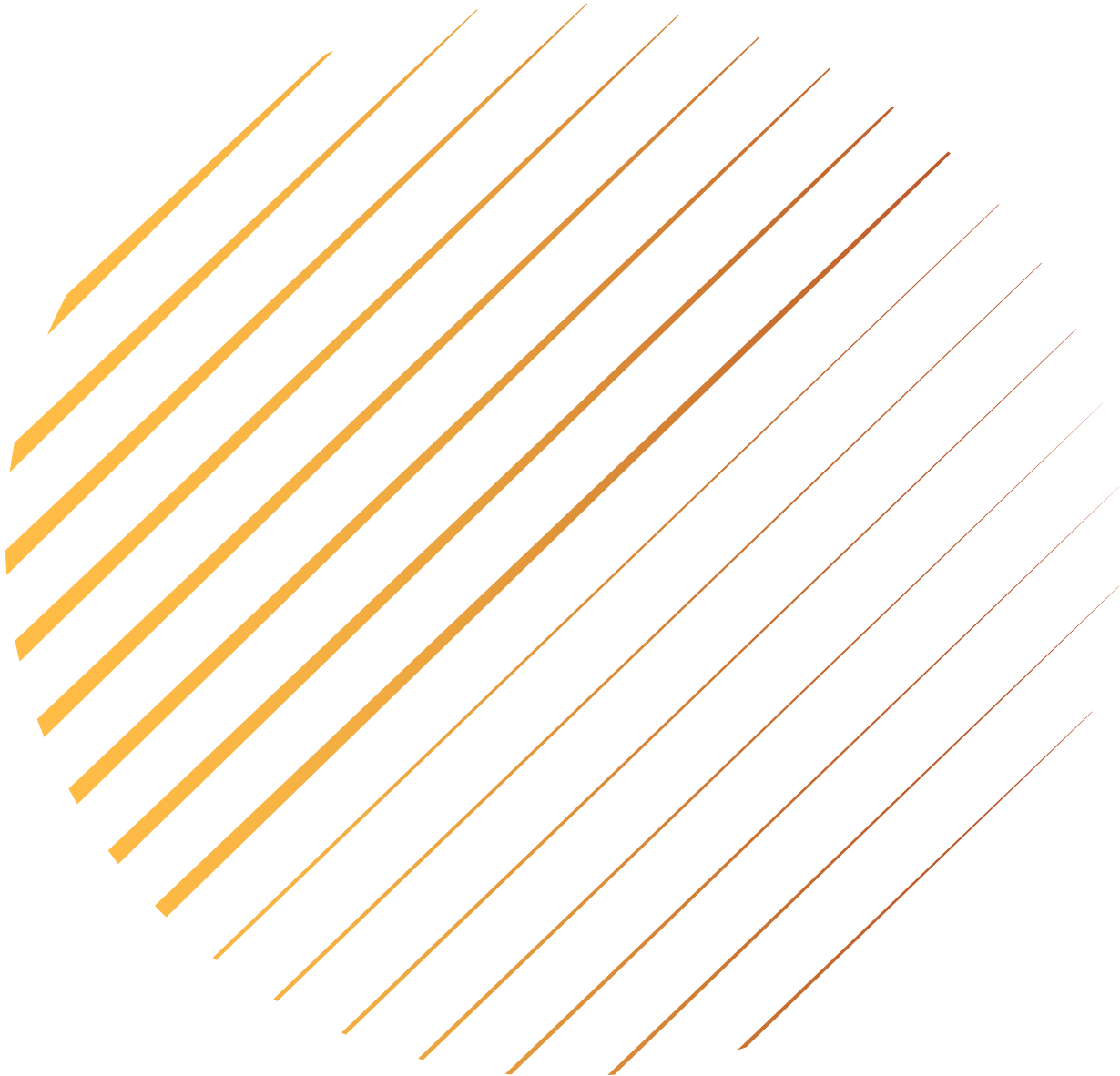


Management Guidelines for Common Medical Emergencies in Village Tract Health Centers (VTHCs)



Dr. THET OO
Dr. ZAW SOE HTIKE
Dr. EI EI PHYO
Dr. MAY SU SANDAR AUNG

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I. Emergency Care Approach

• Dealing With Difficult Patients

General Approach

- Opened, Pleasant Approach.
- Accept the patient regardless of behavior, class, religion, social lifestyle, or ethnicity.
- Health care provider may face such a difficult situation in clinical practice.
- Always remember that both patients and health care workers may pre-existing unpleasant conditions.
- Patient factors: current medical condition, past experience with clinic, social situation, concurrent use of alcohol and drugs, etc.
- Health Care Provider factors: workload, sleeping hour, hunger, etc.
- Put yourself in Patient's position

Dealing with the Situation

- Simple empathetic explanation about the situation that cause the patient's inconvenience remains helpful.
- Never be rude, aggressive to patients.
- Rude or aggressive behavior will lead to conflicts and patients will not have received appropriate treatment for their condition.
- It is necessary to hand over the care of the patient to another health care provider if an unresolvable conflict has arisen.

Patients in Police Custody

- Patients in custody are entitled to the same care as other patients.
- Treat patients in custody as a priority within their triage category.
- Liaise with the medical officer at the police station. Focus on appropriate clinical care.

Special Patients Groups

- Children
- Pregnant women
- Patients with mental illness
- The elderly
- Patient with forgetfulness
- Patient with hearing problems
- Patient with learning difficulties
- Language barrier
- Patient with visual impairment
- Homeless patient or patient without social support
- Patient with drug or alcohol dependency

I. Emergency Care Approach

• Assessing the elderly Patients

Challenges

- Combination of illness and frailty
- But most elderly patients in the general population are actually not frail.
- Degree of frailty before the illness is a good predictor of life expectancy.

Rockwood Clinical Frailty Scale

Score	Label	Descriptor
1	Very Fit	Robust, fit and very active
2	Well	No active illness, exercise occasionally
3	Managing Well	Medical problems well controlled
4	Vulnerable	Symptoms limit activities
5	Mildly Frail	Require help for activities of daily living
6	Moderately Frail	Needs help in the home and with bathing
7	Severely Frail	Completely dependent for personal care
8	Very Severely Frail	Could not recover from minor illness
9	Terminally Frail	Life expectancy < 6 month

- Frailty Syndrome may present with a number of non-specific symptoms but require careful assessment for falls, immobility, delirium, incontinence and medication issues.

Evaluating the Risk

- Evaluation of past medical history and pre-admission status in cases of altered consciousness and psychiatric illness.
- Check for recently changed circumstances such as recent bereavement, change in physical and medical condition, confusion or unusual behaviour.
- Presence or absence of a caregiver to the patient should be sought.
- Living situations should also be considered.

Cognitive Assessment

- Cognition of time, place, person should **be done to patient aged >75 years.**

Fall

- Fall shouldn't be easily regarded as a "simple Mechanical Fall". Factors that cause fall should be sought. Common causes of fall in elderly are correctable conditions; loose rug, poor lighting, poor vision and medical condition such as cerebrovascular disease, arthritis and side effects of drugs, etc.

Discharge Planning

- Assess patient functionality and mobility.
- In case of cognitive impairment, patient is better to be seen in their home environment with familiar surroundings.

I. Emergency Care Approach

• Approach to Patients with Learning Difficulties

Challenges

- Patient with learning difficulties uses health care service more frequently.
- Health care professionals having little experience with these patients.
- Patients often have complex health needs.
- Having many barriers to health care access leads to later presentations of illness.
- Patients may have high tolerance to pain.
- Most patients have problems with expression, comprehension, and social communication. Moreover, they may have difficulties in describing symptoms.

Tips for Communication

- Explain the consultation process before the assessment.
- Speak first to the patient then to the carer.
- Use open questions and then rephrase to check again.
- Use simple example for symptoms and timing.
- Gather information from carer as much as possible. e.g., Constipation.

I. Emergency Care Approach

• End of Life Care

General Consideration

- There is always possibility to see a terminally ill patient not only in VTHCs but also in community.
- Health care provider is the facilitator for making the right decision for the patient.
- Involvement of the patient and Family members in decision-making process is important.
- Respect for their wishes and decision.
- Every decision and agreed plan should be documented.
- Seek senior help if there is unclarity about the patient's underlying medical disease and current illness.

Decision about CPR

- Whether doing or not doing CPR on a sick patient with stopped respiration and heart beating is the critical question.
- Information regarding the patient's illness and will or may not be sufficient in such a situation.
- Rapid discussion with a senior person, family or patient attendants about whether or not to start CPR whenever possible.
- Then document the decision on an appropriate form.
- Any witness arrest with known reversible causes is worth doing CPR.
- For CPR, look at Life Threatening Emergencies Section

Others

- Let the patient and family about the illness and its possible condition.
- Let them know your limitations.
- Let them decide in advance.
- Keep the terminally ill patient and family members at a separate and calm place.
- end-of-life care in the community may also be expected.

I. Emergency Care Approach

• What to do after Death

General Consideration

- Carrying dead body to the clinic, patient died soon after arrival to the clinic and death of the patient within 24 hours of admission to the clinics are the most experienced scenarios.
- Any suspicious death must be immediately reported to the senior and police who will proceed necessary investigations and medicolegal procedures.
- And appropriate documentation is important.
- Ensure relatives of the deceased are given information about the process of death certification and registration.

Documentation

Every VTHCs should have documentation for any sudden and unexpected death or can be documented in police case register book.

Information includes:

- Patient name, address and date of birth.
- Next of kin (Name, relationship, address, phone number).
- Date and time of patient's arrival to clinic.
- Date and time of patient's Death.
- Details of the incident, injuries and illness.
- Relevant Past Medical history.
- When the patient last saw a doctor for his/her illness.
- The patient's religion. Anything else that is important (e.g., difficulties in communication)
- Name and job title of the doctor/medic who pronounced death.

Care for the colleagues

- The death of a patient or the management of a patient with critical illness inevitably affects medical care providers.
- That always reflects to their own experiences.
- To inform the parents of the death of their child and helping them in the initial grieving process is the most difficult situation.
- Taking a break for 5-10 min before communicating with the attendants will help you calm.
- Remember that, our health staff are also the suffered from the grieving process and psychological support is also required.

I. Emergency Care Approach

• Patient Transfer

Reason for transfer

- Requirement of treatment exceeding the current capabilities of the health center.
- Patient's personal preference.

Timing

- Do not transfer until the initial stabilization of basic airway, breathing, circulation and disability has been completed.
- Patient's history and careful head to toe examination should be carried out in order to provide necessary information to the referral unit.
- Once the decision to transfer has been made, do not waste time for non-essential diagnostic procedures.
- Consider the need to insert a urinary catheter and gastric tube.

Arranging the Transfer

Speak directly to the medic/doctor at the receiving hospital or provide full document of the patient's information, findings, diagnosis, treatment and reason for referral with the transfer team. Also discuss with the relatives about the transfer.

Basic information includes;

- Details of the patient.
- A brief history of the onset of symptoms.
- The prehospital findings and treatment.
- The initial findings, diagnosis and treatment at the clinic and the response to treatment.
- Name of the referring and receiving medics/doctors and their health facility names.
- Documents of patient's vital signs monitoring.

For In-person Handover, **ISBAR** is recommended.

I – Introduce yourself

S – Situation: What is happening at the moment.

B – Background: Issues that lead to this situation.

A – Assessment: Relevant clinical findings.

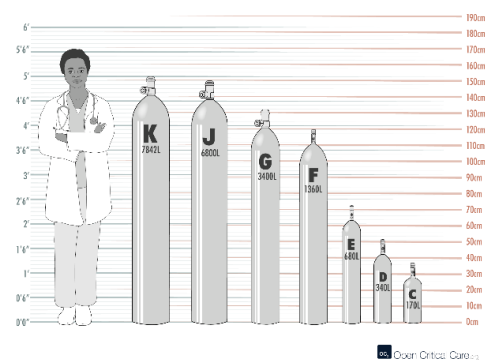
R – Recommendations: What should be done.

Preparing for Transfer

Transfer Team: Trained medical personnel with a good knowledge of the equipment used during transfer.

Equipment and drugs:

- Standardized list of equipment must be immediately available and regularly checked.
- Take all the equipment and drugs necessary for "Airway, Breathing, Circulation and Disability" care during transfer.



- For Oxygen, bring at least twice the amount of O₂ estimated to be necessary (Standard F size cylinder contain 1360L of O₂ and last <3 hrs. if given at the rate of 10L/min)
- Secure the patient, IV catheters, Indwelling Catheters, Tubes and line as well as stretcher before the transfer.

I. Emergency Care Approach

• Medicolegal Aspect

Although the medicolegal system hasn't been well established, medics working at the VTHCs need to know some basic principles to avoid troubles in dealing with such circumstances.

Attitude

Be polite and be honest with the patient. Try to establish a good communication.

Consent

Obtain consent for any procedure or treatment that involve sedation or anesthesia. Verbal consent or written consent is depending on the complexity and risk of the procedure. Clear explanation to the patients/ parents/ guardian about the treatment/procedure and the risks and benefits is important. But do not delay life-saving treatment in order to obtain consent.

Documentation

Clinical notes should be kept carefully. Use simple language with legible handwriting. Always careful about the date and time that you saw the patient.

Avoid abbreviations words. Describe in full spelling. Meticulous documentation of the nature, size and position of any findings/wound. Write down the diagnosis with interpretation of investigation results. Document all instructions and advice given to the patients.

Referral: Record any referral made, the referral unit in charge, date and time of referral and summary of the communication done.

Discharge against advice: Always attempt to persuade the patient to accept the treatment offered. If the patient refuse treatment, ask the patient to sign an appropriate form. If the patient mentality is not sound enough to decide or need to be held against their wish- seek senior help.

Confidentiality

Patient's medical information is confidential and should not be disclosed without the patient 's consent. But if the patient's injury or illness related to legal issues, ask for senior help and relevant information, not all details can be provided to facilitate the legal process.

Reporting Death

Sudden and unexpected death may be seen. The cause of death is seldom immediately apparent. Record all sudden/ unexpected death and death within 24 hours of clinic admission and report to clinic in charge in timely manner.

I. Emergency Care Approach

• Infection Control and Prevention

Standard Precautions

- Also known as Universal Precaution
- Must practice at all time and with all patients
- Treat all blood and body fluids from patients as infected.

Hand Hygiene

- Decontaminate your hands before and after every patient contact and after any activity that might contaminate hands, including removing gloves.
- Wash dirty or contaminated hands with soap and water then dry thoroughly.
- Use alcohol hand gel if hands look clean.
- Cover broken skin with waterproof dressing.

Personal Protective Equipment

- Wear suitable disposable gloves for any contact with blood, body fluid and mucous membrane or non-intact skin.
- Use disposable plastic apron if there is risk of blood or body fluid contaminating the clothing.
- Use a mask, face shield and eye protections if blood or body fluids might splash into your eye or mouth.
- Protection against respiratory virus such as Covid-19 require special mask or respirator.

Safe Handling and Disposal of Sharps

- Avoid handling needles directly and never re-sheath them.
- Place used needles into a sharp bin.
- If possible, use safety needles and cannulas.
- If needlestick injury occurred, follow local approved procedure.

Managing Blood and Bodily Fluid

- Handle samples of blood or body fluids safely, with care not to contaminate.
- If spillage happened, wear suitable PPE and disinfect the spillage with an appropriate agent such as diluted bleach.

Planning for Outbreaks of Infectious Disease

- Follow the local health authority's instruction
- Prepare for the care of the suspected patients without interfering the routine patient care.
- Arrange separate areas of patient management.
- Always mitigate the required consumables, oxygen, medicines, equipment and supplies.

I. Emergency Care Approach

• Major Incidents

Major incidents involve a lot of people. Group of people may present to the clinic with similar symptoms such as vomiting and diarrhea. Food poisoning and mushroom poisoning are the most common occurrences.

Alert

- An occurrence of mass illness in community should be inform to health committee and clinic in-charge.
- Rapidly prepare a dedicated area for accepting patients.
- Set areas for assembly, triage, treatment and transport arrangements.
- Inform to senior person.
- Recruit available manpower and materials before the patients arrive.
- Assign responsible person for each specific area.
- Ensure timely communication with relevant personnels.

Triage

Sorting the patients who to be treated first.

Triage Sort

Scoring Parameters					
GCS	Points	Respiratory Rate	Points	Systolic Blood Pressure	Points
13-15	4	10-29	4	>89	4
9-12	3	>29	3	76-89	3
6-8	2	6-9	2	50-75	2
4-5	1	1-5	1	1-49	1
3	0	0	0	0	0
Total score		1-10	11	12	0
Treatment/transport priority		Immediate	Urgent	Delayed	Dead

I

Red – Should be seen immediately

Yellow - Seen as priority (Within 15-30 mi)

Green – Seen after red and yellow patients (1 hour)

Responding Major Incident

- Team work in integral.
- Effective communication is required.
- Work under a clear command.
- Documentation should not be missed.
- Debrief when finished.

Debriefing

Debriefing is important after a major incident. Staff can discuss what happened and express their feelings and also the lesson learned. Mutual support of the team is essential. Psychosocial First Aid may be needed.

¹ Sort Triage (Smith,2012)

I. Emergency Care Approach

• Seeing the Patient (DRS-ABCDE Approach²)

Goals:

- Approach every patient in a systematic way to identify life-threatening conditions rapidly.
- Recognize life-threatening conditions early to ensure the airway stays open breathing and circulation are adequate to deliver oxygen to the body.
- Do most critical interventions first - fix problems before moving on
- The DRS-ABCDE approach is very quick in a stable patient

DRS-ABCDE Approach

- The most important step is to stay safe!
- Wear Personal Protective Equipment and Hand washing
- Ask for help early if multiple patients and make arrangements if transfer is needed



Airway:

Check for obstruction, ask the patient can talk normally. If yes, continue further steps. If not, look for foreign bodies, open airway by positioning, basic airway devices, remove any obstructing materials.



Breathing:

Assess Breathing status and give oxygen if needed. Ensure adequate movement of air into the lungs.



Circulation:

Look, listen and feel for signs of poor perfusion

- Cool, moist extremities
- Delayed capillary refill
- Diaphoresis
- Tachypnoea
- Tachycardia
- Absent pulses



Disability:

Assessment

- Assess level of consciousness: AVPU or GCS in trauma
- Check for low blood glucose (hypoglycemia)
- Check pupils (size, reactivity to light and if equal)
- Check movement and sensation in all four limbs
- Look for abnormal repetitive movements or shaking e.g., Seizures/convulsions
- Treat according to specific problem.
- If altered mental status, no trauma, DRS-ABCDEs otherwise normal place in Recovery Position.
- If altered mental status, low glucose (<3.5 mmol/L) or if unable to check glucose - Give GLUCOSE
- If actively *seizing* - Give Benzodiazepine
- If pregnant and *seizing* - Give Magnesium Sulphate



Exposure:

- Examine the entire body for hidden injuries, rashes, bites or other lesions.
- Reassess DRS-ABCDEs Frequently!
- *Vital signs should be checked at the end of the DRS-ABCDE approach*
- *Once you find an DRS-ABCDE problem and manage it, you have to GO BACK and repeat the DRS-ABCDE again.*
- *Ideally, the DRS-ABCDE approach should be repeated every 15 minutes or with any change in condition.*

² WHO Basic Emergency Care Approach

I. Emergency Care Approach

• SAMPLE History and Referral Decision³

Elements of the SAMPLE history

S	Signs and symptoms	Patient/family's report of signs and symptoms is an essential assessment
A	Allergies	Important to prevent harm; may also suggest anaphylaxis
M	Medications	Obtain a full list and note recent medication or dose changes
P	Past Medical History	May help in understanding current illness and change management choices
L	Last Oral intake	Note whether solid or liquid; vomiting/choking risk for sedation or surgical procedures
E	Events surrounding the injury/illness	Helpful clues to the cause, progression and severity of current illness

Referral Considerations

- After DRS-ABCDE approach > SAMPLE history
- > Secondary exam > Consider Referral.
- If you have to intervene in any of the DRS-ABCDE categories, immediately consider Handover/Transfer to a higher level of care.
- A good handover includes:
 - Brief identification of the patient
 - Relevant elements of the SAMPLE history
 - Physical exam findings
 - Record of interventions given
 - Plans for future care
 - Things you may be concerned about






³ WHO Basic Emergency Care Approach

I. Emergency Care Approach

• Summary

ABCDE APPROACH

REMEMBER... Always check for signs of trauma [see also TRAUMA card]

	ASSESSMENT FINDINGS	IMMEDIATE MANAGEMENT
Airway 	Unconscious with limited or no air movement	If NO TRAUMA : head-tilt and chin-lift, use OPA or NPA to keep airway open, place in recovery position or position of comfort. If possible TRAUMA : use jaw thrust with c-spine protection and place OPA to keep the airway open (no NPA if facial trauma).
	Foreign body in airway	Remove visible foreign body. Encourage coughing. • If unable to cough: chest/abdominal thrusts/back blows as indicated • If patient becomes unconscious: CPR
	Gurgling	Open airway as above, suction (avoid gagging).
	Stridor	Keep patient calm and allow position of comfort. • For signs of anaphylaxis: give IM adrenaline • For hypoxia: give oxygen
	Signs of abnormal breathing or hypoxia	Give oxygen. Assist ventilation with BVM if breathing NOT adequate.
Breathing 	Wheeze	Give salbutamol. For signs of anaphylaxis: give IM adrenaline.
	Signs of tension pneumothorax (absent sounds / hyperresonance on one side WITH hypotension, distended neck veins)	Perform needle decompression, give oxygen and IV fluids. Will need chest tube
	Signs of opiate overdose (AMS and slow breathing with small pupils)	Give naloxone.
Circulation 	Signs of poor perfusion/shock	If no pulse , follow relevant CPR protocols. Give oxygen and IV fluids.
	Signs of internal or external bleeding	Control external bleeding. Give IV fluids.
	Signs of pericardial tamponade (poor perfusion with distended neck veins and muffled heart sounds)	Give IV fluids, oxygen. Will need rapid pericardial drainage
Disability 	Altered mental status (AMS)	If NO TRAUMA , place in recovery position.
	Seizure	Give benzodiazepine.
	Seizure in pregnancy (or after recent delivery)	Give magnesium sulphate.
	Hypoglycaemia	Give glucose if <3.5mmol/L or unknown.
	Signs of opiate overdose (AMS with slow breathing with small pupils)	Give naloxone.
Exposure 	Signs of life-threatening brain mass or bleed (AMS with unequal pupils)	Raise head of bed, monitor airway. Will need rapid transfer for neurosurgical services
	Remove wet clothing and dry skin thoroughly.	
	Remove jewelry, watches and constrictive clothing	
	Prevent hypothermia and protect modesty.	
Snake bite	Immobilize extremity. Send picture of snake with patient. Call for anti-venom if relevant.	

DANGER SIGNS in CHILDREN

- Signs of airway obstruction (unable to swallow saliva/drooling or stridor)
- Increased breathing effort (fast breathing, nasal flaring, grunting, chest indrawing or retractions)
- Cyanosis (blue colour of the skin, especially at the lips and fingertips)
- Altered mental status (including lethargy or unusual sleepiness, confusion, disorientation)
- Moves only when stimulated or no movement at all (AVPU other than "A")
- Not feeding well, cannot drink or breastfeed or vomiting everything
- Seizures/convulsions
- Low body temperature (hypothermia)

ESTIMATED WEIGHT in KILOGRAMS for CHILDREN 1–10 YEARS OLD:

[age in years + 4] x 2

2. Life Threatening Emergencies

• Anaphylaxis

Anaphylaxis is a generalized immunological condition of sudden onset, which develops after exposure to foreign substance.

Mast cells and basophils release immunologic particles (Mediators: histamine, prostaglandins) producing clinical manifestations.

Common Causes

- Drugs and Vaccine: Antibiotics, Aspirin, NSAIDs, etc.
- Bee/ Wasp stings
- Food: Nut, shellfish, strawberries, wheat
- Latex

Clinical Features

The speed of onset and severity vary with the nature and amount of the stimulus, but the onset is usually in minutes/ hours. A feeling of impending death may present. Usually, two or more systems are involved:

Respiratory – Swelling of the lips, tongue, pharynx and epiglottis may lead to complete upper airway obstruction. Lower airway involvement – dyspnea, wheeze, chest tightness, hypoxia, symptoms similar to acute severe asthma.

Skin – Pruritus, erythema, urticaria and angioedema.

Cardiovascular – Peripheral Vasodilatation and increased vascular permeability resulting in Hypotension and shock. Palpitation and chest pain may be present.

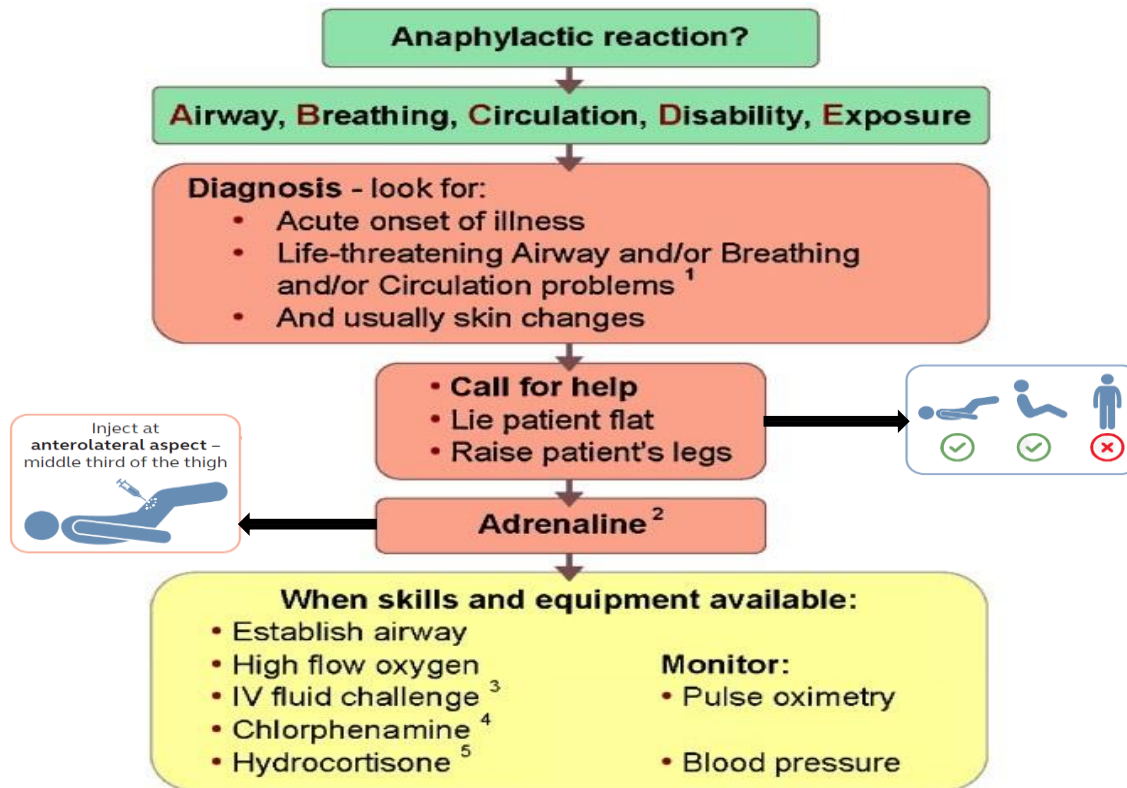
GI Tract – Nausea, vomiting, diarrhea, abdominal cramps.

Treatment

- Discontinue further administration of suspected factor (e.g., Drugs) Remove stings carefully away from skin.
- Give high-flow O₂
- IM Adrenaline as indicated. (see picture)
- Open and maintain airway. If upper airway oedema is present, get specialist senior help immediately. Do not forget ventilation support.
- In profound shock or immediately life-threatening situation, give CPR/ Advanced Life Support (ALS) as necessary. Repeat IM Adrenaline every 5 min.
- Give nebulized salbutamol with O₂ for bronchospasm, wheezing.
- Give IV Fluid if hypotension does not rapidly respond to adrenaline. 1-2L IV 0.9% Saline may be required with further infusion according to clinical state.
- Antihistamine H₁ blockers: Chlorpheniramine 10-20 mg slow IV AND H₂ blockers: Ranitidine 50 mg IV are commonly given.
- Corticosteroids: Hydrocortisone 100-200 mg slow IV may reduce the severity/ duration of symptoms.
- Admit/observe after initial treatment: prolonged reaction and biphasic response may occur. Observe for at least 4-6 hour after all symptoms have settled.
- Refer to the higher-level hospital if the patient condition is not improved despite the standard treatment.
- Appropriate reporting and documentation are required.

2. Life Threatening Emergencies

• Anaphylaxis – Management Flow Chart⁴



1 Life-threatening problems:
Airway: swelling, hoarseness, stridor
Breathing: rapid breathing, wheeze, fatigue, cyanosis, SpO₂ < 92%, confusion
Circulation: pale, clammy, low blood pressure, faintness, drowsy/coma

2 Adrenaline (give IM unless experienced with IV adrenaline)
 IM doses of 1:1000 adrenaline (repeat after 5 min if no better)
 • Adult 500 micrograms IM (0.5 mL)
 • Child more than 12 years: 500 micrograms IM (0.5 mL)
 • Child 6 -12 years: 300 micrograms IM (0.3 mL)
 • Child less than 6 years: 150 micrograms IM (0.15 mL)
 Adrenaline IV to be given **only by experienced specialists**
 Titrate: Adults 50 micrograms; Children 1 microgram/kg

3 IV fluid challenge:
 Adult - 500 – 1000 mL
 Child - crystalloid 20 mL/kg
 Stop IV colloid if this might be the cause of anaphylaxis

4 Chlorphenamine
 (IM or slow IV)
 Adult or child more than 12 years 10 mg
 Child 6 - 12 years 5 mg
 Child 6 months to 6 years 2.5 mg
 Child less than 6 months 250 micrograms/kg

5 Hydrocortisone
 (IM or slow IV)
 200 mg
 100 mg
 50 mg
 25 mg

⁴ Anaphylaxis Management Guideline March 2008 (Reproduced with the kind permission of Resuscitation Council UK)

2. Life Threatening Emergencies

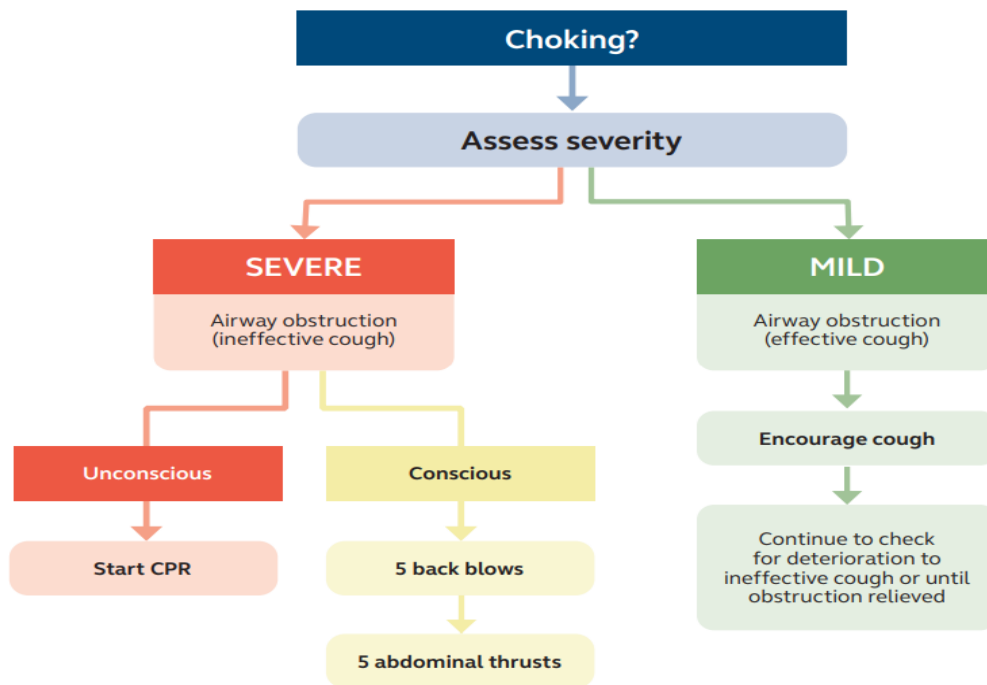
- **Choking**

The management of choking is taught as part of First Aid. Recognition of problem is the key to success. A person experiencing a sudden airway problem whilst eating, possibly combine with them clutching their neck suggest Choking.

Severity of Airway Obstruction

Victims of severe airway obstruction may be unable to speak or breathe and may become unconscious.

Adult choking



⁵ Algorithm illustration from Resuscitation Council UK Adult BLS Guidelines 2021 (Reproduced with the kind permission of Resuscitation Council UK)

2. Life Threatening Emergencies

• Cardiac Arrest

Clinical Features and Recognition

- Suspect cardiac arrest in any patient who is unconscious and who do not have signs of life. Check carotid and femoral pulse, examination shouldn't be longer than 10s. Other confirmatory features; color, pupil size/response took longer time and do not help. Occasionally arrest may present as a grand mal fit of short duration.
- Most Patient have had a sudden and unexpected out-of-hospital event.

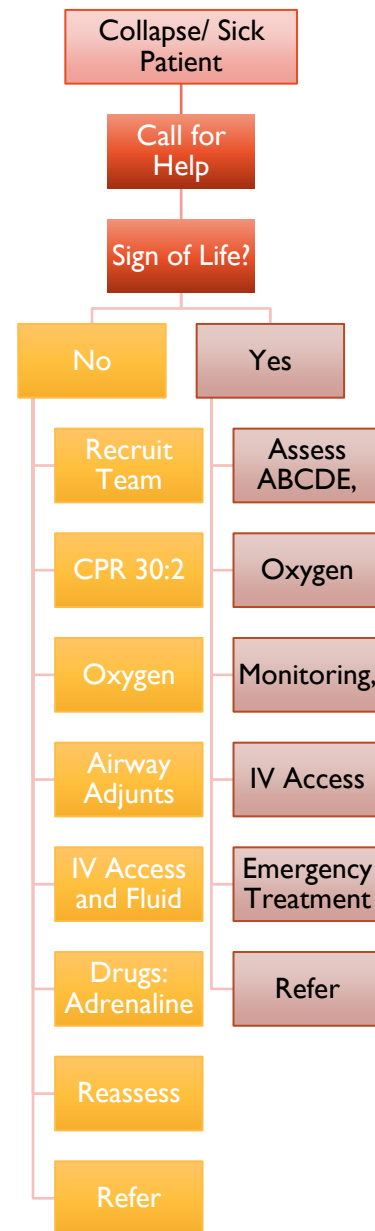
Information to obtain from Relatives if the arrest is not witnessed

- Patient details, including age, past medical history, current medication, and chest pain before event.
- Time of collapse (Often an approximation), any bystander CPR? CPR duration, other intervention, restoration of spontaneous circulation, etc.
- Where a patient with cardiac arrest is brought to hospital, a team of medic/doctor and other trained staffed should perform as a team for cardiac arrest management.

Cardiac Arrest Management

- Continue BLS.
- Remove patients clothing from upper body to allow chest compression and monitoring of chest rise.
- Follow clinic resuscitation algorithm.
- IV adrenaline 1mg (1:1000) and flush with 10ml NSS
- Do not interrupt CPR, except to perform assessment.

Suggested Resuscitation Algorithm⁵



6

⁵ Algorithm adapted from Resuscitation Council UK's In-hospital resuscitation algorithm (Reproduced with the kind permission of Resuscitation Council UK)

⁶ AED, Defibrillation treatments were left due to unavailability.

2. Life Threatening Emergencies

- **Cardiac Arrest contd.**

Adult Basic Life Support

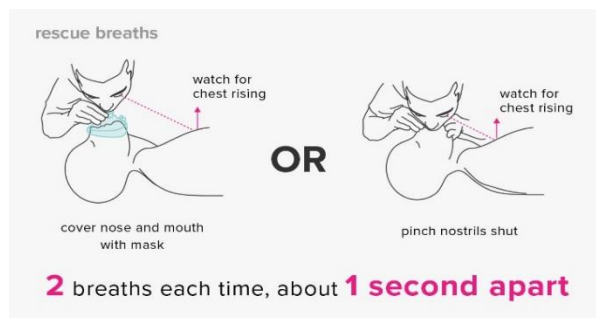
- **Airway and Ventilation**

With the patient on his/her back, **open the airway** by head-tilt/chin-lift method (use jaw thrust if neck trauma suspected)

Remove any visible obstruction from the mouth, but leave a well-fitting denture in place.

Give Oxygen if available.

Each breathing to last one second and make the chest rise. After each breath, maintain the head tilt/chin lift; take your mouth away from the patient's and watch for the chest to fall as the air came out.



7

- **Chest Compression**

Place the heel of one hand over the middle of the lower half of the patient's sternum, with the other hand on top. Extend or interlock the fingers of both hands. Avoid applying pressure to the patient's ribs.

Site - Positioned above the patient's chest and with arms straight,

Depth - 5-6 cm

Release all the pressure

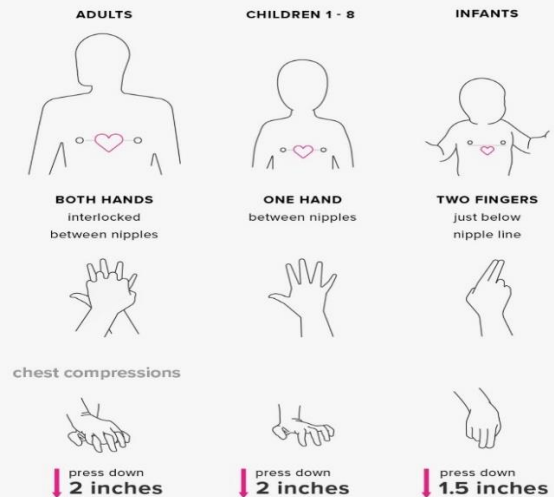
Rate - 100-120/min

Compression and Release phase should take the **same time**

Compression Ventilation Ratio - 30:2

Change the compressor every 2 min, care not to cause significant pause

hand placement & position



30 compressions at **100 - 120** compressions **per minute** allow chest to recoil between compressions Immediately follow with **rescue breaths**

⁸Supraglottic Airway - RR 10/min

- **Drugs**

Try Peripheral IV Access.

Give 10 ml saline bolus and elevate limb for 10-20 secs.

Adrenaline 1mg IV every 3-5 min.

- **Look for**

4Hs	4Ts
Hypoxia	Tension Pneumothorax
Hypovolemia	Tamponade (Heart)*
Hyper/Hypokalemia*	Toxic Substance*
Hypothermia	Thrombosis (PE/MI) *
*- refers difficult to perform in VTHC level	

- **Length of Resuscitation**

The duration of resuscitation depends on the nature of the event, time since the onset, and estimated of prospect of successful outcome.

Cardiac Arrest not respond to treatment or lasting > 1hr usually has poor outcome.

Exception: Hypothermia, near drowning, toxicity and younger patients.

⁷ Picture from <https://www.healthline.com/health/first-aid/cpr>

⁸ <https://www.healthline.com/health/first-aid/cpr>

2. Life Threatening Emergencies

• Recognition of the sick patient

Early identification of sick patient is important. New Early Warning Score (NEWS2) is based on six physiological variables which are simple and easy to measure. They include;

- RR
- SPO₂ (Scale 1 indicates non-COPD patients and scale 2 indicates COPD patients)
- Systolic BP
- Pulse rate
- Level of consciousness
- Temperature

Chart 1: The NEWS scoring system

Physiological parameter	Score						
	3	2	1	0	1	2	3
Respiration rate (per minute)	≤8		9–11	12–20		21–24	≥25
SpO ₂ Scale 1 (%)	≤91	92–93	94–95	≥96			
SpO ₂ Scale 2 (%)	≤83	84–85	86–87	88–92 ≥93 on air	93–94 on oxygen	95–96 on oxygen	≥97 on oxygen
Air or oxygen?		Oxygen		Air			
Systolic blood pressure (mmHg)	≤90	91–100	101–110	111–219			≥220
Pulse (per minute)	≤40		41–50	51–90	91–110	111–130	≥131
Consciousness				Alert			CVPU
Temperature (°C)	≤35.0		35.1–36.0	36.1–38.0	38.1–39.0	≥39.1	

9

NEWS score	Clinical risk	Response
Aggregate score 0–4	Low	Ward-based response
Red score Score of 3 in any individual parameter	Low–medium	Urgent ward-based response*
Aggregate score 5–6	Medium	Key threshold for urgent response*
Aggregate score 7 or more	High	Urgent or emergency response**

NEWS2 is able to identify seriously unwell patients rapidly on presentation to clinic.

It can also help in early identification of the patient who deteriorate at the clinic and need urgent referral.

⁹ <https://www.rcplondon.ac.uk/projects/outputs/national-early-warning-score-news-2> Reproduced with the kind permission of Resuscitation Council UK

2. Life Threatening Emergencies

• Shock

What is Shock?

A clinical condition characterized by failure to adequately perfuse and oxygenate vital organs.

Clinically

- Hypotension: Generally, SBP<90 mmHg in adults, but higher in young, fit or previously hypertensive patients. Associated with Tachycardia >100/min is common but may not be present in patients with cardiac or neurological diseases or those taking beta blockers. A few patients with hemorrhage shock may have paradoxical bradycardia.
- Altered consciousness and/or fainting
- Poor peripheral perfusion: cold peripheries, clammy/sweaty skin, pallor, prolonged capillary refill. But early phase of septic shock may have warm peripheries.
- Tachypnoea
- Purpuric rash
- Oliguria: reduced urine output <50ml/hr. in adults

Classification of Shock

Hypovolemic Shock

- Blood Loss: GI Bleed, ruptured ectopic aneurysm
- Fluid Loss: Burns, GI Loss (vomiting, diarrhea), pancreatitis

Cardiogenic Shock

- Primary: MI, Arrhythmias, valve dysfunction
- Secondary: Massive PE, Tension pneumothorax

Septic Shock

- Includes relative hypovolemia and cardiogenic shock
- More common in extreme of ages, DM, renal/hepatic failure, immunocompromised, pregnancy, post-natal, IVDU, recent surgery, in situ IV catheter
- Causal organisms: Both Gram Positive and Negative organisms; *Staph. Aureus*, *Strep. Pneumoniae*, *N. meningitidis* and coliforms.

Anaphylactic Shock

- See in Anaphylactic Shock section

Neurogenic Shock

- Mostly in spinal cord injuries
- Characterized by low BP with bradycardia

Other causes

- Includes poisoning, Addisonian crisis

Management of Shock

- Early recognition is important.
- Get senior help.
- Follow ABC approach.
- Give O₂ as required according to SPO₂ measurement.
- IM adrenaline for anaphylactic shock
- IV Access
- Draw blood sample for available investigations
- Monitor vital sign PR, RR, BP, SPO₂
- IV Fluid as required: give IV crystalloid (0.9% saline) titrated in small bolus up to 20 ml/kg according to response. Give further IV fluid and blood according to etiology and response. Be cautious IV Fluid infusion in heart diseases.
- Look for and treat the specific causes as possible.
- Antibiotics is sepsis; empirical combination of co-amoxiclav+ Gentamicin+ Metronidazole is advisable.
- Indwelling urinary catheter to monitor urine output.
- Explain the patient and patient's attendant
- Plan to refer for further management.

3. Medicine

• Chest Pain

It may reflect life-threatening illness. Triage is Urgent, so patients are seen within a few minutes. Ischemic Heart Disease is the first diagnosis to consider, but there are some other potentially life-threatening disease processes that cause chest pain.

Differential Diagnosis of Chest Pain¹⁰

Common Causes	Less Common Causes	Common
Musculoskeletal	Aortic Dissection*	
Acute Coronary Syndrome*	Cholecystitis	
Pneumothorax*	Herpes zoster	
Oesophagitis	Oesophageal Rupture*	
Pneumonia	Pancreatitis*	
Pulmonary Embolism*	Vertebral Collapse	
Obscure origin (e.g., Precordial catch)		

*Potentially rapidly Fatal

Careful history taking, physical examination and recognized pattern of disease presentation are integral in making the diagnosis of chest pain.

History

Characterize the pain

- Site (e.g., central, bilateral or unilateral)
- Severity
- Time of onset and duration
- Character (e.g., stabbing, tight gripping, dull aching)
- Radiation (e.g., to arms and neck in myocardial ischemia)
- Precipitation and relieving factors (exercise/rest/ GTN)
- Previous similar pain

Associated symptoms: breathlessness, nausea, vomiting, sweating, cough, hemoptysis, palpitation, dizziness, loss of consciousness

Past Medical History: similar event, risk factors including DM, hypertension, etc.

Others: Drug history, allergy old medical record, family history and smoking habit.

Note: Patient may come to the clinic with angina as first presentation of IHD. Always consider the possibility of MI, particularly if any pain last > 10 min.

Examination and Resuscitation

- Evaluate ABC
- O₂, IV Access as appropriate
- Monitor PR, BP, RR, SPO₂
- Complete full examination.
- Check Pulse and BP (arrhythmia, cardiogenic shock)
- Listen to the heart (murmurs or third heart sound)
- Listen to the lung fields (pneumonia, tension pneumothorax and severe left ventricular failure?)
- Check peripheral pulses (aortic dissection?)
- Check legs for evidence of DVT to exclude PE
- Palpate for abdominal tenderness or mass (? cholecystitis, pancreatitis, perforated peptic ulcer, ruptured aortic aneurysm)

Investigation

- Do 12 lead ECG if available, look for significant ST Elevation > 1 mm in two limb leads and > 2 mm in two adjacent chest leads. Reciprocal ST depression in opposite leads. Pathological Q waves and T wave inversion may be seen. See in ECG Section.
- Random Blood Sugar to exclude DM
- Urine ketones for detection of DKA
- Plan to refer for further management.

Management

- Give Aspirin 300 mg PO if definitely Myocardial Infarct and no contraindication
- Supportive Management and explain the patient and patient's attendant
- **Conditions related to rapidly fatal conditions should be referred to the referral centers.**

¹⁰ Table form Oxford Hand Book of Emergency Medicine, chest pain, page 70

3. Medicine

• Palpitation (Bradycardia and Tachycardia)

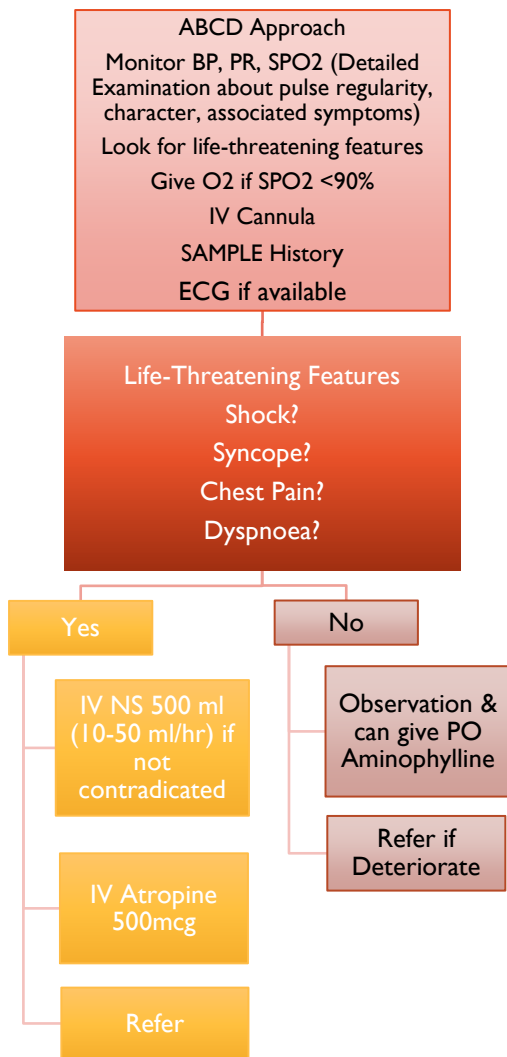
Bradycardia

Bradycardia is a ventricular rate of <60/min.

Causes:

- Heart Disease – Heart Block
- Drugs – Betablockers, Digoxin
- Hypothyroid
- Hypoxia
- Raised ICP
- Irreversible Shock Stage

Assessment and Management Algorithm



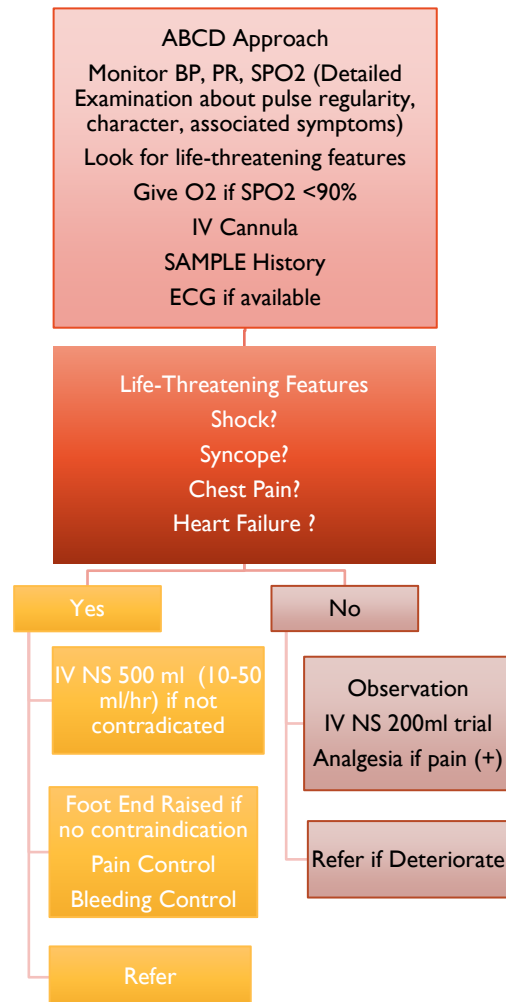
Tachycardia

Heart Rate >100/min

Causes:

- Heart Disease – SVT, VT, AF
- Bleeding/ Hypovolemia
- Drugs – Amphetamines
- Hyperthyroid
- Hypoxia
- Pain
- Anxiety

Assessment and Management Algorithm



3. Medicine

• Hypertensive Problems

Most patients with hypertension are asymptomatic.

Hypertension is SBP > 140mmHg and/or DBP > 90mmHg and is an important risk factor for CVS diseases and stroke.

Unless the presence of any associated symptoms and signs of hypertensive emergency, do not initiate any emergency intervention based on raised BP alone.

Hypertensive Emergency

Increased BP SBP>180mmHg and/or DBP > 110 mmHg with rapid onset of symptoms of:

- Neurological Deficit
- Severe Shortness of Breath/ Dyspnea
- Decreased SPO2
- Visual Impairment
- Impaired Consciousness
- Chest Pain and
- Reduced urine output.

Also look for symptoms of hypertensive encephalopathy such as headache, nausea, vomiting, confusion, visual impairment, fits, focal neurological deficit and reduced conscious level. Check blood pressure on both arms and unequal blood pressure indicates Aortic Dissection. Also consider recent drug ingestion of ecstasy and cocaine.

Management

- DRS-ABCD approach.
- Monitor BP, PR, RR, SPO2, Urine Output
- Give O2 if hypoxic.
- 45 Degree bed rest position.
- IV cannula
- Check glucose level, urine analysis and ECG if available.

- If BP SBP>180mmHg and/or DBP > 110 mmHg associated with focal neurological deficit/confusion or fits/ severe chest pain and dyspnea / unequal BP or pulse on both arms suggests **True Hypertensive Emergency** and aim to reduce BP no more than 25% in first hour. Those patients **need to refer to the higher-level care.**
- **PO Amlodipine 5mg** can be given safely if the patient's renal function has not been assessed before or patient over 55 years of age¹¹.
- **IV Frusemide 40 mg can be given before the referral** if the patient present with severe dyspnea and physical sign suggesting acute pulmonary oedema¹².
- β - blockers are contraindicated by hypertension caused by cocaine, amphetamine since, β – blockers may cause paradoxical hypertension and reduced coronary blood flow.
- In case of suspected stroke, do not lower the blood pressure immediately. This can worsen stroke. Discuss with doctor and refer¹².

Hypertension in Pregnancy

- Consider pre-existing hypertension or pre-eclampsia/ eclampsia.
- **Pre-eclampsia:** Diagnosed by two or more of the Hypertension (>140/90mmHg), proteinuria, oedema.
- Check urine for protein.
- Call for senior EMOC person.
- **Eclampsia:** Onset of generalized seizure/fits after 20 weeks' gestation and carries a significant mortality.
- Treatment includes DRS-ABCD approach, O2 supplement and give 5g of MgSO4 each buttock IM (total of 10 grams)¹³.
- Monitor knee jerk, RR, UO and refer.

¹¹ Burmese Border Guidelines, Hypertensive Emergency Management Guidelines

¹³ EHSSG's Maternal Health Manual, 3rd Edition, 2022.

3. Medicine

• Haemoptysis

Haemoptysis may be the chief or sole complaints of patients to the VTHCs.

Causes of Haemoptysis¹⁴

Respiratory	<ul style="list-style-type: none"> • Carcinoma (Bronchial, Laryngeal) • Infection (URTI, pneumonia, TB, lung abscess) • Bronchiectasis
Cardiovascular	<ul style="list-style-type: none"> • Pulmonary oedema • Pulmonary Embolism
Coagulation Disorder	<ul style="list-style-type: none"> • Drug-induced (Warfarin, Heparin) • Hemophilia
Trauma	<ul style="list-style-type: none"> • Penetrating or blunt injury • Facial bone fractures

Presentation:

Ask about the nature and volume (whether bright red streak to darks granules). Enquire about weight loss, drug history and smoking history.

Investigations

- Check SPO₂
- Perform urine dipstix
- Collect sputum sample and sent for AFP detection if there is nearby laboratory
- CXR and ECG if available

Examination and Resuscitation

- DRS-ABCDE Approach.
- Airway: clear and secure by coughing and suction.
- Breathing: Provide O₂ to maintain SPO₂ between 90-94%. Assisted ventilation with BVM if respiratory effort is inadequate.
- Circulation: 2 IV cannula insertion at both side of arms if bleeding is massive and give IV fluids, blood, and monitor PR, BP, RR, SPO₂
- Management is according to the individual casual factor.
- Refer to higher level care unit for further assessment and treatment.

¹⁴ Table form Oxford Hand Book of Emergency Medicine, chest pain, page 70

3. Medicine

• Oxygen Therapy

Most commonly administered therapy but too much O₂ can increased mortality for medical patients.

Oxygen Requirement

Patient with High O₂ Requirement: specific conditions that benefits form provision of high flow O₂ with target SPO₂ 100%.

- Carbon monoxide Poisoning
- Cluster Headache
- Pneumothorax

Prescribing Oxygen

Consider the following:

- Target SPO₂
- O₂ Mask Type (Nasal cannula, Face mask)
- O₂ Flow Rate

In emergency situation, it is appropriate to administer O₂ prior to prescribing but do not forget to give O₂ after resuscitation.

Most patient with acute medical illness

Aim: to optimize tissue O₂ Delivery

Guiding tool: Use pulse Oximetry

Target SPO₂ Range: about 96% (90 -94%)

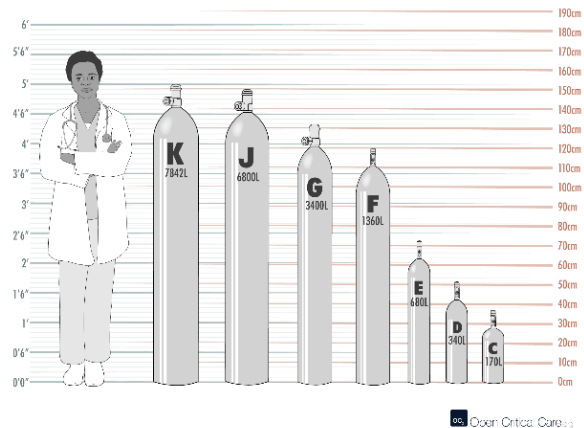
Patient with COPD

Target SPO₂ Range: about 88 -92%

Oxygen Cylinders

- Keep oxygen cylinder in a safe place and carry with handle because O₂ is highly flammable.
- Always check gas pressure regularly.
- For patient transport, ensure enough O₂ for the journey.

Oxygen Cylinder Types



Volume of Cylinder in L / flow Rate = how long cylinder will last in minutes

3. Medicine

• **Dyspneic Patient**

Normal Adult RR: 11-18/min

Normal Tidal Volume: 400-800 ml

Acute dyspnea is the most common presenting complaints in clinics.

Common Cause of Acute Dyspnea

Cardiac Cause

- Heart failure with pulmonary oedema
- Myocardial Infarct
- Pulmonary Embolism
- Arrhythmias

Respiratory Cause

- Asthma and COPD
- Pneumonia
- Pleural Effusion
- Pneumothorax

Traumatic Cause

- Aspiration of foreign body or vomit
- Pneumothorax/ Hemothorax
- Flail chest
- Near drowning

Other Causes

- Hypovolemia or fever from any cause
- Hyperventilation syndrome
- DKA
- Salicylate overdose

Approach

- ABC Approach
- Resuscitate as necessary
- Correct Hypoxia
- Ask about onset of dyspnea, past medical history, associated symptoms of cough, hemoptysis, fever, wheezing, chest pain
- Examine RR, depth and pattern of respiration.
- **Check SPO₂**

Pulse Oximetry

- Simple, rapid, safe and noninvasive method.
- But a normal SPO₂ does not exclude significant lung pathology.
- May be false reading in poor peripheral perfusion, Carbon monoxide poisoning, nail varnish, excessive management.
- Correlate reading with clinical findings; non-pulsatile trace suggests the reading is inaccurate.

3. Medicine

• Hyperventilation

Hyperventilation is breathing which occurs more deeply and/or more rapidly than normal. CO₂ is blown off.

Secondary Cause of Hyperventilation

- Metabolic Acidosis: DKA, Uremia, Sepsis, Hepatic failure
- Poisoning: aspirin, methanol, CO, cyanide
- Pain/ hypoxia
- Hypovolemia
- Respiratory disorder: PE, asthma, pneumothorax

Primary (Psychologic) Hyperventilation

Clinical features include;

- Agitation, distressed
- Dizziness
- Circumoral paraesthesiae
- Carpopedal spasm
- Stabbing Chest pain (Occasional)

Examination

- Tachypnoea
- Equal air entry on both lung fields
- No wheeze
- No evidence of airway obstruction
- Look for secondary causes (PE/ DKA)

Investigations

- SPO₂
- ECG if available
- Blood Glucose
- Full Blood Count if available

Treatment

- ABC Approach
- Look for life-threatening condition
- Exclude secondary causes
- Do not sedate the patient in first instant
- **Try simple breathing exercise**
 - Breath in through the nose – count of 8
 - Out through the mouth – count of 8
 - Hold for count of 4 and
 - Repeat
- Observe the patient
- If these simple measure fails and suspect of the secondary hyperventilation, refer to higher level care facility.

3. Medicine

• Cardiogenic Pulmonary Oedema

Left heart failure results in collection of fluid in extravascular pulmonary tissue faster than the lymphatic clearance.

Causes

- Acute complication of MI and IHD
- Exacerbation of pre-existing cardiac disease (Hypertension, Mitral/Aortic valve disease)
- Arrhythmias
- Ventricular septal defect
- Cardiomyopathy
- Drugs: β -blockers
- Acute myocarditis
- Pericardial Diseases

Evaluate the followings:

Ask for-

- Duration of dyspnea
- Presence of chest pain
- Current medication
- Prior Treatments
- NSAIDs and other traditional drugs usage

Examine the presence of

- Tachypnoeic, tachycardic and anxious
- Cyanosed, coughing up pink frothy sputum and unable to talk in severe cases.
- Blood Pressure changes
- Pulse rate irregularities
- Murmurs and 3rd/4th heart sounds
- Rising JVP
- Wheeze on auscultation
- Fine inspiratory crackles in both lungs fields
- Features of \downarrow cardiac output: cold periphery, sweating, pale
- Look for secondary causes (PE/ DKA)

Investigations

- SPO₂
- ECG if available
- Blood Glucose
- Full Blood Count if available

Treatment

- Sitting Position
- ABC approach and check airway patency
- Provide high flow O₂, as required, by tight fitting face mask
- Give IV Frusemide 40 mg, larger dose is required for patient already taking oral frusemide
- If the patient complains of chest pain, consider giving very small titrated dose of IV Opioid (morphine, nalbuphine) with antiemetic. Avoid opioid use in drowsy, confused or exhausted patients.
- If the patient is very breathless, assisted respiration with BVM with 15L/min of O₂ with tight fitting face mask is beneficial.
- Monitor urine output; indwelling urinary catheter if necessary.
- Monitor PR, BP, RR, SPO₂ and observe the improvements.
- For the definitive care, plan for referral once the patient is stabilized.
- Prepare adequate oxygen supply throughout the route.

3. Medicine

• Acute Asthma: Assessment

Asthma is a chronic lung disease affecting people of all ages. It is caused by inflammation and muscle tightening around the airways, which makes it harder to breathe. Symptoms can include coughing, wheezing, shortness of breath and chest tightness. (WHO)

Assessment

Make an initial assessment of the severity of acute asthma based upon the combination of clinical features, peak flow measurement (if possible), pulse oximeter.

Asthma Severity Assessment¹⁵

Moderate Exacerbation of Asthma

- Increased symptoms
- No features of acute severe asthma
- PEF 50-75% of best or predicted

Acute Severe Asthma

Any one of

- RR \geq 25/min
- Heart Rate \geq 110/min
- Inability to complete sentence in one sentence
- PEF 33-50% best or predicted

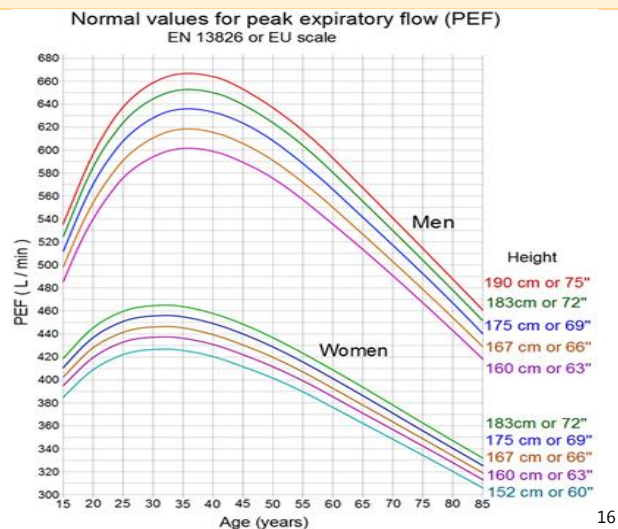
Life-threatening Asthma

A patient with severe asthma with any one of

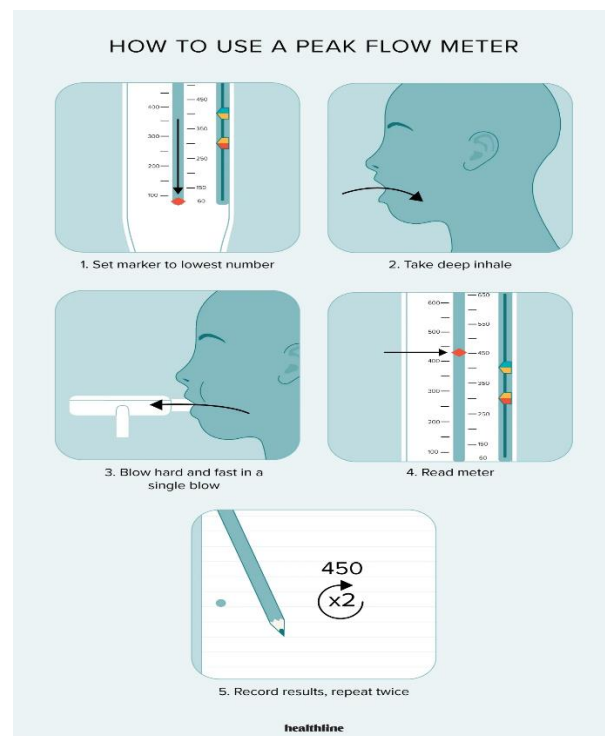
- $SPO_2 < 92\%$
- Silent Chest
- Cyanosis
- Poor Respiratory Effort
- Arrhythmia
- Exhaustion
- Hypotension
- Altered conscious level
- PEF $< 33\%$ best or predicted

Near-fatal Asthma

- Unable to washout CO_2 and require mechanical ventilation with increased inflation pressure



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¹⁵ Assessment category adapted from BTS/SIGN guidelines for the management of Asthma 2019

¹⁶ <https://www.activ8rlives.com/support/data-collected/cardiovascular-and-respiratory/normal-peak-expiratory-flow-pef>

¹⁷ <https://www.healthline.com/health/peak-flow-meter#how-to-use>

3. Medicine

• Acute Asthma: Management

Investigations in Asthma

- SPO₂ – monitoring of adequacy of Oxygen therapy with the target SPO₂ of 94 -98%.
- Peak flow can be used if available, but the percentage of predicted is a rough guide.
- ECG if available for detection of arrhythmia once the patient is stabilized.

Initial Treatment

- Keep the patient in sitting up position
- ABC Approach
- Provide high-flow O₂
- If the patient cannot talk, start treatment as soon as possible and get senior involvement in life-threatening asthma
- Check trachea shift and chest exam for pneumothorax
- Ask about previous hospitalizations, drugs
- Administer O₂ driven nebulized Salbutamol 5mg, or 10 puffs of Salbutamol Inhaler into a spacer device and facemask. Repeat every 15 min in the 1st hour (if necessary) then, every 4-6 hours as needed.
- Give corticosteroid to all patient with acute asthma- either PO prednisolone 40 mg OD 3-5 days or IV hydrocortisone 100 mg stat and 6 hourly until the patient can take orally.
- For patient not responding to initial treatment IVI Aminophylline 5mg/kg + NSS 100 ml over 20 min can also be given as a loading dose. Seek senior advice before treatment.
- For life-threatening asthma or near fatal asthma with poor response to treatment, consider single dose of IV Magnesium sulfate 1.2-2g dilute with NSS 100 ml over 20 min after consultation with senior staff. Monitor BP, RR and UO during and after MgSO₄ treatment.

- Patient who cannot talk will be unable to drink fluids and may be dehydrated
- Avoid routine antibiotics
- Hypokalemia due to Salbutamol and steroids therapy should be anticipated and can be evaluated by ECG if available.
- Admission may be required in acute severe asthma cases and persisting symptom after initial treatment.

Think Early Referral if

- Deteriorating peak flow
- Life-threatening or near fatal attack
- Severe attack persisting after initial treatment.
- Exhaustion
- Drowsiness, confusion, altered consciousness or respiratory arrest

Discharge Decision

- Patient can be discharged if PEF >75% best or predicted 1 hour after initial treatment.
- Prescribe PO Prednisolone 40mg OD for 5 days if initial PEF <50%
- Check Inhaler techniques and PEF monitoring
- Advice to return to hospital if symptoms worsen/recur.

Cardiac Arrest in Acute Asthma

Common Causes:

- Prolonged severe hypoxia
- Hypoxia-related arrhythmias
- Tension pneumothorax

Action: According to cardiac arrest management algorithm.

3. Medicine

• Chronic Obstructive Pulmonary Disease

Chronic airflow limitation due to impaired expiratory airflow, mucosal oedema, infection, bronchospasm, and bronchoconstriction due to reduced lung elasticity.

Smoking is the main cause.

History

Usual complaints: Exertional dyspnoea, cough, sputum, smoking history

Ask about:

- Present treatment – inhalers, steroids, antibiotics, nebulizers, home O₂
- Past history and past hospital notes
- Exercise Tolerance
- Recent History

Examination

- Examine for dyspnoea, tachypnoea, accessory muscle use and purse lip breathing.
- Look for barrel shape chest.
- Listen for wheeze or coarse crackles
- Cyanosis and features of right heart failure suggest advanced disease. Also look for hand tremors, bounding pulse, drowsiness and confusions, signs of increased CO₂.
- Look for features of pneumothorax – absence breath sound
- Look for leg oedema
- Sputum cup examination

Differential Diagnosis

- Acute asthma
- Cardiogenic pulmonary oedema
- Spontaneous pneumothorax
- Pulmonary embolism

Investigations

- SPO₂, RR, PR, BP, T* and Peak flow rate if available
- ECG if available
- Full Blood Count if available
- Sputum for microscopy if available

Treatment

- Sitting Position
- DRS-ABCDE approach
- Give Oxygen: the aim is to maintain target SPO₂ of 88-92%. If the patient is known to have COPD or confusion, give O₂ with nasal cannula with 2 L/min and titrate up to achieve SPO₂ of 88-92% and reduce the O₂ flow rate when SPO₂>92%.
- Bronchodilators: Nebulized salbutamol 5 mg, can be given by oxygen-driven nebulizer or compressed air nebulizer with oxygen supplement via nasal prong at 1-4L/min
- Obtained IV access.
- Steroids: Prednisolone 30mg stat then once daily for 7 days or IV Hydrocortisone 100 mg stat and 6 Hourly if the patient cannot take orally
- Others: Antibiotics (PO Amoxicillin 500mg tid or IV Ampicillin 500 mg 6 hourly, doxycycline 100 mg BD) total 7 days, if purulent sputum (+)
- For patients not responding to initial treatment IVI Aminophylline 5mg/kg + NSS 100 ml over 20 min can also be given as a loading dose. Seek senior advice before treatment.
- Assisted ventilation with BVM can be helpful when the patient is exhausted.
- Educate the patient to stop smoking.
- Consider early referral if the patient is not responding well to initial treatments.

3. Medicine

• Pulmonary Aspiration

Aspiration of solid or liquid material into the upper and lower airway is seen commonly in patient with

- ↓ GCS: head injury, stroke, overdose, seizure, sedation, anesthesia.
- ↓ Cough and/or Gag reflexes: above mentioned conditions, advanced airway procedures, Guillain- Barré syndrome and myasthenia gravis.
- Tendency to regurgitate/vomit: alcohol, full stomach, hiatus hernia, esophageal, obstruction, pregnancy.
- Infirm or elderly patients fed via NG tube.

Clinical Features

Depends on size of particles.

- *Larger food particles*: complete obstruction – choking, inability to speak, increased respiratory effort, cyanosis loss of consciousness and death may occur.
- *Smaller particles*: coughing, stridor, wheeze. *Delayed presentation*: hemoptysis, unresolved pneumonia, abscess formation occurs in days or weeks later.
- *Vomiting/regurgitation is often witnessed* and pulmonary aspiration is confirmed by seeing gastric contents in the oropharynx or trachea following suction.
- Hydrocarbons (e.g., petrol, paraffin) cause severe pulmonary toxicity if aspiration occurs during ingestion or following regurgitation/ vomiting.

Investigations

- SPO₂: Hypoxia within minutes of acid aspiration
- CXR (if available): It takes hours/days to develop radiological abnormalities. Appearance depends on aspirated material's nature, patient's position at the time of aspiration and duration. Abnormalities mostly seen in right lower lobe followed by left lower lobe and right middle lobes of the lungs.

Prevention

Prevention is the most important action.

Pay meticulous attention to airway protection involving positioning, suction.

In at risk patients, cautious insertion of NG tube, since it can predispose to aspiration, and emptying the stomach can be considered.

Treatment

- DRS-ABCDE approach
- Apply choking algorithm for larger food particles.
- Give Oxygen
- Nebulized salbutamol 5 mg, can be given by oxygen driven nebulizer or compressed air nebulizer with oxygen supplement via nasal prong at 1-4L/min
- Antibiotics may be considered; senior involvement is required.
- Steroids use is controversial, seek expert advice.
- Refer to higher level care facilities for further investigation and increasing severity.

3. Medicine

• Pneumonia

Pneumonia is lower respiratory tract infection presenting with breathlessness, productive cough and fever. Consider pneumonia in patients with septicemia or acute confusional state.

Causes

Bacterial (80-90%): *Strep. Pneumoniae* is the most common cause of community acquired pneumonia.

Viral (10-20%): Predominantly COVID 19, influenza A and B, RSV, rarely varicella and SARS.

Rickettsial (1%): Rarely *Coxiella burnetti*

Sign and Symptoms

- Fever, cough and productive sputum are common symptoms. Breathlessness, pleuritic chest pain, myalgia, rigors or hemoptysis may occur. Abnormal bronchial breath sounds may be heard over affected lung zone.
- *Mycoplasma* Pneumonia: Children and young adults with sore throat, headache, nausea, abdominal pain and diarrhea.
- *Legionella* pneumonia: Constitutional upset, diarrhoea and confusion particularly in the elderly.
- *Pneumocystic* pneumonia: Seen mostly in immunosuppressed patient presenting with cough, dyspnoea, marked hypoxia with fewer other findings.

Management

- If there is suspicious of COVID-19 infection, place the patient in isolation, restrict interaction and ensure staff wearing PPE prior to entering the room.
- DRS-ABCDE approach.
- Assess for sign of sever sepsis.
- Monitor RR, PR, BP.
- Check Blood Glucose and SPO₂.
- Obtained nasopharyngeal swab for COVID-19 testing if suspected.
- Do CXR if possible.

Assessment: Admission or Discharge?

- Mild illness with good social circumstances and no comorbidity may be safely discharged with appropriate antibiotics (Amoxicillin 0.5-1g PO tid), simple analgesia for pleuritic pain with the follow up arrangement.
- CURB-65 score is suggested for severity assessment.

CURB-65 Score for Pneumonia	Score
Confusion	1
Urea > 7mmol/L	1
RR≥30/ min	1
Low BP (systolic <90mmHg or Diastolic ≤60mmHg)	1
Age≥65y	1

Although Urea is not available in VTHC setting, decision can be made based on other clinical findings.

- CURB-65 score of ≥3 have severe pneumonia with high risk of death.
- CURB-65 score of ≥2 are also increased risk of death and require admission.
- CURB-65 score of 0-1 are low risk and may be suitable for home treatment.

Treatment (NICE Guideline 2014)

- Patients who are suitable for discharge: give analgesia, oral antibiotics for 5 days and arrange for follow up.
- For Admitted patient with moderate severity: start either PO or IV antibiotics as follows;
- Amoxicillin 0.5- 1g PO tid + erythromycin 500 mg PO qid or
- IV Ampicillin 500mg qid+ Erythromycin 500mg IV qid
- Monitor SPO₂ and Give O₂ to maintain SPO₂ > 94%. Provide simple analgesia for pleurisy.
- Patients with sepsis: according to sepsis management guidelines, commences IV crystalloids fluids, administer IV antibiotics; IV Co-amoxiclav 1.2g tid + IV Erythromycin 500mg qid) immediately, Oxygen supplement, insert urinary catheter and plan for referral.

3. Medicine

• Spontaneous Pneumothorax

May be Primary spontaneous pneumothorax or Secondary spontaneous pneumothorax (SSP). PSP may occur in previously health individual whereas SSP is mostly seen with pre-existing chronic lung disease like COPD, TB, etc.

Clinical Presentation

- Mostly present with unilateral pleuritic chest pain and dyspnoea.
- Appearance of classical clinical signs of pneumothorax may be depended upon the size of pneumothorax. Si/Sx includes tachypnoea, tachycardia, hyper-resonant percussion note with reduced air entry (Absent breath sound) on affect chest.
- Look for the features of tension pneumothorax: inability to speak, gasping, low SPO₂, tracheal deviation and hypotension. Seek senior advice. Treat tension pneumothorax with immediate needle decompression using a wide bore cannula(14-16G) needle at the second intercostal space mid-clavicular line. Tension pneumothorax is a clinical diagnosis and one needle decompression has performed urgent intercostal drainage tube insertion must follow. Therefore, referral plan should also be arranged in advanced.

Initial Assessment and Management

- Sitting upright position.
- DRS-ABCDE Approach.
- Give Oxygen and ensure IV access.
- Monitor PR, RR, SPO₂, BP.
- If there is sign of tension pneumothorax, do needle decompression and refer to higher level care center.
- For suspected pneumothorax patient without any features of tension pneumothorax, initial stabilization, oxygen supplement and planning for erect CXR for diagnosis and referral for further management should be considered.

Needle Aspiration

- Only appropriate for centers with X-ray facilities and expert supervision.
- For patients with tension pneumothorax features, lifesaving intervention of needle decompression can be performed without the CXR result. Tension pneumothorax is clinical diagnosis. Then refer to higher level care center for chest drain insertion.
- Pleural aspiration and drain insertion should be performed by the medical care provider who has prior training and experience. Always discuss the procedure with the patient and document the patient's consent.
- The size of pneumothorax can be measure on CXR by measuring from chest wall to the lung edge at the level of hilum. 2cm is the cut off point for management.
- PSP with size more than 2 cm – Aspiration is considered. (Unsuccessful aspiration should be followed by chest drain insertion and do not repeat the aspiration.) Treatment for symptomatic SSP is chest drain insertion and admission. Therefore, referral to higher level care center is important.

Aspiration Technique

- Confirm the site of pneumothorax.
- Sit the patient upright.
- Ensure the patient has IV access. Perform in a monitored environment with as assistant and appropriate supervision.
- Use Aseptic technique.
- Infiltrate 1% lignocaine, then inset a 16G IV cannula just above the 3rd rib (2nd intercostal space) in the mid-clavicular line.
- Remove the needle; attach a three-way tap, the aspirate air with 20/50 ml syringe.
- Continue aspiration until 2.5 L of air is removed. When the patient cough excessively, stop the procedure and give oxygen.

Discharge: Patient without SOB with small PSP. Arrange for follow up plan.

3. Medicine

• Upper Gastrointestinal Bleeding

Common Causes of Upper GI Bleeding

- Peptic ulceration
- Mucosal inflammation (esophagitis, gastritis or duodenitis)
- Esophageal varices
- Mallory-Weiss tear
- Gastric carcinoma
- Coagulation disorder

History

- Take a detailed history while resuscitating.
- Upper GI Bleeding usually present with hematemesis and melaena and lower GI bleeding present with fresh Per Rectum Bleeding. But major upper GI bleeding may present with fresh PR bleeding.
- Always ask about amount and duration of bleeding, any past h/o GI bleeding, liver disease, and associated symptoms of abdominal pain, weight loss, anorexia.
- Also ask for drug history: aspirin, NSAIDs, anticoagulants, iron and history of alcohol consumption.

Examination

- Check airway patency, breathing adequacy and circulatory shock.
- Look at available vomits or faeces.
- Check for abdominal masses, tenderness, scars, stigmata of liver diseases.
- Perform PR examination and check for occult blood.
- Investigations
 - Hb%
 - BT, CT
 - Blood Glucose
 - Grouping and Cross-matching if facility available.
 - SPO₂

Prognosis

- Increased mortality with increasing age, and association with comorbidities.

Management

- DRS-ABCDE Approach. Give O₂ as needed. Insert large bore (14G) IV cannula on each side. Draw blood for Hb%, BT, CT, Blood Grouping and cross matching.
- Assess for hypovolemic shock (PR, RR, BP, GCS, Skin color).
- Start IV Fluids, followed by blood as necessary.
- Omeprazole 40 mg diluted in 100 ml of saline as IVI over 30 min if the patient has known peptic ulcer disease.
- If the patient is anticoagulated and has coagulation problem, reverse anticoagulation by giving vitamin K 10 mg is considerable.
- Blood transfusion is considered when Hb < 70g/L and where facility is available.
- Give prophylactic antibiotics, eg Ciprofloxacin or second/ third generation cephalosporin (Ceftriaxone IV 1 g OD x 5-7 days) for reducing mortality in sever hemorrhage.
- No strong evidence for use of tranexamic acid and seek expert advice.
- Monitor PR, RR, BP, SPO₂
- Stop NSAIDs and anticoagulants.
- Insert urinary catheter and monitor urine output.
- Refer to higher level care once the patient is stabilized and requiring blood transfusion.
- Always document the treatment given.

3. Medicine

• Lower Gastrointestinal Bleeding

The most common cause of apparent lower GI bleeding is upper GI hemorrhage, nearly 20% of acute GI hemorrhage is from the colon and rectum. Lower GI hemorrhage often stops spontaneously – localization of the bleeding source may be difficult.

History

- Nature of bleeding: melaena may represent small bowel or proximal colon bleeding and upper GI hemorrhage. But large volume of plum-colored rectal bleeding may follow upper GI hemorrhage. Bloody diarrhea suggests inflammatory bowel disease or infective colitis.
- Associated Symptoms: weight loss, anorexia, change in bowel habit may indicate colonic carcinoma. Abdominal pain may be a feature of ischemic colitis, inflammatory bowel disease or carcinoma. Anal pain is commonly seen in anal fissure, or as a complication of hemorrhoids.
- Syncope/Postural dizziness: Significant bleeding and hypovolemia.
- Past Medical History: ask about the inflammatory bowel syndrome, peptic ulcer disease, peptic ulceration.
- Drug History: Salicylate, NSAIDs, corticosteroids and anticoagulants.
- Family and Social History: any family history of peptic ulcers, inflammatory bowel disease, alcohol consumption.

Examination

- Check airway patency, breathing adequacy and circulatory shock.
- Document PR, BP (any postural drop?)
- Perform PR examination and check for occult blood.

Investigations

- Hb%
- BT, CT
- Blood Glucose
- Grouping and Cross-matching if facility available.

Prognosis

Increased mortality with increasing age, and association with comorbidities.

Management

- DRS-ABCDE Approach. Give O₂ as needed. Insert large bore (14G) IV cannula on each side. Draw blood for Hb%, BT, CT, Blood Grouping and cross matching.
- Assess for hypovolemic shock and monitor PR, RR, BP, SPO₂.
- Start 1 liter of NS or RL IV infusion, and give further fluid according to the response.
- If the patient is anticoagulated and has coagulation problem, reverse anticoagulation by giving vitamin K is considerable and also plan for referral.
- Give prophylactic antibiotics, e.g., Ciprofloxacin 500 mg 12 hourly or second/ third generation cephalosporin (Ceftriaxone IV 1 g OD x 5-7 days) and IV metronidazole 500mg 8 hourly for reducing mortality in sever hemorrhage.
- Use of tranexamic acid remain unclear and seek senior advice.
- Insert urinary catheter and monitor urine output.
- Refer to higher level care once the patient is stabilized and requiring blood transfusion.
- Always document the treatment given.

3. Medicine

• Ascites and Liver Failure

Ascites is an abnormal accumulation of fluid within the peritoneal cavity. The most common cause of ascites is hepatic cirrhosis. It can also occur with heart failure, peritonitis, pancreatitis. Cirrhotic ascites is associated with poor prognosis. If refractory, the survival at 1 year is <50 %.

Clinical Features

- Patient may present with the discomfort due to local pressure effect. Gross ascites is often seen as distended abdomen out of proportion to the patient body habitus.
- Loss of appetite, nausea, altered bowel habit are common associations.
- Difficult breathing due to diaphragmatic compression.
- Also have feature of liver failures like gynecomastia, spider naevi, jaundice and testicular atrophy, encephalopathy and variceal bleeding etc.
- Examine for shifting dullness and fluid thrill.
- If clinical evidence of infection, consider spontaneous bacterial peritonitis.

Investigations

- Viral Hepatitis screen if available
- Hb%
- BT, CT
- Blood Glucose
- If variceal bleeding is suspected, Grouping and Cross-matching where there is facility
- Bedside USS may confirm ascites
- Perform ascites tap under USS guidance and send fluid for microscopy, protein, amylase and cytology where lab service is available

Management

- DRS-ABCDE Approach.
- Resuscitate as appropriate.
- Give O₂ as needed.
- If there is evidence of upper GI bleed, assess for hypovolemic shock (PR, RR, BP, SPO₂) and treat as upper GI bleeding.
- If evidence of spontaneous bacterial peritonitis, commence empirical IV antibiotics (e.g., Ciprofloxacin PO 500mg BD)
- Suspect hyponatremia and encephalopathy if the patient has confusion. If encephalopathy present, Don't Do Ascites Aspiration. Require close monitoring and referral, prescribe lactulose to prevent constipation before referral.
- Stop NASIDs and ACE inhibitors.
- Ascites drainage is considered based on patient's symptom and level of discomfort, proximity to higher level center and availability of senior supervision.
- For patients with significant abdominal distension and severe discomfort, ascites aspiration about 1 L can be considered. Too much drainage requires albumin infusion. Before drainage, make sure that patient is hemodynamically stable and no features of hepatic encephalopathy before and after the procedure. Ask the patient to extend both arms, hands dorsiflexed with spreading fingers and look for flapping tremor. Cloudy mentation, Flapping tremor and unable to draw a star on paper are features of hepatic encephalopathy.
- Patients with unknown cause of ascites, blood-stained ascites tap and those requiring albumin replacement should be referred to higher level care center.
- Monitor PR, BP, SPO₂, GCS before, during and after the procedure.

3. Medicine

• Headache

Headache is a common medical problem. Headache with serious pathology may present in one of the three ways:

1. Severe headache, unlike previous one (worst ever headache)
2. Headache associated with worrying features (altered mental status, fever, focal neurological sign)
3. Chronic severe headache unresponsive to treatment

Causes

Primary Cause

- Migraine
- Tension headaches
- Cluster headaches
- Miscellaneous (benign cough headache, benign exertional headache, headache associated with sexual activity)

Secondary Cause

- Head injury
- Vascular: Stroke, intracranial hematoma, subarachnoid hemorrhage, unruptured AV malformation, venous thrombosis, hypertension
- Nonvascular Intracranial Disorder: Increased CSF pressure, post LP, intracranial tumor
- Substance misuse or withdrawal including analgesia withdrawal or rebound
- Infection: encephalitis or meningitis
- Metabolic: hypoxia, hypercapnia, hypoglycemia, CO poisoning
- Craniofacial disorder: pathology of skull, neck, eyes, nose, ear, sinuses, teeth, mouth, temporomandibular joint dysfunction.
- Neuralgias: trigeminal, occipital and other cranial nerves

Headache with serious pathology

May present with the following features:

- Sudden-onset headache
- Worst headache ever
- Dramatic change in pattern of headache
- Known HIV or malignancy
- Presence of ventriculoperitoneal shunt
- Headache coming on during exertion
- New onset headache in those aged >50 yrs.

Examination

- Check GCS, PR, RR, BP, T*, SPO₂
- Muscular tenderness, arterial tenderness, arterial tenderness, and trigger points for neuralgia, evidence of head injury.
- Examine eye for visual acuity, pupil reaction, eye movements.
- Palpate the sinus tenderness.
- Look in ears for hemotympanum or infection
- Check oral cavity for infection
- Look for evidence of purpura/ rash of meningococcal infection
- Perform neurological examination for focal neurological deficit
- Check for Kernig's sign: straightening the knee, whilst the hip is flexed, produce discomfort in the presence of meningeal irritation.

Some useful Approaches for Specific Headaches

Subarachnoid Hemorrhage	Sudden, severe onset, syncope
Meningitis or Encephalitis	Fever, neck rigidity ± indwelling ventriculoperitoneal shunt
Head Injury	Sign of head trauma
Increases ICP	Papilledema, Bradycardia, Hypertension, Abnormal respiration
Stroke	Headache+ focal neurological deficit
Acute Glaucoma	Painful red eye, reduce visual acuity, irregular semi-dilated pupil
Cranial Arteritis	Headache+ Jaw Pain, temporal artery tenderness

3. Medicine

• Specific Headaches and Management 18

Tension Headache

- The most common cause of headache.
- Diagnosis made primarily by clinical.
- Usually classified as episodic and chronic tension headache.
- Triggering factors includes mental stress and physical exhaustion. Insomnia and depression may sometime precipitates.
- Clinical assessment includes type, frequency, location, nature, severity and associated symptoms.
- It is important to differentiate tension headache from other more serious headaches that need urgent referral.
- Treatment is with simple PO analgesics and avoid opioid analgesia. Paracetamol 1g PO and/or NSAIDs, IV metoclopramide 10 mg may be helpful.
- Psychotherapy, physical therapy and attention to stressor may be helpful.
- Refer to higher level care centers if not responsive and become chronic.

Subarachnoid Hemorrhage (SAH)

- Consider SAH in any “worst ever” or sudden onset headache (70% of SAH present with this symptom). Classically describe as “like a blow to the back of the head”, accompanied by neck pain, photophobia and vomiting. In 25%, exertional activities precede the event.
- May present after syncope or fits. Drowsiness and confusion are common.
- Important cause of sudden collapse and death at any age. Most bleeds follow the rupture of saccular aneurysm in Circle of Willis.
- Ottawa Rule: this rule excludes SAH if anew severe atraumatic patient, age 15-39 yrs, with alert consciousness, maximum intensity within 1 hr, who have no neck pain or stiffness, no witnessed LOC, no onset during exertion and no limited neck flexion on examination.

- Treatment: Oxygen supplement as required, Paracetamol 1g PO and/or NSAIDs, IV metoclopramide 10 mg may be helpful. Opioid analgesic can be used in severe cases.

Referral to centers with imaging facilities is suggested for proper diagnosis.

- **Unconscious (GCS<8), severely agitated or combative patient should be referred to higher-level care centers for more comprehensive care.**

Migraine

- Commonly presenting headache
- Migraine without aura is most common and present with moderate to severe unilateral throbbing headache which is aggravated by movement. Also associated with nausea, vomiting, phonophobia and photophobia.
- Classic Migraine (Migraine with aura; reversible neurological symptoms before headache) presents with visual disturbances, dizziness, transient unilateral limb weakness and impaired speech.
- Episodes generally last several hours, but can last up to 72 hours.
- Precipitating factors includes emotional stress, hormonal influences in women, sleep deprivation and alcohol.
- Use Ottawa rule to exclude SAH.
- Give Paracetamol PO and an NSAID. Avoid opioid analgesia.
- Metoclopramide 10 mg IV with IV fluids (1L of NS) can be effective.
- Refer to higher lever care center if the patient is not responding to treatment.

¹⁸ Adapted from Victoria hospital ED guidelines and OHEM

3. Medicine

• Acute Confusional State (Delirium)

Delirium is an organic brain syndrome characterized by:

- Disturbed conscious level and mood (overactivity, excitement, drowsiness or stupor)
- Global disturbance of cognition (memory, orientation, attention, speech, motor function)
- Rapid onset with fluctuating course and brief duration
- Perceptual distortion and hallucinations (especially visual)

Causes

Consider one or more of the followings:

Medications	Digoxin, Cimetidine, Steroids, Analgesics, Diuretics, etc.
Drug Abuse	Opioids, Benzodiazepines, Ecstasy, Amphetamines, Hallucinogens
Withdrawal	From alcohol, opioids, hypnotics, or anxiolytics
Infection	Pneumonia, UTI, septicemia, meningitis, encephalitis
Metabolic	Hypoxia, hypoglycemia, acidosis, hyponatremia
Cardiac	Acute MI, heart failure, endocarditis
Neurological	Head injury, Chronic subdural hematoma, meningitis, post-ictal state
Organ Failure	Respiratory, Renal and Liver failure
Endocrine	Myxedema, thyrotoxicosis, diabetes, Addison's disease

Approach

- DRS-ABCDE approach.
- Correct hypoxia.
- Perform careful physical and mental examination on acutely confused patient.
- Check blood glucose and treat accordingly.
- History can be obtained from relatives, carers and past medical records.
- Look for evidence of alcohol/ drug intoxication or withdrawal states.
- Examine for focal neurological sign and acute cardiac, respiratory, urinary tract abnormalities.
- Document vital signs (BP, PR, RR, T*) in all cases.
- Basic investigations: Blood glucose, Urine analysis, SPO₂ and ECG if available.
- **Be careful not to miss: hypoglycemia, acute alcohol withdrawal, and CO poisoning.**
- Treatment: According to specific condition and seek senior advice. Refer to higher level care centers for specific management.
- Referral consideration for patient not responding to initial care and require specific investigation and care.

3. Medicine

• Unconscious Patient

Causes

Common Causes	Other Possible Cause
Hypoglycemia	Arrhythmia
Drug overdose	Hypovolemic Shock
Head Injury	Anaphylaxis
Stroke	Liver/ Renal Failure
SAH	Hypo/Hyperthermia
Convulsion	Meningitis/Encephalitis
Alcohol	Malaria
Intoxication	DKA/ Hyperosmolar
	Hyperglycemic State (HHS)
	Thiamin Deficiency
	(Wernicke's encephalopathy)

Treatment may be needed before the diagnosis.

Remember

- Airway
- Breathing
- Circulation

Initial Resuscitation

Airway and Cervical Spine	Look for airway obstruction. Clear and protect the airway immediately and immobilize the cervical spine if trauma is suspected.
Breathing	If breathing inadequate, assist ventilation with O ₂ and BVM. Uninjured patient with adequate breathing can be nursed in recovery position. Monitor RR, SPO ₂ .
Circulation	Check PR, BP, Capillary refill. Skin color, sweating and T*. IV Access and IV Fluid if necessary.
Disability	Assess conscious level, pupil size. Check Glasgow Coma Scale. Check blood glucose and treat accordingly. Give slow IV Thiamine in 100 ml of 5% glucose over 30 min in alcoholic and malnourished patient.

History

Ask

- How was the patient found?
- When was he/she last seen normally?
- Is there any suggestion for trauma?
- Is there any history of fits or weakness?
- Has there been recent travel to malaria endemic area?
- Past medical and mental conditions?
- Drugs history?
- Check past records.

Examination

Examine thoroughly for illness and injury.

Some clues for diagnosis include:

Increased RR	Airway obstruction, aspiration, pneumonia, DKA, liver/renal failure, methanol poisoning, salicylate poisoning
Respiratory depression	May be due to Poisoning; opioids, TCA Increased ICP Brainstem compression or damage by stroke (rapid, irregular, or intermittent respiration)
Bradycardia	Hypoxia, Complete heart block, Increased ICP, Digoxin or β blocker poisoning
Tachycardia	Airway obstruction, hypoxia, hypovolemia, cardiac abnormalities, anticholinergic overdose(atropine)
Atrial fibrillation	May be associated with cerebral emboli
Hypotension	Hypoxia, shock (hypovolemic, anaphylactic, septic) or poisoning
Hypertension	Increased ICP (Intracranial Bleeds)
Skin	Addison's disease: pallor, cyanosis, jaundice, spider naevi, scar pigmentations Rashes: meningococcal infection, DIC IVDU: injection marks Erythema or blistering at pressure points indicates prolonged duration.

3. Medicine

• Unconscious Patient Cont.

Neurological Examination

Basic neurological examinations include

- Glasgow Coma Scale
- Limb strength, muscle tone and reflexes
- Neck stiffness (except in neck injury)
- Palpation of fontanelle in babies
- Lateralizing sign: facial or limb weakness indicates stroke(new/old), intracranial bleeding
- Ocular nerve palsies: divergent squint with coma is seen in Wernicke's encephalopathy or tricyclic poisoning
- Subtle seizure: unconscious with twitching of ocular muscles or eyelids, unusual limb movements suggest non-convulsive status epilepticus

Some Important Differential Points

Hypoglycemia	Localized weakness/coma and mimic stroke
Coma without lateralizing sign	Poisoning Post-ictal state Brainstem stroke Hepatic failure
Tricyclic antidepressants	Coma with dilated pupils, a divergent squint, increased muscle tone, jerky limb movement, extensor planters. Muscle flaccidity, respiratory depression and diminished reflexes is observed in severe poisoning.
Coma with small pupils	Opioid poisoning In unexplained coma, give therapeutic trial of naloxone (0.4-0.8 mg IV) and observe for changes in conscious level, RR and pupil size.

Investigation

- Blood glucose: for hypo/hyper glycemia
- SPO₂: Hypoxia
- Full Blood Count (if available)
- ECG (if available) to exclude arrhythmia
- CXR (if available) to detect pneumonia, aspiration, tumor and trauma

Psychogenic Coma

Patient sometimes pretend to be unconscious. It can be difficult to diagnosis and exclude other causes first. Bell's phenomenon (voluntary upward rolling of eye when the eyes are open for assessment) may be seen in psychogenic coma patients.

3. Medicine

• Falls in Elderly

- Elderly population living in more isolated and remote areas are at risk.
- In addition to standard approach, pay particular attention to the following questions

What caused the fall?

- Try to distinguish between a trip/stumble, a dizzy spell, or medical collapse
- Basic observation, lying/standing BP and ECG if available

What injuries resulted?

- The classic injury resulting from a fall in an elderly is Hip fracture.
- Fracture of pubic rami, is also common.
- It is also important to look for head and neck injuries in falls from stairs or down steps.

Did the patient lie for long period?

- Be aware that as a result of being unable to get up after a fall, the patient may be experienced a “long lie” and possess the risk of hypothermia, dehydration, pressure sore and muscle damage (with rhabdomyolysis and hyperkalemia).

Is it safe to consider discharge home?

- Determining whether a patient is safe to discharge home is very often a complex issue.
- Need to discuss with relative and careers.
- Patient requiring X- ray imaging and treatment for medical comorbidities should be referred to higher level care centers.

3. Medicine

• Collapse and Syncope

Syncope is a sudden and transient loss of consciousness with spontaneous recovery. It is important to

- Identify serious life-threatening problems and appropriate treatment
- Decide the requirement for admission or referral
- Decide which patient require follow up

History Taking Points

Simple Faint/ Vasovagal Syncope	Mostly with overwarm environment, prolonged standing, precipitated by sudden fright or visual stimuli (sight of blood). Other contributors: large meal, prolonged starvation, alcohol. Also have premonitory symptoms of feeling unwell, nauseated dizzy or tired with yawning, blurred or tunnel vision or altered hearing (+)
Seizure	An eyewitness account is crucial. History of aura. Amnesia, unresponsive, unusual posturing or prolonged limb jerking, head turning to one side (Generalized tonic-clonic pattern) Cyanosis, saliva frothing from mouth, heavy breathing, tongue biting or incontinence suggest a generalized seizure. Post-ictal drowsiness or confusion
Cardiac Event	Abrupt in onset, maybe accompanied by pallor and sweating. Recovery may be rapid with flushing deep sighing respiration in some cases. Nausea and vomiting are not usually associated with syncope from arrhythmias. May have history of previous episodes, chest pain, palpitation, history of cardiac disease and family history of sudden death. Syncope associated with exertion may be associated with aortic or mitral stenosis, pulmonary hypertension, cardiomyopathy and coronary artery diseases,
Others	Drugs: β -blocker, antihypertensives SAH, Ruptured Ectopic pregnancy, GI bleed, Pulmonary Embolism

Assessment and Treatment

- Obtain detail information from patient and witnesses
- Look for sign of tongue biting, incontinence and other injuries
- CVS examination: Heart sound and murmurs, arrhythmias
- Neurological Examination: look for focal sign
- Postural Test: dizziness or weakness during sitting and standing BP
- Sign of hypovolemia: GI bleed, Ectopic pregnancy

GI Bleed	Syncope (\pm postural symptoms) indicated significant blood loss. PR exam for blood/melaena
Ectopic Pregnancy	Suspect in women with syncope and abdominal pain or gynecological symptoms. Do pregnancy Test.
Pulmonary Embolism	Witness may give history of cyanosis

- RBS: to exclude hypoglycemia
- ECG (if available) to exclude cardiac diseases

Referral

Patients with following conditions should be referred for further management.

- Heart Failure
- Loss of consciousness on exertion
- New or unexplained breathlessness
- A heart murmurs
- An ECG abnormality
- Family history of sudden death <40 yrs old (Arrange referral plan once the patient has been stabilized)

Discharge criteria

Patient who has made full recovery and have an appropriate history for vasovagal syncope and a normal examination.

3. Medicine

• Acute Generalized Weakness

It is important to differentiate the weakness due to common neurological problems (e.g. stroke) from the many causes of collapse. Table presenting the upper and lower motor neurone features can be helpful in distinguishing the possible cause of weakness.

Feature	Upper Motor Neurone	Lower Motor Neurone
Wasting	No	Yes
Fasciculation	No	Yes
Tone	↑	↓
Power	↓	↓
Reflexes	↑	↓
Planters	Upgoing	Down going

General debility and Hypokalemia may also present with generalized weakness.

Less common but important causes of generalized weakness are;

Guillain-Barré Syndrome

- Progressive symmetrical weakness, spreading from distal muscles to proximal muscles following a respiratory or GI infection.
- Symptoms and signs include muscle tenderness, back pain, loss of muscle reflexes, sensory symptoms and disturbance in autonomic nervous system (Hypo- or hypertension, tachy- bradycardia)
- Beware of respiratory failure and respiratory arrest.
- Polymyositis
- Inflammatory myopathy present with symmetrical proximal muscle weakness, arthritis and muscular tenderness. Difficulty in climbing stairs, standing from low chair or lifting arm to brush hair are the common features.

Myasthenia Gravis

- A rare autoimmune disease with generalized weakness.
- Severe muscle weakness during the crisis is the major concern for respiratory arrest.
- Crisis can be precipitated by infection.
- Asymmetrical painless weakness, fatigue, ptosis, diplopia and the blurred vision are the most common presentations.
- Patient with known Myasthenia gravis may present with weakness due to under-treatment or over treatment or as an adverse reaction to other drugs.
- Urgent referral is suggested.

Periodic Paralysis

- A hereditary disease associated with K⁺ fluctuation, lasting a few hours to a week.
- Occasionally associated with eating large meal.
- Fixed proximal weakness
- PO K⁺ supplementation is helpful.

Others

- Wound botulism
- Spinal cord compression
- Tetanus
- Alcoholic Myopathy
- Diphtheria
- Lead poisoning

Management

- DRS-ABCDE approach
- Give Oxygen supplement and assisted ventilation with BVM in respiratory arrest
- Detailed history, physical examination
- **Arrange for referral**
- Monitor vital sign (PR, RR, BP, SPO₂, UO)

3. Medicine

• Stroke

A stroke is an acute onset of focal neurological deficit of vascular origin which last > 24 hour. 70% of strokes occur in those aged >70 years, but they can occur at any age.

Cerebral infarction (80%) results from

- Thrombosis
- Cerebral embolism from AF, valve disease/ replacement, post MI, ventricular aneurysm, endocarditis, cardiomyopathy
- An episode of hypoperfusion

Cerebral hemorrhage (20%) associated with

- Hypertension – rupture of small arteries in the brain
- SAH
- Arteriovenous malformation
- Intracranial tumors
- Bleeding disorders (including anticoagulants) and intracranial tumor

Presentation

Stroke preceded by neck pain	Carotid/vertebral artery dissection, SAH
Headache	Cerebral Hemorrhage
Others	Hypoglycemia, meningitis, hemiplegic migraine, encephalitis, brain abscess, head injury, Bell's palsy, Saturday night palsy, tumors

Examination

Undertake the thorough examination

- Assessment of mental status, GCS, sign of meningeal irritation.
- Examination of pupils and cranial nerves
- Assessment of motor function (tone, power, reflexes)
- Assessment of sensory function, speech and comprehension
- Examination of cerebellar sign
- Sources of embolism (AF, murmurs, carotid bruits)
- Use ROSIER score for stroke recognition

ROSIER Score

Criteria	Points
Facial weakness (asymmetrical)	1
Arm weakness (asymmetrical)	1
Leg weakness (asymmetrical)	1
Speech disturbance	1
Visual field defect	1
Loss of consciousness or syncope	-1
Seizure	-1
Stroke is unlikely if score is 0 or lower	

Investigations (depends on local availability)

Examine and investigate first to exclude other condition, and second to confirm the diagnosis of stroke. As a minimum

- Blood glucose
- SPO₂
- ECG if available
- CXR if available

Refer for Emergency non-enhanced CT if

- Near to stroke care center for emergency thrombolysis
- Patient is on oral anticoagulants/ bleeding tendency
- The GCS<3
- There are unexplained progressive or fluctuating symptoms
- There is neck stiffness or fever.
- There was a severe headache at the onset of symptoms.

Management

- DRS - ABCDE approach
- If hypoxic give O₂ – Aim for SPO₂ 90-94%, check blood glucose and correct hypoglycemia
- Assess for patient's swallowing function, maintenance IV fluid if swallowing difficulties (+)
- Hypertension and labile BP are common in early post-stroke. Do not attempt to reduce the BP at presentation. unless indicated.
- Arrange for referral to higher level care unit.

3. Medicine

• Transient Ischaemic Attack (TIA)

A TIA is an episode of transient focal neurological deficit of vascular origin lasting <24hour. A TIA gives the warning for the development of stroke (5% within 48 hours, up to 50 % in 5 years). Even with the resolution of symptoms/sign, most have evidence of infarction on CT/MRI.

Presentation

- Internal Carotid Artery: unilateral weakness or sensory changes, dysphasia, homonymous hemianopia
- Vertebrobasilar Artery: Black out, bilateral motor or sensory changes, vertigo, ataxia.

Causes

- Thromboembolic diseases: AF, mitral stenosis, post MI, carotid artery stenosis
- Hypertension
- Polycythemia/ Anemia
- Vasculitis
- Hypoglycemia
- Hypoperfusion: arrhythmia, hypovolemia

Assessment

- It is difficult to diagnose TIA in VTHC setting
- TIA: the symptoms must have resolved within 24 hours
- Perform Neurological Examination
- Look for possible cause of emboli: AF, heart murmurs, carotid bruits and MI

Investigation

- Blood Glucose
- ECG if available
- For the patient with symptoms resolved by the time of arrival, do not need to request a CT brain unless there is clinical suspicion of different diagnosis.
- Symptomatic patients require CT scan for diagnosis and, therefore, referral is required.

Management

Making diagnosis and treatment may be difficult for VTHC setting.

- DRS-ABCDE approach.
- Careful history and physical examination.
- Prepare for referral.
- Give Aspirin 300 mg PO immediately unless contraindicated and continue for 2 weeks until specialist review.
- Liaise with medical team for further management.

Discharge advice

- Provide verbal or written advice including not to drive until the symptoms of stroke have been cleared.
- Advice to return to clinic when the symptoms regain.

3. Medicine

• Seizure and Status epilepticus

First Fit

A detailed history from both the patient and any witnesses is crucial. The presence of jerky movements or incontinence does not necessarily reflect epilepsy. Careful exclusion of vasovagal syncope and other types of collapse. Full rapid recovery indicates a syncopal event. Always keeping in mind, the followings

- Alcohol/drugs use
- Withdrawal states
- Hypoglycemia
- Arrhythmia
- Head injury
- SAH
- Stroke /TIA
- Meningitis <24hour

Admission and referral to higher level care center is mandatory for patients with more than one seizure a day and suspected underlying pathology.

Examination: Careful examination of CNS, GCS, confusion, focal abnormalities, CVS, signs of aspiration.

Investigation: Blood glucose, ECG (if available), urine pregnancy test for women with child bearing age. All patients with new onset seizure need brain imaging and referral plan is required.

Discharge: A patient presenting with first seizure may be discharged home once all the symptoms have been disappeared and serious problems, mentioned above, have been excluded. Accompanying by an adult is recommended. Avoidance of driving, swimming, use of heavy machinery is suggested.

Seizure in known epileptics

Ask about:

- Any changes in seizure pattern
- Causes of poor control: medication compliance, intercurrent illness/infection, alcohol, drug ingestion

Patients with significant changes in seizure pattern should be referred for further actions.

Status Epilepticus

Continuous generalized seizure lasting >30 min or without intervening recovery. Longer the seizure time, the more cerebral damage. Precipitants includes cerebral infection, trauma, cerebrovascular disease, toxicity and childhood febrile seizure. Mortality is about 10 % depends on underlying pathology. Although seizure may start as generalized tonic/clonic and later it may be followed by coma with minimal twitching of ocular muscle. Complications includes hypo-glycemia, pulmonary hypertension, raised ICP and pulmonary oedema.

Treatment:

- DRS - ABCDE approach. Clear airway.
- Give O₂ as needed.
- Monitor T*, PR, RR, BP, SPO₂.
- IV access and check blood glucose. Correct hypoglycemia if present (50 ml of 25% glucose)
- IV Diazepam 10 mg slowly. Rectal Diazepam 10-20 mg if there is no venous access.
- IVI Thiamine (Pabrinex 2 pair in 100 ml of 0.9% Saline) if alcohol abuse or malnutrition is suspected.
- Consider pregnancy related fits (Eclampsia) in reproductive age women and treat with IM magnesium sulfate according to guidelines.
- Search for the feature of injury and infection.
- Emergency referral plan should be instituted when the patient is not responding to the above initial management and/or requiring a definitive medical care.

3. Medicine

• Hypoglycemia

Hypoglycemia mimics any neurological presentations including coma, fits, acute confusion or hemiparesis. Even mild episode can lead to brain damage. Hypoglycemia is potentially fatal and accounts for 2.4% of death in Type I DM.

Always exclude hypoglycemia in any patient with coma, altered behavior and neurological symptoms or sign.

Normal plasma glucose: 3.6 -5.8 mmol/L

Cognitive function deterioration occurs when the level <3.0 mmol/L

Most common causes

- Unforeseen exertion
- Delayed food intake
- Excessive insulin or OHA

Other relevant causes include

- Alcohol
- Post gastric surgery
- Pituitary insufficiency
- Liver failure
- Malaria
- Attempted suicide or homicide with large dose of insulin or OHA

Symptoms and sign

Sweating, pallor, tachycardia, hunger, trembling, altered mental state or loss of consciousness, irrational or violent behavior, fitting, focal neurological deficit (e.g., hemiplegia)

Diagnosis

- RBS < 3.0 mmol/L

Treatment Principle

Treatments depends upon the conscious state, degree of co-operation of the patient and causal factor of hypoglycemia.

Management

- DRS-ABCDE approach
- Keep airway open and give O₂ as required.
- Monitor RBS, SPO₂
- Start appropriate treatment depends on the level of hypoglycemia, patient's consciousness and co-operation, and proposed causal factor.
- Conscious and co-operated patients: Sugary drinks and sweets equivalent to carbohydrate 5-15 g then followed by biscuits and milk.
- Unconscious patient/ unable to swallow: IV Glucose 10% solution 50 ml, repeated at 1-2 min interval until the patients is fully conscious of 250 ml 25 g has been given.
- Glucose 50% solution (20-50ml IV) is hypertonic and cause damage to veins and no more effective than 10% solution. If glucose 50 is used, give via the large vein and follow with a saline flush.
- Maintain Plasma glucose at 7-11 mmol/L.
- 90% of patients fully recover in 20 min. It is important to identify the cause of the episode and to be fully corrected. Patient can be discharged after adequate duration of observation with appropriate follow up.
- Glucose infusion may be needed for 24 hours or longer after poisoning with insulin or oral hypoglycemic agents (OHAs).
- Persistence of an altered conscious level suggest another underlying pathology (eg stroke) or development of cerebral oedema due to hypoglycemia which is associated with high mortality. Referral to higher level care center is required.

3. Medicine

• Hyperglycemic Crisis

Diabetic Ketoacidosis (DKA): caused by absolute or relative reduction of insulin level. Hyperglycemia causes an osmotic diuresis, with Na⁺ and water loss (up to 8-10L), hypotension, hypoperfusion and shock. In the absence of insulin, this result in production of non-esterified fatty acids which are oxidized in the liver to ketones.

Younger undiagnosed patient with DM often presents with DKA developing over 1-3 days. Plasma glucose level may not be grossly elevated, euglycemic ketoacidosis can occur. Urine 10 para demonstrate ketonuria.

Hyperosmolar Hyperglycemic state (HHS): caused by DM with intercurrent illness, inadequate diabetic therapy, and dehydration. It develops over days/weeks and is more common in elderly. HHS characterized by markedly elevated glucose level (>30 mmol/L), increased blood osmolality, and lack or urinary ketone. Mortality is about 5-10% but may be higher in the elderly.

Causes: 4 Is separately or in combination

- Infection – commonly UTI, RTI, skin infection
- Infarction – MI, Stroke, GIT, Peripheral vascular disease
- Insufficient Insulin
- Intercurrent illness - Hypoglycemia mimics

Clinical Features

- Signs of dehydration: thirst, polydipsia, polyuria, reduced skin turgor, dry mouth, hypotension, tachycardia
- GI Symptoms: common in DKA, with nausea, vomiting, and abdominal pain. This can mimic acute surgical abdomen.
- Hyperventilation (respiratory compensation for metabolic acidosis), with deep rapid breathing (Kussmaul respiration) and the smell of acetone on the breath, is pathognomonic of DKA.

- True coma is uncommon, but altered conscious state and/or focal neurological deficits (which may correct with treatment) are seen especially in elderly patients with HHS.

Diagnosis and Investigation

Aim to confirm the diagnosis and search for possible underlying cause.

- Check blood glucose.
- Urine ketone assessment
- ECG if available
- FBC CXR if available (for chest infection)

Treatment

Treatment and referral plan are determined based on the available resources for insulin therapy, hourly glucose monitoring and serum potassium assessment and replacement.

- DRS-ABCDE approach. Seek senior help.
- Give O₂ by mask as required. Monitor SPO₂.
- IV access with 2 large bore cannula and give 1000 ml of 0.9% saline over 30 min to 1 hour. Then 500 ml/ hour for next 2-3 hour. Persistent hypotension may require increasing infusion rate. Avoid over rapid infusion with the risk of pulmonary oedema especially in elderly patients with IHD.
- Consider nasogastric tube to reduce the risk of gastric dilatation and aspiration.
- Insert indwelling urinary catheter and monitor urine output.
- Plan for referral to higher level care center.

Insulin therapy requires senior involvement, hourly blood glucose monitoring facility and ECG as minimum assessment of hypokalemia.

Soluble insulin 50 unit + 500 ml of NS (flash first 20 ml of solution) can be given with pediatric burette at 0.1U/kg/hr (Typically 6U/hr – 60 ml/hr) can be given before and during referral with the hourly monitoring of RBS and urine ketone.

3. Medicine

• Urinary Tract Infection (UTI)

Urinary tract is normally bacteriologically sterile. UTIs are much more common in female due to the shorter urethral length. Lower UTI (cystitis) results from invasion of organisms to the bladder via urethra. Ascending infection through the ureter in combination with anatomical derangement, impaired ureteric and bladder emptying cause Upper UTIs (acute and chronic pyelonephritis). Bloodborne spread can also occur. UTI is usually caused by *E.coli* (90%) at all ages.

Presentation

Lower UTI (cystitis)

- Dysuria, frequency, hematuria, suprapubic discomfort, urgency, burning cloudy urine with offensive smell.

Upper UTI (acute pyelonephritis)

- Often systematically unwell with malaise, fever, loin and/or back pain, vomiting, rigors and Gram (-) septicemia. Diagnose pyelonephritis if there is evidence of UTI with loin pain and $T^* > 38^{\circ}\text{C}$.

Investigations

- Urine dipstix test: hematuria, proteinuria, +ve nitrite and leucocyte esterase test. A patient with clear urine, -ve on dipstix testing is extremely unlikely to have UTI. False +ve results may be due to urinary tract tumors or excessive exercise.
- Urine Microscopy if available: leucocytes ($>100/\text{ml}$) correlates well with infection. Presence of RBCs possess low degree of sensitivity and specificity for UTI.
- MSU for C&S if available: especially useful for recurrent and persistent UTIs

Do not routinely perform urine microscopy and culture for women with uncomplicated UTI, but do perform if there is hematuria, impaired renal function, immunosuppression or abnormality of the renal tract.

Treatment

Lower UTI

- Aim to discharge women with uncomplicated lower UTIs with antibiotics. Give 3-day course of Nitrofurantoin 50 mg QID or Amoxicillin 500 mg TID. Provide advice regarding fluid intake, no “holding on”, and encourage voiding after intercourse.
- Consider 5–10 days course for women with impaired renal function, immunosuppression, or abnormality of the renal tract. Advise the patient to see doctor for further management.
- In pregnant patients, treat symptomatic bacteriuria with Amoxicillin 250 mg TID for 7 days or Cefalexin 500 mg TID for 7 days and refer to doctors for MSU for C&S. Treatment is also necessary pregnant women with asymptomatic UTI with +ve urine dipstix for leucocytes and nitrite and advice for GP follow up. (Trimethoprim is contraindicated in the first trimester and nitrofurantoin is contraindicated in the third trimester)
- Treat men with symptoms of lower UTI with 7-day course of Nitrofurantoin 50mg QID or Trimethoprim 200mg BD. Differential diagnosis includes chlamydial infection, prostatitis, epididymitis.

Upper UTI

- Assess and treat for severe sepsis. Admission care with initial stabilization with IV fluid, PO/IV antibiotics and appropriate analgesia.
- Remove and replace indwelling urinary catheter.
- Refer to higher level care centers when there is no response to initial treatment or if there is deterioration.

3. Medicine

• Bleeding Disorder: Assessment and Management

Hemostasis is a coordinated function of the vascular system, platelet and coagulation pathway to limit blood loss from circulation. The fibrinolytic system prevents excess clot formation and inappropriate local or generalized thrombosis.

Recognition of Bleeding

Bleeding is expected after trauma, but suspected bleeding disorder if spontaneous or excessive hemorrhage occurred from multiple or uninjured sites into deep tissues and joints or delayed bleeding occurs (hour/days). Ask about previous bleeding after trauma, surgery, dentistry and about family history.

Congenital Disorder: due to coagulation factor defect. Seen mostly in male patients presenting with spontaneous bleeding, delayed and sustained bleeding or bleeding into deep tissues and joints following unremarkable injury. Also, possess past history of similar events.

Acquired Disorder: may be due to liver disease, uremia, drug use (aspirin, NSAIDs, warfarin, alcohol) or hematological malignancy.

Hypothermia – potentiates any bleeding.

Site of bleeding:

Platelet problem – mucocutaneous bleeding (epistaxis, GI, GU or heavy menstrual bleeding, bruising, purpura and petechial hemorrhage)

Coagulation factor defects – bleeding into joints and potential spaces (retroperitoneal bleeding)

Combined Abnormality – DIC (mucocutaneous bleeding+ bleeding into deep space)

Investigation

- FBC if available
- Platelet count
Thrombocytopenia: $PC < 100 \times 10^9/L$
Spontaneous bleeding: $PC < 20 \times 10^9/L$

Management: General Aspect

- Stop the obvious external catastrophic bleeding by using direct pressure and gauze application, raising the bleeding part above the heart level, bandaging and proximal artery compression in extremities bleedings.
- DRS-ABCDE approach
- Spontaneous or traumatic bleeding into the neck or pharynx may cause rapid airway compromise.
- Perform wound/ fracture management of patients with bleeding disorders but consider early referral for expert management.
- Always suspect intracranial hemorrhage in a patient with headache, neurological symptoms, or minor head trauma.
- Never give IM injection.
- Before prescribing a drug, always check for its possible interference for bleeding risk.
- Stop anticoagulants and any drug that interferes the clot formation.
- Patient with less severe bleeding require admission and observation.
- Give Vit K 10 mg IV for warfarin induced bleeding before the referral.
- Tranexamic acid 1g IV + NS 100ml may be helpful in major bleeding on anticoagulation.
- Refer to higher level care if the bleeding is not responding to treatment.

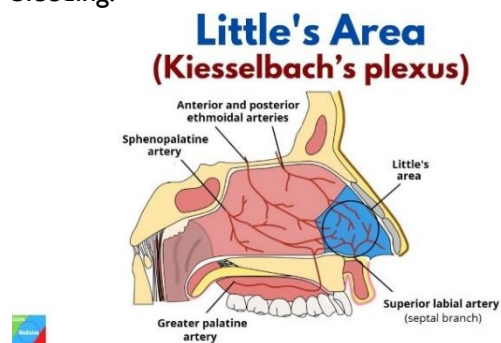
3. Medicine

• Epistaxis

Nasal bleeding may be idiopathic or follow a minor trauma (nose picking). Severe bleeding is seen with hypertension and coagulation disorders. Epistaxis may follow nasal fractures and major facial injury.

Site of Bleeding

Most bleeding is from anterior nasal septum in Little's area. A few patients have posterior bleeding.



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Initial Approach

Associated Facial Injury: Assess ABC and resuscitate as necessary. Treat hemorrhage shock according to trauma management algorithm.

No associated facial injury:

DRS-ABCDE Approach too. Check airway, pulse and BP.

Treat hypovolemia.

Check coagulation status of the patient on anticoagulants and manage accordingly.

Sit the patient up and instruct them to compress the fleshy part of their nose between their finger and thumb for 10 min.

If bleeding stops, the patient may be discharged after 30 min observation.

Continuing bleeding after pressure

Adults

- Apply a gauze string, 1.25 cm wide, which is soaked in lidocaine and paraffin with adrenaline 1 mg at the Little's area.
- Observe for 15 min and discharge with follow-up.
- Advice to avoidance of sniffing picking or blowing nose.
- Gauze can be removed after 24 hours.

Children

- Apply nasal antiseptic cream. But avoid if there is a history of peanut, soya or neomycin allergy.

Continuing Bleeding Despite Packing

- The bleeding site is likely to be posterior and can cause hypovolemic shock.
- DRS-ABCDE approach and insert two large venous cannulas, save blood for FBC, BTCT, Grouping and matching.
- Starts IV fluids.
- Posterior nasal bleeding usually responds to tamponade with Foley catheter.
- Remove the plug and insert a lubricated, uninflated Foley catheter through the bleeding nostril into the nasopharynx.
- Inflate the balloon with air and gently withdraw the catheter, thus tamponading the bleeding site.
- Tape the catheter to the cheek and re-insert the anterior plug.
- Refer to the facility with ENT specialist.

¹⁹ <https://www.youtube.com/watch?v=mb9QQD43Cml>: What is Little's area

3. Medicine

• Vertigo

Vertigo is the impression or illusion of movement when there is none.

Causes of Vertigo

Peripheral (ear) cause: Typically, sudden onset, severe, lasting for seconds or minutes (sometimes hours or days) and may be worsened by change in position and may be accompanied by hearing loss and tinnitus.

- Benign positional vertigo
- Labyrinthitis
- Otitis media
- Wax or foreign body in ear
- Acoustic neuroma
- Ménière's disease

Central (Brain) cause: Vertigo without auditory symptoms.

- Infection – meningitis, brain abscess
- Post-traumatic
- Subclavian steal syndrome
- Vertebrobasilar insufficiency
- Stroke/cerebellar hemorrhage

Management

The most important initial aspect of management for any case of vertigo is to rule out more serious conditions, particularly in differentiating a peripheral cause of vertigo from a central cause of vertigo.

Initial Management

- DRS-ABCDE approach.
- Perform careful examination of the neurological symptoms.
- Check ears, including inspection of tympanic membrane.
- Patients with severe symptoms with prolonged nausea/ vomiting may need IV fluid replacement.
- Antihistamine: Motion sickness medication such as Stemetil (5mg PO /12.5 mg IM) or Cinnarizine 25mg PO may be tried for symptoms but is not usually helpful. This can be given orally, IM.
- Diazepam 5-10 mg PO can be given in severe cases.
- Refer to the higher-level care center if the patient is not responding to the initial treatment.

4. Poisoning

• Approach to the poisoned patient

While managing the poisoning cases, the toxic agent will not be known and options for specific treatments are usually limited. Only a few antidotes are available for VTHC level. Therefore, a general approach to the poisoned patient and provision of supportive care is essential before the specific antidotes is commenced or during the transfer to definitive care centers. Similarly, to the emergency care approach, following the ABCDE sequence with additional consideration of the scene condition and information-gathering practices becomes the mainstay of patient assessment and management. Before seeing the patient, it is important to consider the safety issue. Self-safety with mask, goggles, protective gloves and apron should be carried out to protect from contamination. Then scene safety and survivor safety follow. Careful inspection of the scene will help you in developing the possible clue.

A- Airway (+ C-spine) A patent airway should be established and maintained at all times. Choice of techniques may vary according to the patient's level of consciousness and the risk of vomiting, many poisoned patients are prone to vomiting. Therefore, nurse the patient with recovery position and a working suction machine must be available.

B- Breathing (+ Oxygen) High flow oxygen should be administered and respiratory support with Bag-Valve-Mask may be required in some occasion.

C-Circulation IV Access Vital Sign IV access should be obtained in all cases. But this must not delay transfer of the critical patient. If there is no sign of arrhythmia or heart failure, judicious administration of IV Fluids can be used to raise the blood pressure. Monitor PR, BP and SPO₂ and ECG if available.

D-Disability Assessment of the pupils may provide vital information.
Check AVPU Assessment of AVPU response will determine the depth of reduction of conscious level
Check Pupils

Pupillary Sign
Dilated Pupils
<ul style="list-style-type: none"> • Atropine • Tricyclic antidepressant • Cocaine • Amphetamine • Phenothiazine
Constricted pupils
<ul style="list-style-type: none"> • Opiates (pin-point pupils) • Organophosphates • Nerve agent poisoning

Check Blood Glucose.

E-Exposure Exclude or identified injuries due to the overdose or alcohol.
 Look for: empty packaging, needle marks on IV injection, sores around the mouth (chemical ingestion)
 Complete exposure of the patient should be avoided. Searching for the clue shouldn't deter the transfer of the patient.

Further information about the agent

- Timing/ Duration?
- Amount (pill bottles and strips)?
- Route?
- Single or multiple agents?
- Ingestion: single loading dose or multiple staggering dose?
- Underlying medical condition?
- Mental health status: history of similar events?
- Alcohol and any recreational drug use?
- Last meal?
- Scene situation (suicide note)?

Exclude

- Hypoxia, Hypoglycemia
- Stroke, Post-ictal state, SAH
- Head injury, Hemorrhagic shock

4. Poisoning

• Supportive Care

With the ABCDE approach, life-threatening conditions of the patient has been evaluated and corrected. However, there are some specific conditions related to certain types of agents and supportive management will be discuss below.

Hypotension

Agents	Management
<ul style="list-style-type: none"> Relative hypovolemia Arrhythmia Cardio depressive drugs 	Treat according to the cause Foot end raise 0.9% NS 500 ml if BP <90 mmHg Too much fluid can cause pulmonary oedema Monitoring and refer

Cardiac Arrhythmias (Rare)

Agents	Management
<ul style="list-style-type: none"> TCA β-blocker Digoxin Bronchodilators Verapamil Amphetamine 	Correct hypoxia Assisted ventilation Refer to higher level care center for further management

Convulsion (Fits)

Danger of hypoxia and acidosis can precipitate cardiac arrest.

Agents	Management
<ul style="list-style-type: none"> TCA Mefenamic acid Theophylline 	Correct hypoxia Correct hypoglycemia Brief single fits don't require anticonvulsant If repeated and prolonged, IV or PR Diazepam 10 mg can be given Refer to higher level care center for further management

Hypothermia

Agents	Management
<ul style="list-style-type: none"> Barbiturates phenothiazine clomethiazole 	Check Rectal T* with low reading thermometer Insulation Passive rewarming Refer to higher level care center for further management

Hyperthermia (may associated with rhabdomyolysis and convulsion)

Agents	Management
<ul style="list-style-type: none"> Amphetamine Cocaine Ecstasy Theophylline MAOIs 	Active cooling Chlorpromazine may be helpful Refer to higher level care center for further management

Hypoventilation

Agents	Management
<ul style="list-style-type: none"> Opiate Alcohol Diazepam 	Assisted ventilation Refer to higher level care center for further management

Complication of Immobility

Prolonged immobility risk pressure areas. Treat blisters like minor burns. Immobility may cause rhabdomyolysis, nerve palsies and compartment syndrome. Refer to orthopedic care facility is recommended.

Urinary Retention

Common in coma, with tricyclic poisoning. Suprapubic pressure for reflex bladder emptying. Catheterization may be needed.

4. Poisoning

• Reducing absorption of Poison

There are several methods aiming to reduce absorption of a poison, but none can be recommended routinely. DRS-ABCDE approach is the mainstay of treatment and other measures are considered once the patient has been stabilized.

Gastric Lavage

Now almost only of historical interest. Gastric lavage (for adult) involves insertion of a large orogastric tube (36 or 40 FG), then after clinically confirming the position, pouring 300 ml of tepid water down the tube, then siphoning out until the effluent is clear.

This does not empty the stomach of solids and may force gastric contents through the pylorus into the small bowel. It may cause hypoxia, aspiration pneumonia, and occasionally esophageal perforation. Gastric lavage >1 hour after an overdose is ineffective in reduction of absorption.

Induced Emesis

Never use emetics. Ipecacuanha (ipecac) was once used frequently, but there is no indication for its use. Salt solution may cause fatal hyponatremia and must never be used as emetic.

Activated Charcoal (AC)

Give activated charcoal within 1 hour of poison ingestion and it reduces the absorption of the therapeutic dose of many drugs. But in case of overdose, the efficacy of AC is uncertain. AC reduce the half-life of some drugs (e.g Digoxin). However, AC is messy, unpleasant to take and often cause vomiting. Aspiration into the lung can result in fatal pneumonitis. May cause severe constipation if given in repeated dose.

AC is not effective in iron, lithium, boric acid, cyanide, ethanol, ethylene glycol, methanol, organophosphate, petroleum distillates, strong acids and alkalis. AC is most likely to be useful for poisons which are toxic in small quantities (TCA and theophylline)

If a dangerous overdose is happened in previous 1 hour, give AC (PO or via nasogastric tube: adult 50 g; children 1g/kg max 50 g). Charcoal may be effective for > 1 hour after ingestion of sustained release formulated drugs or drugs that delay gastric emptying (TCA, opioids). Seek senior and expert advice before giving activated charcoal in repeated dose. It may be helpful in poisoning of the following drugs by reducing absorption: carbamazepine, dapsone, digoxin, quinine, salicylate etc.

Whole bowel irrigation

Whole bowel irrigation is rarely needed and should only be used on expert advice. The aim of whole bowel irrigation is to empty the bowel rapidly of solid contents by giving fluid PO or down an NG tube until the rectal effluent becomes clear. The value of this is uncertain. May be helpful for sustained release drugs which cannot be absorbed by AC.

Bowel cleaning solution of propylene glycol and electrolytes are used in whole bowel irrigation-2L/hour in adults, 500 ml/hr in small children for up to 6 hours. Do not use normal saline it may cause fluid overload and hypokalemia. Nausea, vomiting, abdominal pain and electrolyte imbalance may occur.

4. Poisoning

• Symptom Complex (Toxidrome)²⁰

It is not possible to diagnose a poisoning in first seen and giving specific antidote at VTHCs. However, while providing initial stabilization and supportive care, management based on a consideration of symptom complex or toxidrome approach is helpful in differentiating the most possible poisoning.

Symptoms	Sign
Opioids	
<ul style="list-style-type: none"> • Confusion 	<ul style="list-style-type: none"> • Constricted (pinpoint) pupils • Response to naloxone • Reduced conscious level • Respiratory depression • Hypotension
Sympathomimetic: Amphetamines, Aminophylline, Cocaine	
<ul style="list-style-type: none"> • Agitation, excitation • Sweating • Chest pain 	<ul style="list-style-type: none"> • Hyperthermia • Hypertension • Hyperreflexia • Tachycardia • Dilated pupils • Fits
Anticholinergics: Atropine, Antidepressants, TCA, Antihistamine	
<ul style="list-style-type: none"> • Lethargy, Confusion • Dry Mouth • Dry Skin • Dilated Pupils • Blurred Vision • Acute urinary retention • Flushing • Constipation 	<ul style="list-style-type: none"> • Delirium • Fits • Hallucination • Ataxia • Cardio-respiratory failure • Abdominal distension • Hyperthermia • Dilated pupils • Hypertension

Symptoms	Sign
Anticholinergics: Atropine, Antidepressants, TCA, Antihistamine	
<ul style="list-style-type: none"> • Lethargy, Confusion • Dry Mouth • Dry Skin • Dilated Pupils • Blurred Vision • Acute urinary retention • Flushing • Constipation 	<ul style="list-style-type: none"> • Delirium • Fits • Hallucination • Ataxia • Cardio-respiratory failure • Abdominal distension • Hyperthermia • Dilated pupils • Hypertension
Cholinergic: Organophosphates, Nerve agents (DUMBBLES)	
<ul style="list-style-type: none"> • Diarrhea • Urinary incontinence • Muscle cramps, paralysis • Blurred Vision, Bronchial Secretions • Lacrimation • Emesis-vomiting • Sweating, Salivation 	<ul style="list-style-type: none"> • Tachycardia • Hypo/hypertension • Respiratory failure • Constricted pupils • Fasciculations • Ataxia • Fits • Coma • Bradycardia
Benzodiazepine	
<ul style="list-style-type: none"> • Drowsiness 	<ul style="list-style-type: none"> • Coma • Respiratory Depression
Serotonergic symptoms and sign are not mentioned in this book.	

²⁰ Table from Oxford Handbook of Prehospital Care p.376

4. Poisoning

- Antidotes

Although VTHCs have limitations for availability of antidotes, the table of specific antidotes will be helpful in clinical decision-making for appropriate referral where the drug is available.

Commonly Available Antidotes		
Poison	Antidotes	Initial Adult Dose
Benzodiazepines	Flumazenil	
β Blockers	Atropine Glucagon	Up to 3 mg 2-10mg
Calcium Channel Blockers	Calcium gluconate	10 ml repeated as necessary
Insulin/ OHAs	Glucose	IV Glucose 10% solution 50 ml, repeated at 1-2 min intervals until the patients is fully conscious of 250 ml 25 g has been given.
	Glucagon	1mg IM
Opiates	Naloxone	400-800mcg repeated as necessary
Organophosphates	Atropine	2 mg repeated as necessary
Tricyclic Antidepressant	Sodium bicarbonate	1-3 mmol/kg
Carbon monoxide	Oxygen	High-flow oxygen supplement
Digoxin	Digoxin antibodies	
Methanol	Ethanol	40% ethanol, 2.5 ml/kg PO
Paracetamol	Acetylcysteine	
Warfarin	Vitamin K	10 mg IV
Snakebite	Specific anti-snake venom	

4. Poisoning

• Opioid Poisoning and Benzodiazepine Poisoning

The opioids include morphine, diamorphine, pethidine, codeine and methadone. Opioids contain analgesics, cough suppressants and anti-diarrheal agents. Acute opioid poisoning often occurs in recreational drug users. Consider opioid poisoning in patient presenting with coma of unknown etiology. Naloxone is a specific antagonist for opioids and reverses coma and respiratory depression if given in sufficient dosage.

Clinical Features

- Triad of coma, respiratory depression and pinpoint pupils
- Cyanosis, apnoea, convulsion and hypotension may occur
- Effects of opioids are potentiated by alcohol
- Non-cardiogenic pulmonary oedema may result from injecting heroin
- Delayed toxicity may occur with slow-release formulation, methadone.

Treatment

- DRS-ABCDE approach according to the poisoning management protocol. Clear and maintain the airway. Ventilate with BVM and O₂ if breathing is inadequate.
- If available, give IV naloxone 0.4mg IV as an initial dose followed by further dose of 0.8mg after 60s if no response. Aim is to reverse respiratory depression not to restore full consciousness.
- For children give 100 mcg/kg (IV, IM, IN) up to 2 mg, repeated as necessary. Intranasal naloxone, given by dripping or spraying the IV solution into the nose over 60s.
- Naloxone has a much shorter duration of action than most opioids so coma and respiratory depression often recur when naloxone wears off.
- Refer to hospital with adequate respiratory support.

Benzodiazepines (diazepam, midazolam) rarely cause serious poisoning when taken alone in overdose. However, they potentiate other CNS depressants (e.g., alcohol, tricyclics, and barbiturates).

Many benzodiazepines have long-acting metabolites, which may affect driving and other motor skills for several days.

Flumazenil is a specific benzodiazepine antagonist. Flumazenil can cause convulsions and cardiac arrhythmias, and may precipitate withdrawal syndromes in a patient with benzodiazepine dependency.

Clinical Features

- Drowsiness, dizziness, ataxia and dysarthria.
- Rarely, coma, respiratory depression and mild hypotension.

Treatment

- DRS-ABCDE approach according to the poisoning management protocol. Clear and maintain the airway. Ventilate with BVM and O₂ if breathing is inadequate.
- Provide supportive care.
- Consider giving activated charcoal if the patient has taken a potentially toxic dose within the past 1 hour.
- If available, Flumazenil can be given as an antidote to improve ventilation. It reverses the effects of benzodiazepine within 1 min but has a short duration of action (<1 hour). Therefore, toxic effects may recur.
- Continue monitoring vital sign.
- Refer to hospital with adequate respiratory support.

4. Poisoning

• Ethanol Poisoning and Methanol Poisoning

Ethanol Intoxication

Alcohol initially causes disinhibition and later ataxia, dizziness, dysarthria and drowsiness. It also potentiates the CNS depressant effects of many drugs. Characteristic odour of alcoholic beverages and abnormal eye movement may be present.

Never assume that reduced GCS due to alcohol until other causes have been excluded (especially hypoglycemia, head injury, post-ictal state, meningitis, encephalitis, hepatic encephalopathy and intoxication of other drugs).

Severe Poisoning

- May be comatose with respiratory depression, hypotension, hypothermia, and metabolic acidosis
- Hypoglycemia is a particular problem
- Death may result from respiratory failure or aspiration of vomit.
- In adult, fatal dose of ethanol alone is about 300-500 ml of absolute alcohol

Management

- DRS-ABCDE approach. Clear and maintain the airway and adequate ventilation. Nurse in the recovery position.
- Monitor PR, RR, BP, SPO₂.
- Check blood glucose every 1-2 hours in severe poisoning.
- Gastric lavage, activated charcoal are ineffective in ethanol intoxication.
- Position change 2 hourly for comatose patient.
- Look for signs of injury, especially head injury, SAH as well as other co-ingested agents.
- Refer to higher-level care center if there is any problem in maintaining the A, B, C or not responding to the initial treatment.

Methanol Poisoning

Methanol Toxicity is due to its metabolites formaldehyde and formic acid. Ingestion of 10 ml of pure methanol may cause blindness, and 30 ml is fatal. Blindness is due to optic nerve damage. Methylated Spirits contain toxicologically insignificant amounts of methanol – toxicity is entirely due to ethanol.

Clinical Features

- Initially mild transient drowsiness.
- Serious toxicity develops after a latent period of 12-24 hours with vomiting, abdominal pain, headache, dizziness, blurring of vision, drowsiness and coma.
- There is severe metabolic acidosis, hyperglycemia and increased serum amylase.

Treatment

- DRS-ABCDE approach.
- Consider gastric lavage if <1 hour since ingestion. Do not give activated charcoal.
- Monitor PR, RR, BP, SPO₂.
- Check blood glucose
- Provide supportive care. Observe for at least 6 hours after ingestion, even if asymptomatic.
- Loading dose of Ethanol PO as whisky, gin or vodka (40% ethanol, 2.5 ml/kg PO) is considerable.
- Consider sodium bicarbonate to correct metabolic acidosis.
- Refer to higher level care center in severe cases of patients not responding to the initial treatment.

4. Poisoning

• Organophosphate Poisoning and Paraquat Poisoning

Organophosphates

Organophosphates is common poisoning in developing countries. They are widely used as insecticides. Organophosphates are absorbed through the skin, air way and gut and causing accumulation of acetylcholine at the nerve endings and neuromuscular junctions. Agents includes insecticides, nerve gas agents and carbamates. The speed of onset, severity and duration of toxicity may vary between different compounds.

Clinical Features

- Patient may have typical odour of insecticides
- Early features: anxiety, restlessness, tiredness, headache, nausea, vomiting, abdominal colic, diarrhea, sweating, salivation and constricted pupils. Muscle weakness and fasciculation may develop.
- Severe poisoning: widespread paralysis with respiratory failure, pulmonary oedema, profuse bronchial secretion, bronchospasm and convulsion
- Occasionally delayed effect of poisoning develops 1-4 days after acute poisoning. Peripheral neuropathy may develop after 2 weeks, usually involving legs.

Management

- Ensure all staff wearing protective clothing to avoid getting contaminated.
- DRS-ABCDE approach. Clear and maintain the airway and adequate ventilation. Give O₂ as required. Provide supportive as needed.
- Monitor PR, RR, BP, SPO₂. Obtain IV access.
- IV Diazepam 10 mg to treat agitation and control convulsion.
- If there is profuse bronchial secretions or bronchospasm, give IV atropine (adult 2 mg, child 0.02 mg/kg) and repeat every 5 min with the dose doubled each time until the chest sound clear, SBP >80 mmHg, PR > 80.
- Plan for early referral to hospital.

Paraquat Poisoning

Paraquat is a weed killer which is very toxic if ingested- death is likely after 10 ml of liquid paraquat ingestion.

Clinical Features

- Paraquat is corrosive and causes immediate burning pain in the mouth and throat, nausea and vomiting followed by abdominal pain and diarrhea.
- Large amount result in rapid deterioration, with shock, pulmonary oedema, metabolic acidosis, coma, convulsion and death within 24 hours.
- Paraquat causes lung damage, pulmonary oedema and fibrosis. Breathlessness and cyanosis develop and death from hypoxia occurs 7-14 days after poisoning.

Management

- Avoid supplemental oxygen as it may increase lungs damage.
- DRS-ABCDE approach.
- Avoid gastric lavage due to the risk of esophageal perforation.
- Consider activated charcoal is the duration is < 1 hour.
- Monitor vital signs.
- Refer to hospital.

4. Poisoning

• Ecstasy /Amphetamine Poisoning and Mushroom Poisoning

Ecstasy/ Amphetamine Poisoning

Ecstasy and Amphetamine are stimulant recreational drugs. Ecstasy is taken PO as tablet or powder while amphetamine can be swallowed, snorted, smoked or injected. They cause release of stimulant hormones resulting in abnormal thirst, excessive water intake. This may result in body's water and electrolytes imbalance, cerebral oedema.

Clinical Features

- Euphoria, agitation, sweating, dilated pupil, ataxia, teeth grinding, headache, tachycardia, hypertension
- Severe poisoning can cause hyperpyrexia, muscle rigidity, rhabdomyolysis, convulsion, coma, arrhythmias and renal failure, hepatic failure, cerebral hemorrhage and DIC.

Management

- DRS-ABCDE approach. Clear and maintain the airway and adequate ventilation. Give O₂ as required. Provide supportive as needed.
- Consider activated charcoal if < 1 hour since ingestion.
- Monitor PR, RR, BP, SPO₂. ECG if available.
- Observe asymptomatic patients for at least 4 hours.
- Control agitation with PO or IV Diazepam.
- IV Diazepam 10 mg to treat agitation and control convulsion.
- Restrict water intake for mild hyponatremia whereas IV 0.9% NS may be needed for severe cases.
- Cool as for heat stroke if hyperpyrexia.
- Severe cases or complicated patients should be referred to higher level care center.

Mushroom Poisoning

Although serious poisoning from mushrooms is rare. Most deaths are due to *Amanita phalloides* (Death cap mushroom).

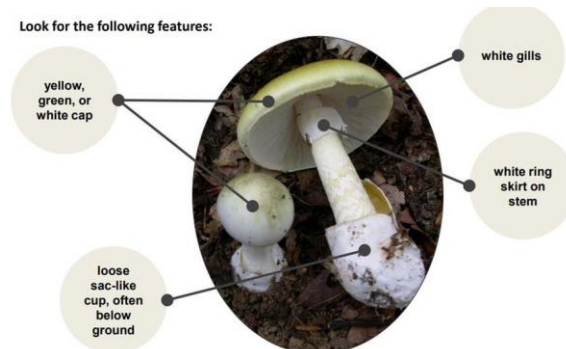
Clinical Features

- Mushrooms found on gardens may cause vomiting and occasionally hallucinations usually within 2 hours of ingestion. Mushrooms which cause symptoms within 6 hours are unlikely to be seriously toxic.
- *Amanita Phalloides* poisoning cause vomiting and profuse watery diarrhea after latent period of 6-12 hour, followed by hepatic and renal failure.
- Ask about the varieties of mushrooms eaten, where they were cooked and whether alcohol was taken.

Management

- DRS-ABCDE approach.
- For most mushrooms, only symptomatic treatment is required such as IV fluids, anti-emetics, etc.
- Activated charcoal may reduce absorption if given within 1 hour.
- Monitor vital signs.
- Patients not responding to the initial treatments should be referred to higher level care centers.

Look for the following features:



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²¹ <https://www.iheartradio.ca/cfax-1070/news/death-cap-mushrooms-fruiting-early-in-victoria-region-1.4130801>

4. Poisoning

• Snake Bite Management

There are various types of snakes. Bringing the snake along with the patient may be helpful. It is important to identify the type of venom whether hemotoxin, neurotoxin or mixed. Viper venom affects mostly haematological system whereas cobra bits are related to neurological presentations due to its neurotoxic effects. Sea snakes produce both characteristics of venoms and rhabdomyolysis is seen as its typical envenomation.

First aid care is important. Early referral for anti-snake venom is the mainstay of treatment.

Clinical Features

- Local Feature: Pain, paresthesia, swelling, tissue necrosis and fang marks and regional lymph adenopathy may present. Ask for the type of snake and enquire about commonly found snakes in the region.
- Systemic Features: nausea, vomiting, diarrhea, abdominal pain, sweating and fever, tachycardia, hypotension and loss of consciousness may be seen.
- Specific feature:
 - Viper – Hemolysis, Acute renal failure, DIC
 - Cobra – Ptosis, respiratory depression
 - Sea snakes – Dark urine, rhabdomyolysis

Management

- Reassurance
- DRS-ABCDE approach. Clear and maintain the airway and adequate ventilation. Give O₂ as required.
- Check wound and fang marks. Look for features of local and systemic envenomation features.
- Do not suck or incise the wound, cleaning and applying a clean gauze is adequate.
- Immobilize the affected limb by splinting.
- Do not apply tourniquet.
- Monitor PR, RR, BP, SPO₂.

- Treat anaphylactoid symptoms with antihistamines, IV fluids.
- Draw blood and do BT, CT and document properly.
- Give ATT.
- Give simple analgesia.
- Refer to hospital as soon as possible. Monitor PR, BP, RR, SPO₂, UO, muscle weakness throughout the route of the assisted ventilation with VBM when necessary.

4. Poisoning

• Gastroenteritis/ Food Poisoning

Diarrhea

- Usual presenting symptoms of gastroenteritis
- But also a feature of many other condition such as otitis media, appendicitis or after antibiotics treatment.

Diarrhea and Vomiting

- May be caused by many types of bacteria and viruses and also by some toxins and poisons.
- Usually results from contaminated food especially meat, milk, or egg products which have been cooked inadequately or left in warm conditions.
- Some infection spread by fecal contamination of water whereas rota virus infection in children may be transmitted by the respiratory route.
- Severe illness with bloody diarrhea, hemolysis and renal failure may result from *E.coli* (VTEC 0157).

Food Poisoning

- A notifiable disease. Immediate notification is mandatory if an outbreak is suspect.
- The food eaten, symptoms and incubation period may suggest the organism and toxin involved.
- Patients presented with diarrhea are flagged up as posing a potential risk of infection, they can be isolated appropriately to protect other patient from cross-infection.

History

- Enquire about the duration of symptoms and the frequency, description of stool and vomit, including the presence of blood.
- Document other symptoms: abdominal pain, fever, food and fluid ingested, and any drugs taken.
- Enquire about affected contacts, travel and occupation.

Examination and Investigation

- Check vital sign, PR, RR, BP, SPO₂ and T*.
- Examine for abdominal tenderness and other sign of infection.
- Assess the level of dehydration (Mild:<5%? Moderate: 5-10? Severe: >10%). Evidence of severe dehydration includes: weakness, confusion, shock and reduced urine output.
- Investigation for food poisoning may not be feasible for VTHC.

Management

- Isolate and take precaution to prevent spread of infection to staff or another patient.
- DRS-ABCDE approach.
- Monitor PR, BP, RR, UO.
- IV fluids to those patients with hypovolemic shock and/or severely dehydrated, reassess, and admit at the clinic and refer to hospitals if the patient is not responding well and having those conditions like significant comorbidities, fever, bloody diarrhea, abdominal pain, diarrhea for >10 days and renal failure.
- Most illness are self-limiting and do not require admission but some patient may need special attention as mentioned above. Aim to discharge less severe cases with oral fluids, ORS and advice. Advise normal diet after symptom settle. Most patient can return to work 48 hours after first normal stool.
- Antiemetics (Metoclopramide 10 mg IM) may be helpful in adults. Anti-diarrheal drugs (loperamide) are contraindicated in children and rarely needed in adults (avoid in bloody diarrhea).
- Patients with amoebiasis, giardiasis, shigella infection may need antibiotics. Ciprofloxacin 500 mg BD PO for 3 days can be given. Protozoal infection may respond to PO metronidazole 200 mg tid.

4. Poisoning

- Gastroenteritis/ Food Poisoning

Common Food Poisoning Characteristics²²

Cause	Incubation	Food	Symptoms
Staphylococcus aureus	1-6 hour	Meat, milk	D, V, P, Shock
Bacillus cereus	1-16 hour	Rice	D, V, P
Salmonella	6-48 hour	Meat, eggs	D, V, P
Escherichia coli	1-2 days	Any food	D, V, P
E. coli VTEC O157	1-2 days	Meat, milk	D, V, P
Campylobacter	1-3 days	Meat, milk	Fever, P, D
Shigella	1-3 days	Any food	Bloody D, V, Fever
Cholera	12 hours to 6 days	Water, seafood	D (watery), shock
Rota virus	1-7 days		D, V, Fever, cough
Botulism	12-96 hours	Preserved food	V, Paralysis
Histamine poisoning (scombrototoxin)	fish <1 hour	Fish	Flushing, headache, D, V, P
Ciguatera fish poisoning	1-6 hours (rarely 30 hour)	Fish from tropical coral reef	D, V, P, paraesthesia. Muscle weakness,
Paralytic poisoning	shellfish 30 min to 10 hours	Shellfish	Dizziness, paresthesia, weakness, respiratory failure.
Chemicals	< 2 hours	Food, water	Various
Mushrooms	< 24 hours	Mushrooms	D, V, P hallucinations

D-diarrhea, V-vomiting, P-abdominal pain

²² Table from Oxford Handbook of Emergency Medicine, p-237

5. Infectious Diseases

• Tetanus

Acute often fatal disease common in Asia. Spores of the Gram +ve organism *Clostridium tetani* (common in soil and animal faeces) contaminated in wound, which may be trivial. The spores germinate in anaerobic conditions, producing tetanospasmin that blocks neurons in CNS and cause muscle spasm and rigidity.

- Incubation period 4-14 days (1 day to 3 months)
- Tetanus occasionally occurs after surgery or IM injections.

Clinical Features

- Stiffness of the masseter muscle – difficulty in opening the mouth, trismus, lockjaw
- Characteristic stiffness of facial and skeletal muscle and muscles of swelling: eyes are partly closed, lips pursed and stretched (risus sardonicus).
- Spasm of the chest muscle: breathing difficulties.
- Abdominal rigidity, stiffness of limbs and forced extension of the back (opisthotonus)
- In severe cases, prolonged muscle spasm affects breathing and swallowing.
- Pyrexia is common.
- Autonomic disturbances: profuse sweating, tachycardia/ bradycardia, hypertension/ hypotension and cardiac arrhythmias.

Differential Diagnosis

- Drug-induced abnormal muscle spasm.
- Quinsy, diphtheria, dental abscess
- Meningitis, Rabies,

Prognosis

- Depends on severity of disease and quality of care.
- Short incubation (<4 days) and rapid progression suggest severe disease, with a high mortality.
- With expert intensive care, mortality in adult is < 10%, but neonatal tetanus is often fatal.

Management

- Isolate and take precautions to prevent spread of infection and prevent muscle spasms. Keep in calm and quiet place.
- DRS-ABCDE approach. Obtain senior help.
- Monitor PR, BP, RR, UO.
- IV fluids to those patients with hypovolemic shock and/or severely dehydrated due to poor intake.
- Control spasm with diazepam.
- Clean and debride wound.
- Give IV Penicillin, Metronidazole.
- Human tetanus immunoglobulin is considerable.
- Refer to higher-level care center for further management.

5. Infectious Diseases

• Enteric Fever (Typhoid and Paratyphoid)

- Caused by Salmonella typhi and S. paratyphi A, B, or C.
- Occur throughout the world, especially where hygiene is inadequate.
- Spread by contamination of food, water by urine faeces from a patient or an asymptomatic carrier.
- Typhoid may occur despite immunization.
- Incubation period: usually 7-14 days but may range from 3-60 days.

Clinical Features

- Common presentations are
 - Headache
 - High continuous fever
 - Dry cough
 - Abdominal discomfort and anorexia
 - Constipation is common, but diarrhea may occur.
 - Confusion and hallucination in later stages.
 - Septic shock may occur in later stages.
- Initially physical examination is unremarkable except for fever.
- There may be relative bradycardia (ie. less than the usual 10 beats/min increase in PR per * Celsius of fever).
- Splenomegaly and abdominal tenderness occur, but no lymphadenopathy.
- Rose spots, pink macular spots on the lower chest or upper abdomen which blanch on pressure, may be seen.
- Signs of pneumonia or dehydration may be present.
- Intestinal perforation or hemorrhage may occur.

Investigation

- Exclusion of malaria, dengue and other causes of fever may be available for VTHCs.

Management

- Isolate and barrier nurse.
- DRS-ABCDE approach. Obtain senior help.
- Monitor PR, BP, RR, UO, SPO₂.
- Judicious use of IV fluids to those patients with shock and/or dehydration.
- Antibiotics: Ciprofloxacin or Cefotaxime is the first line antibiotics.
- Look for shock and bowel perforations.
- Refer to higher level care center for further management in complicated patients.

5. Infectious Diseases

• Malaria

- Very common in the tropics and subtropical regions.
- A parasitic infection transmitted by mosquito bite.
- Species: *Plasmodium falciparum*, *P. vivax*, *P. malariae*, *P. ovale* and *P. knowlesi*.
- Serious complication (cerebral malaria) occurs with *P. falciparum*.
- Check for malaria in any febrile illness in people living in malaria-endemic areas or people who have travelled to malaria-endemic areas within 2 months.
- Common misdiagnosis are influenza and viral hepatitis.
- Incubation period: usually 7-14 days for *P. falciparum*, 12-40 days for other types of malaria but occasionally up to > 1 year especially in *P. vivax* infection.

Clinical Features

- Common presentations are
 - Malaise
 - fatigue
 - headache followed by
 - Paroxysms (8-12 hrs.) of rigor, vomiting and severe sweating.
 - Periodic Fever: 48 hours in *P. ovale* or *P. vivax* and 72 hours in *P. malariae*
- Hemolytic anemia, jaundice and splenomegaly may occur.
- Cerebral malaria present with coma, fits, focal neurological signs.
- Complications: Diarrhea, cardiac failure, pulmonary oedema, metabolic acidosis, shock and renal failure may occur. Deterioration can be rapid.

Investigation

- ICT for malaria
- Send thick and thin blood film for malaria if available.
- Check RBS.
- SPO₂
- Hb%
- Urine dipstix for blood

Management

- Less severe cases can be managed as outpatient treatment.
- For complicated cases DRS-ABCDE approach is advisable. Obtain senior help.
- Monitor PR, BP, RR, UO, SPO₂.
- Oxygen supplement is required in acidotic or patients with pulmonary oedema.
- Judicious use of IV fluids to those patients with shock and/or dehydration. Beware of fluid in pulmonary oedema.
- Do investigations for malaria test and other supportive care.
- Give antimalaria treatment according to the guidelines.
- Refer to higher level care center for further management of patients with complications.

5. Infectious Diseases

• COVID -19

- Although relatively mild illness for most, a small proportion develop serious illness. The development of COVID - 19 vaccine and immunization programs have covered most of the population and have been removed from global pandemic conditions, but the threat still remains. 22

Transmission and Incubation period

- Spread principally by close contact, especially by respiratory droplets and aerosols (coughing, sneezing, breathing), or from contaminated surface.

Clinical Features

- One third of COVID-19 infections are asymptomatic.
- Fever, persistent cough, and breathlessness.
- Headache, myalgia, chest tightness, GI disturbance and loss of smell and taste in some patients.
- Patients who become seriously ill typically deteriorate 7-10 days after the onset of symptoms.
- They may have hypoxia on minimal exertion, high NEWS2 and features of respiratory failure.
- Some patients who survive initial infection go on to develop chronic symptoms lasting weeks or months. Symptoms include; fatigue, breathlessness, headache, palpitation, and anosmia.

The mortality rate increased in

- Old age
- Obese men with pre-existing DM, Hypertension, CVS and Respiratory disease.
- Asians

Investigation

- ICT for malaria
- COVID-19 RDT
- SPO₂

Management

- Manage according to local guidelines.
- Advice patient to put on a mask, protect staff by wearing appropriate PPE, goggles, long sleeve gown and gloves for high-risk procedures like suctioning, NG tube insertion.
- Consider discharge for non-seriously ill patient, NEWS2 of <3 and no hypoxia on minimal exertion (40 steps). Patients with pre-existing medical problems should be admitted and observed.
- Take upper respiratory swab for COVID-19.
- Monitor PR, RR, BP and SPO₂
- Provide Oxygen as required: target SPO₂ 94 - 98% (88-92% in COPD).
- For patients requiring oxygen supplements, give dexamethasone 6 mg orally or IV. (RBS monitoring is required)
- Give Paracetamol and oral fluids. Avoid IV fluids in breathless patients. If needed start with IV bolus of 0.9% NS.
- Give antibiotics if secondary bacterial infection is present.
- Severely dyspneic patients and those with low SPO₂ despite adequate oxygen supplements should be referred to hospital
- Do not start CPR unless all staff are wearing full PPE.

6. Environmental Emergencies

• Drowning and Near drowning

- **Drowning:** death by suffocation from submersion in any liquid. Drowning is a common cause of death in young people. 40% of drownings occur in children aged <4 years.
- Near drowning: Survived from submersion.

Pathophysiology (Relevant facts)

- Wet drowning: Significant aspiration of fluids into the lungs, impairing gas exchange and causing respiratory failure.
- Contamination: Water contaminated with chemical waste; detergents may cause further lung injury.
- Electrolytes: changes in serum electrolytes are usual but rarely immediately life-threatening.
- Gastric Fluid: Swallowing of fluids into the stomach, with gastric dilatation, vomiting and aspiration is common.
- Dry drowning: Persistent laryngospasm following the entry of small amount of water resulting in asphyxia, thick mucus and froth production and then anoxia and death.

Management

- DRS-ABCDE Approach.
- Look for associated injury, especially cervical spine injury.
- Maintain the airway. Remove regurgitated fluid/ debris by suction of the upper airway.
- Assist ventilation with the BVM if the patient is apnoeic or poor breathing. Give high-flow Oxygen supplement.
- Do CPR if the patient is in cardiac arrest. Give adrenaline according to CPR algorithm.
- Prevent hypothermia and remove all wet clothing.
- NG tube to relieve gastric dilatation.
- Do not use steroid.

- Antibiotics may be required if contaminated water is involved.
- Inhalation of mud/sand can cause not only obstruction but also pneumonitis.
- Early referral to the hospital is important.

Prognosis

- Poor: Extreme of age, severe acidosis, immersion for >5 min, coma
- Good: Alert patient, hypothermia, older children and adults, those who received CPR on scene.

6. Environmental Emergencies

• Heat Illness

Body temperature is usually kept at 36- 38°C. Hyperthermia occurs when the control mechanism is overwhelmed by factors affecting the control center individually or together. The young and the elderly are the at-risk groups. The most common condition is increased temperature with humidity, patients who had unaccustomed or prolonged muscular activity, grand mal fitting, athletes, marathon runners and armed forced recruits.

Predisposing Medical Factors

- Alcohol use or withdrawal (Delirium Tremens)
- Heart disease
- Condition that causes water and electrolyte loss: gastroenteritis
- Drugs: alcohol, diuretics, antihistamines, amphetamines, ecstasy, cocaine, antipsychotics

Types of Heat Illness

Heat Cramps

- Core temperature 37-39°C
- Cause: sweating during exercise and replacement of hypotonic fluid leads to Na⁺ deficiency.
- Symptoms: Brief muscle cramps after exertion. Mental function is normal. Body temperature control mechanism is still functioning.
- Treatment: Resting in cool place and drinking ORS solution may be helpful.

Heat Exhaustion

- Core Temperature is < 40* C
- Characterized by mixed water and sodium loss. Body's temperature control mechanism is still functioning.
- Symptoms and signs: weakness, fatigue, headache, vertigo, nausea and vomiting, postural dizziness and syncope. Seating and tachycardia are usually present.

• Treatment:

- Mild cases – remove from heat, simple cooling, rehydration with oral electrolyte solution
- Severe cases – May require IV fluids. IV 0.9% saline with 5% glucose can be given. Up to 4L of fluid may be required over 6-12 hours. Avoid over-rapid infusion which may cause pulmonary and/or cerebral oedema.

Heat Stroke

- Collapse during or after exercise. Core Temperature is >41°C. Outcome depends upon the height of temperature and duration of exposure.
- **Complications:** Cerebral oedema, muscle injury with the release of myoglobin, potassium and phosphate and acute renal failure, thrombocytopenia, leukocytosis, DIC.
- **Features:** Sweating may be present, but the skin surface may feel cool due to peripheral vasoconstriction.
- CNS: confusion, delirium, seizure, coma, dilated pupils. Tremor, muscle rigidity, abnormal posture and cerebellar dysfunction.
- CVS: tachycardia, hypotension, arrhythmias.
- Coagulopathy: purpura, conjunctiva hemorrhage, melaena, hematuria
- **Treatment:** Treat immediately. DRS-ABCDE approach. Give O₂ as necessary. Cooling techniques depend upon the available facilities. Tepid water spraying and blowing with a fan is effective way. Ice packs can be applied to axillae, groins, neck and scalp (avoid prolonged contact). Stop active cooling when core temperature <39°C.
- IV Fluids: give 50 ml of 10% glucose IV if RBS < 3mmol/L. Judicious use of IV fluid is recommended. IV 0.9% NS 1-1.5 L over 1-2 hr. Be careful about circulatory overload.
- Insert urinary catheter and monitor UO.
- Refer to hospital once the patient has been stabilized.

7. Surgical Emergencies

• Approach to abdominal pain

There are various causes of abdominal pain. It is important to identify the patient requiring resuscitation or urgent treatment. Conditions associated with hypovolemic shock or septic shock usually need resuscitation and timely referral.

History

- Detailed inquiries about pain: site, onset, character, radiation, shift, precipitating factors, associations, relieving factors, timing and severity
- Vomiting: Record anorexia, nausea, vomiting. Ask the nature of vomit (blood, bile). Vomiting that follows the onset of abdominal pain – Surgical cause whereas vomiting preceding pain is often non-surgical.
- Bowel disturbances: Ask about recent changes in bowel habits, any rectal bleeding?
- Other causes: find out the symptoms of urological, gynecological, respiratory and cardiovascular diseases.
- Past History: previous surgery and old medical records are helpful.

Examination

- Vital sign: PR, BP, RR, SPO₂, T*, GCS indicates the need for immediate intervention
- General Exam: Look for evidence of dehydration, jaundice, cardiovascular and respiratory systems.
- Abdomen: Look for distension, old scar, discoloration. Check hernial orifices, palpate gently for areas of tenderness and tenderness on percussion instead of rebound tenderness. Per form Per Rectum (PR) and Vaginal examination (PV) only if necessary.

Basic Investigations at VTHCs

- RBS to exclude DKA
- Urine dipstix to exclude urinary problems
- Blood grouping & Matching, BT, CT if available
- USG if technically and material feasible
- Plain X-ray abdomen (erect) and CXR erect film if available.
- ECG if available to exclude MI.

Treatment

- DRS-ABCDE approach. Seek senior help.
- Prompt resuscitation and provision of analgesia and appropriate referral are integral components.
- Patients who are very sick and/or hypotensive should be resuscitated with early IV fluids, full monitoring and appropriate antibiotics if sepsis is suspected.
- Refer to the facility which is capable of surgical care and observation if there is any uncertainty or doubt about the patient's condition.
- Abdominal pain getting better without any definite cause being identified can be diagnosed as non-specific abdominal pain and can be safely discharged.

Important Notes

- Steroids, NSAIDs or obesity may interfere with physical signs.
- Absence of fever doesn't exclude infection especially in very old, very ill, and immune-suppressed.
- Splenic rupture may occur after relatively trivial trauma in patient with hematological disorder.
- Consider gynecological causes of abdominal pain in any women of childbearing age. Always perform a pregnancy test.
- Unexplained abdominal pain in patients > 50 yrs may be caused by cancer.

7. Surgical Emergencies

• Causes of acute abdominal pain

Although there is a wide range of causes of abdominal pain. Remember that a patient is much more likely to have a common condition than a very rare condition.

Causes of acute abdominal pain

Surgical	Gynecological	Medical
<ul style="list-style-type: none"> • Non-specific abdominal pain • Acute appendicitis • Cholecystitis/biliary colic • Pancreatitis • Peptic ulcer disease • Large bowel perforation • Intestinal perforation • Ureteric calculi • Urinary retention • Testicular torsion • Intussusception • Cancer 	<ul style="list-style-type: none"> • Ectopic Pregnancy • Pelvic Inflammatory Disease • Rupture/ torsion of ovarian cyst • Endometriosis • Ovulation pain 	<ul style="list-style-type: none"> • MI • Pneumonia • Pulmonary Embolism • Acute hepatitis • DKA • UTI • Herpes zoster • Gastroenteritis

8. Management Principle in Eye Emergency

• Approach to eye problems

History

- Always take a full history of
- Which eye is affected/ or both?
- How quickly did the symptoms come on?
- Are there any flashing lights or floaters?
- How does it affect the patient's lifestyle?
- How about previous eye problems and treatments?
- Any past medical history and drug history?
- Family history of glaucoma?

Always measure visual acuity in anyone presenting with an eye problem.

Potentially serious eye problems include those with:

- Sudden visual loss
- Significant reduction in visual acuity
- Penetrating eye injuries
- Chemical burns on the eye

Examination

- **Visual acuity:** key to eye examination, use Snellen chart and read at 6m for each eye separately. Allow patient to use glasses if available, if not apply a pinhole.
VA is expressed as
6/6 – normal
6/60 – can read the top line at 6m
3/60 – can read the top line at 3m
Or
Handheld chart reading at 30 cm is an alternative
Counting fingers or detecting hand movement at 1m,
Or
Light perception
And note the best performance for each eye.
- **Pupils:** record pupil size, shape and light reflex.
- **Eye movement:** check full range of eye movement and any diplopia.
- **Visual field:** test eyes separately; temporal, nasal, upper and lower fields.

Notes on eye treatment

- Antibiotic ointment and drops: Apply to the lower fornix (between the lower eyelid and sclera) then ask the patient to keep the eye shut for 1-2 min. Ointments have the advantage over drops because it lasts longer.
- Chemical eye burns should be rinsed with copious amounts of water or normal saline.
- Superglued eyelids as well should be washed with warm water. The eye will open within 4 days.
- Early referral to eye specialist is integral.

Snellen Chart

FEET		METERS
$\frac{20}{200}$	O	61.00
$\frac{20}{100}$	X F	30.50
$\frac{20}{70}$	Z O H	21.34
$\frac{20}{50}$	L D A T	15.24
$\frac{20}{40}$	T A L O E	12.19
$\frac{20}{30}$	A L D O T F	9.14
$\frac{20}{25}$	O E H L T A D	7.62
$\frac{20}{20}$	L D O L D A T F	6.10
$\frac{20}{15}$	E C T L D A Z O H	4.57
$\frac{20}{10}$	Z O H L D O T F L D A	3.05

9. Mental Health Problems

• Aggressive Patient

A significant proportion of patients made aggressive behaviors towards the health staff. It is important to know how to manage those situations. Always beware of whether the underlying medical illness or condition causing the odd behavior or mental health illness.

Causes

Medical illness

- Alcohol/ illicit drugs
- Hypoglycemia
- Head injury
- Hypoxia
- Distended bladder
- Post-ictal confusion state
- Brain disease

Mental Health Illness

- Past history of violent behavior
- Schizophrenia or other psychosis
- Learning difficulties
- Personality disorder

Warning Signs

- Angry facial expression, posture
- Restlessness, overt irritation,
- Over arousal
- Prolonged eye contact
- Loud speech and changes in tone of voice
- Verbally threatening
- Blocking escape route

Safe handling of the situation

- Plan ahead: escape, help, medication
- Gather information
- Dealing with patient
 - Calm manner
 - Listen without interruption
 - Engage conversation
 - Speak slowly
 - Avoid excessive eye contact
 - Sit between patient and door
 - Do not turn your back on the patient
- Documentation is important.

Management of Physical Violence

- Safety of staff, other persons, relatives take priority.
- Some violent acts may require physical restraints.
- Physical restraint: use minimum degree of force, applied for the minimum length of time, prevent further aggression, require sufficient members. Restraint to limb should hold near to major joint, remove patients' shoes or boots. Do not deliberately inflict pain. Do not attempt to restrain unless sufficient helper is available. Monitor vital signs once restrained. Only reduce restraint once it is certain that the risk has decreased.
- Weapons: ask any weapon to be placed in neutral position rather than handed over.
- Oral tranquilization with PO Diazepam 5- 10 mg may be helpful.
- IM tranquilization: IM haloperidol 5 mg can be used unless patient has history of cardiovascular disease. Monitor vital signs after medication.
- IV tranquilization: only for senior staff; IV Diazepam 10 mg can be given in truly exceptional circumstances.
- Refer to hospital once the patient has been controlled.

9. Mental Health Problems

• Alcohol Withdrawal

Simple Alcohol Withdrawal

- Usually starting within 12 hours of stopping or reducing alcohol intake
- Features: anxiety, restlessness, tremor, insomnia, sweating, tachycardia and ataxia.
- Mild cases can be managed as outpatient or day-patient basis whereas moderate to severe cases including delirium tremens and seizures require admission and referral.
- Medication:
PO Diazepam 5-10 mg /day
PO Thiamine 50 – 100 mg/day

CIWA-Ar Scale²³

Clinical Institute Withdrawal Assessment for Alcohol – revised (CIWA-Ar) scale

Clinical Institute Withdrawal Assessment for Alcohol revised	
Symptoms	Range of scores
Nausea or vomiting	0 (no nausea, no vomiting) – 7 (constant nausea and/or vomiting)
Tremor	0 (no tremor) – 7 (severe tremors, even with arms not extended)
Paroxysmal sweats	0 (no sweat visible) – 7 (drenching sweats)
Anxiety	0 (no anxiety, at ease) – 7 (acute panic states)
Agitation	0 (normal activity) – 7 (constantly trashes about)
Tactile disturbances	0 (none) – 7 (continuous hallucinations)
Auditory disturbances	0 (not present) – 7 (continuous hallucinations)
Visual disturbances	0 (not present) – 7 (continuous hallucinations)
Headache	0 (not present) – 7 (extremely severe)
Orientation/clouding of sensorium	0 (orientated, can do serial additions) – 4 (Disorientated for place and/or person)

Score:

<8	Very mild withdrawal
8-14	Mild withdrawal
15-20	Moderate withdrawal
>20	Severe withdrawal

Delirium Tremens

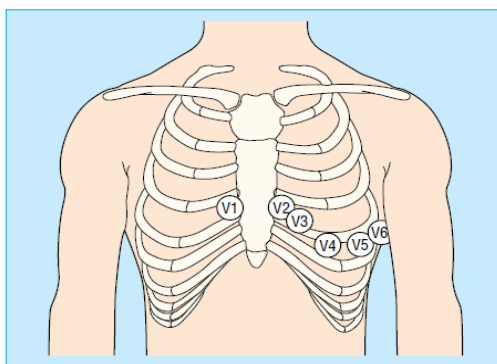
- Carries significant mortality
- Typically starts >48 hours after stopping drinking
- Features: tachycardia, hyperreflexia, hypertension, fever, visual or tactile hallucination, sinister delusion, disorientation, confusion.
- Death occurs from arrhythmias and alcohol-related cardiomyopathy, infection, seizure.
- Start with DRS-ABCDE approach. Give O₂ as required.
- Monitor PR, BP, RR, SPO₂, UO.
- Check blood glucose.
- IV Diazepam 10 mg can be used in very severe cases or alcohol withdrawal seizures. But note for RR and SPO₂.
- Detoxification with IV thiamine 100mg/day for one week can be given.
- Continue supportive care.
- Commence antibiotics if infection is suspected
- Early referral to hospital is important.
- IV tranquilization: only for senior staff; IV Diazepam 10 mg can be given in truly exceptional circumstances.
- Refer to hospital once the patient has been controlled.

²³ <https://primarycarenotebook.com/simplepage.cfm?ID=x2020100717362255460>

Annexes

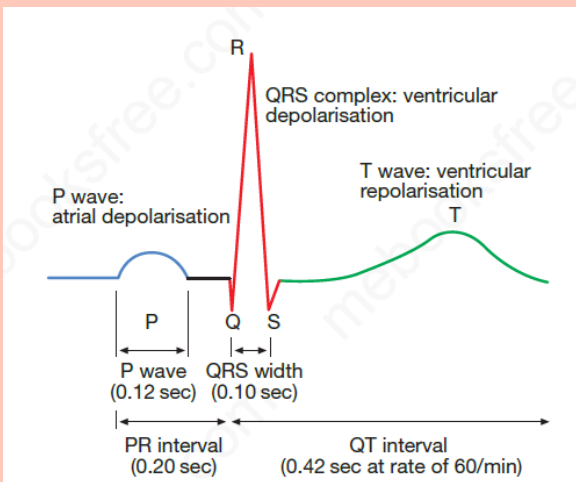
• Annex I: Important ECG Facts

ECG Chest Leads placing²⁴

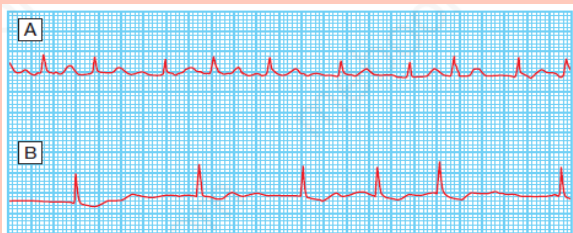


Position of the six chest electrodes for standard 12 lead electrocardiography. V1: right sternal edge, 4th intercostal space; V2: left sternal edge, 4th intercostal space; V3: between V2 and V4; V4: mid-clavicular line, 5th space; V5: anterior axillary line, horizontally in line with V4; V6: mid-axillary line, horizontally in line with V4

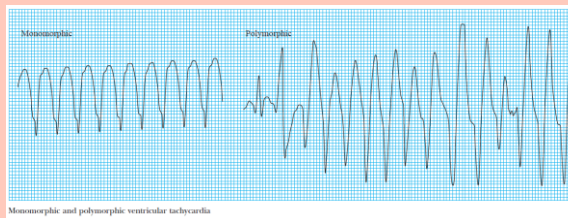
ECG wave sample²⁵



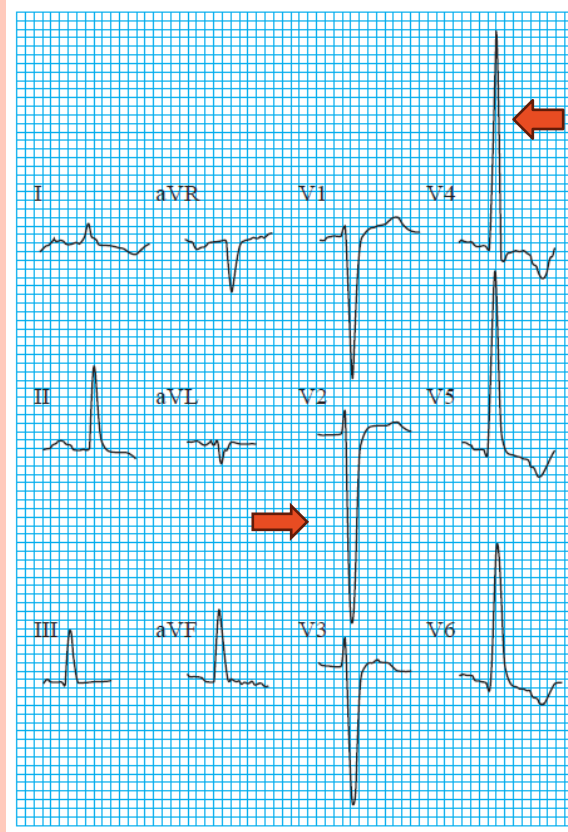
Atrial Fibrillation



Ventricular Tachycardia



Left Ventricular Hypertrophy (Note Deep S wave in V1-3 and Tall R wave in V4-6)

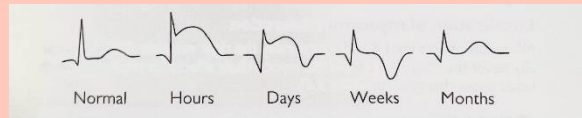


²⁴ BMJ:ABCs of clinical electrocardiography

²⁵ Davidson's Principles and Practice of Medicine: Cardiovascular disease page 448, 471

• Annex I: Important ECG Facts

ECG changes following Myocardial Infarction²⁶



Myocardial Infarction Examples

Electrocardiograms after myocardial infarction

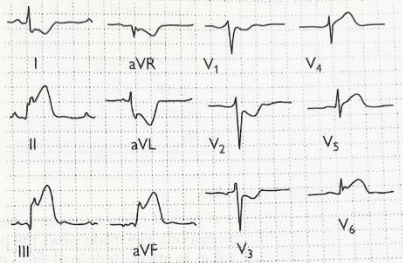


Fig. 3.6 Acute inferolateral infarction with 'reciprocal' ST changes in I, aV_L, and V₂ to V₃.

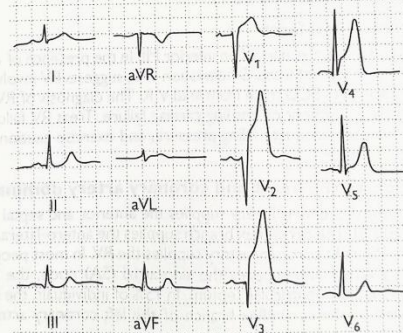
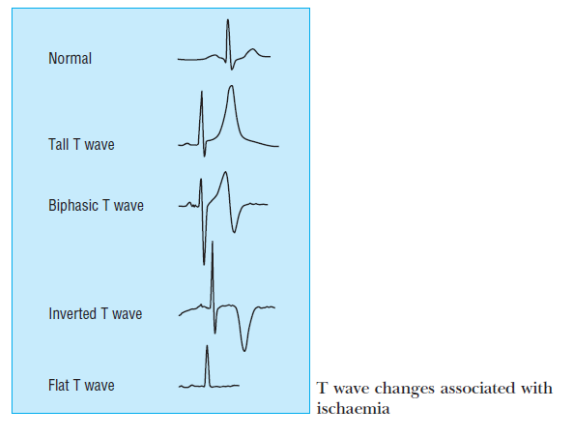
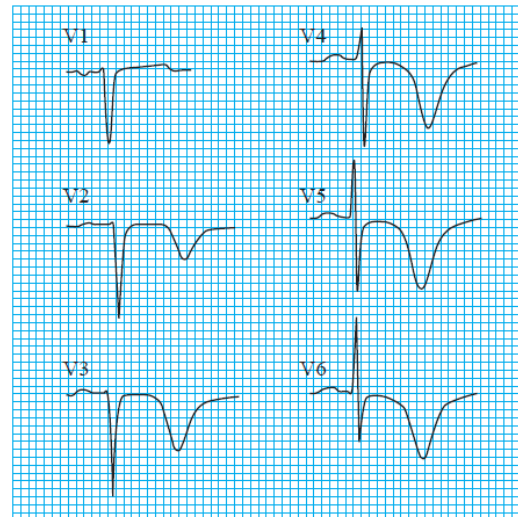


Fig. 3.7 Acute anteroseptal infarction with minimal 'reciprocal' ST changes in III and aV_F.

Myocardial Ischemia²⁷



Arrowhead T inversion in unstable angina (can also be seen in subendocardial infarct)



Arrowhead T wave inversion in patient with unstable angina

²⁶ Pictures from OHEM, Myocardial infarction Changes, page-77

²⁷ BMJ:ABCs of clinical electrocardiography

• **Annex 2 : Emergency Medicines For VTHCs**

The following list of emergency drugs is the suggested list of drugs in Every VTHCs

No	Name	Type	Unit	Quantity
1	Adrenaline 1 mg (1:1000)	Injection	amp	5
2	Hydrocortisone	Injection	vials	5
3	Sterile water(10ml)	Injection	amp	20
4	Chlorpheniramine malate	Injection	amp	10
5	50 % glucose	Injection	amp	5
6	Atropine	Injection	amp	5
7	Aminophylline	Injection	amp	5
8	Furosemide	Injection	amp	5
9	Tramadol 100 mg	Injection	amp	2
10	Diazepam	Injection	amp	5
11	Omeprazole	Injection	vials	5
12	Vit K	Injection	amp	5
13	Thiamine	Injection	amp	5
14	Metoclopramide	Injection	amp	5
15	Lignocaine	Injection	vials	1
16	Stemetil	Injection	amp	5
17	ATT	Injection	amp	5
18	Activated charcoal	Tablet	Sachet	10
19	Prednisolone 5 mg	Tablet	tab	100
20	Aspirin 81 mg	Tablet	tab	50
21	S/L Nitrol	Tablet	tab	20
22	ORS	pcs	pcs	10
23	Cifram Eye drop	Drop	bot	2
24	Tetracycline ointment	Ointment	tube	2
25	Malaria test kit	Kit	box	1
26	NS	Infusion	bot	2
27	RL	Infusion	bot	2
28	3" CC syringe		pcs	10
29	10" CC syringe		pcs	10
30	20" CC syringe		pcs	10
31	50" CC syringe		pcs	2
32	Blood Transfusion set		pcs	5
33	14 G Cannula		pcs	2
34	16 G Cannula		pcs	2
35	Tegaderm		pcs	5
36	Examination glove		pairs	2
37	Glucometer (Mechine, Strip, Lancet)		set	1
38	BP cuff (manual)		pcs	1
39	Stethoscope		pcs	1
40	Oximeter		pcs	1

Common Medical Emergency Management

No	Name	Type	Unit	Quantity
41	Thermometer (Non-Contact)		pcs	1
42	Inhaler (ventolin)		pcs	2
43	Nebulizer Ventolin nebules		pcs	5
44	Foley's catheter		pcs	2
45	Urine bag		pcs	2
46	Ambu bag		pcs	1
47	Naso-gastric tube		pcs	2
48	Surgical Glove 7		pcs	3
49	Lignocaine Gel	Tube	pcs	1
50	Gaudel Airway	Set	Set	1

References

1. Jonathan P.Wyatt, Robert G.Taylor, Kerstin de Wit, Emily J Hotton. ***Oxford Handbook of Emergency medicine***. Oxford : Oxford University Press, 2020. 978-0-19-878419-7.
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