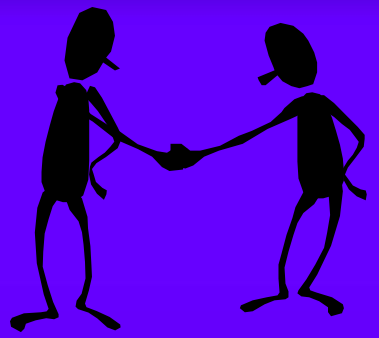
PATIENT AT RISK???
How can we tell??

ASSESSMENT

- Your greatest assets are your powers of observation
- Look at your patient
- Use your other senses e.g. smelling infected wounds, urine etc.

ASSESSMENT



- Ask the person sitting next to you a simple question e.g. "how are you today"?
- What does a normal response tell you
- It tells you:
  - His/her airway is patent
  - He/she is breathing
  - Oxygen is getting to his/her brain

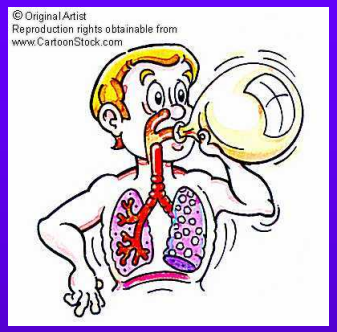
ASSESSMENT

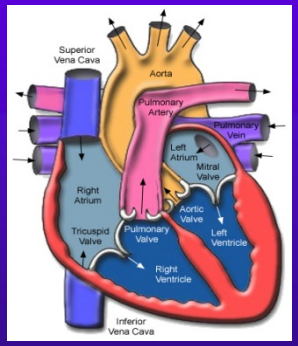
Use ABC

- A – airway
- B – breathing
- C - circulation/colour/conscious level
- Check vital signs

HOW SHOULD IT WORK?

RESPIRATORY SYSTEM





CIRCULATORY SYSTEM

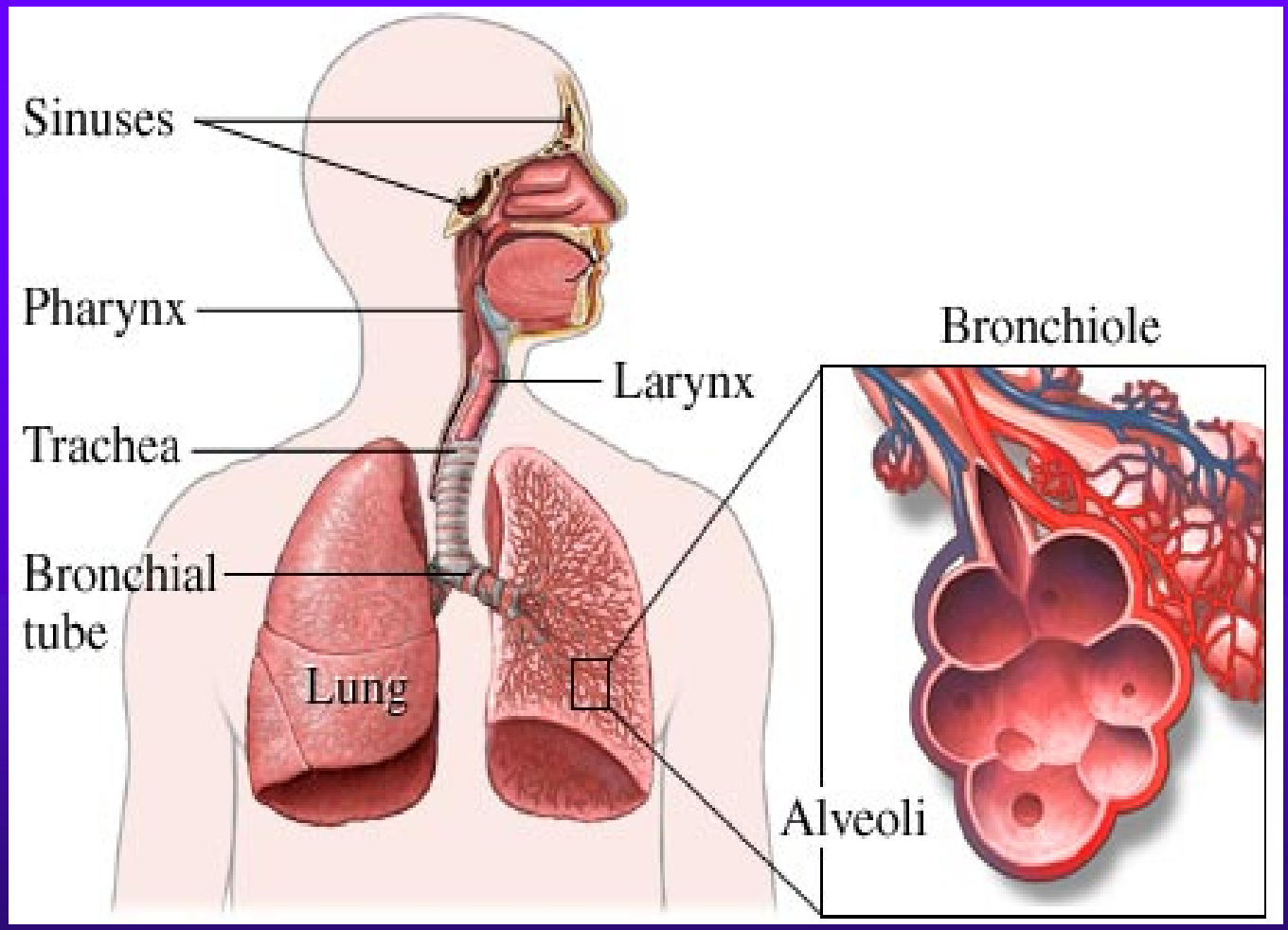
RESPIRATION

- Constant exchange of oxygen and carbon dioxide between living organism and environment essential to survival
- Involves:
  - Breathing – inspiration and expiration
  - Exchange of O_2 and CO_2 between capillaries and air sacs (alveoli)

RESPIRATION

- Upper respiratory tract:
  - Nose
  - Nasal cavity
  - Pharynx (throat)
  - Larynx
- Lower respiratory tract
  - Trachea
  - Bronchi
  - Lungs

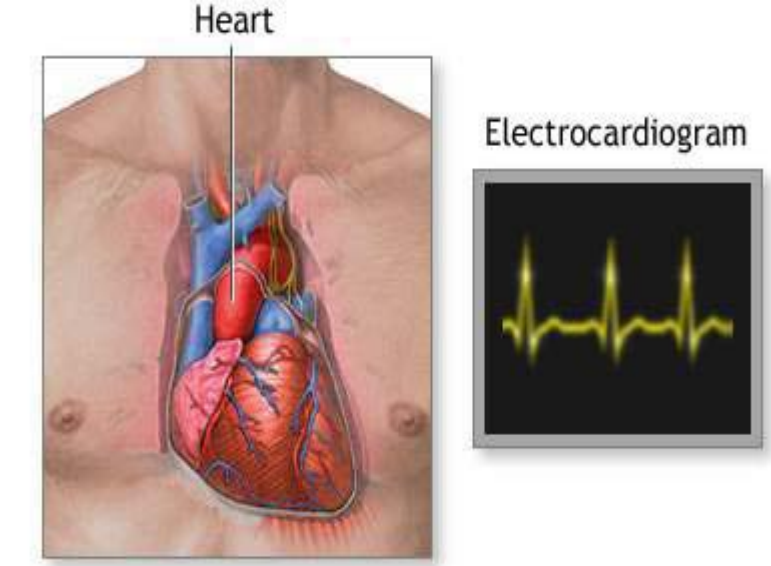
RESPIRATORY SYSTEM



CIRCULATORY SYSYTEM

Normal activity depends on constant supply of oxygen, nutrients and chemicals

Also removal of waste products

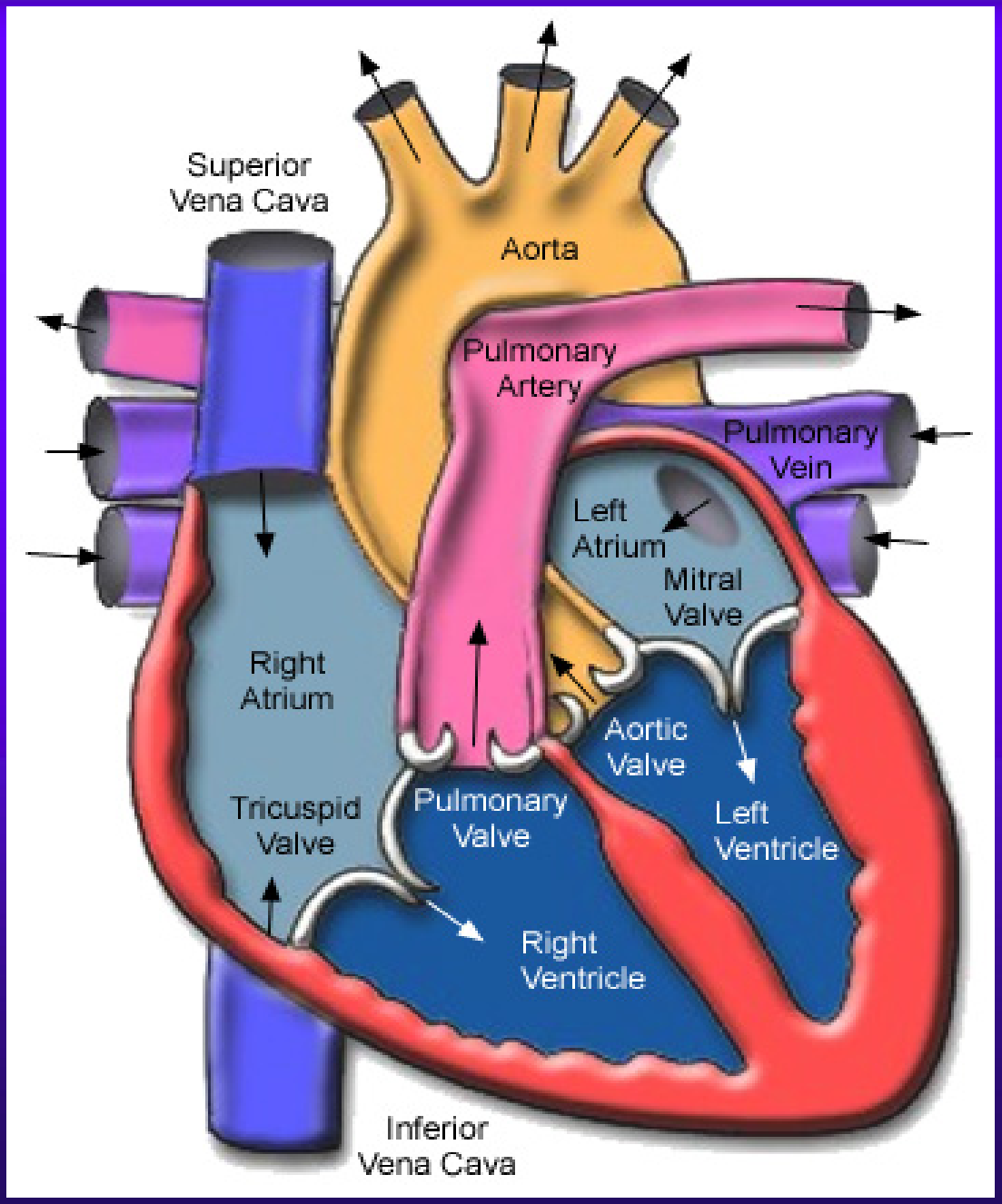


Heart – acts as a pump

Blood vessels – (arteries,veins and capillaries) – transportation system

THE HEART

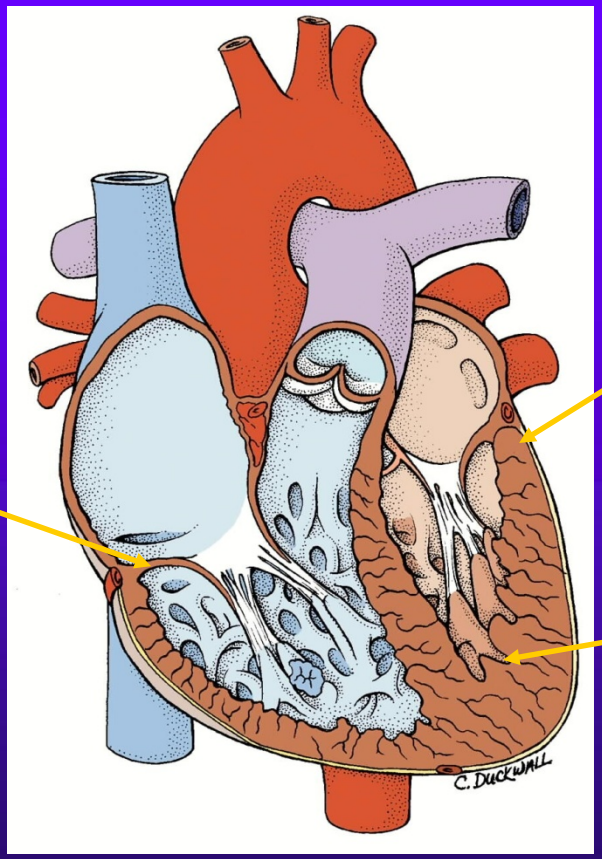
- Weighs 7-15 ounces (200-425 g)
- Little larger the size of a fist
- Muscular pump
- Beats approx 100,000 times per day
- Pumps about 2,000 gallons (7,571 litres) of blood per day
- Over a normal life span the heart contracts enough to fill a supertanker with a million barrels
- Has both mechanical and electrical properties


Superior
Vena Cava
Aorta
Pulmonary
Artery
Pulmonary
Vein
Left
Atrium
Mitral
Valve
Right
Atrium
Aortic
Valve
Tricuspid
Valve
Pulmonary
Valve
Left
Ventricle
Right
Ventricle
Inferior
Vena Cava

3 CARDIAC LAYERS

Endocardium

- innermost layer
- lines cardiac chambers and valves
- smooth for easy blood flow



Pericardium

- Protective layers:
  - visceral
  - parietal

Myocardium

- working muscle
- contains electrical conduction system

THE CARDIAC CYCLE

- Mechanical action of the heart, consists of 2 phases

Systole – 'the squeeze'

- ✓ contraction of the myocardium and ventricular emptying of blood

Diastole

- ✓ relaxation and filling of the ventricles with blood

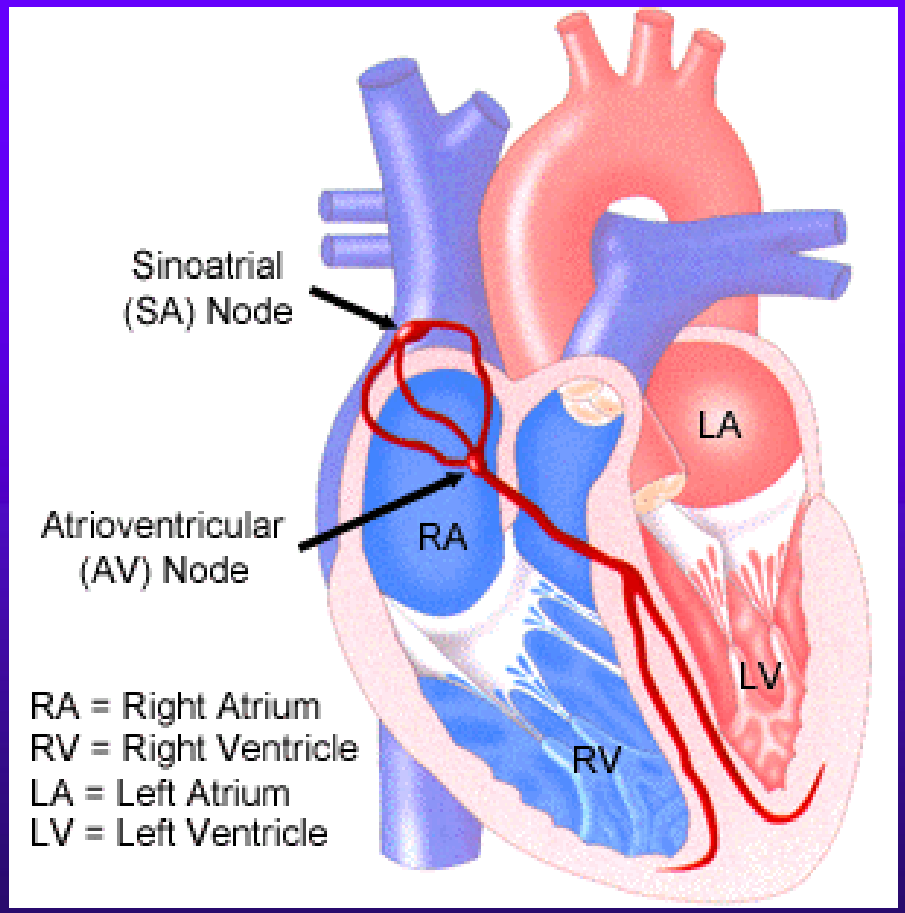
- In order for the heart to function properly the cardiac cycle must occur in an organised fashion

THE HEART AS A "PUMP"

- Myocardium- "working layer"
- Myocardial cells are unique with electrical & mechanical properties
- Normally stimulated by electric impulses from cardiac conduction system that spread from one cell to the next resulting in contraction of the myocardium
- Can independently generate an electrical impulse

CARDIAC CONDUCTION SYSTEM

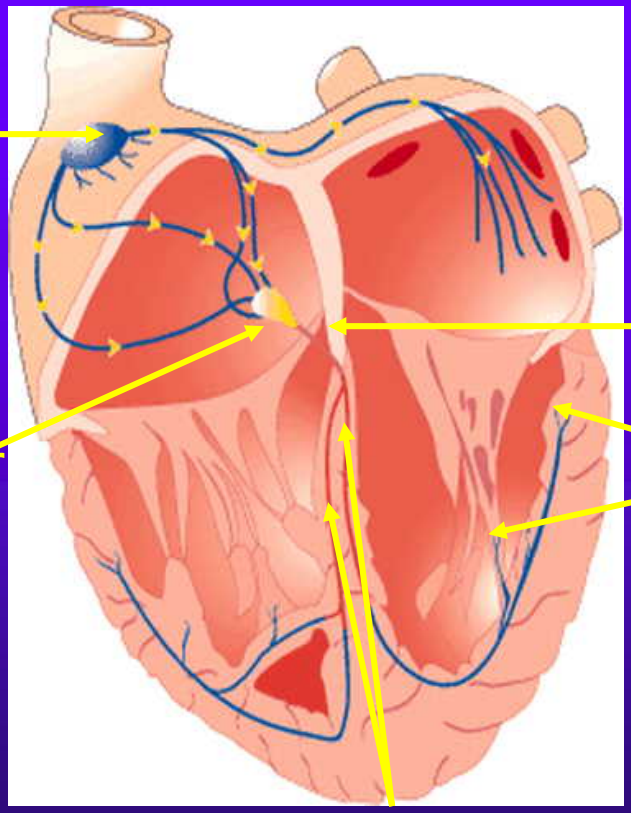
- A normal heart generates an electrical signal that begins in the atrium and advances via a consistent pathway through the ventricles



CARDIAC CONDUCTION SYSTEM

Sino-atrial (SA) Node

Atrio-ventricular (AV) Node



Bundle of His

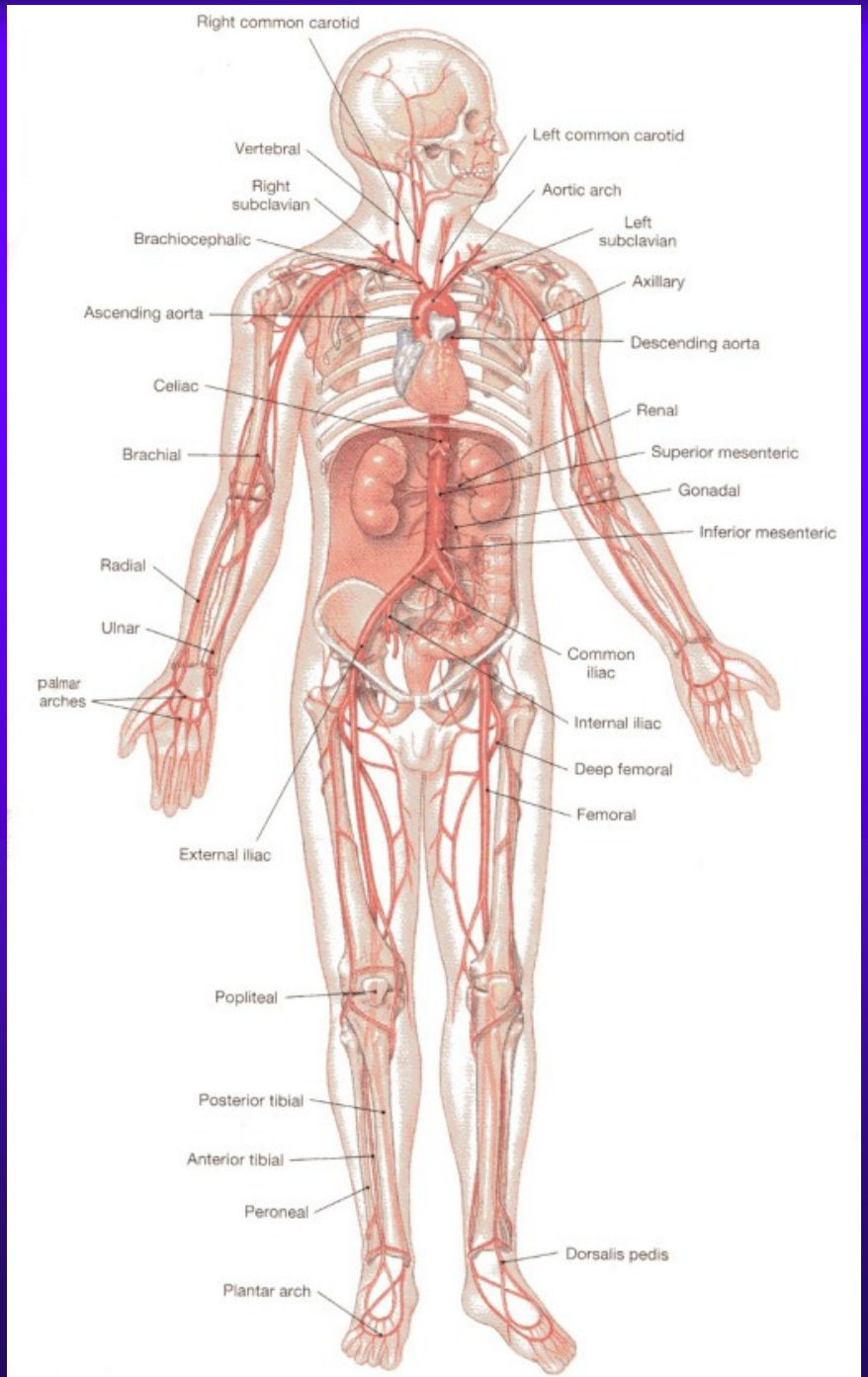
Purkinje Fibres

Right & Left Bundle Branches

BLOOD VESSELS

Intricate network of hollow tubes that transport blood around body

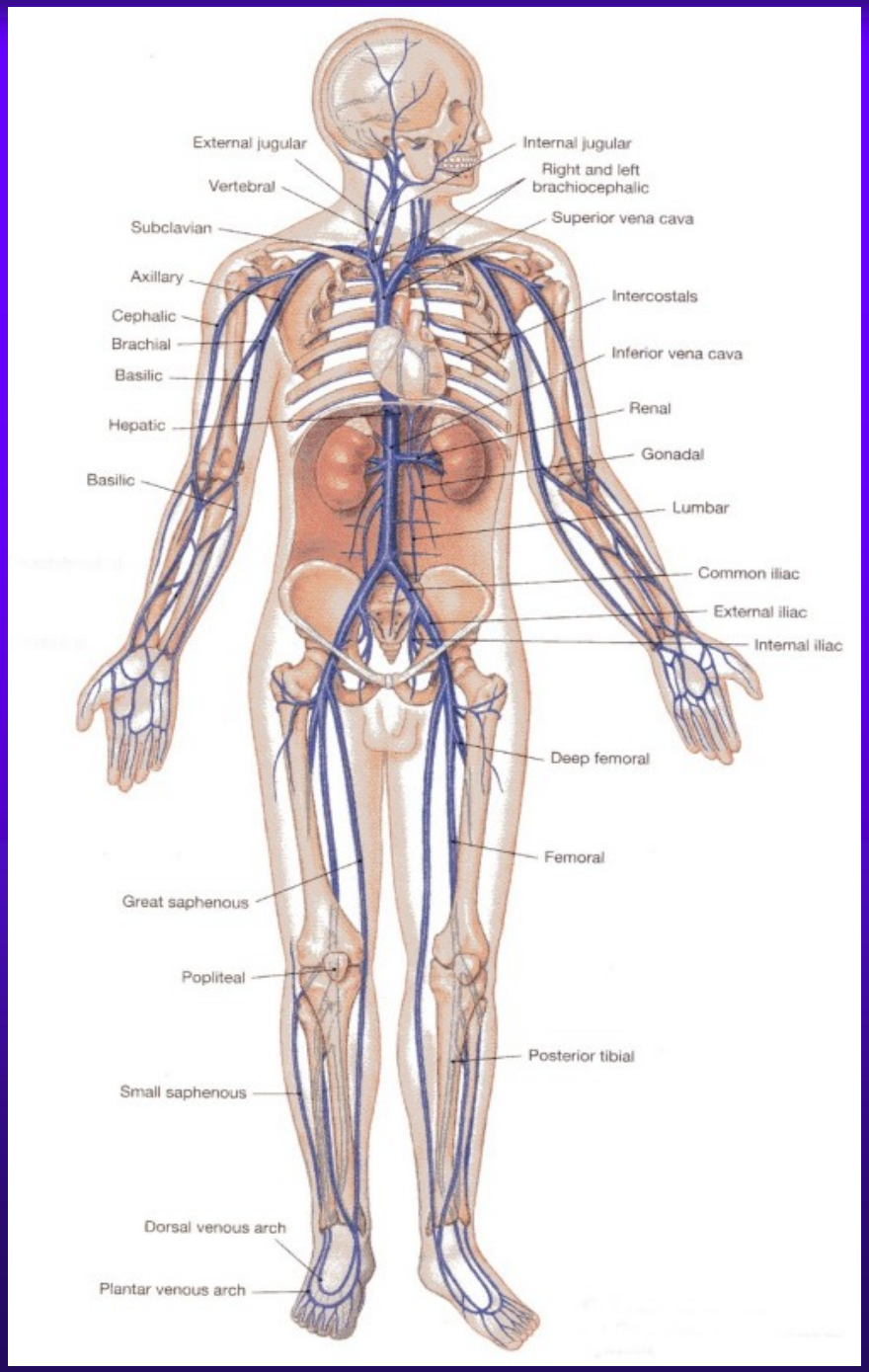
- Arteries:
  - Thick muscular structures
  - Designed to withstand high flow and pressures exerted by force from heart
  - Transport blood away from heart
  - Arterioles (smaller arteries)


Right common carotid
Left common carotid
Vertebral
Right subclavian
Aortic arch
Brachiocephalic
Left subclavian
Axillary
Ascending aorta
Descending aorta
Celiac
Renal
Brachial
Superior mesenteric
Gonadal
Inferior mesenteric
Radial
Ulnar
Common iliac
palmar arches
Internal iliac
Deep femoral
Femoral
External iliac
Popliteal
Posterior tibial
Anterior tibial
Peroneal
Dorsalis pedis
Plantar arch

ARTERY MAN

BLOOD VESSELS

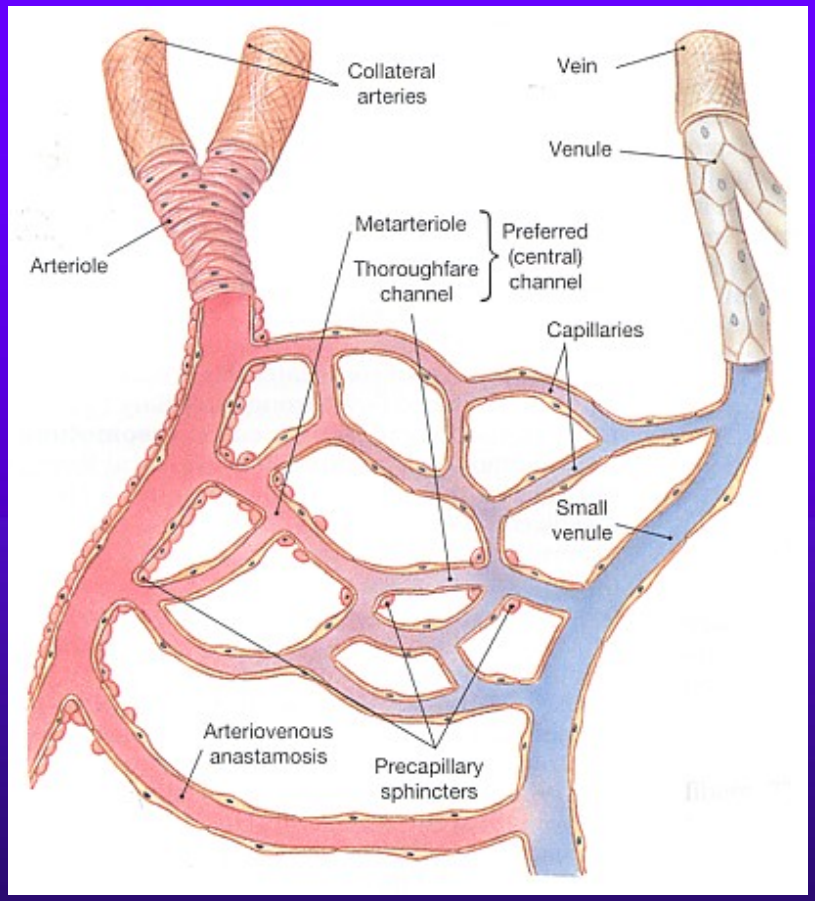
- Veins:
  - Thinner walls than arteries
  - Carry blood back to heart
  - Contain valves which allow flow back to heart but not in other direction
  - Venules – small veins


External jugular
Internal jugular
Right and left brachiocephalic
Vertebral
Subclavian
Superior vena cava
Axillary
Intercostals
Cephalic
Brachial
Inferior vena cava
Basilic
Renal
Hepatic
Gonadal
Basilic
Lumbar
Common iliac
External iliac
Internal iliac
Deep femoral
Femoral
Great saphenous
Popliteal
Posterior tibial
Small saphenous
Dorsal venous arch
Plantar venous arch

VEIN MAN

BLOOD VESSELS

- Capillaries:
  - Form network between arterioles and venules
  - As blood flows through it gives up oxygen and nutrients and takes up carbon dioxide and waste products



VITAL SIGNS

- What do we mean by vital signs?
- Which one is most useful?

BREATHING

- Respiratory rate is one of the most useful vital signs
- Normal resting rate is 12-20 per minute
- Above 20 – ask why?
- Greater than 30 – person may have a life threatening condition

OTHER CLUES

- Is the person sweating?
- Is he breathless?
- Does he have a cough?
- Is he producing sputum?
- Are accessory muscles of respiration being used?
- Is he 'wheezy'
- Does he complain of chest pain
- Is chest movement equal on both sides?
- Colour

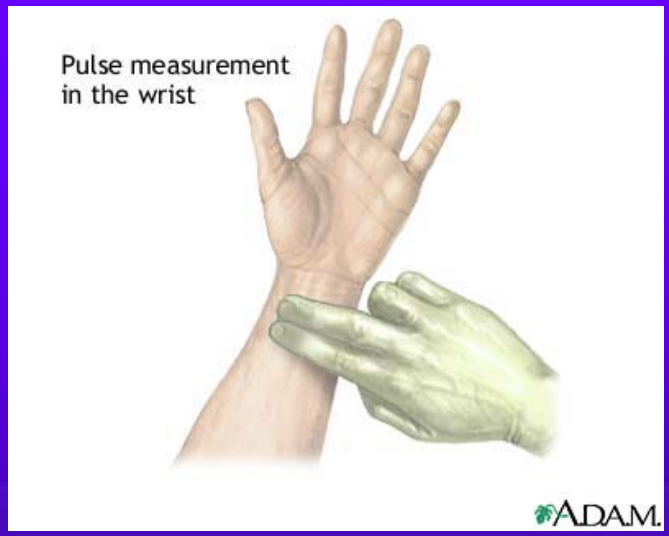
EXERCISE

Work in pairs and check each other's respiration rate

Can you observe anything else your partner's breathing?

CIRCULATION - PULSE

- Check:
  - Pulse is present
  - Quality
  - Rate
  - Regularity
  - Equal on both sides

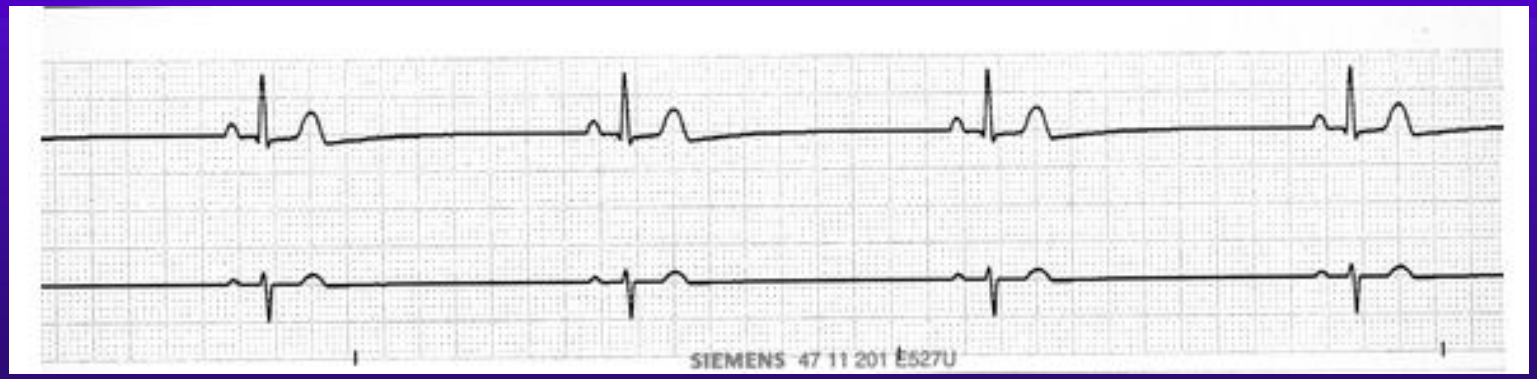


FAST PULSE (TACHYCARDIA)

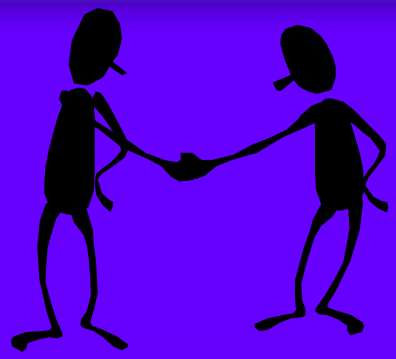
- >100 beats/min at rest may be due to:
  - Anxiety
  - Exercise
  - Fever
  - Anaemia
  - Hypoxia
  - Cardiac disorders
  - Some medication

SLOW PULSE (BRADYCARDIA)

- < 60 beats/min in adults
- May be normal in athletes
- May be caused by some drugs



EXERCISE



- Work in pairs and check each other's pulse
- Is it present?
- How strong is it?
- What is the rate?
- Is it regular?
- Is it the same in both wrists?
- Where else could you check the pulse?

CIRCULATION – Blood pressure

- Defined as pressure exerted on walls of blood vessels
- We routinely take arterial blood pressure
- Systolic – pressure during 'squeeze'
- Diastolic - relaxation
- Normal adult BP – between 95/60 and 140/90
- Influenced by strength of heartbeat, blood volume, elasticity of vessels and resistance
- Pulse pressure – difference between systolic and diastolic readings (normal 35-45mmhg)
- Reduced pulse pressure may indicate arterial narrowing or spasm

DEMONSTRATION AND PRACTISE TAKING BPs

Equipment for measuring blood pressure is called a sphygmomanometer and can be:

- Mercury
- Electronic
- Aneroid

HYPERTENSION

- Sustained raised blood pressure
- May be primary-cause not known(90%) or secondary-identifiable cause
- Untreated leads to vascular disease
- Frequent targets for damage are:
  - Heart
  - Brain
  - Kidneys
  - Eyes

HYPOTENSION

- Low blood pressure (for that person)
- Late sign of compromised circulation – fast pulse is earlier sign
- Results in poor perfusion of vital organs
- Medical emergency investigate immediately and treat cause or transfer out

PYREXIA

- Elevation of body temp>37.5C
- Associated with increased metabolic rate
- Every 0.6C rise approx 10% increase in 0_2 consumption and $C0_2$ production
- Places extra demand on cardio respiratory system
- Causes compensatory increase in heart and respiratory rate

ALTERED CONSCIOUS LEVEL

- May be direct response to disease or injury

OR

- Secondary to a condition elsewhere e.g. high or low BP, high or low blood sugar, low temperature, some medications

REDUCED CONSCIOUS LEVEL

- Assess against how your patient usually presents
- AVPU scale
- Glasgow Coma Scale

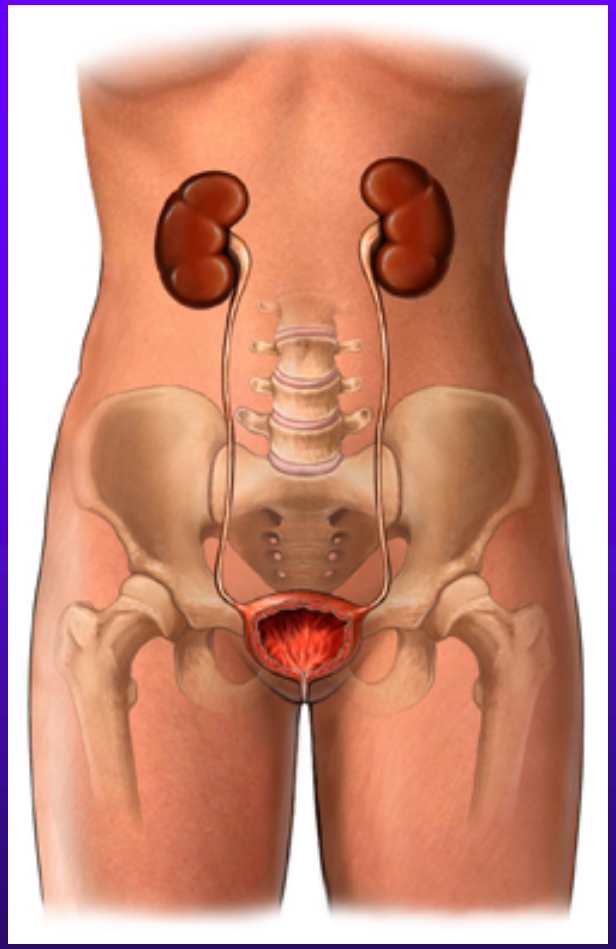
AVPU SCALE

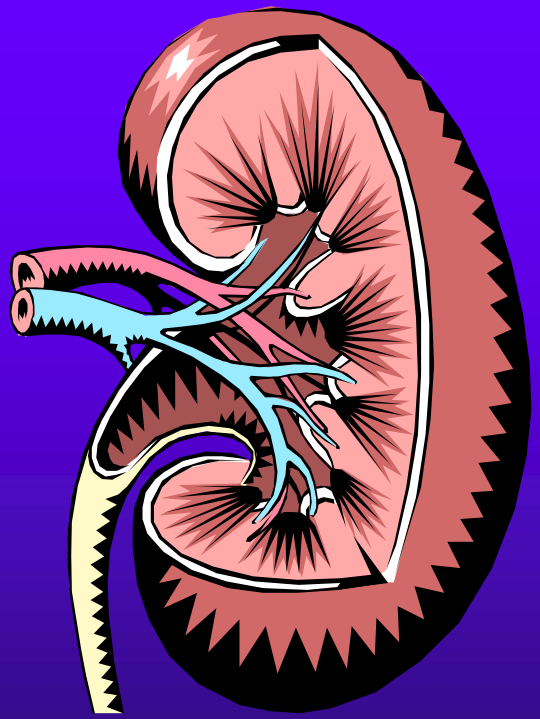
- Quick and easy
- A – alert
- V – responds to voice
- P – responds to pain
- U - unresponsive

CHANGES IN BEHAVIOUR

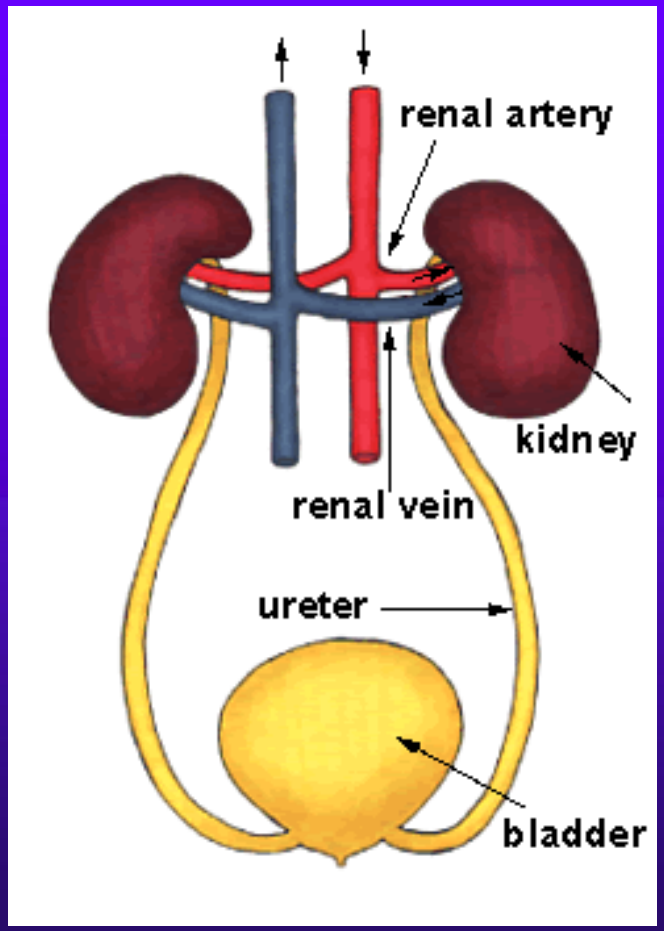
- May be early indication of something wrong
- Check vital signs
- Check for infection – UTI common cause of confusion
- Is patient in pain?
- Is he constipated?
- Is bladder distended/catheter blocked?
- Has he been sitting up for too long?
- Has he been out in the sun

URINARY SYSTEM





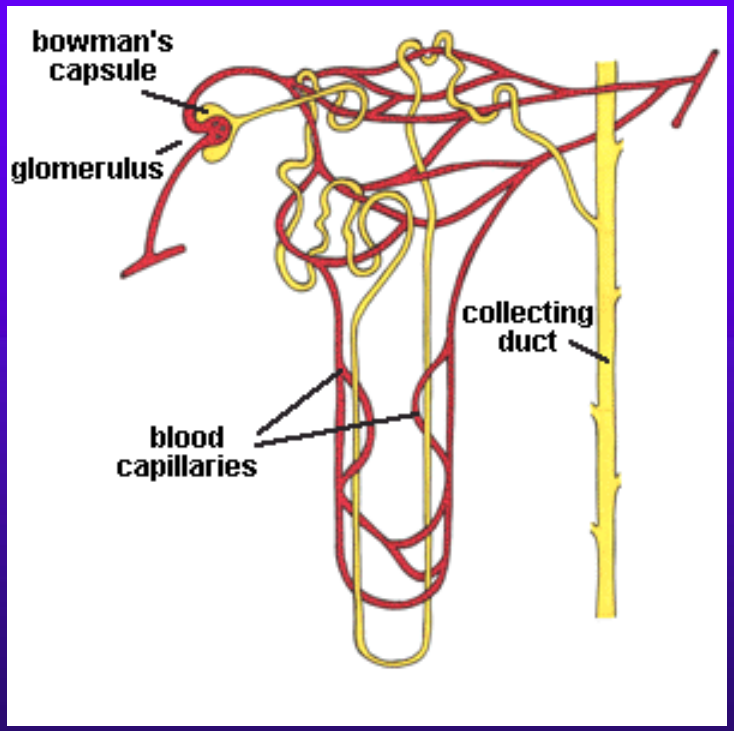
URINARY SYSTEM



- Blood is brought to kidney by renal artery
- Kidneys filter it and reabsorb useful substances e.g. glucose
- Purified blood returns to circulation via renal vein

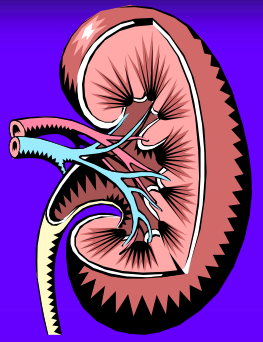
URINARY SYSTEM

Each kidney has many millions of nephrons which produce urine



- Blood is filtered in the glomerulus
- Filtrate is collected by bowman's capsule and enters tubules
- Useful substances are reabsorbed into blood by capillaries which are closely wrapped round tubules
- Waste, consisting of water, some salt and urea is urine
- Urine is collected by collecting duct, taken to ureters and then to bladder

URINE OUTPUT



- Normal output 0.5mls/kg/hr or about 1.5-2 litres per day
- Dependent on:
  - Drinking sufficient fluids
  - Kidneys receiving adequate blood supply
  - Normal kidney function
  - No obstruction to flow

ABNORMAL URINARY OUTPUTS

- Too much (Polyuria) – >2000 mls/24 hrs
- Too little (Oliguria) – 100-400mls/24 hrs
- Much too little (Anuria) - <100mls/24 hrs
- None (Absolute anuria) – no output (check for obstruction)

POLYURIA – excessive urine output

- May indicate kidney disease where ability of tubule to reabsorb water and concentrate waste is limited
- Often seen in chronic kidney disease
- Diabetes (Insipidus or Mellitus)

REDUCED URINE OUTPUT

MAY BE AN EARLY SIGN O F DETERIORATION BUT CHECK SIMPLE THINGS FIRST

- ? Obstruction:
  - Check catheter
  - Get someone to feel for distended bladder

REDUCED URINE OUTPUT

- Assess fluid status
  - Check fluid chart if available
  - Check for dehydration – give fluid if present
  - Colour of urine
  - Dip stick
  - Check for oedema

REDUCED URINE OUTPUT

- ? Infection
  - Appearance and smell of urine
  - Urinalysis
  - Specimen to microbiology
  - Antibiotics

REDUCED URINE OUPUT

- Poor kidney blood flow (perfusion):
  - Normal flow through kidneys is approx 1200 mls per min
  - If reduced will lead to reduced output, urine will be concentrated and have low sodium content

KIDNEY DAMAGE

- Some drugs are toxic to kidneys (Nephrotoxic):
  - Non steroidal anti-inflammatory drugs
  - Frusemide
  - Penicillins
  - Cyclosporin
  - Cephalosporins
  - Aminoglycosides e.g. gentamicin
- Kidney disease e.g. glomerulonephritis

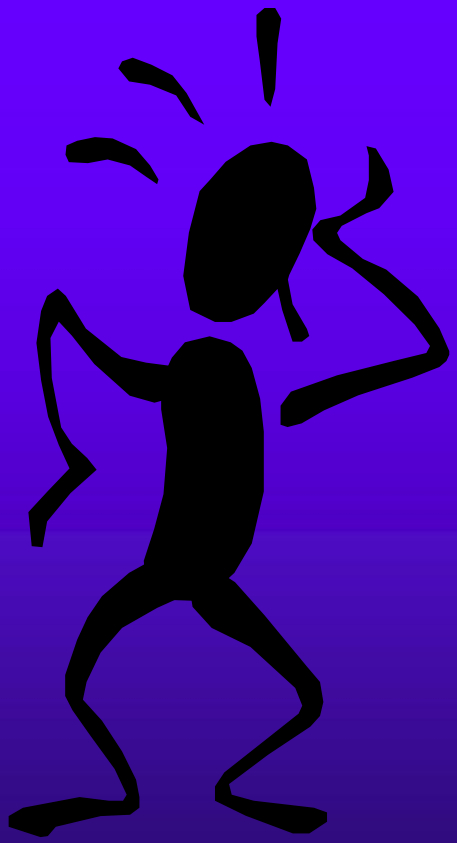
APPEARANCE OF URINE

- Normally – straw coloured and clear, colour can be altered by eating certain foods e.g. beetroot
- Cloudy - infection
- Haematuria – bleeding in urinary tract, infection, trauma
- Dark – dehydration, obstructive jaundice

SUMMARY CHECKLIST

- Make sure charts are accurate – if no output record no output
- Check for distended bladder
- Check catheter for obstruction
- Check for dehydration - give fluids but don't overload
- Check for oedema
- Check vital signs
- Urinalysis
- Send sample to lab
- Check drug chart for nephrotoxic drugs
- Report

PAIN



PAIN

- Complex, distressing experience
- Intensity varies from person to person
- Protective role – when sensation lost e.g. spinal cord injury lack of awareness of injury can lead to extensive damage

PAIN RESPONSES

Varies from person to person

- Physical:
  - Complaining of pain
  - Behavioural changes
  - Changes in sleep pattern
  - Crying out
  - Withdrawal reflex
  - Increased muscle tone
  - Mobilisation of affected part e.g. abdominal rigidity
  - May support or rub painful part, change position frequently

PAIN RESPONSES

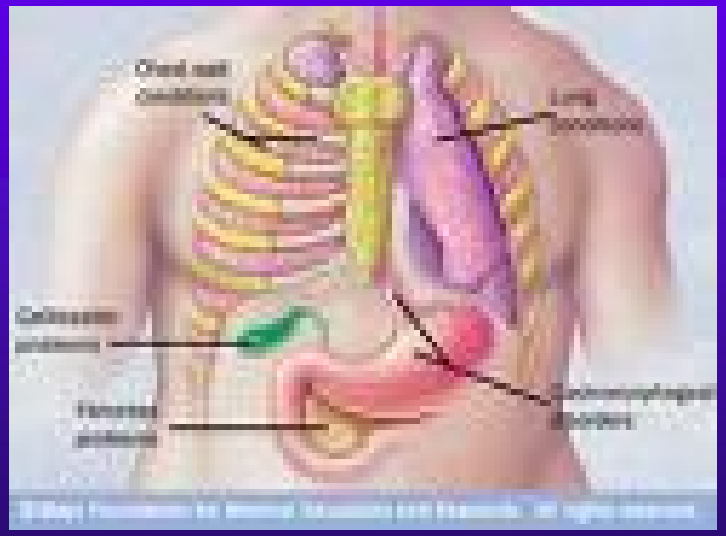
- Autonomic responses:
  - Raised BP, pulse and respiration
  - Perspiration
  - Increased secretions
  - Dilated pupils
  - Pallor, cold clammy skin
  - Dry lips

ANALGESICS

- Drugs that relieve pain. 3 types according to their actions:
  - Opioids - act on brain and spinal cord to reduce appreciation of pain
  - Local anaesthetics - suppress conduction in nerves carrying impulses from painful area
  - Non opioids - reduce inflammation and other causes of pain, suppress formation of prostaglandins (released by cell damage)

CHEST PAIN

- Chest pain may occur as a result of a variety of conditions including:
  - non cardiac
  - pulmonary
  - cardiac conditions



NON -CARDIAC or MUSCULOSKELETAL

- **Muscular** – due to coughing or unaccustomed exercise
- **Rib fracture** – due to trauma or tumour
- **Costochondritis** – localised to one or more costochondrial joints caused by viral infection
- **Neuralgia** – caused by tumour, trauma, shingles

OTHER NON- CARDIAC CAUSES

- Oesophagitis
- Gastric disorders
- Gall bladder disease
- Severe anxiety

PULMONARY AND CARDIAC CAUSES

- Pneumonia
- Pulmonary embolism
- Spontaneous pneumothorax
- Angina
- Myocardial infarction (heart attack)
- Pericarditis
- Dissecting aortic aneurysm

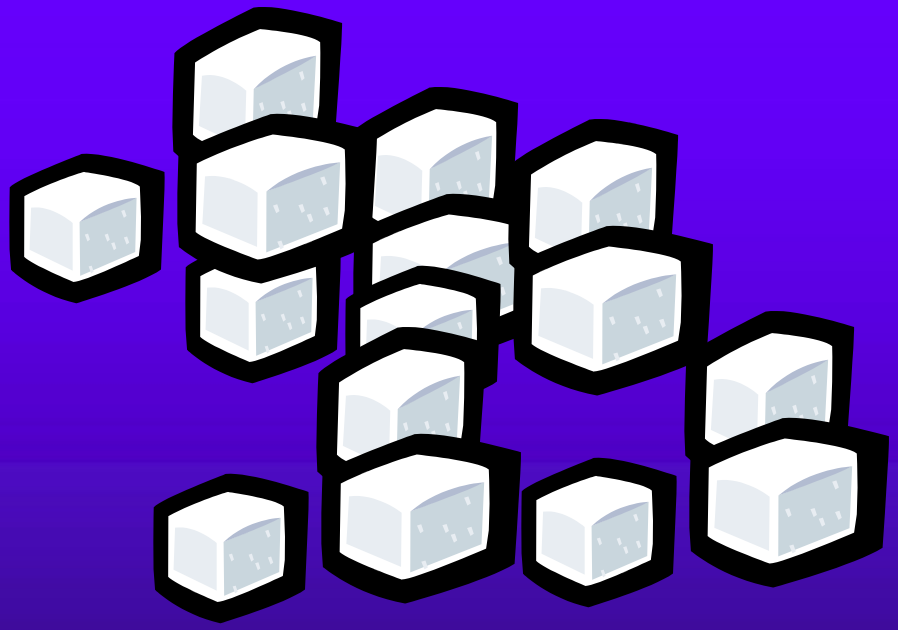
COMMUNICATION

- Staff relationships vital to good care
- Be assertive rather than aggressive or passive
- Teamwork
- Keep good records
- Gather all relevant information
- Report anything you are worried about – even if it seems trivial

SUMMARY

- Early detection of signs of deterioration allows prompt treatment
- May be possible to avoid acute admission or life threatening illness
- Early warning signs:
  - Increased respiratory and pulse rate
  - Reduced urine output
  - Changes in normal behaviour
- REMEMBER common things commonly occur look for simple things first

DIABETES



INTRODUCTION

- Diabetes insipidus
- Diabetes mellitus
- History
- Incidence
- Associated anatomy and physiology
- Types 1&2 Diabetes
- Signs and symptoms
- Treatment
- Hypo/hyperglycaemia
- Longer term complications

DIABETES INSIPIDUS

- Pituitary gland fails to secrete anti diuretic hormone (ADH)
- Results in copious urine production (20-30 litres per day) – normal is 0.5.ml per Kg per hour or approx 1500-2000 mls per day
- Risk of dehydration +++ and chemical imbalance
- Treated with ADH in nasal spray or injection

DIABETES MELLITUS

- Occurs when pancreas produces too little or no insulin at all
- Insulin needed to regulate level of glucose in blood
- Glucose is main source of energy for all cells
- Stimulates cells to absorb glucose they need from blood
- Excess is stored in liver
- In diabetes level of sugar in blood is too high

HISTORY OF DIABETES

- First described in approx 1550 BC by Egyptian Physician Hesy-Ra
- 2,000 years later Greek Physician Arateus described diabetes as: `disease that made someone pass water ceaselessly it seemed the ever thirsty patient's flesh was liquefying'
- Recognised throughout Middle Ages that urine of diabetic patients was loaded with sugar

MODERN HISTORY

- German Pathologist Paul Langerhan (1847-1888) discovered pancreas has 2 types of cell only one of which is concerned with digestion
- 20 years later it was demonstrated cells without a digestive role affect glucose metabolism
- Cells named Islets of Langerhans (or beta pancreatic cells)

WHO'S AFFECTED?

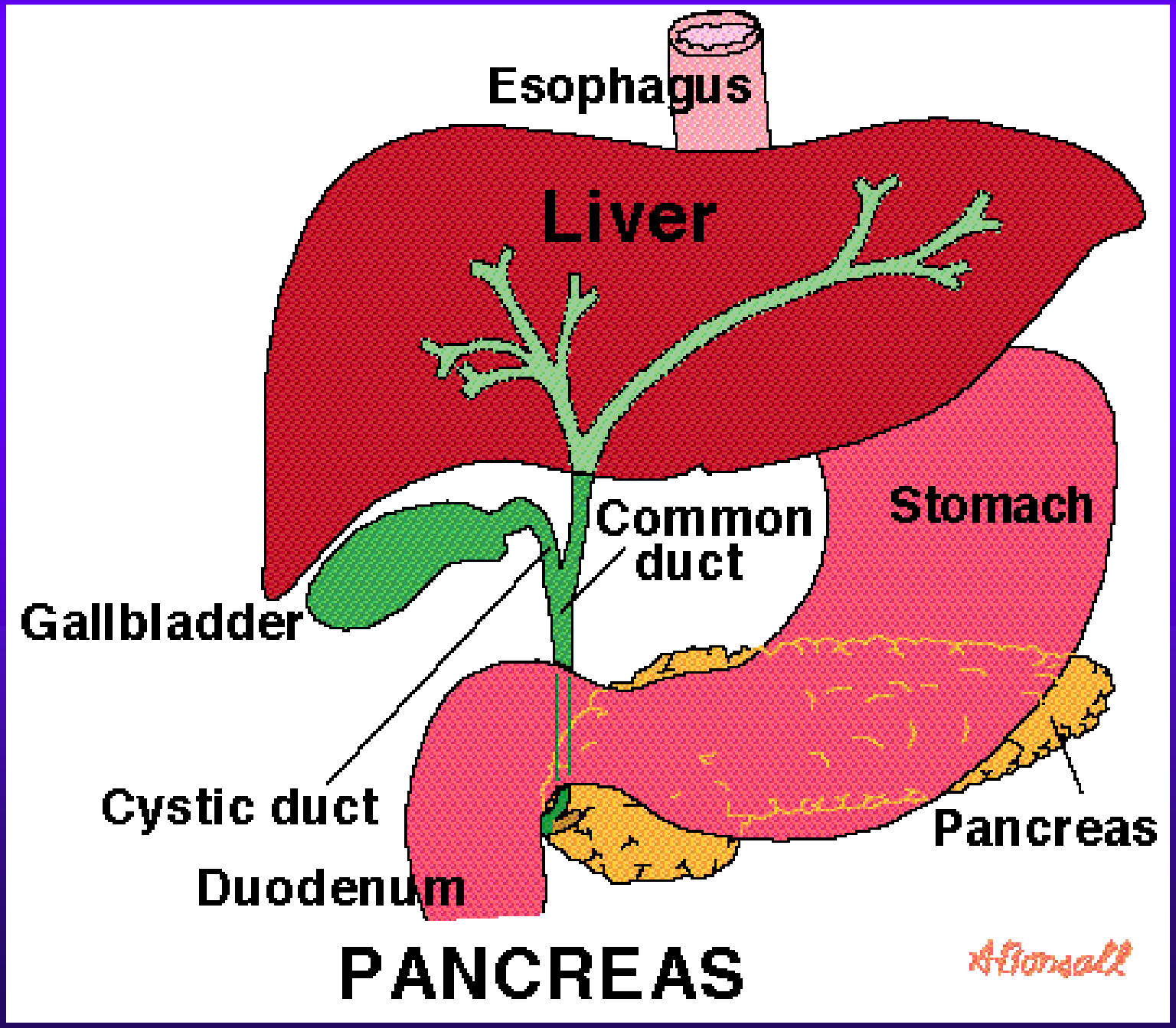
- Very low incidence in SE Asia (China, Japan) and Mediterranean
- Extremely high incidence in South Asia (India, Pakistan)
- On increase in Europe
- More than 2 million people in UK have diabetes
- Estimate a further 750,000 have it but are not aware

WHO'S AT RISK?

- People over 40 or under 25 and Afro-Caribbean or Asian
- Family history of type 2 diabetes
- Overweight people with large waist size
- Women with polycystic ovary syndrome who are overweight
- Women who have had diabetes in pregnancy

ASSOCIATED ANATOMY AND PHYSIOLOGY - pancreas

- Quite high up in abdomen
- Lies across where ribs meet at bottom of breastbone just behind stomach
- About 6 inches long, shaped like a leaf
- Wide end - head
- Narrow end - tail
- Middle bit - body


Esophagus
Liver
Stomach
Common duct
Gallbladder
Cystic duct
Duodenum
Pancreas
PANCREAS

PANCREAS

- 2 types of cells
  - Exocrine – have ducts through which secretions pass to digestive system
  - Endocrine – no ducts, secretions pass straight into blood:
    - Alpha cells release glucagon when blood sugar low
    - Beta cells release insulin in response to rise in blood sugar

TYPE 1 DIABETES

- Usually starts young
- Caused by failure of beta cells
- Severe lack of insulin
- 90% - no family history
- An event e.g. infection can trigger genes that lead to condition

TYPE 2 DIABETES

- Usually starts after age of 40 but increasingly affecting younger people especially if a family history
- Being overweight and inactive increases risk
- Develops when body cannot produce enough insulin or when insulin produced does not work properly
- Previously referred to as non insulin dependent diabetes

SYMPTOMS

- Develop over short period in type 1 and include:
  - Weight loss
  - Excessive thirst – polydipsia
  - Passing large amounts of urine – polyuria
  - Itching of genitals
  - Regular episodes of thrush
  - Fatigue
  - When blood sugar levels very high risk of coma and death
- In type 2 symptoms develop slowly or they may have no symptoms

HYPOGLYCAEMIA – low blood sugar

- Onset rapid
- Caused by too much insulin or insufficient carbohydrate intake
- Pale, sweaty, trembling, glazed look
- Rapid pulse
- Confused, slurred speech
- May appear drunk
- Untreated – may be fatal

HYPOGLYCAEMIA – what to do

- If conscious give oral glucose
- If unconscious:
  - Place in recovery position
  - DO NOT attempt to give anything orally
  - Get help
  - Some diabetics carry glucagon

HYPERGLYCAEMIA

- Onset more gradual
- Caused by insufficient insulin, infection, stress or too much carbohydrate
- Headache, blurred vision, flushed
- Confused, aggressive
- Muscle cramps, abdominal pain
- Polyuria, polydypsia
- Vomiting
- Seizures
- Breath smells of acetone
- Coma
- Death if untreated

HYPERGLYCAEMIA – what to do

- If unconscious:
  - Place in recovery position
  - Get help
  - DO NOT attempt to give anything orally
- Doctor will review treatment
- Treat infection

LONG TERM COMPLICATIONS

- Uncontrolled diabetes has serious health implications
- Excess glucose in blood cause damage to blood vessels increasing risk of:
  - Heart disease
  - Stroke
  - Blindness
  - Kidney damage
  - Impotence
  - Nerve damage
  - Peripheral vascular disease

MANAGEMENT

- Diabetes can be managed well and person can lead a normal life
- Healthy diet low in fat, sugar and salt
- Regular insulin injections to keep blood sugar under control
- Insulin destroyed by digestive enzymes there cannot be taken orally
- Many type 2s need only control diet, some need oral medication or insulin

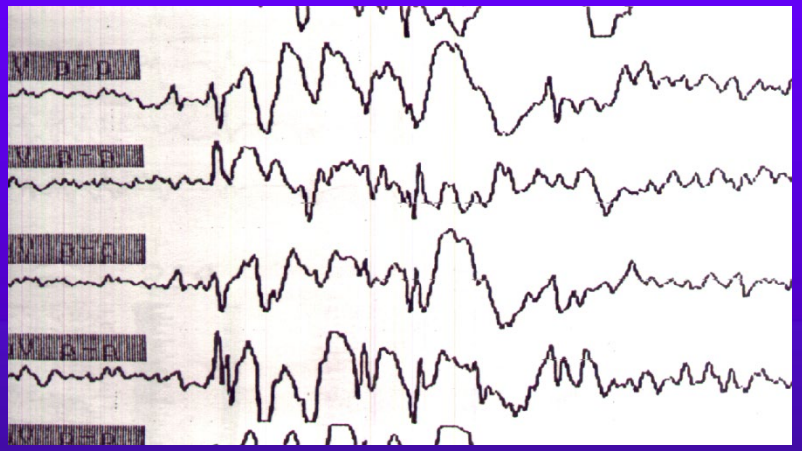
MANAGEMENT

- Monitor blood glucose
- Regular check ups
- Regular eye checks
- Wear medi-alert bracelet in case of black out
- Always have sugar available

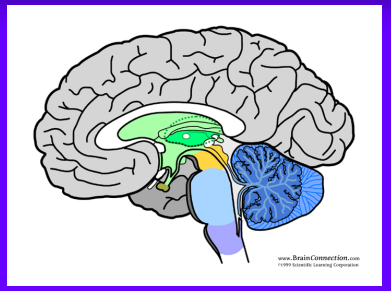
MONITORING BLOOD GLUCOSE

DEMONSTRATION AND PRACTICAL

EPILEPSY



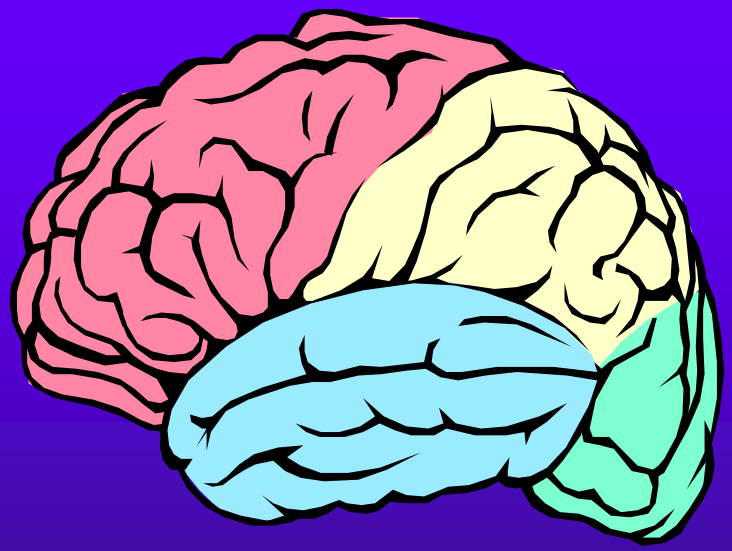
EPILEPSY



- Symptom of abnormal brain activity
- Common in acquired brain injury
- Classification:
  - Idiopathic – no known cause, usually under age 20 yrs
  - Symptomatic – can caused by:
    - Almost any neurological condition
    - High temperature
    - Hypoxia
    - Poisoning

EPILEPSY IN BRAIN INJURY

- Injury to surface of brain increases risk - injury heals but leaves a scar which causes electrical activity in area to become unstable
- More likely to happen in penetrating injuries involving temporal lobe
- Seizures vary in severity



TYPES OF SEIZURES

- Absence – momentary, stares blankly, may drop items or may not be noticed
- Focal (petit mal) – electrical disturbance localised to one area of brain
- Major (grande mal) – electrical disturbance affects whole brain

MAJOR SEIZURES

- Person may have an ‘aura’ beforehand
- Widespread muscle contraction
- Rapid jerky movements
- Loss of consciousness
- Sometimes loss of bladder/bowel control
- May be drowsy, disorientated, confused and complain of headache and muscle soreness afterwards

WHAT TO DO

- Be calm – talk gently and quietly
- Prevent others from crowding person
- Protect person from hurting themselves
- Make sure breathing is unrestricted – loosen clothing
- Do not place anything in mouth or attempt to restrain movements
- Place person on side with something soft under head
- Do not move unless in danger, move objects
- Allow person to rest in quiet place afterwards
- Observe and record

WHEN TO SEEK MEDICAL ASSISTANCE

- Person injures him/herself
- Difficulty breathing after seizure
- One seizure immediately follows another
- Seizure lasts longer than 5 minutes
- Seizure lasts longer than is usual for person

MANAGEMENT

- Medication
- EEG – useful locating cause of seizure and providing evidence of abnormal activity
- In UK anyone having had a seizure is required to surrender driving licence
- Licence returned on medical advice usually after a seizure free period of 2 years

SEPSIS

S — **S**hivering, fever, or very cold

E — **E**xtreme pain or general discomfort ("worst ever")

P — **P**ale or discolored skin

S — **S**leepy, difficult to wake up, confused

I — "**I** feel like I might die"

S — **S**hort of breath

Sepsis is a serious complication of an infection.

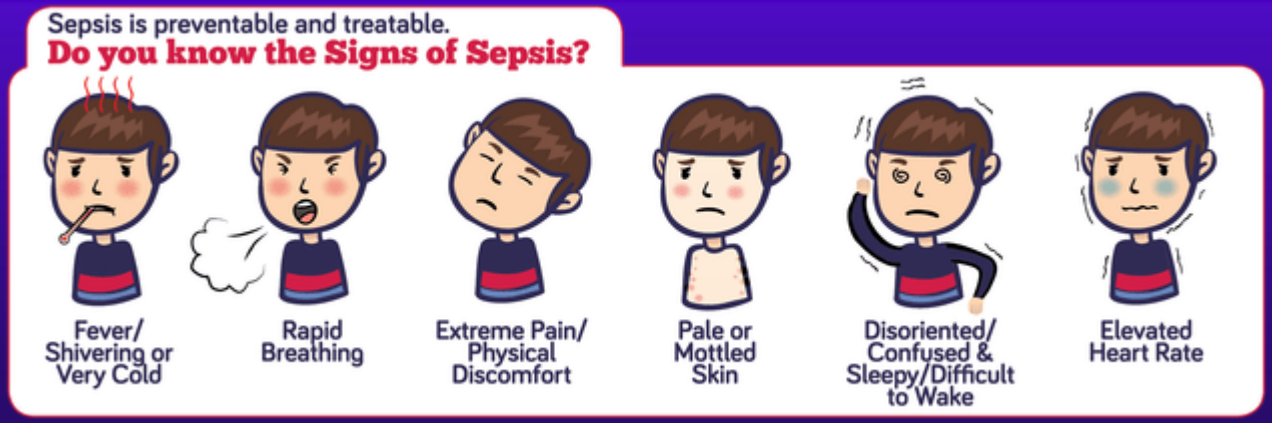
Without quick treatment, sepsis can lead to multiple organ failure and death.

Symptoms of sepsis

Early symptoms of sepsis may include:

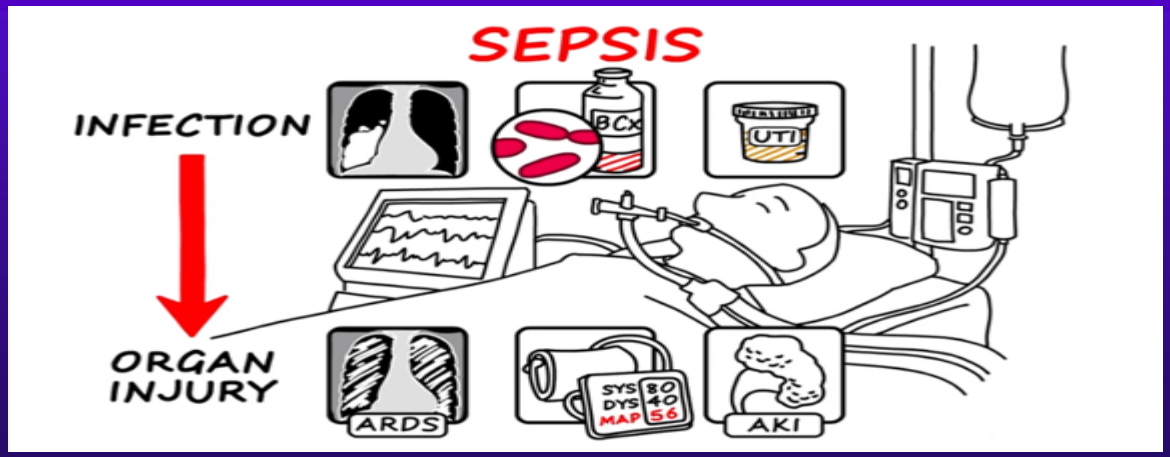
- a high temperature (fever) or low body temperature
- chills and shivering
- a fast heartbeat
- fast breathing

Many of the symptoms of sepsis are also associated with meningitis. The first symptoms of meningitis are often fever, vomiting, headache and feeling unwell.



Septic shock:

In some cases, symptoms of more severe sepsis or septic shock (when your blood pressure drops to a dangerously low level) develop soon after.



These can include:

- feeling dizzy or faint
- a change in mental state – such as confusion or disorientation
- diarrhoea
- nausea and vomiting
- slurred speech
- severe muscle pain

- severe breathlessness
- less urine production than normal – for example, not urinating for a day
- cold, clammy and pale or mottled skin
- loss of consciousness

Causes of Sepsis

Sepsis can be triggered by an infection in any part of the body. The most common sites of infection leading to sepsis are the lungs, urinary tract, tummy (abdomen) and pelvis.

- Usually, your immune system keeps an infection limited to one place. This is known as a localised infection.
- Your body produces white blood cells, which travel to the site of the infection to destroy the germs causing infection.
- A series of biological processes occur, such as tissue swelling, which helps fight the infection and prevents it spreading. This process is known as inflammation.

- If your immune system is weak or an infection is particularly severe, it can quickly spread through the blood into other parts of the body. This causes the immune system to go into overdrive, and the inflammation affects the entire body.
- This can cause more problems than the initial infection, as widespread inflammation damages tissue and interferes with blood flow.

- The interruption in blood flow leads to a dangerous drop in blood pressure, which stops oxygen reaching your organs and tissues.

Who's at Risk?

People most at risk of sepsis include those:

- with a medical condition that weakens their immune system eg. HIV, leukaemia
- receiving medical treatment that weakens their immune system eg. chemotherapy, long-term steroids
- who are already in hospital with a serious illness eg. Diabetes

- Are very young or very old
- Are pregnant
- Have just had surgery, have wounds or injuries as a result of a accident
- Are on mechanical ventilation
- Have drips or catheters attached to their skin
- Are genetically prone to infections

Tests to Diagnose Sepsis

- Sepsis is often diagnosed based on simple measurements such as your temperature, heart rate and breathing rate. You may need to give a blood test.
- Other tests can help determine the type of infection, where it's located and which body functions have been affected.

These include --

- urine or stool samples
- a wound culture – where a small sample of tissue, skin or fluid is taken from the affected area for testing
- respiratory secretion testing – taking a sample of saliva, phlegm or mucus
- blood pressure tests
- imaging studies – such as an X-ray, ultrasound scan or CT scan

Treatment for Sepsis

If sepsis is detected early and hasn't affected vital organs yet, it may be possible to treat the infection at home with antibiotics. Most people who have sepsis detected at this stage make a full recovery.

- Almost all people with severe sepsis and septic shock require admission to hospital. Some people may require admission to an intensive care unit (ICU).

- Because of problems with vital organs, people with severe sepsis are likely to be very ill and the condition can be fatal.
- However, sepsis is treatable if it is identified and treated quickly, and in most cases leads to a full recovery with no lasting problems.

NATIONAL EARLY WARNING SCORE (NEWS)

- An **early warning score** (EWS) is a guide used by medical services to quickly determine the degree of illness of a patient. It is based on the vital signs (respiratory rate, oxygen saturation, temperature, blood pressure, pulse/heart rate, AVPU response

Within hospitals, the EWS is used as part of a "track-and-trigger" system whereby an increasing score produces an escalated response varying from increasing the frequency of patient's observations (for a low score) up to urgent review by a rapid response or Medical Emergency Team

National Early Warning Score (NEWS)*

PHYSIOLOGICAL PARAMETERS	3	2	1	0	1	2	3
Respiration Rate	≤8		9 - 11	12 - 20		21 - 24	≥25
Oxygen Saturations	≤91	92 - 93	94 - 95	≥96			
Any Supplemental Oxygen		Yes		No			
Temperature	≤35.0		35.1 - 36.0	36.1 - 38.0	38.1 - 39.0	≥39.1	
Systolic BP	≤90	91 - 100	101 - 110	111 - 219			≥220
Heart Rate	≤40		41 - 50	51 - 90	91 - 110	111 - 130	≥131
Level of Consciousness				A			V, P, or U

*The NEWS initiative flowed from the Royal College of Physicians' NEWS Development and Implementation Group (NEWSDIG) report, and was jointly developed and funded in collaboration with the Royal College of Physicians, Royal College of Nursing, National Outreach Forum and NHS Training for Innovation

Please see next page for explanatory text about this chart.

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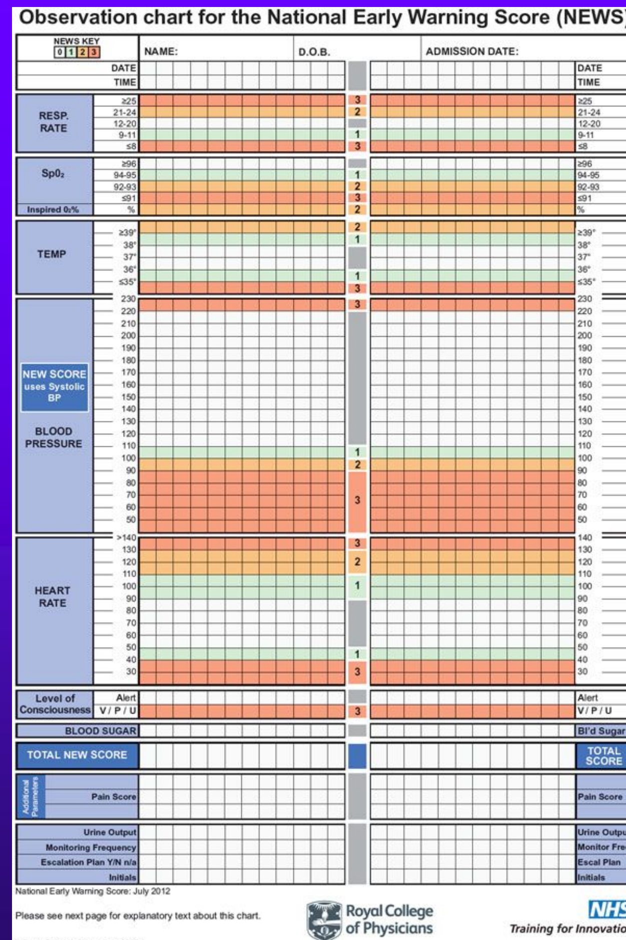
NHS Training for Innovation

News score	Frequency of monitoring	Clinical response
0	Minimum every 12 hours	Continue routine monitoring of national early warning scores (NEWS) with every set of observations
Total (1-4)	Minimum every 4-6 hours	Inform registered nurse, who must assess the patient Registered nurse to decide if increased frequency of monitoring and/or escalation of clinical care is required
Total (≥5, or 3 in one variable)	Increased frequency to a minimum of once an hour	Registered nurse to urgently inform the medical team caring for the patient Urgent assessment by a clinician with core competencies to assess acutely ill patients Clinical care in an environment with monitoring facilities
Total (≥7)	Continuous monitoring of vital signs	Registered nurse to immediately inform the medical team caring for the patient - this should be at least at specialty trainee level Emergency assessment by a clinician team with critical care competencies, which also includes practitioner(s) with advanced airway skills Consider transfer of clinical care to a level 2 or 3 care facility - that is, a higher dependency or intensive care unit



Observation chart for the National Early Warning Score (NEWS)

NEWS KEY 0 1 2 3

NAME: D.O.B. ADMISSION DATE:

		Score	
	DATE		DATE
	TIME		TIME
RESP. RATE	≥25	3	≥25
	21-24	2	21-24
	12-20		12-20
	9-11	1	9-11
	≤8	3	≤8
Sp0₂	≥96		≥96
	94-95	1	94-95
	92-93	2	92-93
	≤91	3	≤91
Inspired O₂%	%	2	%
TEMP	≥39°	2	≥39°
	38°	1	38°
	37°		37°
	36°	1	36°
	≤35°	3	≤35°
NEW SCORE uses Systolic BP; BLOOD PRESSURE	230	3	230
	220		220
	210		210
	200		200
	190		190
	180		180
	170		170
	160		160
	150		150
	140		140
	130		130
	120		120
	110	1	110
	100	2	100
	90		90
	80		80
	70	3	70
	60		60
	50		50
HEART RATE	>140	3	140
	130		130
	120	2	120
	110		110
	100	1	100
	90		90
	80		80
	70		70
	60		60
	50		50
	40	1	40
	30	3	30
Level of Consciousness	Alert		Alert
	V / P / U	3	V / P / U
	BLOOD SUGAR		Bl'd Sugar
	TOTAL NEW SCORE		TOTAL SCORE
Additional Parameters	Pain Score		Pain Score
	Urine Output		Urine Output
	Monitoring Frequency		Monitor Freq
	Escalation Plan Y/N n/a		Escal Plan
	Initials		Initials

National Early Warning Score: July 2012

Please see next page for explanatory text about this chart.

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NHS Training for Innovation

THANK YOU

Any questions

?

1.Name one cardiac layer

2.Name two types of blood vessels

3. What is the normal respiratory rate?

4. What is the normal pulse rate?

5. Give two reasons why a patient may have a fast pulse

6. What does blood pressure measure?

7. What is the normal range for blood pressure?

8. Approximately what is the normal urine output?

9. What can we check if a patient's urine output decreases? give three things:

10. Give two observations that would lead you to think a patient may be in pain

11. What is hypoglycaemia?

12. What is hyperglycaemia?

13. What is epilepsy a symptom of?

14. What can cause epilepsy?

15. What is Sepsis?
16. What are the signs & symptoms of Sepsis?
17. Who are at Risk of developing Sepsis?
18. What is NEWS?


FINISH