomatic or present with fatigue, flu-like symptoms, fever, light stools, dark urine, and/or jaundice.

Causes

- Viral hepatitis
- Alcohol
- Drugs (e.g. diclofenac, co-amoxiclav)
- Toxins
- Obstructive jaundice
- Other infections - malaria, leptospirosis
- Pregnancy

Management

Investigation- LFTs; FBC; U & E; hepatitis serology are usually done. Treat according to cause. Admit acutely if condition is poor or rapidly deteriorating.

Complications

- Chronic hepatitis
- Acute liver failure

CHRONIC HEPATITIS

Hepatitis lasting > 6 months

Causes:

- Viral hepatitis (B,C, and D)
- Alcohol
- Drugs (e.g. nitrofurantoin, methyldopa, isoniazid)
- Chronic autoimmune hepatitis
- Primary biliary cirrhosis
- Sarcoidosis
- Haemochromatosis

Presentation

May be asymptomatic or present with:

- Fatigue
- Right upper quadrant (RUQ) pain
- Jaundice

- Arthralgia
- Signs of chronic liver disease (gynaecomastia, testicular atrophy, clubbing, palmar erythema, leuconychia, peripheral oedema, spider naevi, portal hypertension, recurrent infection)
- Complications (acute liver failure, cirrhosis, hepatocellular carcinoma)

Management

Investigations: LFTs; FBC; U&E; hepatitis serology are done. Refer for specialist care.

VIRAL HEPATITIS

Hepatitis A

Hepatitis A or infectious jaundice is caused by a picornavirus. It is transmitted by the orofecal route, transmitted to humans through methods such as contaminated food. It causes an acute form of hepatitis and does not have a chronic stage.

Signs and Symptoms

- Incubation period-2-6 weeks
- Jaundice is usually preceded by a prodrome of anorexia, arthralgia, nausea, fever
- Tender hepatomegaly
- Splenomegaly
- Lymphadenopathy

Diagnosis

IgM, IgG-1-2 week later and remain for life and LFTs are usually done.

Management

Advise to rest. Stay hydrated and avoid alcohol.

Prevention

Vaccination and improvement of sanitary conditions and safe disposal of excreta will reduce transmission.

HEPATITIS B

Hepatitis B is caused by a hepadnavirus, which can cause both acute and chronic hepatitis. Spread is via blood and blood products, secretion and sexual contact. 95% of patients clear their infection and develop antibodies against hepatitis B virus. 5% of patients do not clear the infection and develop chronic infection; only these people are at risk of long term complications of hepatitis B.

Signs and Symptoms

- Incubation period-1-6 months
- Urticaria
- Arthralgia

Investigation

- HbsAg ->6 months define the carrier state
- HbeAg -highly infectious
- Anti-HBc-past infection
- Anti-HBs-previous vaccination
- LFT

Treatment

Supportive treatment is given. Avoid alcohol. Steroids and NSAID are not indicated. Vaccination can be done.

Hepatitis C

Hepatitis C is caused by a Flavivirus. It can be transmitted through contact with blood. Hepatitis C may lead to a chronic form of hepatitis, culminating in cirrhosis. It can remain asymptomatic for 10-20 years. Patients with hepatitis C are prone to severe hepatitis if they contract either hepatitis A or B. The virus can cause cirrhosis of the liver.

Investigation

Antibodies become detectable at 3-6 months.

Cirrhosis of the liver

DEFINITION

Cirrhosis is a chronic disease that destroys the cells of the liver and replaces them with scar tissue. Previous infection with the Hepatitis B (or C) virus is a common cause. Chronic alcohol abuse can cause cirrhosis. Cirrhosis of the liver can also be the result of recurrent haemolysis due to blood disorders. In the long-term, this disease could result in liver failure, encephalopathy, hypoglycemia, bleeding, ascites, and infections.

SIGNS AND SYMPTOMS

- Jaundice
- Malaise, weakness, bodily itching
- Red palmar side of hands (palmar erythema)
- Slow hand tremor
- Ascites, oedema of the legs and back
- Enlarged spleen, gastrointestinal bleeding
- Muscle wasting
- Spider naevi (red spider-like blood vessels on the skin).

DIAGNOSIS

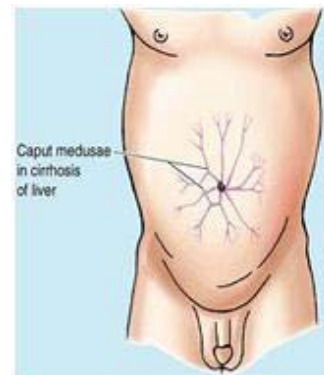
- Liver function test (AST/ALT)
- Ultrasound of liver, if available



ASCITES



PALMAR ERYTHEMA



CAPUT MADUSA

Treatment

It is not possible to cure cirrhosis, only to control the symptoms and to delay liver failure. Nutrition: high protein, low salt diet should be given. In case of acute gastrointestinal bleeding- blood transfusion and vitamin K 1 mg IM. For prevention of gastro intestinal bleeding- give omeprazole. Monitor BP, as HBP is a risk for bleeding. In case of oedema and ascites- give Spironolactone or Furosemide

Prevention

Stop alcohol intake and drugs that cause liver toxicity. (e.g. anti TB and leprosy drugs)

Liver Failure

DEFINITION

Liver failure is severe deterioration in liver function.

CAUSES

Liver failure can result from any type of liver disorder, including viral hepatitis, cirrhosis, and liver damage from alcohol or drugs such as paracetamol. A large portion of the liver must be damaged before liver failure occurs. Liver failure may develop rapidly over days or weeks (acute) or gradually over months or years (chronic).

CLINICAL FEATURES

- Grades of hepatic encephalopathy:
 - Grade 1 Drowsy but coherent; mood change
 - Grade 2 Drowsy, confused at times, inappropriate behavior
 - Grade 3 Very drowsy and stuporose but rousable; alternatively restless, screaming
 - Grade 4 Comatose, barely rousable
- Jaundice
- Feter hepaticus
- Signs of chronic liver disease

INVESTIGATIONS

Check there is no infection, no occult bleeding.

MANAGEMENT

Look for sepsis, hypoglycemia and encephalopathy. Treat the cause if known. If malnourished – support with nutrition. Avoid sedatives. Supportive therapy and monitor closely.

Liver Abscess

DEFINITION

One or more collections of pus within the liver. There are two types of liver abscess:

1. Amoebic

Three times more common than bacterial. The patient may report a recent episode of dysentery. Treat with metronidazole +/- drainage.

2. Bacterial

It is mostly from bacteria ascending the bile ducts. The patient is often more unwell/septic. Treat with broad spectrum antibiotics +/- drainage.

SIGNS AND SYMPTOMS

Fever, chills, no appetite, nausea can be present. Painful and enlarged liver (hepatomegaly) is found on palpation or percussion (in 50% of cases). Sometimes chest pain with a right-sided pleural effusion is present. There is usually no jaundice, no splenomegaly, and no ascites. (if present think of other diagnoses)

DIAGNOSIS

Clinical- ultrasound is very helpful to diagnose liver abscess. Stool test is done to establish the cause.

TREATMENT

If the patient is stable (not too unwell/septic):

- Start metronidazole PO
 - Child 7.5 – 10 mg / kg TID
 - Adult: 750-800 mg TID

If patient improves, continue for 14 days. If patient is not improving after 3-5 days, follow unwell/septic protocol.

If the patient is unwell/ septic: start IV ampicillin, gentamicin and PO/IV metronidazole (same dose as above). Continue for 14 days (stop gentamicin after 8 days). Depending on their size (>6 cm), and response to antibiotic treatment liver abscesses need to be drained surgically.

Cholecystitis**DEFINITION**

Acute cholecystitis is a bacterial infection of the gall bladder mostly due to obstruction of the biliary ducts. It may follow an attack of biliary colic. Cholecystitis can also be due to malnourishment or typhoid fever.

SIGNS AND SYMPTOMS

- Pain, tenderness and guarding in right upper quadrant (RUQ)
- Vomiting
- Fever, rigors
- Jaundice

DIAGNOSIS

Clinical; specific sign is the pain during deep inspiration when the RUQ is palpated, and no pain if this procedure is performed on the LUQ. Ultrasound of the gallbladder is done to reveal stones, if available.

COMPLICATIONS

- Empyema (gallbladder fills with pus)
- Peritonitis

TREATMENT

Bed rest, pain relief (buscopan IV or IM, codeine or tramadol) can be given. Nil by mouth -Intravenous fluids are given. Ceftriaxone 1 gram IV OD and metronidazole 500 mg IV TID can be given until fever settles then oral ciprofloxacin and metronidazole 500 mg TID total 10 days is given. Consider surgical removal of gallbladder. Without surgery, the recurrence is 25%.

Intestinal Worms**COMMON TYPES OF WORMS**

Intestinal worms are very common (ascaris / hookworm/ trichuris / taenia). The patient is infected by eating with dirty hands, walking without shoes or eating uncooked meat or vegetables. Worms should be treated to:

1. prevent anaemia and malnutrition and
2. prevent the following complications:
 - Intestinal obstruction/obstructive jaundice
 - Cysticercosis (*Taenia solium*) – lesions in brain and skin

Soil Transmitted Helminths

Examples of soil-transmitted helminths are ascaris, hookworm and trichuris. These parasites (worms) spend part of their lifecycle outside the human body, typically in soil. Infection is direct- eggs are transmitted from anus to mouth by eating or cooking with dirty hands, or through penetration of the skin by walking with bare feet. The worms live in the intestines of the infected person, but can migrate through the body. Children infected with worms can suffer from impaired growth and intellectual development.

SIGNS AND SYMPTOMS

- Worms can be seen in the stool or vomit
- Abdominal pain
- Epigastric pain is very common, especially with hookworm infection
- Enlarged, swollen abdomen
- Itching anus
- Chronic anaemia
- Malnutrition
- Complications: ascaris pneumonitis; intestinal obstruction, jaundice

Note: Patients with worms have no fever. If fever is present, look for another associated disease.

DIAGNOSIS

- Stool microscopy test for worms and/or eggs
- Complete blood count shows eosinophilia

TREATMENT

Adults and Children > 1 year of age: (Note: for pregnant women NOT in first trimester)

- Mebendazole 100 mg BID x 3 days OR
- Albendazole 400 mg STAT (children 12-24 months 200 mg STAT)

Treat any associated anaemia (especially hookworm).

PREVENTION

Advise people to use latrines, wash hands after passing stools and before eating/cooking, wear shoes.

Tape Worm

This worm is long, flat, made up of many short segments and can be up to 10 meters long. Patients get infected by eating undercooked meat. The eggs of these parasites leave the human body in the stools and can infect animals.

Signs and Symptoms

Patient sees worm pieces in stools or vomit. Abdominal discomfort, epigastric pain, nausea can be present. Patient eats a lot, but loses weight. In one form of *Taenia* (*T. solium*), nodules can be found in the skin or muscles. In neuro cysticercosis, cysts in the brain cause seizures and epilepsy.

Diagnosis

Stool microscopy test

Treatment

- Praziquantel - For child > 4 years and adult: 20mg/kg STAT OR 1 gram STAT
- Niclosamide - Child: < 10 kg: 11-35 kg: 500 mg STAT
 - Adult: 2 gram STAT

Note: tablets need to be chewed before swallowing.

Prevention

Advise people to:

- Avoid eating raw or undercooked pork and other meats.
- Wash hands with soap and water after using the toilet and before handling food, use latrines.

Meat should be inspected for cysts: do not eat pork if it is likely to be infected with tapeworm.

URINARY DISORDERS

URINARY TRACT INFECTIONS (UTI)

Cystitis

DEFINITION

It is the infection of the bladder, and very common in women.

SYMPTOMS AND SIGNS

- Pain or burning when passing urine (Dysuria)
- No fever
- Cloudy urine
- Blood in urine (Haematuria)
- Frequent urination
- Pain and tenderness in the lower abdomen

DIAGNOSIS

- Inspection of urine: cloudy or bloody urine
- Midstream urine specimen (dipstick test- nitrites and leukocyte esterase)
- Microscopic urine examination and culture bacteria

THINK

In cases of recurrent cystitis, think about bladder stone or STIs. Men do not usually get cystitis. Think about STIs in a man with UTI symptoms. Recurrent UTIs in children should be investigated to prevent kidney damage.

TREATMENT

Treatment in OPD; drink plenty of water (3-4 litres/day for adults). Antibiotic treatment has to be chosen according to the local resistance patterns. Treatment schemes could be:

- Cotrimoxazole 960 mg BID (high resistance in some camps) or
- Nitrofurantoin 100 mg QID (best taken with food) (Note- do not use in late pregnancy) or
- Oral cephalosporin (e.g. cephalexin 500 mg BID for 3 days)

DURATION OF TREATMENT

Provide antibiotic treatment for 3 days for the first episode of UTI in women. Provide 7 days antibiotic treatment in men, pregnant women and children.

NO RESPONSE OR RECURRENCE

If no response or if the UTI recurs within 8 weeks:

Send urine for culture and sensitivity and give first line treatment again. Ask the patient to come back in 5 days or sooner if fever starts. If there is resistance, treat according to the sensitivity test. (Note- Ciprofloxacin can be used in pregnancy when other antibiotics are resistant)

PREVENTION

Drink at least 2 litres of water per day. Urinate before bedtime and immediately after intercourse. Avoid constipation, as constipation reduces the bladder's ability to empty.

Pyelonephritis**DEFINITION**

It is the inflammation of the kidney, but other parts of the urinary tract may also be affected.

SIGNS AND SYMPTOMS

- High fever, chills
- Pain and tenderness in the back or kidney area
- Cloudy urine; blood in urine (haematuria)
- Pain or burning when passing urine (Dysuria)
- Frequent urination
- Sepsis

DIAGNOSIS

Examine urine: cloudy or bloody urine. Urine dipstick: is positive for leucocytes and nitrite. Urine microscopy (sediment): is positive for white cells, red cells and bacteria. Ultrasound (if available) is to detect structural kidney abnormalities.

TREATMENT

Treat in IPD until the patient's temperature returns to normal. Prevent dehydration. If the patient cannot drink, give IV fluids and monitor urine output. Drink plenty of water (3-4 litres/day for adults). Treat pain and fever.

- Ciprofloxacin 500 mg BD oral for 14 day (Ciprofloxacin can be used in pregnancy when other antibiotics are resistant) or
- Oral cephalosporin (e.g. cephalexin 1 gram TID for 14 days)

If the patient cannot take oral medication: ceftriaxone 1 gram OD IV/IM until the patient can tolerate oral medication.

PREVENTION

Drink at least 2 litres of water per day. Urinate before bedtime and immediately after intercourse. Avoid constipation - constipation reduces the bladder's ability to empty.

ADVICE FOR A PATIENT ON HOW TO TAKE A MID STREAM URINE SPECIMEN

1. Explain procedure to patient
2. Ensure patient privacy.
3. Advise patient to wash their hands pre-procedure.
4. Ensure patient cleans urethral meatus with 0.9% sodium chloride soaked cotton wool balls or gauze in a downwards motion FRONT TO BACK.
5. Instruct patient to collect midstream specimen in sterile container after passing a small amount of urine into the toilet/bedpan/bottle and then finish passing urine into the toilet/bedpan/bottle.
6. Retrieve specimen jar from patient and ensure lid is tightened on container.
7. Label specimen correctly with patient's name, medical record number and time and date of collection. Note on the request form if the patient is menstruating.
8. Place specimen container and request form in a biohazard specimen bag for transportation to the laboratory or store refrigerated for collection.
9. Wash hands.

Prostatitis

DEFINITION

It is an inflammation of prostate.

SYMPTOMS AND SIGNS

- Fever
- Pain and tenderness in the rectum
- Cloudy urine
- Blood in urine
- Pain in urine (haematuria)
- Pain or burning when passing urine
- Frequency

DIAGNOSIS

Rectal examination is done. Examine urine - cloudy or bloody urine. Urine dipstick - is positive for leucocyte and nitrates. Urine microscopy – is positive for white cells and bacteria.

TREATMENT

Treat in IPD. Prevent dehydration, if cannot, drink IV fluid and monitor urine output. Drink a lot of water (3-4 times/ day). Treat pain and fever and avoid constipation.

- Ciprofloxacin 500 mg BID x 4 weeks

If patient cannot take oral medicine, ceftriaxone 1 G OD IV/IM until patient can tolerate oral medication.

Post Streptococcal Glomerulonephritis

DEFINITION

Acute Glomerulonephritis (AGN) is an inflammation of the filter of the kidneys. There are multiple causes of this syndrome. One of the common causes that can be treated is Post-Streptococcal Glomerulonephritis. This disease usually follows a skin infection or throat infection. It can sometimes follow other infections like pneumonia, typhoid, leptospirosis, malaria, hepatitis C, or measles. It is more common in children over the age of 3 years.

SYMPTOMS AND SIGNS

50% of AGN are very mild and the patients do not seek medical care. In other cases, patient can have:

- Smoky, rusty brown colour urine
- Swelling from fluid retention (oedema) especially on the face, but this can be generalised in severe cases

Low urine output (oliguria) can be present. Hypertension is usually mild but it can be severe in 5-10% of cases. If oedema is generalised, there may be sign of pulmonary oedema: difficulty in breathing crackles at lung bases. Ask for history of previous skin or throat infection. Look at the skin to find signs of old impetigo.

INVESTIGATIONS

- Dipstick: protein (proteinuria), blood (haematuria)
- Urine sediment - Red and white blood cells, hyaline, granular and red blood cell casts

TREATMENT

Admit to IPD, rest. Restrict salt intake. Restrict fluid intake to 500 ml-1 L/day in adults, 50 ml/kg/ day in children (max 1L). Antibiotics like Amoxicillin or Cloxacillin (see tonsillitis and impetigo) are recommended if the infectious focus is still present. In case of severe oedema- PO Furosemide 1mg/kg/day should be given. Treat complications- hypertension, acute pulmonary oedema, seizures.

PREVENTION

Effective treatment of tonsillitis or impetigo should be given. Prevent other infections that can cause glomerulonephritis. Control blood sugar carefully in diabetes mellitus, and control blood pressure in hypertension.

Nephrotic Syndrome

DEFINITION

In nephrotic syndrome, large amounts of protein are found in the urine (proteinuria) whilst levels of protein in the blood/plasma fall (hypoalbuminemia). This may be due to kidney disease (primary glomerular disease) or can be a complication of other diseases like diabetes mellitus or infection (Secondary glomerular disease). The exact cause can only be found by carrying out a renal biopsy.

SIGNS AND SYMPTOMS

- Generalised oedema (in severe cases there is pleural oedema)
- Reduced urine output (oliguria)
- Protein in the urine (proteinuria)
- Low albumin level in the blood (hypoalbuminemia)

TREATMENT

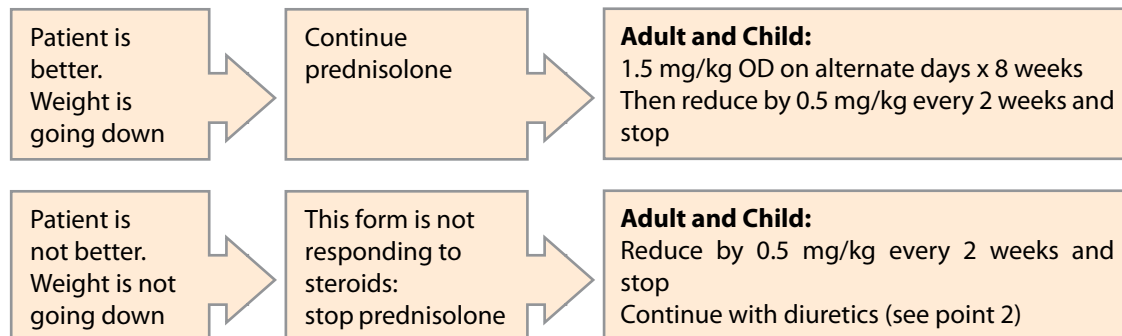
Find and treat the underlying cause (e.g. diabetes mellitus, infection). All patients should be treated in IPD. Drug therapy of nephrotic syndrome consists mainly of steroids (such as prednisolone) and diuretics.

Treatment –Prednisolone

Sometimes nephrotic syndrome can be cured with prednisolone.

- Doses: Child PO: 1 mg/kg BID max 40 g/day. Adult PO: 1-1.5 mg/kg OD

After 4 weeks of prednisolone treatment the patient must be reviewed - See BBG

**TREATMENT – DIURETICS**

Note: Diuretics relieve oedema but do not treat the disorder. Use a combination therapy of:

- Furosemide - Adult and Child PO: 1 mg/kg OD

– AND spironolactone - Adult and Child PO: 3 mg/kg OD
Reduce according to clinical response. (Note: be alert to signs of hypovolemia when using diuretics)

TREATMENT OF OTHER DISEASES

Remember that there is a high risk of infection because of the loss of immune proteins and treatment with steroids. Therefore, treat any other infection. For example: Give albendazole to prevent the spreading of worms. Be sure that your patient has no active TB or amoebic disease. (steroids make them worse)

OTHER IMPORTANT MANAGEMENT

Avoid immobilisation (risk of thrombosis). Restrict fluid intake. Give a high calorie/high protein diet. Weigh patient every day. Aim to lose 1 kg/day. Keep in IPD until the patient's condition is improving, then discharge with a weekly follow-up (check weight and dipstick). Total treatment course will be 4-5 months.

Important note

Patients who recover on prednisolone can relapse. Ask the patient to return to OPD as soon as he/she becomes slightly oedematous. Restart the treatment.

PREVENTION

During the oedema the patient has risk of infection - Consider penicillin V (500 mg PO BD) prophylaxis.

Renal Failure

DEFINITION

Renal failure or kidney failure is the condition in which the kidneys fail to function properly. Physiologically, renal failure is described as a decrease in the glomerular filtration rate. Clinically, this manifests in an elevated serum creatinine.

CLASSIFICATION

- Acute renal failure
- Chronic renal failure
- Acute on chronic renal failure

ACUTE RENAL FAILURE

Acute renal failure (ARF) is a rapid loss of renal function due to damage to the kidneys, resulting in retention of nitrogenous (urea and creatinine) and non-nitrogenous waste products that are normally excreted by the kidney.

CAUSES

Pre-renal (causes in the blood supply):

- hypotension, usually from shock or dehydration and fluid loss
- hepatorenal syndrome in which renal perfusion is compromised in liver failure
- vascular problems, such as atheroembolic disease and renal vein thrombosis

Renal (damage to the kidney itself):

- Infection usually sepsis (systemic inflammation due to infection), toxins or medication (e.g. some NSAIDs, aminoglycoside antibiotics, iodinated contrast, lithium)
- Rhabdomyolysis
- Hemolysis
- Multiple myeloma, either due to hypercalcemia or “cast nephropathy”
- Acute glomerulonephritis

Post-renal (obstructive causes in the urinary tract) due to:

- medication interfering with normal bladder emptying
- benign prostatic hypertrophy or prostate cancer
- kidney stones
- due to abdominal malignancy (e.g. ovarian cancer, colorectal cancer)
- obstructed urinary catheter

DIAGNOSIS

- Creatinine
- Blood urea nitrogen
- Blood tests e.g. potassium, FBC, LFTs, clotting
- Examination of a urine specimen
- Ultrasonography of the renal tract
- Kidney biopsy

CRITERIA FOR DIAGNOSIS OF ARF

- Risk - serum creatinine increased 1.5 times OR urine production of <0.5 ml/kg body weight for 6 hours
- Injury - creatinine 2.0 times OR urine production <0.5 ml/kg for 12 hours
- Failure - creatinine 3.0 times OR creatinine >355 µmol/l (with a rise of >44) or urine output below 0.3 ml/kg for 24 hours
- Loss - persistent ARF or more than four weeks complete loss of kidney function

Ask the questions;

- Is the renal failure acute or chronic?
- Is there urinary tract obstruction?
- Is there any rarer cause of ARF? E.g. GN

MANAGEMENT

IV line and urinary catheter should be done. Monitor vital signs, and intake/output, weight chart. Limit fluid to 500 ml + previous days loss. If the patient is septic, take appropriate culture and treat. Stop any nephrotoxic drugs (aminoglycoside, tetracycline, amphotericin B, NSAID, ACE-inhibitor). Diagnose and treat urinary obstruction.

Nutrition is vital: high calories 200kcal/day and protein 0.5-1 kg/day.

Treat complications - High potassium levels, pulmonary oedema, bleeding

Indications for Dialysis

- Persistent hyperkalemia
- Severe or worsening metabolic acidosis
- Refractory pulmonary oedema
- Uraemia pericarditis
- Uraemic encephalopathy

CHRONIC RENAL FAILURE**DEFINITION**

Chronic renal failure is a slowly progressive loss of renal function over a period of months or years and defined as an abnormally low glomerular filtration rate.

CAUSES

Most common causes are:

- Prostatic hypertrophy
- Glomerulonephritis
- Pyelonephritis
- Diabetes mellitus
- Hypertension
- Renal vascular disease
- Kidney stone

SIGNS AND SYMPTOMS

- History- ask about
 - Past urinary tract infection
 - Hypertension
 - Diabetes mellitus
 - Family history
 - Medications or drugs
 - Fatigue, weakness, shortness of breath, pleuritic chest pain, ankle swelling, anorexia, vomiting, itchiness, impotence, infertility, heavy periods
- Pallor
- Yellow skin pigmentation
- Brown nails
- Easy bruising
- Pleural effusion
- Pulmonary oedema
- Cardiomegaly

INVESTIGATIONS

- Renal Ultrasound
- Serum creatinine and urea and electrolytes
- FBC
- Look at urine
- CXR

TREATMENT

Control of blood pressure - angiotensin converting enzyme inhibitors (ACEIs) are used, as they have been found to slow the progression to end stage renal disease. Hyperlipidemia – treat with statin. Oedema- furosemide 250-2g/day should be given. Anemia - consider erthropoietin to maintain HB>10mg/dl. Renal bone disease decrease amount of milk cheese and eggs. Dietary advice - sodium restriction/potassium restriction is only required for hypercalcemia and acidosis. Preparation for dialysis should be taken ready.

Bladder, Ureteric and Renal Calculi

DEFINITION

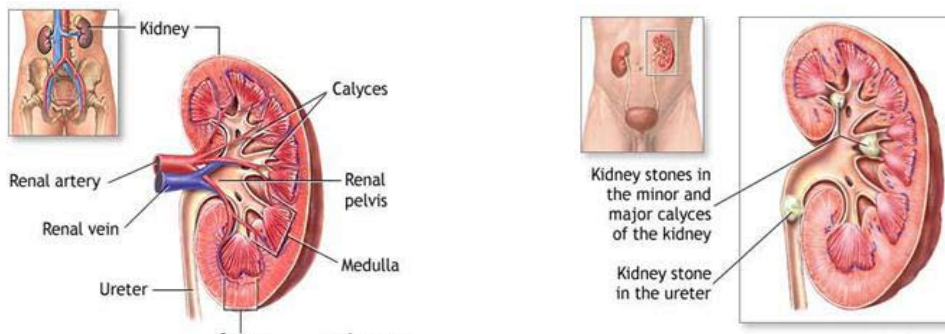
The formation of stones in the urinary system (in bladder or in kidney), which may cause partial or complete obstruction. Stones formed in the kidney can travel down and block the ureters or urethra. Stones in the kidney cause kidney pain. Stones in the ureter cause renal colic (the patient can not lie still).

Important notes

In patients with repeated urinary infections, it is necessary to look for stones.

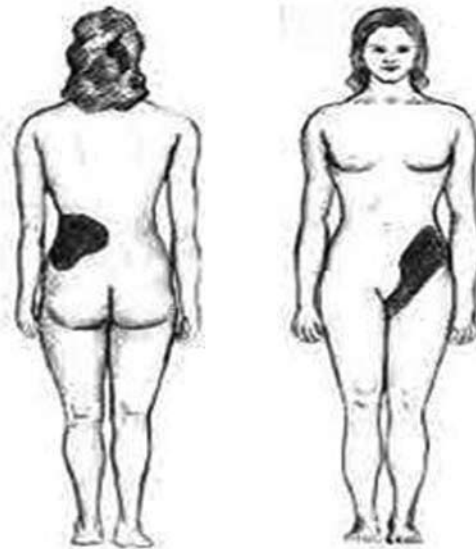
SIGNS AND SYMPTOMS

Severe acute lumbar or pelvic pain-intermittent (renal colic: patient can not lie still and has pain that spreads to pubic area) or constant. Blood in the urine (haematuria) can be present. The patient passes stones in the urine. Signs of secondary infection-fever, chills can be present.



Renal Colic Pain

Loin or loin to groin



TREATMENT

If the stones are not causing obstruction then the patient can be managed conservatively. Treat the pain. Give IV fluids if unable to tolerate oral. Give Buscopan. Give analgesia – diclofenac suppository 100mg. If stronger, needs to give Pentazocine and metoclopramide. If signs of infection present, give antibiotics. If signs of obstruction are found, need urgent referral.

COMPLICATIONS

- Recurrent UTI
- Hydronephrosis

PREVENTION

Drink plenty of fluids. Depending on what type of stone may need to modify diet. Advise your patients to drink water.

TREATMENT OF URINARY TRACT OBSTRUCTION

Lower urinary tract obstruction (bladder, urethra) can be relieved with the following:

Urethral catheter

- A urethral catheter (size 8F-24F) is a flexible external catheter that extends from the bladder through the urethra.
- A physician or nurse can place it. If catheter placement is difficult, a urologist may be needed to avoid urethral trauma. The urologist may need to perform urethral dilation, cystoscopy, or both to pass the catheter.
- The catheter can be left indwelling, or, as an alternative, the patient can perform clean intermittent catheterization.
- If blood is present at the urethral meatus after pelvic trauma and suspicion of urethral injury exists, a urologist should be consulted prior to catheter placement. Retrograde urethrography needs to be performed to rule out urethral injury.

Suprapubic tube or catheter:

If a Foley catheter cannot be passed, a suprapubic tube can be placed percutaneously (at the bedside) or in an open fashion (in the operating room). A suprapubic tube is placed on the lower anterior abdominal wall, approximately 2 finger-breadths above the pubic symphysis. Ultrasound guidance should be used for bedside procedures to ensure proper placement without injury to adjacent structures. In patients with previous abdominal surgery, adhesions and scar tissue may have changed the normal bowel location, so an open approach may be preferred.

Upper urinary tract obstruction (ureter, kidney) can be relieved with the following:

- Ureteral stent: A ureteral stent is a flexible tube that extends from the renal pelvis to the bladder. It can be placed during cystoscopy to relieve obstruction along any point in the ureter. A ureteral stent generally needs to be changed every 3 months.
- Nephrostomy tube: A nephrostomy tube is a flexible tube that is placed through the back directly into the renal pelvis. If a ureteral stent cannot be placed cystoscopically in a retrograde fashion, a percutaneous nephrostomy tube can be inserted for relief of hydronephrosis. If needed, a ureteral stent can then be passed in an antegrade fashion through the nephrostomy tube tract.

The following are urologic emergencies that require immediate attention and intervention:

- Complete urinary tract obstruction
- Any type of obstruction in a solitary kidney
- Obstruction with fever, infection, or both
- Renal failure
- Pain that is uncontrolled with oral medications
- Nausea and vomiting that causes dehydration

PREOPERATIVE DETAILS

Before any surgical intervention or any manipulation of the urinary tract, broad-spectrum antibiotics should be initiated to prevent infection or urosepsis. Ideally, before any manipulation is performed, the urine should be sterile. However, this may not be possible in cases of emergent surgical intervention. Urine culture along with the administration of broad-spectrum antibiotics is important.

If cystoscopy and stent are needed emergently, coagulation is not a concern. If percutaneous drainage is necessary, coagulopathies should be corrected.

INTRAOPERATIVE DETAILS

Different interventions can be performed to temporarily relieve the point of obstruction. If the planned procedure cannot be performed safely or is not adequate in relieving urinary tract obstruction, other modes of urinary tract decompression can be tried.

POSTOPERATIVE DETAILS

When a patient has long-standing urinary tract obstruction that has been relieved, they may experience postobstructive diuresis. This physiologic diuresis is usually self-limiting and can be managed conservatively with fluid replacement and, if needed, electrolyte replacement. Postobstructive diuresis is defined as diuresis of more than 200 mL/h for at least 2 hours. Patients with severe diuresis should receive intravenous fluid replacement in the form of half normal saline at 80% of the hourly urine volume for the first 24 hours, then 50%. Postobstructive diuresis usually lasts 24-72 hours. Most cases are not severe enough to require this level of attention.

FOLLOW-UP

Definitive treatment at the point of obstruction is needed after the acute obstruction is resolved. Adults and children often have different etiologies of urinary tract obstruction. Thus, various definitive surgical treatment options are available for each condition. After definitive treatment is achieved, a final imaging study is obtained to verify complete relief of the obstruction. The type of study performed, as well as the timing of the study, is left to the discretion of the urologist.

COMPLICATIONS

A patient with urinary tract obstruction should see a urologist promptly because of the serious complications that the obstruction can impose. The following are complications of obstructive uropathy:

- Infection, including cystitis (bladder infection), pyelonephritis (kidney infection), abscess formation, and urosepsis
- Urinary fistula formation
- Renal insufficiency or failure
- Urinary extravasation with urinoma formation
- Bladder dysfunction secondary to a dysfunctionalized bladder
- Pain

Urinary Catheterisation of a Female

Establish that patient requires urinary catheterization.

ASSEMBLE EQUIPMENT REQUIRED:

- Disposable catheter pack (dressing pack)
- 1 sachet normal saline
- 2 sterile catheters
- 1 sterile urinary drainage bag
- 10ml syringe
- 10 ml sterile water
- Incontinence sheet
- 10 ml syringe with lignocaine anaesthetic jelly
- Disposable gloves
- Catheter support
- Sterile scissors
- Angle lamp (if available)
- Adhesive tape

PROCEDURE

1. Explain the procedure, answer questions and prepare patient
2. If possible, shower patient and wash pubic area with soap and water.
3. Place incontinent sheet on bed and place patient in recumbent position (knees bent) on bed and raise bed to height for insertion.
4. Maximise light on the pubic region.
5. Open disposable catheter pack.
6. Wash hands.
7. Open and add extra equipment to catheter pack. Wet cotton wool balls with normal saline. Open sterile water ready for drawing up.
8. Put on sterile gloves. Draw up sterile water into syringe.

9. Using forceps and cotton wool balls, cleanse patient's labia majora using a downward stroke. Hold labia apart with gloved hand and cleanse the patient's labia minora and urethra.
10. Place a small amount of lubricant into the receiver. Slowly insert anaesthetic jelly into urethral opening. (optional)
11. Discard used glove and syringe.
12. Position the sterile towel to establish sterile field between patient's legs.
13. Using forceps, place receiver and sterile drainage bag on the sterile field.
14. With fingers, remove the cap from the drainage bag and place the sterile end into the receiver.
15. With fingers, pick up catheter, remove distal sheath and connect catheter to the drainage bag.
16. Fill the syringe with the required amount of sterile water. Inflate the catheter balloon and check for leaks. Deflate the balloon and leave syringe attached.
17. With fingers near the serration, remove the proximal end of the catheter sheath, or use scissors if necessary.
18. Lubricate the catheter tip. Separate the patient's labia and gently insert the catheter directly into the patient's urethra without contaminating the catheter. Check for flow of urine to confirm correct position.
19. Inflate the catheter balloon and gently withdraw the catheter until resistance is felt.
20. Dry and ensure patient is comfortable and safe.
21. Secure catheter to the patient's thigh with bag below the patient's bladder.
22. Wash hands.
23. Document date of the catheter insertion in the patient's notes and care plan.

Urinary Catheterisation of a Male

Establish that patient requires urinary catheterisation.

ASSEMBLE EQUIPMENT REQUIRED:

- Disposable catheter pack
- 1 sachet normal saline
- 2 sterile catheters
- 1 sterile urinary drainage bag
- 10ml syringe
- 10ml sterile water
- Incontinence sheet
- 10ml syringe lignocaine anaesthetic jelly and chlorhexidine
- Adhesive tape
- Disposable gloves

PROCEDURE

1. Explain the procedure, answer questions and prepare patient.
2. If possible, shower patient and wash pubic area with soap and water.
3. Place patient in supine position on bed and raise bed to height for insertion.
4. Maximise light on the pubic region.
5. Open disposable catheter pack.
6. Wash hands.
7. Open and add extra equipment to catheter pack. Wet cotton wool balls with normal saline. Open sterile water ready for drawing up.
8. Put on gloves. Draw up sterile water into syringe.
9. Retract foreskin if not circumcised and clean the patient's meatus and glans using the forceps and saturated cotton wool balls.
10. Position a second paper towel under the patient's penis and lower the penis onto the towel. Discard the first paper towel.

11. Position the sterile towel leaving only the cleaned part of the patient's penis exposed.
12. Using the drape, hold the patient's penis in the vertical position. Place a small amount of lubricant into the receiver and slowly insert the anaesthetic lignocaine jelly into the patient's urethra. Hold the jelly insitu for 3 minutes. Discard syringe.
13. Using forceps, place receiver and sterile drainage bag on the sterile field.
14. With fingers, pick up catheter, remove distal sheath and connect the catheter to the drainage bag.
15. Fill the syringe with the required amount of sterile water. Inflate the catheter balloon and check for leaks. Deflate the balloon and leave syringe attached.
16. With fingers near the serration, remove the proximal end of the catheter sheath, or use scissors if necessary.
17. Lubricate the catheter tip. Using the drape, hold the patient's penis vertically and use the forceps to gently insert the catheter into the patient's urethra. Check for urine flow to ensure correct positioning.
18. Inflate the catheter balloon and gently withdraw the catheter until resistance is felt.
19. Dry the patient's penis to remove all anaesthetic lignocaine jelly. Replace foreskin if necessary. Secure the catheter on the patient's lower abdomen on thigh (so decrease dragging and kinking). Hang catheter bag below the level of the patient's bladder.
20. Wash hands.
21. Document date of the catheter insertion in the patient's notes and care plan.

URINARY INDWELLING CATHETER MANAGEMENT

Risks of Catheterisation

Risks of catheterisation include UTI, structural damage to the urinary tract, bleeding, false passage and patient discomfort. The risk of developing catheter-associated UTI ranges from 1-5% in individuals who have one intermittent catheterisation, to 20% of individuals with indwelling catheters with closed drainage systems. Long-term catheterisation poses a risk of chronic renal inflammation, chronic pyelonephritis, development of calculi (kidney stones), and symptomatic UTI that may lead to bacteraemia, sepsis and death. The decision to catheterise a patient should be made with consideration to the patient's preference, the benefits the patient may gain from the procedure, and the risks to the patient.

SUPRA PUBIC CATHETERS

Supra pubic catheters are surgically inserted through the abdominal wall into the bladder thereby diverting urine from the urethra. There is a slightly reduced risk of infection than with an IDC, and some patients may be more comfortable with a supra pubic catheter. Disadvantages of supra pubic catheters include the risk of cellulitis, leakage, hematoma at the insertion site, and prolapse through the urethra. After they have been inserted, supra pubic catheters should be managed the same as IDCs. The skin area around the catheter insertion site should be washed with soap and water daily and the area kept dry. Avoid the use powder or creams around the catheter site.

After a supra pubic catheter has been surgically inserted, the catheter may be changed by a registered nurse Division 1 if required. Indications for changing are the same as for an IDC. The technique is the same as that for inserting/changing an IDC however; the catheter is inserted through the hole in the abdomen until urine returns, then gently inserted for another 2 centimetres.

INTERMITTENT CATHETERISATION

Intermittent catheterisation on either a short or long term basis should be considered. The literature suggests there is no increase in rate of UTI development between long term intermittent catheterisa-

tion and either IDC or supra pubic catheter, and in the short term the rate of infection has been shown to be lower when using intermittent catheterisation. Elderly patients have been shown to regain voiding more quickly following hip surgery when intermittent catheterisation was used.

SELECTION OF CATHETER SIZE

Because an incorrect catheter size contributes to the risk of developing a catheter-related UTI and structural damage to the urinary tract, consideration should be given to catheter size. It is recommended that the smallest gauge possible should be used as catheters of larger gauges, i.e. greater than size 16, may cause pressure necrosis of the urethra leading to catheter leakage and patient discomfort. In most cases a 12Fg or 14Fg should be used for a female patient, and 12Fg - 16Fg for a male patient. It is recommended that catheters with balloons that hold 5-10ml of fluid be used. Larger balloons increase bladder irritation, contributing to catheter leakage and increasing the risk of stricture formation.

USE OF SURGICAL STERILE TECHNIQUE

Evidence suggests that use of surgical sterile technique (sterile scrub, use of sterile gloves and gown, strict no-touch technique) to insert a catheter does not reduce the rate of UTI development. Aseptic technique using sterile equipment is recommended for the insertion of indwelling or intermittent catheters. Hand washing should be performed immediately before and after all catheter-related interventions.

ONGOING CATHETER CARE

Positioning of catheter and urinary bag

Kinking of the catheter tube can cause back flow and increase the risk of infection. The drainage bag should be kept lower than the patient without resting on the floor. The catheter should be properly secured after insertion to promote patient comfort and prevent movement, traction and potential kinking of the tube.

Emptying the urinary bag

The urinary drainage system should be kept closed at all times to reduce the risk of UTI. The urinary catheter bag should be emptied regularly (at least once/shift) and a separate collection jug should be used for each patient to minimise the risk of cross infection. Contamination should be prevented when emptying the catheter bag. Wear disposable gloves and wipe the drainage bag outlet with an alcohol swap after emptying the bag. Urine output should be recorded .

Obstruction of a catheter

The development of material (encrustation) is caused by build up of microorganisms and cellular material and may lead to obstruction of the indwelling catheter. Encrustation is more likely to occur when the urine is more alkaline.

Where it is unavoidable, catheter irrigations can be performed to remove debris build up that may lead to obstruction of an IDC. Catheters that remain obstructed (no urine flow for 4-8 hours) and catheters that remain patent only due to frequent irrigation, should be replaced

Catheter Irrigation

INDICATIONS

Catheter irrigation (bladder washout) may be indicated if a patient has catheter leakage or blockage.

EQUIPMENT

The following equipment is required:

- Disposable catheter pack
- 1 sterile area towel
- 50ml catheter tip syringe
- 2 x 2 litre sterile jugs
- 30ml normal saline
- Incontinence sheet
- 1 pair sterile gloves
- 1 alcohol wipe and
- Irrigation solution (sterile water or sterile saline) at room temperature.

PROCEDURE FOR PERFORMING A CATHETER IRRIGATION

Explain the procedure, answer questions and prepare the patient.

22. 12. Open the catheter pack using aseptic technique.
23. 13. Ensure the patient's bed or examination table is at the correct height to prevent strain on your back whilst performing the procedure. Prepare the incontinence sheet under patient and release the adhesive tape anchoring the catheter.
24. 14. Open the other equipment, setting up the sterile field using the sterile forceps. Discard the forceps, pour the normal saline into the catheter pack to soak cotton balls and prepare the irrigation fluid in a sterile jug.
25. 15. Using the forceps and cotton balls, clean the patient's meatus and the whole catheter.
26. 16. Use the alcohol wipe to disinfect the catheter end and disconnect the catheter then place on the sterile towel. Wrap the drainage bag in the second sterile towel and place it aside.
27. 17. Put on gloves.
28. 18. Place the receiver on the sterile towel and put the catheter in it.
29. 19. Fill the 50ml syringe with irrigation fluid and connect the syringe nozzle to the catheter end.
30. 20. Insert the irrigation fluid and aspirate fluid continuously using some force. Although some force is required to remove debris build-up, if excessive force is used to aspirate the injected fluid trauma may result. When performing this procedure the nurse should assess the amount of force required and the comfort of the patient to determine whether the catheter requires changing.
31. 21. Continue aspiration until the returning fluid is clear and free of debris.
32. 22. Empty the receiver into disposable jugs as necessary.
33. 23. Wipe the end of the urinary drainage bag with the alcohol swab and re-connect the catheter.
34. 24. Dry the patient. Secure the catheter on the patient's thigh in a position that will minimise dragging or kinking of the catheter. Hang the catheter bag below the level of the patient's bladder.
35. 25. Ensure the patient is comfortable and clear the area.
36. 26. Wash hands.
37. 27. Document in the patient's notes and fluid balance chart, recording the amount of fluid inserted as input and the amount of fluid returned as output. Communicate the procedure to other staff.

Removing a Catheter**EQUIPMENT**

The following equipment is required:

- 1 disposable receiver
- Paper towel
- Syringe and
- Non sterile gloves.

PROCEDURE FOR REMOVING A CATHETER

38. 28. Explain the procedure, answer questions and prepare the patient.
39. 29. Place the receiver between the patient's thighs.
40. 30. Wash hands and put on the non-sterile gloves.
41. 31. Attach the syringe to the balloon valve and withdraw the entire contents of the balloon.
42. 32. Remove the catheter and place it in the receiver.
43. 33. Ensure the patient is comfortable and clear the area.
44. 34. Measure any remaining urine in the urine collection bag, disconnect the catheter from the drainage bag and dispose of catheter equipment in an appropriate infectious waste bin.
45. 35. Wash hands.
46. 36. Document in the patient's notes, care plan and fluid balance chart and communicate the procedure to other staff.

Urinary Tract Obstruction

DEFINITION

It is common and often reversible. Consider in any patient with deteriorating renal function. It can occur from the kidney to the urethra. It can be partial or complete and can occur in one side or both kidneys.

CLINICAL FEATURES

Acute upper tract obstruction

- Pain in the flank radiating to the groin
- Tender loin

Chronic upper tract obstruction

- As above
- May be signs of infection

Acute lower tract obstruction

- Severe suprapubic pain
- Palpable distended bladder

Chronic lower tract obstruction

- Urinary frequency, dribbling, hesitancy, poor stream, overflow incontinence
- Big prostate on rectal examination

TESTS

- Blood Urea, creatinine, electrolytes
- Urine – MSU
- Ultrasound

TREATMENT

Drainage is urgent. Upper tract obstruction – may need nephrostomy. Lower tract obstruction- urethral or supra-pubic catheter can also be done.

Benign Prostatic Hypertrophy

DEFINITION

Enlargement or benign hypertrophy of the prostate (BHP) or Benign Prostatic Hypertrophy (BPH) is common after middle age, affecting virtually every male who lives long enough. An enlarged prostate

projects into the urinary bladder and impedes urination by distorting the prostatic urethra. The middle lobe usually enlarges the most and obstructs the internal urethral orifice- the more the person strains, the more the valve-like prostatic mass occludes the urethra

BPH causes problems

BPH is a common cause of urethral obstruction, leading to nocturia (need to void during the night), dysuria (difficulty and/or pain during urination), and urgency (sudden desire to void). BPH also increases the risk of bladder infections (cystitis) as well as kidney damage.

EXAMINATION – RECTALLY

The prostate is examined for enlargement and tumors (focal masses or asymmetry) by digital rectal examination. The palpability of the prostate depends on the fullness of the bladder. A full bladder offers resistance, holding the gland in place and making it more readily palpable

MALIGNANT PROSTATE

The malignant prostate feels hard and often irregular. In advanced stages, cancer cells metastasize both via lymphatic routes (initially to the internal iliac and sacral lymph nodes and later to distant nodes) and via venous routes (by way of the internal vertebral venous plexus, to the vertebrae and brain).

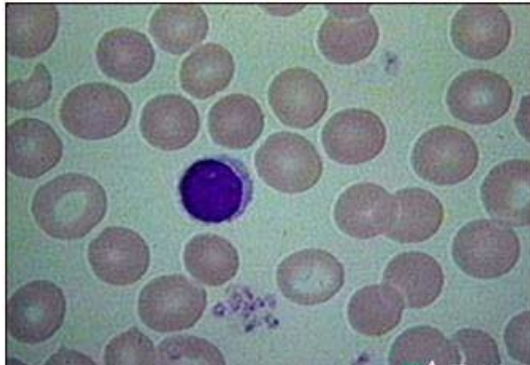
Temporary relief

The obstruction may be relieved temporarily by the insertion of a catheter. This may be very difficult and great care should be shown. If it is not possible to pass the catheter you will be need to refer urgently.

SURGICAL MANAGEMENT

Because of the close relationship of the prostate to the prostatic urethra, obstructions may be relieved endoscopically. The instrument is inserted transurethrally through the external urethral orifice and spongy urethra into the prostatic urethra. All or part of the prostate, or just the hypertrophied part, is removed (transurethral resection of the prostate; TURP)

HAEMATOLOGICAL DISORDERS



Anemia

DEFINITION

Anemia is a condition where the haematocrit (Hct) or haemoglobin (Hb) is below normal levels in the circulating blood (taking into account age, sex and pregnancy state). When this happens, the risk is that the red blood cells are not carrying enough oxygen to the tissues of the body. Anemia can occur from:

- increased red blood cell loss (for example, in haemolysis and haemorrhage), and/ or
- decreased red cell production (for example, in nutritional deficiencies and bone marrow depression)

HAEMOGLOBIN IN PERIPHERAL BLOOD IS LOWER THAN NORMAL FOR AGE SEX AND PREGNANCY STATE

	Hb (g/dl)	Htc
Newborn Infants	< 14	<42
6 months - 6 years	<11	<33
6 - 14 years	<12	<36
Adult males	<13	<39
Adult females (non-pregnant) Adult	<12	<36
Females (pregnant)	<11	<33

HAEMOGLOBIN

The adult haemoglobin is a tetramer of 2 alpha and 2 beta globin chains each containing a haem group.

FUNCTION OF HAEMOGLOBIN

Hemoglobin is an iron-protein compound in red blood cells that gives blood its red color and transports oxygen, carbon dioxide, and nitric oxide. It carries oxygen from the lungs, where blood is oxygenated, to body cells. After releasing oxygen to the body tissues, hemoglobin reverses its function and picks up carbon dioxide, the waste product of cellular respiration, for transport to the lungs, where it is expired.

Hemoglobin is contained entirely in the red blood cells, amounting to perhaps 35 percent of their weight. To combine properly with oxygen, red blood cells must contain adequate hemoglobin. Hemoglobin, in turn, is dependent on iron for its formation. A deficiency of hemoglobin caused by a lack of iron in the body leads to anemia.

After a life of perhaps 120 days, red blood cells are destroyed in the spleen, or in the course of circulation, their hemoglobin is broken into its constituents, including iron, which enters new blood cells formed in the bone marrow.

COMMON CAUSES

Acute

- Malaria (acute destruction of RBCs)
- Acute bleeding (GI tract, genital tract, artery damage in accident, pregnancy-related haemorrhage e.g. PPH)
- G6PD deficiency

Chronic

- Nutritional deficiencies (lack of ferrous and folic acid in diet)
- Hookworms infestation
- Peptic ulcer
- Repeated pregnancies and prolonged breast-feeding
- Thalassemia

CHRONIC CAUSES OF ANEMIA

- Chronic bleeding
- Cancers
- Chronic infections
- Liver and kidney diseases
- Tropical splenomegaly
- Aplastic anaemia

More than one cause?

Very often anemia has more than one cause. Supplementing ferrous sulphate (FS), Folic Acid (FA) and deworming can help many people feel better.

SIGNS AND SYMPTOMS

Anemia affects all population groups. However, the most susceptible groups are pregnant women and young children. The signs and symptoms depend on the severity of anemia and if anemia is acute or chronic. In the milder form, anemia is 'silent', without symptoms. Without treatment, this mild anemia can worsen and become a cause of chronic ill health. (such as impaired fetal development during pregnancy and delayed development and increased risk of infection in young children)

CHRONIC ANEMIA

- Tiredness
- Affects ability to work (therefore, lower income, poorer care for children)
- In children: reduced growth, delayed development, not able to do well at school
- Difficulty breathing and palpitations when working or walking (not at rest)
- Pallor (conjunctivae, palm of hands, nail beds)
- Normal heart rate and respiratory rate at rest.

SEVERE CHRONIC ANEMIA

Sometimes people can have severe anaemia (Hb < 6) with normal pulse and respiratory rate at rest. This is because the anaemia has been very slow to develop (chronic hookworm infection, repeated malaria attacks) or they have had a low haemoglobin count since birth. (thalassemia)

Extreme tiredness and weakness may be present. Difficult breathing and palpitations on minimal effort can be complaint. The patient is very pale. Often heart murmur can be heard. Normal heart rate and respiratory rate are at rest.

ACUTE SYMPTOMATIC ANEMIA –RAPID FALL IN HB (EXAMPLE IS ACUTE BLEEDING, SEVERE MALARIA)

- Fatigue, tiredness
- Difficulty breathing at rest
- Palpitations at rest
- Pallor (conjunctivae, palm of hands, nail beds)
- Fast heart rate at rest (adult >120/m)
- Fast respiratory rate at rest (adult >40/m)
- Low BP (systolic <100 mmHg e.g. post-partum haemorrhage)
- Often you can hear a heart murmur

ANEMIC HEART FAILURE

- Severe difficulty breathing at rest
- Extreme weakness
- Chest pain in some cases
- Very pale
- Acute pulmonary oedema
- Enlarged liver (hepatomegaly)
- Full jugular veins
- Peripheral oedema and sometimes ascites

INVESTIGATION AND DIFFERENTIAL DIAGNOSIS OF ANEMIA

MCV	Causes	Further Investigation
Low < 76 fl	<ul style="list-style-type: none"> • Iron deficiency • Thalassemia • Haemoglobinopathy • Anaemia of chronic disorder 	<ul style="list-style-type: none"> • Blood film • Ferritin • Reticulocyte count • Hb electrophoresis (if indicated) • Rectal examination • Faecal occult blood test
Normal	<ul style="list-style-type: none"> • Acute blood loss • Haemolysis • Anemia of chronic disorder • Uraemia • Haemoglobinopathy • Marrow failure 	<ul style="list-style-type: none"> • Malaria smear • Blood film • Reticulocyte count • Hb electrophoresis (if indicated) • Ferritin • Serum B12 • Serum and red cell folate • Renal function • Serum bilirubin

High > 96 fl	Folate deficiency B12 deficiency Alcohol Liver disease Thyroid disease Myelodysplasia	Blood film Serum B12 Serum and red cell folate Liver function Thyroid function tests
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TREATMENT

Treat the cause.

- Malaria
- Severe bleeding with signs of shock
- Worms
- Nutritional deficiencies

Very Important

About half of all maternal deaths in the tropics are due to anemia. Many people in rural areas along the border are anemic because of:

- poor nutrition
- repeated malaria attacks
- many pregnancies
- continuous breast-feeding
- hookworm infections

These common causes of anaemia in this area are very easy and cheap to treat.

TREATMENT

Treatment dose of ferrous sulphate (FS) and folic acid (FA) is given. A response to oral medication usually appears in <2 weeks (Hb should raise by 1g/dl every 7-10 days). Iron should be continued for 3-6 months after the Hb level has returned to normal to replenish iron store.

Administration of vitamin C may aid the body's ability to absorb iron. If HB < 6 /Hct < 18, discuss with doctor about transfusion. For acute symptomatic anaemia: stop the bleeding and transfuse urgently. Anemic heart failure is very difficult to treat successfully and, if possible, should be prevented by providing treatment before reaching this stage. Treat the pulmonary oedema. All patients with anemia should be dewormed.

Thalassemia

DEFINITION

Thalassemia is a genetic disease caused by abnormal or decreased haemoglobin production. Located in the red blood cells, haemoglobin is made up of two alpha (α) and two beta (β) chains. Thalassemia results in decreased or absent haemoglobin chains.

In α thalassemia the α chains are affected and in β thalassemia the β chains are affected. There are many variations of the disease from no chains being produced by the body to minor changes in the chains. So the disease ranges from being extremely severe to patients not even being aware they have the disease. On the Thailand/ Burma border α - /or β - thalassaemia occur in approximately 10% of people.

Beta Thalassemia Minor: a small portion of the total Hb in the body is affected

- Symptoms - Mild, well-tolerated anemia, often noticed in pregnancy
- Investigations - CBC, Thalassemia test
- Treatment - Folic acid and vitamin B and C, do not overload with iron

Beta Thalassemia Intermedia: a greater portion of the total Hb in the body is affected

- Symptoms - Well-tolerated anemia that gets worse with age. Splenomegaly
- Investigations - CBC, Thalassemia test
- Treatment - Check Hb regularly. Folic acid and vitamin B complex (or vitamin B12 tablets). Give blood only at times of severe anemia. Splenectomy can sometimes help. Beta Thalassemia minor and intermedia should be suspected in all patients with mild anemia that do not improve with iron or folic acid.

Beta Thalassemia Major: the majority of Hb in the body is affected.**SYMPTOMS**

Severe anemia, starting in the first year of life. Child does not grow and develop well. Child contracts many infections. Abnormal bone growth, especially in the face can be found. Enlarged liver and spleen (Hepato-splenomegaly) can be present. Without transfusion death usually occurs within one year.

With adequate transfusion child growth and development are usually good, school attendance is improved. Infections are reduced, overall health is improved, bone deformities improve. Symptoms of iron overload appear after about 10 years, with liver disease and cardiac toxicity. Death is usually due to cardiac iron overload.

With not enough transfusion, anaemia with reduced growth, slow development and bone deformity can be present. Enlarged spleen (splenomegaly), intermittent fever and bleeding may be present. Death usually occurs at 20-30 years of age from cardiac iron overload.

INVESTIGATIONS

- CBC
- film (target cells)
- thalassemia test

TREATMENT

Consider regular transfusions to keep Hb > 8, Hct > 24. Patients receiving multiple transfusions should be transfused in the hospital. Transfusion is the only effective treatment, but over time this causes iron overload and damages some organs, causing death (give desferrioxamine 1-2 gram at each blood transfusion, which can help reduce iron overload). Folic acid 10 mg OD, vitamin C can be present. If splenomegaly is present, discuss the possibility of splenectomy (the benefit is only temporary).

Iron Deficiency Anemia (IDA)**CAUSES**

- Blood loss
- Hookworm
- Poor diet
- Malabsorption

SIGNS

- Chronic IDA, koilonychias
- Atopic glossitis
- Rarely postcricoid webs

INVESTIGATION

- Blood film
- Serum iron and serum ferritin

TREATMENT

Treat the cause. Oral iron ferrous sulphate 200-mg/12 hr until Hb is normal and for at least 3 months to replenish store. Hb should rise 1 g/l week.

ENDOCRINE DISORDERS

Examination of the thyroid – advanced

EXAMINING THE THYROID

The patient should be sitting upright on a chair or the edge of a bed.

INSPECTION

Look at the thyroid region. If the gland is quite enlarged (goitre), you may notice it protruding as a swelling just below the thyroid cartilage. The normal thyroid gland is usually neither visible nor palpable.

Thyroid gland

The gland lies 2-3cm below the thyroid cartilage and has 2 equal lobes connected by a narrow isthmus. If a localized or generalized swelling is visible, ask the patient to take a mouthful of water then swallow, watch the neck swelling carefully. Also ask the patient to protrude their tongue and watch the neck swelling.

- The thyroid is attached to the thyroid cartilage of the larynx and will move up with swallowing.
- Other neck masses such as an enlarged lymph node will hardly move.
- Thyroglossal cysts will not move with swallowing but will move upwards with protrusion of the tongue.

The rest of the neck

- Carefully inspect the neck for any obvious scars (thyroidectomy scars are often hidden below a necklace and are easily missed).
- Look for the JVP and make note of dilated veins which may indicate retrosternal extension of a goitre.
- Redness or erythema may indicate suppurative thyroiditis.

PALPATION OF THYROID GLAND

Always begin palpation from behind. Stand behind the patient and place a hand either side of their neck. The patient's neck should be slightly flexed to relax the sternomastoids. Explain what you are doing.

Ask if there is any tenderness. Place the middle 3 fingers of either hand along the midline of the neck, just below the chin. Gently walk your fingers down until you reach the thyroid gland. The central isthmus is almost never palpable.

If the gland is enlarged, determine if it is symmetrical. Are there any discrete nodules? Assess the size, shape, and mobility of any swelling. Repeat the examination whilst the patient swallows. Ask them

to hold a small amount of water in their mouth, then ask them to swallow once your hands are in position.

Consider the consistency of any palpable thyroid tissue.

- Soft: normal.
- Firm: simple goitre.
- Rubbery hard: Hashimoto's thyroiditis.
- Stony hard: cancer, cystic calcification, fibrosis, Riedel's thyroiditis.

Feel for a palpable thrill which may be present in metabolically active thyrotoxicosis.

The rest of the neck

Palpate cervical lymph nodes, carotid arteries (to check for patency, it can be compressed by a large thyroid) and the trachea for deviation.

PERCUSSION

Percuss downwards from the sternal notch. In retrosternal enlargement the percussion note over the manubrosternum is dull as opposed to the normal resonance.

AUSCULTATION

Apply the diaphragm of the stethoscope over each lobe of the thyroid gland and auscultate for a bruit.

A soft bruit is indicative of blood flow which is characteristic of the hyperthyroid goitre seen in Grave's disease. You may need to occlude venous return within the IJV to rule out a venous hum. Listen over the aortic area to ensure that the thyroid bruit is not, in fact, an outflow obstruction murmur conducted to the root of the neck.

PEMBERTON'S SIGN

A test for thoracic inlet obstruction (e.g. retrosternal goitre)

- Ask the patient to raise both arms above the head.
- Patients with inlet obstruction may develop signs of venous compression (facial plethora, cyanosis)

Assessing thyroid status: examination

- Observe the patient's composure (relaxed/agitated/fidgety).
- Measure the heart rate and note if the patient is in atrial fibrillation.
- Inspect the hands erythema, warmth, thyroid acropachy (phalangeal bone overgrowth similar to pulmonary osteopathy).
- Feel the palms sweaty/dry.
- Look for peripheral tremor, ask the patient to stretch out their arms with fingers out straight and palms down. Resting a piece of paper on the back of the hand can make a tremor more obvious.
- Inspect the face.
 - Test tendon reflexes at the biceps and ankle.
- Exophthalmos, proptosis
 - Test for proximal myopathy by asking the patient to stand from a sitting position.
- Hypothyroid features
 - Look for pretibial myxoedema.
- Examine the eyes.
- Examine the thyroid and neck.

EYE SIGNS IN THYROID DISEASE

Examination

Inspection

- Look at the patient's eyes from the front, side, and from above.
- Note whether the sclera is visible above or below the iris and whether the eyeball appears to sit forward (proptosis best seen from above).
- Note the health of the conjunctiva and sclera looking especially for any ulceration or conjunctivitis.
- Ensure both eyes can close (failure is a medical emergency).

Visual fields

It is wise to perform a quick screening test of the visual fields.

Eye movements

Test eye movements in all direction.

LID LAG (VON GRAEFE'S SIGN)

- Hold your finger high and ask the patient to look at it and follow it with their eyes as it moves (keeping their head still).
- Quickly move your hand downwards in this way the patient is made to look upwards and then quickly downwards.
- Watch the eyes and eyelids - do they move smoothly and together?
- If lid lag is present, the upper eyelid seems to lag behind the movement of the eye, allowing white sclera to be seen above the iris as the eye moves downward.

Findings

PROPTOSIS

It is the protrusion of the globes as a result of an in retro-orbital fat, oedema, and cellular infiltration. It can be formally assessed using a Hertel's exophthalmometer.

EXOPHTHALMOS

This is more severe form of proptosis. Sclera becomes visible below the lower edge of the iris (the inferior limbus). In very severe cases, the patient may not be able to close their eyelids and can develop:

- Corneal ulceration
- Chemosis (oedema of the conjunctiva and sclera caused by obstruction of the normal venous and lymphatic drainage)
- Conjunctivitis

LID RETRACTION

The upper eyelid is retracted such that you are able to see white sclera above the iris when the patient looks forwards. Caused by tone and spasm of levator palpebrae superioris as a result of thyroid hormone excess (Dalrymple's sign).

LID LAG

Described as above. Caused by sympathetic overstimulation of the muscles supplying the upper eyelid is seen in thyroid hormone excess.

EYE SIGNS OF THYROTOXICOSIS AND GRAVE'S DISEASE

A common misconception is that proptosis and exophthalmos are caused by thyrotoxicosis. This is not the case. Proptosis and exophthalmos may be seen in 50% of patients with Grave's disease and thyrotoxicosis may occur in Grave's disease. However, the proptosis may persist once thyroid hormone levels have been normalized.

The eye signs of thyrotoxicosis are:

- Lid retraction.
- Lid lag.

The eye signs of Grave's disease (Grave's ophthalmopathy) are:

- Periorbital oedema and chemosis.
- Proptosis/exophthalmos.
- Ophthalmoplegias (particularly of upward gaze).
- Lid retraction and lid lag only when thyrotoxicosis is present.

Hypothyroidism



DEFINITION

It is the underactivity of the thyroid gland.

SIGNS AND SYMPTOMS

- Constipation
- Tiredness and depression
- Dry and cold skin
- Hoarse voice
- Hair loss
- Oedema of the face

DIAGNOSIS

- Clinical: Feel the thyroid gland (goitre, nodules), pulse
- Laboratory test: TSH, FT4

TREATMENT

- Sub clinical hypothyroid (high TSH, normal T4)- wait and see
- If treatment needed use thyroxine 0.1 mg tablet

< 65 yr:

Start : 0.1 mg 1 month (1OD), then
0.15 mg 1 month (1.5 OD)

Check TSH/FT4 after 2 months and adjust dose in steps of 0.05 mg. Control TSH/FT4 monthly until in normal range.

If TSH/FT4 is in normal range check TSH/FT4 every 6 months and adjust dose with 0.025 mg (1/4 OD).

> 65 yr:

Start : 0.025 mg 1 month (1/4 OD)

Increase with 0.025 mg every month (1/2 OD → 3/4 OD) Maximum dose: 0.075 mg

Control TSH/FT4 to see if they are within normal range. Adjust in steps of 0.025 mg. Adjust TSH/FT4 monthly until in normal range.

After TSH/FT4 normal check TSH/FT4 every 6 months and adjust dose with 0.025 mg (1/4 OD)

FOLLOW UP**Initial treatment phase:**

Ask the patient to come back every month for 3 months. Measure TSH and FT4 every 2 months until normal values achieved.

After initial treatment phase:

Ask the patient to come back every 3 months. Measure TSH and FT4 every 6 months.

Hyperthyroidism

**GRAVES DISEASE AND EXOPHTHALMUS****DEFINITION**

It is the overactivity of the thyroid gland.

SIGNS AND SYMPTOMS

- Diarrhoea
- Nervousness
- Weight loss
- Warm
- Sweatiness
- Exophthalmia
- Tachycardia, palpitations
- Tremors in the hands

DIAGNOSIS

- Clinical- check pulse rate, feel thyroid gland (goitre, nodules)
- Laboratory test- TSH and FT4 (after 1 month then every 3 months)
- Hydatidiform molar pregnancy can cause symptoms that look like hyperthyroidism.

TREATMENT

Propyl thiouracil (PTU) 50 mg tablet (this is an anti-thyroid drug which will stop the thyroid malfunction) is given. Start PTU 200-400 mg OD (4-8 tablets OD). Control thyroid function (TSH, FT4) after 1 month, then every 3 months.

When TSH, FT4 and clinical signs are becoming normal slowly decrease dose with 50 mg per 2 months to 50 -150 mg daily OD. Continue treatment for 12 to 24 months, then discontinue. Follow clinical symptoms. For rapid symptomatic treatment of tachycardia and palpitations give propranolol.

FOLLOW UP

- Initial phase (3 months): every month
- After initial phase: every 2 -3 months

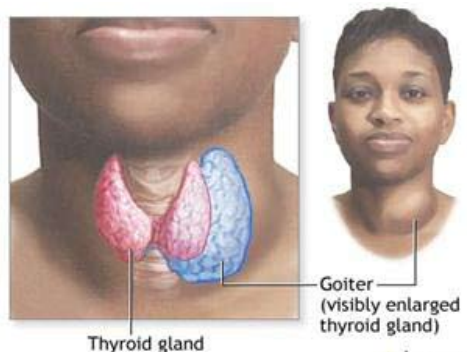
Note: Hyperthyroidism in pregnant women should be monitored carefully, with frequent thyroid function tests.

Delivery should not take place at home and the neonate should be observed carefully for signs of thyroid disease.

PREVENTION

Patients should take their medication regularly and come to the clinic for consultation. They should be able to recognize the signs or symptoms of too much or not enough thyroid hormone. They should be made aware that some other medications could interact with their thyroid. Medication should be taken. They should discuss all new medication with their doctor.

GOITRE



TOXIC MULTINODULAR GOITRES



DEFINITION

Goitre is an enlargement of the thyroid gland, which appears as a large swelling at the front of the neck. Endemic goitre occurs in areas where dietary iodine is deficient. Iodine is essential for the production of thyroid hormone and deficiency impairs synthesis. To compensate, the gland increases in size. Hyper- or hypothyroidism may occur. Regular consumption of foods such as cassava, cabbage or turnips also causes goitre. It is also made worse by smoking and pregnancy.

SIGNS AND SYMPTOMS

- Swelling of the thyroid
- Hypo or hyper thyroidism
- Iodine deficiency in pregnancy: increased fetal and perinatal mortality
- In children- physical and mental retardation

DIAGNOSIS

- Clinical (WHO classification):
 - Group 0: normal thyroid, no palpable or visible goitre
 - Group 1: palpably enlarged thyroid, but not visible with the neck in a normal position
 - Group 2: thyroid clearly visible with the neck in a normal position
- Laboratory test: TSH and FT4 if symptoms of thyroid disease.

COMPLICATIONS

Pain or a sense of fullness in the neck is common. Compression of the trachea and/or oesophagus leading to dyspnoea and/or dysphagia (rare) is a reason for surgical intervention.

TREATMENT

Give 1 dose of iodized oil, repeat after 1 year.

- Iodized oil: 200 milligram capsule as a single yearly oral dose
 - Children < 1 year 1 capsule
 - Children 1-5 years 2 capsules
 - Children 5-16 years 3 to 4 capsules
- Pregnant women 2 capsules
- Adults, especially women of childbearing age 3 to 4 capsules

In children, goitre disappears slowly after several months. In adults, it disappears more slowly or never, despite restoration of normal thyroid function. A few patients will develop hyperthyroidism and require treatment for that condition. Surgery is only indicated for patients who have such a large mass that it gives local compression on the neck. (airway or blood vessels)

PREVENTION

The best way to prevent goitre or iodine deficiency is to encourage consumption of iodized salt (note: this is available in the food basket supplied by TBBC). If there is no iodised salt available, provide people living in iodine deficient areas with iodised oil.

Thyroid Crisis

DEFINITION

Thyroid storm, also referred to as thyrotoxic crisis, is an acute, life-threatening, hypermetabolic state induced by excessive release of thyroid hormones in individuals with thyrotoxicosis. Thyroid storm may be the initial presentation of thyrotoxicosis in undiagnosed children, particularly in neonates.

Mortality rates

Thyroid storm is an acute, life-threatening emergency. The adult mortality rate is extremely high (90%) if early diagnosis is not made and the patient is left untreated.

CLINICAL PRESENTATION

- The clinical presentation includes:
 - Fever
 - Tachycardia
 - Hypertension
 - Neurological
 - GI abnormalities

Hypertension may be followed by congestive heart failure that is associated with hypotension and shock. Because thyroid storm is almost invariably fatal if left untreated, rapid diagnosis and aggressive treatment are critical. Fortunately, this condition is extremely rare in children.

DIAGNOSIS

Diagnosis is primarily clinical, and no specific laboratory tests are available.

SIGNS AND SYMPTOMS

- General symptoms:
 - Fever
 - Profuse sweating
 - Poor feeding and weight loss
 - Respiratory distress
 - Fatigue (more common in older adolescents)
- GI symptoms
 - Nausea and vomiting
 - Diarrhoea
 - Abdominal pain
 - Jaundice
- Neurologic symptoms:
 - Anxiety (more common in older adolescents)
 - Altered behaviour
 - Seizures, coma

PHYSICAL

- Fever
 - Temperature consistently exceeds 38.5°C
 - Patients may progress to hyperpyrexia
 - Temperature frequently exceeds 41°C
- Excessive sweating

- Cardiovascular signs:
 - Hypertension with wide pulse pressure
 - Hypotension in later stages with shock
 - Tachycardia disproportionate to fever
 - Signs of high-output heart failure
 - Neurologic signs:
 - Agitation and confusion
 - Hyperreflexia and transient pyramidal signs
 - Signs of thyrotoxicosis:
 - Orbital signs
 - Goiter
- Cardiac arrhythmia (Supraventricular arrhythmias are more common, [e.g, atrial flutter and fibrillation], but ventricular tachycardia may also occur)
 - Tremors, seizures
 - Coma

Thyroid storm is precipitated by the following factors in individuals with thyrotoxicosis:

- Sepsis
- Surgery
- Anesthesia induction
- Drugs (anticholinergic and adrenergic drugs such as pseudoephedrine, salicylates, non-steroidal anti-inflammatory drugs [NSAIDs], chemotherapy)
- Excessive thyroid hormone (TH) ingestion
- Withdrawal of or noncompliance with antithyroid medications
- Diabetic ketoacidosis
- Direct trauma to the thyroid gland
- Vigorous palpation of an enlarged thyroid
- Toxemia of pregnancy and labour in older adolescents, molar pregnancy

CHILDREN

Thyroid storm can occur in children with thyrotoxicosis due to any cause but is most commonly associated with Grave's disease.

MEDICAL EMERGENCY

Patients with thyroid storm should be treated in an ICU setting for close monitoring of vital signs and for access to invasive monitoring and support, if necessary. Initial stabilization and management of systemic decompensation is as follows:

EMERGENCY TREATMENT

If needed, immediately provide supplemental oxygen, ventilatory support, and intravenous fluids. Dextrose solutions are the preferred intravenous fluids to cope with continuously high metabolic demand. Correct electrolyte abnormalities.

Treat cardiac arrhythmia, if necessary. Aggressively control hyperthermia by applying ice packs and cooling blankets and by administering acetaminophen. (15 mg/kg orally or rectally every 4 h) Promptly administer antiadrenergic drugs (e.g, propranolol) to minimize sympathomimetic symptoms.

Correct the hyperthyroid state. Administer antithyroid medications to block further synthesis of thyroid hormones (THs). High-dose propylthiouracil (PTU) is preferred because of its early onset of action and capacity to inhibit peripheral conversion of T4 to T3.

Diabetes Mellitus

DEFINITION

Diabetes mellitus is a syndrome characterized by disordered metabolism and inappropriately high blood sugar levels (hyperglycaemia) resulting from either low levels of the hormone insulin or from abnormal resistance to insulin coupled with inadequate levels of insulin secretion to compensate.

The characteristic symptoms are:

- excessive urine production - polyuria
- excessive thirst and increased fluid intake polydipsia
- blurred vision

These symptoms are likely absent if the blood sugar is only mildly elevated.

TYPES OF DIABETES MELLITUS

The World Health Organization recognizes three main forms of diabetes mellitus:

- Type 1
- Type 2
- Gestational Diabetes (occurring during pregnancy)

Type 1 (about 10% of cases) usually starts in childhood and can only be treated with insulin. (oral tablets do not work)

Type 2 usually starts in adult life (>40 years) and can usually be managed with tablets. If severe, it may need insulin treatment.

RISK FACTORS

Risk Factors associated with type 2 Diabetes are:

- positive family history
- BMI > 23
- Obesity
- history of diabetes in pregnancy
- history of malnutrition
- low birth weight

SIGNS AND SYMPTOMS

- Increased thirst
- Increased urine output
- Tiredness
- Weight loss
- Increased infections: especially skin infections, UTIs, vaginal infections (candidiasis) and TB
- Symptoms of diabetic complications

EMERGENCY TREATMENT

A diabetic patient can present in coma:

Check the blood sugar level (dextrostick) in every patient with coma. If the blood sugar level is high (>200 mg/dL) in a comatose patient: Insert an IV cannula, start NSS infusion. Start insulin treatment. (10 IE IV STAT then 0, 1 IE/kg/h) Check blood sugar level every hour. Consider referring the patient.

DIAGNOSIS

Patient has diabetes if Random blood glucose >200 mg/dl. Fasting blood glucose Check glucose level in the morning –tell the patient not to drink or eat after midnight (except water)> 126 mg/dl.

COMPLICATIONS

Diabetes Mellitus causes long-term damage to the body if it is not treated. Blood vessel (vascular) disease: stroke, heart disease, heart attack, peripheral vascular disease (poor blood supply causing cold or painful feet). Kidney failure: protein positive on urine lab stick. Eye disease: cataracts, glaucoma,

damage to the retina (patient complains of blurred vision). Nerve damage: numbness, tingling and sometimes pain in the hands and feet (worse at night). Feet problems: due to poor blood supply and numbness, diabetic feet are at increased risk of infections and wounds.

Acute Complications

- Diabetic ketoacidosis
- Hypoglycemia
- Hypoglycemia, or abnormally low blood glucose, is a complication of several diabetes treatments
- The patient may become agitated, sweaty, and have many symptoms of sympathetic activation of the autonomic nervous system resulting in feelings similar to dread and immobilized panic

Hypoglycaemia

Consciousness can be altered or even lost in extreme cases, leading to coma, seizures, or even brain damage and death. In patients with diabetes, this can be caused by several factors, such as too much or incorrectly timed insulin, too much or incorrectly timed exercise (exercise decreases insulin requirements) or not enough food (specifically glucose-producing carbohydrates). In most cases, hypoglycemia is treated with sugary drinks or food. In severe cases, an injection of glucagon (a hormone with the opposite effects of insulin) or an intravenous infusion of glucose is used for treatment, but usually only if the person is unconscious. In hospital, intravenous dextrose is often used.

TREATMENT

The aim of diabetes treatment is to lower the blood sugar to normal levels, which will make the patient feel better and prevent long term damage. Normal random blood sugar levels are between 70 – 140 mg/dL. (3.8 – 7.8 mmol/L)

- Explanation and advice
- Lifestyle changes
 - Diet
 - Stop smoking
 - Exercise
- Medication

ADVICE

When you have made the diagnosis of diabetes, explain to the patient what diabetes is. Tell them that there is no cure for diabetes and that they will have this disease for life (except when diabetes present only in pregnancy - see later). Diabetes can be controlled. Explain that there are drugs which can lower the blood sugar and that there are also some things that the patient can do to help lower the blood sugar level. Advise your patient to check their feet each day to look for sores, cuts, redness or any signs of infection.

LIFESTYLE

Diet

Reduce sugar (e.g. sweets, biscuits, fruit juices, soft drinks like coke, sugar cane, honey). Instead of sugar, eat starchy foods (potato, noodles, bread). These are broken down into sugar by your body but more slowly, so they do not cause a sharp rise of the blood sugar. Be aware that rice and noodles raise the blood sugar. Reduce animal fats and palm oil. Increase fibre (vegetables, fruit). Do not drink alcohol. If overweight, lose weight: this can lower blood sugar.

Smoking -Advise the diabetic patient to stop smoking.

Exercise- Advise the patient to do some exercise: e.g. walking or playing football every day.

Some diabetics can bring their blood sugar level back to normal just by lifestyle treatment.

MEDICATION

Start diabetic medication if the dextrostick >200 mg/dL (11 mmol/L), or lifestyle treatment is not working. The diabetic medication will need to be started by a doctor or senior medic. The aim is to make sure that the random blood sugar levels are brought within the normal range.

Types of medication

- Metformin
- Glibenclamide
- Insulin

FOLLOW UP CONSULTATION

The aim is to educate, achieve good blood sugar levels (normal range 70-140 mg/dL) and check for complications that are treatable. When starting medication review the patient weekly until blood sugar level is stable. Continue to inform the patient about diabetes and remind him about diet and medication.

When blood sugar level is stable, review every month. Educate the diabetic patient about eating frequent meals with solid foods to avoid hypoglycaemia. Warn every patient who is on medication about the symptoms of hypoglycaemia and how to treat at home. Educate the patient how to treat low blood sugar. (eat a tablespoon of sugar)

INFECTIOUS DISEASES

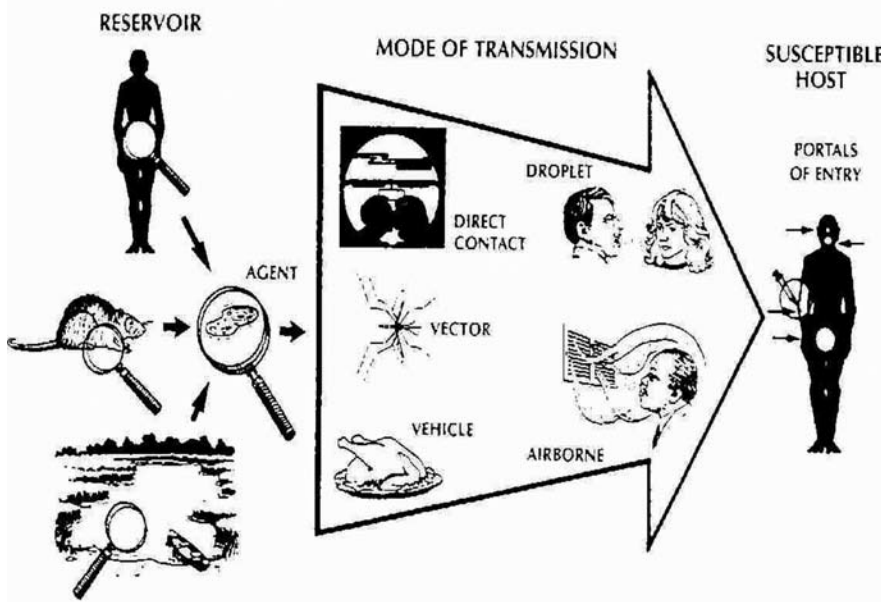
INTRODUCTION TO INFECTIOUS DISEASES

DEFINITION

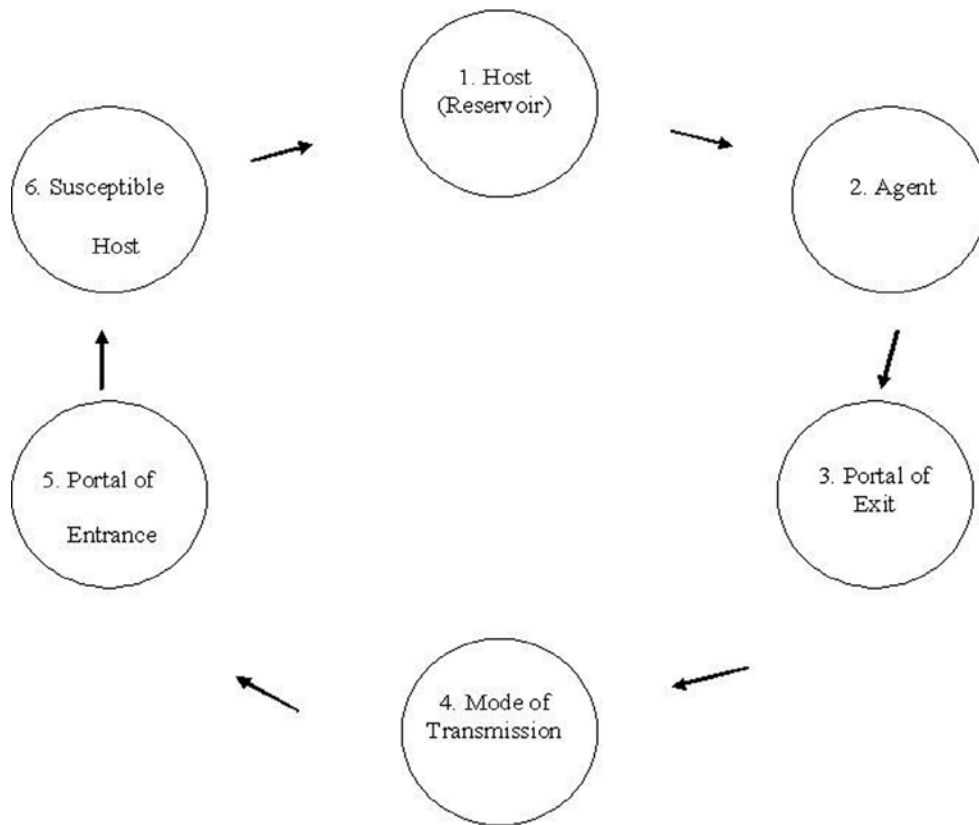
A disease caused by a type of microorganism (agent) is termed a communicable (infectious) disease (infection). Communicable diseases can be transmitted from man (or animal) to man. They result from the interaction of agent, host and environment (epidemiological triad).

- Agent (microorganism): e.g. bacteria, virus, parasites, etc.
- Host factors: influence the individual's susceptibility to the agent, e.g. age, race, sex, socio-economic status, behavior, etc.
- Environmental factors: extrinsic factors, which affect the agent, e.g. climate, insects that transmit the agent, crowding, etc.

More specifically, transmission occurs when the agent (microorganism) leaves its reservoir or host through a portal of exit, and is conveyed by some mode of transmission, and enters through an appropriate portal of entry to infect a susceptible host. Chain of infection for communicable diseases involves:



CHAIN OF INFECTION

**1. Reservoir is the habitat in which an infectious agent normally lives, grows & multiplies:**

- Humans (STDs, measles, mumps, small pox, streptococcal infection, most respiratory pathogens, etc.);
 - persons with symptomatic illness;
 - carriers (asymptomatic, incubatory, convalescent);
- Animals (anthrax, plague, rabies);
- Environment (plants, soil and water-TB, tetanus, dysentery).

2. Agent

- Agents (microorganisms) that cause infections can be broadly divided into:
 - Bacteria, e.g., tubercle bacillus;
 - Viruses e.g., influenza virus;
 - Fungi e.g., Candida albicans;
 - Parasites e.g., Plasmodium falciparum; ameba; tape worm.

3. Portal of Exit is the path by which an agent leaves the source host:

- Respiratory tract (TB bacteria, influenza virus);
- Urine (schistosomes);
- Feces (cholera bacteria);
- Skin lesions (scabiei mite).
- Conjunctival secretions (hemorrhagic conjunctivitis virus).

4. Mode of Transmission (how microorganisms spread): after an agent exits its natural reservoir, it may be transmitted to a susceptible host in numerous ways:

- Direct transmission:
 - direct contact (kissing, skin-to-skin contact, sexual intercourse, soil);
 - droplet spread (sneezing, coughing, talking).
- Indirect transmission:
 - Airborne transmission is by particles that are suspended in air:
 - Airborne dust;
 - Droplet nuclei (TB).
 - Animate (vector) intermediaries: flies (Shigella-dysentery), mosquitoes (malaria parasites), fleas (plague bacteria);
 - Inanimate (vehicle) intermediaries: food, water, blood, fomites (bedding, towels, handkerchiefs, surgical scalpels).

5. Portal of Entry: through which an agent (microorganism) enters a susceptible host:

- Respiratory tract (influenza);
- Fecal-mouth;
 - [Organisms are shed in feces- carried on inadequately washed hand- svehicle (food, water, cooking utensil) - mouth of a new host].
- Skin (hookworm);
- Mucous membranes (syphilis, trachoma);
- Blood (hepatitis B).

6. Susceptible Host

- The chain of infection may be interrupted when an agent does not find a susceptible host.

Example of a chain of infection for a communicable disease:

1. Agent: hepatitis A virus
2. Reservoir(s): man
3. Portal of exit: feces
4. Mode of transmission:
 - indirect transmission: contaminated vector (unwashed hands) to vehicle (food, water)
5. Portal of entry: mouth
6. Factors in host susceptibility: lack of active immunity or passive immunity.

CLASSIFICATION OF COMMUNICABLE DISEASES

1. Fecal-Oral Diseases

- 1.1. Amebiasis
- 1.2. Gastroenteritis
- 1.3. Cholera
- 1.4. Shigellosis (Bacillary Dysentery)
- 1.5. Typhoid & Paratyphoid
- 1.6. Hepatitis A
- 1.7. Poliomyelitis
- 1.8. Enterobius (Pinworm)

2. Soil-Mediated Diseases

- 2.1. Tetanus
- 2.2. Ascaris

- 2.3. Hookworms
- 2.4. Trichuris (Whipworm)

3. Water-Washed Diseases

- 3.1. Trachoma
- 3.2. Scabies
- 3.3. Superficial Fungal Infections

4. Food-Borne Diseases [another method of person-to-person transfer, control is by personal hygiene and cooking of food].

- 4.1. Food poisoning
 - 4.1.1. Salmonellae
 - 4.1.2. Staphylococci
 - 4.1.3. Clostrida
- 4.2. Pork Tapeworms
- 4.3. Beef Tapeworms

5. Respiratory Diseases (Infections)

- 5.1. Acute Respiratory Infections
- 5.2. Measles
- 5.3. Chickenpox
- 5.4. Tuberculosis
- 5.5. Acute Rheumatic Fever
- 5.6. Whooping Cough (Pertussis)
- 5.7. Diphtheria
- 5.8. Bacterial Meningitis

6. Diseases Transmitted Via Body Fluids

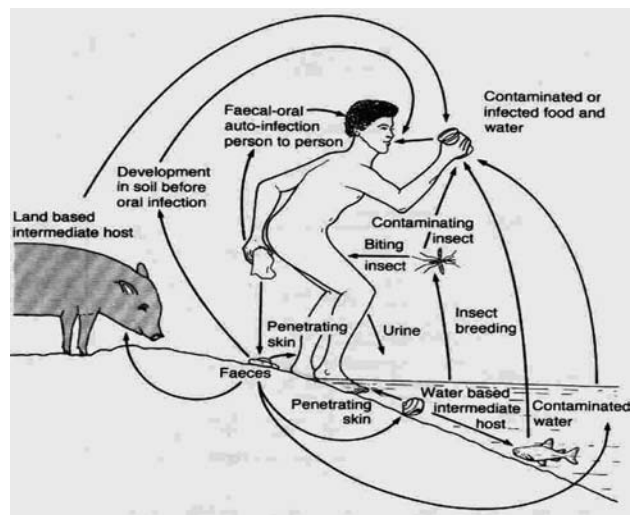
- 6.1. Syphilis
- 6.2. Gonorrhoea
- 6.3. Non-Gonococcal Urethritis (NGU)
- 6.4. Chancroid
- 6.5. Human Immunodeficiency Virus (HIV)
- 6.6. Hepatitis B
- 6.7. Hepatitis C

7. Insect-borne Diseases

- 7.1. Malaria
- 7.2. Dengue Fever
- 7.3. Filariasis

8. Domestic Zoonosis

- 8.1. Rabies
- 8.2. Leptospirosis
- 8.3. Anthrax.



Prevention and Control of Communicable Diseases

PREVENTION & CONTROL STRATEGY

To prevent a disease means to take the necessary measures so that no one in the community will catch that disease.

To control a disease is to take the necessary measures to prevent people in the community becoming infected from already infected persons.

In any communicable disease outbreak the following sequence of events should be undertaken:

- Identification of the cause (diagnosis);
- Notification;
- Epidemiological investigation;
- Treatment of cases;
- Interruption of transmission;
- Analysis and writing of a report;
- Surveillance.

Identification Of The Cause (Diagnosis)

The communicable disease in question must be confirmed by laboratory methods or by careful clinical judgement (as in Measles). Relevant specimen containers and transport media will be needed.

Notification

Notify responsible personnel so that timely plans and control and prevention measures can be carried out.

Epidemiological Investigation

Look for a common event that is shared by all the cases. Study exceptions to see if there are rational explanations. Base these findings on the population at risk. Make clear changes that have occurred in the environment, which may have favored the outbreak (seasonal, new arrivals, etc.). Make a hypothesis of cause, route of transmission and method of control.

Treatment Of Cases

Setting up emergency treatment centers or arranging transport of cases to hospital. Mobilization of staff, medicines and equipment are done according to need. Follow the standard protocol of treatment. Making rules on period of isolation, management of contacts, prevention of carriers and disposal of the dead.

Interruption Of Transmission

Method of control can be in three different phases:

- emergency
- specific
- long-term prevention; depending upon the type of the communicable disease.

Analysis And Writing Of A Report

A communicable disease outbreak should be analysed in detail and written down as a report. This will be based on the investigations made, the prevention & control methods used and the outcome (total number of cases and deaths).

Surveillance

Surveillance is the watching of the environment for any new diseases to appear and the monitoring of change in known diseases. [It is the ongoing systematic collection, analysis, interpretation and dissemination of health data]. It is used to describe and monitor health events in the communities which in turn are used to investigate, control and prevent diseases.

- The key to surveillance is reporting. Reporting can be through:
 - basic health services (IPD, OPD, MCH Clinics, Laboratory Staff)

- camp committee, e.g. notification of births and deaths.

GENERAL PREVENTION & CONTROL METHODS

To prevent a disease means to take the necessary measures so that no one in the community will catch that disease. To control a disease is to take the necessary measures to prevent people in the community becoming infected from already infected persons.

In any communicable disease outbreak the following sequence of events should be undertaken:

- Identification of the cause (diagnosis)
- Notification
- Epidemiological investigation
- Treatment of cases
- Interruption of transmission
- Analysis and writing of a report
- Surveillance

1. Immunization;

2. Environmental control methods:

- Personal and domestic hygiene;
- Protection of Foods
- Inspection of raw (meat) produce;
- Washing and correct preparation;
- Adequate and even cooking;
- Preventing contamination of cooked foods (from insects, hands, flies);
- Use of water supplies;
- Increase water quantity;
- Improve water quality;
- Reduce water contact by bringing water to site of use;
- Proper disposal of excreta and waste;
- Packaging and avoiding contamination;
- Suitable storage conditions and time-limits;
- Eating cooked foods immediately.
- Prevent spillage by proper maintenance of supplies and drainage.

3. Vector control;

- Killing the adult mosquito: knock-down spray & residual insecticide;
- Deterrents & repellants: smokes; creams & solutions;
- Personal protection: clothing;
- Larvicides: not efficient.

INTERRUPTION OF THE CHAIN OF INFECTION

The chain of infection may be interrupted when an agent does not find a susceptible host. We can stop the infective agents' spread by cutting or blocking these paths as follows: -

- by stopping agents leaving people;
- by stopping agents moving across to another person;
- by making one's body strong by increasing his/her immunity so he/she can easily fight harmful agents.

Stopping Agents Leaving People (Hosts)

Spreading through nose (droplet)

- Cover mouth when coughing;
- Do not spit on ground;
- Keep children who have measles, pneumonia, or colds away from other children;
- Wash hands with clean water and soap after coughing or sneezing.

Spreading through mouth (fecal-oral: transmitted by person-to-person contact; through water or food via the oral route)

[To break fecal-oral cycle: increase in water quantity; improvement in water quality; food hygiene; provision of sanitation].

- Use latrines;
- Wash hands with clean water and soap after using latrines;
- Wash hands with clean water and soap after helping child pass stool;
- Wash hands with clean water and soap before making or preparing food;
- Wash hands with clean water and soap before feeding children and also wash their hands;
- Wash hands with clean water and soap before eating;
- Cover food so flies cannot sit on it;
- Drink boiled water;
- Eat thoroughly cook food;
- Wash utensils used for eating.

Stopping Agents Moving Across To Another Person

Spreading through skin (feces/urine to skin)

- Wear shoes;
- Use latrines correctly.

Direct contact

- Wash hands with clean water and soap;
- Wash skin infections and cover them.

Insects bites

- Spray to kill mosquitoes;
- Use mosquito nets, wear clothes;
- Cut bushes and trees to stop breeding;
- Drain stagnant water and puddles;
- Wear clothing that covers skin.

Syringes and needles (Follow Universal Precautions)

- Learn how to give injections correctly;
- Use one needle for one person only one time;
- Throw away used needles and syringes correctly.

Spread through sex

- Avoid unprotected sex;
- have less sexual partners or have monogamous relation
- Use condoms;
- No sex when one has a STD (sexually transmitted disease).

Personal Hygiene That Promote Health & Limit The Spread Of Infectious Diseases

1. Washing hands in soap & water immediately after evacuating bowel or bladder.
2. Washing hands in soap & water before handling food or eating.
3. Keeping hands & unclean articles, or articles that have been used for toilet purposes by others, away from the mouth, nose, eyes, ears, genitalia and wounds.
4. Avoiding the use of common or unclean eating utensils, drinking cups, towels, handkerchiefs, combs and hairbrushes.
5. Avoiding exposure of other persons to spray from the nose and mouth as in coughing, sneezing, laughing or talking.
6. Washing hands thoroughly after handling a patient or the patient's belongings.
7. Keeping the body clean by frequent soap and water baths.

WHO “Ten Golden Rules for Safe Food Preparation”

1. Choose foods processed for safety.
2. Cook food thoroughly.
3. Eat cooked foods immediately.
4. Store cooked foods carefully.
5. Reheat cooked foods thoroughly.
6. Avoid contact between raw food and cooked food.
7. Wash hands repeatedly.
8. Keep all kitchen surfaces meticulously clean.
9. Protect food from insects, rodents and other animals.
10. Use safe water.

UNIVERSAL PRECAUTIONS IN THE HEALTH CARE SETTING

- You can never tell who is infected with the HIV virus (or other infections such as Hepatitis B and C). This is why you must treat every patient as if they could be infected.
 - Universal Precautions’ means using the same means to protect yourself against HIV (and other infections) with every patient.
 - Health care workers are exposed to many substances that may be contaminated with HIV and other organisms. It is very important that health care workers protect themselves from all diseases, especially AIDS. If health care workers get sick, they will not be able to work and help sick people. Health care workers must protect themselves by using the following precautions:-
1. Wear gloves whenever you may come into contact with a patient’s blood or body fluids, e.g., giving injections, inserting IV, draining abscesses, changing dressings, performing deliveries, handling contaminated clothing and during genital and oral examinations.
 2. Dispose of wastes quickly and properly especially “sharps”. Take the sharps container to the patient when you are doing a procedure so that you can immediately dispose of the sharps. Keep sharps container out of reach of children. Dispose of sharps containers properly, e.g., in a deep permanent hole that can be filled in completely.
 3. Store surgical instruments properly when not in use. After use, the instrument should be decontaminated and sterilised as soon as possible.
 4. Avoid re-capping used needles (most accidental injuries with needles happen during re-capping).
 5. Wash hands thoroughly after examining each patient.
 6. Health workers should keep all wounds, abrasions or cuts covered with a bandage when working.

What should you do if you have an accident with a “sharp”?

In case of accidental needle stick (or other sharp) injury or splash with body fluids, you should: -

- Immediately wash with soap and water (if available, use 1% hypochlorite - bleach). This is available from the laboratory in the clinic.
- If needle stick or injury with another sharp, you should make the wound bleed if possible.
- If mucous membrane splash, e.g., conjunctiva or mouth, you should wash copiously with water or saline.

Malaria

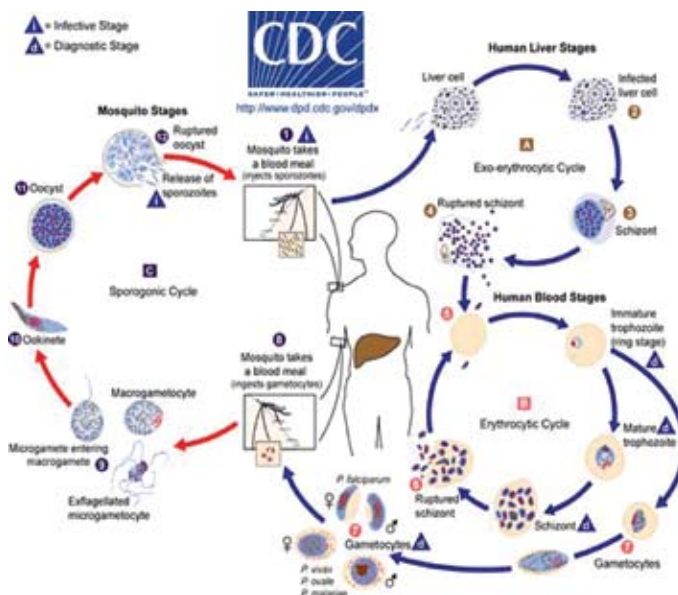
INTRODUCTION

Malaria is a parasitic infection that is transmitted to humans by the female Anopheles mosquito. Four plasmodial species are found on the Thailand/ Burma border: *P. falciparum* (PF), *P. vivax* (PV), *P. malariae* (PM), *P. ovale* (PO) – this is rare. Plasmodium falciparum is the cause of nearly all the deaths caused by malaria. In our area, *P. falciparum* is highly resistant to antimalarial drugs.

Here, it represents 45% of the patients hospitalized in the IPD (average for one year). For some months, this percentage may reach 80%. Here we can get malaria all year long but mainly two seasons are important because there are such conditions (heat, humidity) that the parasite can develop and infect people easily through the mosquitoes. These seasons are:

- the rainy season (during June-July-August)
- the winter (December-January)

LIFE CYCLE OF MALARIA



Mosquito bite contaminates man with parasites. Sporozoites enter liver cells and develop merozoites. (In one liver cell one parasite can give 30,000 parasites) Merozoites are released in great number, enter Red Blood Cells and become trophozoites. The trophozoites grow and become schizonts. The RBCs break and new merozoites are released and may infect RBC again.

Some trophozoites will develop into gametocytes. Mosquito sucks them up during his blood meal. The gametocytes will develop in the mosquitoes' salivary glands becoming sporozoites. They are able to contaminate humans.

Terminology Plasmodium falciparum

On the results of MS you may find various abbreviations:

- PF: Plasmodium falciparum: this species of parasite can kill patients.
- PFT: Plasmodium falciparum trophozoites: with this form of the parasite your patient will be sick (may die), he needs treatment (Trophozoites- treatment).

- PFG: Plasmodium falciparum gametocytes: with this form of parasite your patient is not sick but the mosquito can suck this blood and the malaria cycle will go on: Gametocytes giving sporozoites in the salivary glands of the mosquito.

Terminology: PV Plasmodium vivax

- PVT: Plasmodium vivax trophozoites: your patient is sick but will not die.
- PVG: Plasmodium vivax gametocytes: the patient is not sick but the malaria cycle may go on.
- For PV only, some parasites may stay in the liver cells in a dormant form. They will not develop immediately. After a few months, they can start to develop and give relapses of malaria during 2 to 3 years even if you don't have new mosquito bites. During the dry season, you have more Vivax malaria because of these dormant forms.

DIFFERENT CLINICAL ASPECTS

Malaria has different clinical aspects according to:

- Plasmodium species: PFT or PVT
- Parasitemia (quantity of parasites in the blood): PFT + to PFT +++ (or PVT).
- Patients: children and pregnant women are more susceptible to uncomplicated malaria

Classifications

We use the following classifications:

- Uncomplicated malaria: PV or PF with low parasitemia and no complications
- Severe malaria: PF with high parasitemia or other complications
- This includes cerebral malaria (PF with Coma considered as another aspect of severe malaria)

SIGNS AND SYMPTOMS AND DIAGNOSIS OF MALARIA

Fever with one or more of the following signs: headache, chills, rigor, sweating, muscle or joint pain, anorexia (poor appetite), nausea, vomiting, abdominal pain, diarrhoea are present. Sometimes, the patient arrives unconscious or with convulsions. Sometimes, the patient has no fever at the time of consultation. Anaemia and enlarged spleen are common. **Always think of malaria in patients with fever.**

DIAGNOSIS

Confirm the diagnosis with a positive blood test (Malaria Smear-MS) or with a rapid test. The malaria smear is positive if there are trophozoites (T). Results may be mixed (PF + PV).

With gametocytes only (PG), the patient carries the parasite, but is not sick and does not need treatment. Treat gametocytes-only (PG) if patients have clinical signs of malaria and have not received a full course of an effective treatment (MAS3, AS7D7, Q7D7). Always take a blood smear before starting any malaria treatment, even if it is not possible to read it (for example, at night or in emergency). It will be read later to confirm or exclude the diagnosis. **DO NOT DELAY treatment waiting for a slide to be read the next day.**

Severe or not?

If the smear is negative and fever persists, repeat the smear. Remember: the diagnosis of malaria is by blood test, but the diagnosis of severity is **CLINICAL. Look at the smear result to decide: (hyper) malaria or not. Look at the patient to decide: severe or not.**

Diagnosis of Severity –Is the Malaria severe?

Once you have diagnosed malaria with a positive blood test, decide whether or not the malaria is severe before starting treatment. Check all women of reproductive age (15-50) for pregnancy.

Defining criteria of Severe Malaria

- Cerebral malaria - The patient is unconscious
- Severe anaemia - Hb \leq 6g/dl (Hct $<$ 18%) or signs of severe anaemia
- Renal failure - No or little urine ($<$ 400 cc/day).
- Pulmonary oedema - Rapid breathing with crackles at both lung bases
- Hypoglycaemia - Pale, sweating, falling unconscious, Dextro $<$ 2.5 mMol ($<$ 45 mg/dL)
- Shock - Pulse $>$ 130 and BP $<$ 80/50 with cold hands and feet
- Spontaneous bleeding - Bleeding from gums or in urine, vomiting blood, petechial rash with small very dark spots
- Neurological signs- The patient is drowsy, irritable and agitated, and had/has convulsions
- Acidosis -The patient is breathing very deeply
- Haemoglobinuria - Passage of dark red to black urine

Other manifestations of severe malaria

Note: One sign positive = severe malaria, but many patients have 2 or 3 signs at the same time.

- Extreme weakness and cannot eat or drink by him/her self
- Hyperparasitaemia ($>$ 4% RBC infected)
- Hyperthermia - Temperature $>$ 40.5C
- Jaundice
- Severe vomiting

TREATMENT

Treatment Table – follow these guidelines carefully- Refer to Burma Border Guidelines (BBG)

Simple Plasmodium vivax (PV), Plasmodium ovale (PO) or Plasmodium malariae (PM) Malaria

Malaria smear: PVT, PMT, PVGT or PMGT (Not PF) - Treat the fever with paracetamol. Treat the malaria.

See BBG Malaria Treatment Guidelines.

Carefully check patients who may be at risk (pregnant women and children $<$ 2 years) and decide if admission to IPD is necessary. More than half of all patients with PV or PO will relapse after treatment with chloroquine alone. Relapse is due to the presence of resting stage hypnozoites in the liver. The only drug that can kill the liver stages and prevent relapses is primaquine.

G6PD-Deficiency

Primaquine can cause haemolysis in G6PD-deficient patients. Patients tested with normal G6PD can be safely treated with primaquine 15mg OD for 14 days. When G6PD is deficient primaquine given weekly for 6 or 8 weeks is effective and safe. When G6PD testing is not available, patients with PV or PO can be safely treated with once weekly primaquine.

Mixed PF and PV Malaria in non pregnant Patients

Malaria smear: PFT, PFGT, PVT+PFT

For any MS mixed result, PFT is the most dangerous so treat as PF malaria.

Before treating and during treatment, check for the following.

- Is the malaria severe?
- Is the patient pregnant? If there is any doubt, do a pregnancy test
- Has the person received Mefloquine (MFQ) in the last 2 months?
- What is the age and weight of the person?
- Check the parasitaemia. (hyper: \geq 4% non hyper: $<$ 4%)
- Make sure the patient eats and drinks during treatment.

Note: Do not forget to treat the fever, hypoglycaemia, vomiting, dehydration or other symptoms.

Simple (Uncomplicated) PF Malaria: No signs of severity, MS = PFT < 4%, Patient not pregnant

OPD supervised treatment – see Treatment Table - BBG. If possible, admit to IPD children < 2 years old. They can develop severe malaria very rapidly. If not possible, ask the family to watch them closely for the first 24 hours.

Uncomplicated PF hyperparasitaemia: No signs of severity, MS = PFT ≥ 4%, Patient not pregnant

Admit to IPD, close monitoring, ensure eating and drinking. Use the same checklist as for uncomplicated malaria. Treat the malaria: see Treatment Table - BBG. If patient deteriorates, treat as severe malaria. Anaemia risk is high, especially in children. Check Hb on admission, at 24 hours, and before discharge.

SEVERE AND CEREBRAL MALARIA

Admit to IPD. Treat the malaria: see Treatment Tables -BBG. Monitor the patient closely and check: Temperature, RR, pulse, BP and consciousness (coma score) every hour during the first 4 hours and then every 2 to 4 hours afterwards. Glucose Level with dextrostick should be checked before and at the end of the loading dose for quinine, and if the patients gets worse. Stop IV / IM treatment and start oral treatment as soon as they can be tolerated. See Treatment table - line 7 Treat the complications.

Pregnant women and children should have dextrostick QID while on IV quinine. Hb is tested when admitted and every day if Hb is <7.3 (Hct <22) or if severe signs of anaemia appear. Quantity of urine needs to be checked if the patient says there is little or if unconscious (catheterise and monitor the urine output). MS is done daily.

COMMON COMPLICATIONS

- Fever: Treat with paracetamol or ASA and sponging (ASA contraindicated in children and patients with low platelets).
- Coma: Manage in case of cerebral malaria.
- Convulsions: Treatment: give diazepam IV/IM/PR if convulsions start.
- Hypoglycaemia: Treat when dextro is < 2.5 mMol (<45 mg/dL) with D50 IV 1 ml/kg.
- Severe Anaemia: Give transfusion if needed.
- Pulmonary Oedema: Sitting position, decrease infusion, and give furosemide.
- No Urine: If the patient is dehydrated, give Ringers/NSS.
- If unconscious, put in a urinary catheter.
- Infection: A patient with severe malaria can easily develop other severe infections.
- If there is any doubt about prolonged fever and coma while you give antimalarial treatment, give IV ceftriaxone or ampicillin and gentamicin.
- Shock: Give NSS or RL quickly until the systolic BP is > 90mmHg.
- In case of signs of septic shock add IV ceftriaxone or ampicillin and gentamicin to your antimalarial treatment.

PRESUMPTIVE MALARIA

When clear clinical signs of malaria are present, but the smear is not available (no lab) or negative after the patient has taken some malaria medicines at home, it is presumptive malaria. Repeat the smear if there is a strong suspicion, but the smear was negative. Check for signs of severity and treat as: Simple presumptive malaria. See Treatment Table -BBG. Admit to IPD. Treat like severe malaria.

MALARIA IN PREGNANCY

If possible, admit to IPD all pregnant women, because they can develop severe malaria very rapidly. For treatment see Treatment Table - BBG.

Contraindications to treatment**Cannot give:**

- MEFLOQUINE: Allergy, pregnancy, child less than 5 kg, mefloquine given in the past 63 days, history of epilepsy or mental illness, fitting, drowsiness, unconsciousness, deep jaundice
- DOXYCYCLINE: Allergy, pregnancy, children less than 8 years old.
- ARTESUNATE: Allergy
- PRIMAQUINE: Allergy, pregnancy
- DAILY PRIMAQUINE: G6PD-deficiency (Can give weekly primaquine)

PREVENTION OF MALARIA**Individual protection**

A mosquito that bites during the evening (Anopheles) transmits this disease. Individual protection against Anopheles mosquitoes are:

- (long-lasting impregnated) bed nets
- long sleeves and trousers in the evening
- insect repellents
- burning mosquito coils

Chemoprophylaxis is not recommended in this area.

Malaria Control Programs

Malaria control programs include:

- patient education
- anti-mosquito spraying (vector control)
- use of impregnated bed nets
- early detection and diagnosis (especially for the high risk groups: pregnant women and children)

HIV/ AIDS**DEFINITION**

Acquired immune deficiency syndrome (AIDS) is a collection of symptoms and infections resulting from damage to the immune system caused by the human immunodeficiency virus (HIV) in humans. CD4 T-cells are a type of lymphocyte that co-ordinate the immune system's response to certain micro-organisms such as viruses. HIV can infect and kill CD4 T-cells, as well as some other types of cell. When many CD4 T-cells have been destroyed by HIV, the infected person is no longer able to fight against infections or certain types of cancer. Some organisms can only cause disease in people with low immunity; these diseases are called Opportunistic Infections (OIs).

AIDS is an advanced stage of HIV infection when the infected person develops severe opportunistic infections and may develop some types of cancer. Every person infected with HIV will progress slowly towards AIDS. Death from this can take a long time. People with HIV infection can often live a full and productive life for many years. To illustrate this we often use the term person living with HIV (or PLWH).

Taking medication can often prevent opportunistic infections. Antiretroviral therapy (ART) slows down the progress of the virus and can greatly improve quality of life, but they do not eliminate HIV infection.

TRANSMISSION OF HIV

Transmission of HIV requires contact with body fluids— specifically blood, semen, vaginal secretions, breast milk, saliva, or exudates from wounds or skin and mucosal lesions— that contain free virions or infected cells. Transmission is more likely with higher levels of virions, as is typical during primary infection, even when people are asymptomatic. Transmission by saliva or droplets produced by coughing or sneezing, although conceivable, is extremely unlikely. HIV is not transmitted by casual nonsexual contact as may occur at work, school, or home. Transmission is generally by:

- Direct transfer of bodily fluids through sexual intercourse
- Sharing of blood-contaminated needles
- Childbirth
- Breastfeeding
- Medical procedures (e.g. transfusions, exposure to contaminated instruments)

HIV can be transmitted from mother to offspring transplacentally or perinatally; without treatment, risk of transmission is about 25 to 35%. HIV is also excreted in breast milk, and breastfeeding by HIV-infected mothers may transmit HIV to about 75% of infants who had previously escaped infection.

TRANSMISSION AND PREVENTION

ROUTE OF TRANSMISSION	PREVENTION
Sexual Contact.	<ul style="list-style-type: none"> • Abstain from sexual contact OR • Be faithful to one uninfected partner OR • Use male or female condoms <p>AND</p> <ul style="list-style-type: none"> • Early diagnosis and treatment of sexually transmitted infections (STI). • PEP (post exposure prophylaxis, medicine you give immediately after the exposure). In the event of rape this may reduce the risk of HIV transmission.
Contaminated syringes and needles and other sharps. For example, intravenous drug users, health workers, tattoos.	<ul style="list-style-type: none"> • Avoidance of injecting drug use. • Do not share needles and syringes and always use a new sterilised needle and syringe. • Do not share cutting implements e.g. tattooing needles, ear piercing needles, razor blades. • Universal precautions for health workers. • PEP in the event of occupational exposure may reduce the risk of HIV transmission.
Infection by blood and blood products. For example, blood transfusion by HIV contaminated blood.	<ul style="list-style-type: none"> • Follow protocol for transfusion. • Screening of donors with a questionnaire to assess risk of HIV infection. • HIV testing of blood donors before transfusion (should be provided with pre and post-test counseling if available). If not available screen the blood but do not inform the donor of the result.
Mother to child transmission	<ul style="list-style-type: none"> • See Prevention of Mother to Child Transmission (PMCT) from BBG.

SEROCONVERSION ILLNESS

Symptoms

Initially, primary HIV infection may be asymptomatic or cause transient nonspecific symptoms (acute retroviral syndrome). Acute retroviral syndrome or sero conversion syndrome usually begins within 1 to 4 wk of infection and usually lasts 3 to 14 days. It is characterized by fever, malaise, rash, arthralgia, generalized lymphadenopathy, and sometimes aseptic meningitis. Symptoms are often mistaken for infectious mononucleosis or benign, nonspecific viral syndromes.

CLINICAL STAGING ACCORDING TO WHO

Stage 1

- Asymptomatic
- Persistent generalised lymphadenopathy

Stage 2

- Weight loss 5-10% of body weight
- Minor skin, mouth or nail manifestations such as fungal nail infections, recurrent oral ulcers
- Recurrent upper respiratory tract infections, such as sinusitis, tonsillitis, pharyngitis or otitis media
- Herpes zoster or history of herpes zoster within the last five years

Stage 3- usually associated with a CD4 of less than 350mm³

- Severe weight loss >10% of body weight
- Persistent oral candidiasis
- Severe bacterial infections such as pneumonia and pyomyositis (infection of muscle)
- Pulmonary TB: current or within the last year
- Unexplained diarrhoea for longer than one month
- Unexplained persistent fever for longer than one month

Clinical stage 4: Severe disease (AIDS) (usually associated with a CD4 of less than 200mm³)

- HIV wasting syndrome (severe malnutrition)
- Severe disseminated extrapulmonary TB
- Severe infections {Cryptococcus meningitis, oesophageal candidiasis, pneumocystis carinii pneumonia (PCP) and many others}
- Cancers (invasive cervical cancer, lymphoma and Kaposi's sarcoma)

AIMS OF COUNSELLING IN HIV INFECTION

Prevention

- Determining whether the lifestyle of an individual places him or her at risk
- Working with an individual so that he or she understands the risks
- Helping to identify the meanings of high risk behaviour
- Helping to define the true potential for behaviour change
- Working with the individual to achieve and sustain behaviour change

Support

Individual, relationship, and family counselling to prevent and reduce psychological morbidity associated with HIV infection and disease.

Different HIV counselling programmes and services

- Counselling before the test is done
- Counselling after the test for those who are HIV positive and HIV negative
- Risk reduction assessment to help and prevent transmission
- Counselling after a diagnosis of HIV disease has been made
- Family and relationship counselling
- Bereavement counselling
- Telephone “hotline” counselling
- Outreach counselling
- Crisis intervention
- Structured psychological support for those affected by HIV
- Support groups

Pretest discussion checklist

- Indications for further counselling and referral to counsellor
- People who have been sexually active in areas of high HIV prevalence
- Men who have sex with men
- Current or previous sexual partners HIV positive
- Client presenting with clinical symptoms of HIV infection
- High risk sexual behaviour
- High risk injecting drug practices
- Learning or language difficulties
- Points for counsellor and/or physician to cover
- What is the HIV antibody test (including seroconversion)
- The difference between HIV and AIDS
- The window period for HIV testing
- Medical advantages of knowing HIV status and treatment options
- Transmission of HIV
- Safer sex and risk reduction
- Safer injecting drug use
- If the client were positive how would the client cope: personal resources, support network of friends/partner/family
- Who to tell about the test and the result
- Partner notification issues
- HIV status of regular partner: is partner aware of patient testing?
- Confidentiality
- Does client need more time to consider?
- Is further counselling indicated?
- How the results of the test are obtained (in person from the physician or counsellor)

Causes of uncertainty

- The cause of illness:
 - Progression of disease
 - Management of dying
 - Prognosis
 - Reactions of others (loved ones, employers, social networks)
- Effects of treatment
- Long term impact of antiretroviral therapy
- Impact of disclosure and how this will be managed

Coping strategies

- Using counselling
- Problem solving
- Participation in discussions about treatment
- Disclosure of HIV status and using support options
- Using social and family networks
- Use of alternative therapies, for example relaxation techniques, massage
- Exploring individual potential for control over manageable issues

Psychological issues in HIV/AIDS counselling

Shock

- of diagnosis
- recognition of mortality
- of loss of hope for the future

Fear and anxiety

- uncertain prognosis
- effects of medication and treatment/treatment failure
- of isolation and abandonment and social/sexual rejection
- of infecting others and being infected by them
- of partner's reaction

Depression

- in adjustment to living with a chronic viral condition
- over absence of a cure
- over limits imposed by possible ill health
- possible social, occupational, and sexual rejection
- if treatment fails

Anger and frustration

- over becoming infected
- over new and involuntary health/lifestyle restrictions
- over incorporating demanding drug regimens, and possible side effects, into daily life

Guilt

- interpreting HIV as a punishment; for example, for being gay or using drugs over anxiety caused to partner/family

DIAGNOSIS

Before testing ensure your clinic can offer:

- Confidentiality
- Pre-test Counselling
- Informed Consent
- Post test Counselling
- Laboratory testing
- Referral for appropriate clinical nutritional psychological and social support services

Testing

- HIV antibody testing
- Nucleic acid amplification assays to determine HIV RNA level (viral load)
- When HIV is diagnosed, CD4 count and plasma HIV RNA level should be determined
- Both are useful for determining prognosis and monitoring treatment

OPPORTUNISTIC INFECTIONS**Introduction**

The CDC has compiled a list of opportunistic infections. Please refer to the BBG for common opportunistic infections and their treatment.

Bacterial Infections

- Bacterial Diarrhea (Salmonellosis, Campylobacteriosis, Shigellosis)
- Bacterial Pneumonia
- Mycobacterium Avium Complex (MAC)
- Mycobacterium Kansasi
- Syphilis & Neurosyphilis
- Tuberculosis (TB)

Malignancies (Cancers)

- Anal Dysplasia/Cancer
- Cervical Dysplasia/Cancer
- Kaposi's Sarcoma (KS)
- Lymphomas

Viral Infections

- Cytomegalovirus (CMV)
- Hepatitis C
- Herpes Simplex Virus (oral & genital herpes)
- Herpes Zoster Virus (shingles)
- Progressive Multifocal Leukoencephalopathy (PML)
- Human Papilloma Virus (HPV, genital warts, anal/cervical dysplasia/cancer)
- Molluscum Contagiosum
- Oral Hairy Leukoplakia (OHL)

Fungal Infections

- Aspergillosis
- Candidiasis (thrush, yeast infection)
- Coccidioidomycosis
- Cryptococcal Meningitis
- Histoplasmosis

Protozoal Infections

- Cryptosporidiosis
- Isosporiasis
- Microsporidiosis
- Pneumocystis Pneumonia (PCP)
- Toxoplasmosis

Neurological Conditions

- AIDS Dementia Complex (ADC)
- Peripheral Neuropathy

Other Conditions and Complications

- Aphthous Ulcers (Canker Sores)
- Thrombocytopenia (low platelets)
- Wasting Syndrome

Counselling

- Aims of counseling in HIV infection
 - Prevention and Support
- Different HIV counselling programmes and services
- Pretest discussion –checklist
- Causes of uncertainty
- Coping Strategies
- Psychological issues

INTRODUCTION TO ANTI RETRO VIRAL MEDICATION

There are 3 classes of drugs currently in use.

- NRTI's (Nucleoside Reverse Transcriptase Inhibitors); 3TC, D4T, ddI, AZT
- NNRTI's (Non - Nucleoside Reverse Transcriptase Inhibitors): Nevirapine (NVP), Efavirenz
- PI's (Protease Inhibitors): Ritonavir, Indinavir and Nelfinavir

The best available treatment combines 3 or 4 drugs (usually 2 NRTI's and either an NNRTI or a PI). Such therapy requires close follow-up because of possible side-effects. In Thailand a fixed combination of drugs in 1 tablet is used: GPO-vir. This tablet contains 3TC, D4T and NVP, and is taken BID.

GPO-vir is used as first line treatment for HIV-AIDS in Thailand. Therapy is life-long as these drugs do not cure HIV. If the drugs are stopped the virus begins to multiply again. Regular follow-up is essential to monitor whether the drugs are taken, the clinical response and the side effects.

Sexually Transmitted Diseases

DEFINITION

Sexually transmitted diseases (STDs) are a group of contagious conditions in which the principal mode of transmission is by heterosexual or homosexual activity.

TRANSMISSION

STDs can be transmitted in ways other than sexual contact; for instance, a pregnant woman with a STDs can transmit the infection

- during pregnancy through the placenta (congenital syphilis)
- during delivery by direct contact of the fetus with infected secretions in the birth canal (new-born conjunctivitis)
- during breast-feeding (HIV only)
- Or by blood transfusion e.g. HIV and syphilis

STDs can be:

- a bacterial disease (syphilis, gonorrhoea)
- a viral disease (herpes, HIV/AIDS)
- a fungal disease (e.g. Candida)
- a parasitic disease (pubic lice)

STDs are very contagious (spread easily from one person to another). STDs are common all over the world. It is estimated that around 333 million new STDs infections occur annually worldwide, of which 65 million occur in Sub-Saharan Africa and 150 million in South-East Asia. STDs, Tuberculosis and Malaria constitute the 3 major Public Health Problem in most of developing countries. STDs can infect both men and women but the complications are usually worse for women. Women often have no signs or symptoms but may still have a serious infection.

Unless they are treated early STDs can cause:

- Infertility in both men and women
- Premature birth, low birth weight babies , congenital abnormalities and stillbirth
- Ectopic pregnancy (pregnancy outside of the uterus)
- Cancer of the cervix
- Chronic lower abdominal pain
- Death from severe infection

Factors contributing to the high incidence of STDs in developing countries

- demographic factors (high proportion of population composed by sexually active young adults)
- rural-urban migration with breakdown of traditional customs
- prostitution
- lack of adequate medical services
- polygamy
- drug-resistance
- poverty
- social disruption

IMPORTANT POINTS TO REMEMBER

- To obtain the most effective treatment results, ensure the following:
 - Accurate diagnosis of the STD
 - Treat the infection correctly.
 - Make sure the patient comes for follow up appointments
 - Identify and treat partners.

Educate the patient about STDs and the risks

- Make sure every patient leaves understanding and remembering these messages:
 - Cure your infection.
 - Take all your medicines as instructed, even if symptoms disappear or you feel better.
 - Do not spread STDs.
 - Do not have sex again until you have taken all your medicines and your symptoms are gone.

- If you have sex, use a condom.
- Bring your sexual partner to get treatment.
- Come back to the clinic to check if you are cured. If you still have symptoms, you need more medicine.
- Always use condoms, even with a steady partner and especially with casual partners.
- Protect yourself against AIDS having an STD increases your risk of getting AIDS.

SPECIFIC STIS AND TREATMENT

Gonorrhea

Causative organism: due to infection with a bacteria *Neisseria gonorrhoea*.

Transmission: almost always transmitted by sexual contact but newborns can get gonococcal conjunctivitis from the mother and non- sexually transmitted gonococcal conjunctivitis can occur in epidemics in children. The length of time between contact with an infected person and the development of symptoms (incubation period) is 2-14 days.

Symptoms and Signs: Males: 90% of infected males will have symptoms. The most common site of infection is the urethra and males will usually complain of a purulent (thick and yellow) penile discharge and/or dysuria. Infection may spread to the epididymis, prostate and glans penis.

Females: 70% will not have any symptoms. If symptomatic they will usually have a purulent (thick and yellow) vaginal discharge. The commonest site of infection in females is the cervix. On pelvic examination the cervix will be inflamed and may have a purulent discharge.

Diagnosis: Take a swab of the penile or vaginal discharge and ask the lab to do a gram stain. If it is gonorrhoea, the lab should be able to see the bacteria.

Treatment: Ciprofloxacin 500 mg p.o stat

In pregnancy treat with Ceftriaxone 250mg IM stat. All sexual partners must be treated (even if they have no symptoms). Patients should not have sexual intercourse until their treatment and their partner's treatment completed.

Chlamydia

Causative organism: Caused by a bacterium *Chlamydia trachomatis*

Transmission: Transmission is by sexual contact

Symptoms: Males: 25% of males with chlamydia urethritis will not have any symptoms. Main symptoms are penile discharge (thinner and less purulent than in gonorrhoea) though it may be difficult to differentiate clinically; dysuria is also a common symptom. Chlamydia urethritis may be complicated by epididymo-orchitis.

Females: Most females with chlamydia will not have any symptoms. About 30% of patients complain of increased vaginal discharge, dysuria and urinary frequency. In women chlamydia can spread to the fallopian tubes causing salpingitis. This may result in chronic abdominal pain and infertility.

Diagnosis: Chlamydia is difficult to diagnose using available field laboratory tests. Diagnosis is based on the signs and symptoms.

Treatment: Treatment is with Doxycycline 100mg bid for 14 days. Azithromycin can be given as a stat dose.

Trichonomiasis

Causative organism: Caused by a protozoa, *Trichomonas vaginitis*.

Transmission: By sexual intercourse or rarely by contact with other contaminated objects e.g. towels

Symptoms: In women vaginal itch and increased vaginal discharge; the discharge is frothy, purulent and has an offensive smell; the skin of the vulva may be very irritated. Males who are infected usually do not have any symptoms; however males may get urethritis.

Diagnosis: In women can usually be made from history and physical examination. To confirm ask the laboratory to do a wet preparation of vaginal discharge.

Treatment: Metronidazole 2g stat. All sexual partners must be treated even if they have no symptoms. Patients should not have sexual intercourse until their treatment and their partner's treatment are completed.

Candidiasis

Causative organism: This is due to infection with a yeast like fungus, *Candida albicans*.

Transmission: Candida is present in the vagina of many women but does not usually cause symptoms. Sometimes the numbers of the yeast can increase and cause symptoms e.g. during antibiotic treatment or during pregnancy, infection with HIV/AIDS, or in diabetes.

Symptoms: in women the commonest symptoms is an itchy and irritated vagina and vulva. They may have a thick white discharge which is not offensive (i.e does not have a bad smell). The discharge may look like curdled milk. Men do not usually get symptoms; the male partner of a woman with candidiasis may have irritation of the glans of the penis especially if they are not circumcised.

Diagnosis: in women can usually be made from history and physical examination. To confirm, can ask the laboratory to examine a side of the discharge.

Treatment: Nystatin pessaries one bid for seven days. There are now pessaries available that require only one dose or one does for 3 days to improve compliance.

Gardnerella

Causative organism: *Gardnerella vaginalis*.

Transmission: This is usually due to an overgrowth of bacteria that may be normally found in the vagina. It is not sexually transmitted.

Clinical features: The patient complains of increased vaginal discharge which has a fishy odour. Itchiness is not common. There may be a gray-white discharge.

Diagnosis: is by clinical features. There are some laboratory tests to assist in diagnosis but these are not available in the camp. Treatment: Metronidazole 2g stat

Syphilis

Causative organism: caused by a bacterium *Treponema Pallidum*.

Transmission: by sexual intercourse or congenitally (passed from infected mother to the fetus during pregnancy). Incubation period is 10-90 days.

Symptoms: Syphilis can occur in three distinct stages if it is not treated. Primary syphilis: an ulcer develops at the site of infection (usually on the external genitalia). The ulcer (chancre) is single and painless. It has a well defined edge and hard base. There may be associated enlarged inguinal lymph nodes. After 1-2 months the ulcer heals. In women the chancre may not be noticeable at all as it is painless.

Secondary syphilis: this develops 7-10 weeks after infection; the chancre may still be present.

Clinical features are - mild fever, rash, hoarse voice, swollen lymph nodes, bone and joint pain and hair loss (patchy or widespread). The rash is symmetrical (the same on both sides of the body), maculopapular and involves the whole body (including the palms of the hands and soles of the feet). The skin lesions are very infectious. These symptoms and signs will heal by themselves but the bacteria that causes syphilis is still inside the body. This is called latent syphilis.

Tertiary syphilis: The bacteria can cause symptoms again years after the initial infection. The patient may have cardiac, nervous system or bone problems.

Congenital syphilis: If the mother has syphilis during the pregnancy and is not treated she may pass the infection onto the baby. The baby may be stillborn, born premature or have low birth weight. It may also have bone deformities, facial deformities, blood disorders (anaemia and low platelets) and other serious problems.

Diagnosis: On microscopy of material from the ulcer, with special stain you can demonstrate the bacteria and blood test for syphilis serology.

Treatment: Benzathine penicillin 2.4 MIU IM stat. All sexual partners must be treated even if they have no symptoms. Patients should not have sexual intercourse until their treatment and their partner's treatment is completed.

Chancroid

This is an ulcerating infection which is found mostly in tropical countries. Causative organism: caused by a bacteria *Haemophilus ducreyi*.

Transmission: by sexual intercourse. The incubation period is about 7 days.

Clinical features: Single or multiple painful genital ulcers. The inguinal lymph nodes on one or both sides become larger and form an abscess (bubo) which may rupture through the skin.

Diagnosis: Diagnosis can be made by gram stain and culture of material from the ulcer (not available in the camp).

Treatment: Doxycycline 100mg BD for 14 days



CHANCROID

Granuloma inguinale

This is another ulcerating condition affecting the genitals that is found mainly in the tropics.

Causative organism: caused by a bacterium *Calymmatobacterium Granulomatis*.

Transmission: by sexual intercourse. The incubation period is from 3 days to 6 months.

Clinical features: At first there is a papule at the site of infection. This ulcerates and the ulcer spreads. The base of the ulcer may be raised above the surrounding tissue. If untreated the ulcer may spread and cause a lot of scar tissue.

Diagnosis: On microscopy of material from the ulcer the bacteria may be seen in white blood cells. These are called Donovan bodies.

Treatment: Doxycycline 100mg BD for 14 days



GRANULOMA INGUINALE,
CHRONIC DESTRUCTIVE LESION



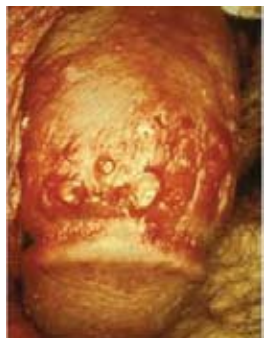
GRANULOMA INGUINALE WITH,
BOTH ACTIVE AND HEALED LESIONS

Genital Herpes

Causative organism: caused by a virus *Herpes Simplex*, Type I or 2. Transmission: by sexual intercourse

Clinical features: The lesions are a group of blisters on red skin. After a while the blisters will break forming shallow ulcers. The lesions are painful. There may also be general symptoms fever, muscle aches. The lesions usually heal within 3 weeks. However, the lesions of herpes can recur many times for many years. If women have genital herpes during labor the infection can be passed to the baby who can cause a very serious illness.

Treatment: Apply Gentian Violet to the lesions. Patients should not have sexual intercourse until the lesions have healed. For recurrent attacks there are antiviral medications available.



PRIMARY HERPES



RECURRENT HERPES



PRIMARY HERPES FEMALE

Pelvic Inflammatory Disease

DEFINITION

They are infections above the cervix (endometritis, salpingitis, tubo-ovarian abscess, pelvic peritonitis) which are mainly caused by Gonorrhoea, Chlamydia and anaerobic bacteria. PID is more severe than vaginitis/ cervicitis.

SIGNS AND SYMPTOMS

- Lower abdominal pain
- Sometimes fever
- Painful cervix/ adnexa on vaginal examination (sometimes painful mass palpable)
- Abnormally painful menstruation
- Pain during sexual intercourse (dyspareunia)
- Abnormal vaginal discharge
- Pain when passing urine (dysuria)

DIAGNOSIS

- Clinical: PID is highly likely if there is one of the above signs and symptoms together with a painful cervix or adnex during vaginal examination or tender pelvic mass
- Microscopy of vaginal/cervical discharge may show gram-negative diplococci or gonorrhoea infection. Chlamydia cannot be identified by field microscopy and should be treated when you treat for gonorrhoea.

TREATMENT

Gonorrhoea, chlamydia and anaerobic bacteria are the most common causes PID. In the OPD management of PID you must treat all three at the same time.

Gonorrhoea - ceftriaxone IM 250 mg stat AND

Chlamydia - Plus doxycycline PO 100mg BID/200 mg OD x14days, (or *tetracycline PO 500mg QID x 14 days) AND

Anaerobic bacteria - Plus metronidazole PO 500 mg TID x 14 days

Criteria for hospitalisation in IPD

- Patient is pregnant
- Recent delivery / abortion
- Pelvic abscess is suspected
- Severe illness
- Patient can not follow complete OPD treatment
- Patient not better after 3 days of OPD

IPD treatment

- Ceftriaxone IM 250 mg OD* AND
- Doxycycline PO 100 mg BID/ 200 mg OD or Tetracycline PO 500 mg QID AND
- Metronidazole PO/IV 500 mg TID

Give this regime until patient's conditions improved, and then continue only with:

- Doxycycline PO 100 mg BID/200mg OD and
- Metronidazole PO 500 mg TID for total 14 days

For puerperal sepsis: Consider retained placenta and refer for manual placenta removal. Change antibiotics: ampicillin, gentamicin, and metronidazole.

Note: If the patient has signs of acute abdominal pain or not better in 3 days of treatment refer them. Before referral give IV fluid and continue antibiotic treatment.

Introduction to STI Syndromic Management

DEFINITION

The syndromic management approach is based on the identification of consistent groups of symptoms and easily recognized signs syndromes). The provision of treatment that will deal with the majority of, or the most serious, organisms is responsible for producing a syndrome.

WHO SYNDROMIC MANAGEMENT OF STIS

WHO has developed a simplified tool (a flowchart or algorithm) to guide health workers in the implementation of syndromic management of STIs.

Key Considerations for treatment

- The choice of antimicrobial regimen
- Efficacy
- Safety
- Cost
- Compliance and acceptability
- Availability
- Coexistent infections
- Risk of reducing drug efficacy for other indications

Practical Considerations in STI management

- The public health package for STI prevention and control
- Comprehensive case management of STI
- Identification of the syndrome
- Antimicrobial treatment for the syndrome
- Education of the patient
- Condom supply
- Counselling
- Notification and management of sexual partners
- Access to services

Case Management

STI case management is the care of a person with an STI-related syndrome or with a positive test for one or more STIs. The components of case management include:

- history taking, clinical examination, correct diagnosis, early and effective treatment, advice on sexual behaviour, promotion and/or provision of condoms, partner notification and treatment, case reporting and clinical follow-up as appropriate

Effective case management consists not only of antimicrobial therapy to obtain cure and reduce infectivity, but also comprehensive consideration and care of the patient's reproductive health.

Criteria for Selection of STI drugs

Drugs selected for treating STI should meet the following criteria:

- high efficacy (at least 95%)
- low cost
- acceptable toxicity and tolerance
- organism resistance unlikely to develop or likely to be delayed
- single dose
- oral administration
- not contraindicated for pregnant or lactating women

Appropriate drugs should be included in the national essential drugs list and in choosing drugs; consideration should be given to the capabilities and experience of health personnel.

Urethral Discharge

Male patients complaining of urethral discharge and/or dysuria should be examined for evidence of discharge. If none is seen, the urethra should be gently massaged from the ventral part of the penis towards the meatus.

If microscopy is available, examination of the urethral smear may show an increased number of polymorphonuclear leukocytes and a Gram stain may demonstrate the presence of gonococci. In the male, more than 5 polymorphonuclear leukocytes per high power field (x 1000) are indicative of urethritis.

The major pathogens causing urethral discharge are *Neisseria gonorrhoeae* (*N. gonorrhoeae*) and *Chlamydia trachomatis* (*C. trachomatis*). In the syndromic management, treatment of a patient with urethral discharge should adequately cover these two organisms. Where reliable laboratory facilities are available, a distinction can be made between the two organisms and specific treatment instituted.

TREATMENT

Therapy for uncomplicated gonorrhoea PLUS therapy for chlamydia

Note - Patients should be advised to return if symptoms persist 7 days after start of therapy.

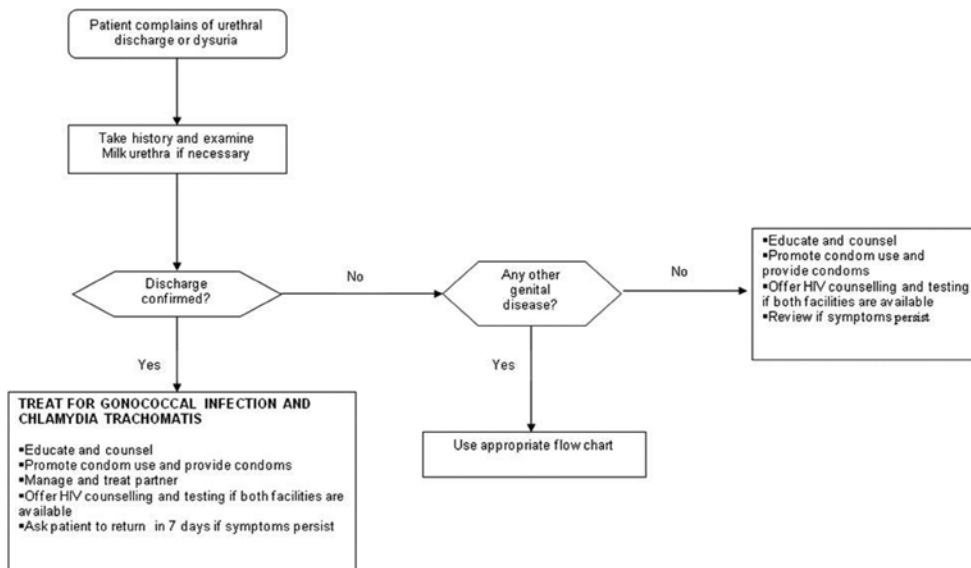
Treatment options

Treatment options

- Ciprofloxacin
- Ceftriaxone
- Cefixime
- Spectinomycin

Treatment options Gonorrhoea for Chlamydia

Doxycycline
Azithromycin



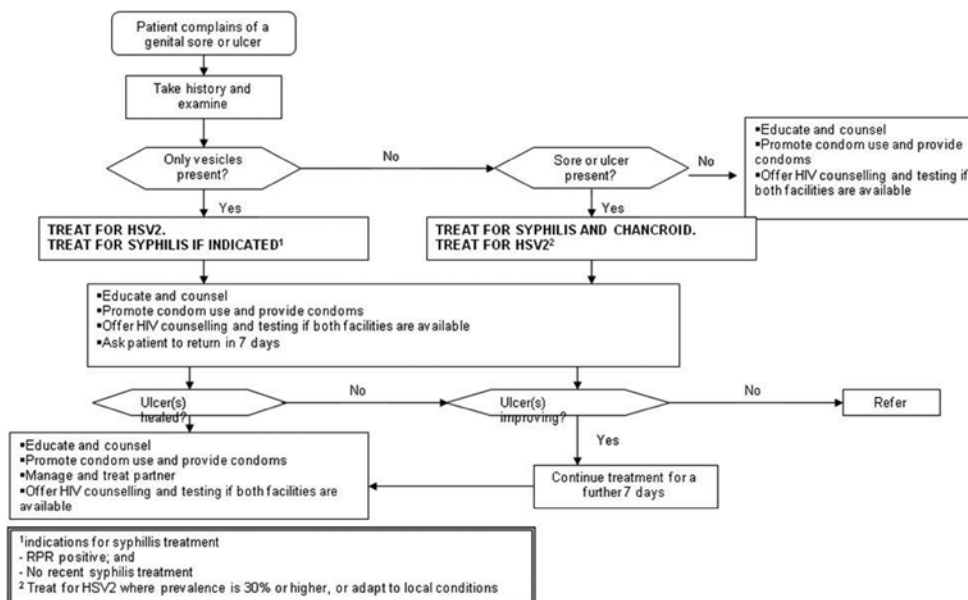
Genital Ulcers

Genital ulcers may be painful or painless; they are frequently accompanied by inguinal lymphadenopathy. (Inguinal bubo) The most common causes are:

- CHANCROID (*Haemophilus ducreyi*)
- SYPHILIS (*Treponema pallidum*)

– GENITAL HERPES (*Herpes simplex virus*)

Therapy for syphilis PLUS EITHER therapy for chancroid where it is prevalent OR therapy for granuloma inguinale where it is prevalent OR therapy for LGV where it is prevalent OR therapy for HSV2 infection where indicated.



Inguinal Bubo

Inguinal and femoral buboes are localised enlargements of the lymph nodes in the groin area, which are painful and may be fluctuant. They are frequently associated with LGV and chancroid. In many cases of chancroid an associated genital ulcer is visible. Non-sexually transmitted local and systemic infections (e.g. infections of the lower limb or tuberculous lymphadenopathy) can also cause swelling of inguinal lymph nodes.

Recommended syndromic treatment

Ciprofloxacin, 500 mg orally, twice daily for 3 days AND doxycycline, 100 mg orally, twice daily for 14 days OR erythromycin, 500 mg orally, four times daily for 14 days

Vaginal Discharge

A spontaneous complaint of abnormal vaginal discharge (in terms of quantity, colour or odour) is most commonly a result of a vaginal infection. It may in rare cases be caused by mucopurulent STI-related cervicitis. *T. vaginalis*, *C. albicans* and bacterial vaginosis (BV) are the commonest causes of vaginal infection. *N. gonorrhoeae* and *C. trachomatis* cause cervical infection

The clinical detection of cervical infection is difficult because a large proportion of women with gonococcal or chlamydial cervical infection are asymptomatic. The symptom of abnormal vaginal discharge is highly indicative of vaginal infection, but poorly predictive for cervical infection. Thus, all women presenting with vaginal discharge should receive treatment for trichomoniasis and BV.

Recommended Syndromic Treatment

Therapy for uncomplicated gonorrhoea PLUS therapy for chlamydia can be given.

TREATMENT

Gonorrhoea

- Ciprofloxacin
- Ceftriaxone
- Cefixime
- Spectinomycin

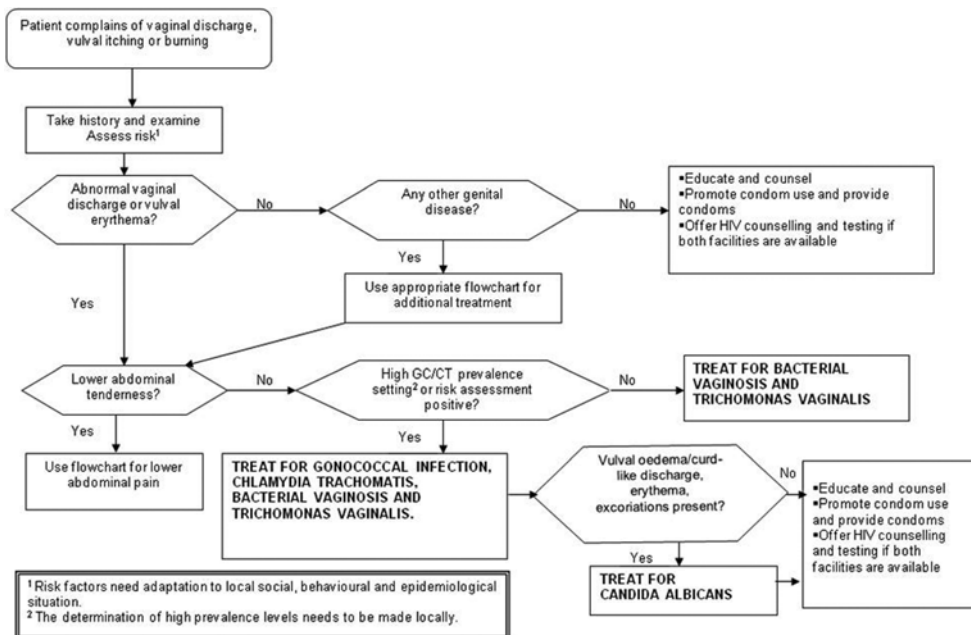
Alternatives

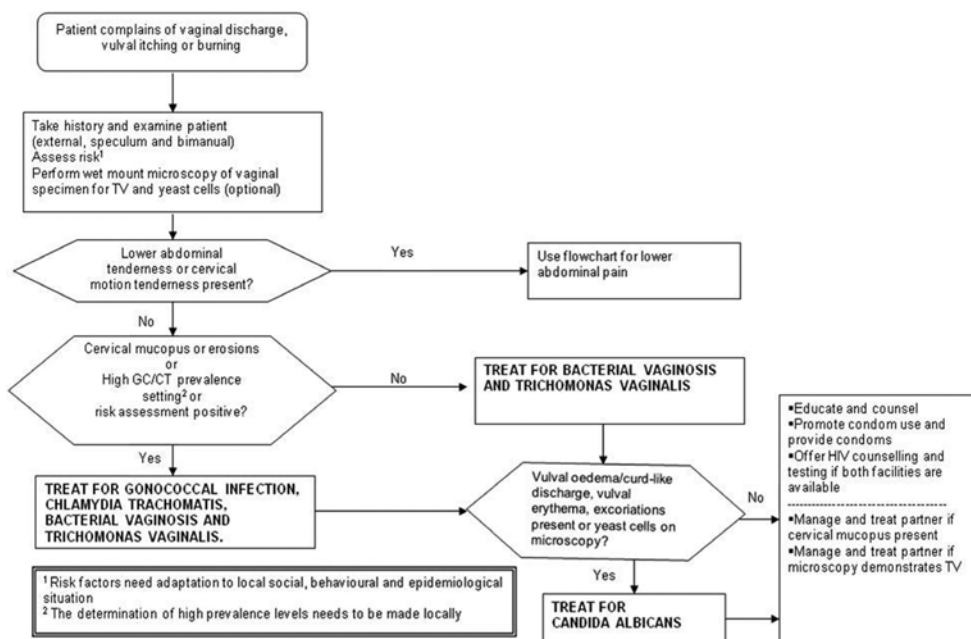
- Amoxicillin
- Ofloxacin
- Erythromycin (if Tetracycline is contraindicated)

Chlamydia

- Doxycycline
- Azithromycin

- Tetracycline (Tetracyclines are contraindicated in pregnancy)





Vaginal discharge: Bimanual & speculum, with or without microscope

Scrub Typhus

DEFINITION

Scrub Typhus is a bacterial disease caused by *Orientia Tsutsugamushi*, a type of rickettsia. The disease transmitted by the bite of a mite that inhabits moist grasslands and jungle. Rodents are normal carrier. Scrub typhus is common our region. Scrub typhus is one of the most common causes of 'Fever of Unknown Origin' (FUO) in the tropics. Left untreated many people recover, but some will die.

SIGNS AND SYMPTOMS

- Fever
- Severe headache
- Red eyes (conjunctival injection)

Enlarged, painful lymph nodes (adenopathy) first near the site of the bite, then generalised. Skin lesions are at the site of the infecting mite's bite: small, round, hard red papulae becoming bigger with a dead (necrotic) centre, covered by a black hard surface (eschar). Look for it on the patients' back, inguinal area and scrotum.

After a few days of fever, a typical (maculopapular) rash appears, starting on the trunk and extending to the limbs. Sometimes signs and symptoms of meningitis / encephalitis are present. Rarely atypical bronchitis, enlarged spleen, inflamed heart (myocarditis), strange behaviour (neuropsychological signs) and kidney failure may be present. People living in areas where scrub typhus is common have a less severe illness, often with NO RASH and NO ESCHAR.

DIAGNOSIS

The diagnosis is clinical: history and examination findings suggestive of scrub typhus and a negative malaria smear. Many times there is nothing suggestive of scrub typhus on history or examination. In the presence of a negative malaria smear and no other obvious finding on history and examination, think of scrub typhus.

On the Thailand/ Burma border another form of typhus is common: Murine Typhus (or endemic typhus). This is an acute infectious disease with fever, headache, and rash; all quite similar to, but milder, than scrub typhus. Murine typhus is caused by a related micro-organism (*rickettsia typhi*), and is transmitted to humans by rat fleas. The animal carriers include rats, mice and other rodents. Treatment is the same as for scrub typhus.

TREATMENT

Treat the fever and the pain. Antibiotics

- First choice:
 - Doxycycline Child** 4.5mg/kg OD for 7 days
 Adult 200 mg PO for 7 days
- Second choice:
 - Chloramphenicol 500 mg PO QID for 7 days

Note: The benefit of short courses of doxycycline outweighs the risks of no treatment in children and pregnant women, when the suspicion of scrub typhus is strong.

If available, they can be treated with azithromycin 500 mg on day 1 and 250 mg from day 2-5. (Dose for children 10 mg/kg OD for 3 days) Azithromycin is very safe in pregnancy. Cotrimoxazole, erythromycin, gentamicin and amoxicillin are NOT EFFECTIVE in scrub typhus

If the fever does not go down within 48 hours after starting treatment: the patient very likely does not have scrub typhus: think of other diagnoses. (Dengue, leptospirosis, typhoid fever, etc.)

PREVENTION

Reduction of vector populations and personal hygiene improvement (including delousing) are most important. Advise people to avoid mite-infested areas, use thick repellents and protective clothing. Patients should wash themselves and disinfect their clothes by washing in hot water or impregnate with 1% permethrin. Advise doxycycline prophylaxis (200 mg weekly) for those working in high-risk areas. Regular preventive treatment of medical/nursing staff is recommended in endemic areas.

ESCHAR



Leptospirosis

DEFINITION

Leptospirosis is caused by a spiral bacteria (spirochetes) called *Leptospira*. These bacteria live in animals (especially rats, but also dogs, cats and cattle) and are excreted in their urine. Once excreted, they can remain alive in the soil for months. *Leptospira* can enter the human body through damaged skin, mucous membranes and conjunctivae following contact with contaminated water (e.g. by animal urine) or through close contact with infected animals.

SIGNS AND SYMPTOMS

- Conjunctival suffusion (eyes are pink, no pus)
- Severe muscle pain (particularly calves) and tenderness
- Headache
- Sometimes also: abdominal pain, nausea and vomiting, diarrhoea, cough and pharyngitis, chest pain, arthralgia (joint pain)

This phase lasts 5-9 days and can be very mild or very severe. In many patients the disease stops here. However, sometimes these symptoms persist or return after stopping for a few days and complications appear:

COMPLICATIONS

- Meningitis: with severe bitemporal and frontal headache
- Liver and Kidney failure (Weil's disease): high fever over 40C, jaundice, oliguria/ anuria, (accompanied by: haemorrhagic pneumonia, cardiac arrhythmias and circulatory collapse).
- In some patients you will find an enlarged liver and spleen (hepato-splenomegaly)
- Haemorrhagic pneumonia with acute respiratory distress syndrome- can happen also without liver and kidney failure.
- Patient coughs up blood (haemoptysis) and often chest examination is normal (no crackles)
- Uveitis
- Liver failure usually gets better, but kidney failure and respiratory distress syndrome have poor prognosis.

DIAGNOSIS

Clinical, but some investigations could be helpful:

- Dipstick: proteins and blood in urine
- Lab (if available): raised CK and bilirubin
- Definite diagnosis by special blood test (serology), but it is not available in all clinics and not easy to interpret

TREATMENT

It should be started as early as possible, but it is now thought effective also if started late. Treat the fever and the pain with paracetamol. Give IV fluids.

Mild infections

- PO doxycycline 200 mg OD x 7 days
- In children and pregnant women: PO amoxicillin (child: 10-25 mg/kg TID, adult 500 mg TID) x 7 days

Severe infections

- IV ampicillin (child 10-25 mg/kg TID, adult 500-1g QID) x 7 days or
- Ceftriaxone IV (25-50 mg/kg OD, adult 1-2 gram OD) * 7 days

PREVENTION

Collection of rubbish should be done to reduce rat population, education of people at risk, doxycycline (200mg weekly) prophylaxis for high-risk groups.

Dengue Fever

INTRODUCTION AND DEFINITION

Dengue is a mosquito-borne disease caused by any one of four closely related dengue viruses (DENV-1, -2, -3, and -4). Infection with one serotype of DENV provides immunity to that serotype for life, but provides no long-term immunity to other serotypes. Thus, a person can be infected as many as four times, once with each serotype. Dengue viruses are transmitted from person to person by *Aedes* mosquitoes (most often *Aedes aegypti*) in the domestic environment.



SIGNS AND SYMPTOMS

Classic dengue fever, or “break bone fever,” is characterized by acute onset of high fever 3–14 days after the bite of an infected mosquito. Symptoms include:

- Frontal headache
- Retro-orbital pain
- Myalgias
- Arthralgias
- Rash
- Hemorrhagic manifestations- tourniquet test positive
- Low white blood cell count
- The patient also may complain of anorexia and nausea

Acute symptoms, when present usually last about 1 week, but weakness, malaise, and anorexia may persist for several weeks. A high proportion of dengue infections produce no symptoms or minimal symptoms, especially in children and those with no previous history of having a dengue infection

Tourniquet Test

Inflate a blood pressure cuff on the upper arm to midway between systolic and diastolic blood pressure for 5 minutes. A positive test is when there are more than 20 petechiae in a 2.5cm square on the front of the forearm. 20% of patients with a viral illness that is not dengue will have a positive test.

COMPLICATIONS OF DENGUE FEVER

The main medical complications of classic dengue fever are febrile seizures and dehydration.

TREATMENT OF DENGUE FEVER EMPHASIZES:

Relieving symptoms of pain is done. Controlling fever is important. Telling patients to avoid aspirin and other non-steroidal, anti-inflammatory medications should be done because they may increase the

risk for hemorrhage. Reminding patients to drink more fluids, especially when they have a high fever is important.

DENGUE HEMORRHAGIC FEVER AND DENGUE SHOCK SYNDROME

Some patients with dengue fever go on to develop dengue hemorrhagic fever (DHF), a severe and sometimes fatal form of the disease. Around the time the fever begins to subside (usually 3–7 days after symptom onset), the patient may develop warning signs of severe disease.

DHF and DSS Warning Signs

Warning signs include:

- severe abdominal pain
- persistent vomiting
- marked change in temperature (from fever to hypothermia)
- hemorrhagic manifestations,
- change in mental status (irritability, confusion, or obtundation)

Early Signs of shock

The patient also may have early signs of shock, including restlessness, cold clammy skin, rapid weak pulse, and narrowing of the pulse pressure. (systolic blood pressure – diastolic blood pressure) Patients with dengue fever should be told to return to the hospital if they develop any of these signs. DHF is currently defined by the following four World Health Organization (WHO) criteria:

- Fever or recent history of fever lasting 2–7 days
- Any hemorrhagic manifestation
- thrombocytopenia (platelet count of $<100,000/\text{mm}^3$)
- Evidence of increased vascular permeability

Hemorrhagic Manifestations

The most common hemorrhagic manifestations are mild and include:

- a positive tourniquet test
- skin hemorrhages (petechiae, hematomas),
- epistaxis (nose bleed)
- gingival bleeding (gum bleed)
- microscopic hematuria

More serious types of hemorrhage include:

- Vaginal bleeding
- Hematemesis
- Maelena
- Intracranial bleeding.

Evidence of plasma leakage due to increased vascular permeability consists of at least one of the following:

An elevated hematocrit $\geq 20\%$ above the population means hematocrit for age and sex. A decline in hematocrit after volume-replacement is treatment of $\geq 20\%$ of the baseline hematocrit. Presence of pleural effusion or ascites is detected by radiography or other imaging method. Hypoproteinemia or hypoalbuminemia is as determined by laboratory test.

Dengue shock syndrome (DSS) is defined as any case that meets the four criteria for DHF and has evidence of circulatory failure manifested by:

- rapid, weak pulse and narrow pulse pressure (≤ 20 mmHg [2.7 kPa]) or
- hypotension for age, restlessness, and cold, clammy skin
- Patients with dengue can rapidly progress into DSS, which, if not treated correctly, can lead to severe complications and death

FATALITY RATES

Fatality rates among patients with DSS can be 10% or higher but, with early recognition and treatment, can be less than 1%. DHF and DSS can occur in both children and adults.

What to look for when you evaluate a patient for DHF:

EVALUATE the patient's heart rate, capillary refill, skin color and temperature, peripheral pulse volume, pulse pressure, and blood pressure. A drop in systolic blood pressure is usually the last sign and appears only when the patient is in shock.

- LOOK FOR evidence of bleeding on the skin and at other sites.
- LOOK FOR evidence of increased capillary permeability. (e.g., pleural effusions, ascites, hemoconcentration)
- MEASURE and ask about urine output.

TREATMENT OF DENGUE FEVER

Tell patients to drink plenty of fluids and get plenty of rest. Tell patients to take antipyretics to control their temperature. Children with dengue are at risk for febrile seizures during the febrile phase of illness. Warn patients to avoid aspirin and other non-steroidal, anti-inflammatory medications because they increase the risk of hemorrhage.

Monitor your patients' hydration status during the febrile phase of illness. Educate patients and parents about the signs of dehydration and have them monitor their urine output. If patients cannot tolerate fluids orally, they may need IV fluids

Assess hemodynamic status frequently by checking the patient's heart rate, capillary refill, pulse pressure, blood pressure, and urine output. Perform hemodynamic assessments, baseline hematocrit testing, and platelet counts. Continue to monitor your patients closely during defervescence. The critical phase of dengue begins with defervescence and lasts 24–48 hours.

LABORATORY DIAGNOSIS

Unequivocal diagnosis of dengue infection requires laboratory confirmation, either by isolating the virus or detecting dengue-specific antibodies.

VECTOR CONTROL MEASURE TO PREVENT DENGUE FEVER

1. Vector control is implemented using environmental management and chemical methods. Proper solid waste disposal, elimination of stagnant water in domestic environment and improved water storage practices.
2. Aerosol and liquid spray has to be applied directly to the adult mosquito for effective killing, e.g. household pesticides.
3. Mosquito coil and electric mosquito mat/ liquid has to be placed near possible entrance, such as window, for mosquito.
4. Wear long-sleeved clothes and long trousers when going outdoors. Bodies could be protected from mosquito bite by applying insect repellent (containing DEET) on the clothes and exposed part of the body especially when you travel to Dengue Fever endemic areas.
5. Mosquito bednet could be used when the room is not air-conditioned.
6. The prevention of dengue requires control or eradication of the mosquitoes carrying the virus that causes dengue. In nations plagued by dengue fever, people are urged to empty stagnant water from old tires, trash cans, and flower pots.

Wear long pants and long sleeves. For personal protection, use mosquito repellent sprays that contain DEET when visiting places where dengue is endemic. Limiting exposure to mosquitoes by avoiding standing water and staying indoors two hours after sunrise and before sunset will help. The *Aedes aegypti* mosquito is a daytime biter with peak periods of biting around sunrise and sunset. It may bite at any time of the day and is often hidden inside homes or other dwellings, especially in urban areas.

Typhoid Fever

DEFINITION

Typhoid fever is a bacterial infection caused by *Salmonella typhi*. It is transmitted by contaminated food, water or dirty hands. The incubation period is 10 -15 days.

Typhoid is suspected in a patient with:

- Prolonged fever ≥ 38.5 o C (axillary) for more than 7 days
- Negative malaria smear, no other identified cause of fever and at least one of the following:
 - Abdominal pain
 - Diarrhoea or constipation
 - Relative low pulse (bradycardia)

SYMPTOMS FIRST WEEK

Symptoms are non-specific in the first week, so the diagnosis can be difficult. Other symptoms that can be present: tiredness, headache, dry cough, patient does not want to eat (anorexia).

In the 2nd week

- Rash (spots on the abdomen and the chest)
- Relative bradycardia (the pulse does not increase with high fever)
- Enlarged liver and spleen (hepatosplenomegaly)

In the 3rd-4th week

Complications can happen even when the patient seems to be cured:

- Intestinal perforation/bleeding or peritonitis
- Septic shock
- Pneumonia
- Confusion with signs of meningitis

DIAGNOSIS

Typhoid is confirmed by a positive blood (or bone marrow) culture for *Salmonella typhi*.

TREATMENT

Admit to IPD: give fluids: ORS or IV fluids (NSS or RL). Treat the fever with paracetamol.

Antibiotics:

- 1st choice:
 - Ciprofloxacin: Child 7.5 mg/kg BID for 5-7 days
 - Adult < 40 kg 250 mg BID for 5-7 days
 - Adult > 40 kg 500 mg BID for 5-7days
- For severe cases/ those who cannot swallow:
 - Ceftriaxone IV/IM 50mg/kg OD for 7 days

Note: Resistance of *Salmonella typhi* to ciprofloxacin has been described in our area.

In case of suspected resistance (bad response to cipro treatment) continue treatment for 10-14 days or switch to azithromycin or ceftriaxone. If signs of peritonitis: **REFER**.

For severe presentations (shock, coma): dexamethasone 3 mg/kg IV in 30 minutes, then 1 mg/ kg every 6 hours for 2 days. The response to treatment is slow. Patients can still have fever after 4-5 days of treatment. Be patient. However, if the fever is still high at day 7, re-think diagnosis or suspect resistance to antibiotics.

PREVENTION

This disease is contagious. Clean water and clean food are important for prevention. Advise the family and the neighbours to use latrines and to wash their hands after passing stools and before eating. If you notice an increased number of cases, inform the doctor and prevent spreading of the disease in order to avoid an epidemic.

Bacterial Meningitis

DEFINITION

Bacterial meningitis is a bacterial infection (mostly *Streptococcus pneumoniae*, *Neisseria meningitides* or *Haemophilus influenzae*) of the membranes covering the brain (meninges). The bacteria are transmitted from person to person through droplets or throat secretions. For other causes of meningitis see e.g. viral meningo-encephalitis, TB-meningitis, Cryptococcal Meningitis.

SIGNS AND SYMPTOMS

- Children less than 1 year

- Fever (38.5 or more), unwell, drowsy, not sucking well, vomiting, convulsions, coma
- Crying a lot or lying very quietly without moving
- Swollen (=bulging) fontanel
- Usually no neck stiffness
- Sepsis: haemorrhagic rash (purpura)

- Older children and adults

- Fever (38.5 or more), headache, vomiting
- Light hurts the eyes (photophobia)
- Neck stiffness
- Sepsis: haemorrhagic rash (purpura)
- Positive signs of meningism (Kernig's and/or Brudzinski sign positive)
- Convulsions and coma

Always think of meningitis in febrile patients with severe headache or coma. **Check neck stiffness.**

Signs to look for

- Neck stiffness: move the chin towards the chest; this results in pain and resistance in a patient with meningism
- Kernig's sign: flex the hip and straighten the leg: this results in pain and resistance in a patient with meningism.
- Brudzinski sign: bend head forward and you see hips flex

Clinical presentation and lumbar puncture should be done. (If possible in your situation) Always carry out a malaria smear. Malaria and meningitis can occur together. Lumbar puncture: check the appearance of the spinal fluid, WBC, glucose, total protein and microscopy (gram stain, Ziehl Neelsen stain, India ink stain)

Are there signs of raised intracranial pressure?

Do **NOT** perform a lumbar puncture if there are signs of raised intracranial pressure such as unequal pupil size, non-reactive pupils, a very slow heart rate (<50 in adults) or irregular breathing. If you cannot perform a lumbar puncture but you are concerned about meningitis start antibiotics. Do not delay starting antibiotics waiting to do a lumbar puncture. This could lead to the death of the patient. If lumbar puncture cannot be done on admission: start antibiotics.

TREATMENT

Admit to IPD. Give Antibiotics.

First choice

For all >2 months: Ceftriaxone IV/IM 50 mg/kg/day BD or 100 mg/kg/day OD for 10 days

Children < 2 months:	Ampicillin	IV/IM	50mg/kg	QID AND
	Cefotaxime	IV/IM	50 mg/kg	BID – QID AND
	Gentamicin	IV/IM	4 mg/kg	OD
	14-21 days (gentamicin could stop after 7 days)			

Alternative treatment, when no ceftriaxone available, Children > 2 months and **Adults: Chloramphenicol IV/IM 25 mg/kg QID**. When the patient's condition has improved and fever is down: change to oral and half the dose (12.5 mg/kg QID) for a total of 10 days. Pregnant Women: Ampicillin IV 2 g QID for 10 days.

Dexamethasone IV 0.15 mg/kg QID for 4 days (first dose before or together with first antibiotics dose) improves the outcome in adults and children. Give supportive treatment: fluids and oxygen. Treat the fever with paracetamol. Treat the convulsions with diazepam (0.5 mg/kg rectally, max 10mg) or 0.3 mg/kg IM. Give special nursing care if the patient is in a coma.

PREVENTION

- Preventive vaccination can be used to protect individuals at risk (for example, people without a spleen)
- Those in close contact with a patient (family/household) should be given immediate prophylaxis to prevent them from contracting the illness (ciprofloxacin 15 mg/kg STAT orally in children, 500 mg STAT orally in adults)

Poliomyelitis**DEFINITION**

Poliomyelitis is an acute viral infection due to a poliovirus. This virus infects the spinal cord cells of a patient, resulting in paralysis. Transmission from human to human is direct (stool-hand-oral) or indirect (eating food or drinking water that is contaminated by stools). The disease can be prevented by a polio vaccine.

SIGNS AND SYMPTOMS

Most of the infected patients have no symptoms.

- Non paralytic form: fever, muscle pain, headache, vomiting, backbone pain.
- Paralytic form: rapid asymmetrical flaccid paralysis starting at the legs and moving toward the head.

The muscles become soft and reflexes disappear. Sensation of the skin remains normal. Patients die if the respiratory muscles become paralysed.

Deformity is due to polio



DIAGNOSIS

Clinical - Suspect poliomyelitis in all patients with acute paralysis. Polio virus can be detected in stool samples.

TREATMENT

Paralytic form:

Keep in IPD, bed rest. Treat the pain. Prevent sores. Physiotherapy is needed to prevent wasting of muscles and stiffness. **Do NOT give any IM injections to a patient with suspected poliomyelitis. You will make the (paralytic) polio worse.**

PREVENTION

Oral polio vaccine is given at birth, and at 6, 10 and 14 weeks, and one year after the last dose. Vaccinate all children under 5 years of age living in the same area of a suspected case even when they have been vaccinated before. Start a mass vaccination campaign if a case of poliomyelitis is confirmed by laboratory test.

Measles

DEFINITION

Measles is a very contagious viral infection that is spread by inhalation of respiratory droplets from infected individuals. It is common in childhood, and can result in severe complications. Mortality from measles can rise to 30 % during epidemics, mostly due to pneumonia. There is no treatment for the disease itself. The main goal is to decrease mortality by preventing and treating the complications of measles. Malnourished children are especially at risk from the complications of measles.



MEASLES RASH

SIGNS AND SYMPTOMS

- Fever ($>38.5^{\circ}\text{C}$) more than 3 days, and
- Red eyes (Conjunctivitis), runny nose, cough
- Sometimes white spots on the mucosa of the mouth (Koplik spots)
- After two to three days, red spots appear on the whole body (red rash), beginning on the neck, chest then abdomen and legs.

COMPLICATIONS

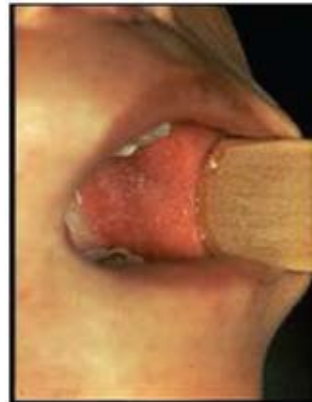
- Pneumonia
- Otitis Media
- Diarrhoea, leading to dehydration and malnutrition
- Corneal ulceration leading to blindness (increased risk when Vitamin A deficient)
- Encephalitis
- Death

DIAGNOSIS

Clinical: - The virus can be found in blood, urine and sputum by serology.



WHITE SPOTS
IN THE MOUTH



TREATMENT – PREVENT COMPLICATIONS

Treat the fever, diarrhoea and dehydration with paracetamol and ORS. Oral hygiene by rinsing mouth is necessary. Apply 1% gentian violet to mouth sores. Give treatment dose of vitamin A Repeat the next day. Daily eye wash and treat conjunctivitis with Terramycin Eye Ointment. Treat secondary infections:

- Pneumonia by amoxicillin
- Otitis media by amoxicillin

Advise the mother to continue breast-feeding and to give normal food to older children. If the measles case is in IPD, vaccinate all other unimmunized children > 6 months in the hospital.

PREVENTION

Routine single dose (0.5 ml) vaccination over the age of 9 months should be given. Report every case-high risk of epidemic.

Rubella

DEFINITION

Rubella is an acute viral infection of children and adults that characteristically include rash, fever and lymphadenopathy. The illness can resemble a mild attack of measles. It can be very dangerous for babies if mothers are infected during the early months of pregnancy. (first 3 months)

TRANSMISSION

Spread by direct contact with an infected person's respiratory secretions or when an infected person cough or sneezes. It can be transmitted from pregnant women to her unborn child.

Incubation: 14 to 18 days (sometimes more)

During the first 2 days, you can have:

- Slight fever (38°)
- Muscular ache
- No other symptoms

After these 2 days there is the RASH. It begins on the face. It spreads in 24 hours to the whole body from top to bottom. It lasts 2 or 3 days.



THE RASH AND OTHER SIGNS AND SYMPTOMS

1st first day: It consists of little pink macules. Sometimes it looks like measles with bigger red macules and papules. You can think of rubella (and not measles) if there were no respiratory signs before the rash.

3rd day: The rash disappears. NO DECAQUAMATION. Fever is slight ($< 39^{\circ}$) and disappears on the second or third day of the rash. You may find cervical lymph nodes on the head, the neck and the elbow, one week before the rash. The patient is contagious one week before and one week after the rash.

COMPLICATIONS

Arthritis - Can appear on the second day of the rash, especially of the wrist, the fingers and the knees; Lasts 10 to 30 days. Not dangerous.

Blood disorders: - Easy bleeding occurs. May see anemia, purpura, hematuria and nose bleeding. It lasts, 2 to 4 weeks.

CONGENITAL RUBELLA

If a pregnant woman is infected during the first three months of pregnancy, the newborn may have:

- Cardiac defects: so you may have a cardiac murmur +/- cardiac failure
- Ocular defects: the baby can be blind
- Hearing defects: deafness
- Brain damage



Infant with Congenital Rubella Syndrome

Mumps

DEFINITION

Mumps is a disease caused by a virus that usually spread through saliva and can infect many parts of body, especially the parotid salivary gland. In case of mumps, these glands typically swell and become painful.

TRANSMISSION

Mumps is contagious and spread in tiny drops of fluid from the mouth and nose of infected person. It can spread to other people through direct contact.

SIGNS AND SYMPTOMS

- Fever up to 39°C
- Headache
- Loss of appetite
- The pain get worse when the child swallows, talks, chews, or drink acidic juices
- Pain in the parotid region(1-3 days)
- Parotid gland swelling and become increase in size over 1-3 days
- Left and/or right parotid gland may be affected

COMPLICATIONS

- Inflammation and swelling of brain and other organ
- Encephalitis/meningitis (rare)
- Orchitis
- Pancreatitis
- Inflammation of ovaries



TREATMENT

There is no specific therapy for mumps. Fever – treated by paracetamol. Soft diet that does not require a lot chewing is given.

PREVENTION

Mumps can be prevented by vaccination. MMR vaccine is usually given to children 12-15 months of age. Second MMR dose is generally given at 4-6 years of age.

Chicken Pox

DEFINITION

This is a very common disease caused by a virus, and spreads easily. Other persons in the family or in the neighborhood might have the same symptoms.

SIGNS AND SYMPTOMS

- Slight fever, headache, feeling unwell
- Itchy, round spots of different sizes with clear liquid inside, some may be crusty
- Whole body: more on the trunk and less on the arms and legs

DIAGNOSIS

- Clinical

TREATMENT

Clean with water and soap. Cut the fingernails, to reduce damage from scratching. Apply GV only on infected spots. Secondary infections: antibiotic treatment Treat the fever with paracetamol. Only in cases of severe itching, give chlorpheniramine 1-3 days. If sores in the eye are present, treat with Teramycin eye ointment.



H1N1 Influenza

WHAT IS THE 2009 H1N1 PANDEMIC VIRUS?

This is an influenza virus that had never been identified as a cause of infections in people before the current H1N1 pandemic. Genetic analyses of this virus have shown that it originated from animal influenza viruses and is unrelated to the human seasonal H1N1 viruses that have been in general circulation among people since 1977.

The new virus has also led to patterns of death and illness not normally seen in influenza infections. Most of the deaths caused by the pandemic influenza have occurred among younger people, including those who were otherwise healthy.

WHO IS AT RISK?

Pregnant women, younger children and people of any age with certain chronic lung or other medical conditions appear to be at higher risk of more complicated or severe illness. Many of the severe cases have been due to viral pneumonia, which is harder to treat than bacterial pneumonias usually associated with seasonal influenza. Many of these patients have required intensive care

TRANSMISSION

The pandemic H1N1 virus is spread from person to person, similar to seasonal influenza viruses. It is transmitted as easily as the normal seasonal flu and can be passed to other people by exposure to infected droplets expelled by coughing or sneezing that can be inhaled, or that can contaminate hands or surfaces. To prevent spread, people who are ill should cover their mouth and nose when coughing or sneezing, stay home when they are unwell, clean their hands regularly, and keep some distance from healthy people, as much as possible.

SIGNS AND SYMPTOMS

Signs of the pandemic influenza are flu-like, including malaise, fever, cough, headache, muscle and joint pain, sore throat and runny nose, and sometimes vomiting and diarrhoea. The majority of people with pandemic influenza experience mild illness and recover fully without treatment. People should seek medical care if they experience shortness of breath or difficulty breathing, or if a fever, and especially high fever, continues more than three days. For parents with a young child who is ill, seek medical care if a child has fast or labored breathing, continuing fever or convulsions (seizures). Supportive care at home - resting, drinking plenty of fluids and using a pain reliever for aches and pains - is adequate for recovery in most cases. A non-aspirin pain reliever should be used for children or adolescents under age 18.

TREATMENT

People should seek medical care if they experience shortness of breath or difficulty breathing, or if a fever, and especially high fever, continues more than three days. For parents with a young child who is ill, seek medical care if a child has fast or labored breathing, continuing fever or convulsions (seizures). Supportive care at home - resting, drinking plenty of fluids and using a pain reliever for aches and pains - is adequate for recovery in most cases. A non-aspirin pain reliever should be used for children or adolescents under age 18.

Avian Influenza

DEFINITION

Avian influenza, or 'bird flu', is a contagious disease caused by viruses that normally infect only birds and, less commonly, pigs. Avian influenza viruses are highly species-specific, but have, on rare occasions, crossed the species barrier to infect humans. Over half of the human cases so far have been fatal. There is a risk that the H5N1 virus – if given enough opportunities – will develop the characteristics required to start an influenza pandemic.

TRANSMISSION

Transmission is mostly from bird-to-human by inhalation of infectious droplets or by direct contact.

SIGNS AND SYMPTOMS

- Fever, muscle pain, headache
- Respiratory symptoms (cough, sore throat and runny nose)
- Diarrhoea
- Shortness of breath (dyspnoea)
- Clinical pneumonia

WHO CRITERIA FOR CASE DEFINITION

Suspected case

A person presenting with unexplained acute lower respiratory illness with fever (>38 °C) and cough, shortness of breath or difficulty breathing AND One or more of the following exposures in the 7 days prior to symptom onset:

- Close contact (within 1 metre) with a person (e.g. caring for, speaking with, or touching) who is a suspected, probable, or confirmed H5N1 case.
- Exposure (e.g. handling, slaughtering, defeathering, butchering, preparation for consumption) to poultry or wild birds or their remains or to environments contaminated by their faeces in an area where H5N1 infections in animals or humans have been suspected or confirmed in the last month.
- Consumption of raw or undercooked poultry products in an area where H5N1 infections in animals or humans have been suspected or confirmed in the last month.
- Close contact with a confirmed H5N1 infected animal other than poultry or wild birds. (e.g. cat or pig)
- Handling samples (animal or human) suspected of containing H5N1 virus in a laboratory or other setting.

Probable case

- Probable definition 1:
A person meeting the criteria for a suspected case AND One of the following additional criteria:
 - infiltrates or evidence of an acute pneumonia on chest radiograph plus evidence of respiratory failure (hypoxemia, severe tachypnea) OR
 - positive laboratory confirmation of an influenza A infection but insufficient laboratory evidence for H5N1 infection.
- Probable definition 2:
A person dying of an unexplained acute respiratory illness who is considered to be epidemiologically linked by time, place, and exposure to a probable or confirmed H5N1 case

Confirmed case

A person meeting the criteria for a suspected or probable case AND One of the following positive results conducted in a national, regional or international influenza laboratory whose H5N1 test results are accepted by WHO as confirmatory:

- Isolation of an H5N1 virus
- Positive H5 PCR results from tests using two different PCR targets, e.g. primers specific for influenza A and H5 HA
- A fourfold or greater rise in neutralization antibody titer for H5N1 based on testing of an acute serum specimen (collected 7 days or less after symptom onset) and a convalescent serum specimen. The convalescent neutralizing antibody titer must also be 1:80 or higher.
- A microneutralization antibody titer for H5N1 of 1:80 or greater in a single serum specimen collected at day 14 or later after symptom onset and a positive result using a different serological assay, for example, a horse red blood cell haemagglutination inhibition titer of 1:160 or greater or an H5-specific western blot positive result.

DIAGNOSIS

CBC, chest X-ray, specific viral culture and PCR

TREATMENT

A suspected or probable patient should be transferred to MOPH referral hospital urgently with all precautions to limit the spread of the disease (use of masks and gloves with minimum handling of patient).

Pre-referral IPD management should ideally follow:

Isolation: keep the patient in strict isolation. No visitors should be allowed in IPD.

Treat the fever, keep the patient well hydrated.

Infection prevention: the patient should wear a mask and should cover his/her mouth with a cloth while coughing or sneezing and wash their hands afterwards.

Antibiotics: broad-spectrum antibiotics (IV/IM ampicillin and gentamicin) should be given to treat secondary bacterial infections.

Steroids can be used to treat acute respiratory distress.

Antiviral drugs: These drugs are not available on the market due to fear of unnecessary use of drugs leading to drug resistance. But MOPH supplies in case of need.

Tetanus

DEFINITION



Tetanus is an acute, often fatal, disease characterised by a prolonged contraction of muscles caused by a toxin produced by the bacterium *Clostridium tetani*. Infection generally occurs through wound contamination, and often involves a cut or deep puncture wound. As the infection progresses, muscle spasms in the jaw develop, hence the common name: 'lock-jaw'. This is followed by difficulty swallowing, general muscle stiffness and spasms in other parts of the body. The toxins (or spores) are widely distributed in soil and animal faeces.

NEONATAL TETANUS

Neonatal tetanus is a form of generalised tetanus that occurs in newborn infants. It occurs in infants born to mothers who have never been immunised for tetanus. It usually occurs through infection of the unhealed umbilical stump, especially when the stump is cut with a non-sterile instrument.

SIGNS AND SYMPTOMS

- Contaminated wound
- Slight fever
- Sweating
- Muscle spasms and stiffness (e.g. lockjaw)
- Difficulty swallowing
- Generalised muscle spasms

CLINICAL DIAGNOSIS

There are no laboratory findings on characteristic of tetanus. The diagnosis is entirely clinical and does not depend upon bacteriologic confirmation.

TREATMENT

All wounds should be cleaned. Necrotic tissue and foreign material should be removed. If tetanic spasms are occurring, supportive therapy and maintenance of an open airway are very important.

PREVENTION

- Vaccination
- See BBG for guidelines as to treatment for high and low risk
- Check if patient has received immunization for tetanus and when they last received this.



RISK	PATIENT VACCINATION COMPLETE			PATIENT VACCINATION NOT COMPLETE (< 3 doses)
	Last booster was:			
	< 5 years	> 5 years	> 10 years	
LOW *	None	None	Booster	Start or complete vaccination (full course of 5 doses)
HIGH **	Antibiotics	Antibiotics Booster	Antibiotics Serotherapy Booster	Antibiotics Serotherapy Start or complete vaccination

* Low risk wound: minor wounds, scratch.

** High risk wound: deep wounds, war wounds, wounds with bone fractures, wounds with devitalised tissue, extensive burns, foreign bodies, wounds older than 6 hours.

Antibiotics:	cloxacillin 5 days
Booster:	Tetanus toxoid vaccine 0.5 ml by IM into upper arm or buttock
Serotherapy:	Adults: 250 units Tetanus Immune Globulin (TIG) IM STAT with part of the dose infiltrated around the wound. If the injury occurred >24 hours ago, there is serious infection or after burns give 500 units of TIG. Children of any age: 250 Units of Tetanus Immune Globulin IM STAT.

Scabies

DEFINITION

Scabies is a parasitic infection of the skin. It is common in this region and spreads easily. Transmission is by close direct contact. The mite invades into the skin causing an inflammatory reaction. It is very contagious.

SCABIES MITES

Scabies mites burrow, or tunnel, under the outer layer of skin. Scabies causes pimple-like irritations known as the scabies rash (this can be seen in several of the pictures of scabies). These mites lay eggs under the skin and feed on blood. The mites are about the size of a pinhead, are nearly transparent, and usually cannot be seen.

SYMPTOMS

The most common symptom of scabies is extreme itching, particularly at night. As can be seen in the pictures of scabies, the skin becomes red and blistered. The itching is the result of an allergic reaction to the mites and their waste. The most common areas of skin affected by scabies include: Between the toes and fingers, around the wrist, folds of the elbow, armpits, beltline, abdomen, genitalia, nipples, buttocks, and the groin. Babies and small children may get it on the face, scalp or soles of the feet. The symptoms of scabies usually appear from two to six weeks after becoming infested. However, people who have previously had scabies can show symptoms within a few days.



TRANSMISSION

Scabies is transferred by direct skin-to-skin contact. It can also be transferred by contact with clothes or bedding that has been contaminated by an infected person. A very common way to get scabies is to shake hands with an infected person.

It can also be transmitted during sexual contact. You cannot get scabies from pets. Scabies mites only infest humans. Scabies mites can only survive for three or four days if they are away from the human body. You are contagious and can spread scabies until all the mites and eggs are killed by a treatment.

TREATMENT

Everyone living with an infected person, as well as intimate contacts, should be treated. Everyone should be treated at the same time to prevent re-infestation with scabies from other persons who might be infected but do not have any symptoms yet. Also, the infected persons clothing and bedding needs to be washed in hot water and ironed so as to kill the mite and all of its eggs

Treat secondary infection first. Wash the whole body with water and soap. Apply 5% Permethrin lotion on the whole body (except face) or Benzyl Benzoate Lotion 25% adults (12% in children) avoiding mucous membranes, STAT dose. Allow to dry and then put on clean clothes. Do not wash for at least 12 hours. It may be easier to apply Permethrin in the evening to avoid washing. (Do not use permethrin on infants under 2 months of age). Cut fingernails and apply permethrin under the nails. Treat all peo-

ple in the family and close contacts at the same time. Wash the clothes with boiled water and soap. Put bedding (for example blankets) in the sun for 2 days or put them in a closed plastic bag for 4 days.

For severe cases (Norwegian scabies) permethrin 5% on day 1 then BBL for day 2-7; then repeat for several weeks. Educate patients that the itching may continue for several weeks. This is a reaction to the dead parasite. Calamine lotion may be needed.

Impetigo

DEFINITION

This is a bacterial infection of the skin. It spreads easily amongst children. Transmission is by direct contact. Often starts around a bite or a scratch. It may spread over days to weeks. The lesions are round, flattish, with crusts and usually 0.5 to 3cm in size. They are sometimes wet. Treat also any pre-existing skin disease (scabies, ringworm, eczema etc).

TREATMENT FOR LOCALIZED LESIONS

They are less than 3 spots with pus and red skin on one part of the body, often around the mouth, behind the ears, on the hands or feet. No fever.

Note: If the child is a neonate go directly to Type 2: EXTENSIVE

Clean with water and soap or antiseptic (for example savlon or chlorhexidine). Remove the crust, cut the fingernails, and shave the head if necessary (if a lot of lesions on the head). Apply gentian violet (GV) 2 times /day. If on the face apply antiseptic BID instead of gentian violet. Keep dry (if on the buttocks of children, leave them uncovered). Quarantine from school until crusts are dry. Treat contacts.

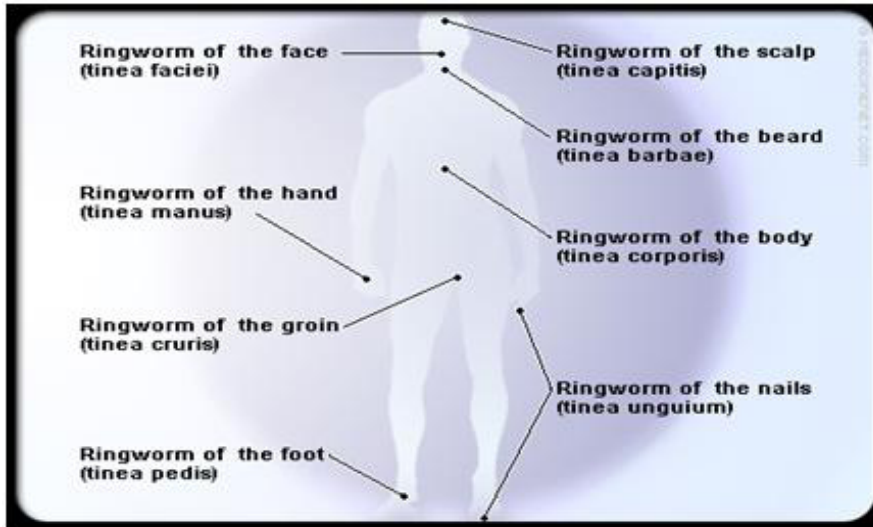
EXTENSIVE /Neonates, or more than 3 lesions or impetigo on more than one part of the body

Give the same local treatment as for mild infections. Give cloxacillin 500 mg QID for 7-10 days (children 25 mg/kg/dose QID for 7 days) or erythromycin 25 mg/kg QID for 7 days, if allergic to penicillin. Incise abscesses.



Fungal Skin Diseases

DIFFERENT PLACES ON THE BODY



DEFINITION

It is the fungal infection of the skin. Round dry lesions grow slowly (taking weeks to months). Dry white scales on the edges with a clearing in the centre, they are very itchy but there is no pain or fever. Sometimes there are pustules on the scalp it may be associated with localised loss of hair.

TREATMENT

Clean with water and soap. If on the scalp: shave the head. Apply whitfield ointment BID for at least 3 weeks. Note: do not use whitfield ointment in children or on the face.

If there is no improvement after three weeks, or in children, apply clotrimazole cream BID for three weeks. For very severe cases, or if no improvement after the above treatment, consult a doctor or give griseofulvin (adults 500 mg daily, children 10 mg/kg/day as a single dose) for 6 weeks or until hair regrows, usually 6-8 weeks. (Note: Men should not make their wives pregnant within 6 months of treatment; women should wait until 1 month after treatment before getting pregnant).

For ringworm of the scalp, treat secondary infection first (topical treatment never works). At least 3 months of griseofulvin is needed to prevent recurrence. Consider oral fluconazole (adult 150 mg/week, children 8 mg/kg/week for 8-12 weeks). If there is no improvement, make sure it is not leprosy.

Herpes Zoster

DEFINITION

Rash of vesicles (water spots) are on one area of the skin. It is caused by the same virus as chicken pox but occurs many years after chicken pox (reactivation). It may happen at any age, but frequently inpatients with low immunity.

SIGNS AND SYMPTOMS

Often fever and a few chills a few days before the rash develop. The patient may feel unwell. Moderate to severe pain at the site where the rash will develop. 4 or 5 days later the vesicles appear on a red base (similar to herpes simplex but over a larger area). The vesicles become pustules, then crusts. The rash appears in the surrounding area of the affected nerve (dermatome), very often on the chest but it can be found anywhere on the skin or mucosa (depending on the affected nerve). The rash is usually only on one side of the body.

**TREATMENT**

Oral acyclovir, if available, 200 mg 5 times per day for 7 days, given in the first 48 hours is indicated for the severe cases with necrotic lesions or in the face spreading to the eye. Apply cold compresses. Follow pain protocol. If pain is not relieved by painkillers, amitriptyline may be needed. If eye is affected or severe disease, refer to a doctor. Acyclovir can help if available, but only if given in the first 48 hours after eruption of lesions. The patient is infectious to people who have not had chicken pox.

Eczema

DEFINITION

Non-specific inflammatory skin reaction to special factors

Itchy lesions are anywhere on the body, usually on both sides of the body (especially at the front of the elbows and behind the knees). It may be localised or widespread, dry or wet but usually long lasting. The dry lesions are very itchy and there is serous (like water) exudation. It can appear and disappear many times at the same place. Secondary infections are common. If infected, treat the infection first (see Impetigo) and then the eczema.



TREATMENT

Do not scratch; try socks over the hands at night to prevent unconscious scratching. Wash only with water: do not use soap on affected areas. Do not scrub with water. Rinse clothes very well, so that no soap stays on. When dry, apply Sorbolene.

If severe consider using steroid cream for example hydrocortisone or betamethasone, if available. If very itchy, treat with chlorpheniramine. Steroid creams are of different strengths-hydrocortisone is mild, betamethasone is stronger. Be careful when applying strong steroid creams for a long period as it can damage the skin. Use the weakest cream that you can for the shortest time possible.

Cutaneous Larva Migrans and Larva Currens

DEFINITION

The disease is caused by the larvae of animal hookworms. Eggs are found in dog or cat faeces on the ground. Humans walking bare foot or lying on the sand can become infected by larval invasion through intact skin. The larvae travel under the skin leaving a red irregular tract, most often on the feet. Very itchy red tracks are on the skin. The larvae travel a few millimetres each day. Foot and ankle are the most common sites. The larvae can survive for weeks before they die.



Larva Currens

DEFINITION

The disease is caused by migrating *Strongyloides stercoralis* larvae.

SIGNS AND SYMPTOMS

Itchy red tracks on the skin found between the neck and knees that last for hours or a day or two. The rash comes and goes.

Treatment - Mebendazole 100 mg BID for 3 days or albendazole 400 mg OD for 3 days

Prevention - Wearing shoes or sandals

Lymphatic Filariasis

DEFINITION

Lymphatic filariasis is a parasitic disease caused by thread-like worms. The clinical signs and symptoms are very variable due to differences in parasites, reaction of the body to the parasites and intensity of the infection.

The disease spreads from person to person by mosquito bites (lymphatic filariasis). The parasites (worms) enter the body through the skin, are transported through the lymph system and settle in lymph nodes. Different forms of lymphatic filariasis along the Thailand/ Burma border are *Wuchereria bancrofti* and *Brugia malayi*.

SIGNS AND SYMPTOMS

It might be asymptomatic (no signs or symptoms). Fever with headache, lymphadenopathy, itchy skins (dermatitis), sometimes bacterial super infection are present. Swollen lymph nodes are mainly in the groin. Arm, breast, leg or scrotal swellings are due to lack of lymph drainage.

Chronic infections lead to:

- Lymph oedema of the legs
- Ascites
- Glomerulonephritis with haematuria
- Chyluria (passing white urine: urine mixed with chyle (lymph fluid) of ruptured lymph vessels)

COMPLICATIONS

Complications due to extreme eosinophilia, severe pulmonary inflammation can develop tropical pulmonary eosinophilia. Patients present with dry cough (especially at night time), wheeze, dyspnoea, fever and sometimes coughing blood.

DIAGNOSIS

- Blood smear, preferably at night, to see microfilariae in the blood
- Lymph node biopsy in lymphatic filariasis or specific antibody test
- Urine examination for proteins

TREATMENT

Albendazole PO 400 mg STAT AND doxycycline 200 mg OD for 6 weeks or Diethylcarbamazine (DEC) 1mg/kg on the first day, then increase gradually to 2 mg/kg in TID (day 4-21)

This dose is maintained for 21 days (be careful for side effects: fever, headache, myalgia, anorexia, abdominal discomfort). DEC is effective against microfilariae and adult worms of *Wuchereria bancrofti* and *Brugia malayi*. A single dose kills only 50% of adult worms.

Note: Do not use albendazole in first trimester of pregnancy. Note: Do not use doxycycline in pregnancy.

Basic principles for filariasis patients

Wash the affected parts twice daily with soap and clean, cool water, and dry them carefully. Raise the affected limb at night. Exercise the limb regularly. Keep the nails clean. Wear comfortable shoes. Treat wounds or abrasions.

PREVENTION

Prevent mosquito bites: use mosquito nets and repellents. Seasonal mass treatment with diethylcarbamazine (DEC) and albendazole are recommended in areas where filariasis is common. Vector control should be carried out.

NEUROLOGICAL DISORDERS

Neurological Examination

MENTAL STATUS

- Appearance: kempt, unkempt
- Level of consciousness:
 - Normal consciousness or not?
 - Consciousness: a state of normal cerebral activity in which the patient is aware of himself and of his environment and is able to respond to changes both within himself (e.g., hunger), and in his environment.
 - Confusional state: the patient's alertness is clouded, and is agitated, frightened and disoriented in time, space and person. Misperception, hallucinations and delusions may occur.
 - Stupor: a state of disturbed consciousness from which only vigorous external stimuli can produce arousal. Arousal from stupor is both brief and incomplete.
 - Coma: the patient is unarousable and unresponsive to all external stimuli.
- Orientation: ability to situate wisely in an environment with regards to:
 - Time
 - Place
 - Identity.

The person knows who they are, where they live, day, month and year.

- Memory: mental registration, retention and recall of past experiences.
- Disturbance of speech: (speech = ability to speak).
- Mood

PROBLEMS DUE TO CRANIAL NERVES DYSFUNCTION

- Visual problems:
 - Visual acuity

Tested using the Snellen's chart, finger counting and hand movement

- Visual field examination: Sit opposite your patient with your knees touching each other. Tell your patient to look at your nose and only at that. And you look at his. Tell your patient to close one eye and you must close your own eye on the same side as your patient (patient closes left eye; you close your right eye).
 - First raise one arm and move your fingers while you bring your hand into your field of vision. At a place where you can see it, without having to look at it. Can your patient see it too? He should be able to. Repeat this for the upper and lower half on each side and for each eye.
- Eye movements: hold the chin of your patient with one hand and ask him to follow the movement of your other hand with his eyes only (he must not turn his head). This way you may see if he has paralysis on the eye movements.
- Pupil reaction to light: normally the pupil size should decrease when you point a light in the eyes of your patient.

Mydriasis: Big pupil size.

Miosis: Small pupil size.

- Facial movements:
 - Ask your patient to show his teeth, to frown, to close his eyes tightly and notice if his face looks symmetrical or not.
- Hearing: See lesson on “E.N.T examination”.

MOTOR SYSTEM EXAMINATION:

- Inspection: Look for a muscular atrophy (loss of muscles - Compare left and right with each other or abnormal movement).
- Test the voluntary movement of muscles groups (top to bottom) by comparing both sides and the strength against resistance:
 - Raise the shoulders
 - Raise the arms to above the head
 - Flex and extend the forearm from the elbow
 - Grip the hands
 - Flex the hip
 - Raise the legs
 - Flex and extend the knee
 - Pull and push on the feet.
- Do passive movement to evaluate muscle tone or rigidity.
- Reflexes: with a reflex hammer, hit the muscular tendon in order to get a muscle contraction inducing a movement (sometimes only a contraction). Compare both sides to see if the reflex is absent or increased or a symmetrical. The main reflexes are:
 - Bicipital, tricipital for the upper limb
 - Patella, Achilles, plantar for the lower limb.

CEREBELLUM EXAMINATION:

- Coordination of the movements:
 - Ask your patient to “Do the puppet”: to supinate and pronate his hands very quickly.
 - To touch his nose (or your fingers) alternatively with his index finger.

SENSATION EXAMINATIONS:

- Superficial: ask the patient to close his eyes and to tell you if he feels it when you touch him with a piece of cotton. Also use a needle to induce a painful stimulation.
- Deep: ask your patient to tell you if his big toe that you are moving remains in up or down position.

OTHER SIGNS:

NEVER FORGET to look for neck stiffness and the aspect of the fontanel. Start with this in any unconscious patient or sick baby. See lesson on ‘Neurologic examination of the baby’ and on ‘Meningitis’.

Neurological examination in Children

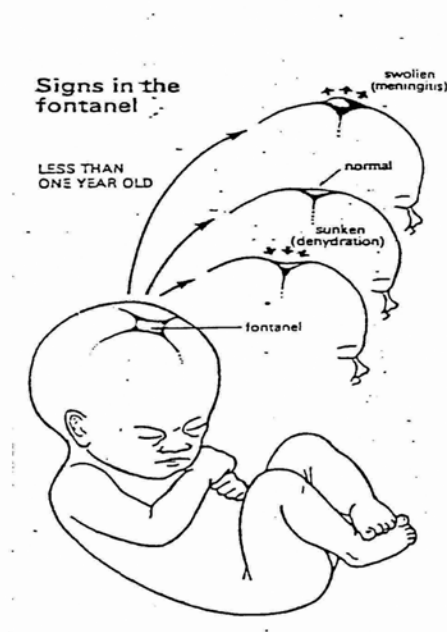
The examination of the neurological system of the child is particularly different from that of an adult because the child is still undergoing growth and development. They still don't have some brain functions. Step by step, he will learn, his brain will develop these functions. You have to know the main steps of his development for at least 2 reasons:

1. To check if a child is developing normally
2. To be able to diagnose something wrong or abnormal when the child is sick.

FONTANEL

- Between the bones of the skull there are places without bony protection these are the fontanels.

- Through the skin, you can feel the covering of the central nervous system. This covering is called the meninges.
- The tension felt through this covering is the CSF's pressure.
- CSF: Cerebral Spinal Fluid: liquid located all around the central nervous system: the brain, the spinal cord and the meninges. CSF absorbs shocks avoiding brain and spinal cord damages. CSF is involved in nutritional process for brain and spinal cord.
- Sometimes the fontanel is swollen due to high pressure resulting from infections like encephalitis, cerebral malaria and meningitis.
- In dehydration the fontanel will be depressed.
- The fontanel closes by bone growth between the age of 12 and 18 months.



PRIMITIVE REFLEXES DURING FIRST YEAR

- **Moro reflex:** or embrace reflex: Line the baby and suddenly lower his head (do not drop it) he will spread his arms outward in an embracing manner).
- **Grasping:** The infant is able to grasp your finger with his hand so firmly that you can lift him up.
- **Sucking:** If you stimulate the lips of an infant with your finger he will try to suck your finger.
- **Automatic walk:** Hold the new born under the shoulders in an upright position with the feet on the floor. When you move him forward he will lift his legs as if to walk.

In 3 months the primitive reflexes gradually disappear. The last primitive reflexes to disappear are:

- Moro reflex (to explain)
- Grasping

Slowly the adult reflexes appear: biceps, triceps, knee, ankle.

MUSCLE TONE

- **The axial tone:** This is the tone of the muscles of the neck and the back. These muscles are not yet fully developed. The new born is unable to hold up his head or sit up. This is hypotony. It increases gradually. The baby becomes able to:
 - Hold his head: 3-4 months
 - Sit up without help: 6-9 months

- Stand up with help 9-13 months
- Walk alone: 10-14 months.
- **The peripheral tone:** This is the tone of the limbs. The new born usually has his limbs in a flexed position. This is hypertony. It decreases gradually, so that the limb's movements are more coordinated. The baby becomes able:
 - To grasp something with all the fingers.
 - To use the thumb and index fingers as pincers (the pincer grip): 9-11 month.

SPECIAL SENSES

In time the baby's senses become more developed (seeing or hearing).

- **Vision:**
 - Between 1 and 2 months, the infant can fix on an object and close the eye to sudden light or movements.
 - Between 3 and 4 months, he can fix on and follow an object.
- **Hearing and speech:**
 - 3 month: the baby should have an adequate reaction to noise. To awaken when he sleeps.
 - 6 months: turns his head when his name is called, repeats syllables.
 - 10 months: makes sounds on his own, imitates sounds of others, understands the meaning of simple words (no, bye bye ...).
 - 18 months: appropriate use of single words, understands many single words and short sentences.

Never forget that normally a child plays. Find out if the child plays. Normally it's a good reflection of his development.

THE NECK

Always look for neck stiffness in a child mainly:

- If your small patient has:
 - Fever, convulsions
 - Projectile vomiting
 - Headache
- If he looks sleepy, fears the lights. [Common symptoms of meningitis].

You try to bend the head of the patient until his chin will touch the sternal bone. It could be difficult and painful (increasing headache): that's neck stiffness.

Take care in babies under one and a half-year of age:

- No stiffness, the neck as well as the limbs may be soft even when they have meningitis
- In babies fontanel examination is much more important.

Convulsions

DEFINITION

A convulsion is the sudden involuntary contractions of a group of muscles with loss of CONSCIOUSNESS and sometimes with loss of urine and/or faeces and biting of the tongue. It happens because the nerve cells in part of the brain send messages to the body that you cannot control. The nature of the convulsion varies depending on the part of the brain that is affected.

If your patient regains consciousness immediately and is not disorientated after the attack, or if the patient remains conscious during the crisis, it is not a convulsion. When the movements stop, the patient may remain unconscious and breathe deeply for up to hour. Return to full consciousness is progressive and the patient may be disoriented, asking the same questions many times (about what happened to

him/her, where he/she is etc). In small babies strong arm or leg movements might be absent, look for eyes or mouth movements.

The principal causes are:

- Fever
- Cerebral malaria
- Meningitis
- Encephalitis
- Hypoglycaemia
- Idiopathic (no cause found - this type tends to be recurrent and is called epilepsy).

ASPECTS AND CAUSES

1. Convulsions in infants (below 1 month)

- Aspect:
 - May be difficult to recognize
 - Jerks of extremities
 - Limited movements of the face
 - Chewing movements
 - Persistent deviations of the eyes (turned up)
 - Sudden respiratory arrest with cyanosis
 - Sudden pallor of the face.
- Causes:
 - Intra-cranial causes:
 - Meningitis
 - Encephalitis
 - Intracranial hemorrhage
 - General causes:
 - Hypoglycaemia (not enough glucose in blood)
 - hypoxia (not enough oxygen).

2. Convulsions in children

- Aspect:
 - Jerks of the whole body or only half of the body
 - Loss of consciousness
 - Up turned eyes.
- Causes:
 - Fever (the most frequent cause in children under 5 years)
 - Cerebral Malaria
 - Meningitis
 - Encephalitis
 - Paragonimiasis, tumor.
 - Otitis (causes fit due to fever).
 - Head injury
 - Epilepsy (disease causing attacks of unconsciousness and fits)
 - Severe dehydration
 - Hypoglycemia (don't forget it if you have fits in a malnourished child)

3. Convulsions in adults (more than 15 years)

- Aspect:
 - Loss of consciousness
 - Loss of muscular control
 - Jerking movements of the whole body (or only 1/2 of the body)
 - Deep sleep with stridor (noisy breathing).
- Causes:
 - Cerebral Malaria
 - Central nervous system infections:
 - Meningitis
 - Encephalitis
 - Brain abscess
 - Paragonimiasis
 - Other brain problems:
 - Tumor
 - Intra cranial hemorrhage.
 - Head injury
 - Hypoglycemia
 - HBP.

MANAGEMENT OF CONVULSIONS

- Emergency Measures

1. Put in coma position (lying on left side) and in a quiet safe place to protect him against injury.
2. Maintain clear upper airway (mouth open and clean secretions and vomits). Give IV 50% dextrose bolus unless hypoglycaemia is excluded.
3. Stop the convulsions with Diazepam to stop the convulsions or prevent another crisis: When the patient is moving, it can be easier to give first dose IM or PR (Drug Table)
4. Treat Fever if present. Give oxygen and suction if available.

Prevent injuries:

- it's hopeless to try to stop the movements:
 - Move potentially harmful objects out of the patient's way;
 - The patient is lying down in Lateral Safe Position (LSP);
 - Clear the airway.

Treat the convulsions:

* Child: Diazepam 0.5 mg/ kg/ injection (0.1 cc/ kg/ injection) (IR=Intra-Rectal)

- Use a syringe without a needle.
- Close the buttocks firmly for 2 minutes. It is the time necessary for the Diazepam to be absorbed by the rectal mucosa.

* Adult: Diazepam: (First Choice) + 8 cc sterile water SLOW IV treatment or IM. It's usually easier and less dangerous to do than IV but it's not so efficient.

For Diazepam IV:

- Why do you have to dilute in 8 cc of sterile water?
 - Because Diazepam pure can be toxic for the veins which can be damaged.
- Why do you have to give Diazepam IV very slowly?
 - Because Diazepam IV quickly can give a respiratory arrest. Be ready to give ventilation (either with an ambu-bag or mouth to mouth).

Table: Diazepam Injection [Diazepam 1 Amp=10mg in 2 cc]

Weight	Dose	Injection 10 mg
< 4 kg	1 mg	0.2 cc
4 - 8 kg	3 mg	0.6 cc
9-15 kg	6 mg	1.2 cc
16-35 kg	10 mg	2 cc
> 35 kg	10 -20 mg	2-4 cc

Dose: Child -0.5mg/kg/inj. IR or slow IV

Adult - 10 mg/injection (IV slowly)

Duration: If after 10 min the patient still has convulsions, repeat the dose.

Note: To give diazepam IV, dilute in 4 times of DW (8 cc) and inject slowly over 2-3 min.

- If convulsions don't stop:

You can repeat the same IR or IV 10 minutes later. As maintenance of convulsions control, you can give Diazepam every 6 hours.

LOOK FOR A CAUSE AND TREAT IT

Convulsions with fever

Convulsions with or without fever

Malaria, Meningitis, Hyperthermia, Encephalitis

Hypoglycaemia, Severe dehydration, Head trauma

Convulsions in pregnant women

Eclampsia (high BP+oedema+convulsions),
Malaria, Hypoglycaemia

Repeated convulsions without fever

Epilepsy, Cranial tumour; See a doctor

Check blood sugar for hypoglycaemia. Look for signs of infection (meningitis, malaria, etc). Ask for past and recent medical history, previous convulsion episodes, and medication taken. When looking for causes, the next list could be helpful: remember AEIOU - A: Alcohol, E: Eclampsia, I: Infections, O: Organ failure, U: Uraemia (= renal failure)

- Prevent new convulsions:

According to the clinical course of your patient you can prevent new fits for 1 or 2 days with:

- Phenobarbital 200 mg = 1 cc/ vial: IM 5 mg/ kg/ day for child and adult (for adult: maximum 1 vial / day) + Diazepam: same dosages as above.

The patient has had convulsions but doesn't convulse when you see him.

First: Make sure it was really a convulsion:

- If there were any eye witnesses let them tell the story and describe what exactly happened.
- If it was just before, the patient may be sleepy with noisy breathing or he could look only very relaxed.
- Ask if he passed urine during the convulsion:
 - If yes, it's a clear sign he probably had convulsions.
 - If no, it doesn't mean your patient didn't have convulsions.
- Look at his tongue to see if he has bitten it or not:
 - If yes: clear sign, he probably had convulsions
 - If no: it doesn't mean he didn't have convulsions.
- Lie him in the Lateral Safe Position.
- Clear the airway.
- Establish the diagnosis. (T^o; MS; Neck stiffness; Dextro; BP)
- Treat the cause.
- Ask if your patient already received a treatment for fits?
- Prevent other convulsions if you are sure he really had fits before - phenobarbital 5 mg/kg/day IM.
- Otherwise: Keep him under observation for one or two days.

SPECIAL CASES

Child who has convulsions each time he has fever:

- You can prevent fits if he has more than 38.5 °C again with Diazepam 1mg/kg/day in 3 divided doses.
- Convulsions in pregnant woman:
 - It often occurs with HBP. It's called Eclampsia and needs to be treated quickly because the foetus as well as the mother may die Diazepam IV 1 vial = 2 cc + 8 cc sterile water.
 - Treat the cause: decrease the BP with Nifedipine and Methyl dopa.

ANTICONVULSANT DRUGS:

Seizure Type	Medication to treat	Medication to avoid
Infant < 1 yr Generalized tonic-clonic	Phenytoin Phenobarbitone	Na valporate
Child Generalized tonic-clonic	Na valporate Carbamazepine Phenytoin	
Child Absence seizure	Na valporate	Carbamazepine Phenytoin
Adult: Generalized tonic-clonic	Carbamazepine Na Valporate Phenytoin	

	Tablet	Starting Dose	Max Dose per day	Most Common Side-Effects	Toxic Effects
Phenytoin	50 and 100 mg	200 mg OD or BID	500 mg	depression, polyneuropathy, acne, swollen gums	double vision, tremor, ataxia, difficulty speaking, changes in behaviour, anaemia
Carbamazepine	200 mg	100 mg BID	2 g	drowsiness, confusion, rash	rash, nausea, double vision, dizziness, low sodium
Phenobarbitone	30 mg	60 mg at night	180 mg	depression, drowsiness, sedation in adults excitation in children confusion in old people	nystagmus, ataxia
Sodium Valproate	200 mg	200 mg TID	3 g	nausea and vomiting, weight gain, ankle swelling	Rarely, liver failure; especially in children < 3 years old

Epilepsy

DEFINITION

An epileptic seizure is a sudden onset event where there is a disturbance of consciousness, posture, movement or behavior due to increased electrical activity in the brain. It is diagnosed after a person has had more than two epileptic seizures. There are many different types of epilepsy.

GENERALIZED CONVULSIONS (GENERALISED TONIC CLONIC SEIZURES)

In this type of seizure there is a sudden loss of consciousness with or without cyanosis and strong jerking movements of the arms and legs (sometimes the patient also passes urine or bites their tongue). When the movements stop, the patient may be very sleepy. In small babies, obvious arm or leg movements might be absent but their eyes can blink, and they can smack their lips together or clench their hands. If the patient is still conscious during the crisis, it is not a generalised convulsion but it could be a different type of convulsion.

CHILDHOOD ABSENCE SEIZURES

In this type of seizure the child suddenly stops talking or playing for a few seconds and then starts again to do what he was doing. The child does not remember the attack.

Take a good history

The most important step in diagnosing epilepsy is to take a good history of the episode from an eye-witness. Not all seizures are due to epilepsy- you must consider other diagnoses:

- **Seizures with fever:** e.g. malaria, meningitis, hyperthermia, encephalitis
- **Seizures with or without fever:** e.g. hypoglycaemia, severe dehydration, head trauma, amphetamines, alcohol, renal failure (uraemia)
- **Seizures in pregnant women:** e.g. eclampsia
- **Repeated seizures without fever:** e.g. brain tumour, cysticercosis

Examine the person properly

Every patient presenting with a seizure should have a **full neurological examination** performed. Every patient presenting with a seizure of unknown cause should have an ECG performed, as some cardiac arrhythmias can present as a seizure.

TREATMENT

See BBG for Medication guidelines.

Consider starting patients on medication if the patient is having more than two convulsions in one year. Explain to the patient that this therapy is long-term and stopping suddenly could cause severe convulsions. Talk to the patient about epilepsy and explain to him/her that it is a disease that can be controlled.

If the patient agrees to treatment, treat with one medication only. If the seizures are not controlled on one medication at the maximum dose, discuss the case with a doctor. Start with a small dose and then increase the dose until convulsions are controlled or the patient has side-effects. Encourage the patient to come back every month. Try to see the same patient every time (i.e. the same medic for the same patient)

Stopping the medication

The majority of patients will have no more convulsions after a few years on medication. Consider stopping medication if the patient has had no convulsions for more than 2 years. AND has a normal neurological examination.

Discuss the possibility with the patient and take the decision together. Some patients will be too afraid of having convulsions if medications are stopped, other patients will wish to stop as soon as possible.

- More than 60% will have no more convulsions if medication is stopped.
- Less than 40% will start having convulsions again after medication is stopped.
- If you and the patient decide to stop the medication, you must gradually decrease the medication every 4 weeks. Schedule for adult patients:
 - Decrease phenytoin by 50 mg every 4 weeks.
 - Decrease carbamazepine by 100 mg every 4 weeks.
 - Decrease phenobarbitone by 30 mg every 4 weeks.
 - Decrease sodium valproate by 200 mg every 4 weeks.

MENTAL DISORDERS

MOOD DISORDERS

There are two types of mood disorders:

- Depressive disorder
- Bipolar disorder (manic depressive disorder)

EXCLUDING UNDERLYING DISEASE FIRST

Many psychiatric disorders do not have obvious signs and symptoms. Alcohol abuse, for example, may be a symptom of depression, anxiety or trauma. Disorders of mental health (mood, thinking and behaviour) may be due to a psychiatric diagnosis, a personality disorder or to physical disorders. Before you diagnose a mental health problem, you should exclude underlying physical diseases or drug or substance abuse. For example, hyperthyroidism may present as anxiety, or a hypoglycaemic patient may be agitated. When diagnosing a mental health problem, you should always obtain a detailed medical history.

DEPRESSION

- A depressive mood (feelings of sadness) most of the time
- Less interest or pleasure in normal activities most of the time
- Loss of sleep (insomnia)
- Weight loss
- Fatigue or lack of energy
- Feelings of guilt or incompetence
- Loss of concentration
- Suicidal thoughts or activities

These symptoms must be present for at least two weeks before a diagnosis of depression should be made.

ANXIETY

Anxiety or mental stress often occurs when we are frightened or afraid. Anxiety disorders are defined when acute anxiety overwhelms the psychological functioning or when anxiety is persistent. When feeling anxiety or stress, the heart usually starts beating faster, reactions are quicker and we are more alert. This is the body's normal reaction to stress, but problems occur when levels of stress are too high or are unable to be relieved.

ANXIETY SYMPTOMS

A normal reaction to psychological stress is headache, feeling uptight and nervous. When these symptoms become chronic you could speak of anxiety disorder. More severe symptoms from unrelieved anxiety can include sleeplessness, heart palpitations, depression, violence, withdrawal and psychosomatic complaints. Psychosomatic disorders: these occur when a person is unable to deal with increasing levels of mental stress or tension. Because the patient is unable to deal with the mental consequences of high levels of stress, the body will develop a physical symptom such as pain, numbness, or

in some cases, paralysis. Generally the patient is able to discuss physical aches and pains more openly than their underlying psychological stress and the causes for it.

UNDERLYING MEDICAL DISORDER THAT MAY PRESENT AS A MOOD DISORDER

- Hyperthyroidism (thyroid hormone excess) may present as anxiety
- Hypoglycaemia may present as anxiety
- Cancers can present as chronic depression
- Chronic illnesses can present as depression
- Look for underlying causes

DIAGNOSIS

A depressive disorder is characterised by one or more depressive episodes. There are no manic episodes. A bipolar disorder is characterised by at least one manic episode and one or more depressive episode.

SYMPTOMS

Five or more of the following symptoms, including a depressive mood or loss of interest, characterizes a depressive episode:

- A depressive mood (feelings of sadness) most of the time
- Less interest or pleasure in normal activities most of the time
- Loss of sleep (insomnia)
- Fatigue or lack of energy
- Feelings of guilt or incompetence
- Loss of concentration
- Suicidal thoughts or activities
- Weight loss

These symptoms must be present for at least two weeks before a diagnosis of depression should be made. A depressive episode is also characterized by a low level of psychomotor activity. The patient may have a sad facial expression, a lack of humour, be silent or reluctant to speak, or want to be alone.

A manic episode is characterized by three or more of the following symptoms:

- Extreme feelings of competence
- Less need of sleep
- Talking very quickly
- Vivid thoughts
- Easily excited
- Increased activity (social, sexual)
- Seeks out pleasurable activities

These symptoms must be present for at least one week before diagnosing a manic episode.

TREATMENT

Non-medication treatment options:

- Counselling
- Encourage the patient to keep active, get up at regular times and do plenty of physical exercise

Medication

- Depressive disorders- see BBG
 - SSRIs
 - Tricyclic antidepressants

Selective Serotonin Reuptake Inhibitor (SSRI): e.g. Fluoxetine, tablets of 20 mg. Normal dose 40 mg a day. This treatment must be maintained for 6 months. Keep in mind that it can take 6-8 weeks for this drug to take full effect, but the side effects appear in the first week of treatment. This must be explained carefully to the patient. Advise the patient to take this medication in the morning, as it can influence sleep patterns.

Side effects: Weight gain, sweating, and occasional mild neurological signs such as tingling in the fingers.

Note: in the first few weeks of SSRI treatment the suicide risk is increased. For patients with severe depression Diazepam (5 mg TID for 2 weeks) may be added to the treatment.

If you do not have SSRI, or if the SSRI is not effective after 8 weeks, stop SSRI and give the patient a Tricyclic antidepressant (TCA) e.g. Amitriptyline. A normal dose is between 75 or 150 mg a day.

If possible, obtain regular amitriptyline blood levels from the patient. Note: do not give large amounts of TCAs to a patient undergoing unsupervised treatment. If the above medication is not effective, refer the patient to a hospital where mental health care is provided. If a patient with a depressive disorder has severe sleep disturbances Diazepam (or Oxazepam) 5mg oral may be given for a short period of time.

TREATMENT FOR MANIA

Manic disorder must be treated in a psychiatric hospital, because patients on this type of medication (lithium, valproate etc) must have their blood levels monitored regularly to prevent catastrophic side effects. For an acute episode, if the patient has not been admitted to hospital, it is possible to administer a sedative drug, like Diazepam or Oxazepam or you treat them like you would treat a person with an acute psychosis.

Anxiety Disorders

DEFINITION

Anxiety or mental stress often occurs when we are frightened or afraid. Anxiety disorders are defined when acute anxiety overwhelms the psychological functioning or when anxiety is persistent. When feeling anxiety or stress, the heart usually starts beating faster, reactions are quicker and we are more alert. This is the body's normal reaction to stress, but problems occur when levels of stress are too high or are unable to be relieved.

SIGNS AND SYMPTOMS

A normal reaction to psychological stress is headache, feeling uptight and nervous. When these symptoms become chronic you could speak of anxiety disorder. More severe symptoms from unrelieved anxiety can include sleeplessness, heart palpitations, depression, violence, withdrawal and psychosomatic complaints.

Psychosomatic disorders: these occur when a person is unable to deal with increasing levels of mental stress or tension. Because the patient is unable to deal with the mental consequences of high levels of stress, the body will develop a physical symptom such as pain, numbness, or in some cases, paralysis. Generally the patient is able to discuss physical aches and pains more openly than their underlying psychological stress and the causes for it.

TREATMENT

Try to calm down the patient by personal talking and listening carefully and reassuring. Always look for an underlying mental disorder (depression, PTSS or psychosis) and give specific treatment.

Treatment options by medication:

For an acute anxiety attack you can use diazepam (5-15 mg PO in divided doses for a maximum of 2 weeks) to lower the anxiety. For long-term treatment, other medication is needed. Very much used as medications are the SSRI, of which fluoxetine is one of them. The doses are most of the time equal to

the treatment of a depression: 40 mg a day. Other treatment options by medication are difficult because they need blood level monitoring. Other treatment options: is Cognitive behavioural therapy.

Post Traumatic Stress Disorder

DEFINITION

Post Traumatic Stress Disorder (PTSD) is a condition that occurs as a response to extremely frightening, severe and prolonged fear. It is characterised by continual high levels of anxiety that interfere significantly with the person's ability to lead their life. This disorder is common in people that have experienced violent situations, or have escaped from life-threatening situations, both of which are common experiences for refugees.

CAUSE

Life threatening violence, either a single event or over a long period of time is the cause. Violence can be experienced either directly by the patient or seen by the patient to have happened to somebody else. Escaping from possible violence, or fear of capture are also possible.

SIGNS AND SYMPTOMS

- Affecting a person's ability to enjoy life and interact with others
- Withdrawal (little or no communication with others)
- Panic attacks (episodes of sudden fear occurring for no apparent reason)
- Often: vague symptoms such as headaches, sleeping problems, joint pain, fatigue, irritability, irrational fear, and flattened or inappropriate mood
- Personality changes, violent outbursts, poor concentration

DIAGNOSIS

Talk and listen, ask the patient about the history of their problems. For example, when was the first time they felt the headaches, or could not sleep? What things were happening in their lives around that time?

TREATMENT

Try to locate a probable cause for their symptoms. Try to listen to the patient's problems. Do not judge them based upon their stories, express that you are interested in what they have to say and try to let them express themselves. Above all, let the patient know they are not alone and that you understand the reasons for their stress.

Treatment options by medication:

Consider SSRI like fluoxetine. When the patient is suffering from nightmares, a low dose of haloperidol (1-2 mg) could be very helpful. For other sleeping disturbances, you can use benzodiazepines (e.g. diazepam 5 mg oral). However, diazepam is an extremely addictive medicine, so diazepam should not be prescribed for more than 1-2 weeks.

Psychosis

DEFINITION

A severe form of mental illness - the patient is unable to distinguish between the real world and the world of their hallucinations and delusions.

SIGNS AND SYMPTOMS

Hallucinations where one has the experience of hearing, seeing, smelling and even feeling things that are not there, i.e. the patient may hear voices talking to them though there is no-one around them, or see things that are not there. It is important to realise that the patient does not imagine these sensations. These are real experiences for them and can be very frightening.

Delusions

They are fixed false beliefs that are not shared by other members of the person's culture or society. Ideas that seem strange and bizarre, such as having powers that others do not possess e.g. the patient may claim to be able to read peoples' minds, or claim to be from another planet. Delusions are generally so strange that many peoples' first reaction is to laugh. However, to the patient these beliefs are completely true. Due to the extreme nature of hallucinations and delusions, patients are often unable to care for themselves and are likely to be disruptive in the community. Unfortunately, very often people with psychosis may be regarded as "fools" and not considered worthy of medical help. However, with proper medical intervention, psychotic patients can get better.

REASSURE

Acutely psychotic patients are difficult to talk to, as they are not able to understand what is happening around them. However, medical staff should make attempts to let the patient know where they are and what is happening to them i.e. that they are in hospital and they will receive treatment.

TREATMENT

For acutely psychotic patients, phenergan 25mg + haloperidol 5mg orally or by IM injection (both medications can be administered together in the same syringe). Monitor these patients closely as these medicines have severe and distressing side effects. Long term medical management needs to be tailored individually to the patient and should only be prescribed by experienced medical personnel. Treatment should include counselling, psychotherapy and social support.

SUBSTANCE ABUSE

Alcohol

Excessive drinking of alcohol can cause several clinical manifestations. Identification of the alcohol-affected person is complicated by the tendency of some to hide, underestimate or understate the extent of their intake.

In order to diagnose and classify alcohol-dependent people, the family doctor has to rely on a combination of parameters that include clinical symptoms and signs, available data on quantity consumed, clinical intuition, personal knowledge of the social habits of patients, and information (usually unsolicited) from relatives, friends or other health workers.

In a study by the author the outstanding clinical problems are the psychogenic disorders (anxiety, depression and insomnia) and hypertension. 4 Susceptibility to work and domestic accidents were also significant findings.

The challenge to the family doctor is early recognition of the alcohol problem. This is achieved by developing a special interest in the problem and knowledge of the early clinical and social pointers, and being ever alert to the tell-tale signs of alcohol dependence.

PSYCHOSOCIAL FEATURES

- concern about drinking by self, family or others
- heavy drinking—more than six glasses per day
- early morning drinking
- reaching for the bottle when stressed
- regular hotel patron
- skipping meals/poor diet
- cancelling appointments
- increased tolerance to alcohol
- alcohol-related accidents
- frequent drinking during working day
- marital problems
- behavioural problems in children
- driving offences
- criminal offences
- financial problems
- absenteeism from work/loss of job
- heavy smoking

CLINICAL FEATURES

- characteristic facies
- hand tremor
- alcohol foetor by day
- morning nausea and vomiting
- traumatic episodes
- dyspepsia—gastritis/ulcer
- obesity
- palpitations
- impotence
- alcohol-related accidents
- frequent drinking during working day
- marital problems
- behavioural problems in children
- driving offences
- criminal offences
- financial problems
- absenteeism from work/loss of job
- heavy smoking

Hard addictive street drugs

There are several psychotropic substances that are used for their effects on mood and other mental functions. Many of the severe problems are due to withdrawal of the drug. Symptomatic behaviour common to the hard addictive drugs includes:

- rapid disappearance of clothing, personal belongings from home
- signs of unusual activity around hang-outs and other buildings
- loitering in hallways or in areas frequented by addicts
- spending unusual amounts of time in locked bathrooms
- inability to hold a job or stay in school
- rejection of old friends
- using the jargon of addicts

Newer drugs include 'crack', which is a cocaine base where the hydrochloride has mostly been removed, usually in a microwave oven. Crack can be inhaled or smoked. It is the crude form of methamphetamine, a derivative of amphetamine.

LSD

Severe hallucinations, Feelings of detachment, Incoherent speech, Cold hands and feet . Vomiting, Laughing and crying may be present. Cube sugar with discolouration in centre. Strong body odour. Small tube of liquid. Suicidal tendencies, Unpredictable behaviour. Chronic exposure causes brain damage. LSD causes chromosomal breakdown.

AMPHETAMINES

Aggressive or overactive behaviour. Giggling. Silliness. Euphoria. Rapid speech. Confused thinking. No appetite. Extreme fatigue. Dry mouth. Shakiness. Jars of pills of varying colours. Chain smoking. Death from overdose. Hallucinations.

Methamphetamines sometimes cause temporary psychosis.

BARBITURATES

Drowsiness. Stupor. Dullness. Slurred speech. Drunk appearance. Vomiting. Pills of various colours. Death from overdose or as a result of withdrawal. Addictions. Convulsions.

NARCOTICS

(a) opiates, e.g. heroin

Stupor/drowsiness. Marks on body. Watery eyes. Loss of appetite. Bloodstain on shirt sleeve. Running nose.

Needle or hypodermic syringe. Cotton. Tourniquet—string. Rope, belt, burnt bottle, caps or spoons. Glassine envelopes.

Death from overdose. Mental deterioration. Destruction of brain and liver. Hepatitis. Embolisms.

(b) cocaine

Similar effects to amphetamines—muscle pains, irritability, paranoia, hyperactive, jerky movements.

Powder: in microwave ovens

Death from overdose—sudden death from arrhythmias. Seizures, mental disorders. Severe respiratory problems.

Phencyclidine (angel dust)

Lack of co-ordination. Feeling of increased physical strength. Hallucinations. Mood disorders.

White powder. Tablets—unbranded. Syringes. Smoked in conjunction with marijuana.

Suicidal tendencies. Death from overdose. Mental disorder. Self-injury.

Marijuana

Initial euphoria. Floating feeling. Sleepiness. Wandering mind. Enlarged eye pupils. Lack of co-ordination. Craving for sweets. Changes of appetite.

Strong odour of burnt leaves. Small seeds in pocket lining. Cigarette paper. Discoloured fingers.

Inducement to take stronger narcotics. Recent medical findings reveal that prolonged usage causes cerebral lesions.

Glue sniffing

Aggression and violence. Drunk appearance, slurred speech. Dreamy or blank expression.

Tubes of glue, glue smear. Large paper or plastic bags or handkerchiefs.

Lung/brain/liver damage. Death through suffocation or choking.

NARCOTIC DEPENDENCE

This section will focus on heroin dependence.

Typical profile of a heroin-dependent person

Male or female: 16-30 years.

Family history: often severely disrupted, e.g. parental problems, early death, separation, divorce, alcohol or drug abuse, sexual abuse, mental illness, lack of affection.

Personal history: low threshold for toleration, unpleasant emotions, poor academic record, failure to fulfill aims, poor self-esteem.

First experiments with drugs are out of curiosity, and then regular use follows with loss of job, alienation from family, finally moving into a 'drug scene' type of lifestyle.

Methods of intake

- Oral ingestion
- Inhalation
- Intranasal
- Smoking
- Parenteral
- Subcutaneous
- Intramuscular
- Intravenous

Withdrawal effects

These develop within 12 hours of ceasing regular usage. Maximum withdrawal symptoms usually occur between 36 and 72 hours.

- anxiety and panic
- irritability
- chills and shivering
- excessive sweating
- 'gooseflesh' (cold turkey)
- loss of appetite, nausea (possibly vomiting)
- lacrimation/rhinorrhoea
- tiredness/insomnia
- muscle aches and cramps
- abdominal colic
- diarrhea

A secondary abstinence syndrome is identified 5 at 2 to 3 months and includes irritability, depression and insomnia.

COMPLICATIONS

Medical

Acute heroin reaction: respiratory depression—may include fatal cardiopulmonary collapse. There is an alarming increase in opioid deaths (including methadone).

Injection site: scarring, pigmentation, thrombosis, abscesses, ulceration (especially with barbiturates).

Distal septic complications: septicaemia, infective endocarditis, lung abscess, osteomyelitis, ophthalmitis.

Viral infections: hepatitis B, hepatitis C, HIV infection.

Neurological complications: transverse myelitis, nerve trauma.

Physical disability: malnutrition.

Social

Alienation from family, loss of employment, loss of assets, criminal activity (theft, burglary, prostitution, drug trafficking).

MANAGEMENT

Management is complex because it includes the medical management not only of physical dependence and withdrawal but also of the individual complex social and emotional factors. The issue of HIV prevention also has to be addressed. Patients should be referred to a treatment clinic and then a shared care approach can be used. The treatments include cold turkey with pharmacological support, acupuncture, megadoses of vitamin C, methadone substitution and drug-free community education programs.

Methadone maintenance programs that include counselling techniques are widely used for heroin dependence. Acute toxicity requires injections of naloxone.

The natural history of the opiate dependence indicates that many patients do grow through their period of dependence and, irrespective of treatments provided, a high percentage become rehabilitated by their mid-thirties.

Cannabis (marijuana)

Cannabis is a drug that comes from a plant called *Cannabis sativa* or the Indian hemp plant. It contains a chemical called tetrahydrocannabinol, which makes people get 'high'. It is commonly called marijuana, grass, pot, dope, hash or hashish. Other slang terms are Acapulco Gold, ganga, herb, J, jay, hay, joint, reefer, weed, locoweed, smoke, tea, stick, Mary Jane and Panama Red. Marijuana comes from the leaves, while hashish is the concentrated form of the resinous substances from the head of the female plant and can be very strong (it comes as a resin or oil). The drug is usually smoked as a leaf (marijuana) or a powder (hashish), or hashish oil is added to a cigarette and then smoked. The effects of taking cannabis depend on how much is taken, how it is taken, how often, whether it is used with other drugs and on the particular person. The effects vary from person to person. The effects of a small to moderate amount include:

- feeling of well-being and relaxation
- decreased inhibitions
- woozy, floating feeling
- lethargy and sleepiness
- talkativeness and laughing a lot
- red nose, gritty eyes and dry mouth
- unusual perception of sounds and colour
- nausea and dizziness
- loss of concentration
- looking 'spaced out' or drunk
- lack of co-ordination
- a new form called 'skunk' or 'mad weed' causes paranoia

The effects of smoking marijuana take up to 20 minutes to appear and usually last 2 to 3 hours and then drowsiness follows. The main problem is habitual use with the development of dependence, although dependence (addiction) is worse than originally believed.

LONG-TERM USE AND ADDICTION

The influence of 'pot' has a severe effect on the personality and drive of the users. They lose their energy, initiative and enterprise. They become bored, inert, apathetic and careless. A serious effect of smoking pot is loss of memory. Some serious problems include:

- crime
- lack of morality—scant respect for others and their property
- respiratory disease (more potent than nicotine for lung disease): causes COAD, laryngitis and rhinitis
- often prelude to taking hard drugs
- becoming psychotic (resembling schizophrenia): the drug appears to unmask an underlying psychosis

WITHDRAWAL

Sudden withdrawal produces insomnia, night sweats, nausea, depression, myalgia, irritability and maybe anger and aggression.

MANAGEMENT

The best treatment is prevention. People should either not use it or limit it to experimentation. If it is used, people should be prepared to 'sleep it off' and not drive.

Substance Dependence/Abuse - Alcohol

IDENTIFYING THE PROBLEM

Alcohol abuse should be suspected in any patient presenting with one or more of the physical or psychosocial problems which you will find in the handout

WHAT IS CONSIDERED HARMFUL DRINKING?

One standard drink contains 10 g of alcohol

	Low risk	Hazardous	Harmful
Men	0-4	5-6	> 6
Women	0-2	3-4	> 4

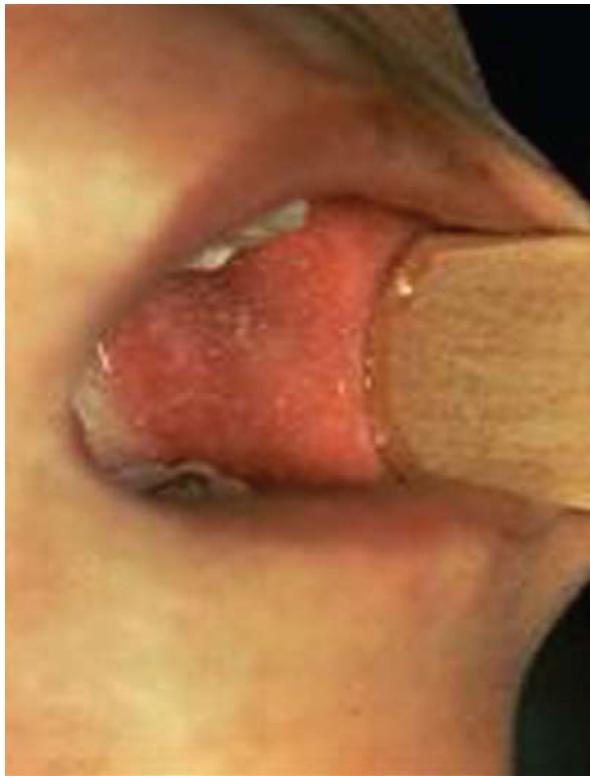
TAKING A HISTORY

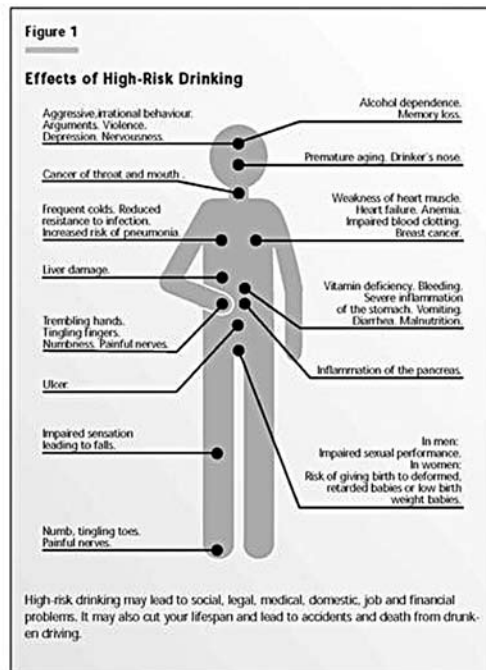
- When did you last drink alcohol?
- Do you like alcohol?
- What is your usual intake each day? Each week?
- What type of alcohol do you prefer to drink?
- Do you take a drink in the morning?
- Do you eat breakfast?

- When was the last time you felt nauseated or 'off-colour' in the morning?
- When do you get heartburn?
- Do you drink with your mates or family or at the club?
- How long do you usually go without alcohol?
- When was the last time you were drunk?
- When was the last time you cannot remember a drinking session?
- About how much alcohol can you take before it affects you?
- Has alcohol had any effects on you?
- Does it give you the shakes?
- Do you ever need to take alcohol to help you get to sleep?
- Do you need it to steady your nerves

CAGE QUESTIONNAIRE

- ➔ Have you ever felt you should CUT down on your drinking?
- ➔ Have people ANNOYED you by criticising your drinking?
- ➔ Have you ever felt bad or GUILTY about your drinking?
- ➔ Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover? (an EYE-OPENER)





WITHDRAWAL SYNDROME

Symptoms of a 'hangover' include headache, nausea, irritability, malaise and a mild tremor. Withdrawal from alcohol in a chronic problem drinker includes:

- agitation
- prominent tremor
- sweating
- insomnia
- seizures
- delirium tremens

Treatment for moderate symptoms is based on diazepam. The aim is to prevent development of delirium tremens. Maintain fluid, electrolytes and nutrition. Add vitamin B complex including thiamine because the patients are invariably thiamine deficient.

Substance Abuse/Dependence – Drugs

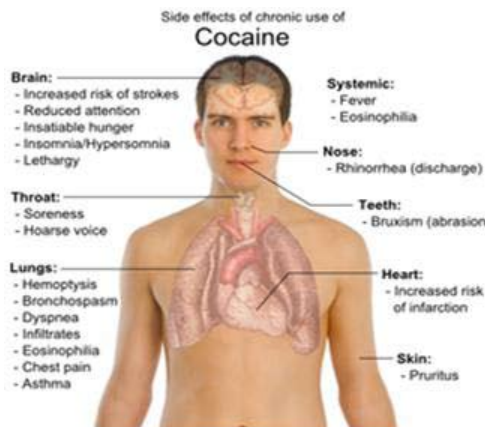
DEFINITION OF SUBSTANCE DEPENDENCE

When an individual persists in use of alcohol or other drugs despite problems related to use of the substance, substance dependence may be diagnosed. Compulsive and repetitive use may result in tolerance to the effect of the drug and withdrawal symptoms when use is reduced or stopped. This, along with Substance Abuse are considered Substance Use Disorders.

Three stages of addiction:

- preoccupation/anticipation
- binge/intoxication
- withdrawal/negative affect

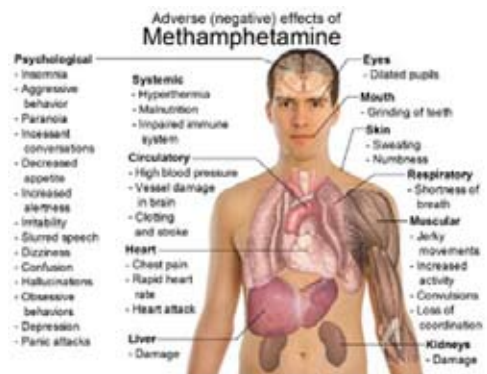
These stages are characterized, respectively, everywhere by constant cravings and preoccupation with obtaining the substance; using more of the substance than necessary to experience the intoxicating effects and experiencing tolerance, withdrawal symptoms, and decreased motivation for normal life activities.



LSD

- Severe hallucinations
- Feelings of detachment
- Incoherent speech
- Cold hands and feet
- Vomiting
- Laughing and crying.
- Strong body odour
- Suicidal tendencies
- Unpredictable behaviour
- Chronic exposure causes brain damage
- LSD causes chromosomal breakdown

CRYSTAL METHAMPHETAMINE



Physical Effects of Amphetamines

Physical effects can include anorexia, hyperactivity, dilated pupils, flushing, restlessness, dry mouth, headache, fast heart rate, or slow heart rate, blood pressure and temperature regulation, sweating, gastrointestinal disturbances, neurological disturbances, heart arrhythmias, tremor, convulsions, stroke, heart attack and possible death

Psychosocial Effects of Amphetamines

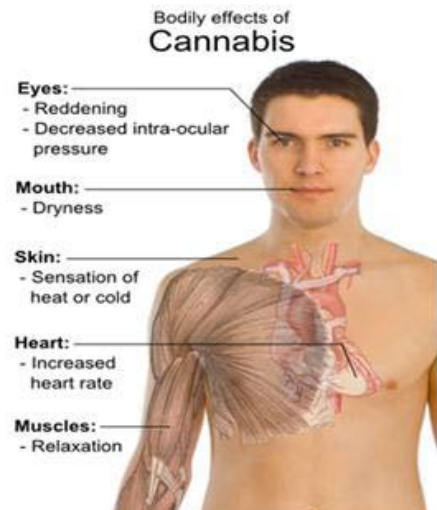
Psychological effects can include feeling of self confidence, poor concentration, irritability aggression, paranoia, obsessive. There is a wide spectrum of symptoms.

Withdrawal effects of Amphetamines

Withdrawal is characterized by excessive sleeping, increased appetite, often accompanied by anxiety and drug craving.

- anxiety and panic
- irritability
- chills and shivering
- excessive sweating
- 'gooseflesh' (cold turkey)
- loss of appetite, nausea (possibly vomiting)
- tiredness/insomnia
- muscle aches and cramps
- abdominal colic
- diarrhoea
- lacrimation/ rhinorrhoea

MARIJUANA



SIGNS OF MARIJUANA ABUSE

- Rapid, loud talking and bursts of laughter in early stages of intoxication
- Sleepy or stuporous in the later stages
- Lack of concentration and coordination
- Forgetfulness in conversation
- Inflammation in whites of eyes
- Odor similar to burnt rope on clothing or breath
- Distorted sense of time passage - tendency to overestimate time intervals
- Craving for sweets
- Increased appetite
- Use or possession of paraphernalia including roach clip, packs of rolling papers, pipes or bongs

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12. Health Messenger Guidebook on Substance Abuse, Drugs and Addiction, 2010

ACKNOWLEDGEMENTS

The photos, diagrams, flowcharts and tables are adopted from the following sites.

- <http://www.cdc.gov/> (Centers for Disease Control and Prevention)
- <http://www.nlm.nih.gov/> (The A.D.A.M. Medical Encyclopedia)
- <http://en.wikipedia.org/> (Wikipedia)
- <http://www.nejm.org/> (The New England Journal of Medicine)
- <http://www.cedars-sinai.edu>
- <http://www.stdhelp.org/> (the STD Support Community)
- <http://www.ghorayeb.com> (Otolaryngology Houston)
- <http://www.pedisurg.com> (the Pediatric Surgery)
- <http://www.baby-safety-concerns.com> (Your Baby Safety Guide)
- <http://www.immune.org>
- <http://www.aap.org/> (American Academy of Pediatrics)
- <http://www.moondragon.org> (MoonDragon Birthing Services)
- <http://www.vaccineinformation.org> (Vaccine Information)

