World Health Organization

Prehospital emergency care

Clinical protocols for ambulance systems

Contents

World Health Organization

Introduction

These clinical algorithms are extracted from WHO's *Prehospital emergency care: operational guidance for ambulance systems*, which is available at WHO's prehospital webpage.

In the prehospital setting, timely recognition and management of medical emergencies can mean the difference between life and death. Clinical protocols provide structured, evidence-based guidance to ensure that prehospital providers can deliver consistent, high-quality care in unpredictable, high-pressure environments. Protocols are used to standardize assessment and treatment approaches, enhance decision-making and support seamless coordination with health-care facilities.

These clinical algorithms are aligned with international best practice and are adaptable to different health systems. They provide clear, step-by-step recommendations for the management of common life-threatening conditions, ensuring that prehospital providers – regardless of their level of training – deliver safe, effective, timely care. The protocols can support countries in strengthening the delivery of prehospital emergency care, reducing variations in care delivery and improving clinical outcomes.

The clinical protocols are for basic and advanced PPs. They are designed to assist prehospital leaders in ensuring the quality of services provided. Use of these protocols supports provision of people-centred, evidence-based prehospital care.

The 21 clinical protocols in this chapter are intended for basic and advanced providers. They are intended to be suitable for direct implementation in ambulance systems. In all the protocols, assumptions have been made about scope of practice and available equipment and resources (for example, oxygen saturation monitor or electrocardiogram monitor). These will differ by service, and the protocols should be amended accordingly. As systems are in different stages of development in different settings, some of the content of the protocols may not be directly applicable for all services. They should be adapted to local needs according to context, laws, regulations, resource availability and scope of practice

Medication charts are provided for basic and advanced providers. These list the indications, dosage and route of administration of the emergency medications cited in the protocols.

While the protocols cover the most common complaints encountered in prehospital emergency care, a protocol will not be perfectly fit every situation. In such cases, medical control should be contacted or the protocols used only for general guidance.

The text of the protocols is kept to a minimum to facilitate their use in clinical practice. Their introduction into service should be accompanied by provider training and medical oversight as part of a QI programme.

Clinical providers working in prehospital settings must always consider their own safety. The protocols provided here do not replace formal training in scene safety and response.

How to use these protocols

1. Commence your interaction with every patient using the **standard approach**:
   - ensure safety
   - wear appropriate PPE
   - greet the patient and identify oneself as a prehospital provider
   - begin every assessment with a primary survey to identify and manage immediately life-threatening problems. The primary survey is detailed in the "standard approach to all patients" protocol.
     - The CABCDE approach should be performed in the first 5 minutes and repeated whenever a patient's condition changes. This approach is used in both adults and children, although some aspects of assessing and managing children are different from adults
     - Always check for danger signs in children.

2. Depending on the patient's presenting complaint, **use the relevant clinical protocol** to guide assessment and management.

3. **Follow the protocol to assess and manage the patient.** Follow the protocol from top to bottom, ideally completing each action before progressing to the next (if you are a single provider; a clinical team can do several steps in parallel). Note that some protocols include cross-references to other protocols: check the other protocol for relevant management steps.

4. **Use the colour-coded text** to determine whether you are authorized to perform certain tasks or to administer certain medications according to your scope of practice:
   - black text – to be done by all providers
   - red text – to only be done by advanced providers

5. **Use the symbols to guide care decisions and management:**
   - Blue diamond – clinical decision (e.g., "Active bleeding" – if there is active bleeding evident, follow the arrow to the right ("Yes"), otherwise continue to the next step in the protocol)

   - Grey rectangle – action (e.g., "Wheezing → bronchodilator" – if there is wheezing, administer your supplied bronchodilator by most appropriate route within scope of practice).

   - Yellow rectangle – information. These boxes provide detail to support clinical decision making and management

   - Pink rhomboid – cross-reference to another protocol

   - Red rectangle – recommend reference to medical control for advice

World Health Organization

7. In most protocols, medications are provided by name only. **Use the medication charts to calculate drug doses and determine route of administration.** Use clinical judgment to decide whether to use weight-based calculations for older children and adolescents.

8. On completion of the specific clinical protocol, **follow the standard approach**:

- place the patient in a position of comfort
- transport to the closest, most appropriate destination
- document your care and handover the patient.

The protocols apply to both adults and children, unless specified otherwise. For use of the protocols for children, this publication provides ranges of normal vital signs, danger signs and special considerations.

Always consider the possibility of pregnancy. Later stages of pregnancy change a woman's physiology and anatomy, and this should be taken into consideration in assessment and management. In some circumstances, pregnancy will change clinical management. Destination triage may also be affected by a pregnancy.

A decision about whether CPR is appropriate for a patient depends on many factors, including the cause of the condition, available resources and relevant institutional protocols and practices. In many situations, it may be appropriate to initiate but then terminate CPR after a certain interval; in others, CPR may be inappropriate. The decision about whether to initiate CPR and when to stop may differ by region, and protocols should be developed in advance by the relevant authorities. Decisions should be made case by case according to local protocols and in discussion with medical control. While the protocols presented here address several aspects of resuscitation, they do not cover general CPR protocols. Medical directors should determine appropriate CPR protocols.

STANDARD APPROACH TO ALL PATIENTS

Ensure scene safety
- Identify threats - if unsafe, await police or additional assistance
- Call for additional resources as needed
- Re-evaluate frequently & maintain situational awareness

Use Personal Protective Equipment
- Gloves, goggles, masks, gowns as needed
- Isolate patient (potential transmissible disease or CBRNE)
- Arrange for decontamination if needed

PERFORM THE PRIMARY SURVEY

Control life threatening bleeding
- Compress the bleeding site
- If not controlled → pack the wound
- If not controlled →tourniquet
  - Apply above injury, document time of application.

Check responsiveness
- If not responsive → **check pulse**
- **If no pulse** → CPR (per local protocol)

Check airway is open and self maintained
- If not → **head-tilt chin-lift** (**jaw thrust** if trauma)
- **Suction** as needed
- **OPA / NPA** (Do not use NPA if facial trauma)
- **Immobilize cervical spine** if indicated
- **Intubate / advanced airway**

Assess breathing
- If no or inadequate breathing → **BVM ventilations**
  - 10-15 /min adult; 20-30 /min child
- **Oxygen***

Assess circulation
- Shocked, alert, protecting airway → **ORS**
- **IV fluids**[!]
- **Vasopressors**

Assess disability
- If glucose low or unable to check → Glucose

Obtain vital signs
RR, O_2 sat, HR, BP, Temp.

Take a SAMPLE history
Ask women about last menstrual period:
consider pregnancy or recent delivery

Place patient in position of comfort
- Consider need for spinal immobilization
- Visibly pregnant women → left lateral recumbent position

Transport to the closest most appropriate health facility.
Reassess frequently during transport.
Keep patient covered.

Document the patient encounter.
Handover to receiving facility.

***Oxygen administration - difficulty in breathing**
- Mild to moderate: nasal cannula 2-6 Lpm
- Severe: non-rebreather mask 10-15 Lpm
- If not improving, BVM assisted respirations with 15 Lpm
- Be guided by O_2 sats (where available) - maintain > 92%

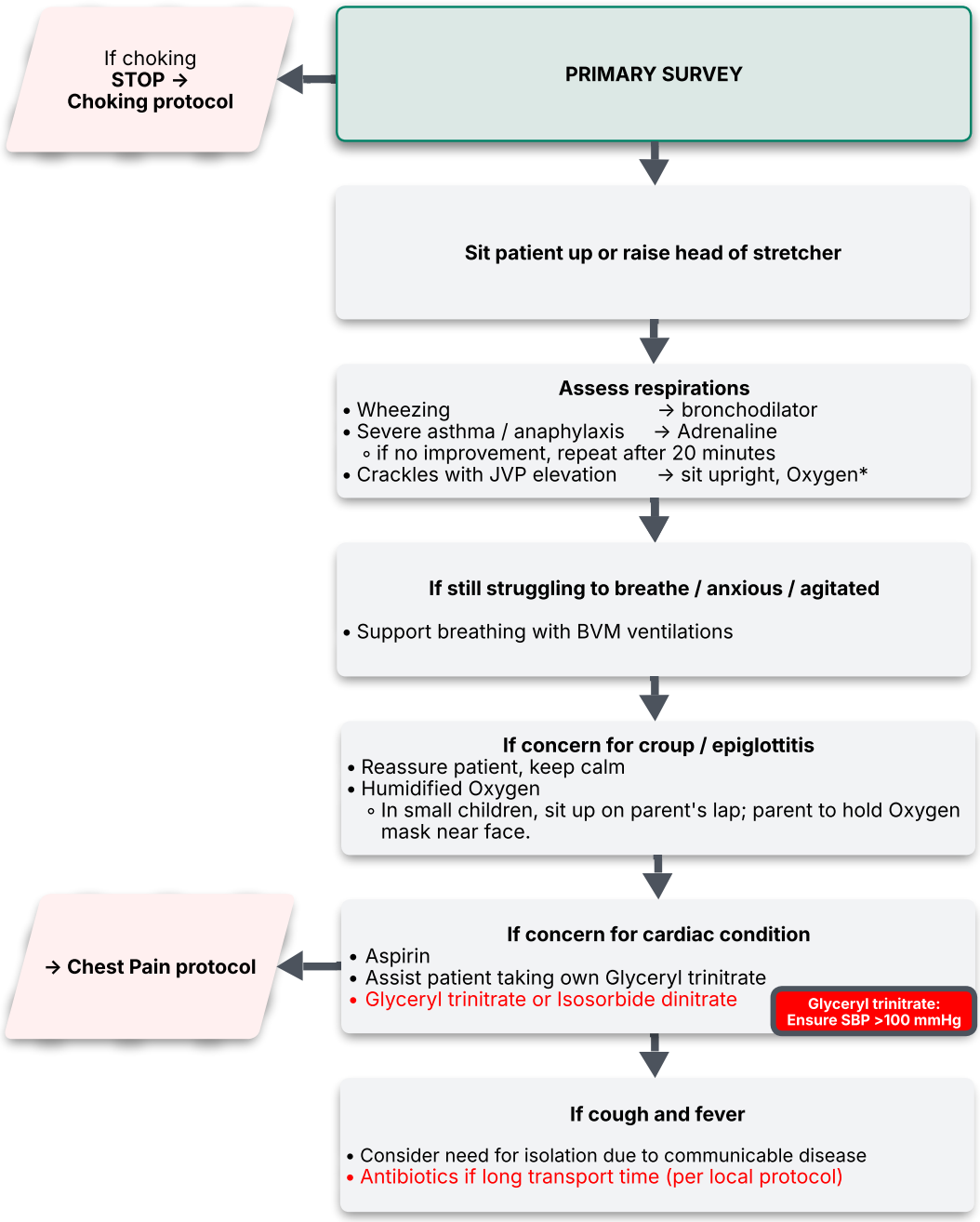
[!]IV fluid resuscitation in non traumatic emergencies
- If shocked → IV fluids
  - Adults: 250-500 mL bolus over 5 minutes
  - Children: 20 mL/kg over 10 minutes
  - Malnourished children: 10 mL/kg over 10 minutes
- If signs of shock remain
  - → repeat IV bolus
  - → IV vasopressors if unresponsive to second bolus
- If improving → slow IV fluids titrated by vital signs and clinical condition

Glucose administration
- Buccal - smear 25g of oral glucose on gums or inside cheek
- IV - 20 mL of 50% glucose
- Recheck glucose after 5 minutes. Repeat if no improvement

Follow relevant clinical protocol for condition specific management

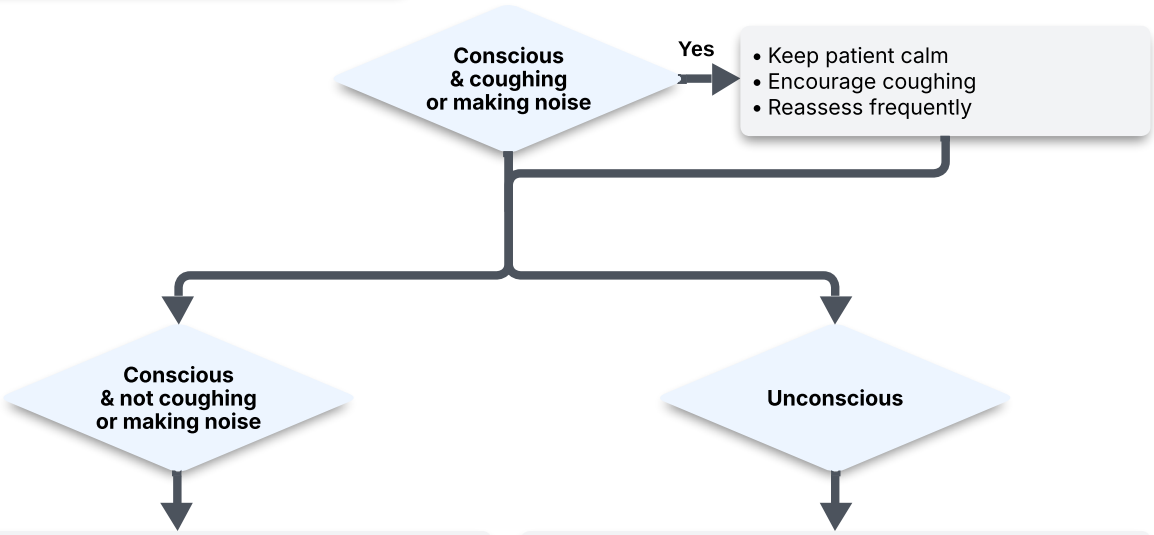
Be alert for signs of abuse or human trafficking - contact appropriate authorities (per local protocol)

PATIENT WITH DIFFICULTY IN BREATHING



CHOKING PATIENT

Signs of choking
- History of foreign body
- Abnormal sounds (stridor, grunting)
- Placing hands on neck

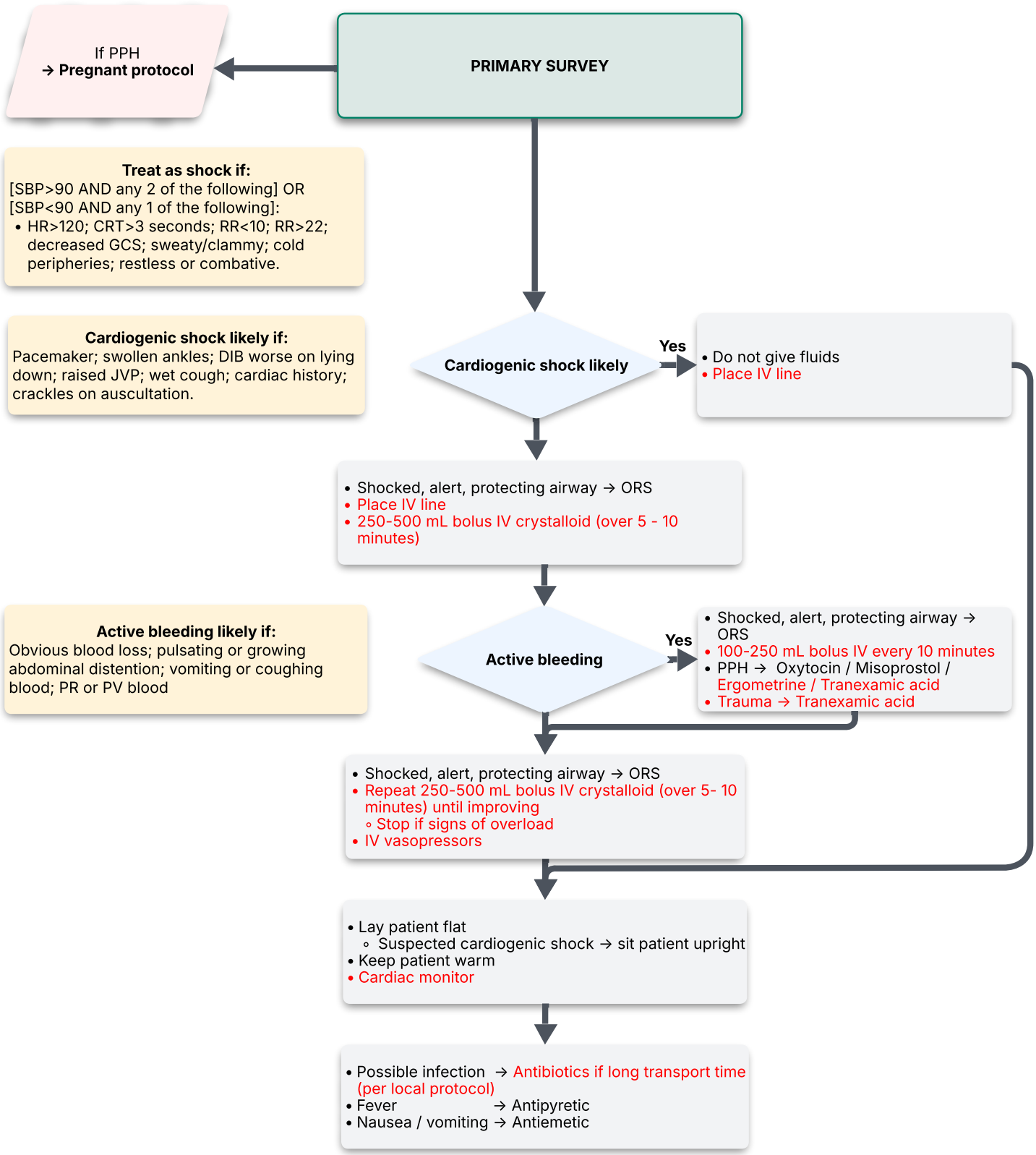


Adult & larger child: 5 abdominal thrusts → 5 black blows
Pregnant: 5 black blows → 5 chest thrusts
Infant & small child: 5 back blows → 5 chest thrusts

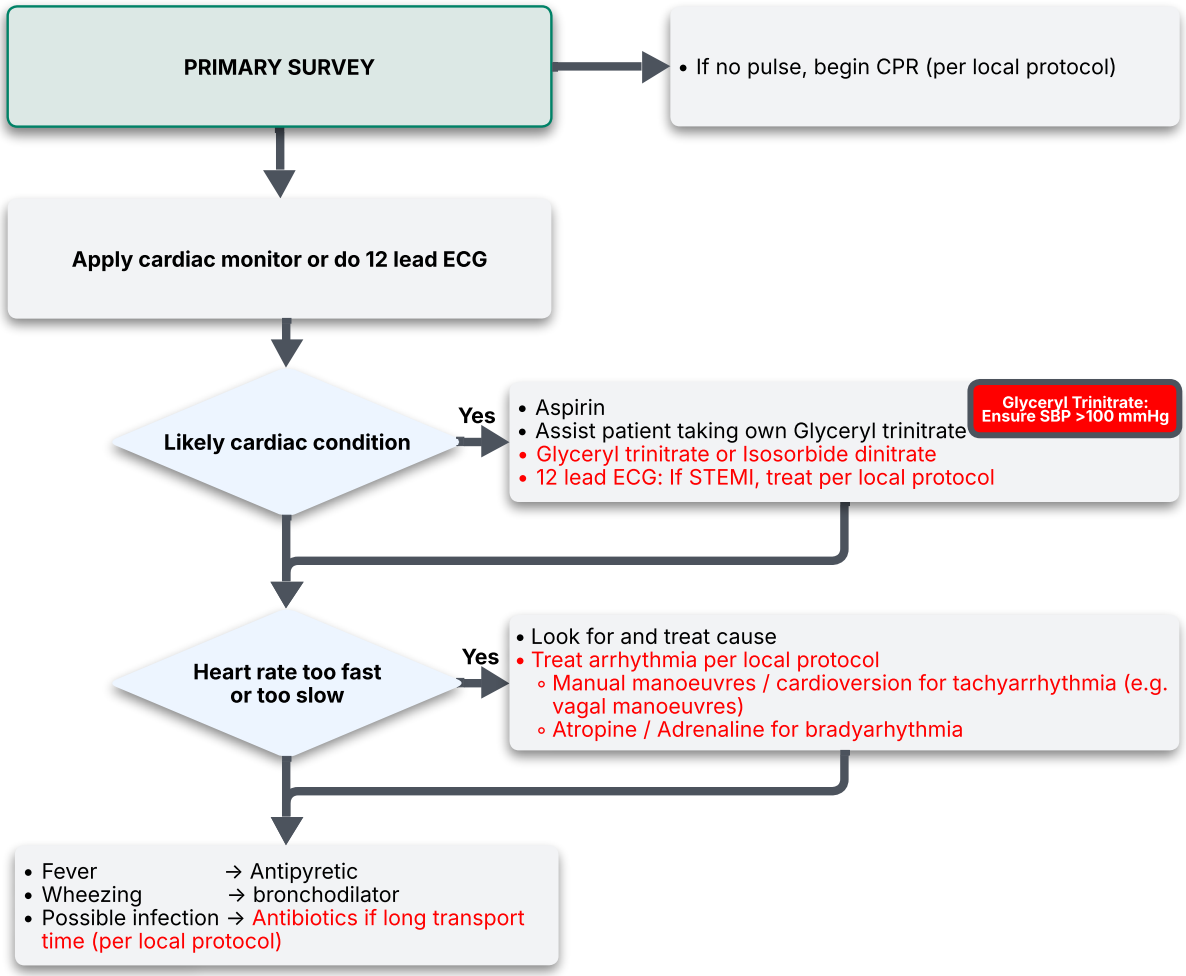
- Repeat each cycle until the foreign body is removed, the person can speak or cough, or they become unconscious

- Open airway, remove foreign body if visible
- Chest compressions (per local protocol)
- Repeat until obstruction relieved
- Laryngoscopy with Magill forceps to remove foreign body
- Intubate & attempt to ventilate through obstruction

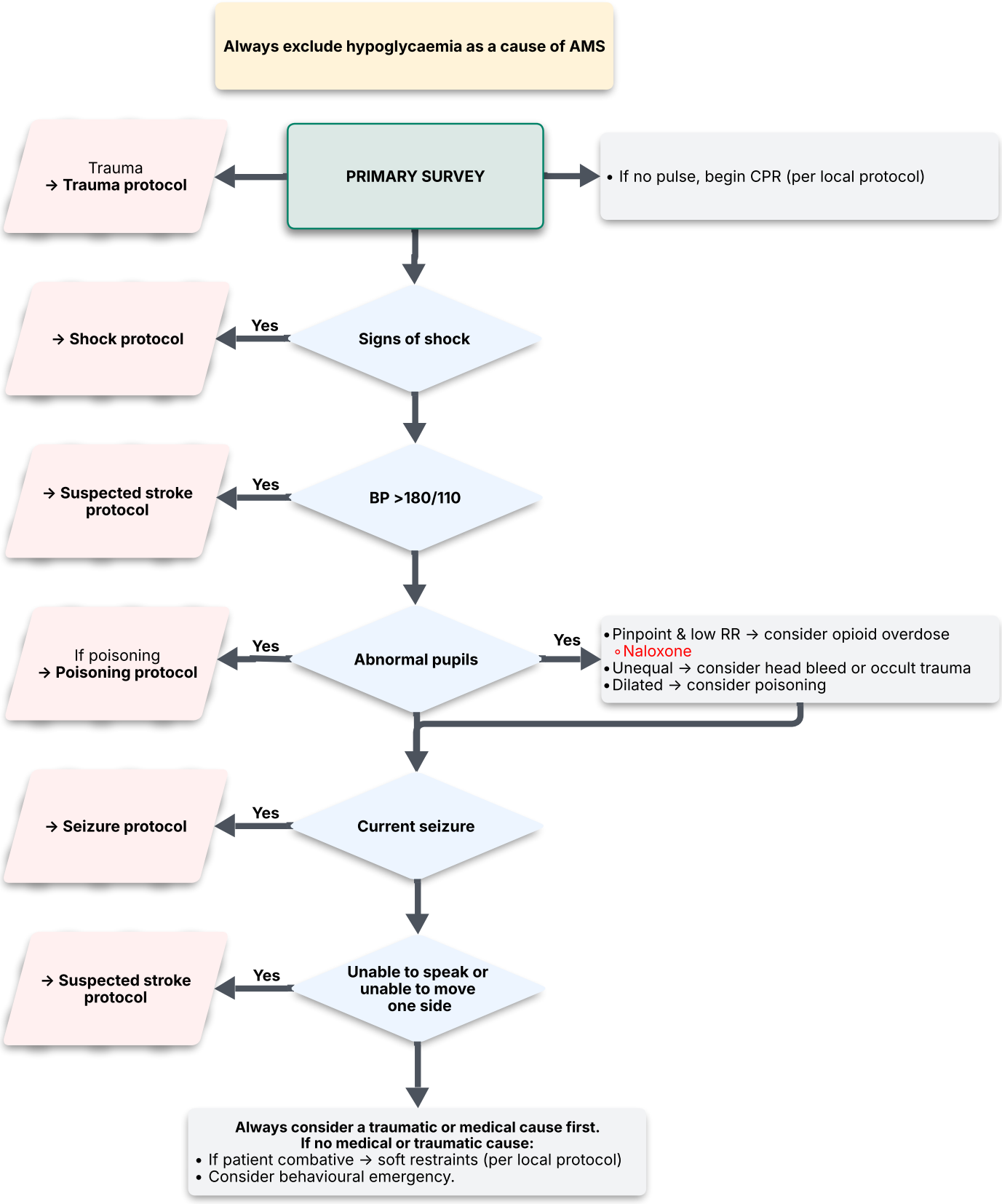
PATIENT IN SHOCK



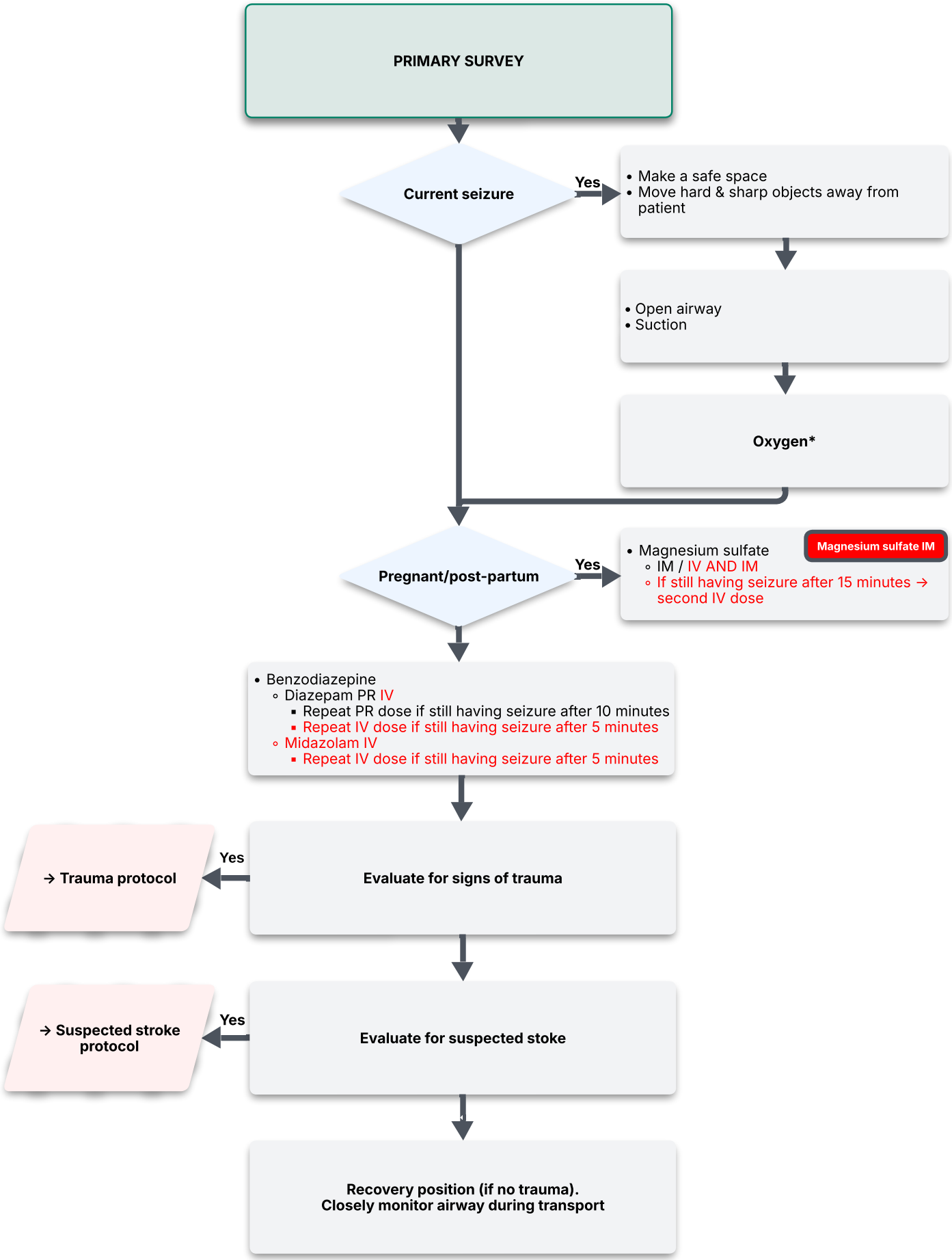
PATIENT WITH CHEST PAIN OR PALPITATIONS



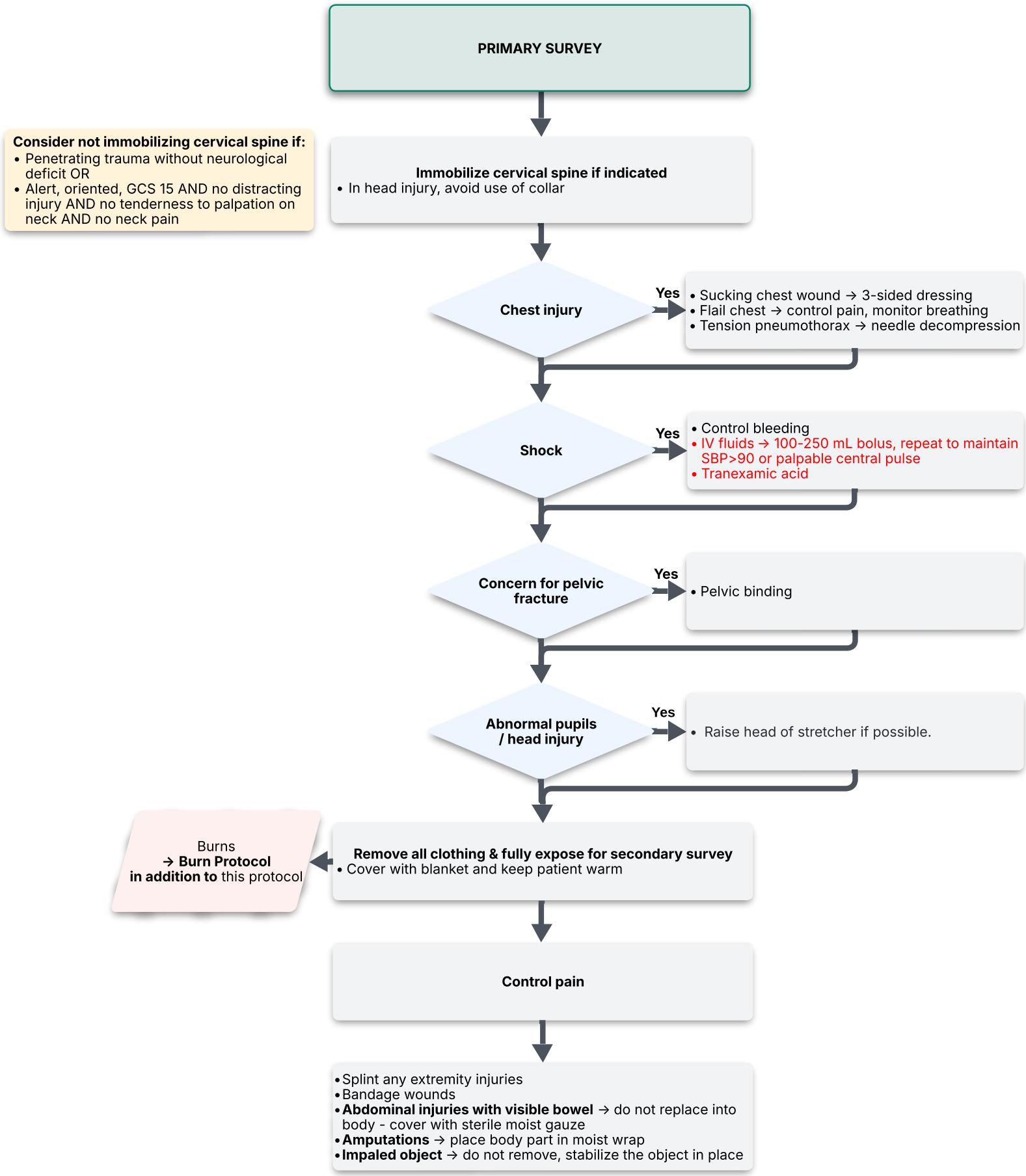
PATIENT WITH ALTERED MENTAL STATUS



PATIENT WITH SEIZURES



INJURED PATIENT



PATIENT WITH BURNS

Stop the burning process
- Stop, drop, roll
- Room temperature running water
- Decontaminate chemical burns

PRIMARY SURVEY

Trauma
→ Trauma protocol
in addition to this protocol

- Closely monitor airway - inhalation burns can rapidly cause swelling
- Consider intubation early

Signs of airways burns:
- Facial burns
- Soot around mouth / nose, black sputum
- Singed nasal hairs
- Hoarse voice

Need for fluid management?

Yes →
- <20% TBSA → oral fluids to thirst
- 20% - 40% TBSA
  - Alert, protecting airway, no facial burn → ORS
  - IV fluids per standard formula
- >40% TBSA → IV fluids per standard formula

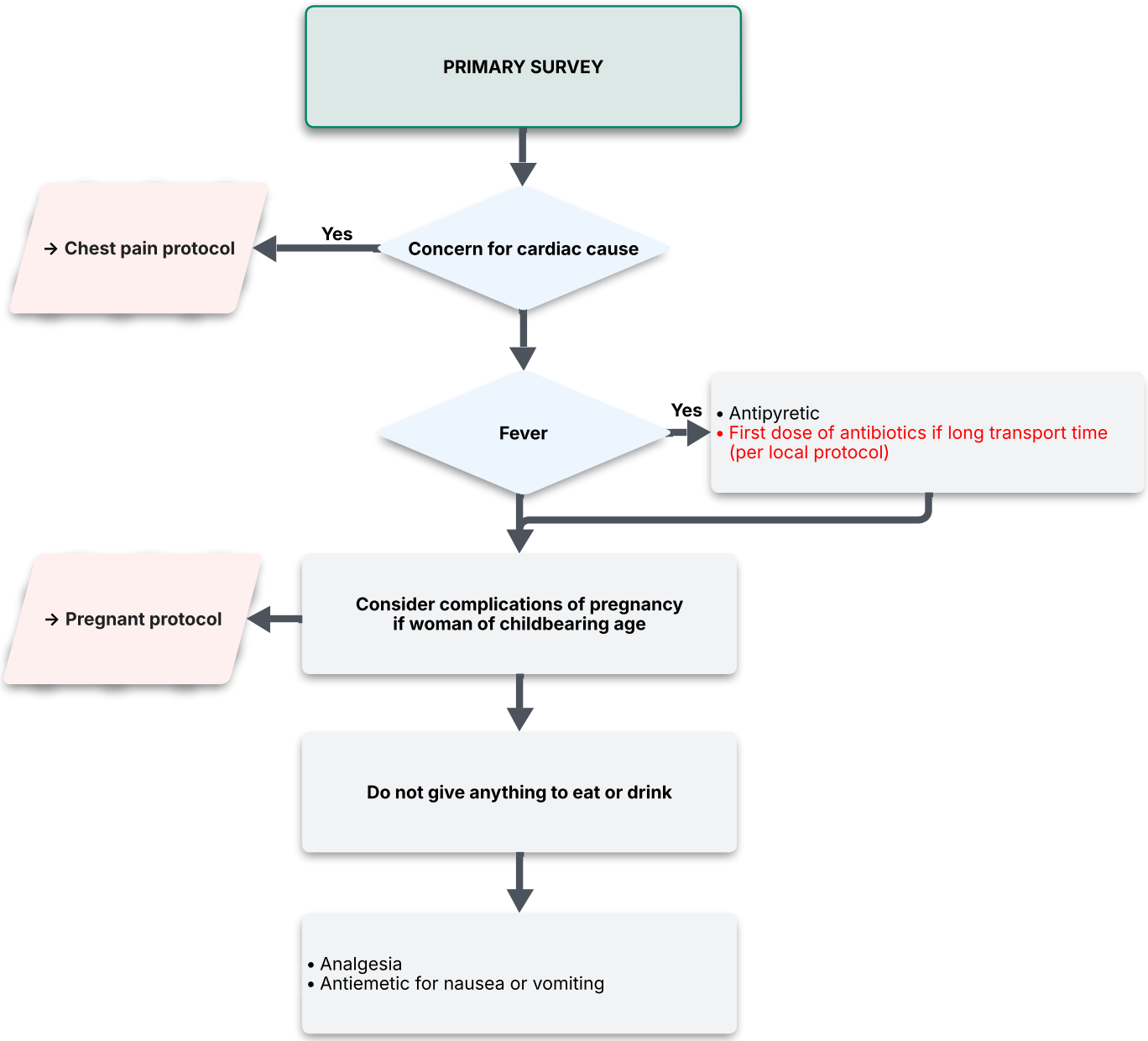
TBSA & IV fluids
- Use rule of 9s body chart (modified for small children)
- Do not include superficial burns in TBSA calculation
- IV fluid[!] requirements:
  - 4 mL* weight (kg) * % TBSA
  - Half in the first 8 hours from the time of the burn

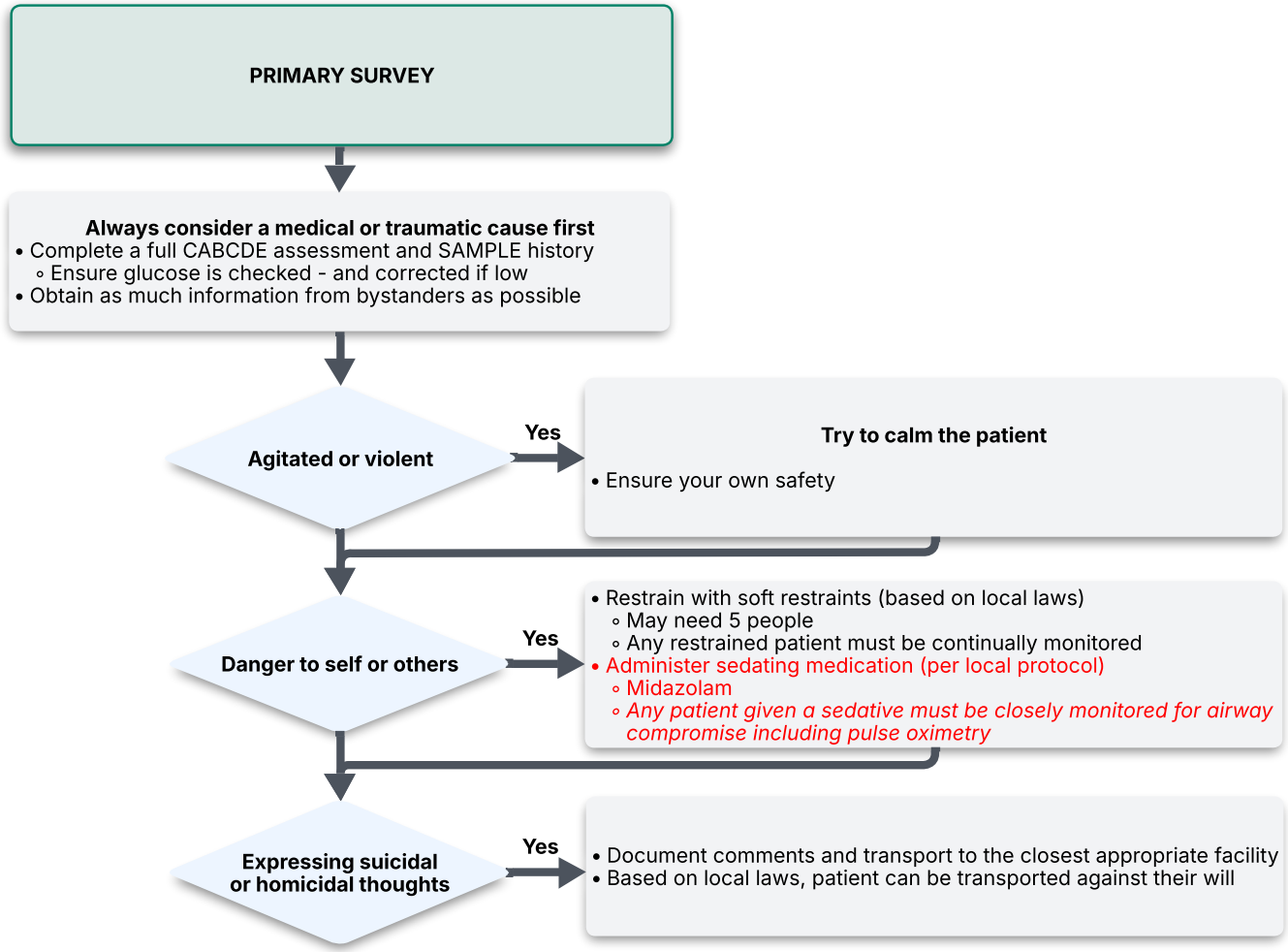
- **Analgesia**
- **Dress burned areas**
  - plastic wrap, clean dry sheet or blanket
  - document or photograph before dressing

Remove clothing & jewelry.
Elevate burned limbs

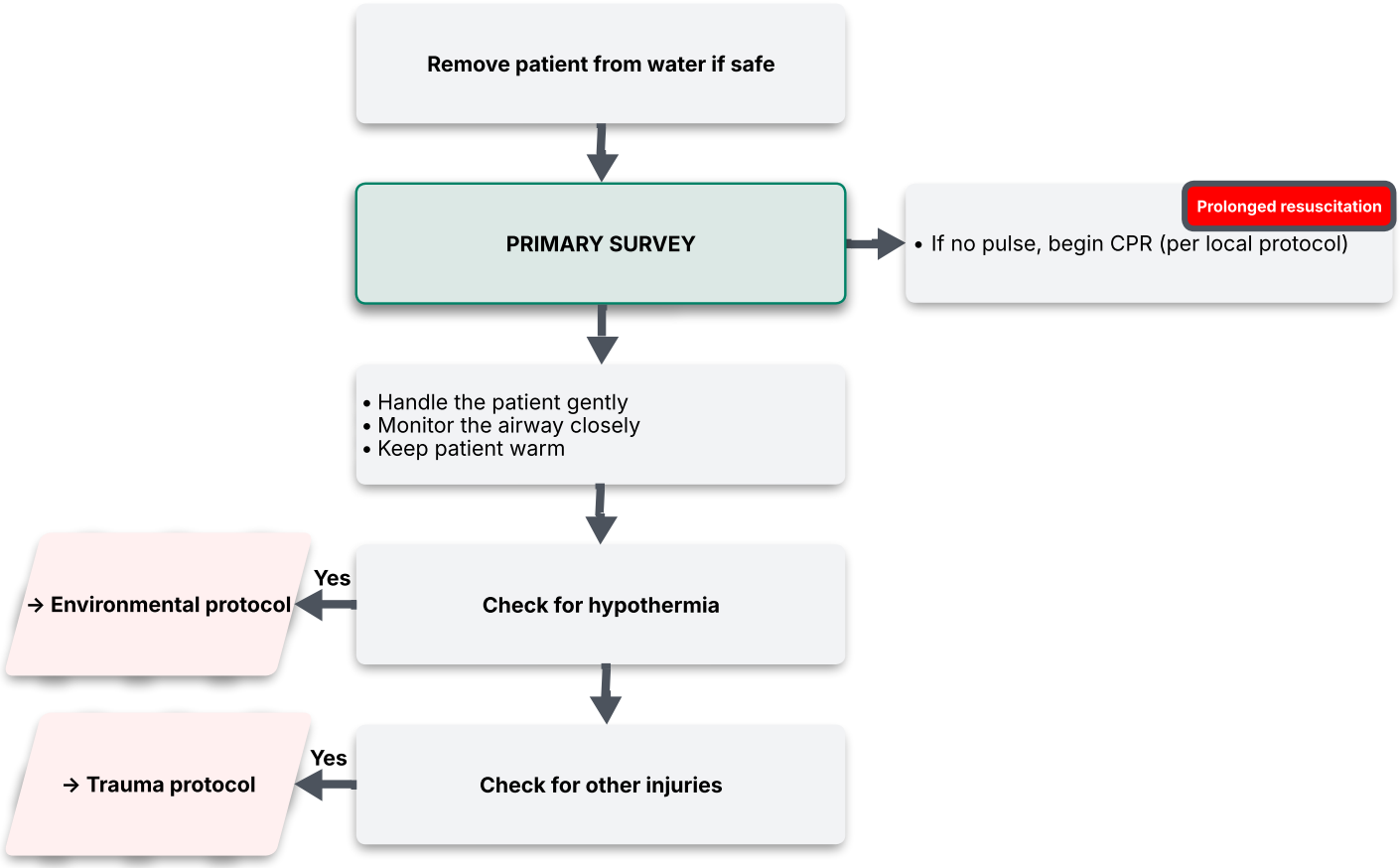
Burns requiring specialist care (per local protocol):
- Partial or full thickness >15% TBSA; >10% in children
- Burns of hands, face, groin area, joints
- Circumferential burns
- Inhalation injury
- Burns with associated trauma
- Any burn in very young or elderly people
- Significant pre-burn illness (e.g.,diabetes)
- Chemical, electrical or radiation burns

PATIENT WITH ABDOMINAL PAIN




PRIMARY SURVEY
Always consider a medical or traumatic cause first
• Complete a full CABCDE assessment and SAMPLE history
◦ Ensure glucose is checked - and corrected if low
• Obtain as much information from bystanders as possible
Agitated or violent
Yes
Try to calm the patient
• Ensure your own safety
Danger to self or others
Yes
• Restrain with soft restraints (based on local laws)
◦ May need 5 people
◦ Any restrained patient must be continually monitored
• Administer sedating medication (per local protocol)
◦ Midazolam
◦ Any patient given a sedative must be closely monitored for airway compromise including pulse oximetry
Expressing suicidal or homicidal thoughts
Yes
• Document comments and transport to the closest appropriate facility
• Based on local laws, patient can be transported against their will

SURVIVOR OF DROWNING



HEAT AND COLD RELATED EMERGENCIES

Environmental emergencies can present with shock and can mask signs of trauma.

PRIMARY SURVEY

Manage life-threatening conditions before beginning treatment for heat or cold emergency

Measure temperature

Heat related

- Remove patient from the hot environment
- Remove clothing, protect modesty (e.g. cover with wet sheet)
- Cool with moist cloths
- Cool with mist and fan
- Cool vehicle with air conditioning or open window

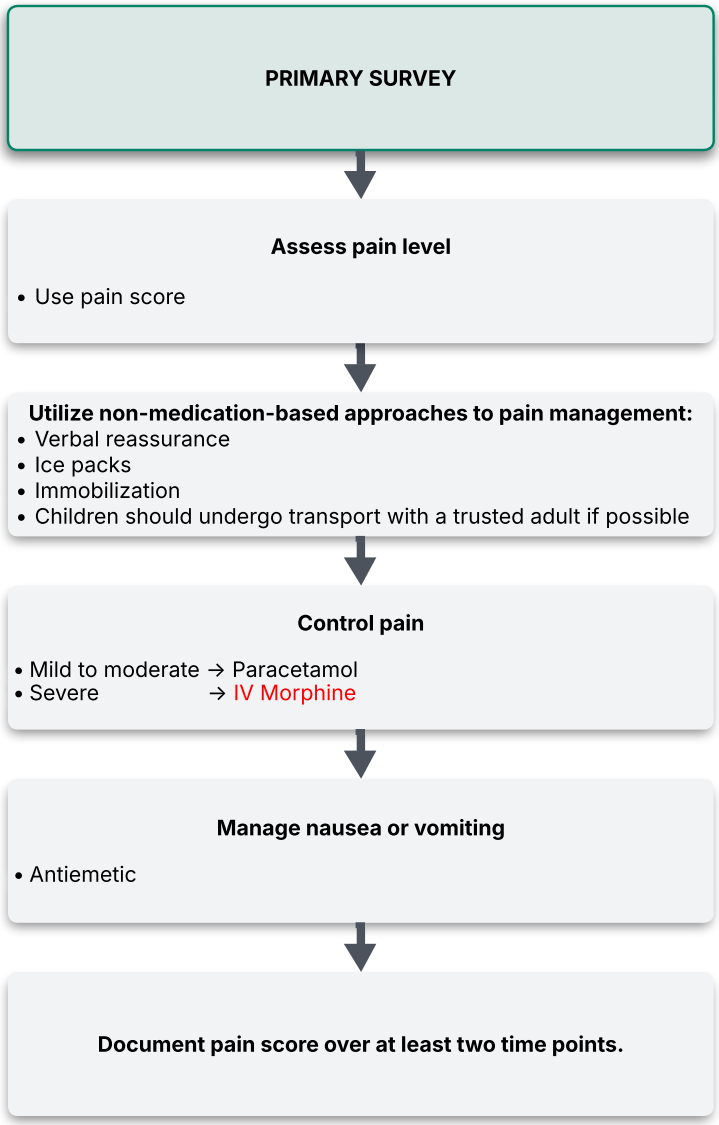
- Alert, protecting airway → cold oral fluids
- IV fluids[!] (cooled, ideally)

Cold related

- Remove from the cold environment
- Remove all wet clothing, protect modesty
- Prevent further heat loss, wrap in blankets, cover head
  - use warmed blankets where possible
- Warm vehicle with heat

- Handle patient gently
- Kangaroo care for infants
- Active non-invasive rewarming (per local protocol)
  - e.g. heat packs, heat lamps, forced air systems.
- Monitor for afterdrop as patient warms
- Warm IV fluids[!]

PAIN MANAGEMENT



VISIBLY PREGNANT WOMAN

Always position visibly pregnant patient in the left lateral recumbent position to avoid hypotension during assessment and transport

If delivery is not imminent → **relevant protocol**

Seizures

Yes

Magnesium sulfate **IM**
- IM / IV AND IM
- If still having seizure after 15 minutes - second IV dose

Active labour & urge to push

No

Rapid transport to closest most appropriate facility

Yes

Check for crowning and determine presenting part — **Delivery**
- If no crowning → rapid transport
- If crowning and head visible → prepare for birth
- If crowning and presenting part is other than head → do not attempt delivery, and transport rapidly to a facility with surgical capabilities

Prepare for birth
- Call for help
- Prepare all equipment & supplies
- Ensure that the woman has a companion of her choice, explain all procedures & ensure privacy and confidentiality

Birth of the head
- Apply gentle pressure to keep the head flexed. With the other hand, gently pressure the perineum as the baby's head is born
  - Look for umbilical cord around the neck: if it is loose, slip it over the baby's head. If it is tight around the neck, double clamp and cut it

Birth of the body
- After the baby's head turns spontaneously, place a hand on each side and move it downward to facilitate birth of the anterior shoulder
- Next, move head gently upwards and deliver the rest of body
  - If there is difficulty delivering the shoulders, suspect shoulder dystocia

Follow local protocols for complicated delivery conditions

Initial newborn care
- If breathing or crying
  - Place baby on mother's abdomen and dry
  - Wrap newborn and mother in blankets to keep warm while maintaining skin to skin contact
  - Clamp and cut umbilical cord with a sterile blade after 1 minute
- If not breathing and secretions are present → suction
- If not breathing, stimulate by rubbing the back → **neonatal resuscitation protocol**

If required → **Neonatal Resuscitation** protocol

Palpate the woman's abdomen to check for an additional baby

Active management of third stage of labour to prevent PPH
- Oxytocin IM or Carbetocin IM or Misoprostol PO within one minute of birth
- Wait for spontaneous delivery of the placenta
  - Notify receiving facility status of placenta delivery
- Verify uterine tone: if uterus is not well contracted, uterine massage

- In PPH, start the bundle immediately.
- Use the MOTIV mnemonic:
  - **M**assage the uterus
  - **O**xytocic drug
  - **T**ranexamic acid
  - **IV** access
- Complete the bundle within 15 minutes.
  - The order does not matter.
  - Give all elements in the bundle, even if there is improvement

PPH

Yes

- Massage the uterus
- Oxytocin IM, or if cold storage not possible, Misoprostol PO
- Ergometrine IV
- Tranexamic acid
- If still bleeding → bimanual compression of uterus or external aortic compression
  - Consider non-pneumatic anti-shock garment

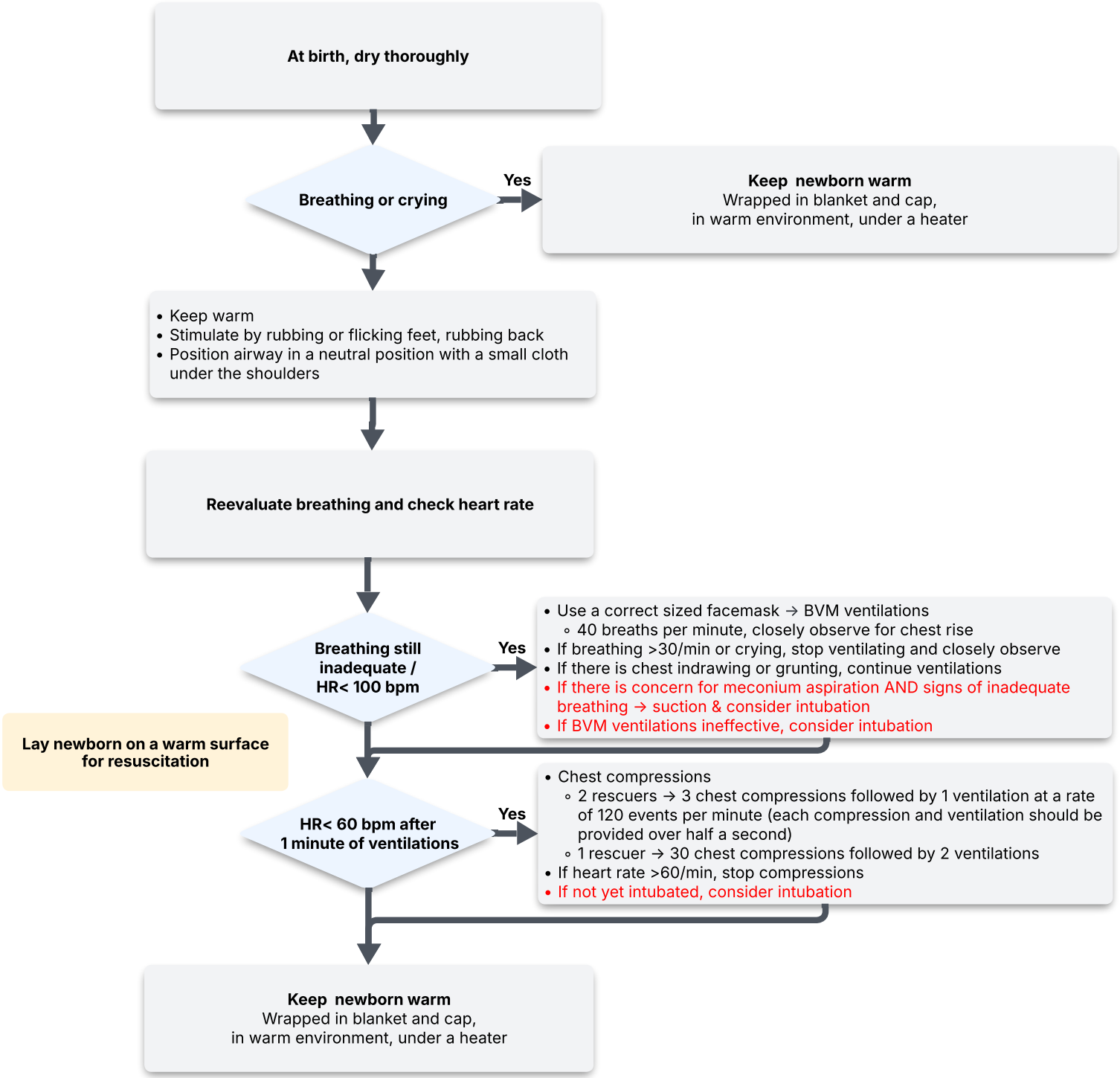
Uterine inversion or rupture

Yes

- If uterus is inverted, reinsert
- If ruptured uterus is suspected, place in non-pneumatic anti-shock garment

Reassess mother, estimate blood loss, and transport immediately

NEONATAL RESUSCITATION



POISONING AND OVERDOSE

- Do not enter scene if concern for ongoing exposure
- Decontaminate patient if required
  - Skin: Remove clothes and wash skin with soap and water
  - Eyes: flush under running water or normal saline

PRIMARY SURVEY

- If no pulse, begin CPR (per local protocol)

Do NOT induce vomiting

Issues with circulation — Yes

- If shocked: IV fluid bolus, repeat as needed

Current seizure — Yes

- Benzodiazepine
  - Diazepam PR IV
    - Repeat PR dose if still having seizure after 10 minutes
    - Repeat IV dose if still having seizure after 5 minutes
  - Midazolam IV
    - Repeat IV dose if still having seizure after 5 minutes

SAMPLE history

- Obtain as much history from scene and bystanders as possible
- Determine time of ingestion / exposure
- Bring pill bottles to hospital
- Check for bite or sting marks

Activated charcoal — Activated Charcoal

- If ingestion was less than 60 minutes ago AND
- Patient is alert & protecting airway AND
- DID NOT ingest alcohol, petrol, paraffin, corrosives, household products, iron or lithium

Assess for toxidromes

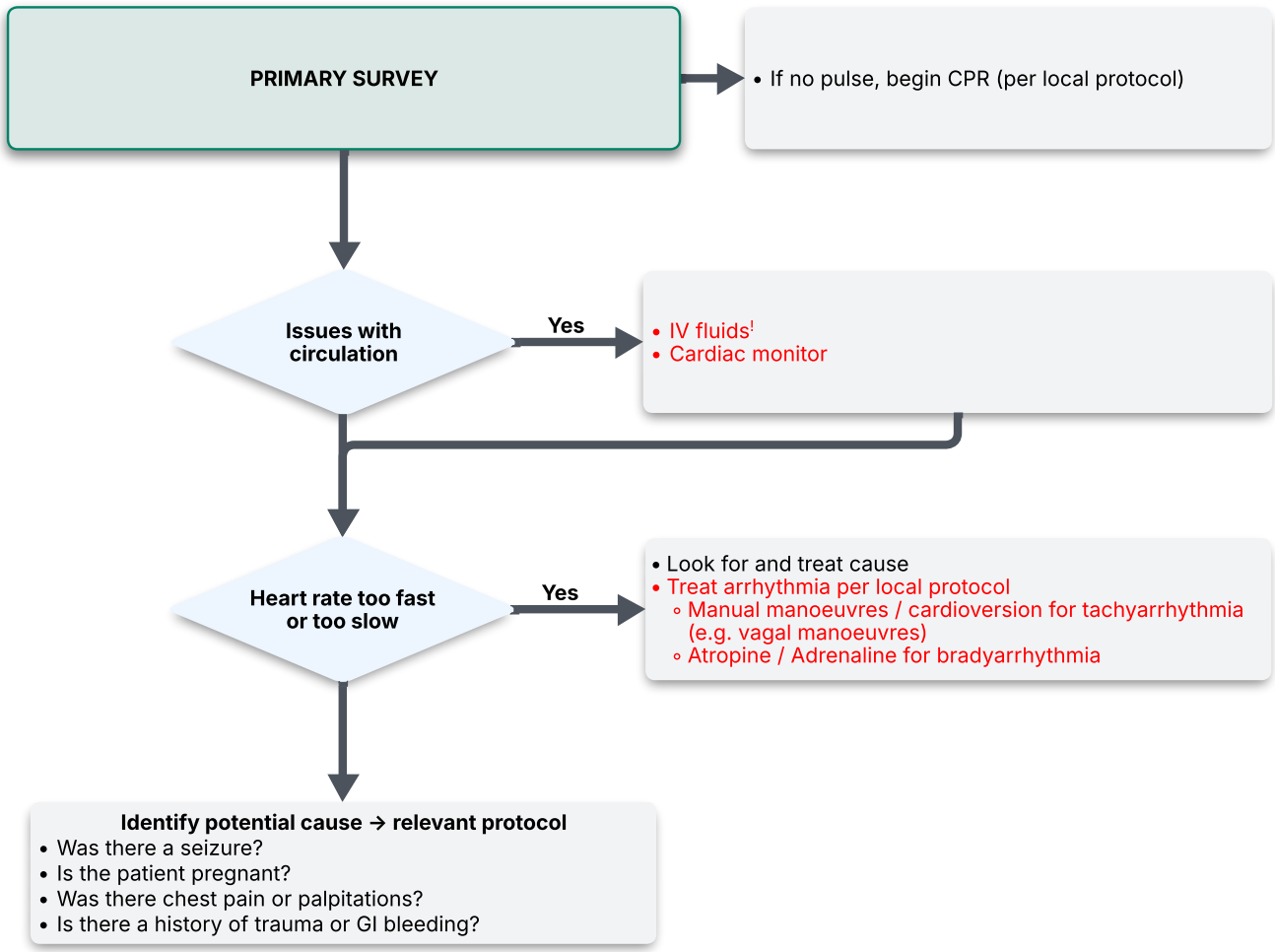
Manage by toxidrome

- Opioid
  - Naloxone
- Cholingeric
  - Atropine
- Sympathomimetic / Anticholingeric / Sedative
  - Symptomatic treatment

Toxidromes

- **Opioid**
  - Decreased LOC, pinpoint pupils, low RR, low HR, hypotension
- **Sympathomimetic**
  - Seizures, sweating, agitation, hyperthermia, high HR, high BP, dilated pupils
- **Anticholingeric**
  - Dry & flushed skin, agitation, hyperthermia, high HR, dilated pupils, urine retention, blurred vision
- **Cholingeric**
  - Decreased LOC, seizures, pinpoint pupils, low HR, urine incontinence, diarrhoea & vomiting
- **Sedative**
  - Decreased LOC, low RR, slurred speech

PATIENT WITH SYNCOPE



SUSPECTED SEPSIS

Suspect sepsis in ADULTS if all 3 are present:
- Evidence of an infection AND
- Physiologic derangement AND
  - HR>90, RR>20, temp <36 or >38, confusion or AMS
- Signs of shock
  - HR>130, RR>30, SBP<90, VP or U on AVPU

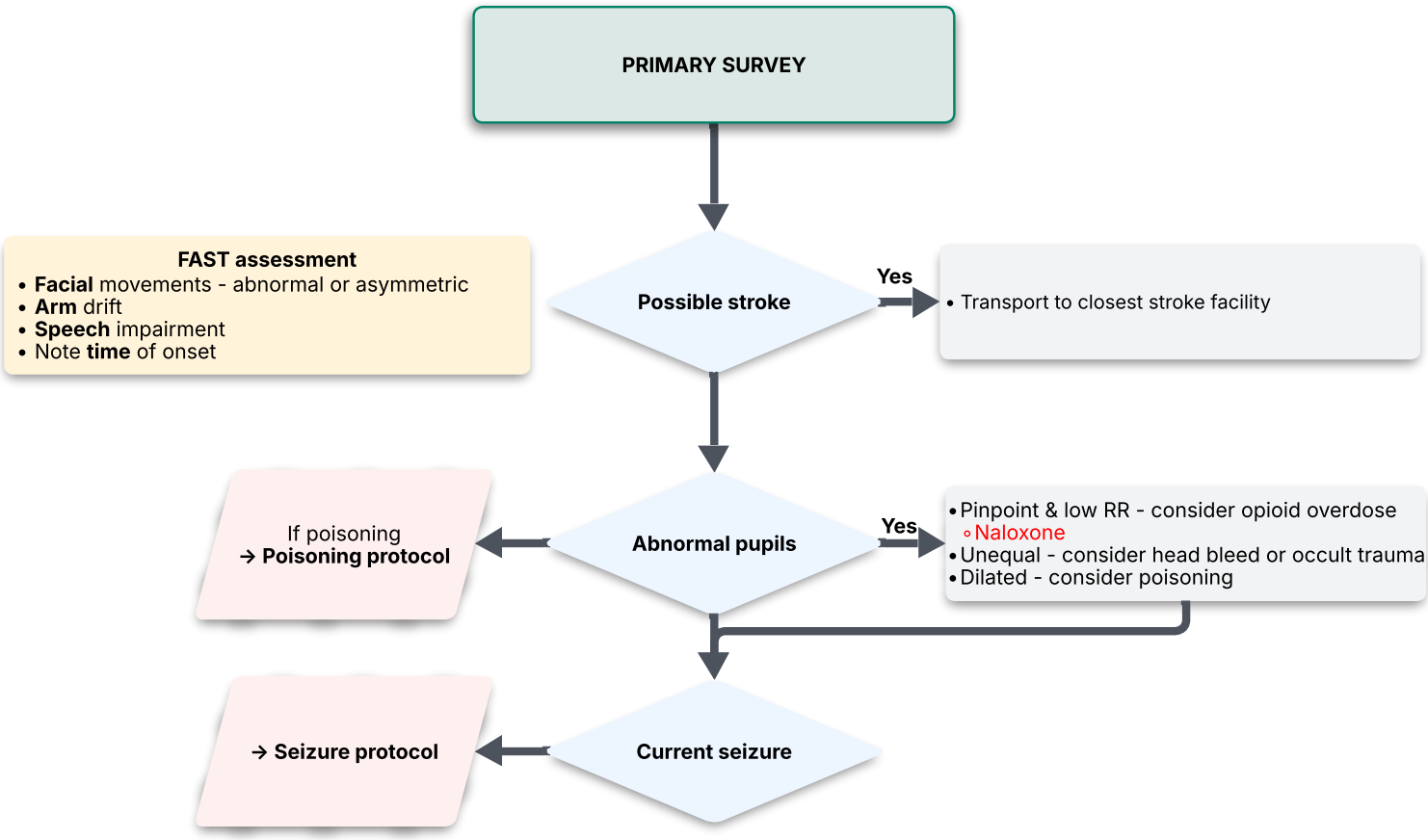
Suspect sepsis in CHILDREN if:
- Evidence of an infection AND
- Signs of shock
  - feeble rapid pulse, rapid breathing, cool or pale extremities
  - altered mental status

PRIMARY SURVEY

- Shocked, alert, protecting airway → ORS
- If shocked → IV fluids
  - Adults: 30 mL/kg crystalloid bolus
  - Children: 20 mL/kg crystalloid bolus
  - Malnourished children: 10 mL/kg crystalloid bolus
- If signs of shock remain → repeat IV bolus
- If signs of shock remain → IV vasopressors
- Cardiac monitor

- Fever → Antipyretic
- Antibiotics if long transport time (per local protocol)
- Identify the potential source of infection if possible
  - Wound cleaning if long transport time (per local protocol)

PATIENT WITH WEAKNESS OR SUSPECTED STROKE



PATIENT WITH SNAKEBITE

Ensure your safety

- Take a photo of the snake if possible
- Do NOT attempt to catch the snake or to bring it to the hospital

PRIMARY SURVEY

- Restrict the patient's movement
- Splint to the limb to immobilize as much of the limb as possible
  - Note the time the splint was placed
- Follow local protocol for snakes in your area

- DO NOT put a tourniquet around the snake bite or limb
- DO NOT cut the bite out as this will lead to unnecessary bleeding
- DO NOT suck on the bite to remove the venom

NORMAL ADULT VITAL SIGNS

Pulse rate: 60–100 beats per minute
Respiratory rate: 10–20 breaths per minute
Systolic blood pressure >90 mmHg
Oxygen Saturation > 92%

Estimating systolic blood pressure
(not reliable in children and the elderly):
Carotid (neck) pulse → SBP ≥ 60 mmHg
Femoral (groin) pulse → SBP ≥ 70 mmHg
Radial (wrist) pulse → SBP ≥80 mmHg

SAMPLE History

Signs & Symptoms
Allergies
Medications
PMH
Last oral intake
Events

SPECIAL CONSIDERATIONS IN THE ASSESSMENT OF CHILDREN

- Children have bigger heads and tongues, and shorter, softer necks than adults. Position airway as appropriate for age.
- Always consider foreign bodies.

- Look for signs of increased work of breathing (e.g. chest indrawing, retractions, nasal flaring).
- Listen for abnormal breath sounds (e.g. grunting, stridor, or silent chest).

AGE	NORMAL RESPIRATORY RATE (breaths per minute)
<2 months	40–60
2–12 months	25–50
1–5 years	20–40

- Signs of poor perfusion in children include: slow capillary refill, decreased urine output, lethargy, sunken fontanelle, poor skin pinch.
- Look for signs of anaemia and malnourishment (adjust fluids).
- Remember that children may not always report trauma and may have serious internal injury with few external signs.

AGE (in years)	NORMAL HEART RATE (beats per minute)
<1	100–160
1–3	90–150
4–5	80–140

- Always check AVPU.
- Hypoglycaemia is common in ill children.
- Check for tone and response to stimulus.
- Look for lethargy or irritability.

INFANTS AND CHILDREN HAVE DIFFICULTY MAINTAINING TEMPERATURE

- Remove wet clothing and dry skin thoroughly. Place infants skin-to-skin when possible.
- For hypothermia, cover the head (but be sure mouth and nose are clear).
- For hyperthermia, unbundle tightly wrapped babies.

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

Prehospital medications: basic ambulance provider

MEDICATION	DOSAGE	INDICATION
Acetylsalicylic acid (Aspirin)	**Oral tablet: 300 mg** 300 mg (preferably chewed or in water) immediately as single dose.	Concern for acute coronary syndrome
Activated charcoal	**Powder or liquid suspension.** **Adults**: 50-100 g (1 g/kg) **PO** **Children**: 1 g/kg **PO** Avoid if ingested household products, paraffin, petrol, corrosive poisons (acids/bases), iron, lithium, or alcohol.	Poisoning
Adrenaline (Epinephrine)	**Solution: 1 mg in 1 mL ampoule (1:1000)** **Adults:** 50 kg or above: 0.5 mg **IM** (0.5 mL of 1:1000) 40 kg: 0.4 mg **IM** (0.4 mL of 1:1000) 30 kg: 0.3 mg **IM** (0.3 mL of 1:1000) Repeat every 5 minutes as needed. **Children:** **Anaphylaxis**: 0.15 mg **IM** (0.15 mL of 1:1000). Repeat every 5 minutes as needed. **Severe Asthma**: 0.01 mg/kg **IM** up to 0.3 mg. Repeat every 15 minutes as needed.	Anaphylaxis/severe allergic reaction and severe wheezing
Carbetocin	**Solution: 100 mcg in 1 mL** Give a single dose of 100 mcg **IM** following a vaginal delivery.	Prevention of postpartum haemorrhage
Diazepam	**Rectal solution: 2 mg per mL** **Adults:** First dose: 10 mg **PR** Second dose after 10 minutes: 10 mg **PR** **Children:** First dose: 0.5 mg/kg **PR** Can repeat half of first dose after 10 minutes if seizures/convulsions continue. **MONITOR BREATHING CLOSELY in all patients given diazepam.**	Seizures/convulsions
Glucose (Dextrose)	**Solution: 50% dextrose (D50)** 2–5 mL of 50% dextrose **OR** sugar solution in buccal space.	Hypoglycaemia
Magnesium sulfate	**Solution: 1 g in 2 mL ampoule , 5 g in 10 mL ampoule (50% or 500 mg/mL)** 10 g **IM** (5 g in **each** buttock). **If transport delays continue:** Give 5 g of 50% solution **IM** in alternate buttocks every 4 hours.	Eclampsia or pregnant with seizure/convulsion
Metoclopramide	**Oral tablet: 10 mg (hydrochloride); oral liquid: 5 mg/5 mL** **Adults**: 10 mg **PO** stat **Children and adolescents**: 0.1-0.2 mg/kg **PO**; max 10 mg/dose.	Nausea/ vomiting

MEDICATION	DOSAGE	INDICATION
Misoprostol PO	**Oral tablet: 200 µg** Prevention: 600 µg **PO** stat Treatment: 800 µg **SL** stat.	Prevention and treatment of postpartum haemorrhage
Ondansetron	**Oral solid: 4 mg, 8 mg; oral liquid: 4 mg/5 mL** **Adults**: 4-8 mg **PO** stat **Children**: **PO** <15 kg: 0.2 mg/kg/dose; 15 to 30 kg: 4 mg; >30 kg: 8 mg Not to be given in children 1 month or younger.	Nausea/ vomiting
Oxytocin	**Solution: 10 IU in 1 mL ampoule** **Immediately after birth / identifying haemorrhage:** give 10 IU **IM** **If placenta manually removed / uterus does not contract:** repeat 10 IU **IM.**	Prevention and treatment of postpartum haemorrhage
Paracetamol (acetaminophen)	**Oral tablet: 250 mg, 500 mg**; **rectal suppositories: 250 mg, 500 mg** **Adults:** 500 mg–1 g **PO/PR** every 6 hours Max 4 g daily or max 2 g daily if liver impairment/ cirrhosis **Children:** 10–15 mg/kg **PO/PR** up to four times per day.	Mild to moderate pain, fever, headache
Salbutamol (Albuterol)	**Inhaler: 100 mcg per puff** **Adults:** Prime with 5 puffs and give 2 puffs via spacer every 2 minutes until improved. **Children:** Prime with 5 puffs and give 2 puffs into spacer. Keep spacer in mouth for 3–5 breaths. Repeat until 6 puffs given for < 5 years, or 12 puffs for > 5 years. For severe wheezing, above doses can be given several times in an hour.	Severe wheezing

Prehospital medications: advanced ambulance provider

MEDICATION	DOSAGE	INDICATION
Acetylsalicylic acid (Aspirin)	**Oral tablet: 300 mg** 300 mg (preferably chewed or in water) immediately as single dose.	Concern for acute coronary syndrome
Activated charcoal	**Powder or liquid suspension.** **Adults**: 50-100 g (1 g/kg) **PO** **Children**: 1 g/kg **PO** Avoid if ingested household products, paraffin, petrol, corrosive poisons (acids/bases), iron, lithium, or alcohol.	Poisoning
Adrenaline (Epinephrine)	**Solution: 1 mg in 1 mL ampoule (1:1000)** **Adults:** 50 kg or above: 0.5 mg **IM** (0.5 mL of 1:1000) 40 kg: 0.4 mg **IM** (0.4 mL of 1:1000) 30 kg: 0.3 mg **IM** (0.3 mL of 1:1000) Repeat every 5 minutes as needed **Children:** **Anaphylaxis**: 0.15 mg **IM** (0.15 mL of 1:1000). Repeat every 5 minutes as needed **Severe Asthma**: 0.01 mg/kg **IM** up to 0.3 mg. Repeat every 15 minutes as needed	Anaphylaxis/severe allergic reaction and severe wheezing
	Infusion (adults): Give continuous **IV** infusion of 0.01 to 0.5 µg/kg/minute; titrate based on target BP or evidence of end-organ perfusion.	Distributive / Cardiogenic shock
Atropine	**Solution: 1 mg (sulfate) in 1 mL ampoule** **Adults:** 2 mg **IV**, every 3-5 minutes, doubling until clinical effect achieved. **Children:** 0.05 mg/kg **IV**, every 3-5 minutes, doubling until clinical effect achieved. Not to be given in children 3 months or younger.	Poisoning
Carbetocin	**Solution: 100 mcg in 1 mL** Give a single dose of 100 mcg **IM/IV** following a vaginal delivery.	Prevention of postpartum haemorrhage
Diazepam	**Rectal solution: 2 mg per mL solution 5 mg/ 1 mL ampoule** **Adults:** First dose: 10 mg slow **IV** push or 20 mg **PR** Second dose after 10 minutes: 5 mg slow **IV** push or 10 mg **PR** **Children:** First dose: 0.2 mg/kg slow **IV** push or 0.5 mg/kg **PR**. Can repeat half of first dose after 10 minutes if seizures/convulsions continue **MONITOR BREATHING CLOSELY in all patients given diazepam.**	Seizures/convulsions
Ergometrine	**Solution**: **200 µg (hydrogen maleate) in 1 mL ampoule** Give 0.2 mg **IV**; repeat every 2-4 hours as needed, max 5 total doses.	Prevention and treatment of postpartum haemorrhage

MEDICATION	DOSAGE	INDICATION
Glucose (Dextrose)	**Solution: 50% dextrose (D50), 25% dextrose (D25), or 10% dextrose (D10)** **Adults and children greater than 40 kg:** 25–50 mL **IV** of D50, or 125–250 mL **IV** of D10 **Children up to 40 kg:** 5 mL/kg **IV** of D10 (preferred) 2 mL/kg **IV** of D25 1 mL/kg **IV** of D50 **If no IV access:** 2–5 mL of 50% dextrose **OR** sugar solution in buccal space.	Hypoglycaemia
Glyceryl trinitrate	**Sublingual tablet: 500 mcg** 500 mcg **SL** every 5 minutes up to 3 doses if SBP >100 mmHg.	Concern for acute coronary syndrome
Isosorbide dinitrate	**Sublingual tablet: 5 mg** 5-10 mg **SL** every 2 to 4 hours if SBP >100 mmHg.	Concern for acute coronary syndrome
Magnesium sulfate	**Solution: 1 g in 2 mL ampoule, 5 g in 10 mL ampoule (50% or 500 mg/mL)** Give 4 g **IV** **slowly** over 20 minutes (Take 8 ml (four 2 ml vials) and dilute with 12 ml of sterile water. This gives 20 ml of 20% solution or 4 gm of magnesium sulfate. Administer as an IV loading dose over 5 min.) **AND** give 10 g **IM** (use the 5 g/10 mL solution) with 1 mL of 2% lidocaine **in each** buttock. **If unable to give IV,** give 10 g **IM** injection only (as above, 5 g in each buttock). **If seizures/convulsions recur** after 15 minutes give additional 2 g (10 mL of 20% solution) **IV** over 5 minutes. **If transport delays continue:** Give 5 g of 50% solution **IM (**with 1 mL of 2% lidocaine) in alternate buttocks every 4 hours.	Eclampsia or pregnant with seizure/convulsion
Metoclopramide	**Oral tablet: 10 mg (hydrochloride); oral liquid: 5 mg/5 mL; solution: 5 mg/mL (hydrochloride) in 2 mL ampoule.** **Adults**: 10-20 mg **IV** stat; 10 mg **PO** stat **Children and adolescents**: 0.1-0.2 mg/kg **PO**; max 10 mg/dose.	Nausea/ vomiting
Midazolam	**Solution: 1 mg/mL** **Adults**: 0.5-2.5 mg **IV** over 1 to 2 minutes; repeat every 2 to 5 minutes as needed; titrate to clinical effect; usual total dose: 5 mg **Children**: 0.1-0.15 mg/kg **IM**, max 10 mg; 0.25-0.5 mg/kg PO, max 20 mg **IV** dose**:** • ≥6 months to <6 years: 0.05-0.1 mg/kg; max dose: 6 mg. • ≥6 years: 0.025-0.05 mg/kg; max dose: 10 mg. • Adolescents: 1-2.5 mg over ≥2 minutes; max dose: 10 mg.	Sedation
	Adults: 10 mg **IV** repeat after 5 minutes if still having seizure. **Children:** 0.2 mg/kg **IV** repeat after 5 minutes if still having seizure.	Seizure
Misoprostol PO	**Oral tablet: 200 µg** Prevention: 600 µg **PO** stat Treatment: 800 µg **SL** stat.	Prevention and treatment of postpartum haemorrhage

MEDICATION	DOSAGE	INDICATION
Morphine	**Solution: 10 mg in 1 mL ampoule** **IV** stat doses of 0.05 mg to 0.1 mg/kg/dose titrated (typically 3-7 mg per dose). Repeat as needed **Use with caution in the elderly, children and obese patients.** **MONITOR BREATHING CLOSELY in all patients given morphine.** **Monitor respiratory rate, sedation, nausea and vomiting.**	Severe pain
Naloxone	**Solution: 400 µg/mL (hydrochloride) in 1 mL ampoule** **IV:** 100 µg single dose **OR** **IM:** 400 µg single dose May repeat every 5 minutes as needed. May require 0.4 mg/hr infusion for several hours for long-acting opioids.	Opioid overdose
Ondansetron	**Oral solid: 4 mg, 8 mg; oral liquid: 4 mg/5 mL; solution: 2 mg/mL in 2 mL ampoule.** **Adults**: 4-8 mg **PO/IM/IV** stat **Children**: **IV** 0.15 mg/kg/dose **IV** stat; max 8 mg/dose **PO** <15 kg: 0.2 mg/kg/dose; 15 to 30 kg: 4 mg; >30 kg: 8 mg Not to be given in children 1 month or younger.	Nausea/ vomiting
Oxytocin	**Solution: 10 IU in 1 mL ampoule** **Immediately after birth / identifying haemorrhage:** Give 10 IU **IM/IV AND** start IV fluids with 20 IU/L at 60 drops/minute. **Once placenta is delivered, continue** IV fluids with 20 IU/L at 40 drops/minute if still bleeding. **If placenta manually removed / uterus does not contract:** repeat 10 IU **IM**. Continue IV fluids with 20 IU/L at 20 drops/minute for 1 hour after bleeding stops. **Max Dose:** 3 L of IV fluids containing oxytocin.	Prevention and treatment of postpartum haemorrhage
Paracetamol (acetaminophen)	**Oral tablet: 250 mg, 500 mg**; **rectal suppositories: 250 mg, 500 mg** **Adults:** 500 mg–1 g **PO/PR** every 6 hours Max 4 g daily or max 2 g daily if liver impairment/ cirrhosis **Children:** 10–15 mg/kg **PO/PR** up to four times per day.	Mild to moderate pain, fever, headache
Salbutamol (Albuterol)	**Inhaler: 100 mcg per puff** **Adults:** Prime with 5 puffs and give 2 puffs via spacer every 2 minutes until improved. **Children:** Prime with 5 puffs and give 2 puffs into spacer. Keep spacer in mouth for 3–5 breaths. Repeat until 6 puffs given for < 5 years, or 12 puffs for > 5 years. **Nebulizer: (Adults)** 5 mg in 5 mL sterile saline. **(Children)** 2.5 mg in 3 mL sterile saline. For severe wheezing, above doses can be given several times in an hour.	Severe wheezing
Tranexamic acid	**Solution: 100 mg/mL in 10 mL ampoule.** **Adult**: 1 g in 200 mL **IV** over 10 minutes (within 3 hours of injury) Follow initial dose with a continuous infusion of 1 g over 8 hours.	Severe bleeding following injury
	1 g **IV** as soon as possible after birth. Repeat after 30 minutes if bleeding continues, or if bleeding restarts within 24 hours of first dose.	Treatment of postpartum haemorrhage


World Health
Organization