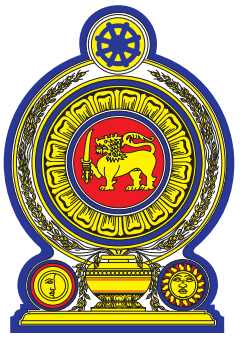
MANUAL FOR ACCIDENT AND EMERGENCY CARE SERVICES IN SRI LANKA



Ministry of Health, Nutrition & Indigenous Medicine

Sri Lanka

2016

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1. Contributors

The Working Committee

- **College of Medical Administrators of Sri Lanka**
  - Dr. Ananda Gunesekera - Chairman
  - Dr. Lal Pannapitiya
  - Dr. Champika Wickramasingha

- **The College of Surgeons of Sri Lanka**
  - Prof. Mohan de Silva
  - Dr. L. R. P. K. B. Udapamunuwa
  - Dr. R. N. Ellawala
  - Dr. Nissakna Jayawardena
  - Dr. Kirthi Abayajeewa
  - Dr. Saman Wadanambi
  - Dr. Mahanama Gunasekara

- **Ceylon College of Physicians**
  - Dr. Amitha Fernando
  - Dr. Ananda Wijewickrema
  - Dr. Kirthi Gunesekera
  - Dr. Krishantha Jayasekerkera
  - Dr. Athula Weeraratne
  - Dr. Rohitha Jayamaha
  - Dr Lalith Wijayaratne
  - Prof Chandrika Wijeyaratne
  - Dr. Manohari Senevirathna

- **Sri Lanka College of Paediatricians**
  - Dr. Sri Lal De Silva
  - Prof. Sujeewa Amarasena

- **The College of Anaesthesiologists**
  - Dr Kumudini Ranathunga
  - Dr Mithrajee Premarthna

- **Sri Lanka College of Obstetricians & Gynaecologists**
  - Dr. Milhan Bacha
  - Dr. U. D. P. Rathnasiri
  -
- **Sri Lanka College of Radiologists**
  - Dr. Suneetha Weerakoon
  - Dr. U.G.L.N. Gamage
  - Dr. Palitha kandamby

- **The Sri Lanka College of Psychiatrists**
  - Dr. Jayan Mendis - Consultant Psychiatrist

- **The College of Otolaryngologists**
  - Dr. Chandra Jayasuriya - Consultant ENT Surgeon

- **Other Contributors**
  - Prof Senaka Rajapaksha – Consultant Physician
  - Dr. Waruna Gunathilake – Consultant Physician
  - Prof. P. Ariyanada – Consultant Physician
  - Prof. Tilak Weeraratne – Consultant Physician
  - Dr. G. Hettiarachchi – Consultant Physician
  - Dr. Aruna Munasingha – Technical Coordinator (2012-2013)
  - Expert Committee of Snake Bite – SLMA
  - Dr. Ruwan Ekanayake – Consultant Cardiologist
  - Dr. Kumudu Karunaratne – Consultant Microbiologist
  - Dr. Dhammika Gunewardana – Consultant Haematologist
  - Dr. Senaka Bandusena – Consultant Neurologist
  - Dr Asunga Dunuwila – Consultant Clinical Electrocardiophysiologist
  - Dr Rohan Gunawardena – Consultant Clinical Electrocardiophysiologist
  - Dr Suresh Kollegoda – Consultant Clinical Electrocardiophysiologist
  - Dr. Samiddhi Samarakoon – Technical Secretary (2012-2013)
  - Dr. Sonali Lunuwila – Technical Secretary (2013-2014)
  - Dr Indika Jagoda – Technical Secretary(2014-2015)
  - Dr. D.M.P.S. Bandara – Technical Secretary(2015-2016)
  - Dr. R.C. Fernando – Technical Secretary(2016)

2. Introduction

Accident and emergency (A and E) medicine is a specialized area of patient care dealing with acute illness. An accident is a traumatic incident involving any part of the body. Emergencies can be medical paediatric, surgical, gynaecological, obstetric or psychiatric. Patients present without prior preparation can have life threatening illnesses. An A & E department enables quick and efficient patient care while minimizing patient deaths and complication without delays in treatment.

3. Ethics of Emergency Unit

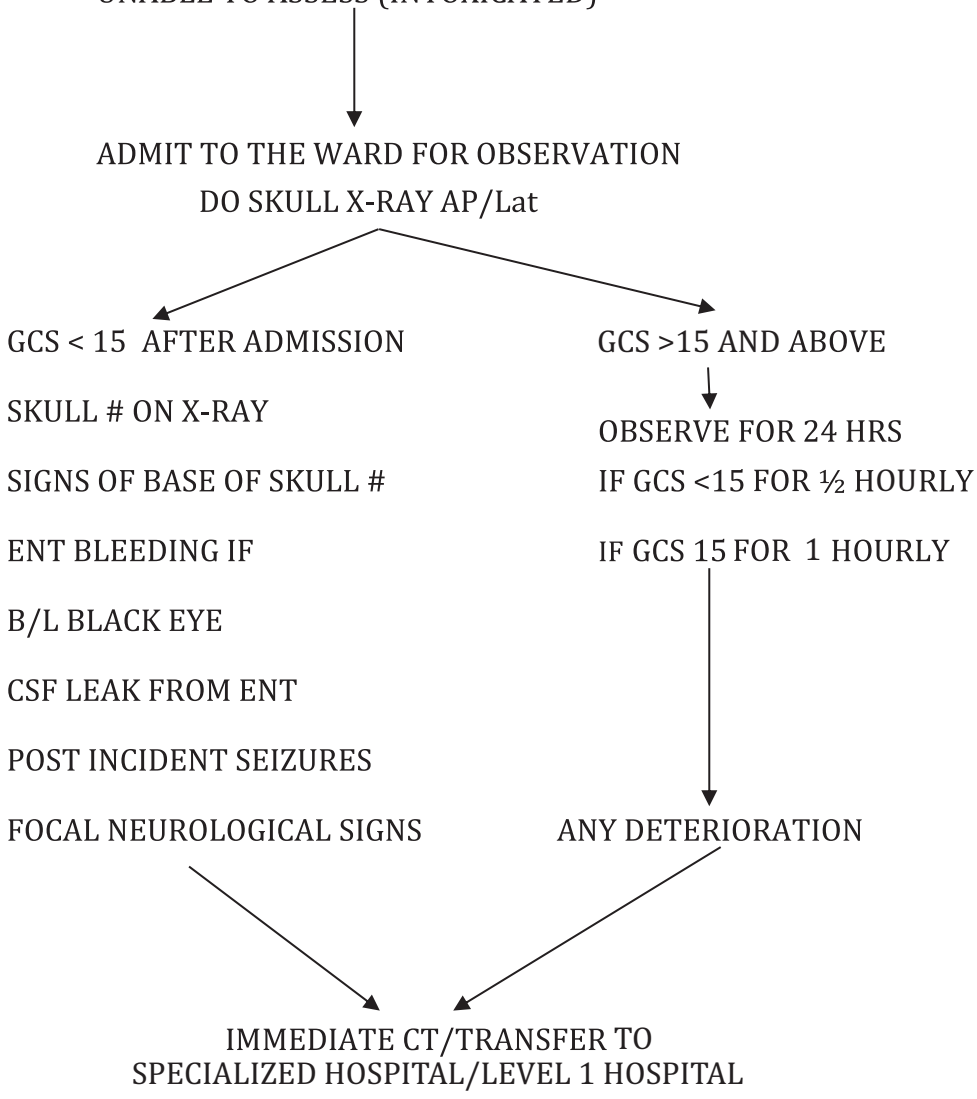
- All patients presenting to the A & E have the right to immediate treatment regardless of age and other discriminations.
- Obtain consent from patients for all procedures. The patient has the right to know about their illness and procedures to be carried out. They have the right to refuse treatment
- Always act in the best interest of the patient especially the mentally disabled and children
- Maintain confidentiality and do not reveal a patients details to any one without patients consent unless legally required to do so
- Work in harmony with all categories of staff to ensure each patient gets the best treatment possible
- Be punctual for work and interact well with colleagues
- Update knowledge to ensure best patient management.

4. Standard Treatment Protocols (STPs)

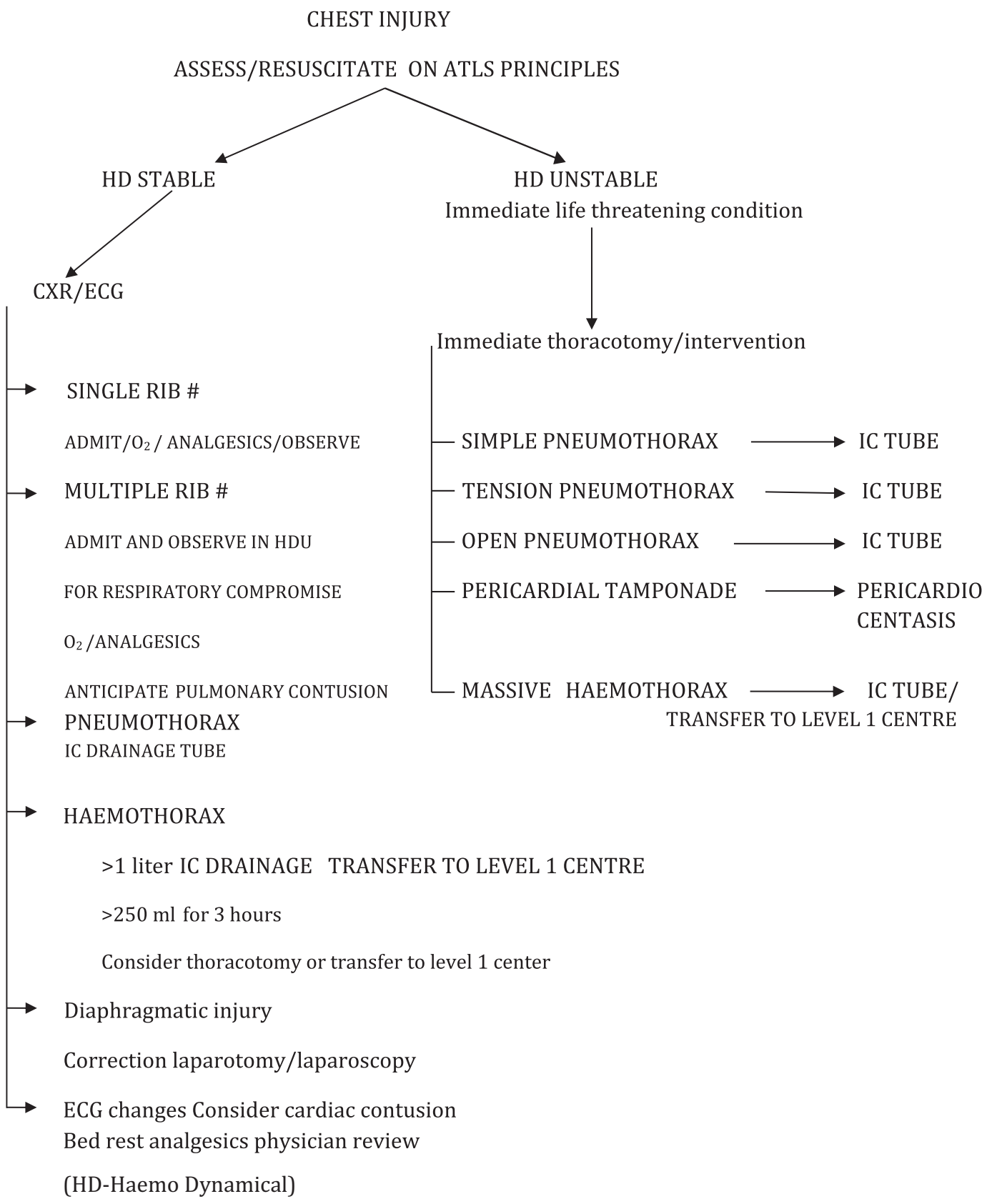
1. Surgical Emergencies

1.1 Head Injury

- HIGH VELOCITY INJURY/FATALITIES/PENETRATING INJURY
- ANY LOSS OF CONSCIUSNESS(GCS <15)
- AMNESIA (RETRO/ANTEROGRADE)
- SIGNIFICANT PERSISTANT HEADACHE
- FOCAL NEUROLOGICAL SIGNS
- FITS AFTER INJURY
- VOMITING SINCE INJURY
- ALTERED BEHAVIOUR
- UNABLE TO ASSESS (INTOXICATED)



1.2 Chest Injury



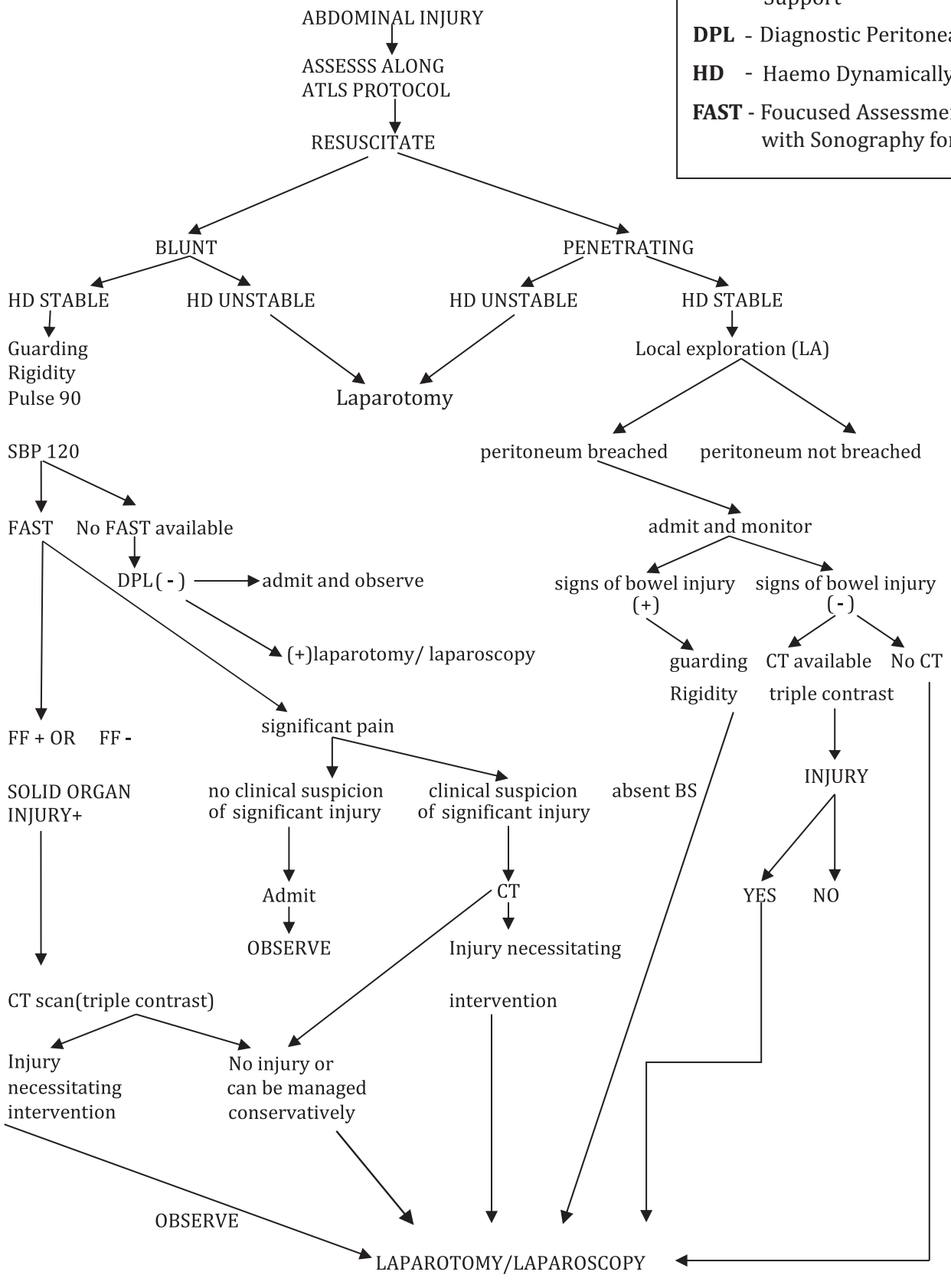
1.3 Abdominal Injury

ATLS - Advanced Trauma Life Support

DPL - Diagnostic Peritoneal Lavarge

HD - Haemo Dynamically

FAST - Foucused Assessment with Sonography for Trauma



1.4 Acute limb swelling +/- Infection

Acute limb swelling is a spectrum of disease ranging from cellulitis to limb threatening ischaemia or life threatening necrotizing fasciitis or gas gangrene.
Following are the possibilities:

1. Ischaemic limb
2. DVT
3. Necrotizing fasciitis/cellulitis/abscess
4. Gas gangrene
5. Haematoma /contusion
6. Oedema due to non surgical causes
7. Ruptured bakers cyst
8. Lymphoedema +/- infection

When evaluating a patient's history and examination it should be focused to arrive at a diagnosis and associated limb or life threatening conditions.

History

Duration & onset	Varicose veins
Pain	Recent surgery/prolonged bed rest
Symptoms of acute inflammation	Co-morbidities eg. DM HT IHD
Evidence of trauma	Relevant systemic review
Dependent oedema	

Examination

General appearance, fever, severity of pain

Limb -Colour & temperature –pale & cold suspect acute ischaemia PULSES

- Redness & warmth –infection
- Presence of necrosis or gangrene
- Oedema Pitting or non-pitting
- Varicose veins
- Bruising
- Regional lymphadenopathy

Investigations

Based on history and examination following tables will guide on appropriate investigations.

Systemic evaluation:
- complete blood count
- urinalysis
- electrolytes
- creatinine
- blood sugar
- thyroid stimulating hormone
- albumin
- other tests for specific indications

Specific indications:
Acute edema: d-Dimer, to follow with doppler exam if d-Dimer elevated OR clinical suspicion of DVT high
Age :45 years: echocardiogram to rule out pulmonary hypertension, heart failure
Suspicion of heart disease: ECG, echocardiogram, chest radiograph, brain natriuretic peptide
Suspicion of liver disease: ALT, AST, total bilirubin, alkaline phosphatase, prothrombin time, serum albumin
Suspicion of kidney disease: urinalysis with exam of sediment, serum lipids
Suspicion of malignancy: abdominal and Pelvic CT scan
Suspicion of sleep apnea: sleep study, echocardiogram
Lymphedema: abdominal and Pelvic/ CT scan
Medication known to cause edema : consider reducing dose or changing medication

Treatment

- Pain relief
- Start treatment according to the provisional diagnosis and consult relevant team or arrange discharge and follow up.
  - Necrotizing fasciitis , gas gangrene > emergency > surgical and infectious disease control team
  - Ischaemic limb >emergency > surgical or vascular team
  - DVT > emergency > surgical or vascular team
- Cellulitis- depending on severity discharge with oral medications, IV antibiotics and SSU or continuum care- surgical/medical
- Contusion, haematoma and ruptured Bakers cyst- depending on severity discharge with oral medications, SSU or continuum care- surgical

1.5 The Acute Abdominal Pain

The acute abdominal pain may represent simple indigition which resolves spontaneouly in a short time to a wide variety of life threatening conditions for which prompt and correct management is essential, and it represents a serious diagnostic dilemma more often than not. Therefore systematic triage system is essential for the effective management of the patients with acute abdomen, who admit to the A & E.

Good history and thorough examination is essential

History

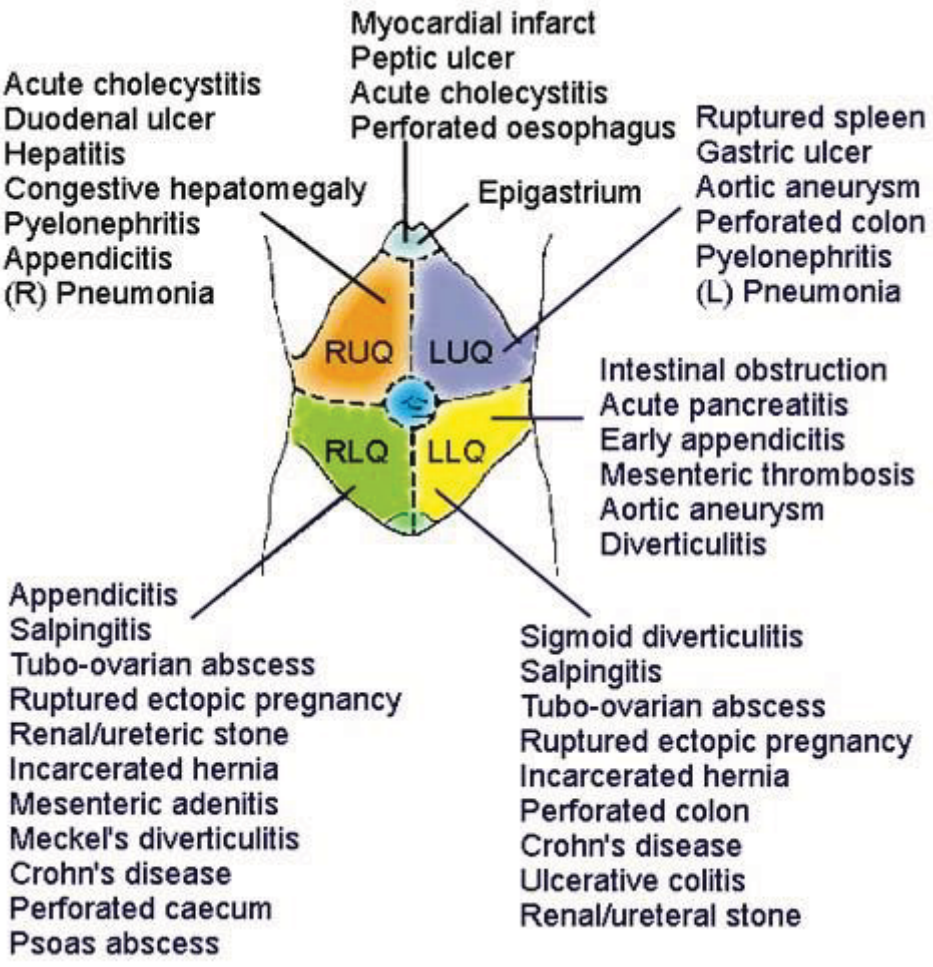
This should cover the following points:

- Demographic details, occupation, recent travel, history of recent abdominal trauma.
- Pain:
  - Onset (including whether new pain or previously experienced).
  - Site (ask the patient to point), localised or diffuse.
  - Nature (constant/intermittent/colicky).
  - Radiation.
  - Severity.
  - Relieving/aggravating factors (eg if worsened by movement/coughing, suspect active peritonitis; pancreatitis is relieved by sitting forward).
- Associated symptoms:
  - Vomiting and the nature of vomitus (undigested food or bile suggests upper GI pathology or obstruction; faeculent vomiting suggests lower GI obstruction).
  - Haematemesis or melaena.
  - Stool/urine colour.
  - New lumps in the abdominal region/groins.
  - Eating and drinking - including when the patient's last meal occurred.
  - Bowels - including presence of diarrhoea, constipation and ability to pass flatus.
  - Fainting, dizziness or palpitations.
  - Fever/rigors.
  - Rash or itching.
  - Urinary symptoms.
  - Recent weight loss.

- Past medical and surgical history/medication.

- Gynaecological and obstetric history:
  - Contraception (including intrauterine contraceptive device (IUCD) use).
  - Last menstrual period.
  - History of sexually transmitted infections/pelvic inflammatory disease.
  - Previous gynaecological or tubal surgery.
  - Previous ectopic pregnancy.
  - Vaginal bleeding.
  - Drug history and allergies - including any complementary medication.

Guide to the diagnosis of abdominal pain according to the region.



Pl. Note the non abdominal causes of abdominal pain.

Examination

- Pulse, temperature and blood pressure.
- Assess respiratory rate and pattern. Patients with peritonitis may take shallow, rapid breaths to reduce pain.

- If there is altered consciousness, check Glasgow Coma Scale (GCS) or AVPU (**A**lert, **V**oice response, **P**ain response, **U**nconscious) scale.
- Inspection:
  - Look for evidence of anaemia/jaundice.
  - Look for visible peristalsis or abdominal distension.
  - Look for signs of bruising around the umbilicus (Cullen's sign - this can be present in hemorrhagic pancreatitis and ectopic pregnancy) or flanks (Grey Turner's sign - this can be present in retroperitoneal haematoma).
  - Assess whether the patient is dehydrated (skin turgor/dry mucous membranes).
- Palpation:
  - Palpate the abdomen gently, then more deeply, starting away from the pain and moving towards it.
  - Feel for masses, tenderness, involuntary guarding and organomegaly (including the bladder).
  - Test for rebound tenderness.
  - Examine the groins for evidence of hernia.
  - Always examine the scrotum in men as pain may be referred from unrecognised testicular pathology.
  - Check supraclavicular and groin lymph nodes.
- Percussion:
  - Percuss the abdomen to assess whether swelling/distension might be due to bowel gas or ascites.
  - Patients who display tenderness to percussion are likely to have generalized peritonitis and this should act as a red flag for serious pathology.
  - Assess for shifting dullness and fluid thrill.
  - Percussion can also be used to determine the size of an abdominal mass/extent of organomegaly.
- Auscultation:
  - Auscultate the abdomen in all four quadrants.
  - Absent bowel sounds suggest paralytic ileus, generalised peritonitis or intestinal obstruction. High-pitched and tinkling bowel sounds suggest sub acute intestinal obstruction.
  - Intestinal obstruction can also present with normal bowel sounds.
  - If there is reason to suspect aortic aneurysm, listen carefully for abdominal and iliac bruits.
- Further examination:
  - Perform rectal or pelvic examination as needed, **with an appropriate chaperone in attendance.**
  - Check lower limb pulses if there could be an abdominal aortic aneurysm.
  - Dipstick urine and send for culture if appropriate.
  - In a woman of childbearing age, assume that she is pregnant until proven otherwise - perform a pregnancy test.
  - Examine any other system that might be relevant, e.g. respiratory, cardiovascular.

Emergency department care of suspected acute abdomen

- Keep patient nil by mouth.
- Apply oxygen as appropriate.
- Intravenous (IV) fluids: set up immediately if the patient is shocked and the equipment is available. Send blood for group and save/cross match and other blood tests as appropriate.
- Consider passing a nasogastric (NG) tube if there is severe vomiting, signs of intestinal obstruction or the patient is extremely unwell and there is danger of aspiration.
- Analgesia: the previous practice was to withhold analgesia until surgical review, but a surgical abdomen is very painful and is likely only to be adequately relieved by parenteral opiates, e.g . morphine. One recent review showed that opiate administration may alter physical examination findings, but these changes result in no significant increase in management errors. Another study showed that morphine safely provides analgesia without impairing diagnostic accuracy. A Cochrane review also supported the use of analgesia before assessment by a surgeon.
- Antiemetic: avoid using this as a symptomatic treatment without considering a diagnosis in a community setting.
- Antibiotics: if systemic sepsis, or peritonitis, or severe urinary tract infection (UTI) is suspected. IV cephalosporin plus metronidazole are commonly used in acutely unwell patients in whom peritonitis is suspected.
- Arrange urgent surgical/gynaecological review as appropriate.
- Arrange investigations such as ECG if a medical cause is likely.
- Admit: if surgery is considered likely, if the patient is unable to tolerate oral fluids, for pain control, if a medical cause is possible or if IV antibiotics are required.

The management-The flow chart.

Green **-** Abdominal pain of less than 6 hrs. Resolves spontaneously.

Exclusion criteria.

If associated/ occurs in/with

1. Fever
2. Chills
3. Vomiting > 3 episodes
4. Diarrhoea > 3 times within a day
5. Dysuria, haematuria, frequency
6. Constipation
7. Distention
8. Malaena, haematemesis
9. Shock/tachycardia/tachypnoea

10. Confusion or altered conciousness
11. Tenderness, guarding, or rigidity
12. Masses and organomegally
13. pulsatile mass
14. Children less than 16 yr (especially with poor family support)
15. Pregnancy and /or with a POA
16. Senior citizens > 60yr (especially with poor family support)
17. Immuno compramized patients
18. Who have previously dignosed illness/cause
19. Severe persistant pain

Yellow - short stay unit.

All patients with abdominal pain whose vital parameters are stable and who has the above exclusion criteria will be moved to the short stay unit.

QHT – all patients.

Monitoring of vital signs. – all patients.

The Investigations

FBC - All patients who have got guarding/rigidty and other patients whom the medical officer thinks that should have a FBC.

Urine HCG – all females with child bearing age with lover abdominal pain with or without a POA.

Serum amylase – patients with upper abdiminal pain + guarding/ rigidity, patients who has a history of gall badder/ pancreatic disease.

UFR – fever with chills, dysuria, haematuria, confusion and altered conciousness (especially in > 60yr.), tender loins/iliac fossae, ballotable kidney, palpable bladder, and in immunocompramised patients.

USS abdomen/ KUB – all patients with positive UFR, loin to groin pain, fever with chills, Haematuria, tenderness/ guarding/rigidity, palpable masses, pulsatile masses, organomegally, pregnancy and POA.

X –Ray (errect chest) – all patients with epigasric tenderness/guarding or rigidity, patients with associated cough and fever.

X – Ray (supine abdomen) - patients with abdominal distension, vomiting, constipation. (An errect abdomen also may be taken in patients with distension/ diarrhoea/ constipation). Patients who has painful bloody/ mucoid diarrhoea (think of acute exaserbation of IBD).

CT – Pulsatile Mass.

Spiral CT urogram (If available)/or limited film IVU – if UFR/USS positive loin to groin pain.

Discharge criteria.

No pain for 6 - 8 hrs, with no positive investigation findings.

Patients who are having a proven diagnosis such as uncomplcated UTI, who can be managed at home.

All patients who are discharged to be issued an advice card (see section on advice card).

Transfer to cotinnum care unit

Persistant pain after 24 hours with negative results but with no defenitive diagnosis.

Patients who have associted symptoms indicating serious illness E.g. haematuria, pyuria, malaena, profuse bleeding PR, blood and mucus diarrhoea, haematesis, haemoptysis, fever with chills and rigors.

Pain associated with positive signs before/after 24 hrs with negative investigations.

Pain associated with abnormal findings of any of the above investigations which would indicate a specific dignosis before 24 hrs which needs continuatinued in-hospital care.

Associated scrotal pain (needs immediate assement by surgical team)

Red – Resuscitation area

Patients in shock or pre - shock , unconcious and confused patients,

ABCDE – Advaced Life Support (ALS) guidelines to be carried out

Catheter, NG (if indicated), drips through large bore cannula ,

Blood for FBC, Random Blood sugar, serum electrolytes, blood gas analysis, serum creatinine, serum alcohol and DT.

Intubate when indicated.

USS/CT abdomen – when indicated.

Consult relavant consultant and consider admitting for ICU care.

Red flags that raise suspicion of serious pathology

- Hypotension.
- Confusion/impaired consciousness.
- Signs of shock.
- Systemically unwell/septic-looking.
- Signs of dehydration.
- Rigid abdomen.
- Patient lying very still or writhing.
- Absent or altered bowel sounds.
- Associated testicular pathology.
- Marked involuntary guarding/rebound tenderness.
- Tenderness to percussion.
- History of haematemesis/melaena or evidence of latter on examination per rectum (PR).
- Suspicion of a medical cause for abdominal pain.

Special situations

Children
Pain aetiology varies with age; history and examination can be difficult.

Pregnancy
Always consider ectopic pregnancy in women of childbearing age. Causes of acute abdomen in late pregnancy are different and require expert combined obstetric, gynaecological and surgical evaluation.

Older patients

- Tend to show less specific symptoms and signs.
- Tend to present later in the course of their illness.
- Morbidity and mortality in older patients presenting with acute abdominal pain are high.
- You should have a lower threshold for referral to secondary care/for surgical assessment and a higher index of suspicion of serious pathology.
- Aortic aneurysm and bowel ischaemia are more prevalent in the elderly.
- Angiodysplasia of the colon is more common and can cause GI haemorrhage.
- Medical causes of abdominal pain are encountered more frequently.
- The 'Top 5' medical causes of an acute abdomen to consider in older patients are:
  - Inferior myocardial infarction.
  - Lower-lobe pneumonia/pulmonary embolism causing pleurisy.
  - Diabetic ketoacidosis or hyperosmolar nonketotic coma (HONK).
  - Pyelonephritis.
  - Inflammatory bowel disease.
- Biliary tract disease, including cholecystitis, is the most common indication for surgery in older patients with abdominal pain. This is thought to be due to age-related changes in the biliary tract.

Discharge on Patient advice/instruction card.

To be given to all patients who are having abdominal pain when discharged from the A & E. The langauge of instructions should be Sinhala/ Tamil.

- You have been observed and investigate following your abdominal pain. There have been no signs of complications and you are now ready to return home.
- We suggest that you should rest quietly for 24hours.
- It is better if a responsible adult can remain with you for that period.
- You should return to the Hospital immediately if your pain returns and does not resolve with simple painkillers.

- **You can telephone for advice if you are unsure (the telephone numbers are to be given)**

Medicolegal pitfalls and tips

- Careful documentation of the clinical situation and decision-making process is essential.
- Failure to appreciate the severity of illness through not assessing vital signs/taking heed of general condition.
- Failing to take note of history from carers/parents in a patient who now seems relatively well, particularly in children.
- Failure to examine adequately or to document findings.
- Failure to examine for an enlarged bladder, for herniae or to check the scrotum.
- Failure to carry out rectal or vaginal examination when it is indicated.
- Failing to explain the reason for an intimate examination, leading to an accusation of impropriety.
- Treating children as little adults and not considering paediatric-specific diagnoses.
- Failing to make concrete follow-up arrangements or advising a patient of when they should seek further assessment, when managing patients in the community.
- Delayed transfer of acutely unwell patients to hospital. Use the 1990 service where necessary.
- Steroids or other forms of immunocompromise may mask symptoms and signs.
- When pain outstrips signs, consider gut infarction or AAA.
- Don't rely on a normal test result to discount pathology if the clinical condition suggests otherwise.
- Failing to consider pregnancy or conduct a pregnancy test.
- Be ready to reassess your initial diagnosis, or a colleague's diagnosis, where the clinical situation has changed.

2. Medical Emergencies

2.1 The critically ill patient: assessment and stabilization

Signs of critical illness

1. Airway
dyspnea, tachypnea, ability to speak only in short sentences or single words, agitation

2. Respiratory rate
Respiratory rate < 8 or > 30/min ⟶ pulse oximeter O_2 saturation if less than 95% give oxygen 60–100%

Check blood gases

3. Heart rate
Heart rate < 60 or > 120 bpm on cardiac monitor ⟶ immediate ECG obtain IV access manage arrhythmia

4. Blood pressure
Systolic BP < 90 mmHg, Give oxygen 60–100% Connect an ECG monitor ⟶ exclude arrhythmia

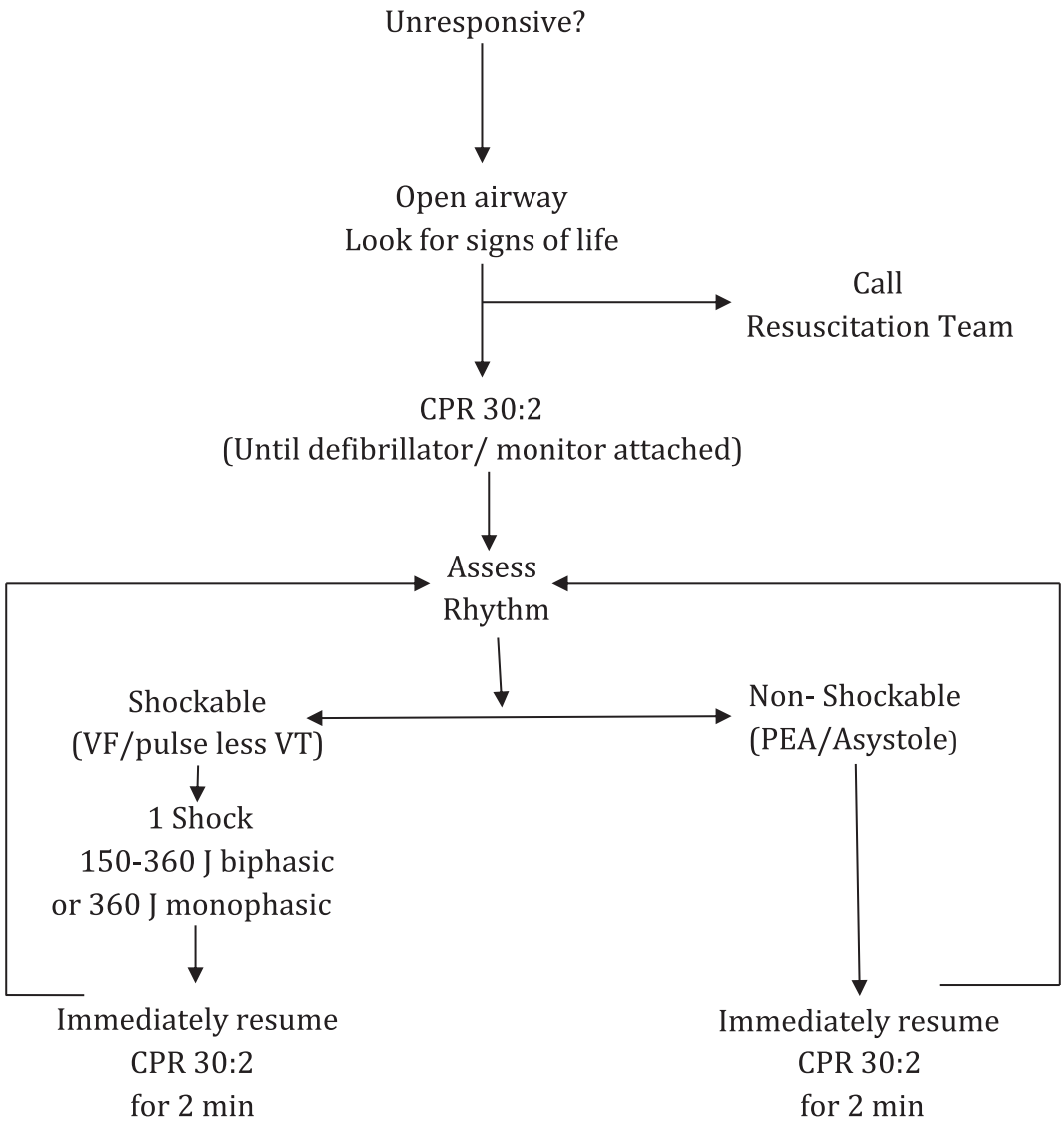
5. Perfusion
Cold skin with fine film of sweat, capillary refill > 2S agitated, altered, LOC, oliguria Connect an ECG monitor exclude arrhythmia, run in fast normal saline if no pulmonary oedema

6. Conscious level
Reduced level of consciousness level (GCS/APUV) size of pupils Stabilize airway, breathing and circulation ⟶ endotracheal intubation if GCS 8 or less Exclude hypoglycemia

7. Temperature
Core temperature <36 or >38°C,
Hypotension
Hypoxemia, oliguria
Or confusional state

8. Blood glucose
Blood glucose <3.5 mmol/l, Sweating, tachycardia, abnormal behavior, focal neurological signs reduced conscious level or fits give 50cc 50 % dextrose with thiamine

2.2 Cardiac Arrest - Adult Advanced Life Support Algorithm



During CPR ;

- Correct reversible causes
- Attempt to intubate
- Give uninterrupted compressions once air way secure
- Give adrenaline/ atropine according to protocol

2.3 Hypotension

If the blood pressure is un- recordable start CPR

Systolic BP <90 mmHg → ECG monitor → Correct arrhythmia

→ acute blood loss / severe sepsis } Fluid resuscitation

→ Consider tension pneumothorax and cardiac tamponade

→ Pulmonary edema

Clear the airway
Raise the foot end of the bed
High flow oxygen(60-100%)
2 large bore IV cannulae → start colloid infusion

Differential diagnosis

Hypovolaemia	Anaphylaxis	Systemic vasodilatation	Cardiac pump failure	Obstruction
Acute blood loss (gut/aorta) Fluid loss from gut/kidneys/skin Acute adrenal insufficiency		Sepsis Drugs/poisons	cardiogenic shock aortic dissection arrhythmias Acute valvular regurgiation	Tension pneumothorax Cardiac tamponade Pulmonary embolism

2.4 Sepsis and septic shock

Suspected severe sepsis ▸ history- fever, diabetes, sweats chills rigors, breathless, headache, confusion nausea and vomiting

- Symtoms - evidence of cellulitis lung signs, abdominal pain with systolic BP <90 mmHg,warm peripheries, bounding peripheral pulses, fever or hypothermia (elderly) tachypnoe and oliguria.

Management ;

Clear the air way
60-100% oxygen
Large bore cannulae/CVP line
Fliud replacement

Keep mean arterial pulse >55-60
Maintain hemoglobin >8 g/dl
If shock persists despite adequate CVP
↓
Start norepinephrine IVI 1-12mg/min

Take blood for cortisol level and start hydrocortisone 50 mg 6-hourly IV
Correct hyperglycaemia
Send blood culture

If focus of sepsis is identified start specific antibiotics. If not empirical antibiotics According to hospital protocol

2.5 Anaphylaxis & Anaphylactic Shock

Hypotension → 0.5ml adrenaline IM (mid lateral one third of thigh)
↓
Repeat once in 5 minutes if necessary
↓
IV Normal saline or Colloid
↓
Raise foot end of bed if breathing is comfortable

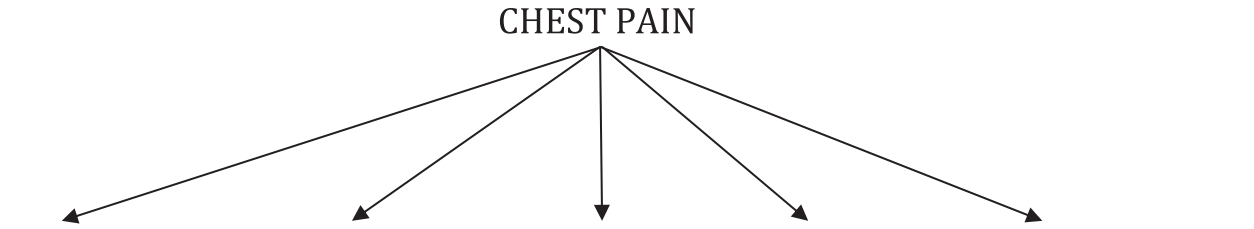
- Laryngeal oedema (choking, coughing, stridor)
- Flushed appearance, urticaria, angio oedema

→ • Chlopheniramine 10mg IV
• Hydrocortisone 200 mg IV

- Bronchospasm (wheezing, cough and breathlessness) → Nebulise with salbutamol
- Loss of consciousness → manage as unconscious pt

Ref: *A Guide to the Management of Medical Emergencies. Second edition 2010*
Prof PL Ariyananda, Dr G hettarachchi, Prof TP Weerarathna

2.6 Chest Pain



Cardiac	Pulmonary	Vascular	GIT	Musculoskeletal
Ischaemia	pneumonia	aortic aneurism	peptic ulcers	cervical spondylosis
Myocarditis	pneumothorax		cholecystitis	costochondritis
Cardiomyopathy	pulmonary embolism		pancreatitis	

Brief history – Nature of the pain

Past history- IHD/Aspirin. DM Dyslipidaemia alcohol GERD

duration of the pain NSAID use

O/E

Fever

BP and peripheral pulses

Crepts in lung bases

Abdominal tenderness

Investigations

12 lead ECG, FBC,cardiac enzymes according to protocol,CXR

Proceed to individual protocol

References: ***Dr Ruvan A. I. Ekanayaka ST Elevation myocardial Infarction 2009***
Dr Ruvan A. I. Ekanayaka Unstable Angina 2009

2.7 Dyspnoea

85% of cases it is due to either

asthma,

pneumonia,

LVF/ARF

chronic obstructive pulmonary disease,

congestive heart failure,

cardiac ischemia,

Anaemia

Asthma

↓

shortness of breath

↓

wheezing

↓

tightness in the chest
non productive cough

Acute coronary syndrome

↓

retrosternal chest discomfort

↓

difiicult breathing

Congestive heart failure

↓

shortness of breath with exertion

↓

orthopnea,

paroxysmal nocturnal dyspnea.

Chronic obstructive pulmonary disease

↓

increased shortness of breath and sputum production

Pneumothorax

↓

pleuritic chest pain of acute onset

↓

shortness of breath not improved with oxygen

Pneumonia

↓

fever,
productive cough,

↓

shortness of breath,

↓

pleuritic chest pain

Pulmonary Embolism

↓

acute shortness of breath

↓

pleuritic chest pain
(cough, Hermoptysis)
fever

Anaemia

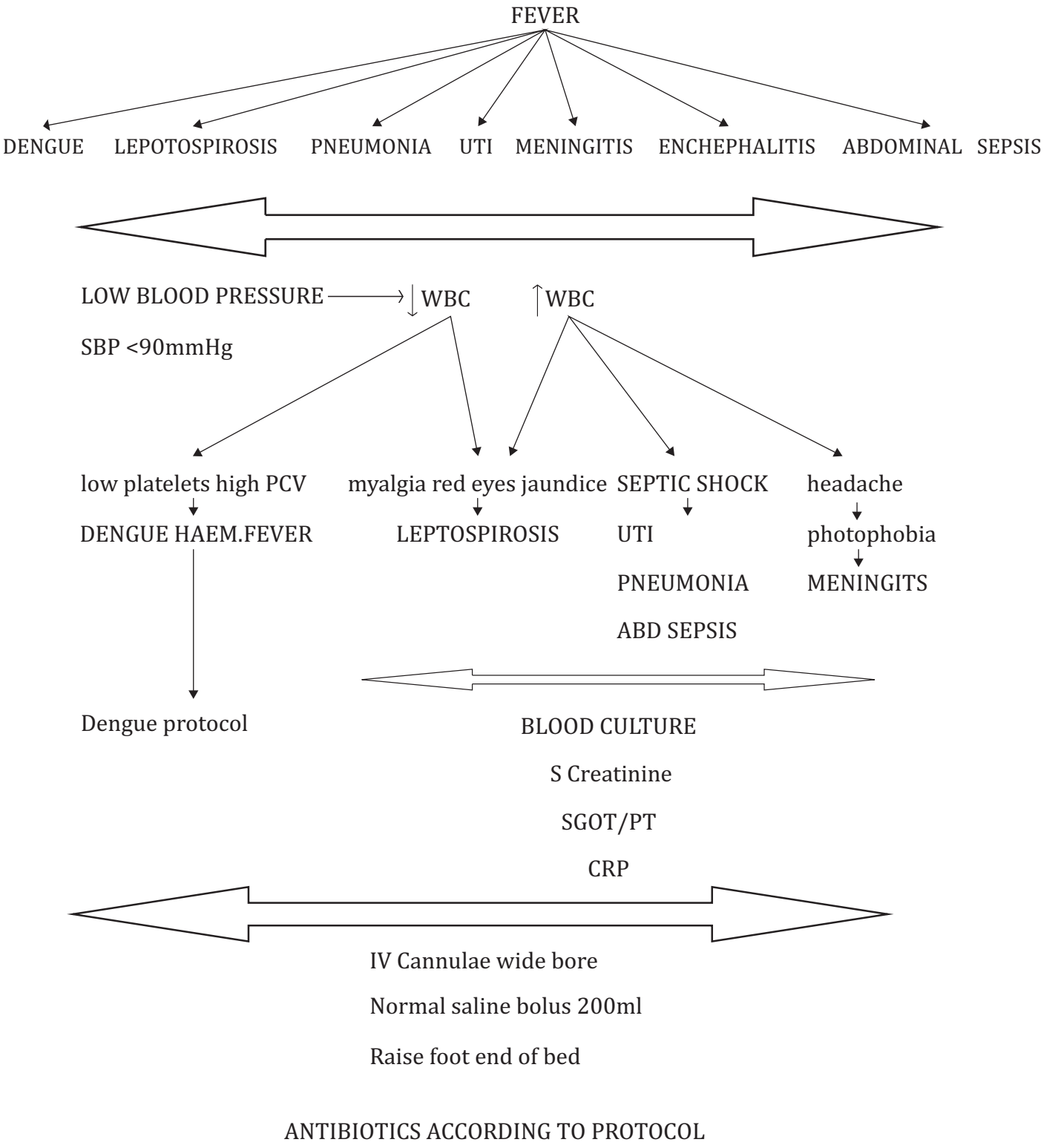
↓

Dyspnoea

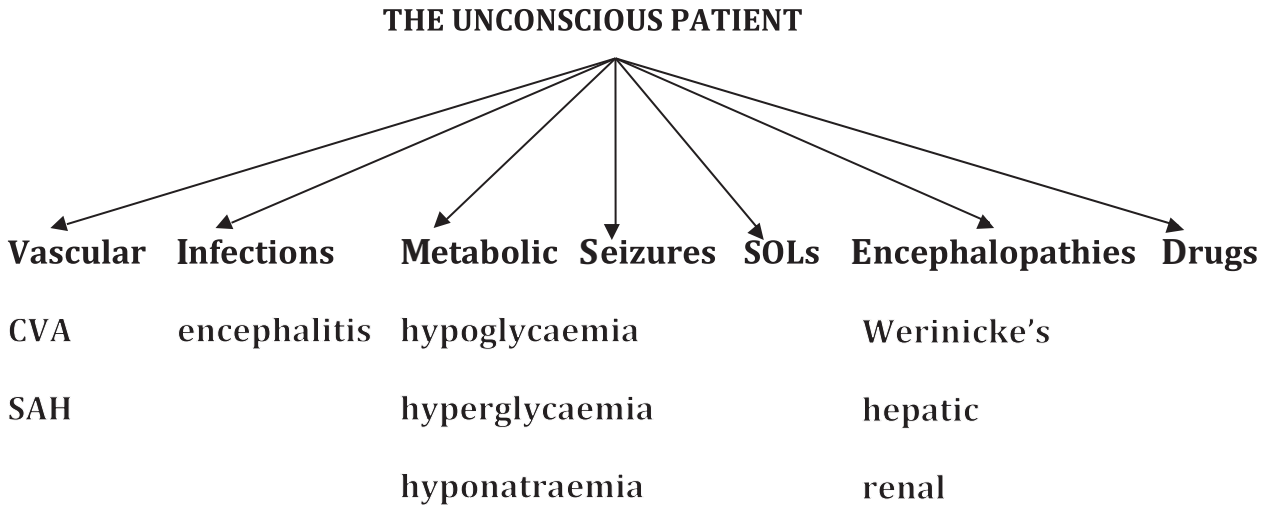
↓

Headache

2.8 Fever


FEVER
DENGUE
LEPOTOSPIROSIS
PNEUMONIA
UTI
MENINGITIS
ENCHEPHALITIS
ABDOMINAL SEPSIS
LOW BLOOD PRESSURE
SBP <90mmHg
WBC
WBC
low platelets high PCV
myalgia red eyes jaundice
SEPTIC SHOCK
headache
DENGUE HAEM.FEVER
LEPTOSPIROSIS
UTI
PNEUMONIA
ABD SEPSIS
photophobia
MENINGITS
Dengue protocol
BLOOD CULTURE
S Creatinine
SGOT/PT
CRP
IV Cannulae wide bore
Normal saline bolus 200ml
Raise foot end of bed
ANTIBIOTICS ACCORDING TO PROTOCOL

2.9 THE UNCONSCIOUS PATIENT



History.

- Sudden or gradual,
- Fever
- Fits

Examination

- Neck stiffness
- focal neurological signs
- Planters up
- Pupils

Management

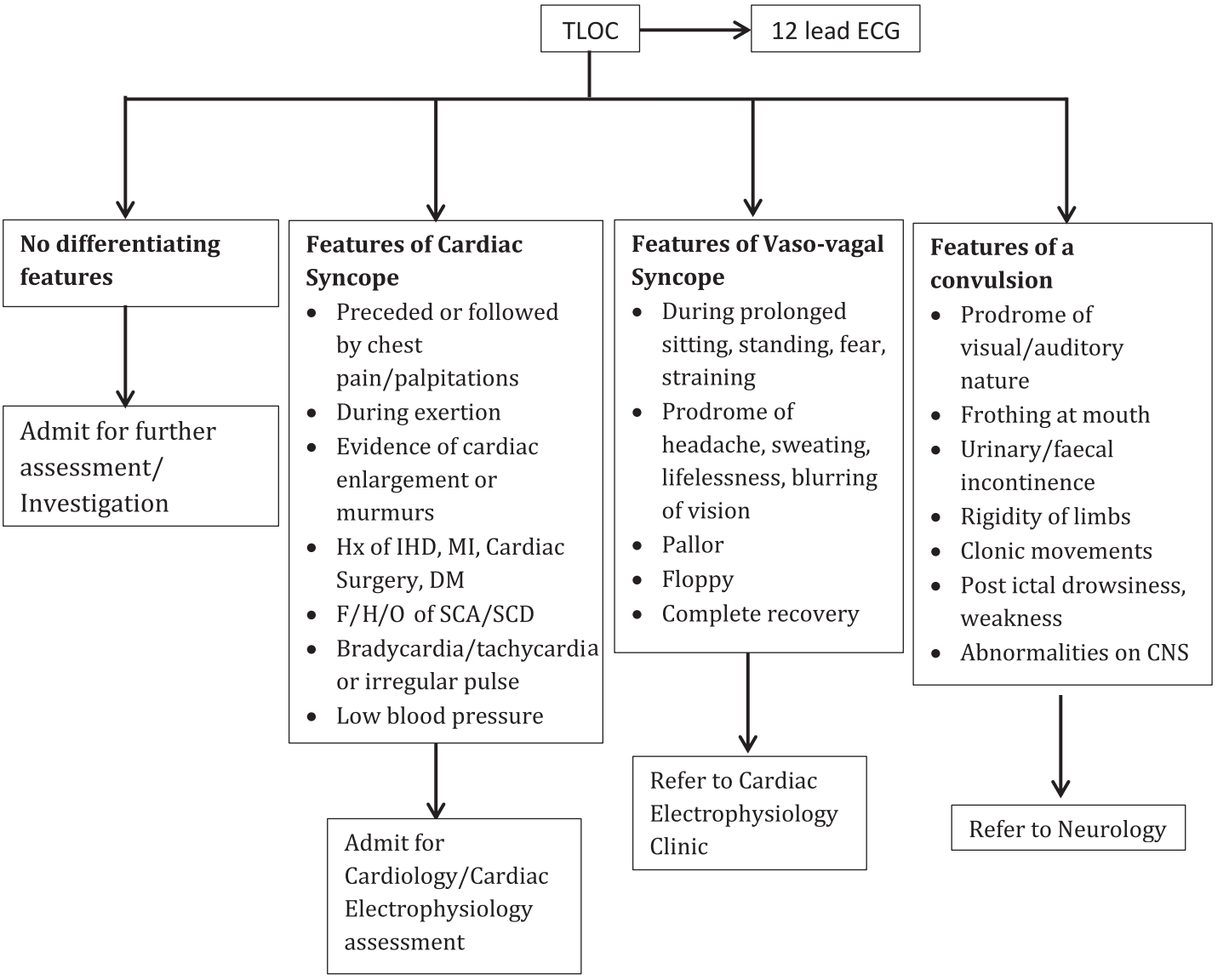
- Turn to left lateral position after clearing air way give 2-4 liter s oxygen
- RBS by glucometer< 50mg/dl 50 cc 50% dextrose IV
- If the GCS is below 8 put an endotracheal tube
- H/O Alcoholism- 5% dextrose with IV thiamine 100mg IVI
- Urgent NCCT brain if normal; LP
- Eye cover\ Catheterise
- NG feed prevent aspiration

Turn every 2 hours

Look for a cause

2.10 Transient Loss of Consciousness (TLOC)

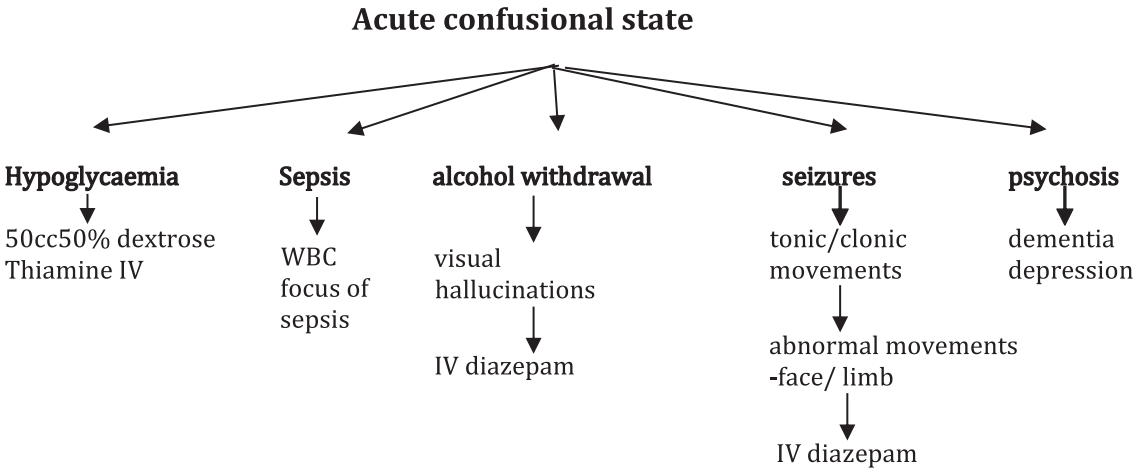
A diagnosis of TLOC is made on a history of a sudden onset fall/faint, with or without a prodrome, with rapid recovery. Patients may also present with aborted TLOC.



*ECG abnormalities

- Any degree of heart block or sinus/junctional bradycardia (<60bpm).
- ECG criteria for LVH/RVH.
- Abnormal Q waves, ST changes, T inversions.
  Evidence of Brugada changes, Abnormal QTc, features of early repolarization

2.11 Acute confusional state



Stabilize airway, breathing, circulation

1. Assess the mental state
Acute confusional state is characterized by:

– Clouding of consciousness (reduced alertness, impaired attention and concentration)
– Disorientation in time (and often also for place and person)
– Impaired short-term memory

• The duration of the patient's abnormal mental state, as assessed by are liable witness, often helps distinguish acute confusional state from dementia (which may of course coexist)

2 Check the drug chart

• Many drugs may cause an acute confusional state in the elderly, notably benzodiazepines, tricyclics, analgesics (including NSAIDs, particularly indomethacin), lithium, corticosteroids, and drugs for parkinsonism

• If the patient was admitted with an acute confusional state, find out exactly what medications were being taken prior to admission, and ask relatives to collect all medications in the home)

3 Are there signs of sepsis or other illness which may cause acute confusion?

2.12 Status Epilepticus

Continuous tonic clonic convulsions for 30 min or longer with out regaining consciousness

CAUSES

Cerebral tumour ($1^0/2^0$)	
Intracranial infection	Drug over dose
Hypoglycaemia	Alcohol withdrawal
Head Injury	hypoxia
Stroke	Low calcium

Low sodium Non compliance with anti-epileptic medication

⇩

Open the air way by placing in semi prone position with head slightly lower to prevent aspiration

⇩

Give oxygen

⇩

Correct hypotension if necessary with a colloid Take ECG

⇩

IV line take blood for U&E LFT FBC calcium

⇩

Check RBS- give 50cc 50% dextrose with IV thiamnine 100mg

⇩

IV diazepam 10-20 mg repeat after 30 min Max dose 40mg. Watch for respiratory depression

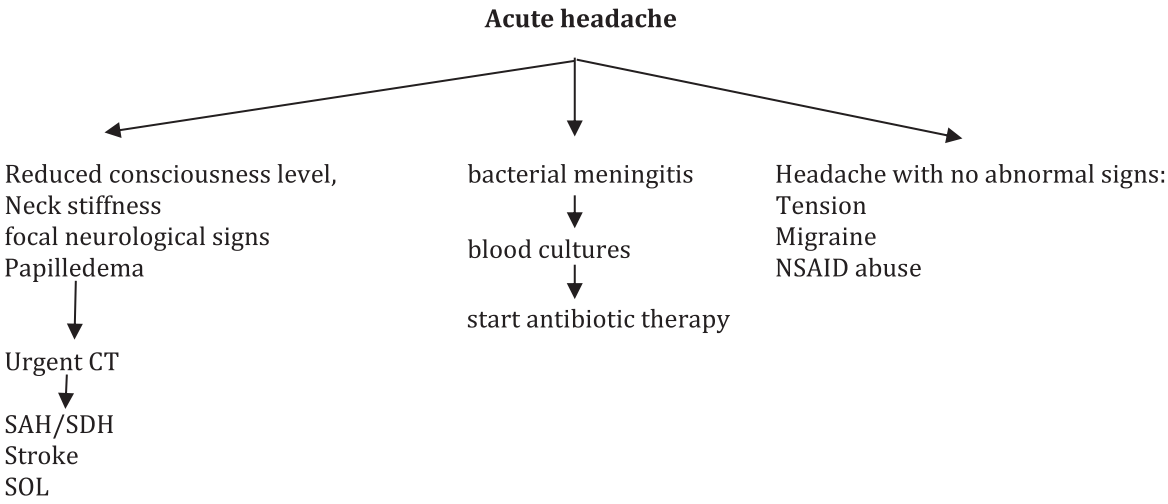
⇩

IV phenytion infusion 18mg/kg(1-1.5g) If patient is already on phenytion 10mg/kg(1 to 500mg). Monitor for cardiac dysrhythmias

⇩

Paralyze and ventilate

2.13 Acute Headache



History

- How did the headache start? Instantaneous onset?
- Still present? How long has it lasted?
- Syncope at onset?
- How severe? Worst headache ever?
- Distribution (unilateral, diffuse, localized)
- Associated systemic, neurological or visual symptoms (e.g. syncope/ presyncope, limb weakness, speech disturbance, blurring of vision, transient blindness, diplopia,). Did these precede or follow the headache?

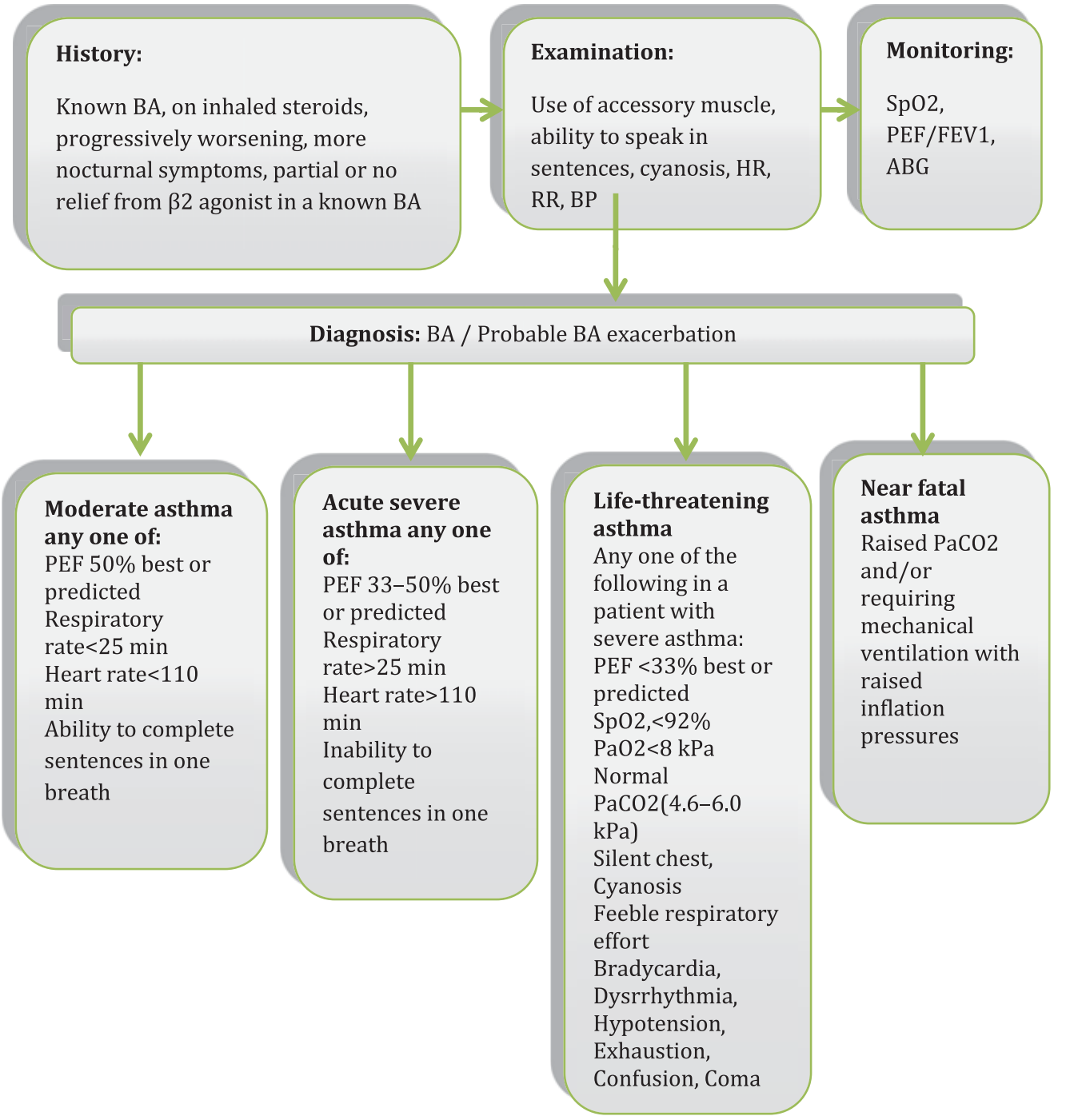
Background

- Medication history and possible exposure to toxins
- Recent travel abroad?
- Immuno compromised or known malignancy?
- Disorders associated with increased risk of aneurysmal subarachnoid hemorrhage: polycystic kidney disease,
- Family history of migraine or subarachnoid hemorrhage?

Examination

- Key observations: airway, respiratory rate, arterial oxygen saturation, heart rate, blood pressure, perfusion, consciousness level, temperature, blood glucose
- Neck stiffness (in both flexion and extension)?
- Focal neurological signs?
- Horner syndrome (partial ptosis and constricted pupil: if present,
- Visual acuity and fields
- Fundi (papilledema or retinal hemorrhage?)
- Signs of dental, ENT or ophthalmic disease?
- Temporal artery tenderness or loss of pulsation?

2.14Bronchial Asthma



Initial Management:

Oxygen 40-60%(CO_2 retension is not usually aggravated by oxygen therapy in BA)

Salbutamol 5mg or 1 ml with 3ml N. saline with O_2 driven nebulizer 6-8L/min

Nebulize every 20min / continuous nebulization Salbutamol 10mg with 8ml N. saline

Hydration and Oral prednisolone40mg or IV hydrocortisone 100mg

Ipratropium 500mcg nebulization after 1h and every 4 hourly

No sedatives

CXR only if Pnemothorax or consolidation is suspected or patient requires IPPV

If Life threatening features are present:

Discuss with senior clinician and ICU team

Initial management

Add IV $MgSO_4$ 1.2g - 2 g infusion over 20 min

Continous Salbutamol nebulisation

Assess every 15-30 min
Repeat measurement of PEF 15-30 minutes after starting treatment

maintain SpO_2 >94-98%

Repeat blood gas measurements within 1 hour of starting treatment if:

initial PaO_2 <8 kPa (60 mmHg) unless subsequent SpO_2 >92%

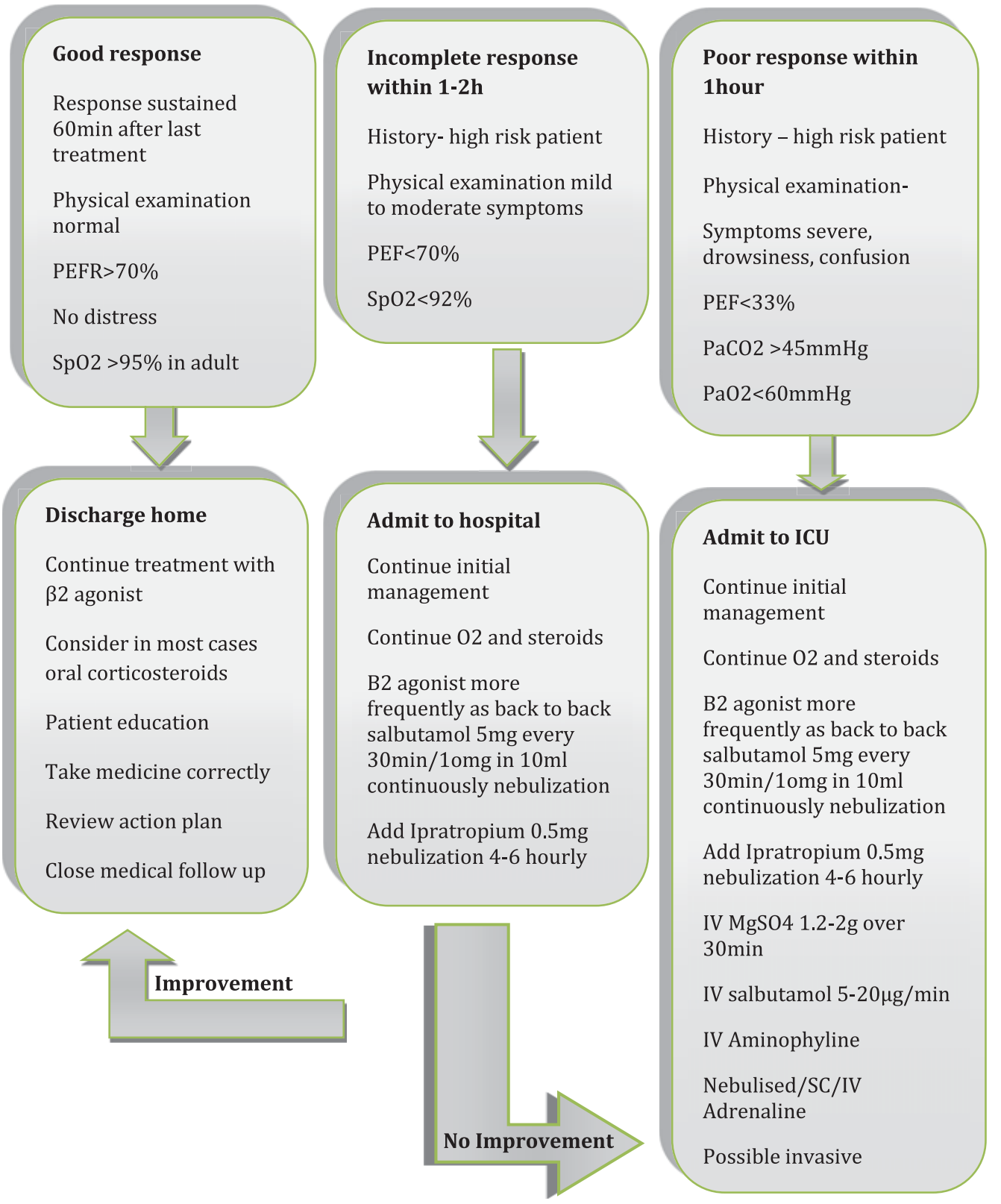
$PaCO_2$ normal or raised

patient deteriorates

Chart PEF before and after giving β2 agonists and at least 4 times daily throughout hospital stay

Correction of hydration

Correction of electrolytes


Good response
Response sustained 60min after last treatment
Physical examination normal
PEFR>70%
No distress
SpO2 >95% in adult
Incomplete response within 1-2h
History- high risk patient
Physical examination mild to moderate symptoms
PEF<70%
SpO2<92%
Poor response within 1hour
History – high risk patient
Physical examination-
Symptoms severe, drowsiness, confusion
PEF<33%
PaCO2 >45mmHg
PaO2<60mmHg
Discharge home
Continue treatment with β2 agonist
Consider in most cases oral corticosteroids
Patient education
Take medicine correctly
Review action plan
Close medical follow up
Admit to hospital
Continue initial management
Continue O2 and steroids
B2 agonist more frequently as back to back salbutamol 5mg every 30min/1omg in 10ml continuously nebulization
Add Ipratropium 0.5mg nebulization 4-6 hourly
Admit to ICU
Continue initial management
Continue O2 and steroids
B2 agonist more frequently as back to back salbutamol 5mg every 30min/1omg in 10ml continuously nebulization
Add Ipratropium 0.5mg nebulization 4-6 hourly
IV MgSO4 1.2-2g over 30min
IV salbutamol 5-20µg/min
IV Aminophyline
Nebulised/SC/IV Adrenaline
Possible invasive
Improvement
No Improvement

Mechanical ventilation tips

Indication for intubation

- Deteriorating PEF, worsening or persisting hypoxia, or hypercapnea
- Exhaustion, altered consciousness
- Poor respiratory effort or respiratory arrest

AMBU ventilation or Mechanical ventilation

- RR – 12-14/min
- TV- 4-8 ml/kg
- FiO2 to SpO2 >92%
- I:E ratio 1:4
- PEEP- No PEEP or < 5cmH2O
- PlP< 35cm H2O
- PH>7.2

2.15 COPD

History

- Known COPD, Worsening dyspnoea from base line, increase sputum production, purulent sticky sputum, increase tight swelling of legs,
- Current inhalers, Compliance, Base line activity status, CAT score,
- PHx -exacerbations, ICU admissions, Sputum microbiology, Home O2, Current smoking status, recent antibiotics

Examination

- Dyspnoea, tachypnoea, use of accessary muscles, pursed lip breathing, confusion, cyanosis, new leg oedema, signs of R/ heart failure, rhonchi, crepts, signs of CO2 retention (flapps)

Differential Diagnosis

- Pneumothorax, Pulmonary embolism, Pulmonary oedema/ LVF, Pneumonia, CA lung, Pleural effusion

Systemic Steroids

Salbutamol 100 micrograms by inhalation, up to 10 inhalations (preferably via a large-volume spacer), repeated as required OR

Terbutaline 500 micrograms by inhalation, 1 or 2 inhalations, repeated as required

OR

Ipratropium bromide 40 micrograms by inhalation, up to 6 inhalations (preferably via a large-volume spacer), repeated as required.

Antibiotics

Salbutamol 2.5 to 5 mg by nebuliser, as required /

Ipratropium bromide 250 to 500 micrograms by nebuliser, as required.

O_2 Therapy

- Target SPO_2 - 88- 92%

PaO_2 (mm Hg)	$PaCO_2$ (mm Hg)	pH	Adjustment
Much greater than 65 (or SpO_2 much greater than 92%)	normal (36 to 44) or high (greater than 44)	normal (7.36 to 7.44) or low (less than 7.36)	reduce oxygen flow to maintain PaO_2 closer to 60 mm Hg (SpO_2 88 to 92%) and monitor clinical status and ABG
55 to 65 (or SpO_2 88 to 92%)	normal (36 to 44)	normal	continue same oxygen flow
	high (greater than 44)	low	continue same oxygen flow, monitor clinical status and ABG, and consider assisted ventilation
less than 55 (SpO_2 less than 88%)	normal or low	normal	increase oxygen flow but monitor clinical status and ABG
	high (greater than 44)	low	consider assisted ventilation, titrate O_2 and monitor ABG

Indication for NIV in COPD

- Acute exacerbations of COPD
- Exacerbations of COPD with CO2 retention,
- A respiratory acidosis with a pH in the range of 7.25 to 7.35
- Tachypnoea

Contraindications for NIV

- Immediate need for tracheal intubation
- Cardiorespiratory arrest
- Haemodynamic instability
- Impaired consciousness with inability to protect the airway
- Fixed upper airway obstruction
- Copious secretions or vomiting
- Pneumothorax
- Facial injuries
- Recent upper gastrointestinal surgery
- Non-cooperative patient or patient intolerant of the mask.

Discharge plan

- Medication review & assess drug compliance

- Bronchodilators - B_2 agonists
- long acting anticholinergics (tiotropium)
- Inhaled steroids with long acting B2 agonists
- Theophyline *

(** Access to NIV is not readily available in our country)*

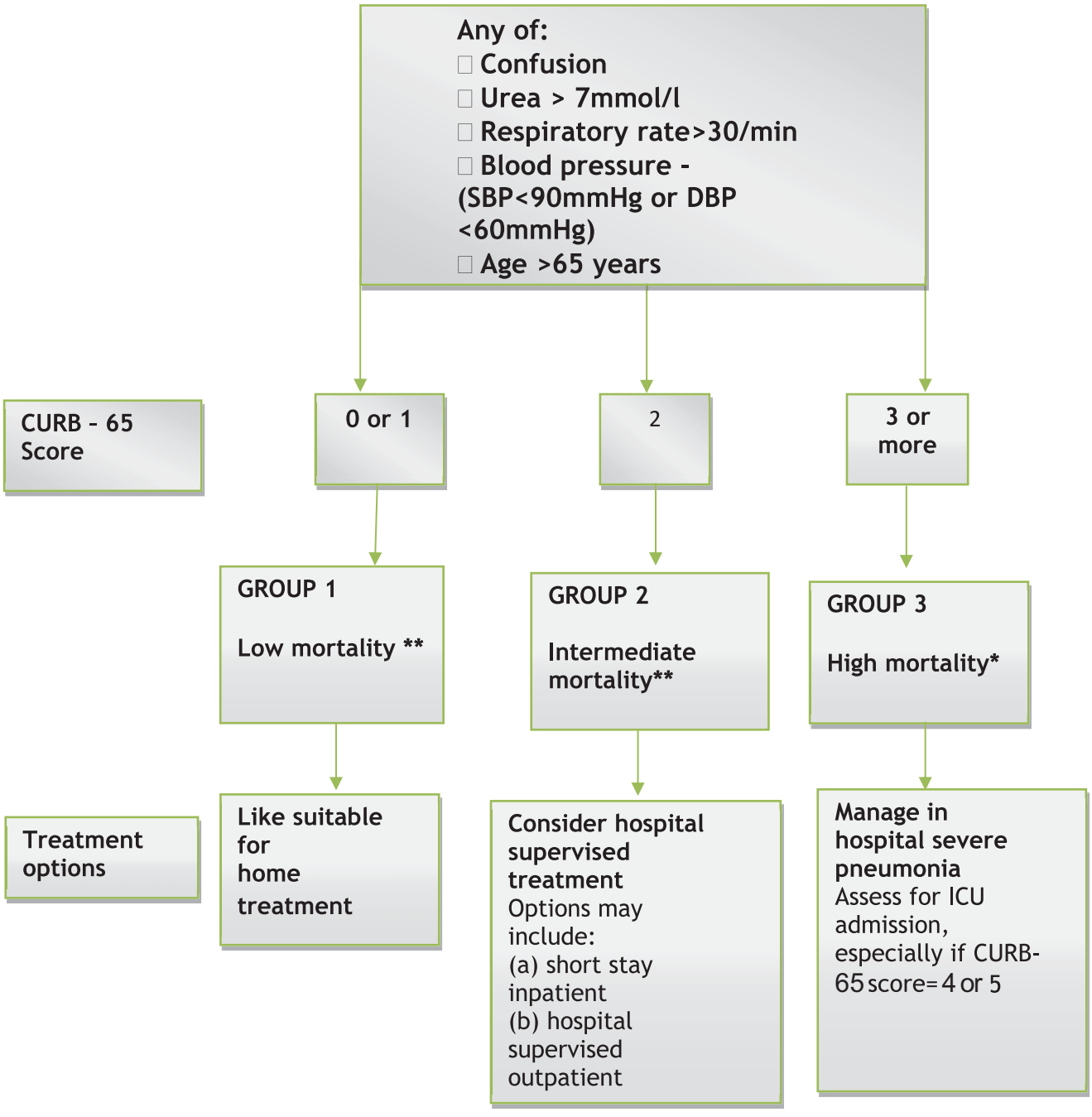
Assessment for Home oxygen requirement

- Pulmonary rehabilitation including chest physiotherapy
- Vaccination

  If current smoker – smoking cessation therapy

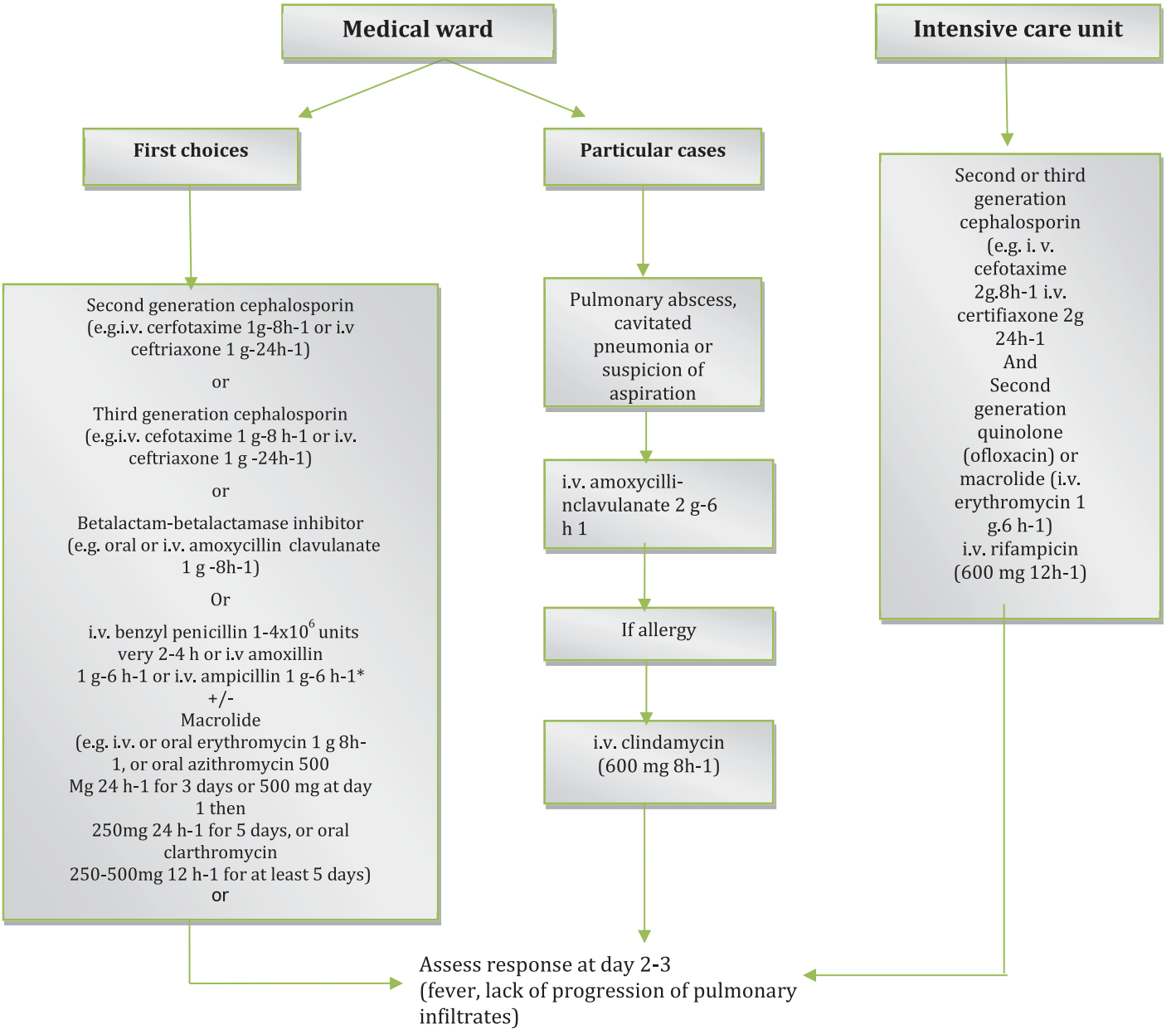
2.16 Community Acquired Pneumonia

Severity assessment in a hospital: The CURB-65 (Confusion,Urea,Respirator Rate,Blood Pressure,age >65) score

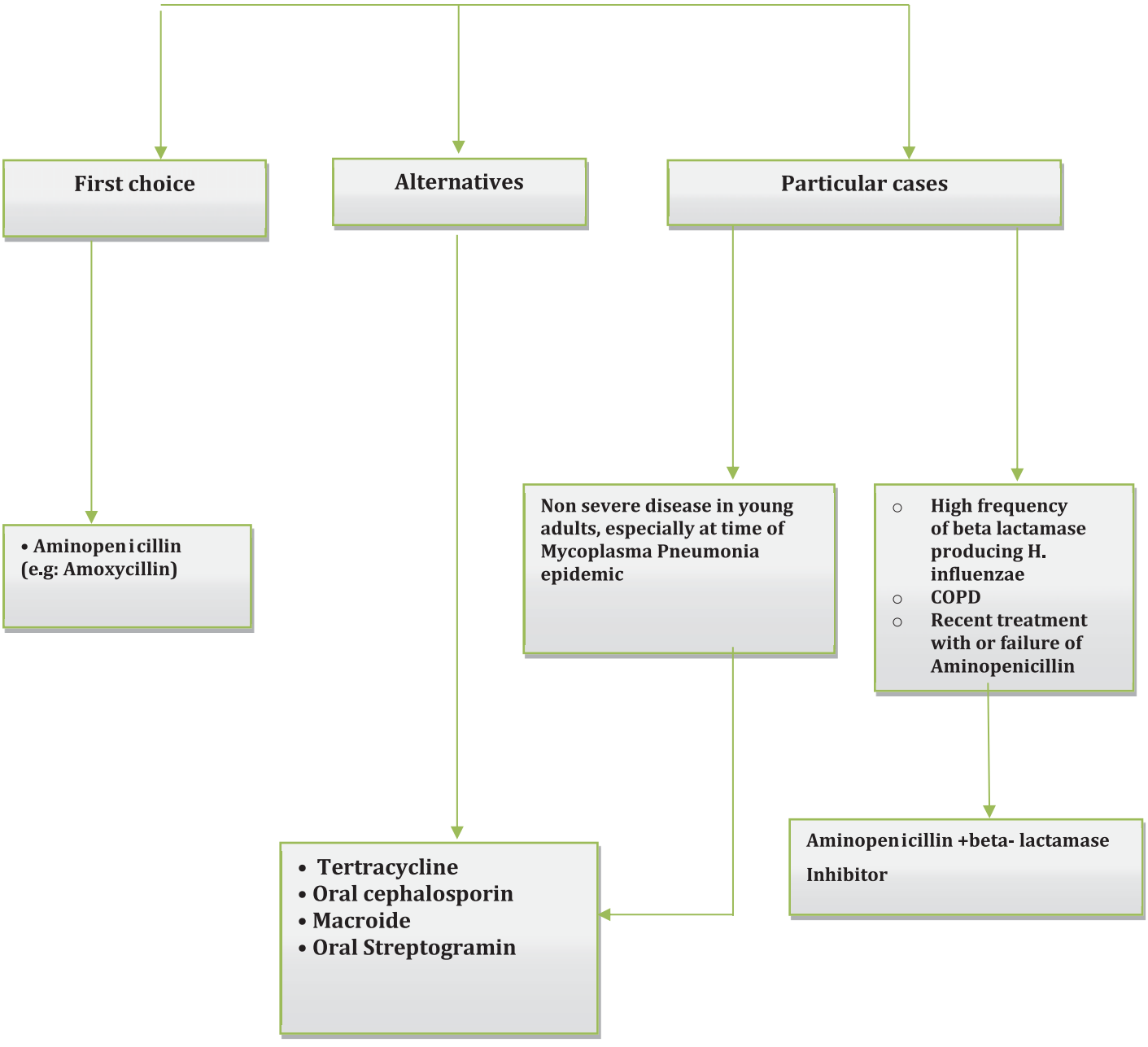


Defined as a Mental Test Score of 8 or less, or new disorientation in person, place or time risk of mortality at 30 days.

Choice of antibiotics and assessment of response in community acquired pneumonia managed in the hospital only in areas where the frequency of betalactamase -producing Haemophilus influenzae is low.



Choice of antibiotics and duration of treatment in home managed community acquired Lower respiratory tract infections.



2.17 Indications for NIPPV

- Moderate to severe dyspnoea at rest , use of accessory muscles of respiration , thoraco-abdominal dyssyncronism .
- Respiratory Rate > 25 / minute.
- Pulse Oxymetry SpO2 < 92%.

Do Arterial Blood Gases (ABG)

Inclusion Criteria for Non-Invasive Ventilation (NIV)

ABG criteria

- pH < 7.35 but ≥ 7.26.
- PaCO2 > 45 mmHg (or an acute increase of 15-20mmHg).
- PaO2/ FiO2 < 250 in a hypoxaemic patient breathing air or on a Ventimask at a FiO2 of 50%.

Acceptable level of consciousness.

Exclusion Criteria for NIV.

- Immediate need to protect airway,
- Heamodynamic instability (systolic BP < 90 mmHg despite vassopressors and fluid bolus) .
- Major arrhythmias
- Pneumothorax
- Excessive respiratory secretions.
- Compromised state of consciousness.
- Respiratory Rate < 12
- Respiratory arrest.
- Inability to co-operate.
- Facial injury / trauma
- FOR SETTING AND TROUBLE SHOOTING REFER PROTOCOL

2.18 Management of suspected myocardial infarction

1. Bed rest. Allow patient to adopt position of maximum comfort (often pt is most comfortable at 45^0)
2. Insert IV line into the upper limb as central as possible (not to lower limbs- cardiac drugs will take a long time to reach the heart if hypotensive.).
3. Attach patient to a continuous monitoring system keeping the chest area free in case of a cardiac arrest and need to resuscitate. Arrange a standard 12 lead ECG.
4. If the ECG is normal but chest pain is very suggestive of MI do serial ECGs (cardiac enzyme assays may be too late for sufficiently early diagnosis to give thrombolytics)

	10min	10 min	10 min	30 min	30 min.	30 min.
Baseline	RPT	RPT	RPT	RPT	RPT	RPT
ECG	ECG	ECG	ECG	ECG	ECG	ECG

A total of 7 ECGS for suspected AMI- if ECG remains normal treat as unstable angina /NSTEMI

5. If the initial ECG is diagnostic of an STEMI the cardiac enzymes need not be assayed. It is best to time the 'peak' release at 12 hrs after the maximum pain and perform one assay only in Sri Lanka considering the high cost of these tests

   Troponin (Trp) levels diagnostic of AMI

   Trp T 0.1ng/dl & above

   Trp I 1.5ng dl & above

6. If history is suggestive,give 300mg soluble aspirin dissolved in a little water
7. Pain relief- morphine 5mg ,1mg per minute with metochlorpramide to prevent vomiting. Maximum dose 15mg Watch for respiratory depression and hypotension
8. Oxygen supplementation- for 6 hours 2-4l /min (contraindicated in COPD)

   Refer to STEMI/NSTEMI protocol

2.19 Cardiac arrhythmias

Step 1- what is the heart rate? Tachycardia /bradycardia

Step 11 – QRS narrow/broad

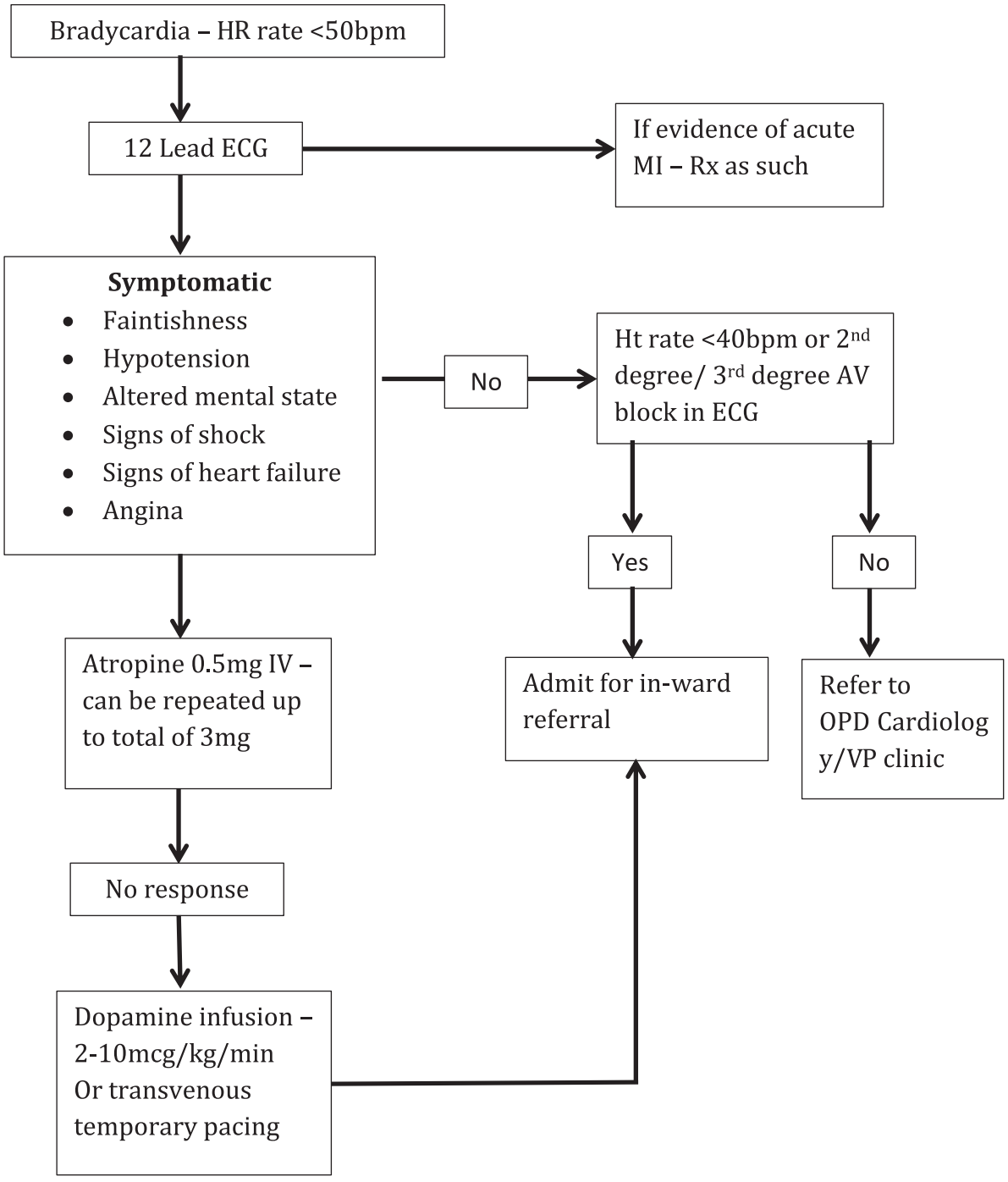
Step 111 is the rhythm regular – measure r-r interval in several beats.

Step 1V are there P waves

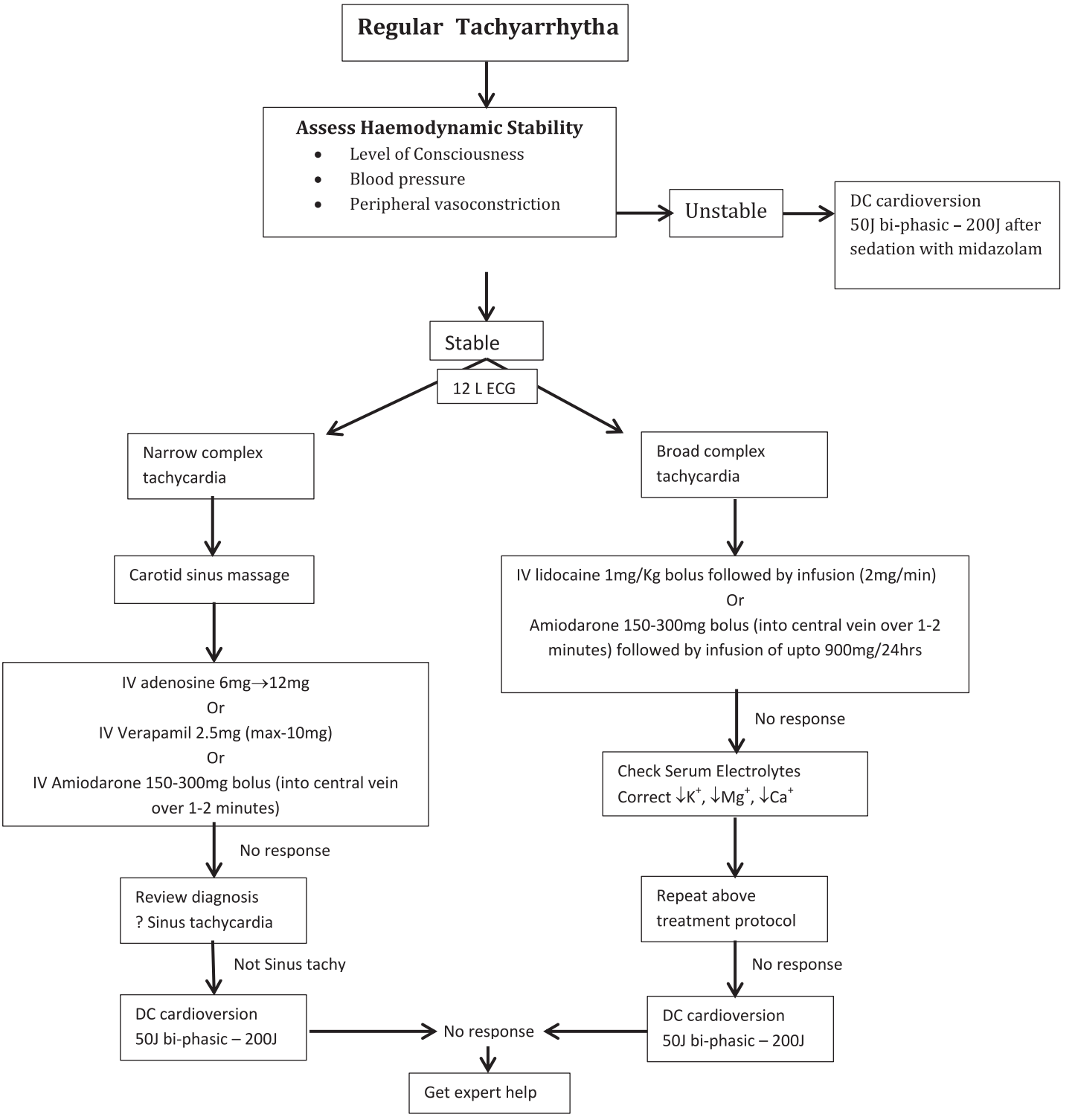
Step V additional features

Ref: *Cardiac arrhythmias Dr Ruvan A.I. Ekanayaka 2012*

2.20 Brady-arrhythmia

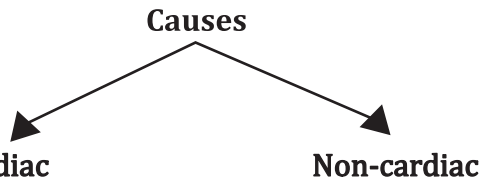


2.21 Tachyarrhythmias



Prepared on behalf of the Sri Lanka Heart Association by Dr. AsungaDunuwille (MD, MRCP), Dr. Rohan Gunawardena (MD), Dr. Suresh Kottegoda (MD, MRCP). Copyright – Sri Lanka Heart Association

2.22 Acute Pulmonary Oedema



LVF due to any cause ARDS

Clinical features

- Onset: Usually acute
- Dyspnoea and orthopnoea, Frothy blood stained sputum
- Bilateral fine pulmonary crepitations
- Patient may present in a state of shock or in a cardiac arrest
- Evidence of the underlying condition such as chest pain in MI may be apparent

Management

Sit the patient upright

Give high flow oxygen by face mask. Caution: Start with 24% in COPD

Gain IV access

Connect to a cardiac monitor. Look for arrhythmias and treat accordingly.

Perform 12 lead ECG and arrange an urgent CXR

Give frusemide 40-120mg IV as a bolus. Larger doses are required in renal failure

Give morphine 2.5 - 5 mg slow IV (2mg per min.) Caution : respiratory depression.

Give metoclopramide 10 mg IV to prevent nausea/ vomiting

Consider giving GTN (10 - 100 microgrammes / min . IV) or ISDN (2 -10 mg/h IV) infusion. Titrate the infusion rate to keep the SBP around 100 mmHg. Caution: Avoid when initial SBP is <90 mmHg

If the patient is showing fatigue, consider intubation and ventilation or NIV where available

Catheterise the bladder and maintain fluid balance

Identify the underlying cause and institute specific treatment e.g. Acute MI.

Investigations

ECG: Arrhythmia, ischaemia, Ml

CXR: upper, lobe diversion/ Kerly B lines

ABG: Typically features of Type I respiratory failure.

FBC: Severe anaemia, evidence of infection

U&E: Changes due to ARF

Troponins, - biochemical marker of myocardial injury:

2.23 Hypertensive Emergencies

- Accelerated hypertension (severe hypertension with retinopathy/papilloedema)
- Hypertensive encephalopathy (severe hypertension with cerebral oedema)
- Hypertension with phaeochromocytoma
- Acute pulmonary oedema.
- Dissecting aneurysm.

ACCELERATED (MALIGNANT) HYPERTENSION

- Diastolic BP >120 mm Hg with acute microvascular damage (e.g. retinopathy and nephropathy). The rate of change of BP is more important than the absolute level.
- Headache and blurred vision. Focal neurological deficits and fits. ARF, DIC, cardiac complications including Ml and LVF
- BP typically raised to over 200/120 mm Hg
- Retinal exudates/haemorrhages and papilloedema bilaterally
- Look for an underlying cause
- Examine for retinal damage, LVH, aortic valve incompetence, coarctation of aorta, renal masses

Investigations

- Urine: Dip test for protein/ haemoglobin
- Serum creatinine/blood urea: Elevated
- Serum electrolytes
- CXR: Cardiomegaly, dissection, coarctation of aorta
- Renal USS

Management

- Cardiac monitor
- IV cannula
- Reduce DBP to 100mmHg over 24 hrs Avoid sudden drop in BP can pt get a stroke. oral nipedipine 20mg sublingual captopril
- IV GTN infusion

2.24 Diagnosed ITP bleeder

- FBC stat, PT, APTT

Severe bleeding

(1) Evidence of intra cranial haemorrhage,
Severe gastrointestinal/ genitourinary bleeding
with platelet count < 10,000/mm^3.

↓

- One adult pack of platelets (random)

under Iv Ig cover.

- Iv Ig 1g/ kg/day

* (Check previous history of allergy before administration.)

- Start steroids

(2) For other significant bleeds with severe thrombocytopaenia,

- Iv Ig 1g/ kg/day for 2 days

- iv Methyl Prednisolone 1g/day for 3 days or

- oral Prednisolone 1-2 mg/kg/ day

(3) Haematology referral.

(4) If severe / symptomatic Anaemia

↓

Packed cell transfusion

(5) Check BP, Pulse etc.

Other measures

- Oral Tranexaemic acid 500mg tds
(If no haematuria or throat bleeding)
- Folic acid + Vit C

2.25 Haemophilia

Presentation – Pain / swelling of a joint

- Soft tissue bleeding like muscle haematoma / pain and swelling
- Reduced movements of a joint
- Rarely – Intra cranial haemorrage, internal bleeding or neck/ throat bleeding

Management

-Treatment on suspicion (do not wait until confirmation of a bleed)

-Treat as soon as possible

-Refer to a Haematologist

(1) Pain management - Paracetamol

↓ If no response

Cox – 2 inhibiotors (eg; Celecoxib, Meloxicam)

Or Paracetamol + Codein (eg; Panadene)

Or Paracetamol + tremadol

↓ If no response

Morphine (slow release)

(2) For joint bleeds

-Cold pack (Ice) -Immobilization

-Splints -Crutches

-Rest the joint at acute stage

(3) Factor replacement

- Try to give factor VIII or IX concentrates.
- Before giving, check whether patient has developed an inhibitor or not. (check records)
- If inhibitor^{+} ⟶ may need bypassing agent (take haematology opinion)
- Take samples for preliminary investigations. (FBC, APTT, PT, TT)
- If factor concentrates are not available and patient has no history of allergy to Cryo/FFP administratio ns previously, transfuse with Cryo/FFP
- Give according to chart given below
- Inform Haematology team as early as possible.

(4) For mild haemophillias,

- If previous successful DDAVP trial is present ⟶ Can give subcutaneous or intra nasal (spray) DDAVP (take haematology opinion)

SUGGESTED PLASMA FACTOR PEAK LEVEL AND DURATION OF ADMINISTRATION WHEN THERE IS NO SIGNIFICANT RESOURCE CONSTRAINT 161

	HEMOPHILIA A		HEMOPHILIA B	
TYPE OF HEMORRHAGE	DESIRED LEVEL (IU/DL)	DURATION (DAY)	DESIRED LEVEL (IU/DL)	DURATION (DAY)
JOINT	40-60	1-2, MAY BE LONGER IF RESPONSE IS INADEQUATE	40-60	1-2, MAY BE LONGER IF RESPONSE IS INADEQUATE
Superficial muscle/ no NV compromise (except iliopsoas)	40-60	2-3, MAY BE LONGER IF RESPONSE IS INADEQUATE	40-60	2-3, MAY BE LONGER IF RESPONSE IS INADEQUATE
Illiopsoas and deep muscle with NV injury, or substantial blood loss				
initial	80-100	1-2	60-80	1-2
maintenance	30-60	3-5 sometimes longer as secondary prophylaxis during phyiotherapy	30-60	3-5 sometimes longer as secondary prophylaxis during phyiotherapy
CNS/head				
initial	80-100	1-2	60-80	1-2
maintenance	50	8-21	30	8-21
Throat and neck				
initial	80-100	1-7	60-80	1-2
maintenance	50	8-14	30	8-14
Gastrointestinal				
initial	80-100	7-14	60-80	7-14
maintenance	50		30	
Renal	50	3-5	40	3-5
Deep Laceration	50	5-7	30	5-7
Surgery (major)				
Pre-op	80-100		60-80	
Pre-op	60-80	1-3	40-60	1-3
	40-60	4-6	30-50	4-6
	30-50	7-14	20-40	7-14
Surgery (minor)				
Pre-op	50-80		50-80	
Pre-op	30-80	1-5, depending on type of procedure	30-80	1-5, depending on type of procedure

NV, neurovascular

2.26 OVER WARFARINIZATION

Objective and intended outcome:

1. Accurate and effective management of patients overanticoagulated with warfarin to prevent & minimize complications and life threatening situations due to haemorrhage.

2. Reversal of warfarin action in emergencies with haemorrhage/ with emergency surgical intervention.

Management of patients with over warfarinization should be individualized depending on

indication for warfarin therapy,
degree of increment in INR,
presence and the degree of haemorrhage/ risk of haemorrhage,
co-morbid factors and
other drugs patient on (such as antiplatelet drugs)

Patient with life threatening bleeding while on warfarin – (with elevated INR > 9 / with no known INR results/ at any INR value)

Admit to acute care facility and evaluate haemorrhage
Attempt local control of bleeding if haemorrhagic site is accessible
Warfarin should be discontinued temporarily
Assess other drugs – e.g: antiplatelet

To control severe life threatening bleeding following should be administered:

1. **Prothrombin Complex Concentrate (PCC)** : 25 - 50 U/kg -
   Reverse INR rapidly.
   Caution : thrombotic risk.

2. **Vitamin K 1** : 5-10 mg by slow intravenous infusion (rate < 1 mg/min)

   Can reverse INR in 6- 24 hrs

   Caution: *IV vitamin K 1 can cause facial flushing, diaphoresis, chest pain, hypotension, dyspnea, anaphylaxis and cerebral thrombosis, and should be given only in emergency situations and by slow infusion.*

   Caution: *in liver failure may not be effective/ target INR reversal may not achieve*

3. **FFP** : 15 ml/kg - Need to know the blood group of the individual.
   Group specific, adequately thawed FFP
   Caution: volume overload. Specially with cardiac co morbid factors.

Note: FFP should be given only when PCC is not available. Vitamin K1 should be given always.

4. **RFVII a**: **Not recommended** for the reversal of prolonged INR.
   May be useful in life threatening severe haemorrhage (such as cerebral). However, action is very short lasting (60 minutes). Thus other measures are always needed to prevent further bleeding risk. Need emphasize on risk of thrombosis.

Assess for continuation or stoppage of bleeding. Assess haemodynamic state and act accordingly. Should rely on clinical signs, haemodynamic parameters and patient's symptomatology rather than INR values for attainment of control of bleeding.

Risk of bleeding is exponentially increased with increasing INR. Such patients can be on antiplatelet drugs and liver or renal diseases etc which can affect haemostasis.

Repeat INR 6 hourly to decide on further correction.

Need to evaluate risk of thrombosis when patient is stable and suitable remedial actions should be taken to minimize thrombosis depending on indication/s for warfarin.

Note: Reversal of INR with FFP & PCC is temporary. If vitamin K is not given, or action of vitamin K is doubtful due to liver failure, patient can re-bleed/ can have bleeding risk in 12- 24 hrs with high INR due to longer persistence of action of warfarin.

Patient with INR > 9 with no bleeding.

Stop warfarin temporarily
Evaluate for risk of bleeding.
Oral vitamin K 1-2 mg is the choice and patient can be managed in a routine care ward.

Patient who is on warfarin needing emergency surgery or presenting with life threatening bleeding due to trauma (with therapeutic INR 2.5- 3.5).

PCC & FFP are the best alternatives as above for rapid reversal of anticoagulation.

Always should look for possibility of postponement of surgery

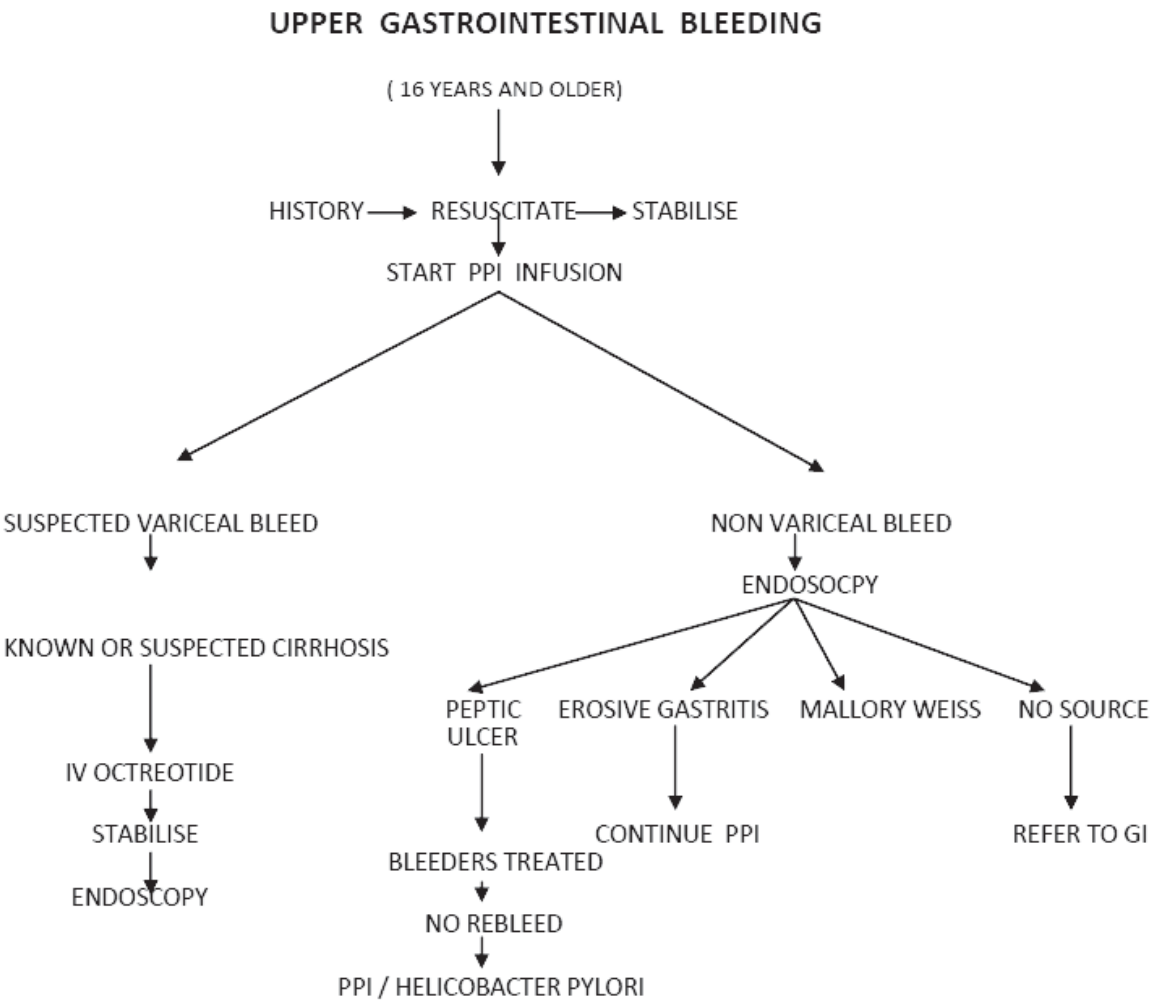
Note: In all patients with blood loss, it is mandatory to assess degree of blood loss and replace accordingly.

All the other patients with mildly high INR, with no bleeding or with no risk of life threatening bleeding risk and preparation for routine planned surgeries should be done at haematology clinic

References: *BCSH guidelines, ASH publications- Blood*

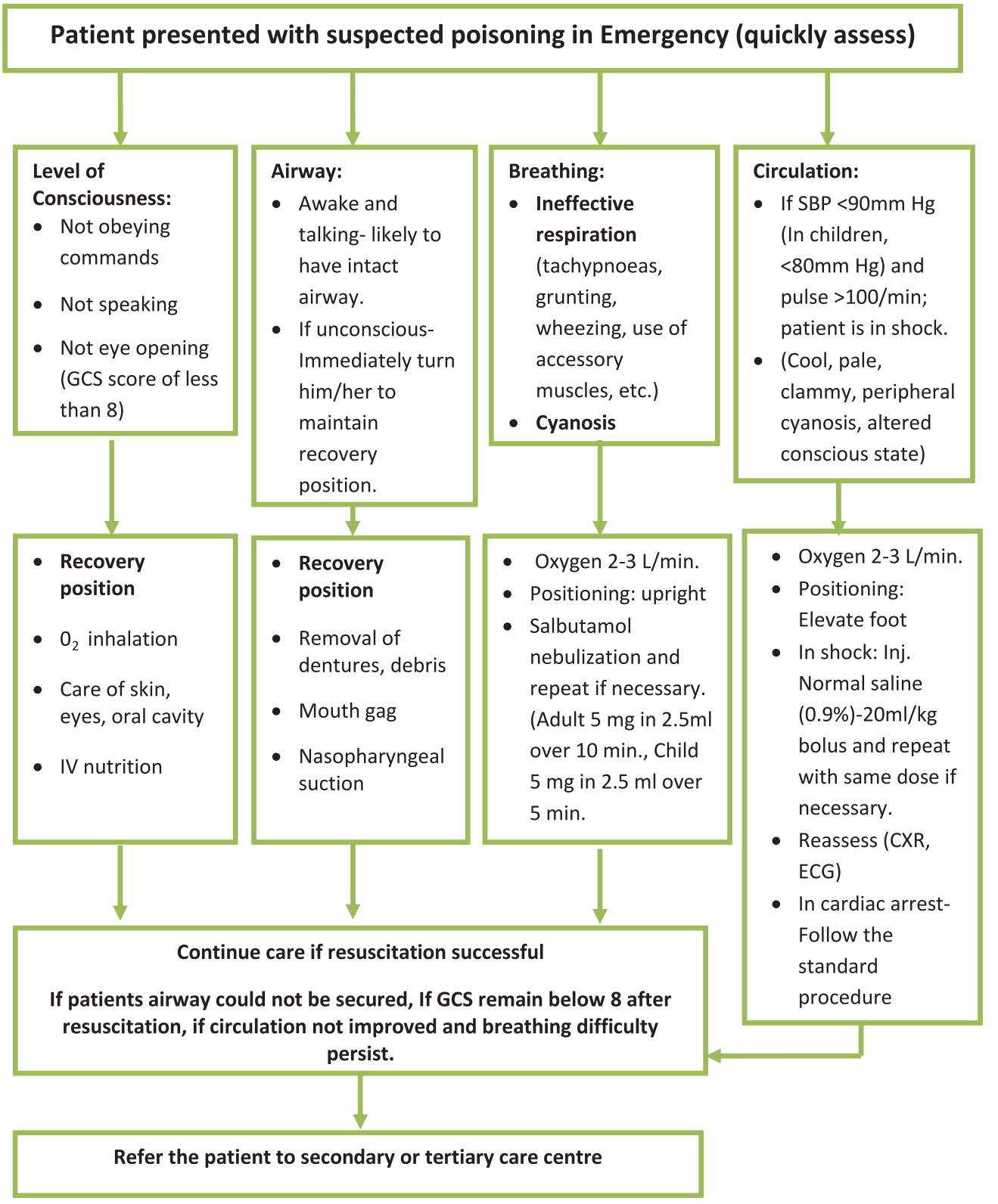
Prepared by: *Dr K.A.C.Wickramaratne on behalf of SLCH. TO BE DISCUSSED AND FINALIZED BY SLCH*

2.27 Upper Gastrointestinal bleeding

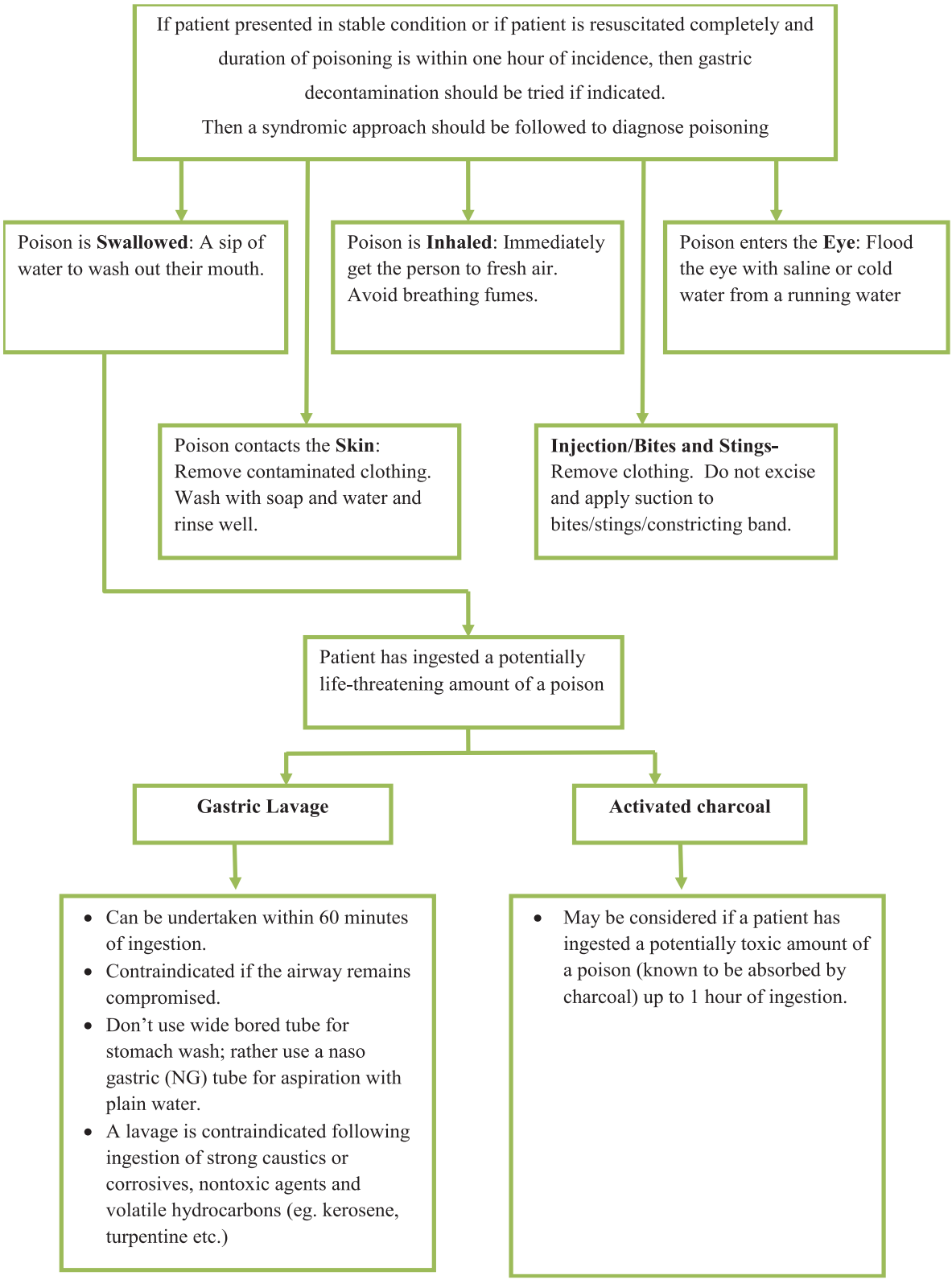


- Ix FBC,BUN,CREATINIE,PT,INR,LFT
- GORUP AND DT 4 UNITS OF BLOOD
- NASOGASTRIC TUBE IS USEFUL TO ASSESS BLEEDING AND TO AVIOD ASPIRATION
- KEEP Hb AROUND 8d/dl IN CIRRHOSIS ONLY AND 10 g/dl IF PT ALSO HAS IHD

2.28 Poisoning



2.29 Patient presented with suspected poisoning



2.30 How to do gastric lavage

(1) Informed consent from the patient or a relative should be taken.

(2) If the patient is drowsy, protect the airway in recovery position and raised foot end 20 cm.

(3) Lubricate and pass down the NG tube orally after measuring the distance and using a mouth gag to prevent patient from biting the tube

(4) Confirm the correct placement of the tube in the stomach by aspirating fluid out or injecting air with the 50 mL syringe, while auscultating over the epigastrium.

(5) Siphon off the gastric contents before lavage and save a specimen for toxicological analysis if necessary.

(6) Small amount of lavage fluid should be repeatedly introduced. and the recommended volume of Each aliquot is 200 mL for adults and 10 mL/kg for children

(7) The lavage can be stopped when a total of 3 L of lavage fluid is used and the return is clear.

(8) Collect the first 50 ml of lavage fluid for toxicological analysis or medico legal purpose.

Identification of the type of poison according to the clinical features

Clinical Features	Likely Poison
Coma, hypotension, hypothermia, shallow breathing, hypotonia, hypo-reflexia, fast pulse, watering eyes, yawning, cramps, hallucinations, restlessness, diarrhea.	Barbiturates, benzodiazepines (travel related) and alcohol combinations, severe TCA poisoning.
Smell of OPC, bronchorrhea, bradycardia, hypotension, incontinence of urine & stool, miosis and hyper salivation.	Organophosphorus, carbamate insecticides, some kind of mushroom, nerve agents.
small pupils, slow breathing,unconsciousness, weak pulse low temperature, vomiting	Opioids.
Nausea, vomiting, tinnitus, deafness, sweating, hyperventilation, vasodilatation, metabolic acidosis.	Salicylate (aspirin)
Restlessness, agitation, mydriasis, anxiety, tremor, tachycardia,convulsion, arrhythmias,hyperthermia,hallucinations,fits, sweating, flushed skin, confusion	Sympathomimetic drugs, Amphetamine, Cocaine, Bronchodilator(Theophylline)
dry, hot skin, fever, thirst, dry mouth, large pupils, fast pulse, difficulty in passing urine, hallucinations, fits, shallow breathing unconsciousness	Atropine, Amitriptyline, Antihistamines, Datura , Quinine, methanol stramonium, some kinds of Mushrooms

Do in Poisoning

1. Remove all contaminated cloths and wash the contaminated body with plain water particularly in OP poisoning.
2. Always maintain recovery position in unconscious patient with any poisoning.
3. Always follow National Poisoning Management Guideline in any confusion.

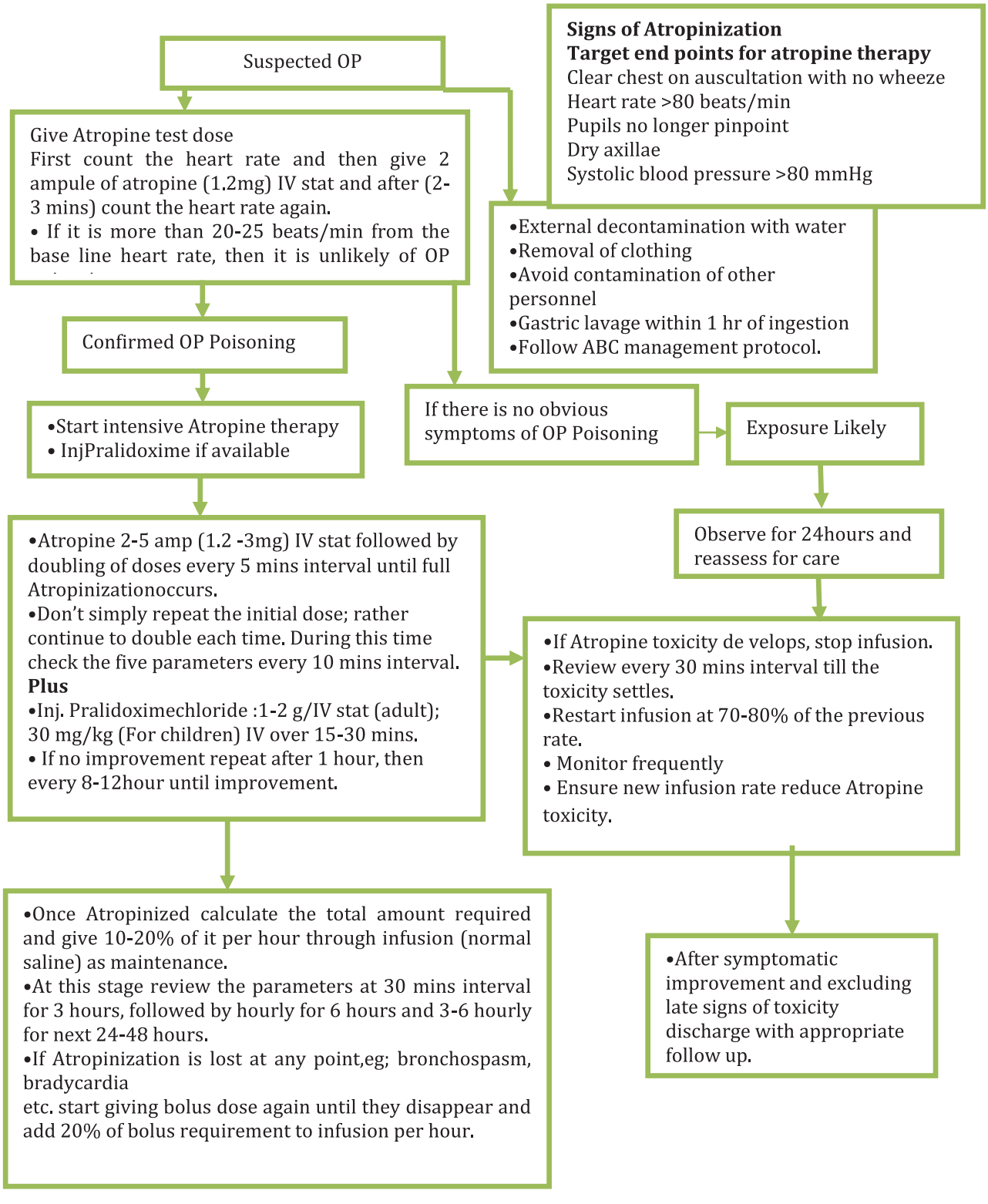
Don't in Poisoning

1. Do not give stomach wash/ gastric lavage with wide bore tube.
2. No emesis and No forced dieresis (except salicylate and amphetamine)
3. No whole bowel irrigation exception iron, lead, zinc and packets of illicit drugs.
4. Never use Steroid or Antibiotic (except in aspiration pneumonia)
5. Do not give cathertics
6. Never give anything by mouth to an unconscious patient.

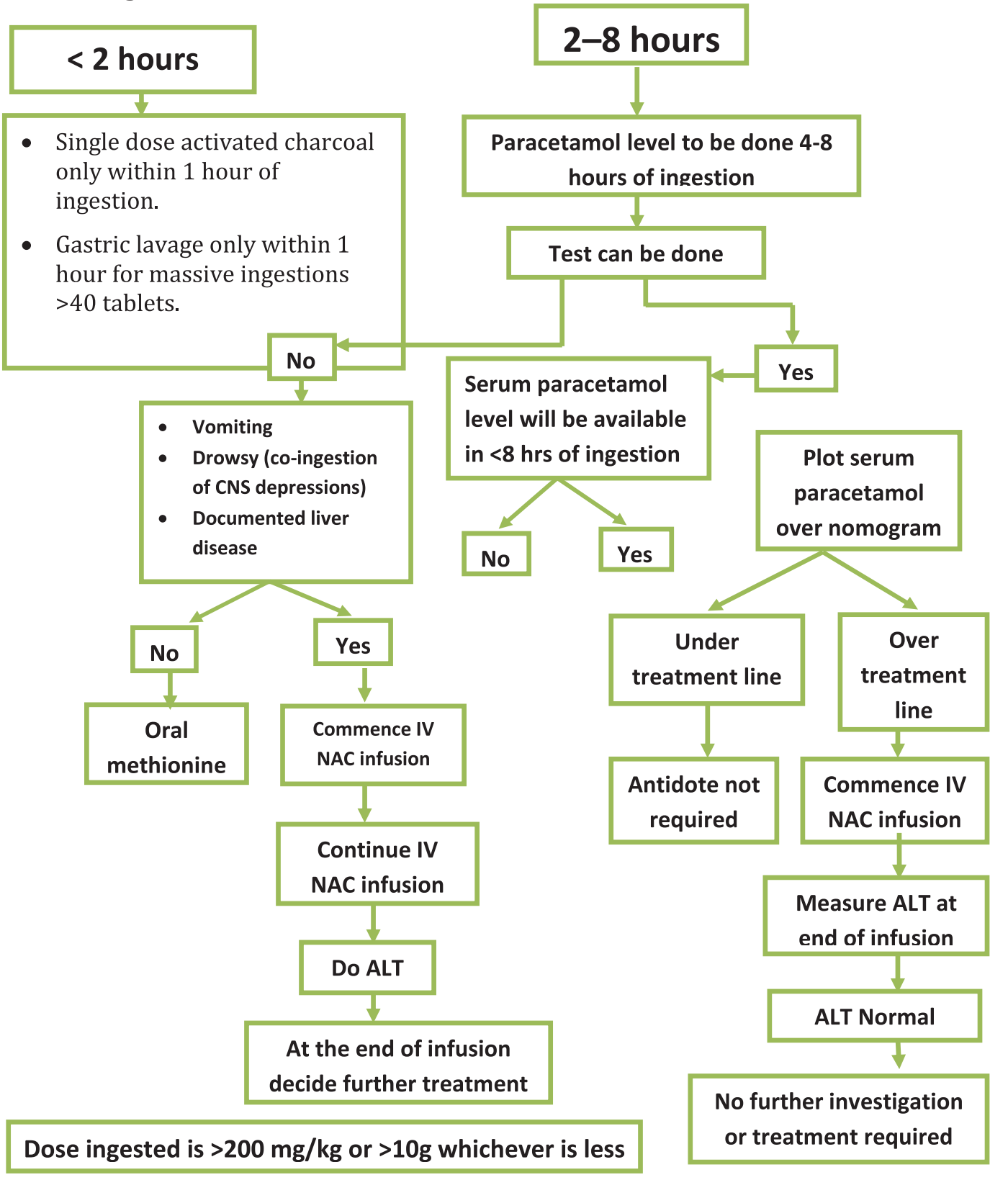
2.31 List of specific antidotes and general care that can be given in some poisoning cases

Poison	Antidote
Aluminium Phosphide (Local name: Gas tab)	•Perform gastric lavage. Use, if available, 1:5000 potassium permanganate solution or 2% sodium bicarbonate solution. • Maintain fluid balance and give Sodium bi carbonate to correct acidosis. •Correct shock with adequate fluid. If hypotension does not respond to adequate IV fluids, raise the foot end of the bed. Give dopamine. •If still no response, give hydrocortisone 400 mg IV 4 hourly or dexamethasone 4 mg IV 4 hourly. Give vitamin K1 (phytomenadione) 10 mg IV daily, if prothrombin time is prolonged.
Benzodiazepines except Clonazepam (e.g Sleeping pill,)	**• Rarely need antidote. If patient developed resp difficulty or persistent deterioration of consciousness, then** **•Flumazenil**(2 mg of flumazenil within 5 to 10 minutes. **Adult Dose:** 0.1-0.2 mg IV q1min to a total dose of 1 mg at one time or 3 mg in 1 h; infusion rates of 0.1 mg/min decrease disconcerting rapid arousal. **Pediatric Dose:** 0.002-0.02 mg/kg IV q1min.
Carbon monoxide	100% oxygen
Copper Sulphate (local name—Tute)	**•DPenicillamine (Oral): Adult dose**: 1000 to 1500 mg/day divided every six to 12h, before meals. **For Pediatrics:** Initially 10 mg/kg/day gradually increase to 30 mg/kg/day divided in two or three doses as tolerated. Doses up to 100 mg/kg/day in four divided doses can be given. **•BAL/ Dimercaprol:** Dose: 3 to 5 mg/kg/dose deep intramuscularly every four hours for two days, every four to six hours for an additional two days, then every four to 12h for seven days.
Coumarins / Rat killer	•Vitamin K1; fresh frozen plasma. Dose: 10 mg I/M daily until normalization of prothombin time.
Methanol (spirit, adulterated alcohol) and ethylene alcohol	•Ethanol [give arrack (Gin, or whisky) 1.8 mI/kg as a loading dose, and 0.2 ml/kg/hr as maintenance dose orally for 3-4 days, after diluted with water or fruit juice] •Fomepizole (if available)
Opioids	•Naloxone Adult dose 0.4mg, can be repeated at intervals of 2-3 minutes to a maximum of 10mg. (Naloxon ampoule, 0.4mg/ml).

2.32 Management of Organophospate Poisoning



2.33 Treatment Algorithm for Acute Deliberate Paracetamol Overdose with Known Time of Ingestion - I



Dosage for NAC infusion(IV)

Adults and children over 20 kg

150 mg/kg IV in 200 ml of 5% dextrose over 15 minutes,

Followed by 50 mg/kg IV in 500 ml 5% dextrose over 16 hours,

Full dose of NAC should be continued once started unless we have level below the treatment line in the nomogram.

If liver dysfunction and coagulopathy develop, maintain infusion at a dose of 100 mg / kg, until INR falls blow 2.

AST/ALT should be checked at the end of the administration of this full dose or at 24 hours whichever comes early.

Children weighing less than 20 kg

150 mg/kg IV in 3 ml/kg of 5% dextrose over 15 minutes, followed by 50 mg/kg IV in 7 ml/kg of 5% dextrose over 16 hours.

If for any reason dextrose is unsuitable, 0.9% sodium chloride solution may be substituted. In children 0.45% sodium chloride is used instead.

Dosage of Methionine (oral)

Adults and children weighing over 20kg

2.5g initially,

Followed by 3 more doses of 2.5g given 4 – hourly

Children weighing less than 20kg

Methionine 1g orally, initially

Followed by 3 doses of 1 g, 4 hourly,

The total dose is 4g

(Methionine is not recommended to be started later than 10-12 hours after the overdose, or if there is established liver injury)

2.34 Snake Bite

MANAGEMENT PLAN

Patient with a history of snakebite;
or when snakebite is suspected

↓

ADMIT, REASSURE, ASSESS GENERAL CONDITION;

↓

IF NECESSARY, RESUSCITATE

↓

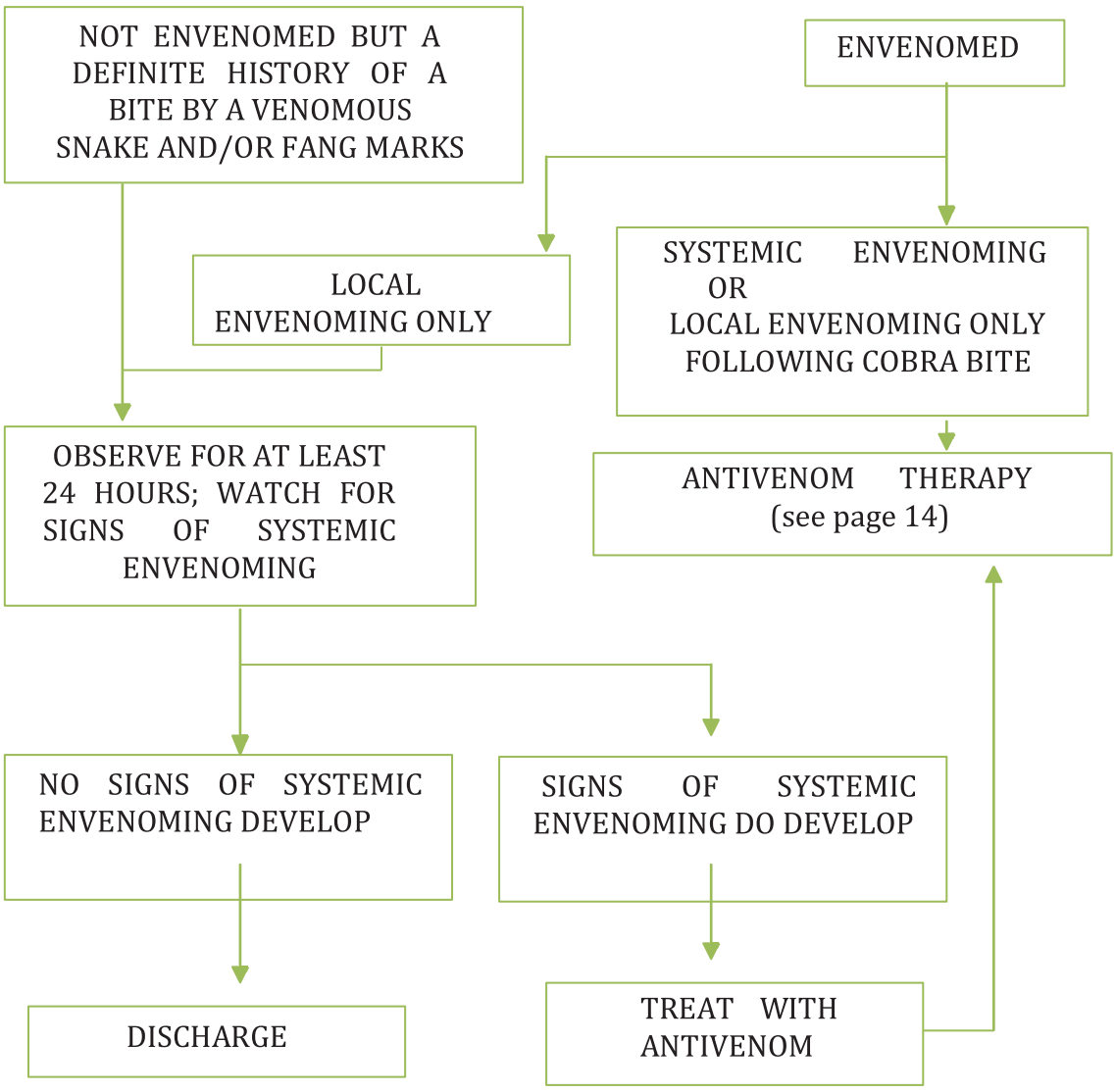
ASSESS FOR SIGNS OF ENVENOMING

↓

IDENTIFY THE SNAKE
it will help in:
- decisions regarding antivenom administration
- vigilance and preparedness regarding complications

COMMENCE TETANUS PROPHYLAXIS.
MONITOR:
- Level of consciousness
- Pulse rate
- Blood pressure
- Respiratory rate & tidal volume
- Temperature
- Urine output
- Fluid balance

AVOID
(whenever possible)
- NSAIDs, including aspirin
- Intramuscular injections, including penicillin
- Concurrent administration of sera, other than antivenom serum, that may produce anaphylaxis
- Narcotics and other respiratory depressants



SIGNS of ENVENOMING

Local effects

- swelling
- blistering
- tissue necrosis

Systemic effects

Depends on the species of venomous snake

Early non-specific features
- abdominal pain
- nausea
- vomiting
- hypotension
- Polymorphonuclear leucocytosis

Specific features
- neurotoxicity
- spontaneous systemic bleeding
- rhabdomyolysis With myoglobinuria
- coagulopathy

Detect coagulopathy in viper bites by performing the **20minute whole blood clotting test (20WBCT)**
1 to 2 hourly during the first 6hours and then 6 hourly

THE 20WBCT

The 20 minute whole blood clotting test is performed at the bed side as follows:

1. Collect 2ml of blood into a clean, dry test tube, gently rotate and leave it undisturbed for 20minutes.

2. At the end of 20mins. tilt the tube:observe whether the blood has clotted or not.

3. Conclusions
   a) If the blood flows (i.e.no clot), there **is** coagulopathy(envenomed).

   b) If the blood does not flow(i.e. clotted),there **is no** coagulopathy (not envenomed).

If there is any doubt about the result, either repeat the test together with a control sample or seek laboratory tests such as bleeding time and clotting time.

If the snake is brought:

The medically important snakes are characteristic and identifiable by their appearance.

- The simplified guide to identification of venomous snakes lists the characteristic features
- The key to the identification of venomous snakes relies on appearance and scale pattern: use this if the simplified guide is inconclusive

If the snake is not brought:

The probable identity of the biting snake can be inferred by the circumstances and the epidemiological features

SIMPLIFIED GUIDE TO VENOMOUS SNAKES

Based on characteristic physical features

Do not handle live snakes
Handle 'dead' snakes with care - they may not be dead: and even if dead, are capable of inflicting a reflex bite

Sri Lankan krait:
Bluish-black in colour with white rings, extending to belly. Old specimens may be brownish with faint white rings.

Common krait:
Narrow white rings in pairs on the dorsum. A black glossy snake. White belly.

Sea snakes:
Have short, paddle- shaped tails that are flattened side to side.

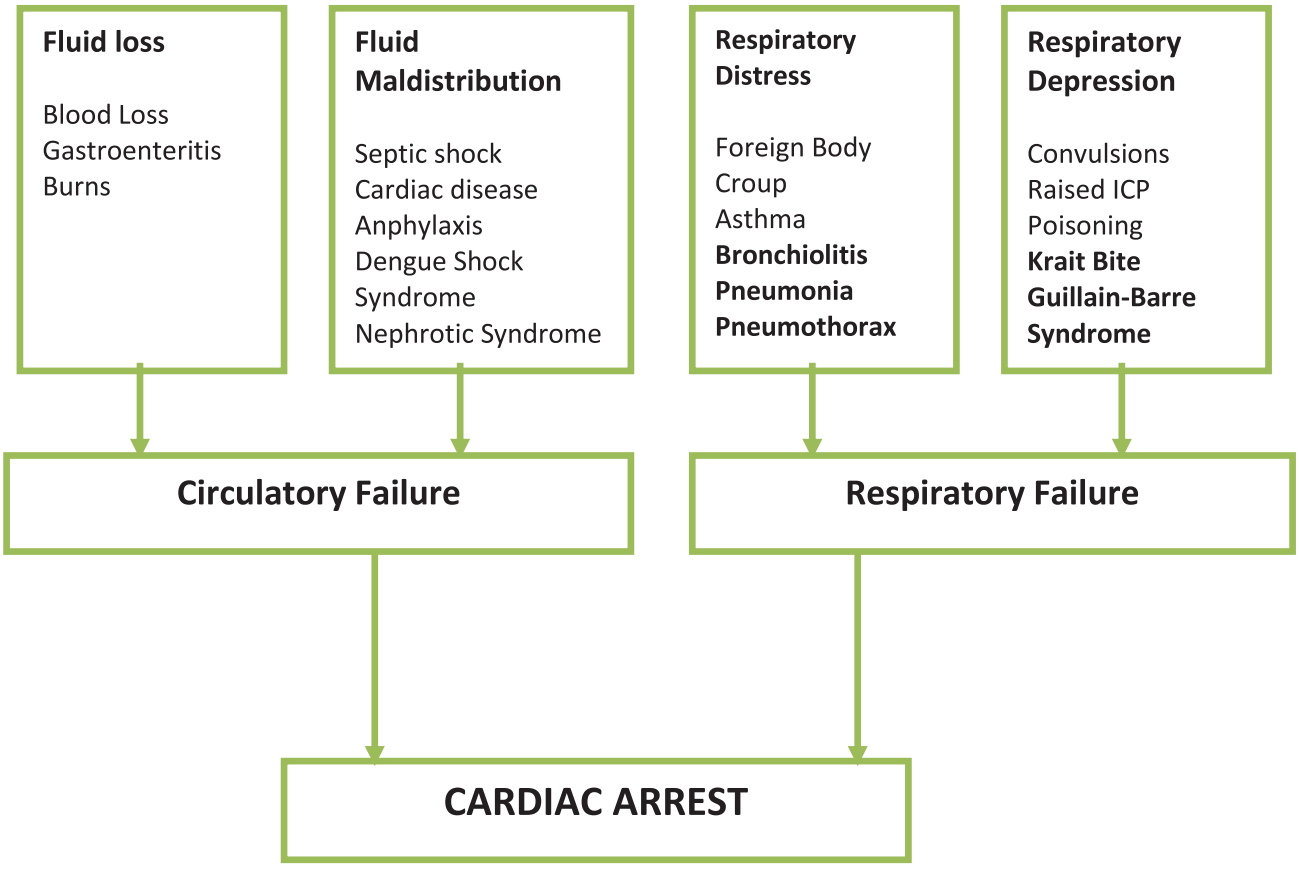
Russels viper:
Triangular head with narrow neck; dark brown oval-shaped patches edged with black and white.

Saw-scaled viper:
Triangular head with narrow neck; a white dagger- or bird's foot- shaped patch on the dorsum of the head.

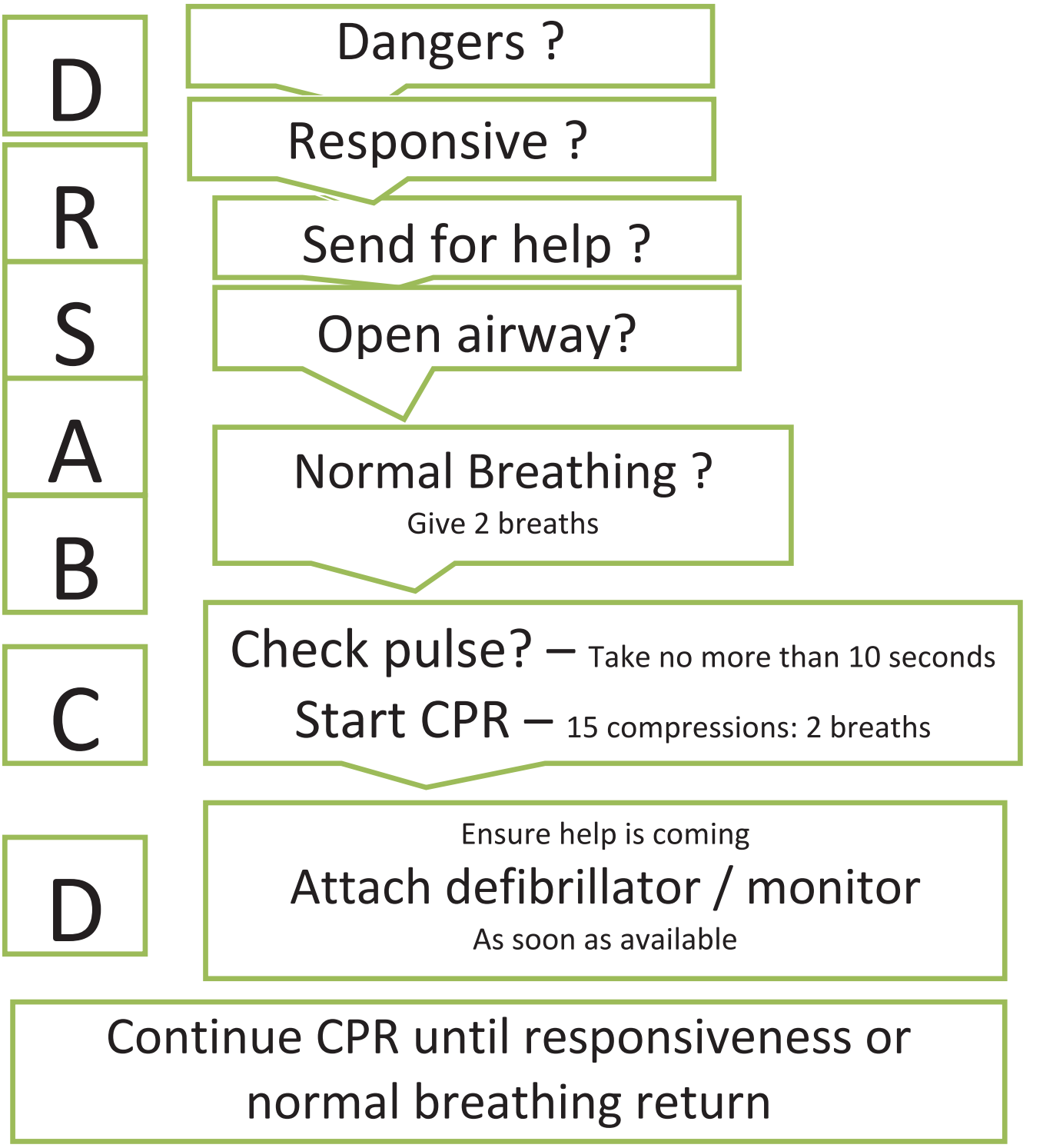
Hump nosed pit-viper:
Has an upturned snout (look at the side profile) and a pit between the eye and the nostril on each side.

3. Pediatric Emergencies

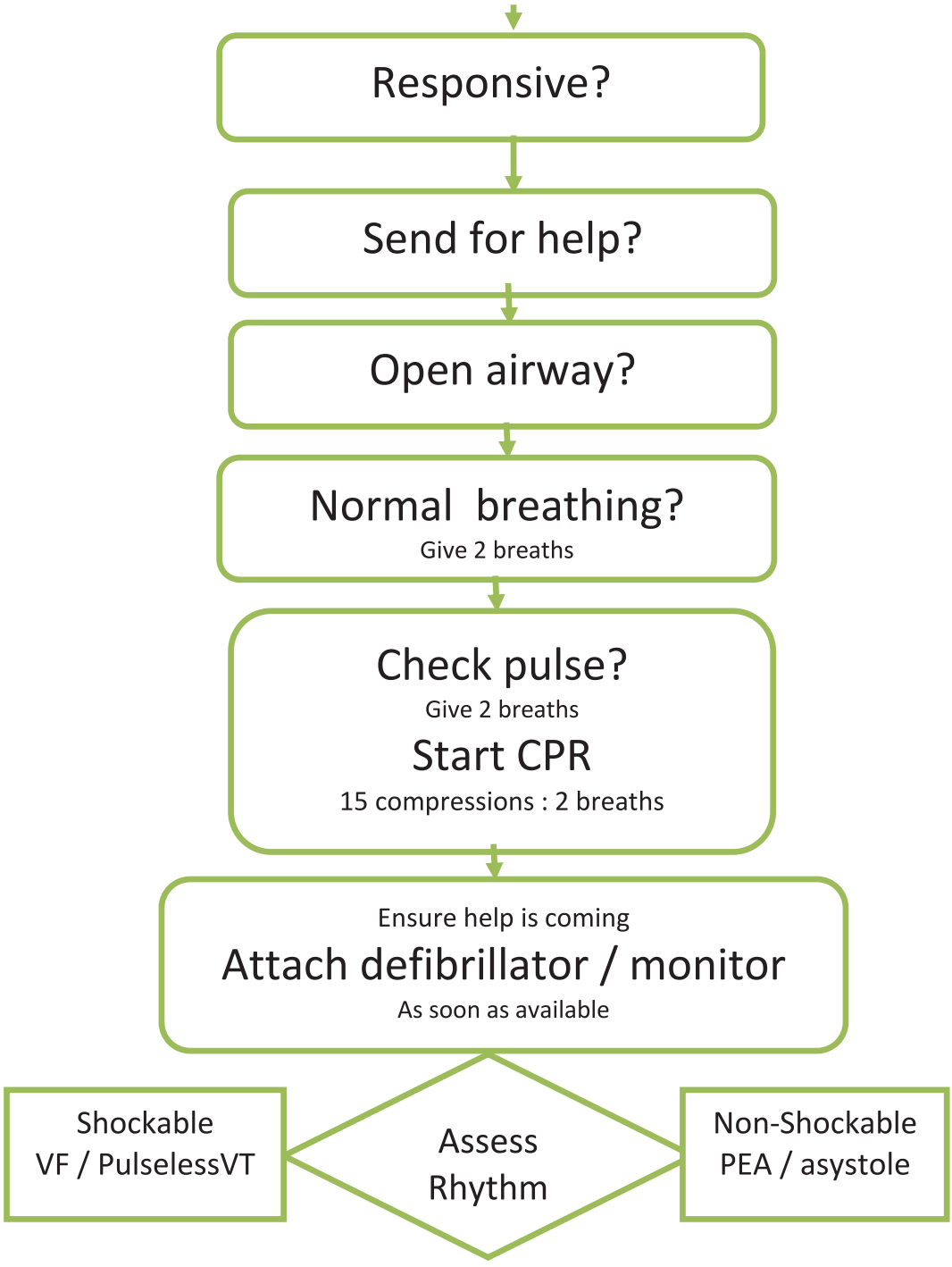
3.1 Pathways leading to cardiac arrest



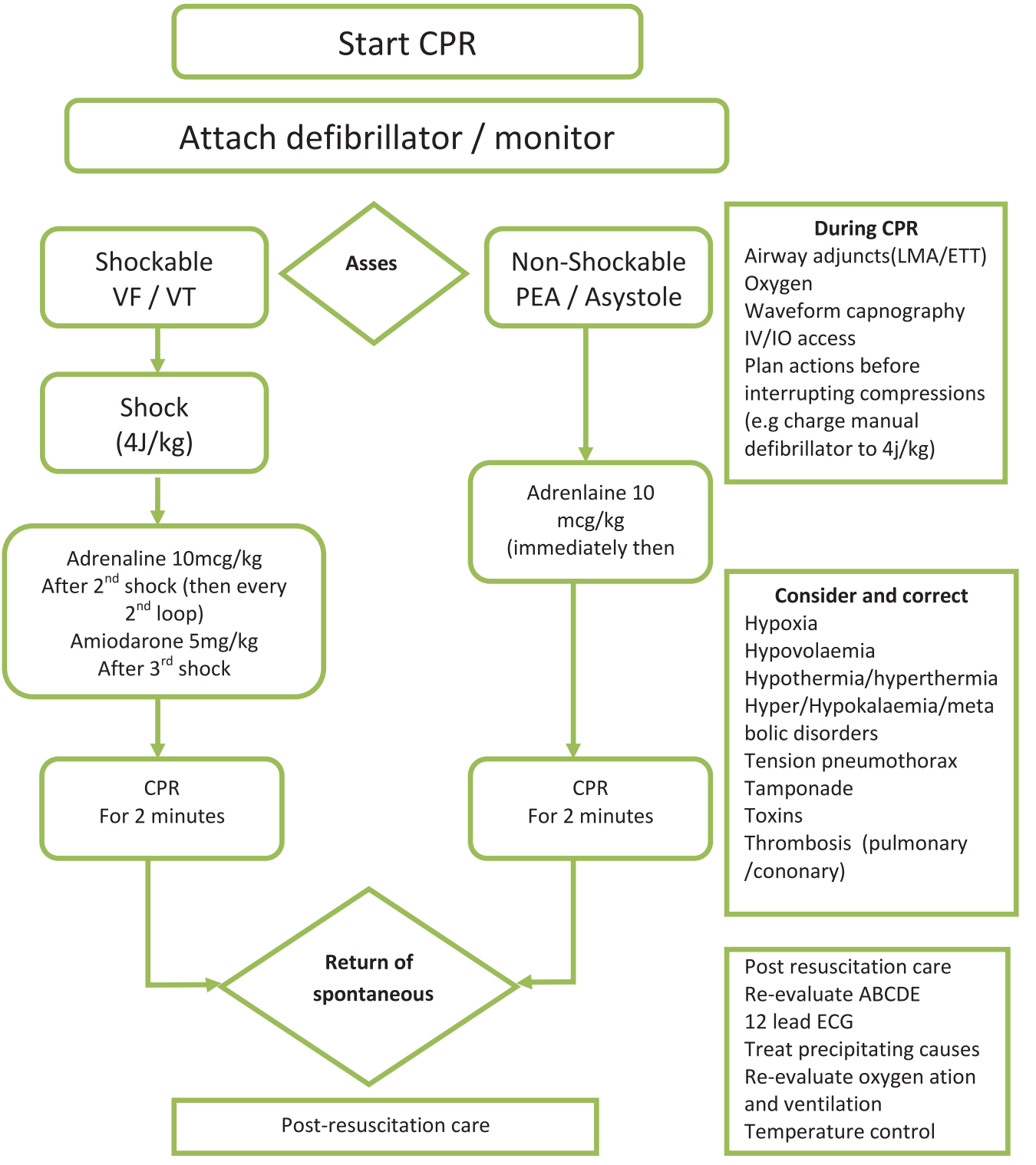
3.2 Paediatric Basic Life Support



3.3 Paediatric Cardiac Arrest Algorithm



3.4 Algorithm for asystole, PEA and ventricular fibrillation, VT



3.5 The scheme of management for Epiglotittis

Do	Do not
• **Call for senior help** **Paediatric registrar / Consultant** **Anaesthetist registrar / Consultant** **ENT surgeon registrar / Consultant** • **Allow the child to remain in its favoured position.** • **The child should be constantly supervised by someone skilled in intubation.** • **Give humidified oxygen as tolerated**	• **Attempt oropharngeal examination, since this may precipitate complete obstruction.** • **Attempt insertion of an IV cannula or take blood.** • **Send the child for neck X-ray or other X-ray** • **Upset the child e.g removing parents.** • **Leave the child unsupervised** • **Rely only on pulse oximetry**

1. Indications for intubation

- Suspected epiglottitis
- Inhalational injury
- Fall in conscious level
- Increasing respiratory failure
- Rising pCO2
- Exhaustion
- Hypoxia (SpO2 <92% despite high-flow O2 by mask >5 L/min)

2. Management of intubation

The most experienced anaesthetist must be present at the intubation. Most anaesthetists would favor a gas induction. The resuscitation team have a backup oxygenation strategy prepared.

It may be necessary to use croup tubes rather than standard ETT. These are longer than standard ETT, but come in similar sizes, and may be necessary in

situations where severe airway narrowing mandates a much smaller ETT than indicated by age (e.g. a 4.0 mm ETT for a 6 year old).

3. Management following intubation

- Once the airway obstruction is bypassed, most children are easy to ventilate. Exceptions might be in case of bacterial tracheitis (pulmonary involvement), inhalational injury (ARDS), or anaphylaxis (bronchoconstriction).
- Ensure that the ETT is securely taped.
- **Use sedation and paralysis to ensure safety of ETT.**
- Following a difficult intubation, an ETT should only be changed if there is a clear clinical reason which justifies this risk.
- Start adjunctive treatments such as iv dexamethasone (0.15 mg/kg QDS) in case of croup; or ceftriaxone (80 mg/kg) in case of epiglottitis or tracheitis.
- Blood cultures must be taken in suspected cases of infection.
- In case of inhalation injury and burns, start fluid replacement as per burns guidance.
- Patients with bacterial tracheitis may become septic, and need fluid resuscitation and inotopic support.

4. Transport considerations

- Children with an unstable airway should not be transported without detailed discussion with on call consultant.
- ETCO2 monitoring is mandatory during transfer to maintain continuous correct ETT placement.
- Use continuous muscle relaxation during retrieval to ensure safety of ETT.
- If transporting an un-intubated child with suspected foreign body obstruction, avoid unnecessary delay and transfer immediately to ENTcentre of Teaching or Provincial hospital (directly to theatres if necessary). The team must have a strategy to manage unexpected obstruction or hypoxia.

3.6 Bronchiolitis

History & Assessment

a. Often preceded by coryzal illness
b. Age 2-24 months (peak 2-8 months)

Moderate

- Tachycardia
- RR >50/min
- Flaring
- Accessory muscles
- Recessions
- Head retraction
- Unable to feed

Severe

- Cyanosis
- Getting tired
- Decreased conscious level
- SpO_2 <92% in spite of O_2 therapy
- Rising $PaCO_2$

Investigations

- FBC
- U&E
- Blood culture

Investigations

- CXR
- NPA
- ABE

Management Strategies

- ✓ A-B-C
- ✓ Assess airway
  - Ensure patent airway
  - Give humidified oxygen to achieve SpO_2 >92%
    - 6-8 l/min via mask with a reservoir bag;
    - Nasal cannula (<2l/min oxygen) for milder and improving cases
    - Consider using humidity, prone position and high flow oxygen
  - Clear nares and patent airway using Yankauer sucker
  - Monitor for apneas (especially age <6 weeks)
- ✓ Nebulisers are worth trying, but do not persist if no response
  - Ipratropium bromide 125 mcg
  - Adrenaline 1:1000 0.5ml/kg (max 5ml)
  - Salbutamol 2.5mg
  - 3% Saline nebs
- ✓ Consider CPAP early for respiratory
  - Patients unresponsive to initial treatment
  - Worsening blood gases
- ✓ GIT & Nutrition
  - Large bore orgogastric tube leave for free drainage to prevent abdominal distension
  - Oral feeds / Breast feeding, N-G feeding, Nil By Mouth.
  - Restrict maintenance to 2/3 requirement
- ✓ Nebulise with 3% N Saline / Adrenaline may be helpful
- ✓ Monitor the baby for apnea and hypoventilation esp<2 months
  - SpO2
  - Respiratory frequency / apnoea
  - pCO2 – capillary/ end tidal
- ✓ NIV (Bipap)
- ✓ Consider intubation and mechanical ventilation (Recurrent apnoea, Exhaustion, severe hypocapnia and hypoxia)
- ✓ Consider anti viral agents (Ribavirin, Palivizumab)
- ✓ Bronochodilators, steroids, antibiotics are of no help

Indications for intubation

- Exhausted
- Recurrent apnoeas
- Reduce conscious level
- Worsening hypoxemia
- Worsening hypercarbia

Intubation

- Pre-oxygenation
- Fluid boluses and resuscitation drugs
- Consider modified rapid sequence induction with ketamine 1-2mg/kg (bronchodilator activity)
- CXR (post intubation)

Management following intubation

- Sedation for ventilation
- Permissive hypercapnia strategy (limit PIP<35cm H_2O, TV 5-8ml/kg, Rate <30bpm, Higher rates may leads to air trapping, I:E 1:2,
- PEEP 5-7 is often necessary to counteract intrinsic PEEP. Failure to apply extrinsic PEEP at 85-100% of intrinsic PEEP will result in progressive over inflation and haemodynamic compromise.
- Regular chest physiotherapy and suctioning for mucus plugging.
- Check CXR for ETT position and to exclude pneumothorax.

Transport Consideration

- EtCO2 is mandatory to ensure ETT position
- If having problems with CO2 --. Minimize dead space
- Adrenaline can be administered down the ETT tube in severe air trapping.
- If ventilation deteriorates – hand ventilate, auscultate, suction, perform manual decompression, treat pneumothorax.

3.7 Asthma

Management of Acute Severe Asthma >2 years

Assess severity		
Moderate	Severe	Life threatening
SaO2 > 92% in air Normal vital signs Alert Talking in sentences Audible wheeze	SaO2 <92% in air Heart rate >140/min (<5years) Heart rate >125/min (>5 years) Respiratory rate >40/min (<5 years) Respiratory rate >30/min (5 years) Use of accessory muscles Difficulty talking, agitated	(Any one of these) SaO2 <92% in air Silent chest Poor respiratory effort Cyanosis Altered consciousness Exhausted

Summon senior help – Achieve Oxygen saturation above 92%

Salbutamol <5years = 5 – 10 puffs via Areochamber >5 years = 10 puffs via Areochamber Tidal breathing 1 puff every 5 breaths **Oral Prednisolone** <12 years: 1-2mg/kg (max 40mg) OD If the child has been taking oral corticosteroids – 2mg/kg (max 60mg) OD **Reassess** hourly	**Salbutamol nebulised**(driven by 6-8 liters/min O_2) 2.5mg <5 years; 5mg >5 years Add **Ipratropium** 0.25mg (>12years 0.5mg) nebulised. Give every 20 minutes for 1 hour **Oral Prednisolone** <12 years: 1-2mg/kg (max 40mg) OD for 3-5 days. If the child has been taking oral corticosteroids – 2mg/kg (max 60mg) OD for 3-5 days. If poor response after 3 nebs give IV **MgSO4** 40mg/kg (max 2g) single dose over 20 minutes and continue neblulised treatment **Reassess** every 20 minutes	**Salbutamol nebulised**(driven by 6-8 liters/min O_2) 2.5mg <5 years; 5mg >5 years Add **Ipratropium** 0.25mg (>12years 0.5mg) nebulised. Give every 20 minutes for 1 hour IV **hydrocortisone** 4mg/kg 6 hourly 2-5 years : maximum 50mg 5-18 years : Maximum 100mg If poor response after 3 nebs give IV **MgSO4** 40mg/kg (max 2g) single dose and continue neblulised treatment **Continue Observation** Inform Consultant PICU

Discharge criteria met? SaO2 >94% in air Heart rate <140/min (<5years) Heart rate <125/min (>5 years) Respiratory rate <40/min (<5 years) Respiratory rate <30/min (5 years) Stable for 4 hours	**IV MgSO4 can be administered on any ward as a recue therapy.** If patient has **not** improved or deteriorated, **move to life threatening pathway.** If patient has improved: Admit to ward Repeat Salbutamol 1-4 hourly	**Poor response or Deteriorating** **Continuous nebulised** ß$_2$ agonist + ipratropium :: **Consider** **CXR & Blood gases** **Bolus IV Salbutamol** (<2 years- 5microgram/kg, >2years 15microgram/kg, maximum 250microgram over 5 minutes) **Continuous IV salbutamol** infusion 1-5microgram/kg/min(200mcg/ml

Discharge Plan Continue oral Prednisolone (for a total of 3 days) Continue bronchodilator via Areochamber/mask Salbutamol 4 puffs 4 hourly for 4 days and then 2 puffs PRN Check inhaler technique Review maintenance therapy Written discharge plan Arrange follow up	Maintain SaO_2>92% If oxygen is further required, Ipratropium 0.25mg(>12yrs-0.5mg) nebulised 4-6 hourly. If unable to tolerate oral steroids, change to IV. Stable on 4 hrly Salbutamol Change to Areochamber 4 puffs 4hrly until discharge criteria met	solution) **Arrange HDU/PICU transfer** **Inform Consultant for review** **IV aminophylline** 5mg/kg loading dose over 20 minutes with ECG monitoring(omit if on oral theophyllines) followed by continuous infusion 1mg/kg/hr(500mg aminophylline in 500ml sodium chloride 0.9% run at 1ml/kg/hr)

3.8 Management of a inhaled foreign body

Points in favor of inhaled foreign body

- ✓ Making a comfortable diagnosis is extremely difficult
- ✓ Age group – older infants / toddlers
- ✓ High degree of suspicious
- ✓ Positive history must never be ignored
- ✓ Negative history may be misleading
- ✓ Children who present with 1st episode of wheezing
- ✓ Absence of fever or preceding illness

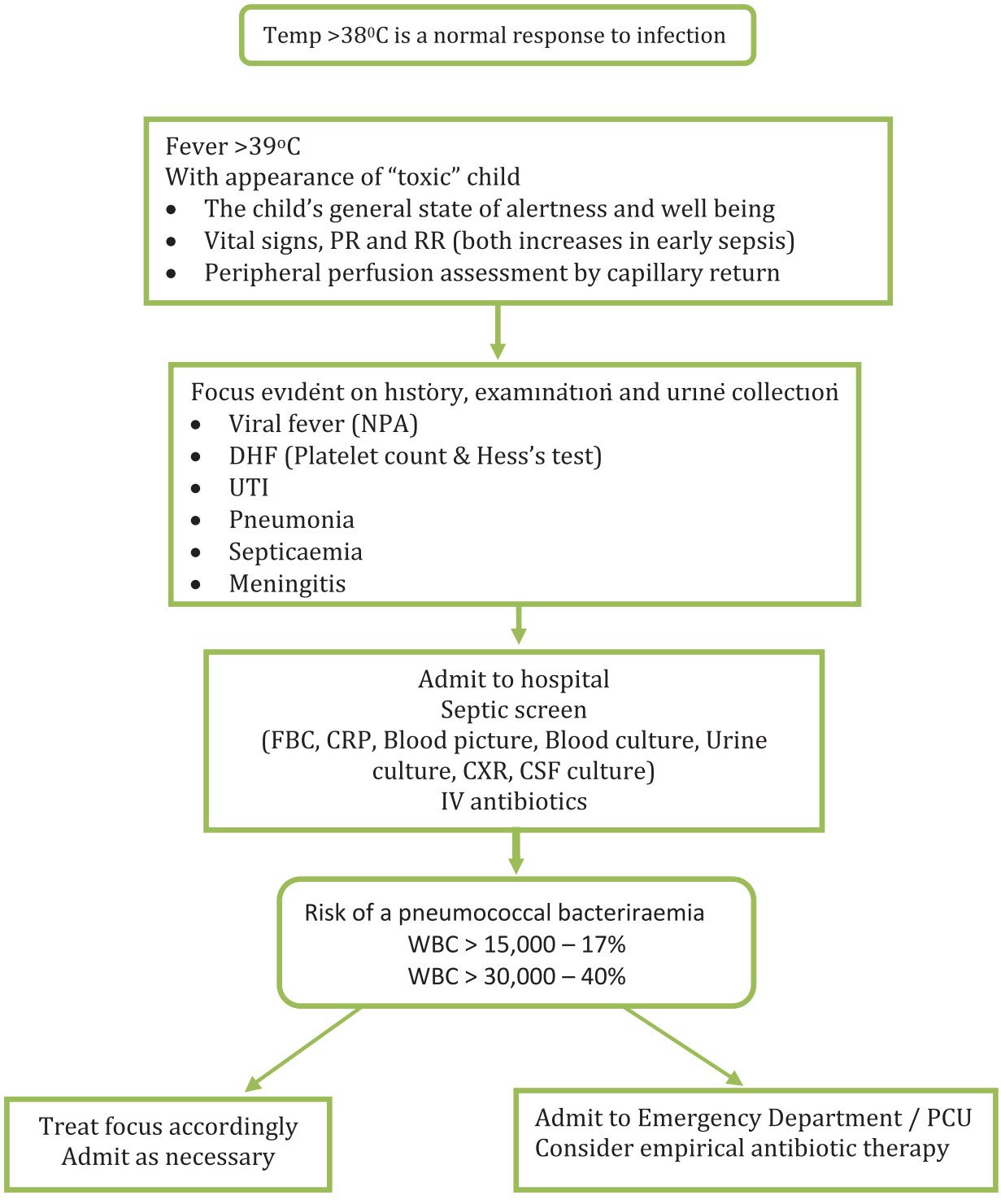
Clinical features

- Violent paroxysms of (intermittent episodes)
  - ✓ Coughing
  - ✓ Choking
  - ✓ Gagging
  - ✓ Possible wheezing
  - ✓ Cyanotic episodes
- Asymptomatic intervals
  - ✓ When FB gets lodged
- Complications
  - ✓ Fever, cough
  - ✓ Haemoptysis
  - ✓ Pneumonia
  - ✓ Atelectasis

Management Strategies

- Assess the work of breathing, effort, and efficacy of breathing
- Follow the APLS choking child protocol
- Inform Paediatric registrar and PICU
- CXR (both expiratory & inspiratory films) if child is stable
- Inform ENT surgeon, Anesthetist, Paediatric intensivist
- Transfer to PICU in the most comfortable position of the child
- Book the operation theater for video bronchoscopy.

3.9 The Febrile Child



3.10 Febrile Convulsions

A convulsion in infancy or childhood usually occurring between 3 months and 5 years associated with fever but without evidence of intra cranial or defined cause.
Affect 4% of children damage from fits are rare.
Need for prophylactic anticonvulsants is uncommon.
Risk of latter epilepsy is same as in general population.
< 1 year has greater risk of severe FC & repeated convulsions within 24-48hrs and FC with subsequent febrile episodes.

Simple FC

Complex FC
Last longer than 15 minutes
Have focal features
Recur within 24 hours

Management

- Terminate fit if necessary (see status epilepticus) (Don't Ever Forget RBS)
- Find and treat cause of fever (Exclude bacterial meningitis)
- Treat with paracetamol and physical measures
- Admit
    - First fit
    - Prolonged or focal fit or slow recovery
    - Young child < 2years of age
    - Two or more fits within 24 hours
- Prophylactic anticonvulsants
  Oral diazepam 0.5mg/kg/day in divided doses with fever or intra nasal midazolam 0.25mg/kg/ or rectal diazepam (0.5mg/kg/dose) with the onset of convulsion may be prescribed.

First afebrile seizure

- Look carefully for precipitating cause(s)
- Full examination including – blood pressure, head circumference, urinalysis, blood glucose and electrolytes including calcium and magnesium.
- Avoid
    - Falls from unprotected heights
    - Unsupervised swimming pools and bathing
    - Bike riding on busy roads
- Consider Paediatric Neurologist's opinion

3.11 Diarrhoea and Dehydration

1. Assessment of dehydration
   It is important to assess the degree of dehydration in children. Infants and small children are at a higher risk of dehydration. Weight loss is useful in estimating the degree of dehydration if weight prior to admission is known.

	No dehydration 5%	Some dehydration 5-10%	Severe dehydration >10%
Fluid deficit in ml/kg body weight	<50 ml/kg	50-100 ml/kg	>100 ml/kg
General Condition	Well, alert	Restless, Irritable	Lethargic or unconscious or floppy
Eyes	Normal	Sunken	Very sunken and dry
Tears	Present	Absent	Absent
- Mouth & tongue	Moist,	Dry	Very dry
Thirst	thirsty	Thirsty, drinks eagerly	Drinks poorly or not able to drink
Skin pinch	Goes back quickly	Goes back slowly	Goes back very slowly

2. Management of Dehydration
   - Correction of the existing water and electrolyte deficit
   - Replacement of ongoing losses.
   - Provision of normal daily fluid requirement
3. No dehydration
   a. Give the child more fluids than usual to prevent dehydration
   b. Home based fluids and ORS solutions such as kanjee should be used.
   c. Give as much fluid as the child wants.
   d. As a guide approximately 50 ml of fluid should be given after each stool.
   e. Watch for signs of dehydration.
4. Some dehydration (5 – 10%)
   a. Approximate amount of ORS solution to be given in the first four hours is 75ml/kg in first 4 hours
5. Severe dehydration >10% dehydration
   a. Children with severe dehydration need intra venous fluids, as there is a risk of impending shock
   b. Start IV Ringer's Lactate fluid immediately. If the patient can drink, ORS should be given while the drip is set up.
   c. Normal saline could be used if Ringer's Lactate solution is not available.
   d. If intra venous access is impossible attempt intra osseous administration or give ORS through naso-gastric tube
   e. Reassess the patient every 1-2 hours. If hydration is not improving, give the IV drip more rapidly.

Guidelines for intravenous treatment of children and with severe dehydration Start IV fluids immediately. If the patient can drink, give ORS by mouth until the drip is set up. Give 100 ml/kg. Ringer's Lactate Solution a divided as follows:		
Age	First give 30ml/kg in	Then give 70ml/kg in
Infants <12 months	1 hour	5 hours
>1 year	30 minutes	2 ½ hours

3.12 Child in shock

Aetiology of the shock

Hypovolaemic	Distributive	Cardiogenic	Obstructive	Dissociative
Haemmohagic Gastroenteritis Intussusceptions Volvulus Peritonitis Burns	**Sepsis Anaphylaxis Vasodilatory drugs Spinal injury DSS/DHF**	**Arrhythmias Cardiomyopathy Heart failure Valvular disease**	**Tension pneumothorax Haemo-pneumothorax Flail chest Cardiac tamponade Pulmonary embolism**	**Severe anaemia CO poisoning Methhaemo-globinaemia**

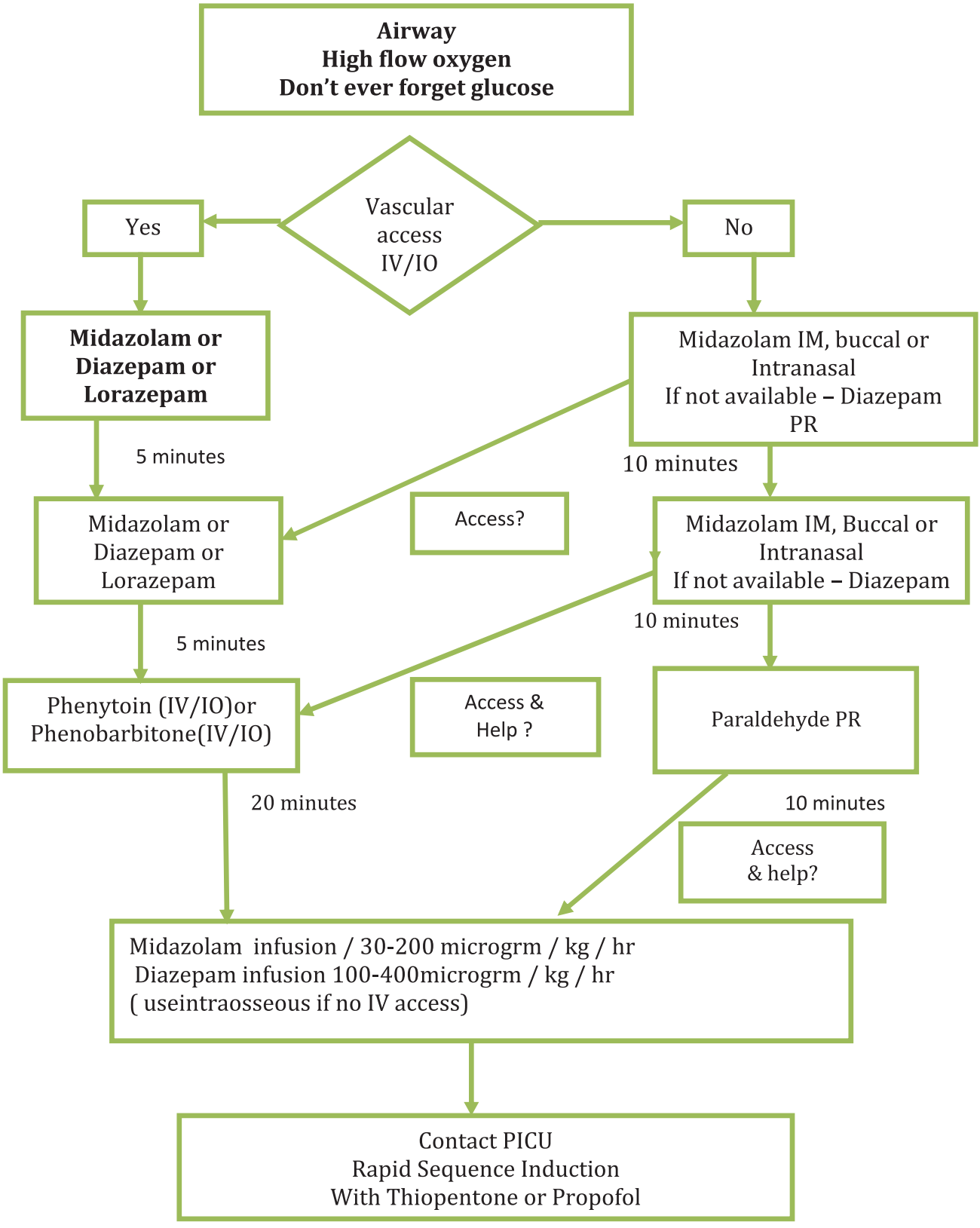
A sick child- hypovolaemic shock

	Compensated	**Uncompensated**	**Preterminal**
Blood volume loss	<25%	25-40%	**>40%**
Heart rate / Pulse rate	↑	↑↑	↑↑↑/↓
Systolic BP	Normal	↓	**Unrecordable**
Diastolic BP	May be elevated	Falling,	**Very Low / Un-recordable**
Central pulses	Normal	Weak,	**Absent**
Cap. refill	> 2 secs	>2 secs	**> 5 secs**
Extremities - Temperature	Cold,	Cold,	**Cold**
Skin colour	Cool / pink	Cold / mottled	**Cold / grey**
Respiratory rate	↑	↑↑	**Sighing**
Mental state	Mild agitation	Uncooperative	**Unresponsive**
Breathing Pattern	Normal,	↑↓	**Acidotic**
Urine output	**Reduced**	**Nil**	**Nil**

Irreversible shock (Pre-terminal)

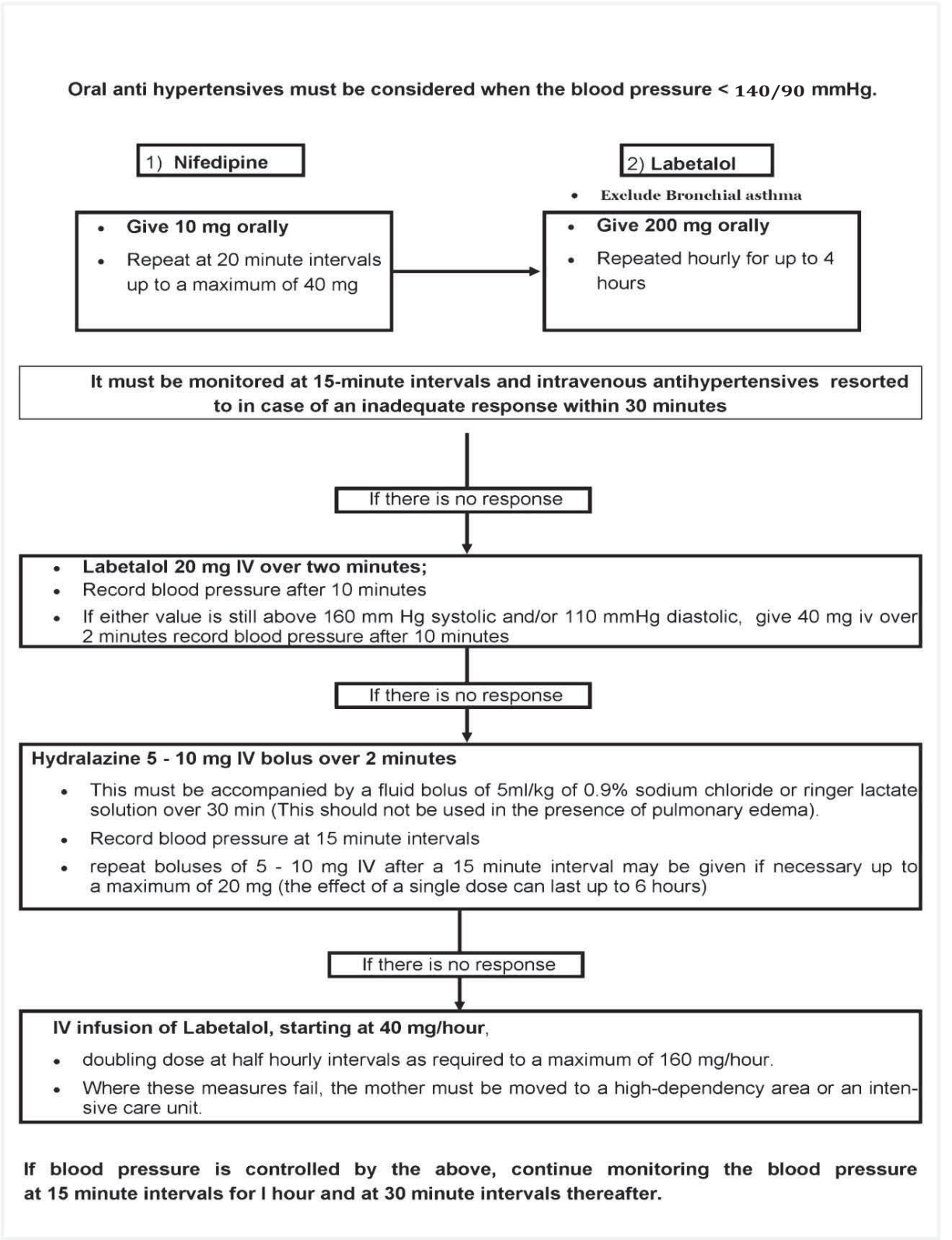
- Diagnosis is retrospective one
- Death of the patient is inevitable despite therapeutic intervention
- Sever damage to vital organs such as heart and brain
- Pathophysiologically the high energy phosphate reserves in cells (especially

3.13 Status Epilepticus Algorithm



4 Obstetric Emergencies

4.1 Management of Pregnancy Induced Hypertension



4.2 Eclampsia

Prevention

- Magnesium sulphate is the anticonvulsant of choice
- It should be given to any woman with features of impending/imminent eclampsia (presence of clonus, severe headache, visual disturbances, dizziness).

Management

- Turn the patient to a side and hold her in that position
- Suck out secretions from the mouth
- Pull up the side rails of the bed
- Administer oxygen via a face mask
- Most eclamptic seizures resolve spontaneously
- Do not diagnose fetal hypoxia based on fetal heart aberrations during a seizure. These result from maternal hypoventilation and acidosis and will recover following the seizure
- Attempt to establish intravenous access
- Obtain blood for full blood count, liver transaminases, blood urea and electrolytes, blood for cross-match,coagulation profile

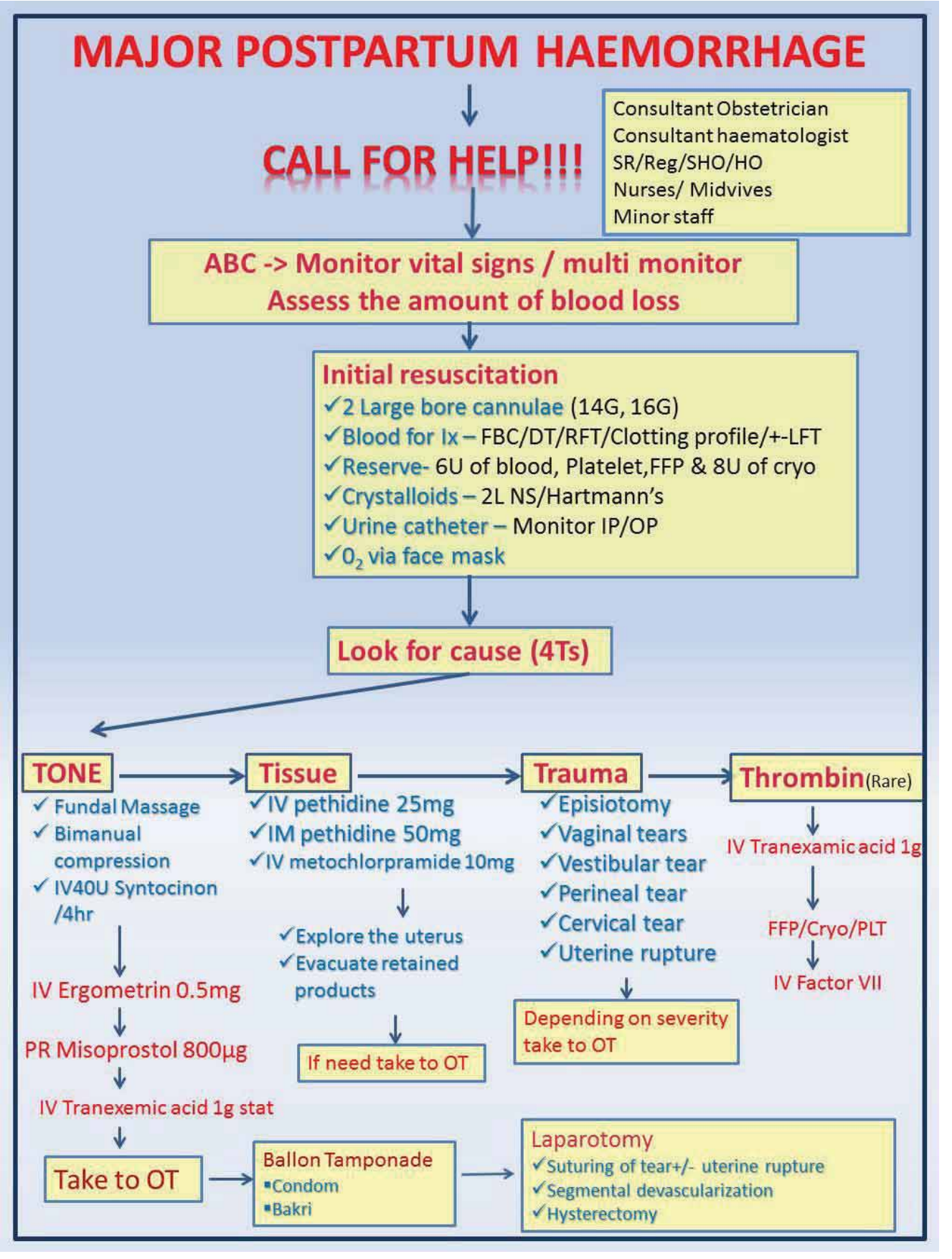
- Give loading dose of 4 G IV over 10 minutes. There are two methods of giving magnesium sulfate intravenously.
  - Diluted to a total volume of 20 ml with saline, given via an infusion pump
  - Diluted to a total volume of 80 ml with saline via a burette
- Start infusion of 1 G IV per hour and continue for at least 24 hours after delivery
- Monitor the mother to ensure hourly urine output of 30 ml per hour, respiratory rate >16/ minute, oxygen saturation >90% and presence of patellar reflexes
- These should be done every 30 minutes

Women developing the first seizure while on magnesium sulphate

- 10% of women receiving magnesium sulphate will develop a second seizure
- Administer magnesium sulphate 2 grams diluted to 10 ml with 0.9% sodium chloride solution over 5 minutes
- Increase the infusion rate to 2 grams per hour with monitoring as above

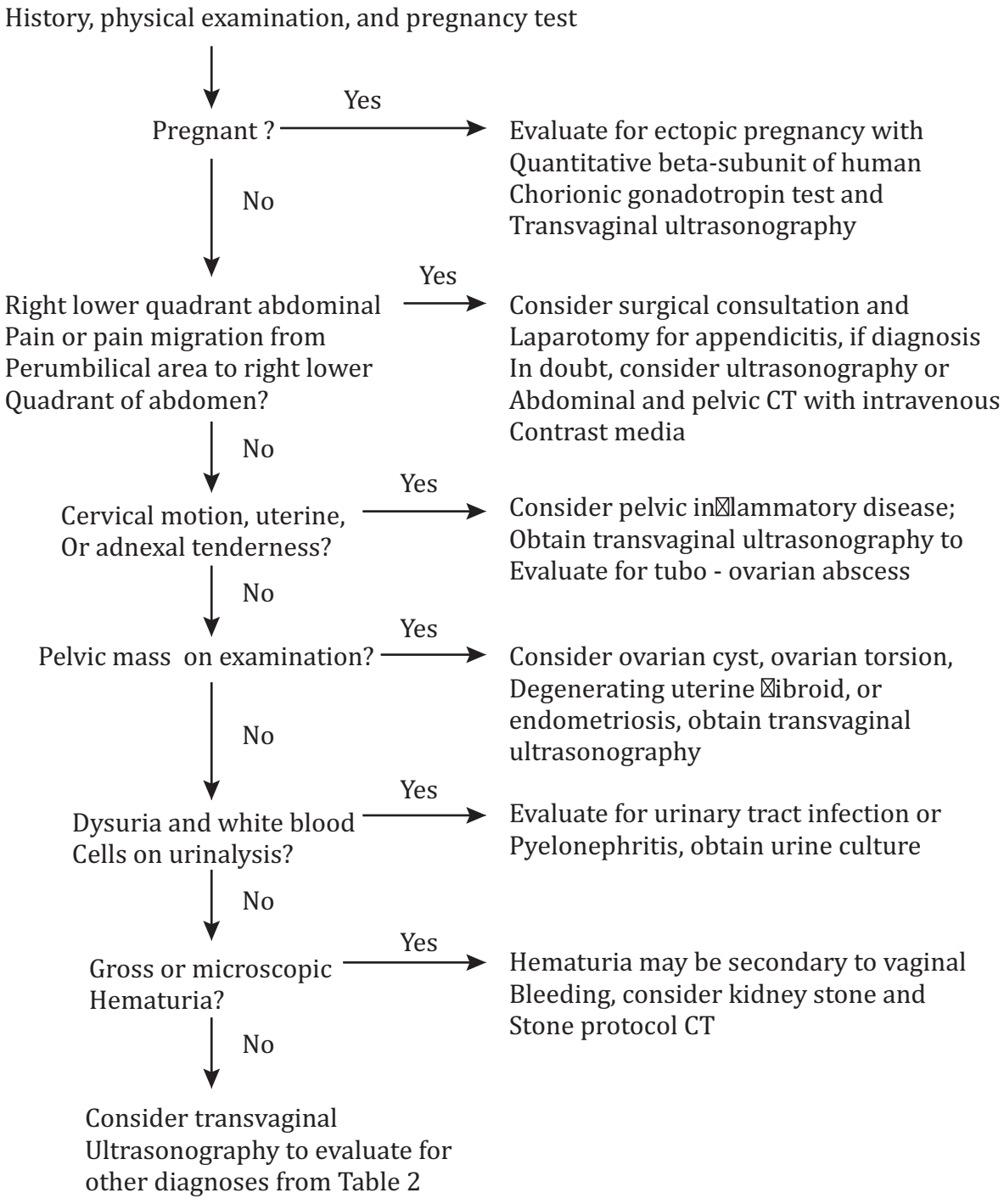
Women *developing more than one seizures while on magnesium sulphate*

- Call a Neurology team or if one is not available, the medical team
- Inform the anesthetic team if still not in an intensive care setting
- Administer sodium amiobarbital 250 mg iv over 5 minutes
- If the woman develops further seizures, consider moving to intensive care for neuromuscular paralysis and ventilation
- These women will require a full neurological evaluation, including imaging


MAJOR POSTPARTUM HAEMORRHAGE
CALL FOR HELP!!!
Consultant Obstetrician
Consultant haematologist
SR/Reg/SHO/HO
Nurses/ Midvives
Minor staff
ABC -> Monitor vital signs / multi monitor
Assess the amount of blood loss
Initial resuscitation
✓2 Large bore cannulae (14G, 16G)
✓Blood for Ix – FBC/DT/RFT/Clotting profile/+-LFT
✓Reserve- 6U of blood, Platelet,FFP & 8U of cryo
✓Crystalloids – 2L NS/Hartmann's
✓Urine catheter – Monitor IP/OP
✓O_2 via face mask
Look for cause (4Ts)
TONE
✓ Fundal Massage
✓ Bimanual compression
✓ IV40U Syntocinon /4hr
IV Ergometrin 0.5mg
PR Misoprostol 800µg
IV Tranexemic acid 1g stat
Take to OT
Tissue
✓IV pethidine 25mg
✓IM pethidine 50mg
✓IV metochlorpramide 10mg
✓Explore the uterus
✓Evacuate retained products
If need take to OT
Trauma
✓Episiotomy
✓Vaginal tears
✓Vestibular tear
✓Perineal tear
✓Cervical tear
✓Uterine rupture
Depending on severity take to OT
Thrombin (Rare)
IV Tranexamic acid 1g
FFP/Cryo/PLT
IV Factor VII
Ballon Tamponade
▪Condom
▪Bakri
Laparotomy
✓Suturing of tear+/- uterine rupture
✓Segmental devascularization
✓Hysterectomy

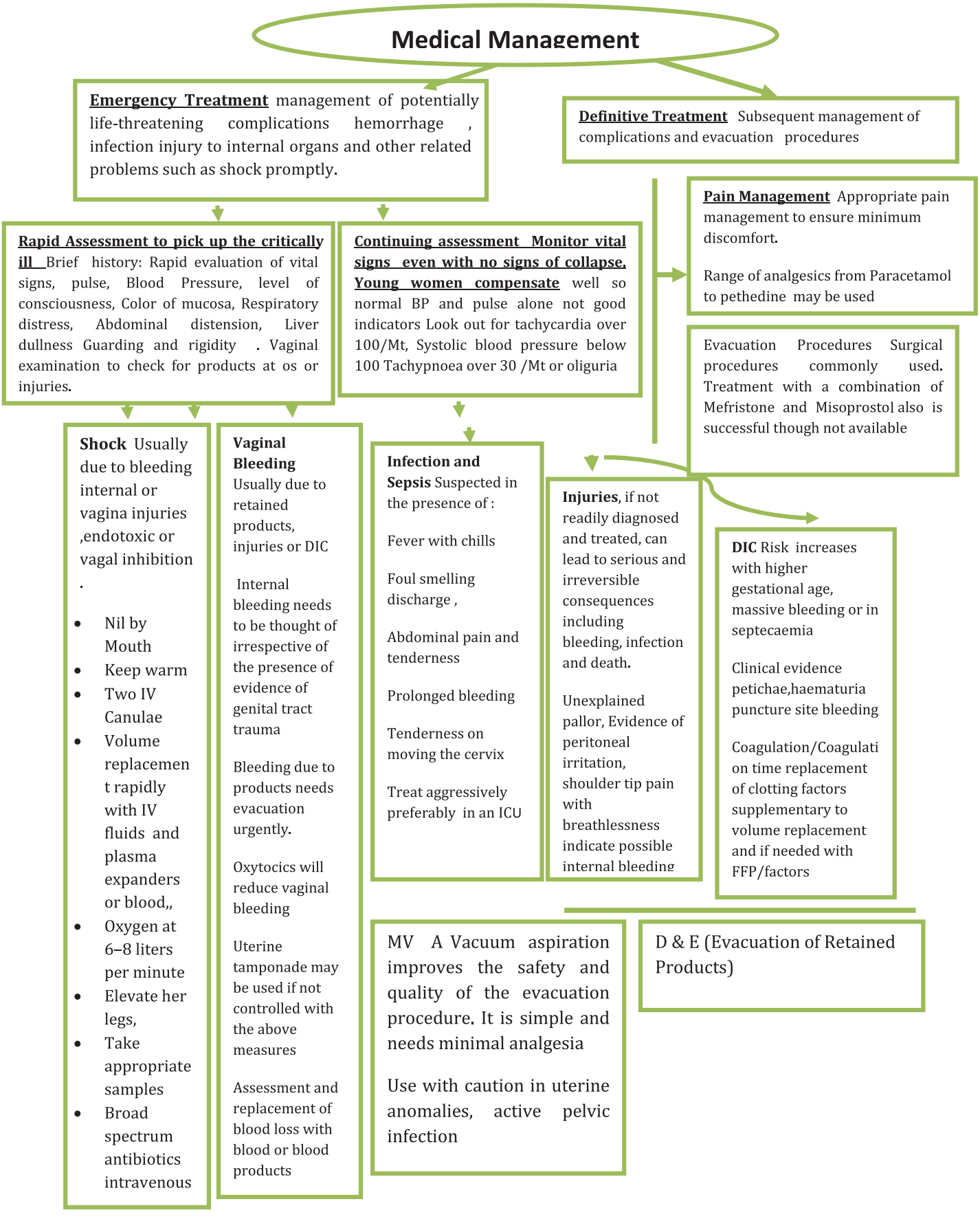
Gynaecological Emergencies

4.3 Evaluation of woman with acute pelvic pain



History	Possible diagnosis
Bilateral pelvic pain	PID
Dysmenorrhea	Endometriosis, uterine fibroid
Dyspareunia	Endometriosis, ovarian cyst
Dysuria	PID, UTI
Gross hematuria	Kidney stone, UTI
Left-sided pelvic pain	Diverticulitis, kidney stone, ruptured ovarian cyst
Midcycle pain	Mittelschmerz
Nausea and vomiting	Appendicitis, ovarian torsion
Pain migration from periumbilical area to right lower quadrant of abdomen	Appendicitis

4.4 Post abortal care



5. ENT Emergencies

5.1 Management of Ear Emergencies

1. EAR LACERATIONS

1. If cartilagenous part is involved, do not suture without ENT surgeon's opinion. Antibiotic cover is necessary until sutures come out.
2. Trauma can cause Ear canal laceration and temporal bone fracture in the same patient.
3. Look for VII Nerve palsy at the initial assessment as it is often missed.

- ***Blood clot in canal should be left undisturbed***

2. PERICHONDRIAL HAEMATOMA

1. Urgent ENT referral should be done as delayed management can lead to cauliflower Ear
2. Incision & drainage done immediately by the ENT team to prevent cartilage necrosis under sterile conditions
3. Pressure bandage is applied for 5 days.
4. Antibiotics should be given

3. FOREIGN BODY IN THE EAR

1. Ask for history of foreign body, but in case of children a clear history might not be available.
   Pain
   Deafness
   Discharge
   Irritating buzz (in case of live insects)

2. Diagnosed by direct visualization with an auroscope

3. Removal:

- In an uncooperative child, refer to an ENT unit to consider removal under General anesthesia.
- Removed under direct vision with a foreign body hook placing it under the foreign body and slowly pulling outwards.Examiner should wear a headlight so that both hands will be free for examination and manipulation. Manipulate gently to avoid causing damage or further impaction.
- Cotton buds,small pieces of paper, small insects should be gently removed with a Crocodile forcep.
- Drown live insects in 2% lidocaine/ Glyserine first
- Do not syringe vegetable/organic matter with water as it may cause swelling up and increase in pain. Patient should be referred to an ENT clinic
- Objects such as beads can be removed using a toothpick/stick with a tiny amount of superglue on the end
- If the foreign body is firm or hard and is not completely filling the ear canal it can be removed through syringing. The water jet should be directed towards the posterior ear canal wall. The foreign body will come out with the reflected stream of water.
- If the foreign body is firm and completely filling the ear canal, removal should be attempted in the theatre under general anesthesia. Sometimes ear canal has to be opened surgically.

4.EAR DRUM PERFORATION WITH OR WITHOUT OSSICULAR DAMAGE

Causes:

a) Noise trauma
b) Shrapnel injury
c) Self inflicted
d) Iatrogenic

Management

1. Keep the ear canal dry (Ear plugs during bathing/swimming)
2. Prescribe Oral antibiotics for one week
3. Review in one month
4. Minor perforations may heal spontaneously. Suggest Myringoplasty later only If perforation has not healed

5. SUDDEN DEAFNESS

- Sudden deafness could be conductive or sensorineural.
- Sudden sensorineural deafness is an Emergency.

- Causes:
  - Vascular,
  - Viral,
  - Autoimmune
  - Cerebello-Pontine angle tumor(rare)
- Proper examination including neurological examination should be performed.
- Conversational and whispered voice hearing has to be tested after occluding the non test ear by tragal massage.
- Exclude conductive causes such as wax impaction and traumatic causes, if detected treat accordingly.
- Tuning folk test should be done.
- Bilateral sudden deafness needs admission.
- Investigate with,

  FBC, ESR, FBS, Lipid Profile, TSH, VDRL, serial PTA, MRI

- Urgent ENT referral is needed for treatment with Intra Tympanic Dexamethasone under local anesthesia. Sensorineural deafness may get reversed if the injection is given within first 48 hours.

6.ACUTE MASTOIDITIS

Clinical features,

1. Post aural redness and swelling
2. Prominence of pinna
3. Patient is usually acutely ill and toxic with high fever

ENT examination as well as central nervous system examination has to be performed

Urgent ENT referral has to be done to prevent extra and Intracranial complications.

Investigations

1. Full blood count
2. If an ear discharge or post aural discharging sinus is present, take swabs for culture and ABST prior to treatment.
3. X-ray mastoid region
4. CT brain and Temporal bones to exclude extra andIntracranial complications.

Management,

- Start Intra venous antibiotics as soon as possible (can be changed after the culture results).

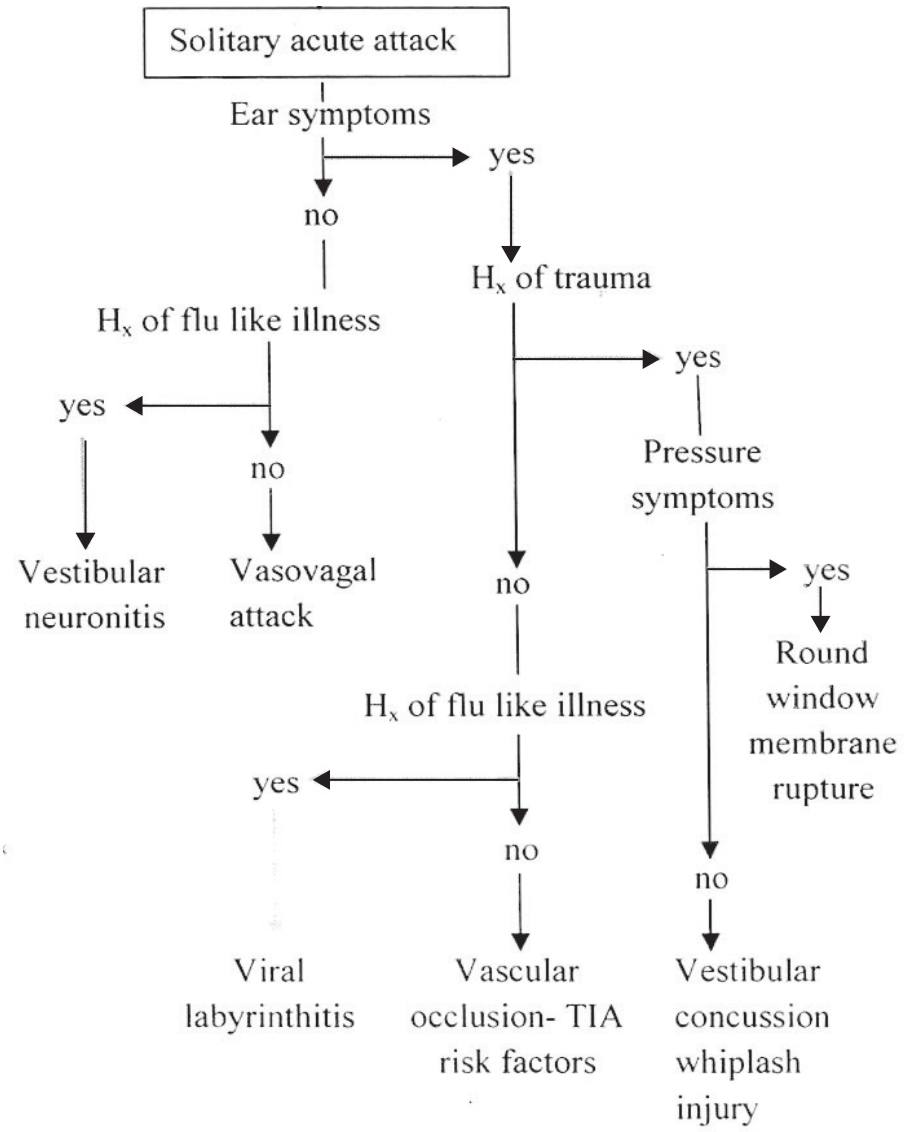
5.2 ACUTE VERTIGO

Vertigo occurs due to otological, neurological, and psychological causes.

Main Causes

1. ear trauma
2. Acute meniere's attack
2. Posterior circulation Stroke
3. Acute vestibular neuronitis
4. Benign paroxysmal vertigo

Assessment of a patient presenting with a solitary acute attack of vertigo



Management-

- supportive care- bed rest, fluids and reassurance
- Medications that suppress vestibular signs can be helpful acutely. (To be prescribed only for 1 week - Dimenhydrinate, Beta Histidine)
- Refer to an ENT Surgeon and Neurologist for definitive diagnosis and management.

5.3 Emergencies of nose

1. FOREIGN BODY IN NOSE

Commonly seen in:

children
psychiatric and mentally retarded adults

Removal of foreign body immediately after insertion:

- As there is a risk of aspiration in any nasal foreign body, refer uncooperative patients to an ENT surgeon for removal of foreign body with airway protection.
- If cooperative, instruct the patient to blow his nose whilst occluding the unaffected nostril. If unsuccessful, attempt removal using combination of hook and forceps as appropriate, blunt hair pin (diagram)or hook too can be inserted above the foreign body for removal. Head light should be worn to free the hands for manipulation.
- Nasal button batteries or magnets can cause significant damage, so refer to an ENT unit if you suspect an inhalation of such object.

When diagnosis is delayed patient presents with an offensive unilateral nasal discharge. Do not attempt to remove as this may cause bleeding. Refer to ENT unit.

2. EPISTAXIS

1. Management depends on the site of bleeding, severity of bleeding and the age of the patient.

- Three major Principles of mangement,

    1. Resucitation
    2. Arrest Bleeding
    3. Find the cause

- In Posterior nasal bleeding patient present with bleeding from nose as well as mouth,

2. Finding the bleeding point is very important.

In a child

Common causes of Epistaxis are,

Nasal picking due to sepatal deviation causing Vestibulitis
Undiagnosed long standing Foreign body of nose
Angiofibroma – recurrent bleeding in an adolescent male, this tumour has to be excluded by CT imaging
Exclude any bleeding disorder such as Leukaemia or Haemopphillia.

Mangement of a child includes,

- Direct pressure by nasal pinching
- Keeping ice packs
- Nasal cautery (described later) if bleeding is not arrested with above measures

In an Adult

Common causes are,

Local causes- Trauma,
Neoplastic lesions
Infections
Iatrogenic factors

Systemic causes-Coagulopathies (Inherited conditions,Thrombocytopenia, Platelet disorders, Liver disease, Renal failure, Chronic alcohol abuse, AIDS)

Vascular Abnormalities,

Hypertension

Management of an adult patient with epistaxis-

Mild epistaxis

1. Reassure the patient
2. Take a brief history and examine the patient
3. Sit with their upper body tilted forward and their mouth open. Avoid lying down, unless patient is in shock. Leaning forward decreases blood flow through the nasopharynx, allows spitting out of blood, and minimizes swallowing blood that drains into the pharynx.

4. Pinch the cartilaginous (soft) part of the nose firmly and hold it for 10–15 minutes without releasing the pressure, while breathing through the mouth.

5. If bleeding site identified, cauterize with $AgNO_3$.
6. If not controlled with above measures anterior and posterior nasal packing has to be done.

Severe epistaxis,

1. Assess the person's airway, breathing, pulse, and blood pressure.

2. If the person is otherwise well, take a brief history.

3. If circulation is compromised, resuscitate the patient along with a wide bore canula and IV fluids – Hartman's/ 0.9% Saline. Send blood for investigations - FBC, Clotting Profile, Grouping and DT
4. If ENT facilities are available, Patient should be referred to an ENT unit for nasal packing. Otherwise do the Anterior nasal packing and Posterior nasal packing

Anterior Nasal Packing:

- Anterior packing is required when the bleeding fails to stop with simple measures.
- This is done under local anesthesia using Vaseline nasal packs, Thudicum speculum and packing forceps.
- Nasal packs can be kept for 48-72 hours.

Posterior Nasal Packing/ Balloon Catheters:

- Posterior nasal bleeds can be difficult to manage related to the relatively inaccessible site of bleeding and generally don't respond the above standard medical treatment and anterior packing.
- Posterior packing can be done with inflation of the balloon of a Foley catheter with 30ml of normal saline
- The catheter is inserted through the nose in to the back of the oropharynx, and then inflate the balloon first and bring forward to seal off the postnasal space. Apply

Straight Artery Forcep at the nostril. Be careful about compression of nasal alar cartilage as it may undergo avascular necrosis.

Cautery:

- Bleeding points can be cauterized with a cotton bud soaked in 90% $AgNO_3$ or Electrocautery with bipolar forceps.

5.4 Assessment of a patient with Facio-Maxillary trauma

- After primary survey and resuscitation, complete palpation of the facial skeleton to detect facial fractures should be carried out during the secondary survey.
- Starting from the orbital rim,along the nasal bone, maxillary prominence, zygomatic arch, temperomandibular joint up to the mandibular margin should be palpated carefully.
- Upper dentition has to be palpated with the thumb inside the mouth.
- Look for dental malocclusion. This suggests fracture involving the maxilla or the mandible.
- Trismus if present indicates a fracture of the head of the mandible or related muscle spasm due to a nearby fracture.
- During intra oral examination, haematoma of the vestibule or the floor of the mouth should be noted.Haematoma may indicate a fracture line.
- It is important to identify a septal hematoma

  Septal deviation

  Epistaxis or intranasal laceration

  CSF rhinorrhea: Indicates more serious fracture of underlying facial bone or skull

Le Fort I fractures

Upper Dental arch

Le Fort II fractures

Pyramidal through the orbit (Infra orbital nerve damage)

Le Fort III fractures

Craniofacial disjunction Orbit, sphenoid,

Zygomatic Bone

- Management should be done in collaboration with faciomaxillary team.
- 3D CT will be helpful to assess the deformity and to plan the treatment.

Nasal bone fractures

Diagnosis

Physical Exam

1. Physical examination with visual inspection and palpation is very important.
   CSF mixed with blood will cause double-ring sign when placed on filter paper.

Classification
Class 1 - Lower part of the nasal bone fractured

Class 2 – Nasal bone fracture associated with septal fracture
Class 3– Nasal fracture which extends including the ethmoid labyrinth.
Tip of the nose turned up revealing the nostrils – pig nose deformity.
An apparent widening of the space between the eyes.(telecanthus-Wider than width of an eye).

Investigations

- Nasal radiographs - X- ray nasal bone and sinus view.
- 3D CT will help to assess the deformity.

TREATMENT/PROCEDURES

a) Proper cleansing of facial wounds is essential.
b) Lacerations without cartilage or bone involvement should be approximated with fine (5.0) Prolene under antibiotic cover
c) If the cartilage or the bone is involved ENT/plastic surgical opinion must be sought.
d) Appropriate analgesics should be provided.
e) It is generally recommended to let swelling go down and reduce the fracture in 1 week.
f) Definitive management depends on the class of the fracture.
   a. Class 1- easily manipulated by fingers under local anesthesia
   b. Class 2- The manipulation of the nasal bone should be accompanied by an manipulation of the septum
   c. Class 3- this requires open reduction by an ENT team in collaboration with OMF team.

- Fever may or may not be present.
- Features of upper respiratory tract infection or sinusitis will be present.

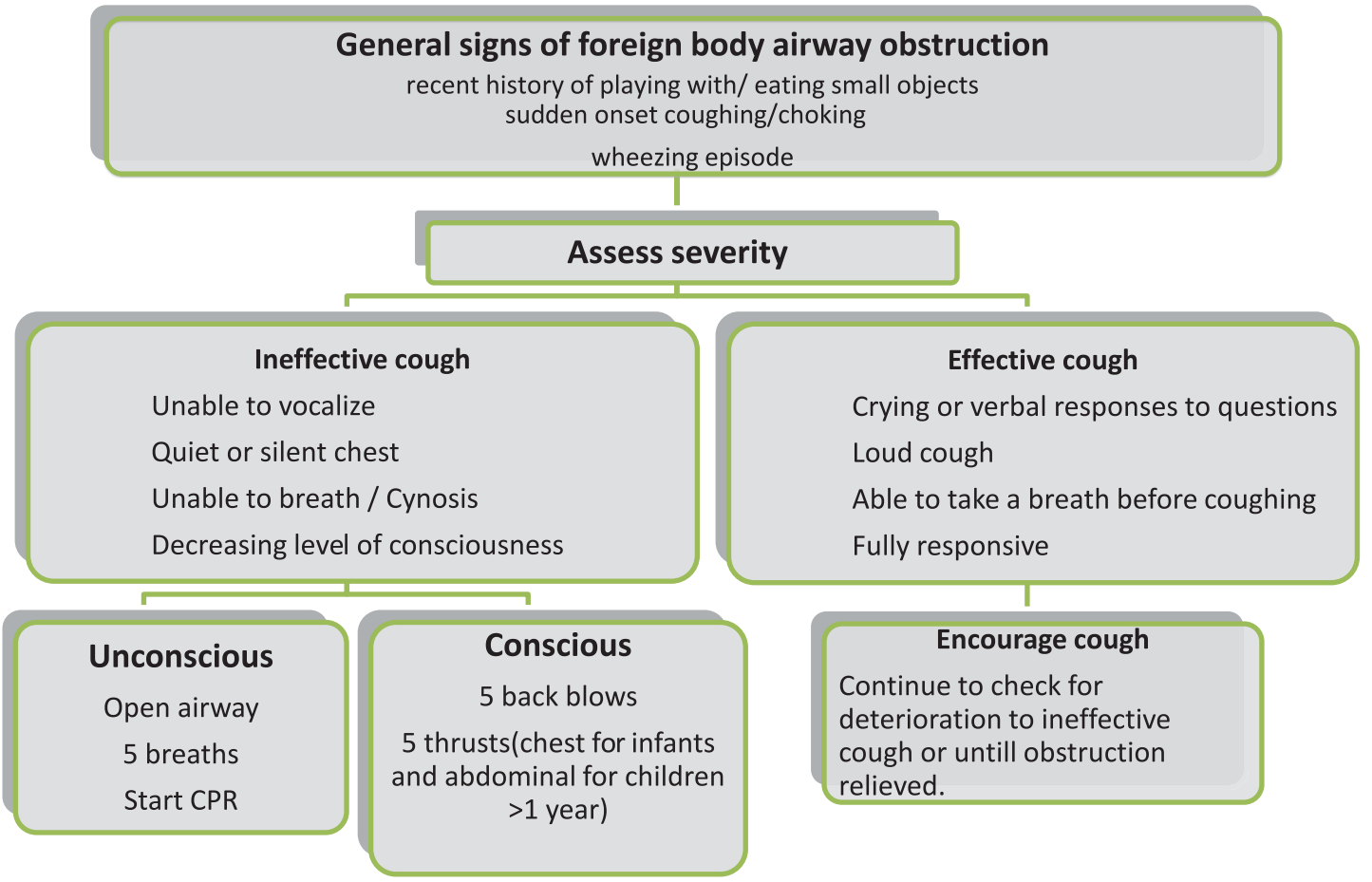
5.5 Emergencies of Throat

1. Foreign body in the throat

- Presenting features
  - Drooling of saliva
  - Difficulty in swallowing
- The foreign bodies can get impacted in the tonsils, piriform fossa or in the upper oesophagus. If the foreign body is in the tonsils it can be removed using the artery forceps.
- And if the tonsils are clear these patients need urgent ENT referral.

Foreign body in the Air Way
- In the bronchus
- In the trachea

Aspiration causing complete upper airway obstruction needs urgent referral



2. Ludwig's angina

- Rapidly spreading cellulitis involving the floor of the mouth.
- Commonest aetiology – dentoalveolar or tonsillar sepsis
- Patient can die of airway obstruction due to fallen back tongue
- Patient present with trismus, swelling of neck and toxic features like high fever

Emergency management

- Asses the condition of the patient
- If the airway is compromised, secure the airway using an oral airway

  If the patient does not tolerate an oral airway then urgent intubation or tracheostomy is necessary
- Broad spectrum Intravenous antibiotics - amoxycillin with clavulanic acid with Metronidazole
  Clindamycin -in resistant cases.
- Most of the patients are immunocompromised with Diabetes. Do a CBS and refer to resident physician. Proper management of Diabetes is essential

3. STRIDOR

In a child

- congenital
- Infective

  Bacterial – Acute Epiglottitis, Retropharyngeal Abscess.

  Viral – Croup
- Non-infective Inflammatory - Angioedema
- Traumatic conditions
  Foreign Bodies, Intubation Trauma ,Blunt & Penetrating Trauma

Emergency management

- assess the child for severity of stridor and respiratory compromise
- Monitor pulse rate and respiratory rates, pulse oximerty, if possible arterial blood gas. Look for Tachypnea, Tachycardia, Chest wall recessions, spells of Apnea, use of accessory muscles for respiration, nasal flaring
- Assess the level of consciousness and responsiveness.
- Allow the child to be in preferred position/ prop up
- Give 100% O2 via face mask
- if acute epiglotitis is suspected (drooling of saliva, cervical lymphadenopathy, high fever) do not try to examine or send the child for X-ray neck, until the patient reaches a facility equipped for emergency management of the pediatric airway,
- Patient is taken to the operation theatre immediately. Intubation is done in the presence of ENT surgeon, the Paediatrician and the consultant anesthetist.
- Emergency Airway access

  Cricothyroid Puncture
  Intubation
  Tracheostomy

- Anteroposterior (AP) and lateral radiographs of the neck and chest
- Refer to an ENT unit for Direct laryngoscopy and bronchoscopy
- Find the cause and treat accordingly.
- Adrenaline Nebulization , Steroids – especially when croup is suspected
- After securing the airway if epiglotitis is confirmed, give IV antibiotics.
  Eg: Third generation Cephalosporins

In an adult-

Most common causes are -

- Bilateral vocal cord palsy - idiopathic or post surgical eg: Thyroidectomy
- Laryngeal growth obstructing the larynx
- Laryngeal haematoma following trauma
- Post intubation stridor due to laryngeal granuloma or subglottic stenosis
- Hypocalcaemia following Thyroidectomy

Signs- Stridor (Cardinal sign), Stretor, suprasternal retraction, intercostal recession , flaring of the nostrils, Restlessness, Drooling , Bleeding, Subcutaneous emphysema

Emergency management

- Prop up; assess the airway, breathing and circulation.
- Achieve control by securing the airway below the lowest level of the obstruction- intubation/ cricothyrotomy/ tracheostomy as appropriate.
- Monitor pulse rate, respiratory rate, oxygen saturation and level of consciousness.
- 100% Humidified oxygen via a face mask or nasal cannula
- Steroids/ Antibiotics
- Once the airway has been adequately secured, any other medical problems should be addressed
- Investigate with Plain X-ray – Soft Tissue Neck (Cincinnati View) Chest PA
  Imaging – CT, CTA, MRI, MRA
  Contrast Studies

5.6 Management of Laryngeal / Tracheal

Damage to the larynx results from penetrating injuries or from blunt trauma.

- Upper airway Injuries should be considered in any patient with a history of neck trauma
- Symptoms-
  Dysphonia, stridor
- Signs –
  Subcutaneous emphysaema and loss of laryngeal prominence in a male are the main features.

Emergency Management

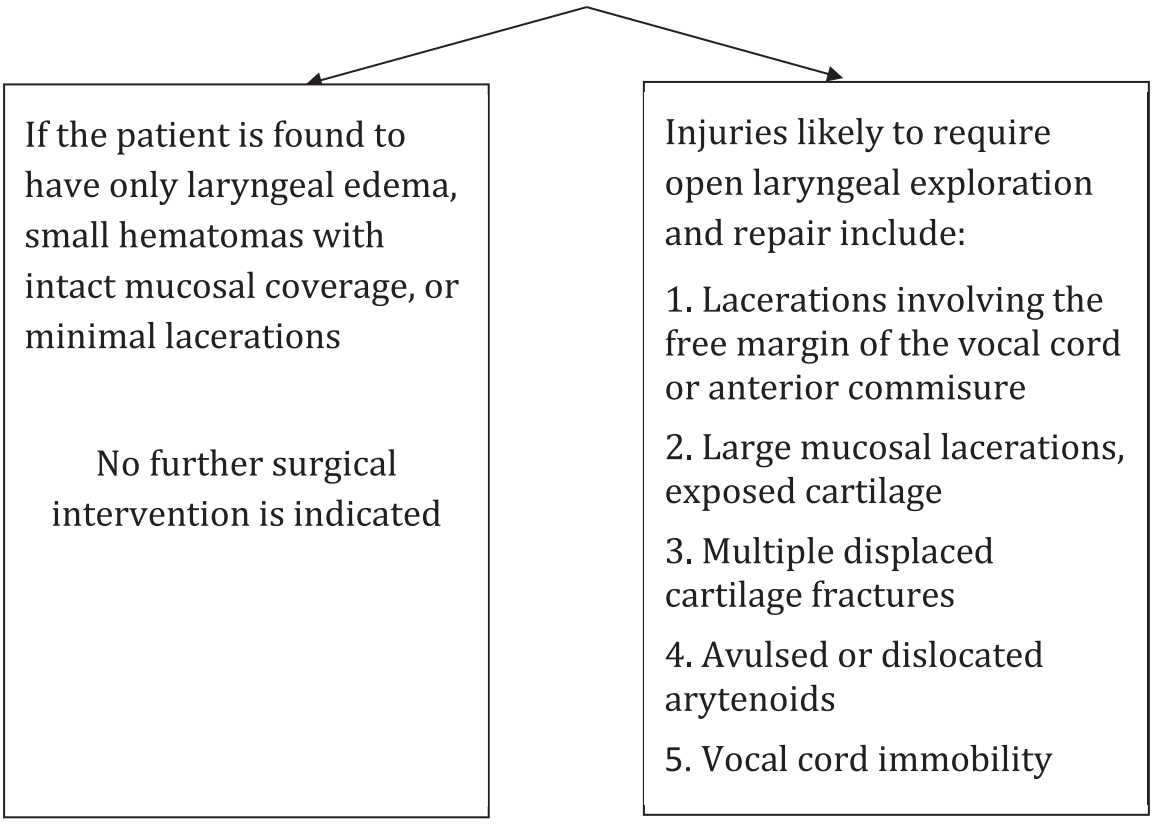
If ENT surgeon is available seek opinion for airway management.

- Airway Management – assess and secure
  If stable, history, physical exam and radiological workup may proceed.
  If unstable, the airway must be secured immediately.
- Patient should be monitored with pulse oximeter
- Steroids
- Nebulize with Adrenaline

- Management can be primarily medical or surgical and is based on the type of injury as determined by the physical examination and CT scan.
- In the following instances injury will resolve without surgical intervention:
    - Oedema
    - small hematoma with intact mucosa
    - Small glottic or supraglottic lacerations not involving free margin of the vocal cords or the anterior commisure; no exposed cartilage
    - Single, nondisplaced stable thyroid cartilage fracture.

Surgical management

- Tracheotomy is performed if intubation is not possible or ICU bed is not available to keep the intubated patient.
- Patients with significant injuries should be examined with laryngoscopy, bronchoscopy and esophagoscopy in the ENT unit.



5. Quinsy (peritonsillar abscess)

Symptoms-

- fever ,malaise
- odynophagia (difficulty in swallowing even liquids)
- trismus (difficulty in opening the mouth)

- change in voice -muffled voice, "hot potato" voice.

Physical signs-

- swelling of the anterior tonsil pillar,-especially the upper end
- tonsil itself is enlarged and displaced medially,
- uvula displaces to opposite side,
- Tenderness and often swelling on the ipsilateral side of the neck at the angle of the jaw.

Management -

1. Aspiration
2. Incision & drainage by ENT team - under local anesthesia with a number 11 blade (patient's condition improves immediately after drainage)
3. Antibiotics- C. Penicillin 1MU IV 6 hourly
4. Pain management

6. Psychiatric Emergencies

6.1 The Aggressive and Violent Patient

DEFINITIONS

Aggression is any form of behaviour directed towards the goal of harming or injuring another living being who is motivated to avoid such treatment.
Violence is harmful behaviour inflicted upon another person or property involving the use of force. Violence is defined as the act that leads to physical harm or destruction.
Aggression may or may not result in violence but all violence is aggression.

ASSESSMENT

1. Predictors of violent behaviour

- Details of aggressive behaviour and thinking (including protective factors such as, what stops the patient acting in their thoughts).
- Current mental status (psychosis, impulsivity, intoxication, illicit drug use, delirium).

2. Risk Factors

- History of violence
- Impulsiveness.
- History of childhood abuse.
- Substance use/intoxication.
- Personality disorder (antisocial, borderline).

- Psychosis (especially command hallucinations, persecutory delusion, alien control, hyper-religiosity or hyper-vigilant)
- Organic cause (head injury)

3. Maintain Safety

Interview with at least two staff together, have other staff or security nearby.
Do not attempt to disarm an armed patient yourself – call police and/or hospital security.
Do not threaten or challenge.
Approach in a calm, confident manner and avoid sudden or violent gestures.
Avoid prolonged eye contact, do not confront, and do not corner or tower over patient.
Focus on the here and now, and do not delve into long -term grievances or issues.
Seek help if you feel scared.

4. What is the context?

Get as much history as possible from corroborative sources before approaching the patient, including previous notes, other staff, police, family and friends.
Has the patient committed a violent act?
How did the patient come to be in the emergency department?
What is the patient saying?
Is the patient's aggression understandable at some level?
Is there a precipitant?
Is the patient making specific threats?

5. Differential Diagnosis:

- Psychiatric disorders associated with violence (Schizophrenia, mania, depression, personality disorder, PTSD, Acute reaction to stress)
- Physical/ organic causes (Delirium, Drug and alcohol intoxication or withdrawal, dementia, organic personality disorder)

MANAGEMENT:

Phases of dealing with aggression or violence:
Phase 1: De-escalation
Phase 2: Sedation
Phase 3: Mechanical restraint
Phase 4: Physical restraint
Phase 5: Post sedation / Seclusion / Transfer

Phase 1: De-escalation

De-escalation is a process to defuse a potentially violent or aggressive situation without having to resort to physical restraint.

There is a need for verbal intervention, which could help to reduce the threat of violence and return the patient to a calm state of mind.

- Show concern or empathy
- Speak quietly but clearly and calmly; don't argue
- Assist patient to stay in control
- Set limits firmly but do not threaten
- Allow extra personal space
- Deal with the issue at hand
- Ensure safe environment and remove all potential weapons
- Ensure safe exit point for staff
- Encourage patient to talk and make use of appropriate listening skills
- Offer medication to patient; initially oral therapy
- Allow patient to find a solution to the problem

Phase 2: Sedation

- Initially offer patient oral therapy (Lorazepam 1-2mg(Max 6mg/24hrs), clonazepam 1-2mg repeat after 45-60 minutes)
- If patient refuses and de-escalation techniques have failed, use intramuscular or intravascular therapy
- Lorazepam (Ativan) 2mg – 4mg IMI/IVI stat – give slowly over 3 minutes after Diluting, or Olanzepine 10mg IM or Promethazine 25mg IM (can repeat after 30 minutes if not responding)
- If patient not sedated after 20 minutes, administer Haloperidol 5mg IMI stat which may be repeated using 5mg every hour to a maximum of 18mg

ECG is needed before giving IM Haloperidol.

Phase 3: Mechanical Restraint

- Not to be used as a punitive measure, **but for the safety of the patient and others, until sedation takes effect**
- Not to be used for longer than 30 minutes at a time according to the Mental Health Care Act regulations
- Restrain in a semi-prone position ensuring that the limbs are not contorted, to prevent aspiration and compression injury

Phase 4: Physical Restraint

- Team leader to co-ordinate
- Evacuation of staff and patients not involved
- Obtain assistance of at least 4 other staff members
- Inform the patient that the intention is to restrain and sedate
- Each person should hold a limb and the team leader should hold the patient's head while talking to the patient

Phase 5: Post Sedation/Seclusion/Transfer

- Assign a staff member to be with patient until he/she becomes ambulant or until transfer effected
- Patient to be preferably nursed in a seclusion room
- Once sedated or calm, to attempt history taking, physical mental state examination and special investigations (esp. blood glucose) to evaluat because of behavioural disturbance
- Blood pressure, pulse rate and respiration to be monitored every 5 – 10 minutes in first hour and then every 15 minutes until ambulant
- If BP drops below 100/60, elevate lower limbs of patient
- If BP does not respond, IV fluids need to be commenced
- Document all nursing care and medication accurately
- Transfer of patient to a psychiatric hospital should occur after 72 hours assessment at District Hospital or as an emergency before 72 hours after necessary arrangements being made

6.2 The Hallucinating Patient

Hallucinations are perceptions in the absence of a stimulus and can be arise in any modality. The types of hallucinations are auditory, visual, somatic (can arise in any part of the body), alfactory .

ASSESSMENT

Eg: Clinical assessment of auditory hallucinations

Patients are usually able to describe their hallucinatory experiences. The Schedules for Clinical Assessment in Neuropsychiatry provides a standard question that can be used in assessing symptoms: “Do you ever seem to hear noises or voices when there is nobody about, and no ordinary explanation seems possible?” A description of the experience in the patient’s own words is required for a positive rating.

Assess the severity, frequency, distress and the nature of the hallucination (commanding hallucinations) and the associated risk.

DIFFERENTIAL DIAGNOSIS

Psychiatric: Schizophrenia, Major affective disorder (mania or depression), Acute and transient psychotic disorders, Pueperal psychosis

Organic: Alcohol and other substances (intoxication or withdrawal), Dementia, Delirium, Epilepsy, CNS tumors, SOL or infections, eye or retinal disease

MANAGEMENT

- Exclude an organic cause
- If the patient is agitated remove the patient to a calm environment, engage in conversation and reduce the distress. If the patient is anxious give a benzodiazepine (Clonazepam 2mg or Diazepam 5mg)
- The management of the individual patient is that of the primary diagnosis. Antipsychotic medications are of value in both organic and non organic hallucinations (start small dose of Olanzepine, Risperidone, Haloperidol or Trifluoperazine)
- Refer the patient to a psychiatric unit.

6.3 Management of the Suicidal Patient

ASSESSMENT OF RISK FACTORS FOR SUICIDE

- Male
- Elderly
- Single, divorced, widowed
- Living alone, poor social support
- Unemployed
- low socioeconomic status
- Previous suicide attempt or self harm
- Any mental disorder (specially depression or psychotic illness)
- Alcohol/ drug abuse/dependence
- Recent in-patient in a psychiatric unit
- Concurrent physical disorder
- Recent bereavement

ASSESSMENT

AIMS OF THE ASSESSMENT:

Is there ongoing suicidal intent?
Is there evidence of mental illness?
Are there non-mental health issues which can be addressed?

FEATURES OF ACT:

Lethality of method
Patient's belief in lethality of method
Length of planning
Triggers
Final acts
Precautions to avoid discovery
Previous similar acts
Actions after the act

CHILD AND ADOLESCENT CASES:
Young child
Toxic environment
Runaway

REASONS FOR THE ACT:
Unequivocal intent
Ambivalent intent
Impulsive response
'Cry for help'
Manipulative act
Escape from intolerable
symptoms or situation

MENTAL STATE:
Attitude to survival
Affective symptoms
Substance misuse
Other mental disorders
Risk to others

PERSONAL AND PAST PSYCHIATRIC AND MEDICAL HISTORY:
Recent life events
Current life
Circumstances
Previous or current psychiatric diagnoses
Physical health problems

ASSESSMENT OF DIFFERENTIAL DIAGNOSIS AND ASSOCIATED DISORDERS

Psychatric disorders (Affective disorders, schizophrenia, persistent anxiety states, personality disorders)

Organic disorders (Alcoholism, substance misuse, epilepsy, chronic disabling physical illness, chronic pain, terminal illness)

MANAGEMENT

1. Manage the suicidal risk (acknowledge the staff, observe for risk of suicide, remove harmful objects, provide safe environment)
2. Reduce the distress of the patient (communicate with empathy, talk to the family members)

3. Consider the need to hospitalize
4. Treat mental disorder (refer to the psychiatry unit)
5. Refer to relevant professionals
6. Liaise with relevant parties
7. Form a contract with the patient
8. Provide emergency contacts
9. Regular follow-up

6.4 Managing Substance and Alcohol Problems

DEFINITIONS

A. Alcohol abuse is maladaptive pattern of substance use leading to clinically significant impairment or distress, without meeting the criteria for alcohol dependence

B. Alcohol dependence is defined as the excessive and recurrent use of alcohol despite medical, psychological, social, and/or economic problems. As classified in DSM-IV (Table 1), it usually includes tolerance and withdrawal symptoms, but these signs of physical dependence are not required for the diagnosis.

Table1. DSM-IV Diagnostic Criteria

ALCOHOL ABUSE: One or more of the following present at any time during the same 12 month period.

1. Alcohol use results in failure to fulfill major obligations.
2. Recurrent use in physically dangerous situations (such as drunk driving).
3. Recurrent alcohol-related legal problems.
4. Continued use despite recurrent social or interpersonal problems.
5. Has never met criteria for Alcohol Dependence.

ALCOHOL DEPENDENCE: Three or more of the following present at any time during the same 12-month period.

1. Tolerance.
2. Withdrawal.
3. Use in larger amounts, or for longer periods than intended.
4. Unsuccessful efforts to cut down or control use.
5. A great deal of time spent obtaining alcohol, using or recovering from alcohol use.
6. Important activities given up.
7. Continued use despite knowledge of problems.

DO A COMPREHENSIVE DIAGNOSTIC ASSESSMENT COVERING

1. Alcohol use – patterns, quantity, assess for abuse or dependence, Time of last intake, and features of withdrawal (sweating, tremors, headache, vomiting, anxiety and agitation, hallucinations, confusion)
2. Comorbid general medical conditions.
3. Comorbid psychological/psychiatric conditions.
4. Social and occupational functioning and support systems.
5. Use of other substances.
6. Investigations where indicated. (LFT, FBC, Ultra sound scan abdomen)

MANAGEMENT

Intoxication:

• *Mild* – self limiting, safe environment, supportive interventions

• *Severe* – e.g. history of withdrawal symptoms → admit to hospital

Monitor clinical state; supportive interventions

LONG TERM GOALS – ABSTAINANCE, RELAPSE PREVENTION & REHABILITATION

Withdrawal:

DETOXIFICATION:

• *Mild*

- Sweating, anxious, tremor; lasts hours to 1 – 2 days
- Rx as Out-patient; ensure support, caregiver
- Diazepam regime; start 5 – 10 mg. tds po and taper over 10 days
- Thiamine 100 mg. daily po; MVT tablet daily; Vit B Co 2 daily tablets

• *Severe*

- Complicated with past history of seizures, Delirium Tremens, fever, physically ill
- Treat as in-patient
- Ensure adequate hydration

-Monitor vital signs 1-2hourly up to 24 hours, twice daily from days 2-6

- Diazepam 5-10 mg every 8 hourly; Then taper over 3-5 days **Or** Chlordiazepoxidestrting a dose depending on a severity of dependence (eg;if severe 30mg 6 hourly) with a maximum dose of 250mg over 24 hours and tapering off over 7 days.
- Thiamine 100- 200 mg. daily, IM initially
- Reduce external stimuli
- Monitor clinical status, and intervene as indicated
- Keep under observation for withdrawal seizures
- Psychosis → Haloperidol 0.5-5mg tds, per oral or IM

Liaise with the psychiatry team after the initial medical management for assessment of motivation to abstain and for rehabilitation

6.5 The Confused Patient

ASSESSMENT:

1. **Level of consciousness**
   Assess the disturbance of the level of consciousness which is manifested by a reduced clarity of awareness of the environment and the impaired ability to focus, sustain, or shift attention.

   There is an accompanying change in cognition that may include memory impairment, disorientation, language disturbance, or development of a perceptual disturbance. The disturbance develops over a short period of time and tends to fluctuate during the course of the day

2. **History**
   Duration, onset (sudden or acute), progression of symptoms, psychomotor changes (retardation or agitation), disturbance in affect, speech, sleep.

3. **Examination**
   Need a thorough physical examination including signs of dehydration, focal neurological signs, signs of infection

DIFFERENTIAL DIAGNOSIS:

1. **Organic:** Delirium (look for a cause for delirium), substance intoxication or withdrawal, Dementia, Space occupying lesions, epilepsy (post ictal confusion), head injury and other neurological conditions
2. **Psychiatric:** Schizophrenia (acute florid psychosis with hallucinatory behaviours), Depression (Pseudodementia), Severe anxiety, mania, Acute stress reaction, Dissociative state.

MANAGEMENT

- Investigations (to find out a cause)- basic investigations including FBC, RFT, LFT, UFR, chest x ray if there are signs of infection, CT brain, EEG (if indicated)
- Management will depend on the cause of confusion.
- Take measures to prevent progression

8. Radiology

8.1 Patient needs immediate Ultra sound Scan on admission to A & E

	Clinical Condition	Purpose
01	Fever	1. DHF – to visualized leakage in to the abdomen & thorax 2. Leptospirosis – ARF 3. Septic shock - To identify the focus of infections
02	Upper GI Bleeding	Look for perforation - free fluids
03	Snake bite	ARF
04	Vaginal bleeding	Exclude Ectopic pregnancy Antepartum haemorrhage, miscarriages
05	Shock	ARF and to identify the focus
06	Ectopic pregnancy	TVS-identify ectopic pregnancy & free fluids
07	Abdominal & pelvic trauma	FAST – Free fluids & abdominal visceral injuries
08	Acute limb swelling	To exclude DVT / Cellulitis
09	i. Limb Trauma	Arterial duplex scan to identify vascular injuries
	ii. Peripheral vascular injuries	
	iii. Fractures	
10	Animal bite	To exclude ARF
11	Foreign body	To visualized FB in upper oesophagus & trachea
12	Burn management	To exclude ARF
13	Sexual assault	To exclude pregnancy
14	Diabetes Emergency	To exclude CRF & visualized to infective focus
15	Acute renal colic	To visualized renal stone and hydronephrosis
16	Intestinal obstruction	To confirm in obstruction & free fluids
17	Sepsis	To exclude ARF To look for focus of infections

8.2 Patients needs urgent CT

	Condition	Purpose
01	Acute confusional state	To exclude SDH / ICH / Trauma
02	Unconscious patient	To exclude CVA
03	Stroke	To exclude CVA
04	Severe chest pain	To exclude ruptured aortic aneurysm

05	Head & Neck trauma	To exclude ICH / cervical spinal injuries
06	Spinal trauma	To exclude spinal injuries
07	Meningitis	To exclude complications of meningitis
08	Alcohol & fits	To exclude SDH, ICH
09	Pulmonary embolisum	Need CT pulmonary angiogram when other investigations are negative.

9.Algorythm

9.1 ABCDE approach

Underlying principles

The approach to all deteriorating or critically ill patients is the same.
The underlying principles are:

1. Use the Airway, Breathing, Circulation, Disability, Exposure (ABCDE) approach to assess and treat the patient.

2. Do a complete initial assessment and re-assess regularly.

3. Treat life-threatening problems before moving to the next part of assessment.

4. Assess the effects of treatment.

5. Recognise when you will need extra help. Call for appropriate help early.

6. Use all members of the team. This enables interventions (e.g. assessment, attaching monitors, intravenous access), to be undertaken simultaneously.

7. Communicate effectively - use the Situation, Background, Assessment, Recommendation (SBAR) or Reason, Story, Vital signs, Plan (RSVP) approach.

8. The aim of the initial treatment is to keep the patient alive, and achieve some clinical improvement. This will buy time for further treatment and making a diagnosis.

9. Remember – it can take a few minutes for treatments to work, so wait a short while before reassessing the patient after an intervention.

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The world is created by fantasizers.
The future depends on the fantasizers
who try harder to make their dreams a reality.
This is a story about such a dream and some fantasizers.
A dream which has become a concept that bloomed
in the Medical Services branch of the Ministry of Health
few years ago now culminated as a government policy
as well as a necessity of our nation.
This note is for a team who tried hard to make
such a dream a reality.
The system proposed by the new A & E policy will
change the entire health care delivery system ensuring
the emergency care for the needy people in an unprecedented
way preserving the concept of platinum 10 minutes
during the golden hour. There by providing right care to
the right patient by a right team at a right place will assure
the recovery without meeting complications as well as the
satisfaction of both the patient and the staff. The whole nation
should be thankful to the team who brought about this change.
“The Next Life You Save Maybe Your own”

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