PLABABLE

GEMS

VERSION 4.8

EMERGENCY MEDICINE

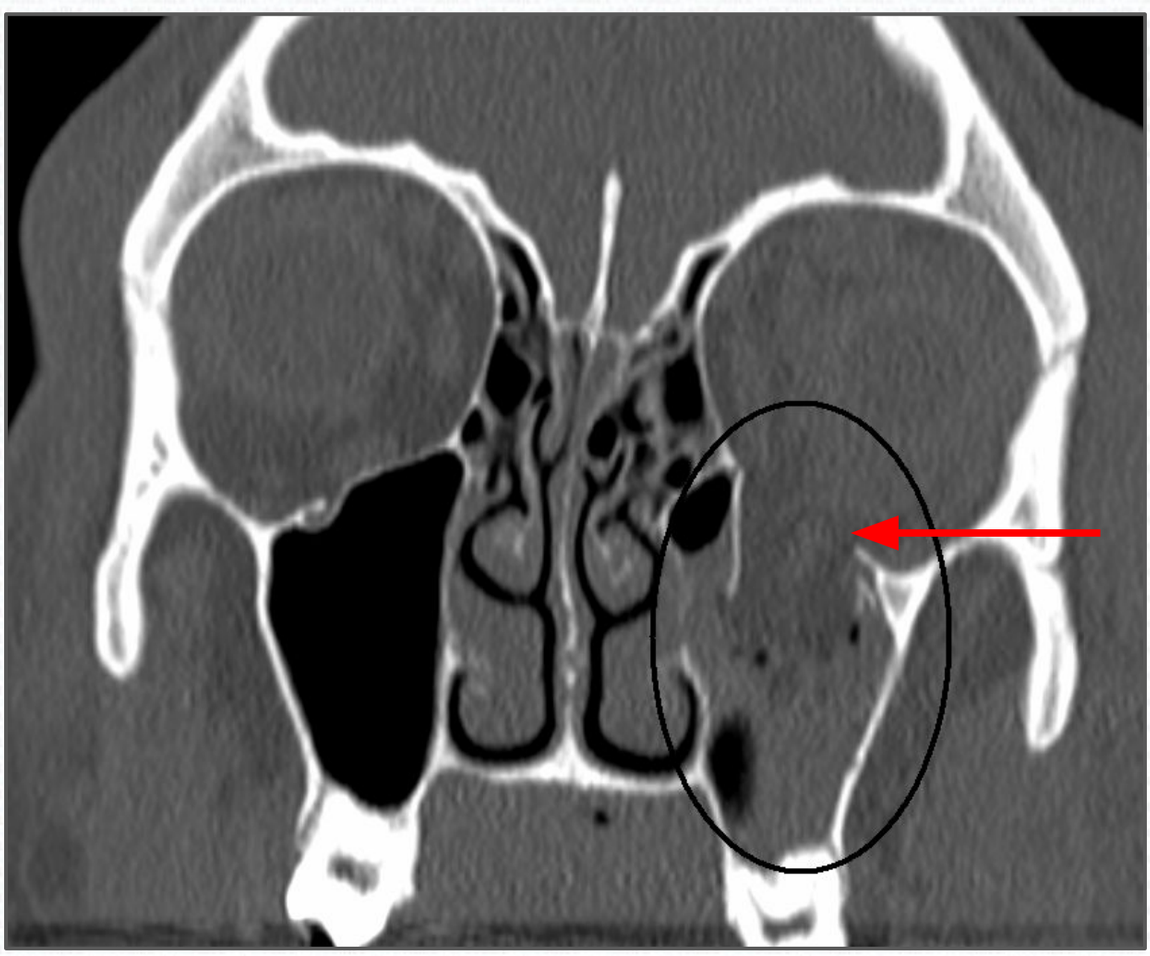
Orbital Blowout Fracture

Presentation

- Blow from an object → **orbital floor (maxilla) #**
- **Vertical diplopia** especially on looking up (impingement of the inferior rectus muscle)
- Enophthalmos (sunken eye)
- Infraorbital anaesthesia

Management

- X-ray of the skull
- CT scan (gold standard)
- Surgical management



Orbital blowout fracture

Brain trainer:

A 30 year old man presents to the A&E following RTA with **periorbital ecchymosis and double vision on looking up**.

➔ Which muscle is commonly affected in this type of injury?

Inferior rectus (collapse of the inferior wall) is commonly involved in orbital blowout fractures.

Head Injury (adults)

In the United Kingdom there are stringent requirements for performing a head CT scan

These requirements are set according to NICE guidelines

CT scan indicated within 1 hour if any of the following present

- GCS < 13 on initial assessment in ED
- GCS < 15 at 2 hours after the injury on assessment in the ED
- Suspected open or depressed skull fracture
- Any sign of basal skull fracture
- More than 1 vomiting episode
- Post-traumatic seizure
- Focal neurological deficit

CT scan indicated within 8 hours if any of the following present

- 65 years or older
- Any history of bleeding or clotting disorders
- On anticoagulation treatment
- Dangerous mechanism of injury
- More than 30 minutes of retrograde amnesia

If GCS is 8 or less you must intubate

Head Injury (children)

In the United Kingdom there are stringent requirements for performing a head CT scan These requirements are set according to NICE guidelines

CT scan indicated within 1 hour if any of the following present

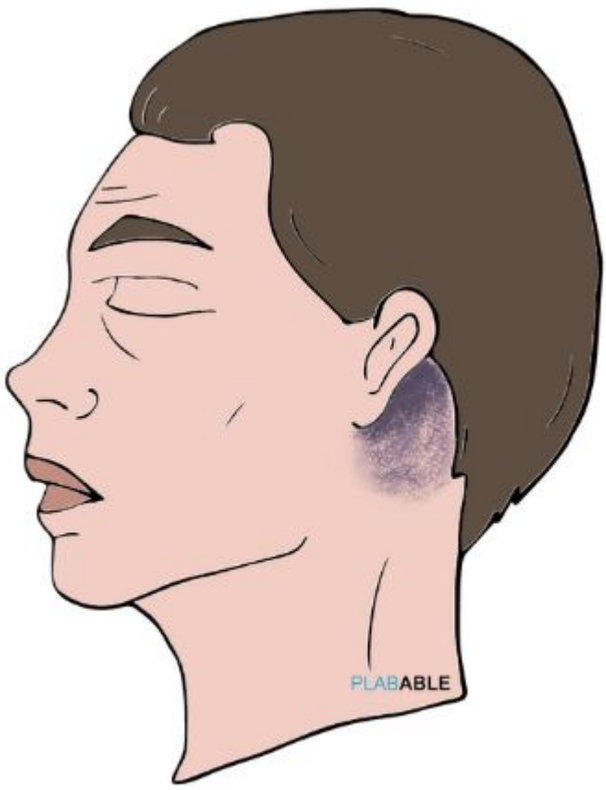
- Post-traumatic seizure but no history of epilepsy
- On initial assessment in the ED, GCS < 14 (less than 15 if the child is under 1 year old)
- GCS < 15 at 2 hours after injury
- Suspected open or depressed skull fracture or tense fontanelle
- Any sign of basal skull fracture
- Focal neurological deficit

CT scan indicated within 1 hour if <u>TWO</u> of the following present

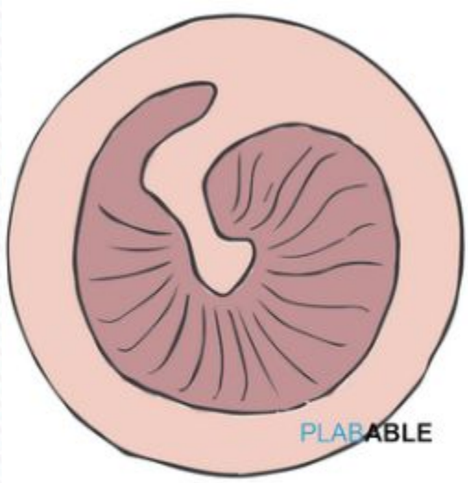
- Loss of consciousness lasting more than 5 minutes
- Abnormal drowsiness
- Three or more discrete episodes of vomiting
- High-speed road traffic accident
- Fall from a height of greater than 3 metres
- Amnesia lasting more than 5 minutes

Basal skull fracture

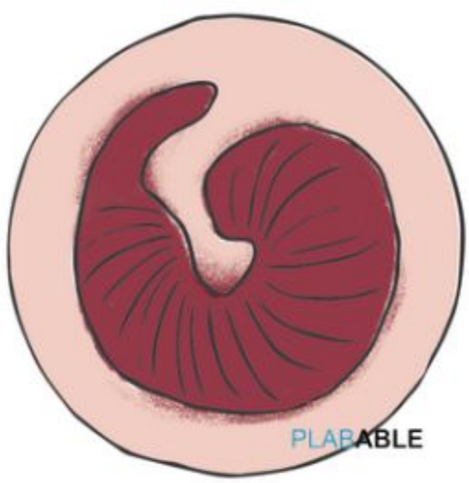
Racoon Eyes & CSF Rhinorrhoea



Battle Sign



Typical Membrane



Haemotympanum

Head Injury

Brain trainer:

A factory worker has hit his head on some machinery. He did not lose consciousness but is unable to recall the mechanism of injury. He has no episodes of vomiting since the accident. When is head CT scan indicated?

➔ **Within 8 hours**

Due to the presence of retrograde amnesia and a dangerous mechanism of injury

Pupillary Response

Brain trainer:

A patient has a unilaterally dilated pupil. What diagnosis might you expect?

➔ **Space occupying lesion**
(e.g. abscess, tumour, haematoma)

Pupillary Response

Brain trainer:

A patient has bilateral mydriasis (dilated pupils). What diagnoses are high yield for the exam?

➔ **Stimulants / tricyclic antidepressant overdose**

Pupillary Response

Brain trainer:

A patient has bilateral miosis (constricted pupils). What diagnoses are high yield for the exam?

➔ **Opiate overdose, CVA of the brainstem**

Drug Overdoses

Drug	Presentation	Treatment
Paracetamol	RUQ pain Vomiting Jaundice Liver failure	<1 hr: **activated charcoal** 4hr plasma value > treatment line OR staggered dosing: **IV N-acetylcysteine**
Aspirin	Vomiting Hyperventilation Tinnitus Vertigo Respiratory alkalosis → Metabolic acidosis	<1 hr: **activated charcoal** Metabolic acidosis: **alkalinization of urine** Salicylate level >700: **dialysis**
Opioids	Miosis Respiratory depression Low BP and HR	**IV naloxone**

Paracetamol poisoning

Brain trainer:

A 21 year old female is brought to the A&E in a confused state. The parents found a bottle of paracetamol alongside her. They are not sure when or how many she has taken. What is the most appropriate initial management?

Start N-acetylcysteine immediately if there is doubt over the time of ingestion of paracetamol, irrespective of the plasma concentration.

King’s College Hospital Criteria

With a paracetamol overdose we must arrange for immediate liver transplantation if the criterias are met

Criteria

Arterial pH < 7.3, 24 hours after ingestion or all of the following:

- Prothrombin time > 100 seconds
- Creatinine > 300 µmol/l
- Grade III or IV encephalopathy

Heroin

Brain trainer:

A man is brought into the ED by a group of his friends. He had been at a party and ingested some drugs. He is hypotensive, with RR 6 and constricted pupils. What is the most likely diagnosis?

➔ **Heroin overdose**

Aspirin

Brain trainer:

Which commonly prescribed over the counter medication initially causes a respiratory alkalosis and then later a metabolic acidosis?

➔ **Salicylate (aspirin) poisoning**

One of the common acid-base changes for aspirin overdose is a mixed respiratory alkalosis and metabolic acidosis.

Drug Overdoses

Drug	Presentation	Treatment
Organo -phosphate	SLUD Salivation Lacrimation Urination Diarrhoea	IV Atropine IV Pralidoxime
TCA - Amitriptyline	Widened QRS and broad complex tachycardia	Sodium bicarbonate 0.9% NS (hypotension)
Benzodia -zepines	Respiratory depression	Flumazenil
Cocaine	High BP, HR and RR Mydriasis Perforated nasal septum MI	Benzodiazepines
Cyanide	Dizziness Anxiety Tachycardia Vomiting	100% oxygen Sodium nitrite/ sodium thiosulfate Hydroxocobalamin

Benzodiazepines

Brain trainer:

An overdose of benzodiazepines will cause what acid-base disturbance?

➔ **Respiratory acidosis (RA)**

(Apnoea → Accumulation of CO_2 → RA)

TCA poisoning

Brain trainer:

A 28 year old male is brought to the A&E with history of consuming half a bottle of antidepressants. He is confused and has bilateral dilated pupils. Further examination shows tachycardia with a BP of 90/60 mmHg.

➔ What is the most likely finding on an ECG?

Sinus tachycardia and broad QRS complex (amitriptyline poisoning)

➔ What is the most appropriate management?

Intravenous sodium bicarbonate along with fluid resuscitation.

Stages of Hypovolaemia

For adults, the clinical staging relating to loss of blood volume can be classified as:

	Stage 1	Stage 2	Stage 3	Stage 4
Blood loss	10-15%	15-30%	30-40%	Over 40%
Blood pressure	Normal	Postural hypotension	Hypotension	Marked hypotension
Heart rate	Normal	Slight tachycardia (> 100 bpm)	Tachycardia (> 120 bpm)	Extreme tachycardia (>140 bpm)
Respiratory rate	Normal	Increased (> 20)	Tachypnoea (> 30)	Extreme tachypnoea
Mental status	Normal	Slight anxiety, restless	Altered, confused	Decreased consciousness, lethargy, or coma
Urine output	Normal	20-30 mL/hour	Less than 20 ml/hour	No urine output

Plabable's Tip

Remember the heart rate and corresponding stage

Stages of Hypovolaemia

Brain trainer:

A butcher has cut his leg and is bleeding profusely. His heart rate is 130. What percentage of blood has he lost?

➔ **30-40%**

Opioid Overdose

Presentation

- Pinpoint pupils
- Respiratory depression
- Coma

Management

- IV Naloxone

Opioid withdrawal

- Sweating, rhinorrhoea, tremor, dilated pupils, tachycardia and hypertension
- **Detoxification:** methadone
- **Relapse prevention:** naltrexone

Drug Withdrawal

Drug	Withdrawal symptoms	Treatment
Opioids	• Sweating • Rhinorrhoea • Tremor • Dilated pupils • Tachycardia • Hypertension	Methadone
Benzo-diazepines	• Anxiety • Insomnia • Agitation	Diazepam and slowly reduce the dose Propranolol
Cocaine	• Depression • Restlessness	Propranolol Diazepam
Alcohol	• Insomnia and fatigue • Tremor • Anxiety/feeling nervous • Nausea and vomiting • Palpitations • Alcohol hallucinosis • Seizures	Chlordiaze-poxide IV thiamine

Carbon Monoxide (CO) Poisoning

- **CO** is produced by incomplete combustion (car exhausts and burning home)
- It reduces the oxygen carrying capacity by binding to Hb
  (CO has more affinity for Hb than O2)

Presentation

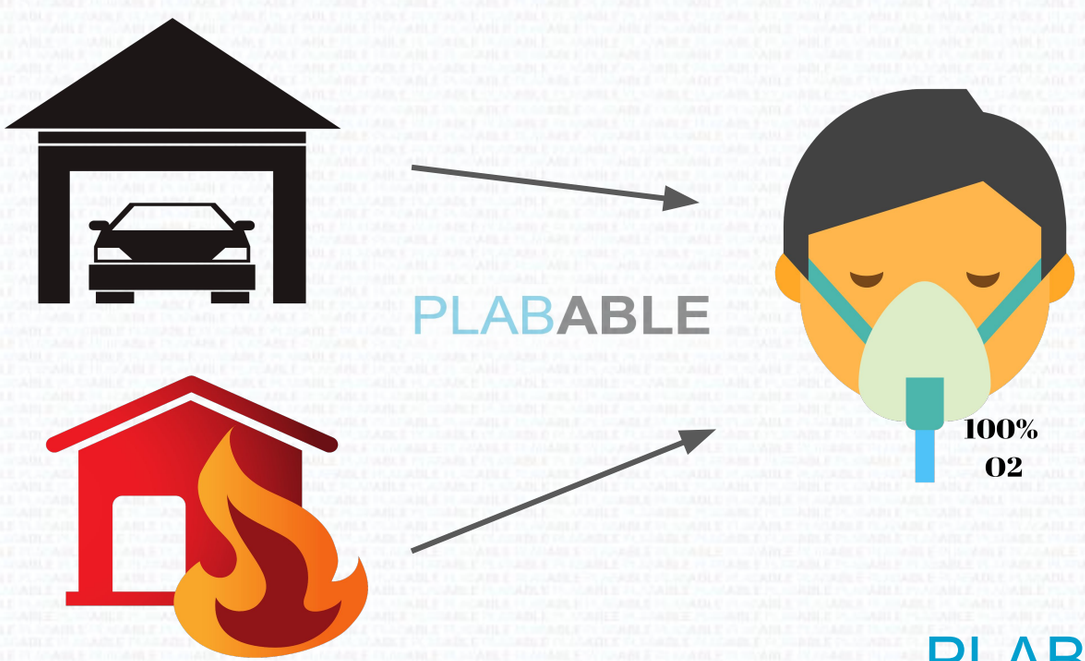
- Headache
- Nausea and vomiting
- Vertigo

Investigation

- HbCO level in blood (spectophotometry)

Management

- 100% oxygen
- Use of hyperbaric oxygen is controversial



Superficial Burn

Red and painful but do not blister

Partial Thickness Burn

Range from blistering to deep dermal burn.
The appearance is shiny and sensation is intact.
Capillary refill blanches.

Full Thickness Burn

Has a leathery or waxy appearance. It may be white, brown or black in colour. There are no blisters and sensation is lost so they do not feel any pain. There is no capillary refill.

Burns

Brain trainer:

Above what percentage of total body surface area burned requires fluid replacement?

➔ **Children - 10%**
➔ **Adults - 15%**

Smoke Inhalation Injury

Presentation

- Persistent cough
- Stridor
- Wheezing
- Black sputum suggests excessive exposure to soot
- Use of accessory muscles of respiration
- Blistering or oedema of the oropharynx
- Hypoxia or hypercapnia

Management

- Oxygen
- Intubation
- IV fluids

Parkland Formula

Brain trainer:

What is the formula used for calculating fluids for burn patients?

➔ **4 x weight (kgs) x percentage of area of burn (ml of fluids)**

Hypoglycaemia

Etiology

- Hypoglycaemics, binging of alcohol, post gastric surgery

Presentation

- Autonomic: sweating, anxiety, hunger, tremor, palpitations, dizziness
- Neuroglycopenic: confusion, drowsiness, visual trouble, seizures, coma

Management

- If conscious + orientated
  → Carbohydrate snack
  → Glucose gel
- If unconscious
  → Glucagon 1mg IM or glucose IV

Hypoglycaemia Management

Types of different **intravenous glucose** that is administered

Glucose 10% solution 50 ml intravenously repeatedly every 1-2 minutes until the patient is conscious or 250 ml has been given

Glucose 20% solution 75 ml intravenously over 10 to 15 minutes

Our PLABABLE all time favourite!

Glucose 50% solution 25-50 ml (insert to large vein followed by saline flush) - *least favourite option as this is a hypertonic solution and can damage veins*

Hypoglycaemia Management

Capillary Blood glucose less than 4 mmol/L

Patient conscious and aware of likely diagnosis

Oral medication

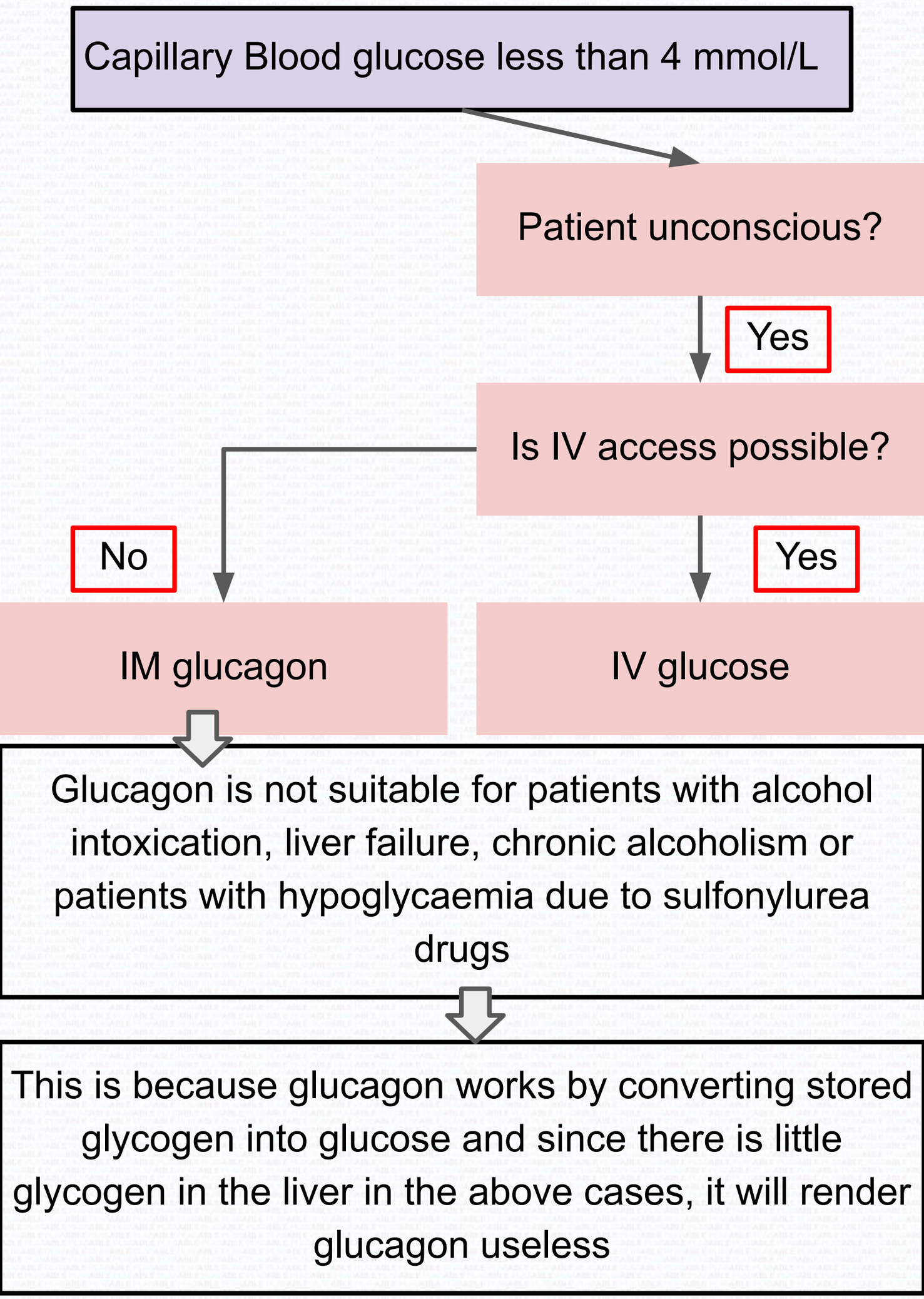
Give any of the following:

- Lucozade
- Dextrose tablets
- Oral glucose gel (glucogel)
- 2-4 teaspoons of sugar

Patient unconscious

Glucagon 1mg IM or glucose IV

Hypoglycaemia Management



Glucagon is not suitable for patients with alcohol intoxication, liver failure, chronic alcoholism or patients with hypoglycaemia due to sulfonylurea drugs

This is because glucagon works by converting stored glycogen into glucose and since there is little glycogen in the liver in the above cases, it will render glucagon useless

Alcoholic

Brain trainer:

What laboratory findings would you expect in a chronic alcoholic who is vomiting profusely?

➔ Hypoglycemia
➔ Hypokalemia

Mallory-Weiss Syndrome

Presentation / Etiology

1. Persistent vomiting/retching
2. Oesophageal tear
3. Haematemesis

- Alcoholism
- Bulimia nervosa

Investigation

- Endoscopy

Management

- Maintain airway, provide high-flow oxygen, correct fluid losses by giving IV fluids. Intravenous blood can also be given in severe cases.
- Endoscopy immediately after resuscitation to confirm diagnosis and stop any potential further bleeding.

Oesophageal Varices

Suspected variceal bleed

Always start with resuscitation

IV fluid resuscitation +/- blood products

Start medications:

- Terlipressin
- Prophylactic antibiotics
- If INR prolonged: vitamin K

Endoscopy

If unstable → immediately after resus

If stable → within 24 hours

👉 **Do not start PPI prior to diagnosis by endoscopy unless patient has known PUD**

Confirmed variceal bleed

Definitive management:

- **Band ligation** is first choice
- If not controlled: offer transjugular intrahepatic portosystemic shunt (**TIPS**)

Continue terlipressin 2 mg every 4-6 hours. This should be stopped when haemostasis is achieved or after 5 days.

Choking Management

Infant

1. Whilst seated hold infant in prone position with head down (gravity aids in removing foreign body) deliver 5 back blows with heel of hand along spinal cord (between shoulder blades).
2. Turn infant into a supine position and deliver five chest thrusts. These thrusts are similar to CPR but sharper in nature and lower in frequency.

Child / adult

1. Procedure same as for infants (i.e. back blows)
2. Give 5 abdominals thrusts - stand behind victim who is leaning forward, put both hands around upper abdomen and clench one fist and grip this fist with other hand. Pull upwards and inwards sharply.
3. Alternate between step 1 and step 2

If unconscious

1. Place victim on floor
2. Call ambulance
3. Begin CPR

Acute Alcohol Withdrawal

Presentation

- **Insomnia and fatigue**
- **Tremor**
- Anxiety/feeling nervous
- Nausea and vomiting
- Excessive sweating
- **Palpitations**
- Alcohol hallucinosis
- **Seizures**

Management

- Benzodiazepines (**chlordiazepoxide**)
- IV thiamine

Delirium Tremens

Delirium tremens

Usually seen in alcoholics 24-72 hrs after hospital admission because of withdrawal

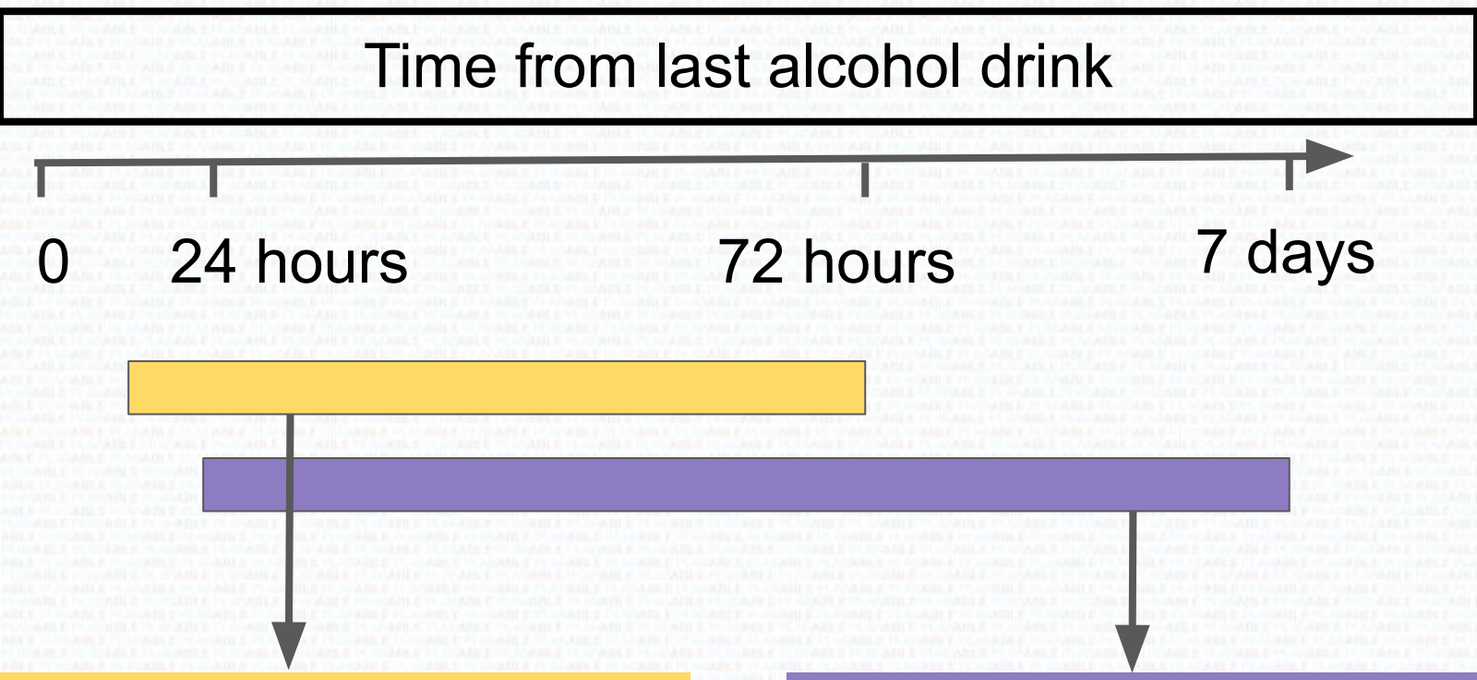
- **Hallucinations**
- Confusion
- **Delusion**
- Severe agitation
- Seizures

Management

- Benzodiazepines (**Lorazepam**)
- IV thiamine

Alcohol Issues

Chronic alcoholism



Alcohol withdrawal

Starts off with anxiety, insomnia, headache, palpitations

Followed by alcoholic hallucinosis → Commonly visual, auditory or tactile hallucinations

Then withdrawal seizures (tonic-clonic convulsions

Delirium Tremens

Hallucinations that are indistinguishable from reality

Severe confusion and disorientation

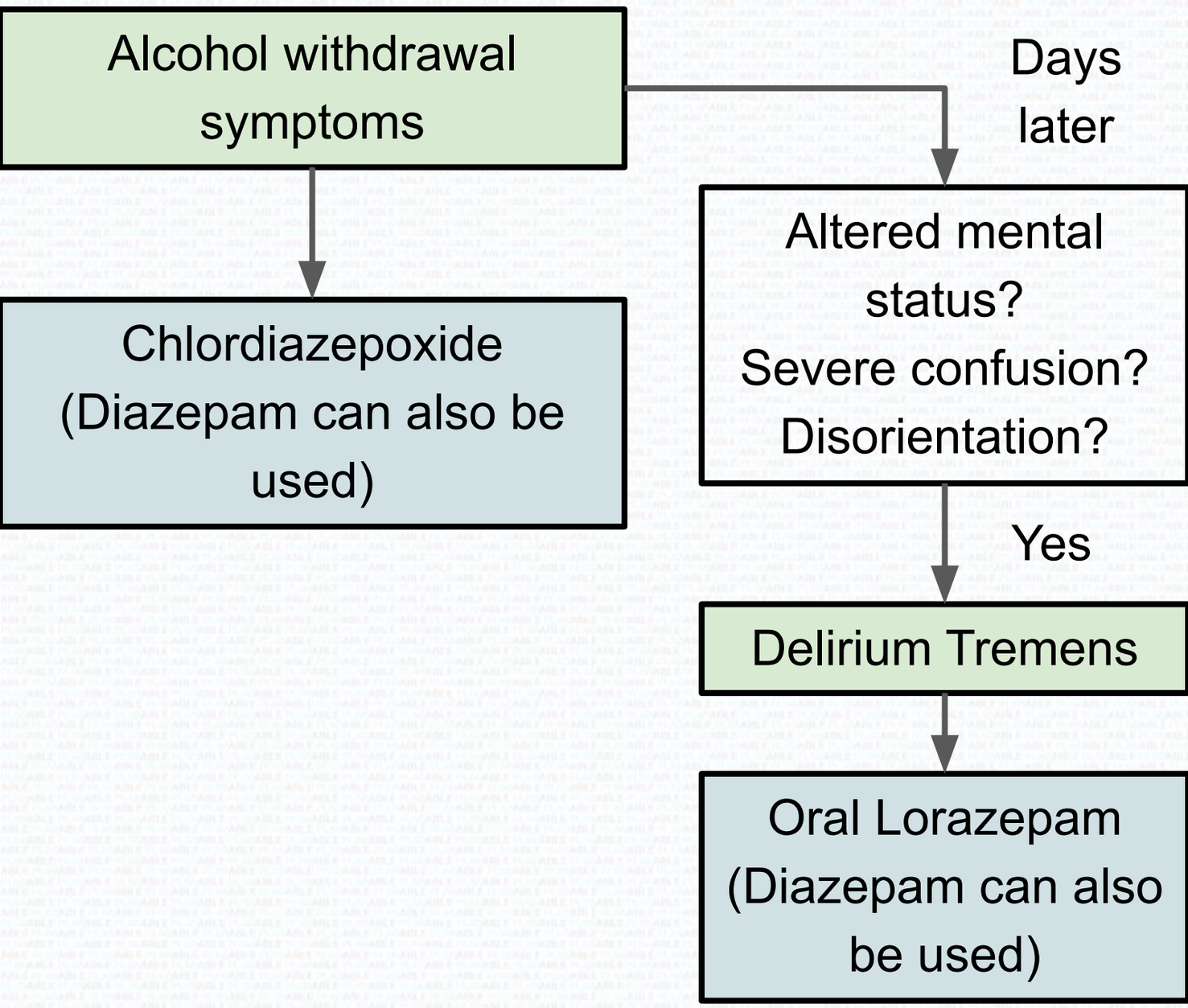
Alcohol Issues

Still having a hard time distinguishing delirium tremens from alcohol withdrawal?

The easiest way is to remember the definition of **delirium tremens**

A rapid onset of confusion caused by withdrawal from alcohol

Alcohol Issues



Has thiamine been prescribed?

Thiamine deficiency is common in people who are alcohol-dependent and therefore thiamine should be prescribed

Acute alcohol withdrawal

Brain trainer:

A 55 year old male a known case of chronic alcoholism was brought to the A&E with severe confusion, sweating, and tremors. The wife tells you that the last drink was 2 days back and that he is trying to cut down on alcohol a while now without any success.

➔ What is the most appropriate treatment?

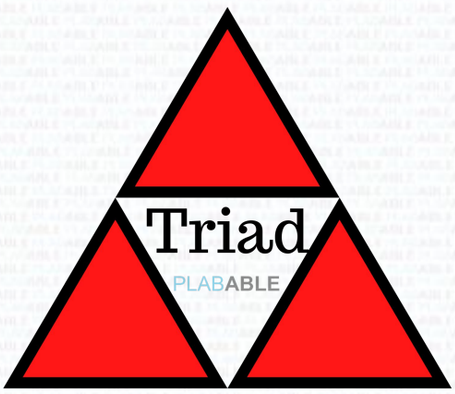
Diazepam or lorazepam is given in a case of **delirium tremens**. It is seen 48 to 72 hours after the last drink in a chronic alcoholic.

The patient must also be given **thiamine infusion** to prevent **Wernicke's encephalopathy** and correct hypoglycemia if any.

Wernicke's Encephalopathy

Disorder due to **thiamine** (Vit B1) deficiency mainly in chronic alcoholics

Ophthalmoplegia
(Double vision)



Ataxia Confusion

Treatment

- IV thiamine followed by glucose

Common in chronic alcoholic

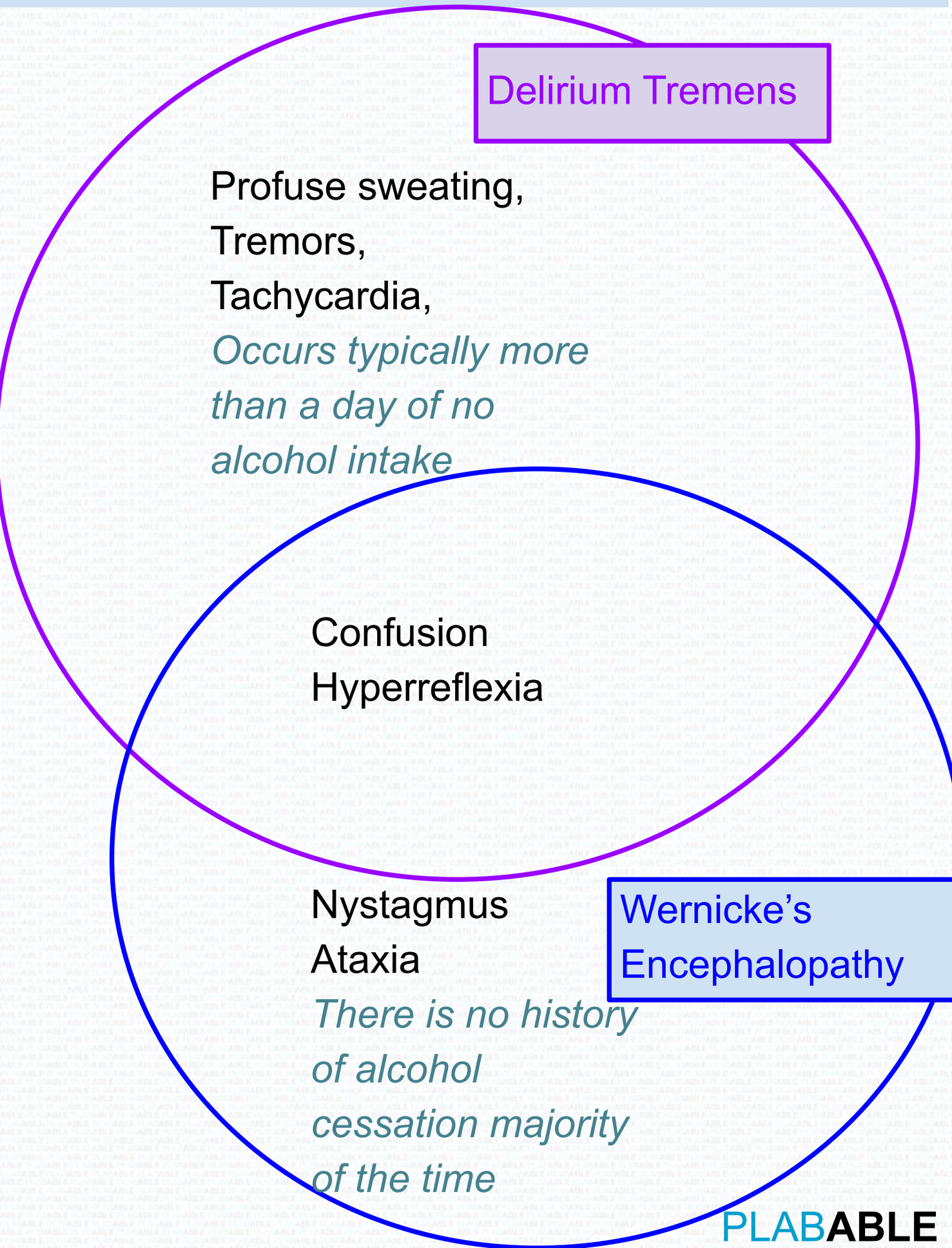
Thiamine (B1) deficiency

Korsakoff syndrome

- Anterograde amnesia
- Confabulation (making up stories)

Delirium Tremens Vs Wernicke's Encephalopathy

Both seen in chronic alcoholics



Delirium Tremens Vs Wernicke's Encephalopathy

Treatment

Delirium Tremens

Benzodiazepine usually lorazepam (alternatives include diazepam) Followed by IV thiamine to prevent Wernicke's Encephalopathy

If mixed picture, best to start with benzodiazepine followed by IV thiamine

Wernicke's Encephalopathy

IV thiamine

Who Gets Hospital Admission For Alcohol Related Issues?

Majority of alcohol related issues (intoxication/withdrawal) do **NOT** get admissions into hospitals but instead are referred on to

ALCOHOL ABUSE SERVICES

Alcohol related issues that do get admitted include

Alcohol intoxication if the patient is comatose or hypoglycaemic

Alcohol withdrawal if the patient has a history of withdrawal seizures

Delirium Tremens

Wernicke's encephalopathy

Korsakoff's psychosis

Points that you **must** remember for the exam

To Admit Or Not To Admit Patients With Alcohol Intoxication?

Alcohol Intoxication

Should you admit a patient into the medical ward from A&E?

Is the patient comatose or hypoglycaemic?

Yes

Admit (if comatose, secure airways)

No

Alcohol abuse service referral

Acute Compartment Syndrome

Trauma causing ↑ pressure within an anatomical space compromising the blood flow and causing ischaemia

Presentation

- Increasing pain despite analgesia
- Sensory deficit
- Excessive pain on passive movement
- If severe: Pallor, pulselessness, paralysis, coolness and loss of capillary return

Investigation

- Intracompartmental pressure measurement

Treatment

- Emergency **fasciotomy**

Acute Compartment Syndrome

Reperfusion injury

Once the ischaemic tissue is perfused after fasciotomy, myoglobin is released into circulation → **Acute kidney injury**

Prevention

- Adequate hydration and alkalisation of urine
- In severe cases dialysis is required

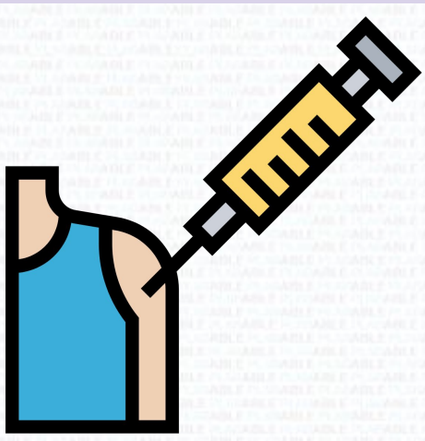
Anaphylaxis

Presentation

- **Respiratory:**
  - Exposure to allergen (peanuts, eggs etc.)
  - Swelling of lips, tongue, pharynx and epiglottis potentially result in complete upper respiratory tract obstruction
  - Wheeze
  - Hypoxia and hypercapnia
- **Skin:** Pruritus, urticaria and angioedema
- **CVS:** Hypotension and shock

Management

- **IM adrenaline**
  - Adults: 0.5 ml of 1 in 1000
  - Children up 6 yrs: 0.15 ml of 1 in 1000
  - Children 6 - 12 yrs: 0.3 ml of 1 in 1000



IM adrenaline

Adrenaline Doses In Adults Compared

Anaphylaxis

IM

0.5 ml of 1 in 1000

(equates to 0.5 mg)

The one you MUST remember

Each 0.5 ml ampoule contains 0.5 mg adrenaline

Cardiopulmonary resuscitation

IV

10 ml of 1 in 10,000

(equates to 1 mg)

Each 10 ml pre-filled syringe contains 1 mg adrenaline

Panic Attack

Presentation

- Periods of intense fear usually for 10-20 min associated with:
  - Palpitations
  - Sweating
  - Tremors
  - Difficulty breathing
  - Chest pain
  - Numbness or tingling sensation

  (Hyperventilation → CO_2 washout → Respiratory alkalosis → Hypocalcaemia)

Diagnosis requires attack followed by ≥ 1 month of ≥ 1 of the following:

- Persistent concern of additional attacks
- Worrying about consequences of attack
- Behavioral change related to attacks

Management

- Acute: Breathing through the bag
- Long term: CBT, antidepressants (SSRI)

Hereditary Angioedema

Autosomal dominant condition due to C1 esterase deficiency

Presentation

- Facial, lip and mouth swelling
- Laryngeal oedema - life threatening (dyspnoea and stridor)
- Abdominal pain
- Precipitated by stress, infection, trauma/surgery

Investigation

- Serum C4 level
- C1 Inhibitor level

Management

- **IV or SC C1 inhibitor concentrate** (first line for acute treatment and prophylaxis)
- Bradykinin receptor inhibitor
- Kallikrein inhibitor
- Severe laryngeal oedema requires intubation and ventilation

Note: Anaphylaxis have a similar presentation and is treated with **IM adrenaline.** Allergy and family history is important to differentiate both.

Perforated Peptic Ulcer

Presentation

- Epigastric pain
- Haematemesis
- Melaena

Risk factors: NSAIDs, steroids, *H. pylori* infection

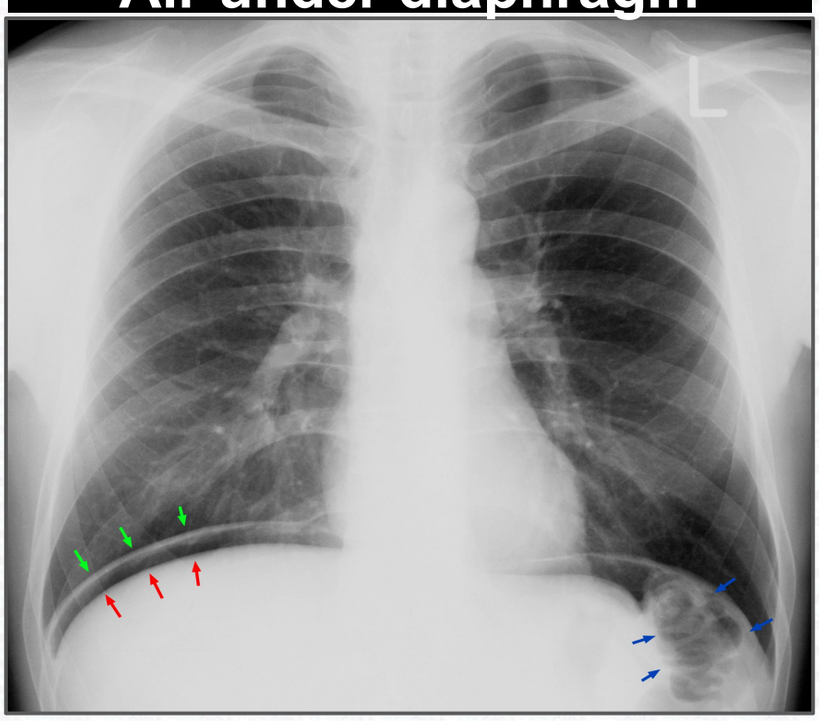
Investigation

- **Erect X-ray chest:** air under diaphragm
- Endoscopy

Treatment

- Endoscopic repair

Air under diaphragm



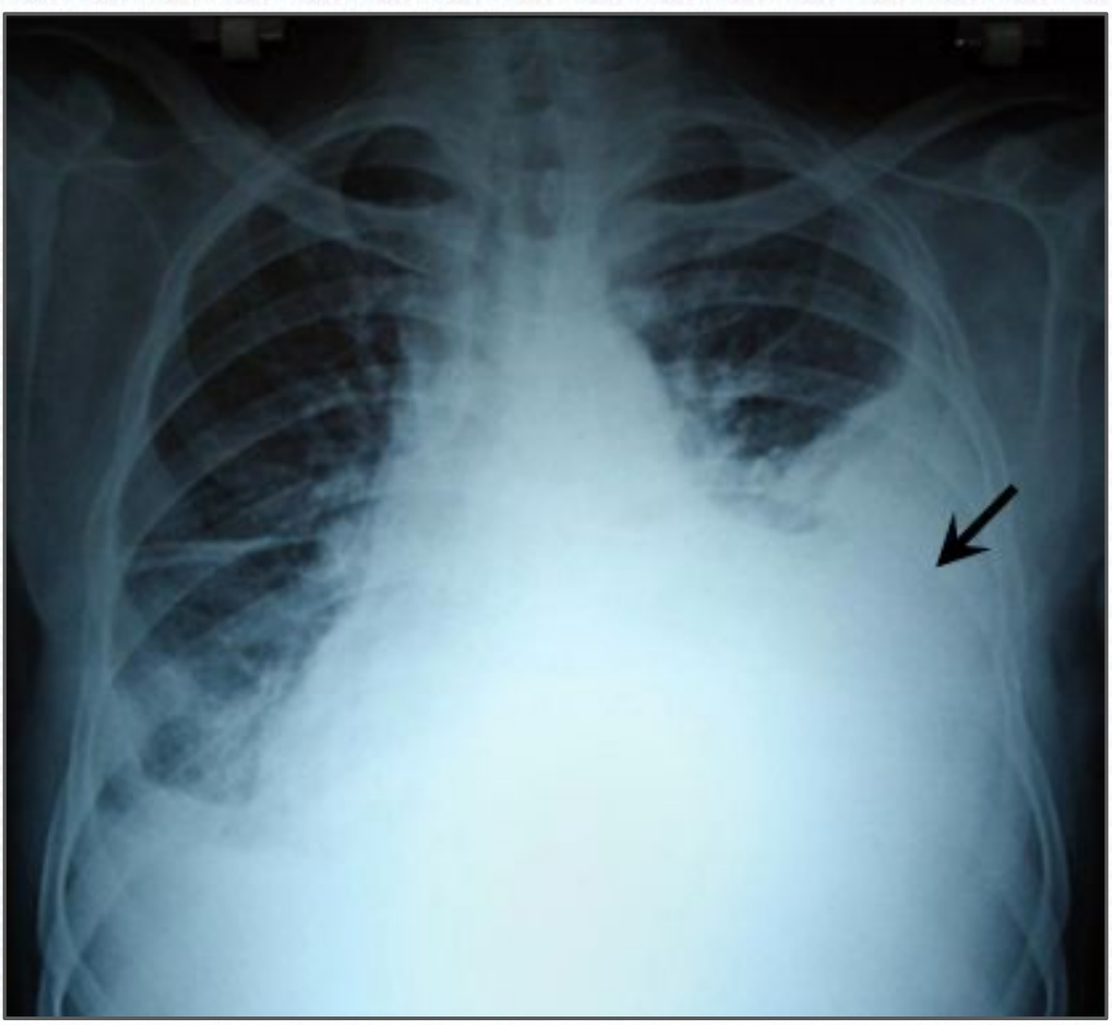
Haemothorax

Presentation:

- RTA or stab injury
- Hypotension and tachycardia
- Dullness on percussion
- Chest X-ray: homogenous opacity on the lower region of the lung

Management

- Chest drain
- Surgical exploration



Pneumothorax

Collection of air in the pleural cavity resulting in collapse of the lung on the affected side

Causes

- Primary in healthy individuals (smoking and **marfan** syndrome are risk factors)
- Secondary in RTA, stab injuries and COPD

Presentation

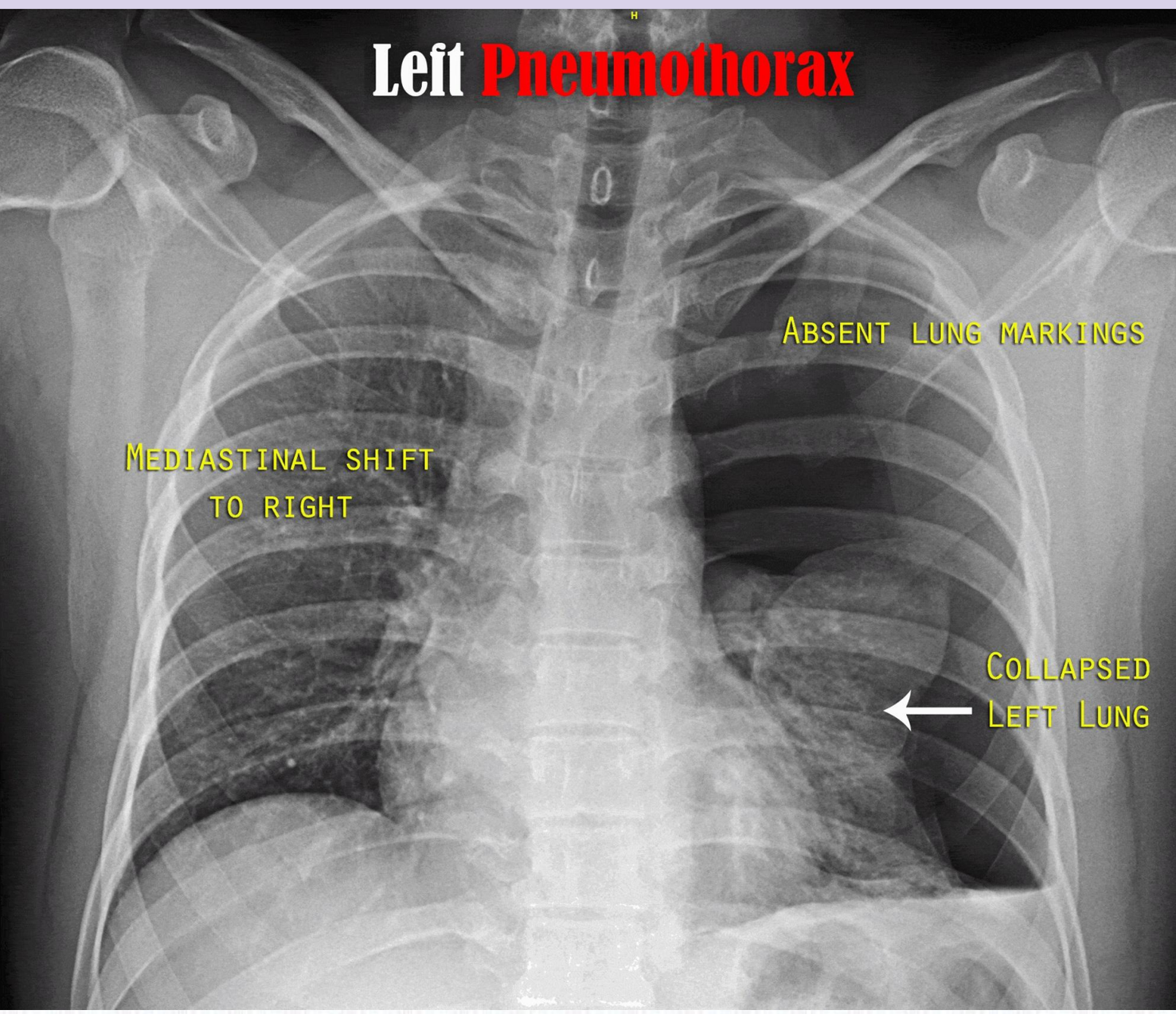
- Sudden onset of chest pain
- Shortness of breath
- Hyperresonance in the affected side
- **Tension pneumothorax:** Pulsus paradoxus, tracheal deviation and hypotension

Pneumothorax

X-ray:
Hyperlucent lung, tracheal deviation and collapse of lung

Management:

- **Tension pneumothorax:** needle decompression
- **Mild cases:** supplemental oxygen and observation



Flail Chest

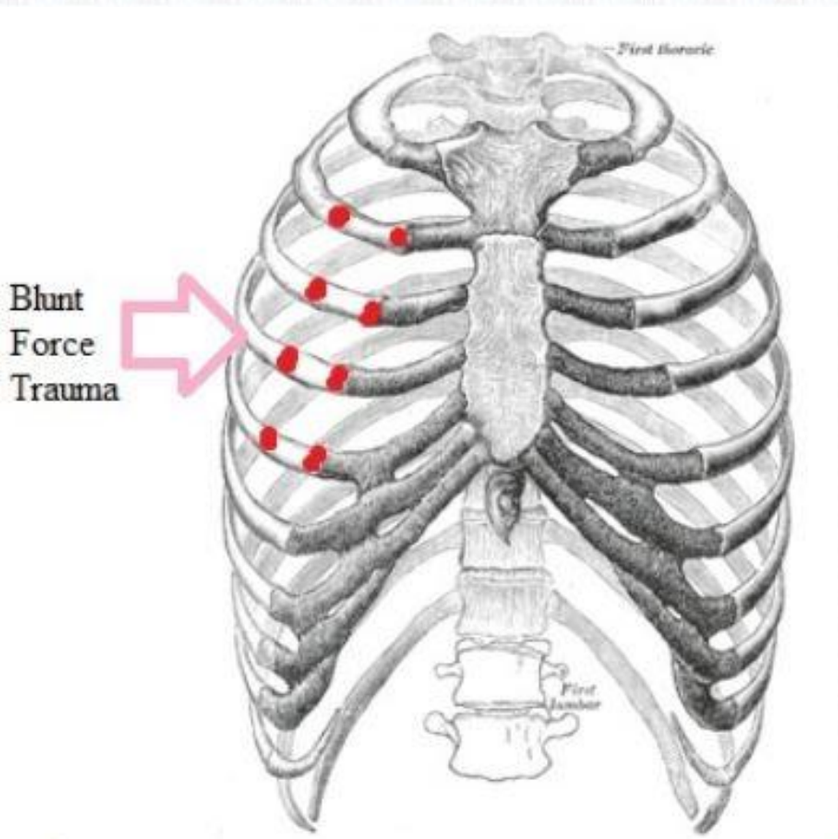
Multiple broken ribs due to trauma which move in during inspiration and out during expiration causing **paradoxical breathing**

Presentation

- RTA
- Chest pain
- Shortness of breath

Management

- High flow oxygen
- Adequate analgesia
- Positive pressure ventilation (If severe)



RTA Injuries To The Chest

Differentials of chest injuries in road traffic accidents are frequently asked

Haemothorax	Pneumothorax	Flail chest
Dullness on percussion	Hyperresonance on percussion	Paradoxical chest movements
Erect Chest X-ray shows homogenous opacity on the lower region of the lung	Chest X-ray shows collapse lung	Chest X-ray shows rib fractures

Chest pain and shortness of breath are features for all the above

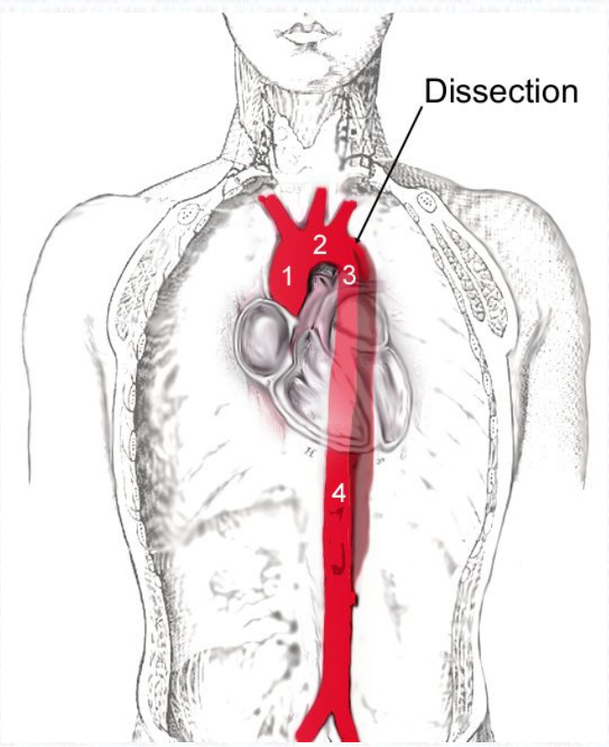
Aortic Dissection

Presentation

- **Abrupt** onset of **thoracic**, abdominal and/or back pain
- Character of pain: **sharp** > tearing > ripping
- Absence of pulse and/or difference in blood pressure between right and left arm
- Hypertension
- Pain migrates as dissection progresses

Risk factors

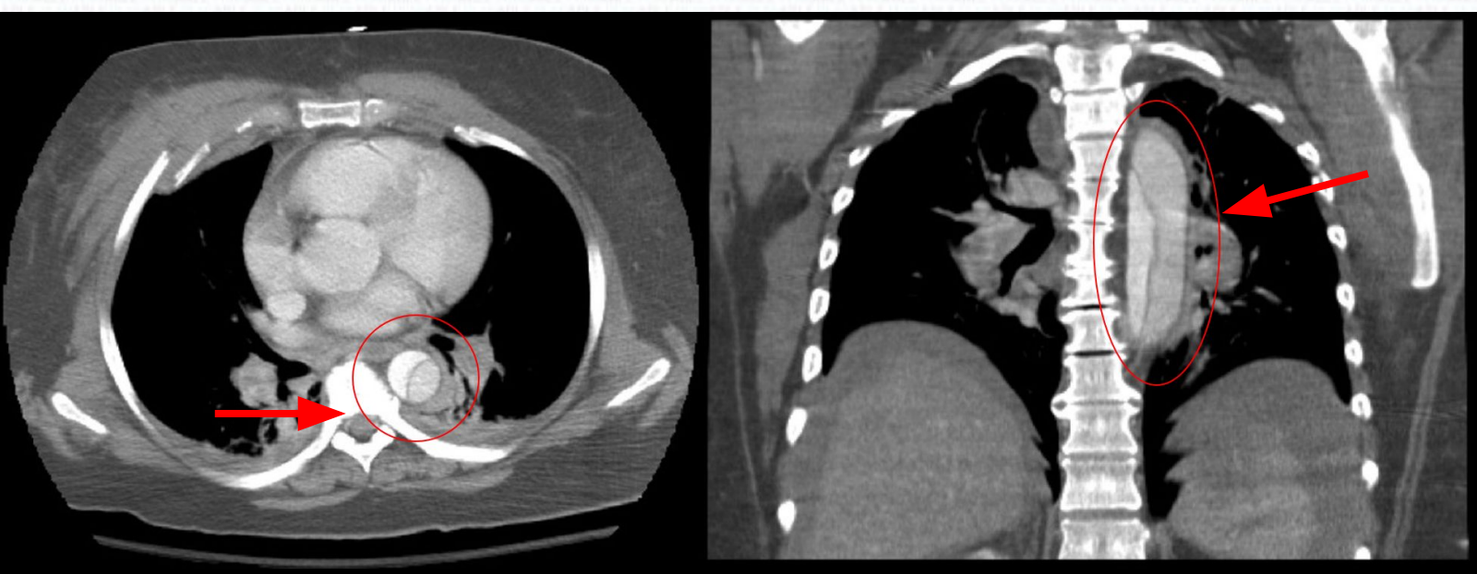
- Hypertension
- Smoking
- Marfan's syndrome
- Ehlers-Danlos syndrome



Aortic Dissection

Investigations

- Chest X-ray → May show widened mediastinum if thoracic aortic dissection
- CT angiogram for definitive diagnosis
- Transoesophageal US if haemodynamically unstable



Descending Aortic dissection

Aortic Dissection

Management

- Control hypertension with intravenous beta blockers (e.g. intravenous labetalol) → *Should be started when suspecting an aortic dissection*
- Surgery - grafting or stenting

Ascending aortic dissection → **Surgical treatment**

Descending aortic dissection → **Medical management** to control hypertension in ICU

Note: When the patient is having unstable vitals in any clinical scenario always think of ABC as the first choice

Sepsis

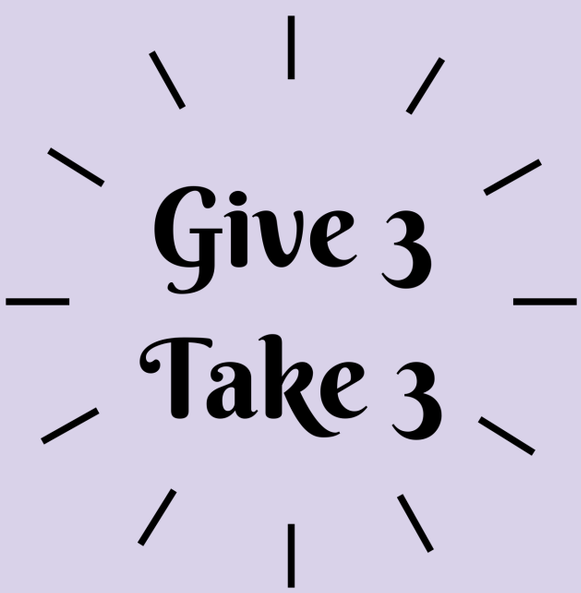
Red Flag for sepsis based on NICE:

- **Systolic BP** <90 mm Hg
  (or >40 mm Hg fall from baseline)
- **HR** >130 beats per minute
- **SpO2** <91%
- **RR** >25/min
- Responds only to voice or pain/unresponsive
- **Lactate** >2.0 mmol

Sepsis six to be started if any red flag is present:

Give 3:

- **Fluid** resuscitation
- High-flow **oxygen**
- IV **antibiotics**



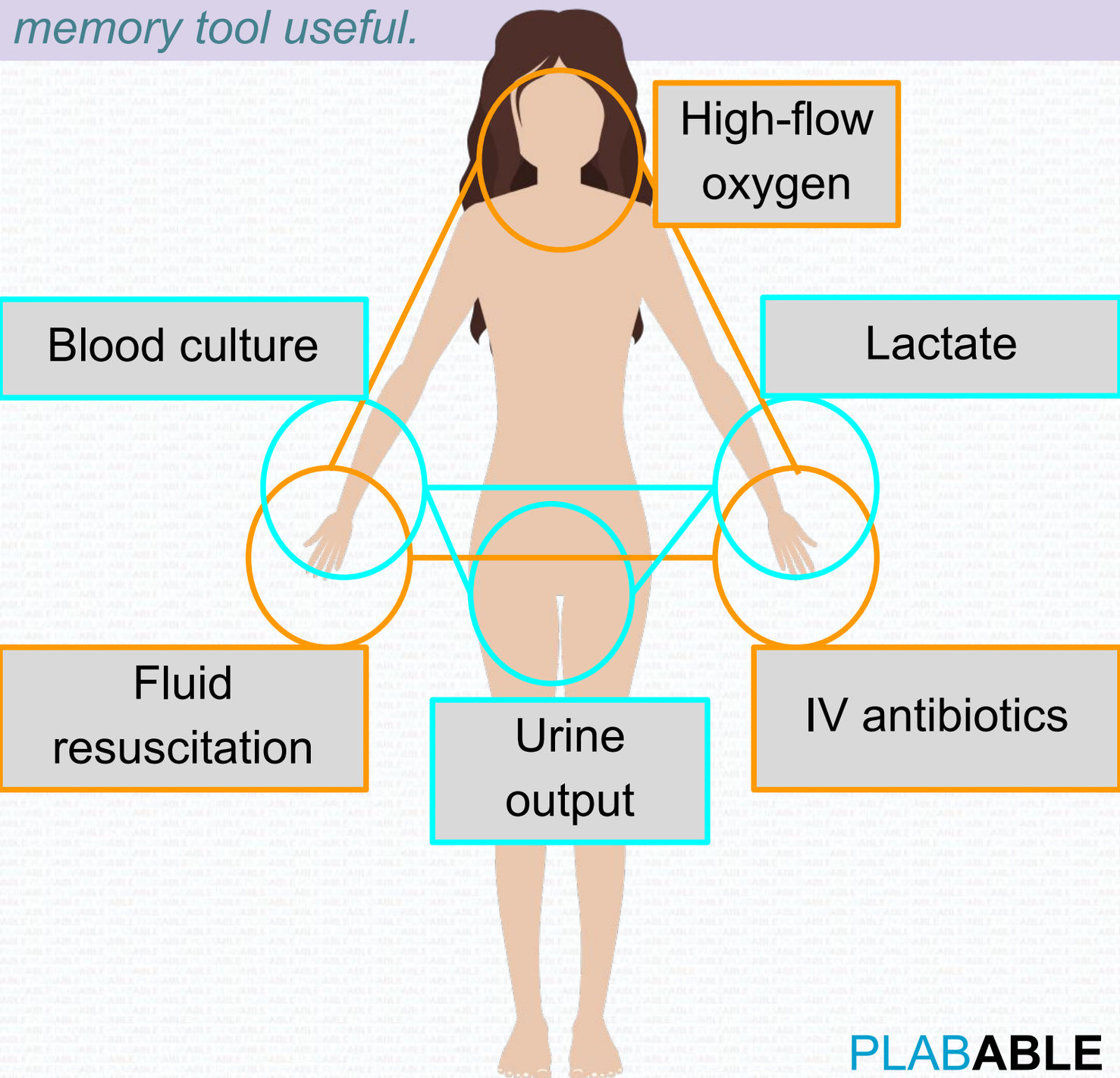
Take 3:

- **Blood culture**
- Serial **lactates**
- Hourly **urine output**

Sepsis

Sepsis six!

*When I was a junior doctor, I used to remember "**Give 3**" and "**Take 3**" based on anatomical locations that these occur with a triangle drawn. E.g. Circle on face is where the oxygen is given, circle on hand is where the IV line is inserted to give fluids, circle on bladder is where insertion of catheter takes place to measure urine output. Hopefully, you would find this memory tool useful.*



Sepsis

Brain trainer:

A 65 year old male presented to the ED with confusion. He is being treated for community acquired pneumonia by the GP for the past 3 days. Despite taking antibiotics he has not improved. On examination, his heart rate is 140/min, BP is 80/50 mmHg and saturation is 85%. Capillary refill is delayed in the extremities.

➔ **What is the first line management?**

High flow oxygen or IV fluids or IV antibiotics depending on the options given. If all of the options are given then choose by ABC protocol.

Sepsis

We always get asked, when do you pick CSF analysis and when do you pick blood culture for someone who is septic with possibly meningococcal septicaemia.

Compare question code IN 3580 with CS 0200

The simplest answer (only applicable for exams as a clincher) is that if there is a rash (meningococcal rash), pick blood culture.

Toxic Shock Syndrome

Multisystem inflammatory response to bacterial exotoxins (*staphylococci* and *streptococci*)

Presentation

- Fever
- Hypotension
- Diffuse erythematous rash
- Multiorgan dysfunction
- Desquamation of palms and soles after 1-2 weeks
- Risk factor: **tampon** usage

Treatment is same as sepsis along with steroids

Serotonin syndrome

↑ levels of serotonin in the synapses due to drug overdose or interaction between **MAOI, SSRI or SNRI**

Presentation:

- **Autonomic hyperactivity**
  - Hypertension
  - Hyperthermia
  - Tachycardia
- **Neuromuscular abnormality**
  - Tremor
  - Ocular clonus
  - Hypertonicity
- **Mental status changes**
  - Anxiety
  - Confusion

Management:

- Withdrawing offending drug
- IV fluids and benzodiazepines
- Cyproheptadine

Serotonin syndrome

Brain trainer:

A 34 year old male is brought to the A&E in an agitated and confused state. On examination the patient has tachycardia, sweating profusely and the BP is 160/90 mmHg. The patient has been recently started on phenelzine by the GP. He has also been taking St John's wort as a supplement for over a year now. What is the most appropriate diagnosis?

➔ **Serotonin syndrome**

MAOIs when taken along with St John's wort, SSRI and SNRI can cause serotonin syndrome.

➔ **What is the first line management?**

Removal of the offending agent and treatment with benzodiazepines to control agitation.

Neuroleptic Malignant Syndrome

Life threatening condition due to potent neuroleptics such as haloperidol and fluphenazine

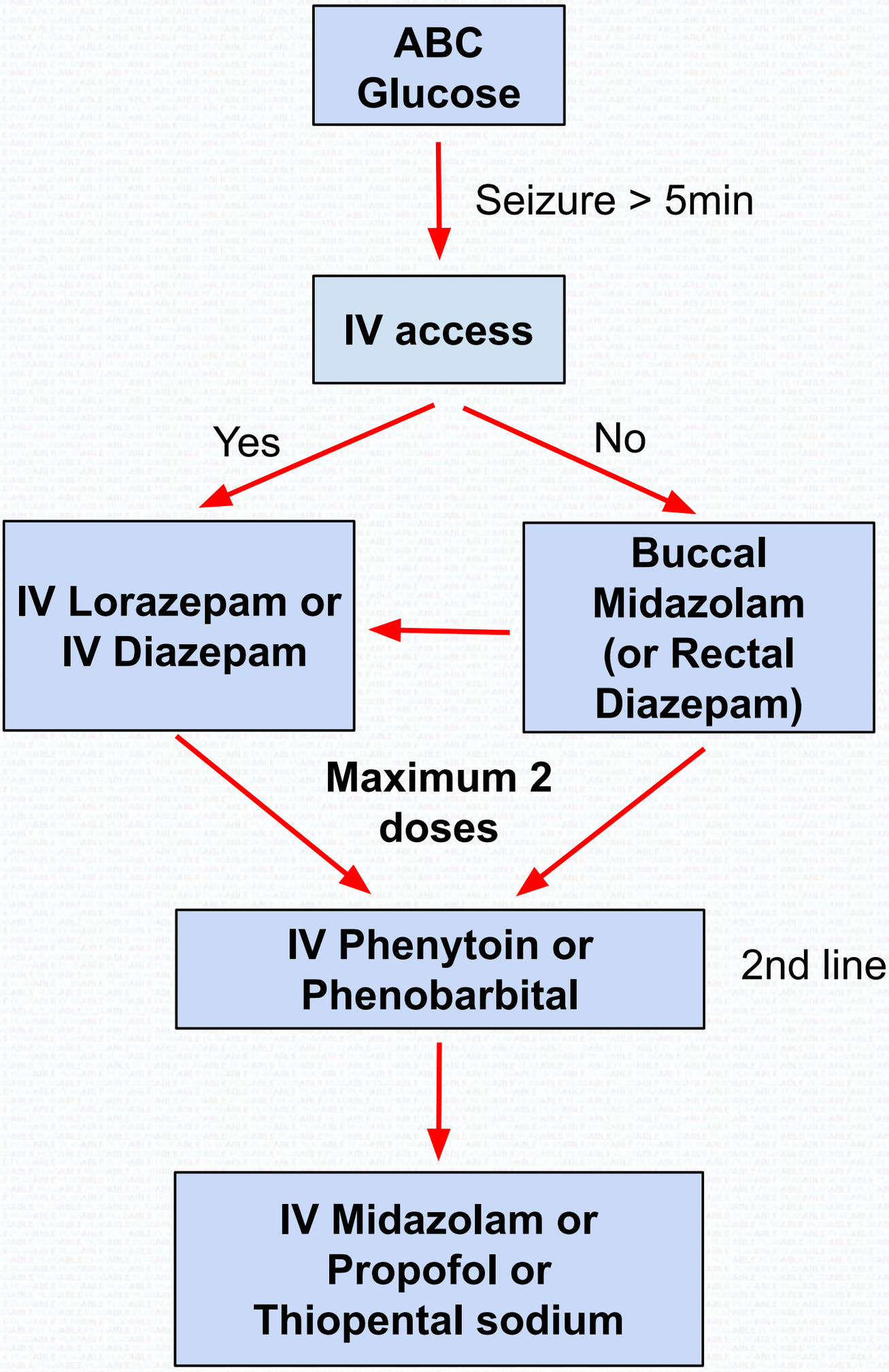
Presentation

- Hyperthermia
- Muscular rigidity
- Autonomic instability

Management

- Stop the drug
- Bromocriptine
- Benzodiazepines
- Dantrolene sodium (muscle relaxant)

Generalised Tonic Clonic Seizure



Status Epilepticus

Defined as

- Continuous seizure activity for more than 5 minutes or
- Recurrent seizures (2 or more) within a 5 minute period without a period of neurological recovery

5 minutes

Management always begins with securing airways

Status Epilepticus

Brain trainer:

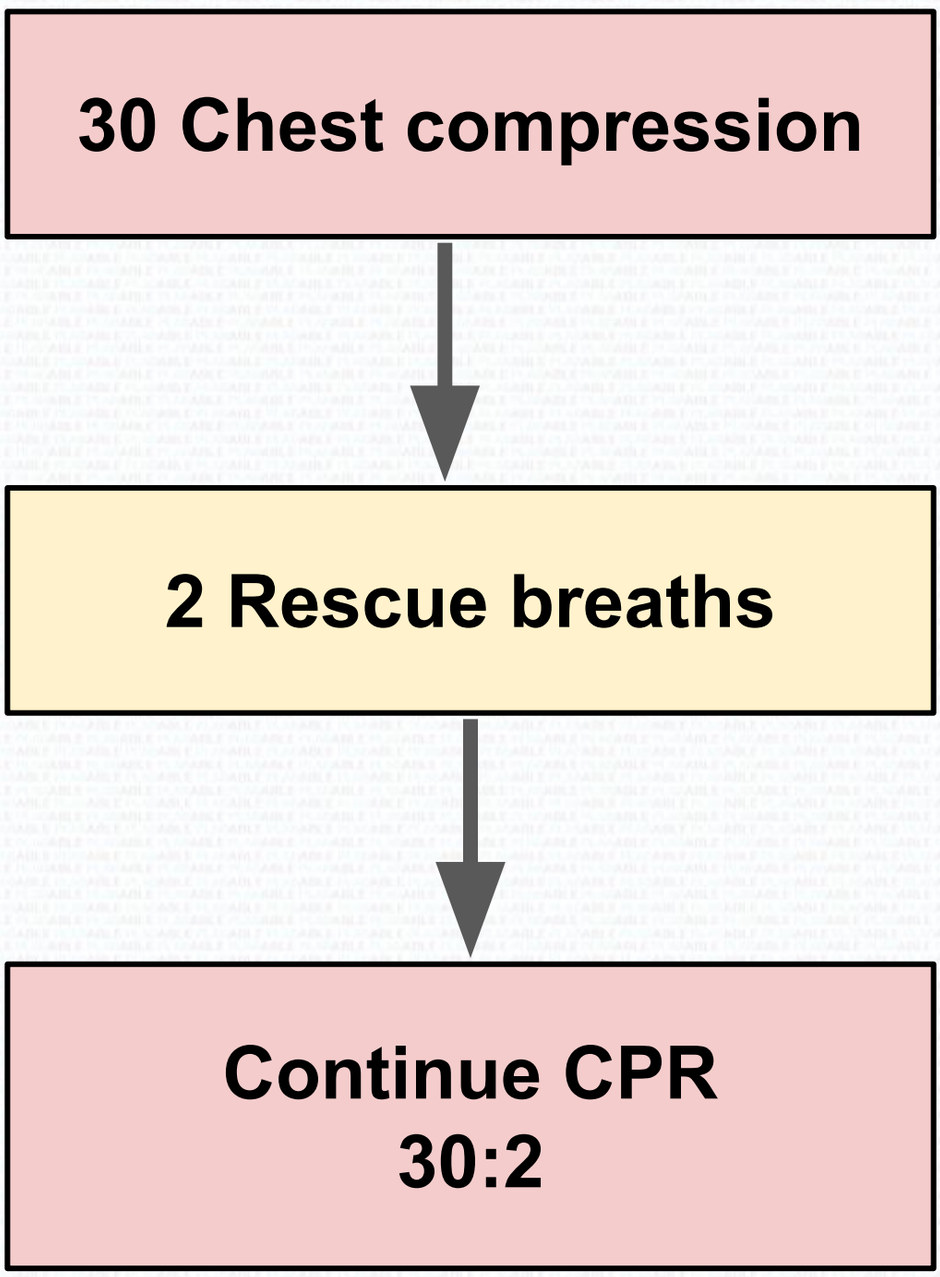
A 19 year old male was brought to the A&E with 4 episodes of convulsive seizures in the past 45 minutes with no recovery in between the episodes. His airways are secured.

➔ What is the most appropriate treatment if you are unable to secure an IV line?

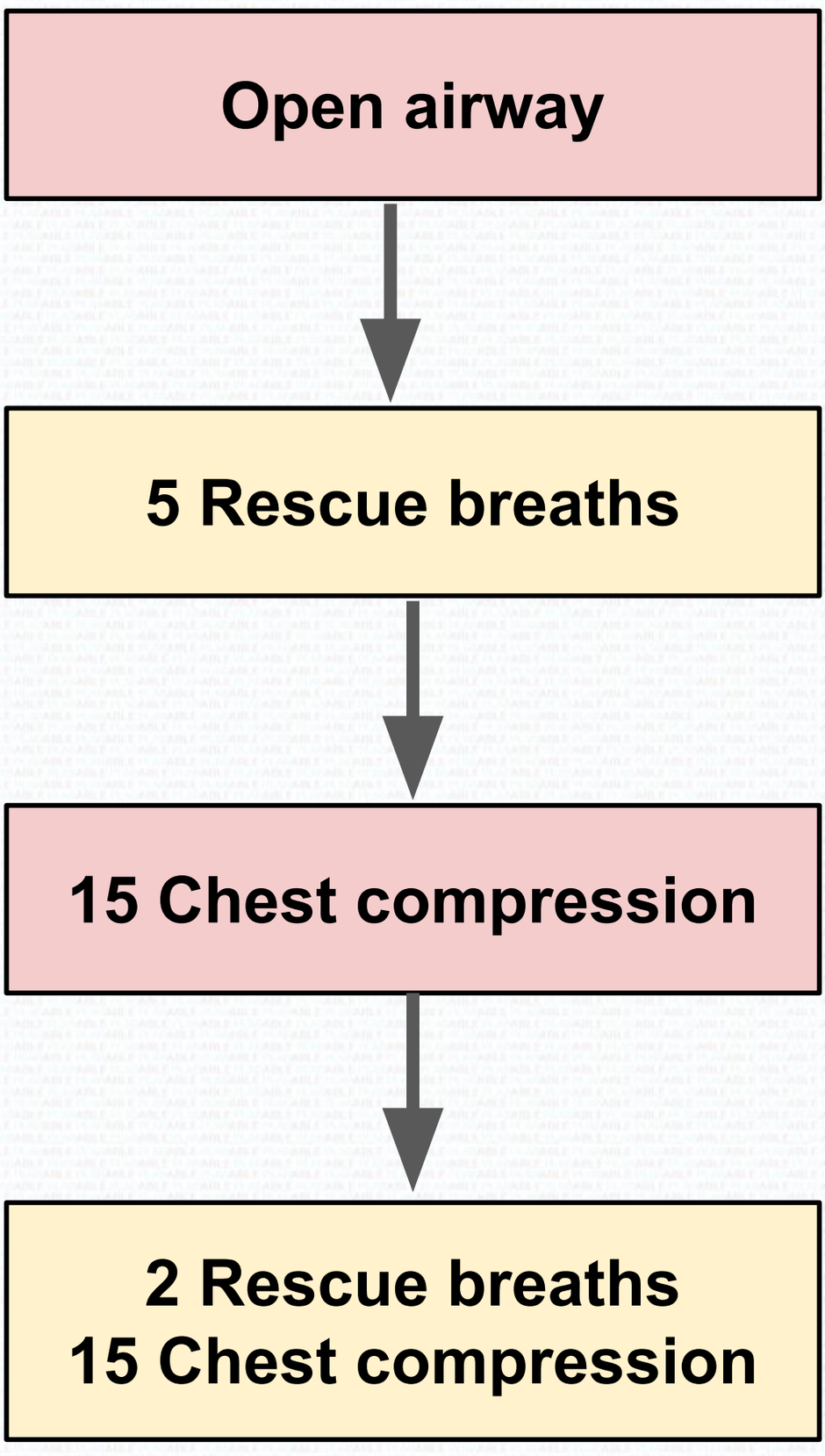
Buccal midazolam should be given if you are unable to secure an IV line in a case of status epilepticus.

IV lorazepam is the first line if you can secure an IV line. IV diazepam can be used if the former is not available.

Resuscitation - Adult



Resuscitation - Child



Hypernatraemia

In the presence of dehydration → Use sodium chloride 0.9% to replenish fluid and decrease sodium

Care should be taken not to decrease sodium levels too quickly in patients with chronic hypernatraemia as it could result in cerebral oedema

PodsForDocs

Check out our Podcast episode '*Acute Medicine'* to further solidify your knowledge on the topic.

Click on the image below to head to our PodsForDocs podcast page to subscribe. Enjoy!

Haemorrhagic Shock Classes

ATLS has 4 haemorrhagic shock classes

	Class 1	Class 2	Class 3	Class 4
Blood loss	<15% or <750 ml	15 - 30% or 750 - 1500ml	30 - 40% or 1500 - 2000 ml	>40% or >2000 ml
Heart rate	60 - 100	101 - 120	121 - 140	>140
Blood pressure	Normal	Normal	Decreased	Decreased
Respiratory rate	14 - 20	21 - 30	31 - 40	>35

Foreign Body Aspiration

Child playing with toys + acute symptoms

Suspect **foreign body aspiration/ingestion** *(like a toy)*

- **Aspiration** → Respiratory symptoms
- **Ingestion** → Usually asymptomatic

If there is no stridor or cyanosis and child relatively well, then proceed for imaging

Remember to perform a **chest X-ray** first!

Nasendoscopy → Examines the nasal passage, pharynx and larynx

Bronchoscopy → If obstructing bronchus *(e.g. unilateral signs like right-sided wheezing)*

When To Give 0.9% Sodium Chloride

Hyponatraemia

If dehydrated (hypovolaemia)

E.g. Patient who has vomiting and diarrhoea but replaces his fluids with water

If euvolaemic *(in majority of cases) Note for SIADH, it is usually fluid restriction*

Hypernatraemia

If dehydrated (hypovolaemia)

E.g. Patient who has vomiting and diarrhoea but inadequately replaces his fluids with water

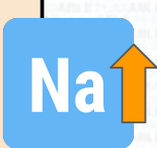
The Dehydrated Person And Sodium

In a patient who is dehydrated, you can replace fluids with intravenous normal saline (0.9% sodium chloride) whether the patient is hyponatraemic or hypernatraemic.

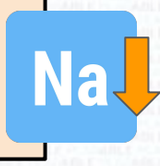
How does hyponatraemia or hypernatraemia occur?

Example of dehydration
→ Vomiting and diarrhoea

Diarrhoea can result in free water loss resulting in more water being loss than sodium
→ Results in hypernatraemic hypovolaemia



Vomiting and diarrhoea can result in loss of sodium and water and when replenished by oral fluid like water (which is hypotonic)
→ Results in hyponatraemic hypovolaemia



Since sodium chloride 0.9% is isotonic, it will slowly correct the sodium levels

The Emergency Situation for Hyponatraemia

What are emergency situations for hyponatraemia?

Patient who has rapid change in sodium levels where they start to have a **seizure** or go into **coma**

Start **hypertonic saline** (examples include 1.8% sodium chloride or 3% sodium chloride)

Then consider **furosemide**

This is a senior led decision!

Fine Coarse Tremors

One might give you a scenario where a patient with a history of bipolar disorder and hypothyroidism overdosed on a certain medication. Which medication is it?

Could it be lithium or levothyroxine?

The first point to remember is it takes a lot more tablets of levothyroxine than lithium to become symptomatic. For that reason, levothyroxine overdoses are less asked in the exam.

Lithium toxicity

Affects CNS

Examples:
Ataxia, confusion, tremors

Levothyroxine toxicity

Affects all systems but mostly CNS and cardiovascular

Examples:
Tachycardia, anxiety, tremors

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