Alberta Health Services

Alberta Health

Emergency Medical Services

Medical First Responder (MFR)
Medical Control Protocols (MCPs)

Standard First Aid (SFA)

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The Alberta Health Services (AHS) Emergency Medical Services (EMS) is committed to providing high quality and safe patient care. To this end, AHS EMS has developed this set of Medical Fire Response (MFR), Medical Control Protocols (MCPs). The MCPs contain evidence-based and expert-informed care and treatment information that is specifically intended for the use of medical first responders in Alberta and the physicians who provide medical oversight for these agencies. EMS reserves the right at its own discretion to make changes, including the correction of errors and complete revisions to the MCPs.

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**Be advised that these MCP's will continue to be reviewed and updated at regular intervals to ensure that they meet the above standards.

Dr. Ian Phelps
Senior Medical Director
Alberta Health Services
Emergency Medical Services

Medical Oversight Agreement
(Complete if not using AHS Medical Direction)

Agency Name: _____

Municipality/County: _____

Administration Name: _____

Signature: _____

Chief/Director Name: _____

Signature: _____

Medical Direction

As Medical Director for the above mentioned agency, I have reviewed and approve of the use of these medical control protocols by our medical first responders.

Medical Director Name: _____

Signature: _____

Contact Phone Number: _____

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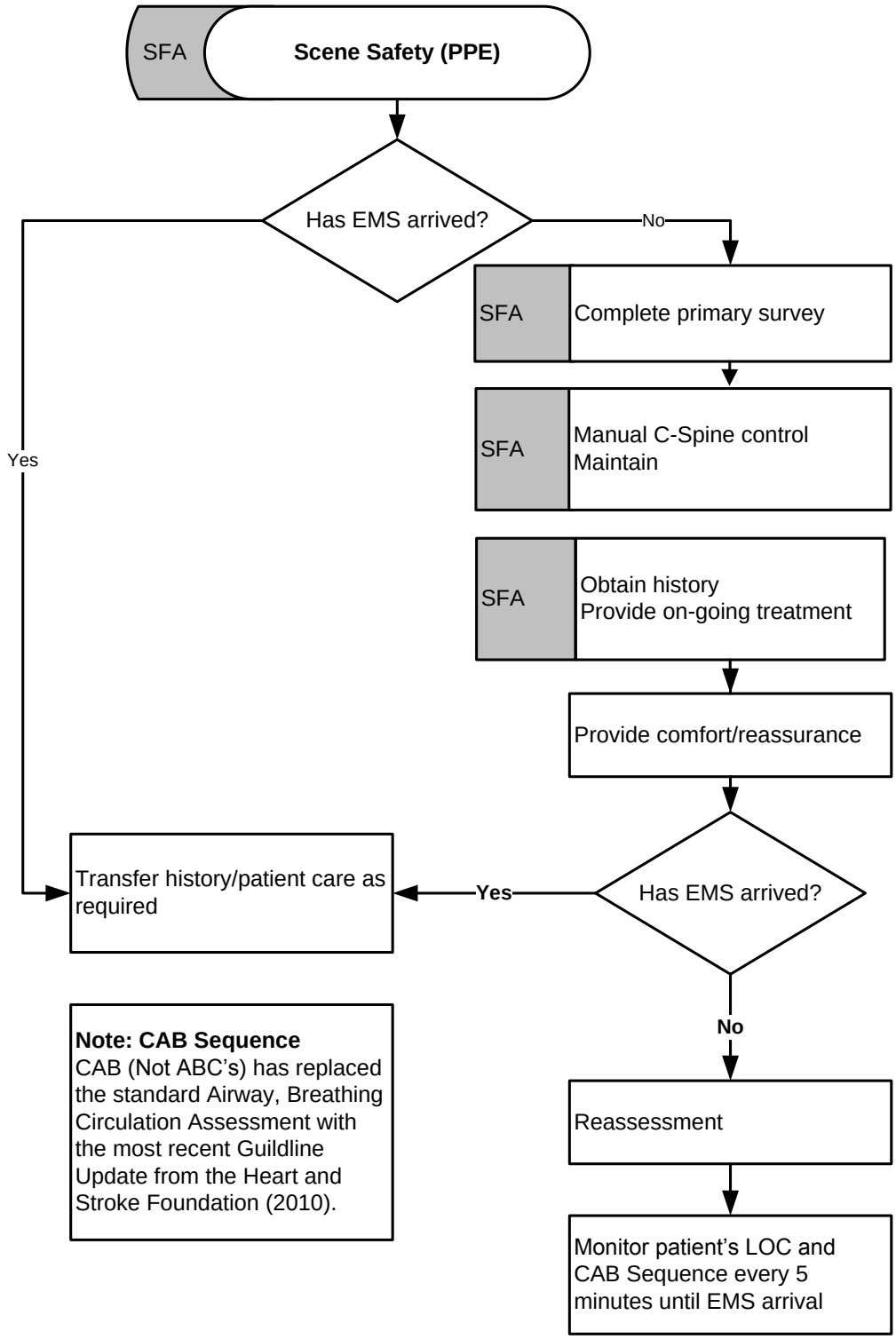
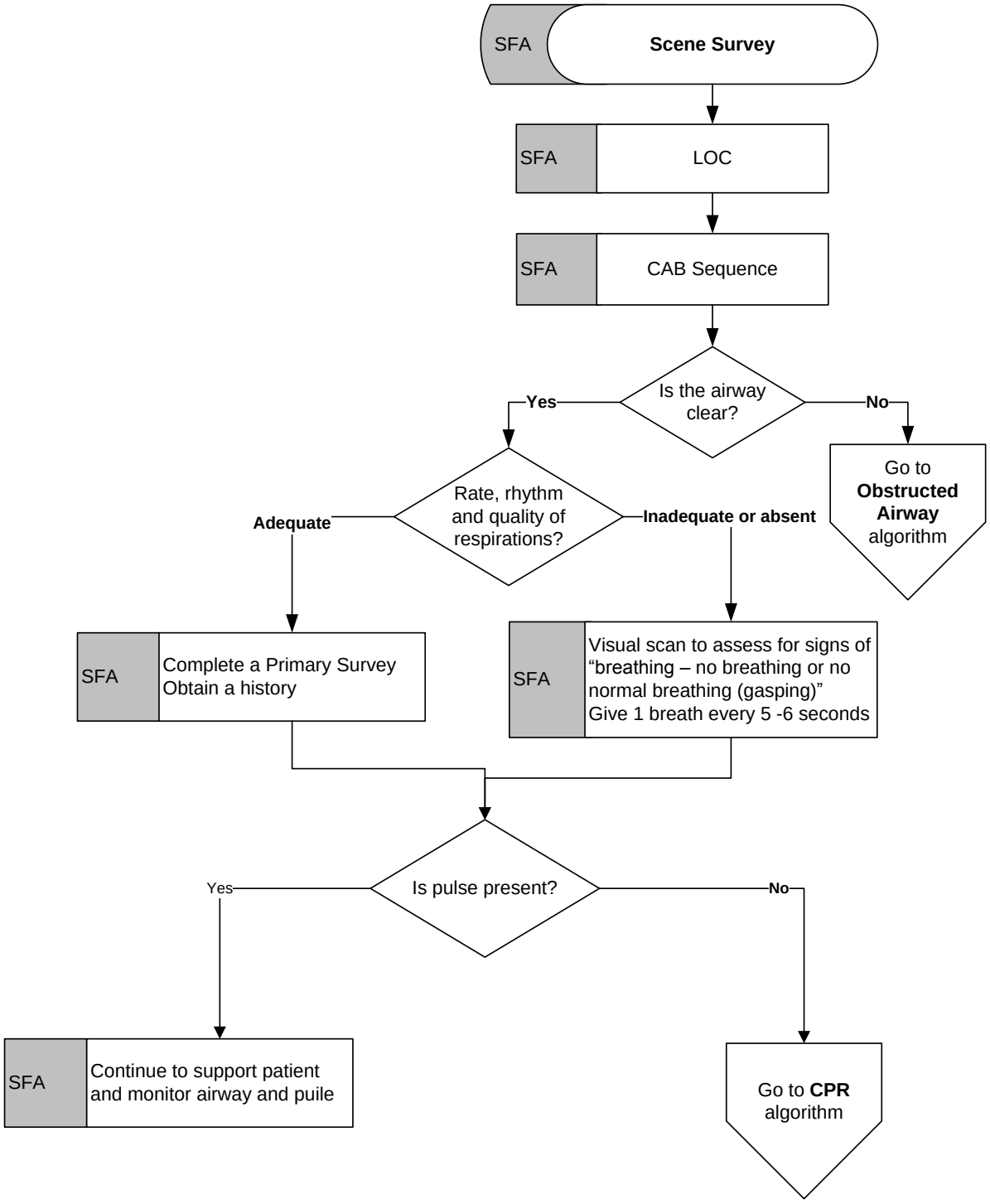
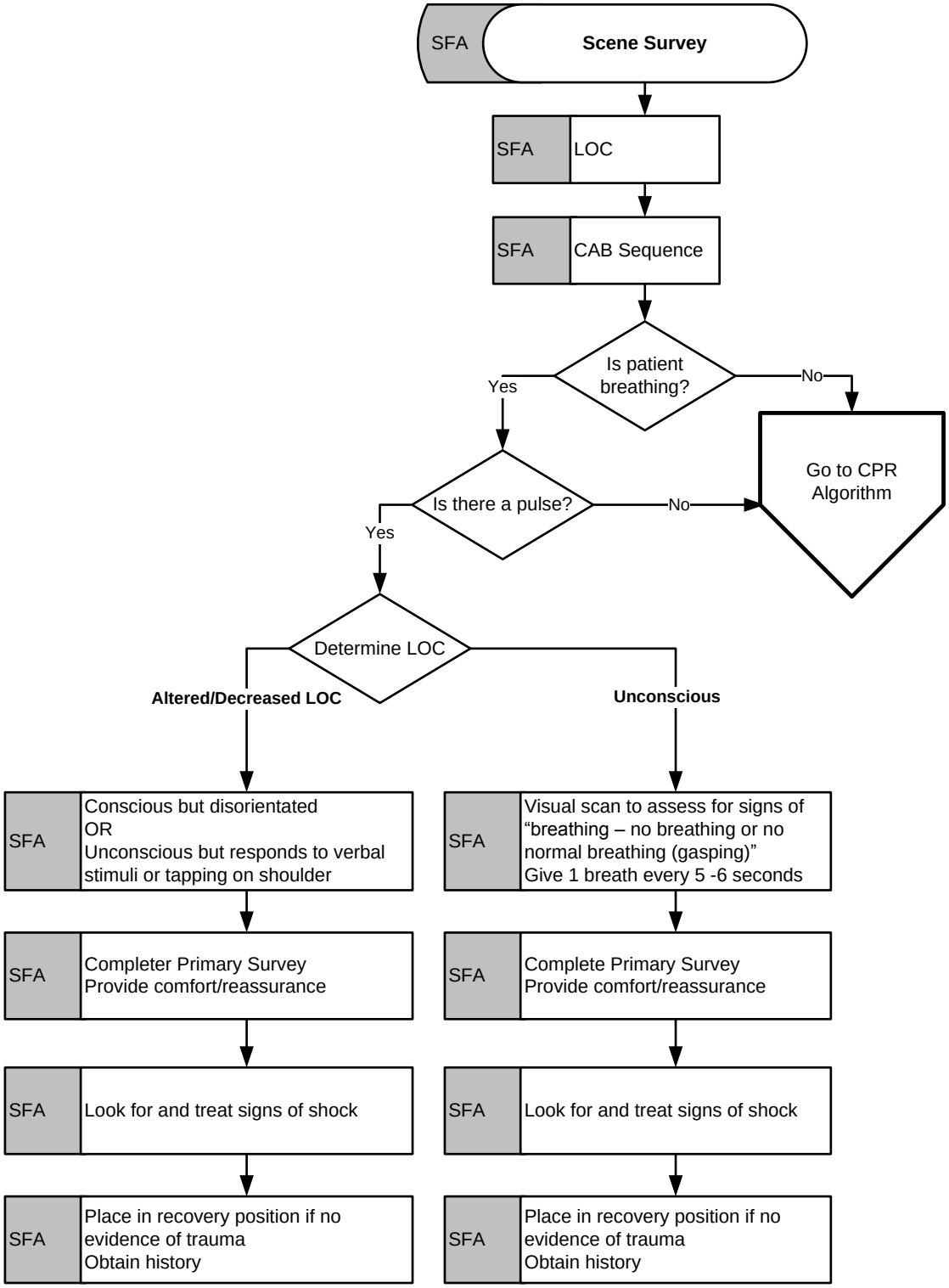


Algorithm 2 Airway Control – Unconscious Patients

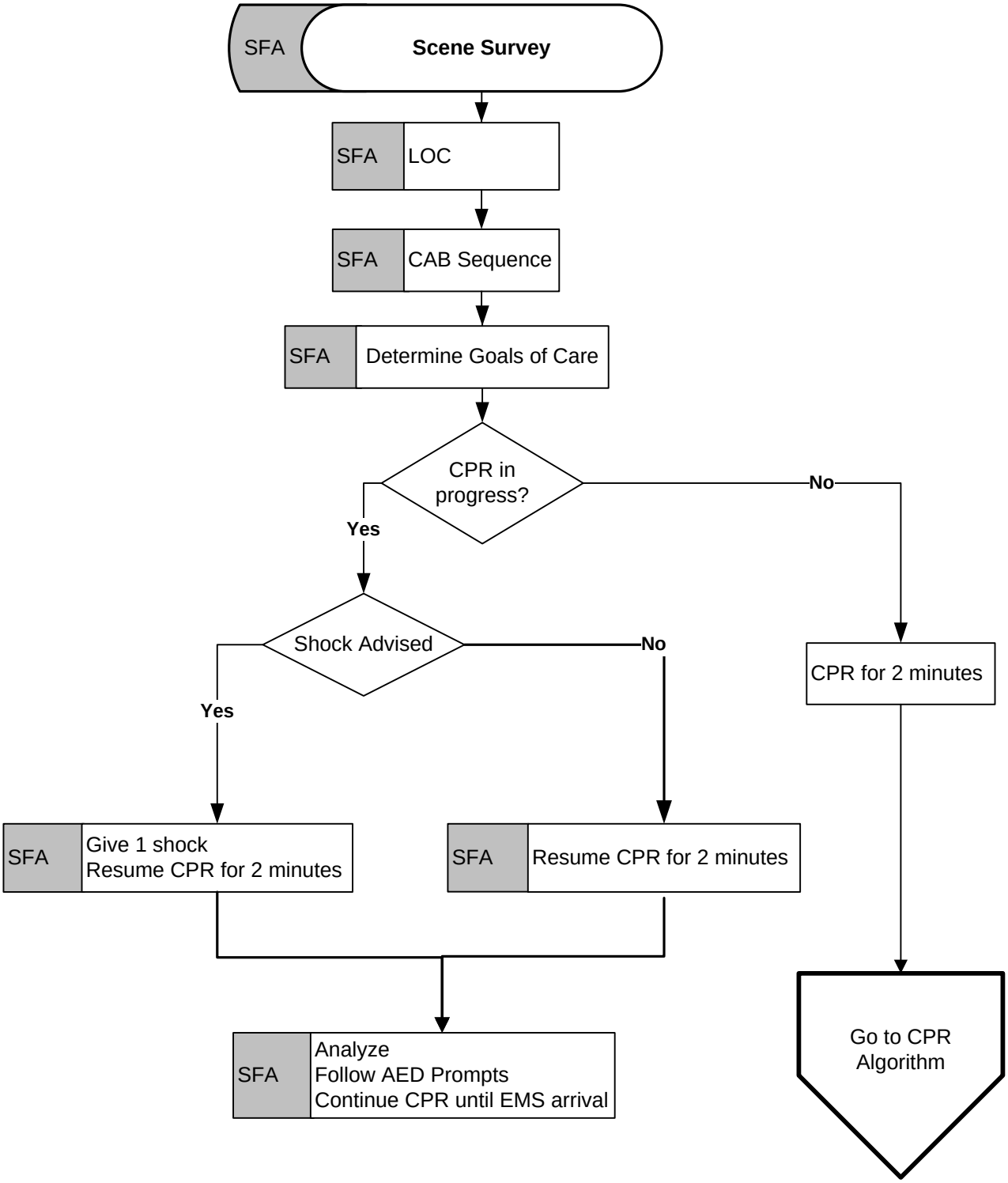


*****In the unlikely event there is a pulse but no breathing, provide mouth to mask/shield ventilations 1 every 5-6 seconds

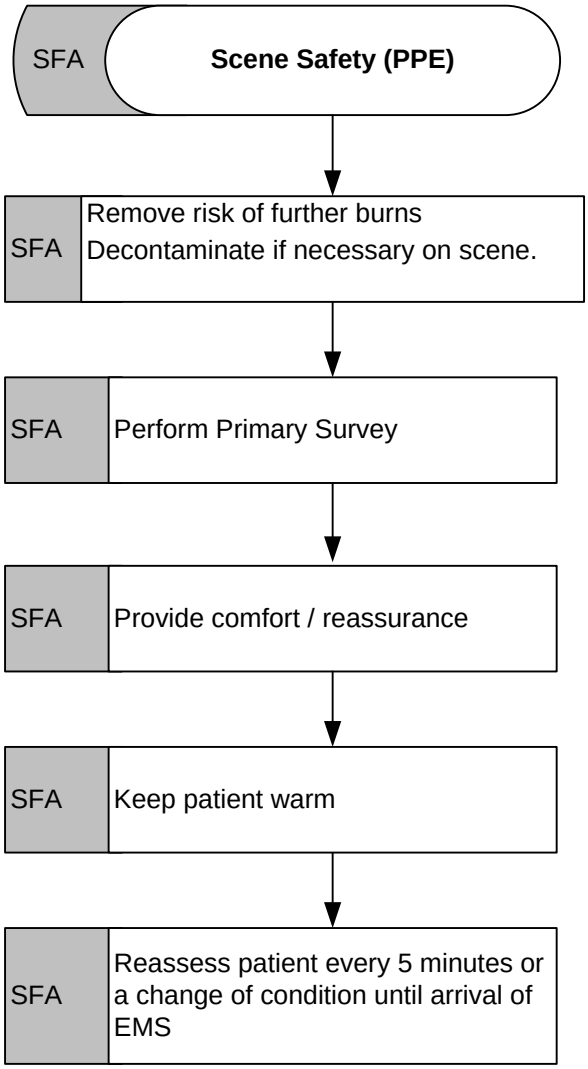
Algorithm 3 Altered Level of Consciousness



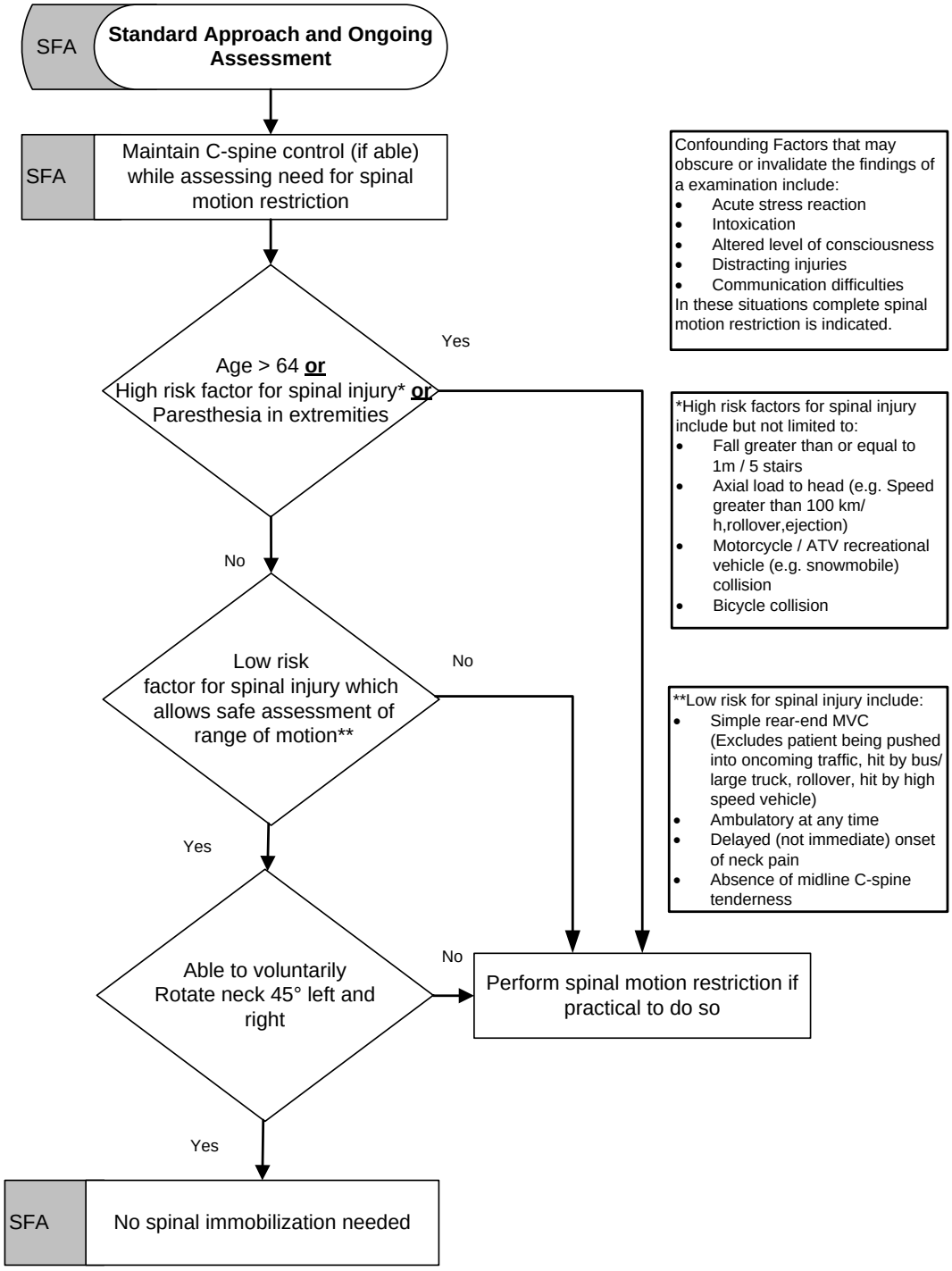
Algorithm 4 Automated External Defibrillation



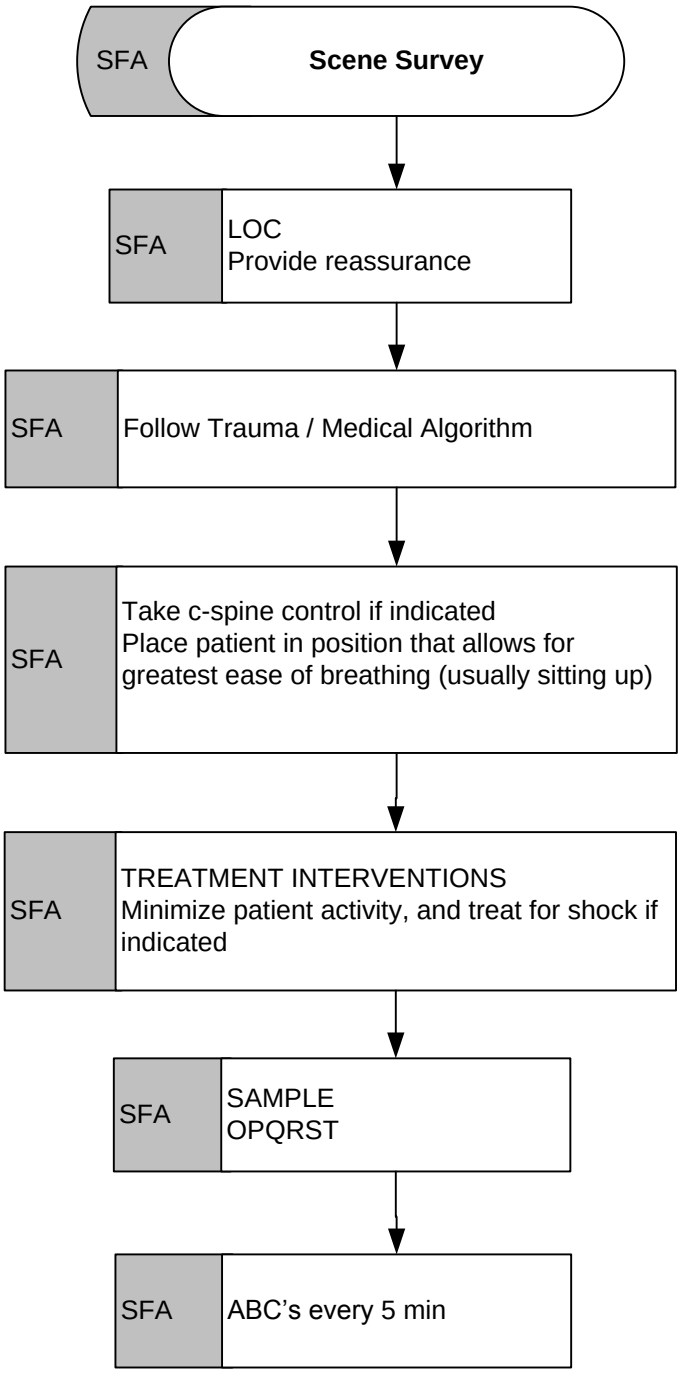
Algorithm 5 Burns



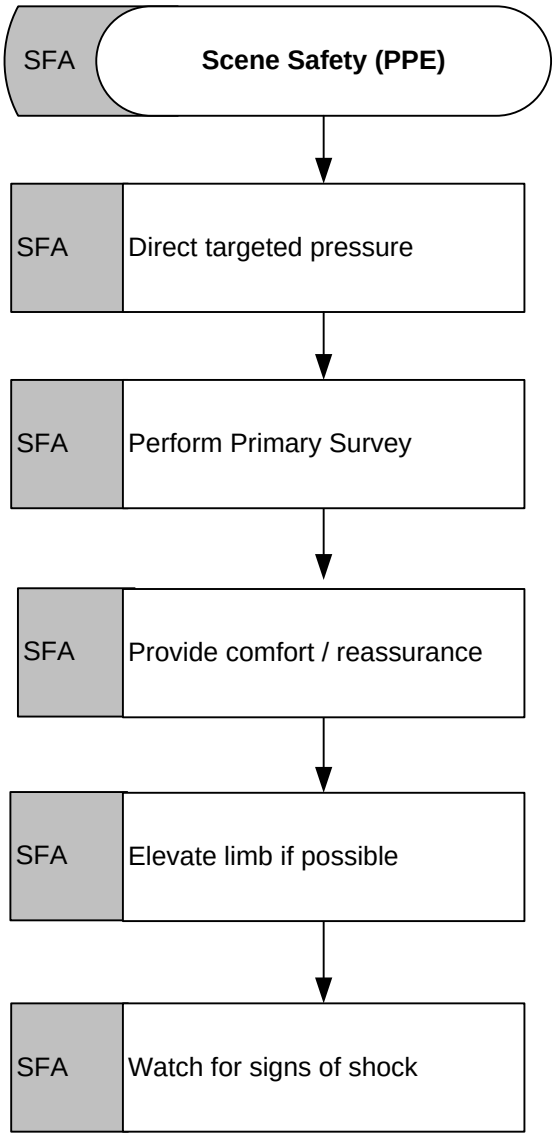
Algorithm 6 C-Spine Assessment



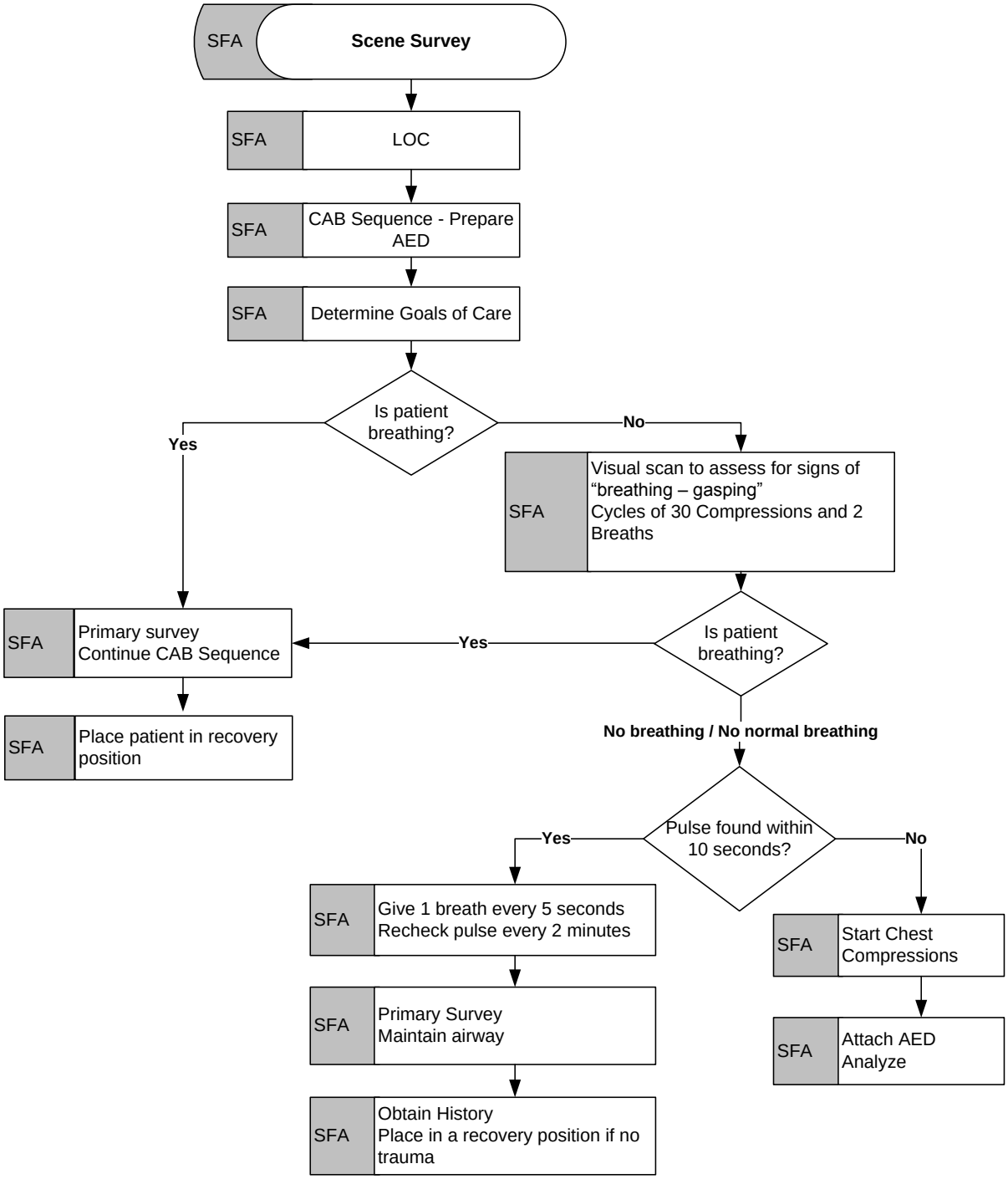
Algorithm 7 Chest Pain



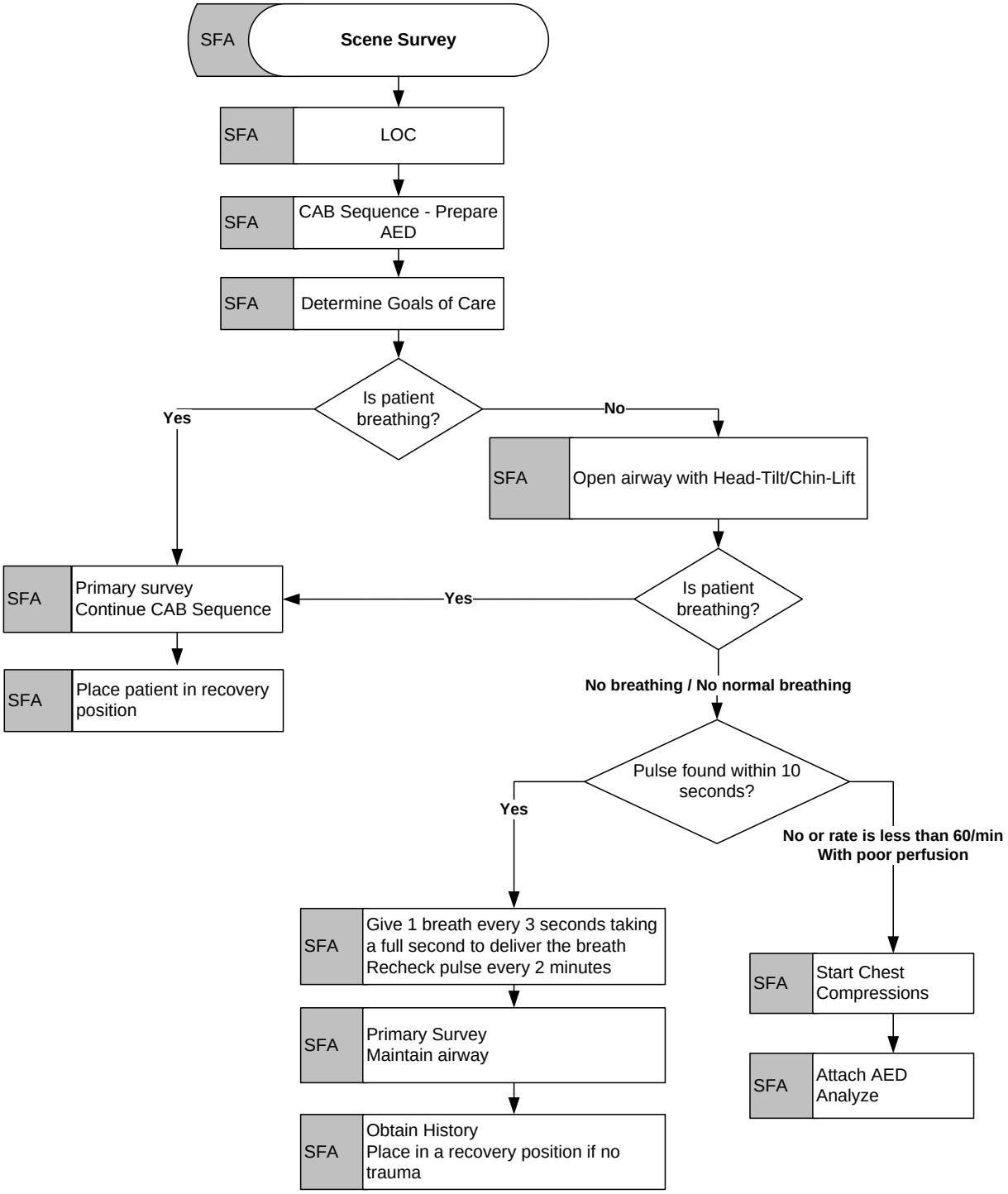
Algorithm 8 Control of External Bleeding



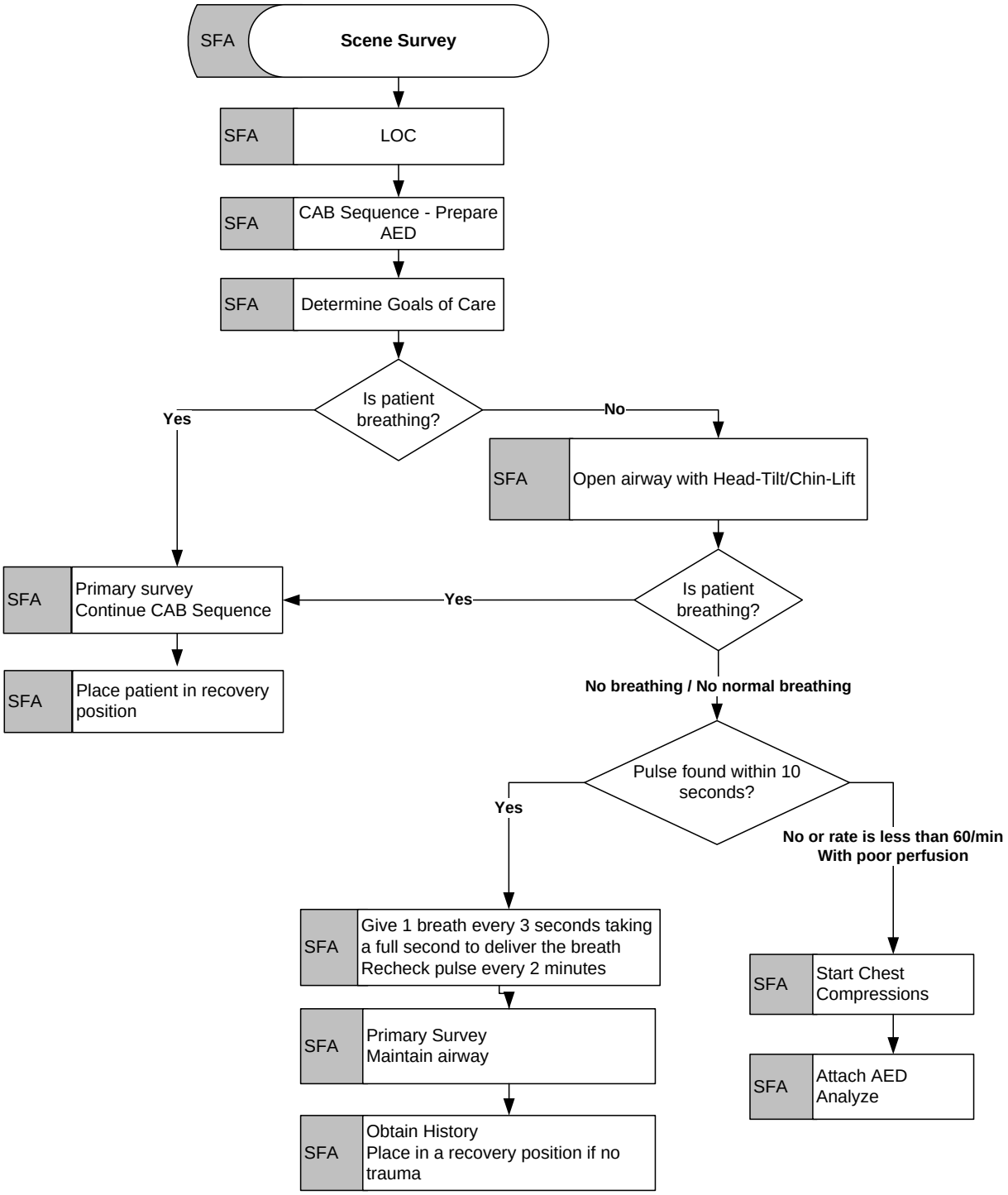
Algorithm 9 CPR Adults



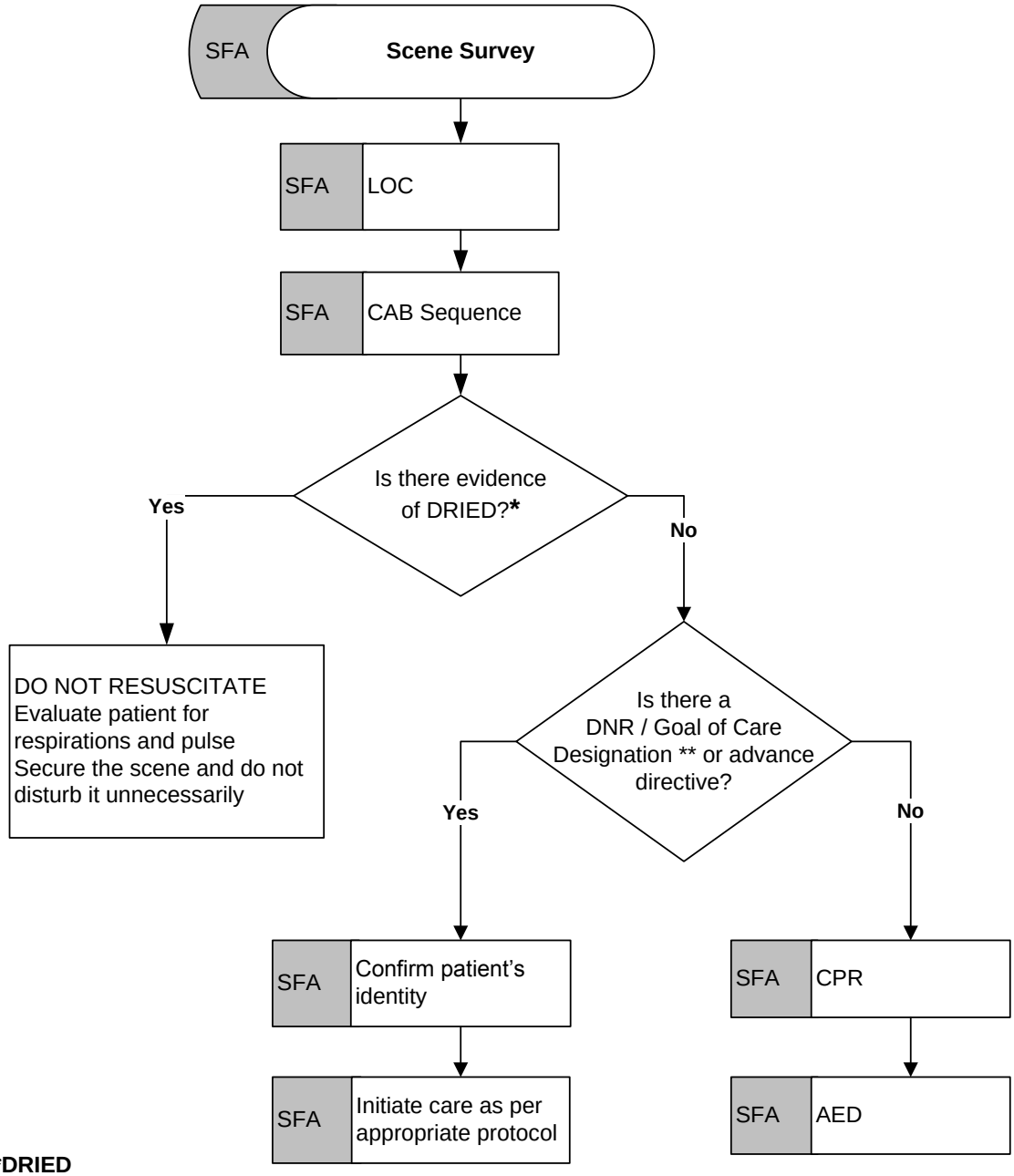
Algorithm 10 CPR Children (1 to 8 years)



Algorithm 11 CPR Infants (Less than 1 Year)



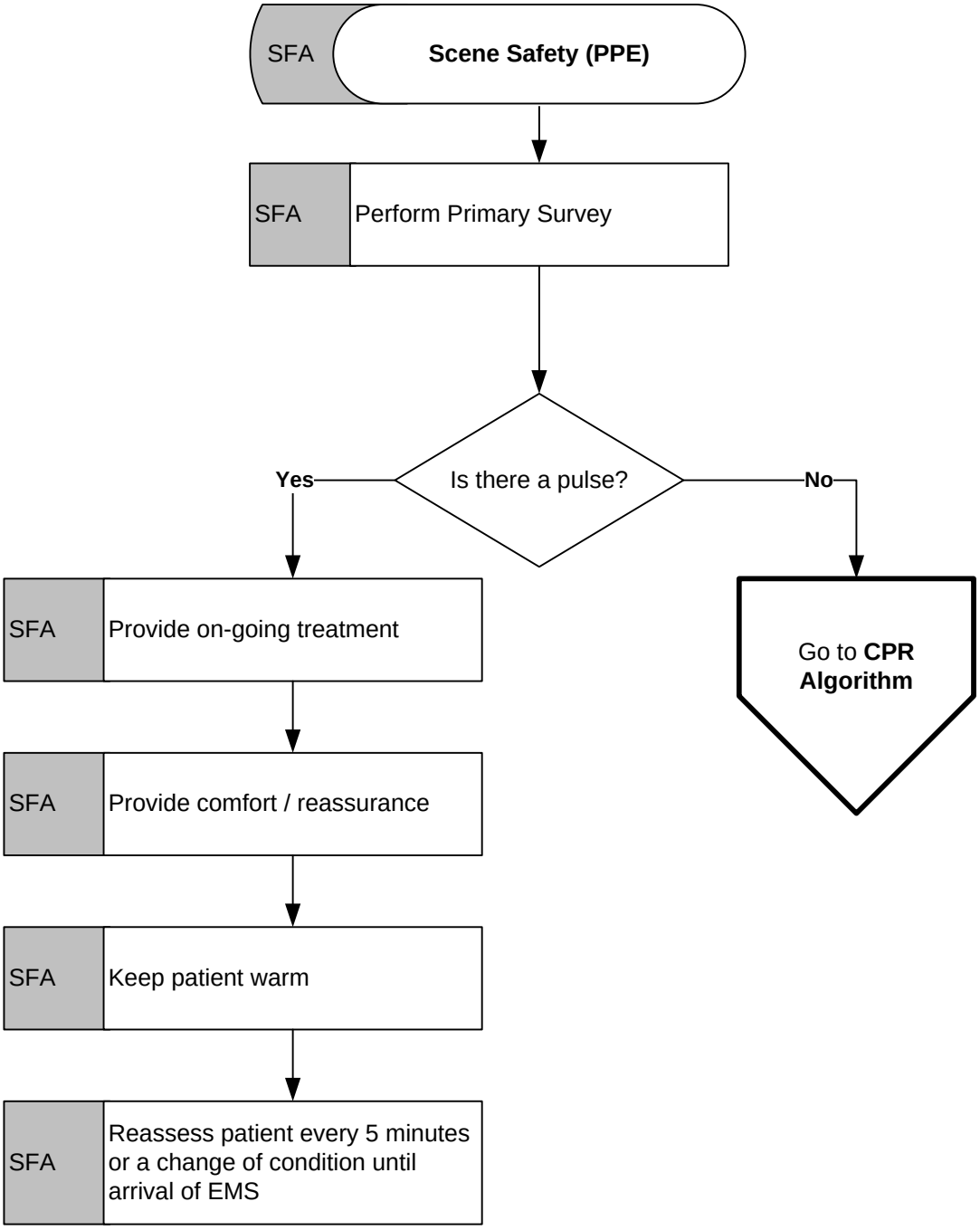
Algorithm 12 Death On-Scene



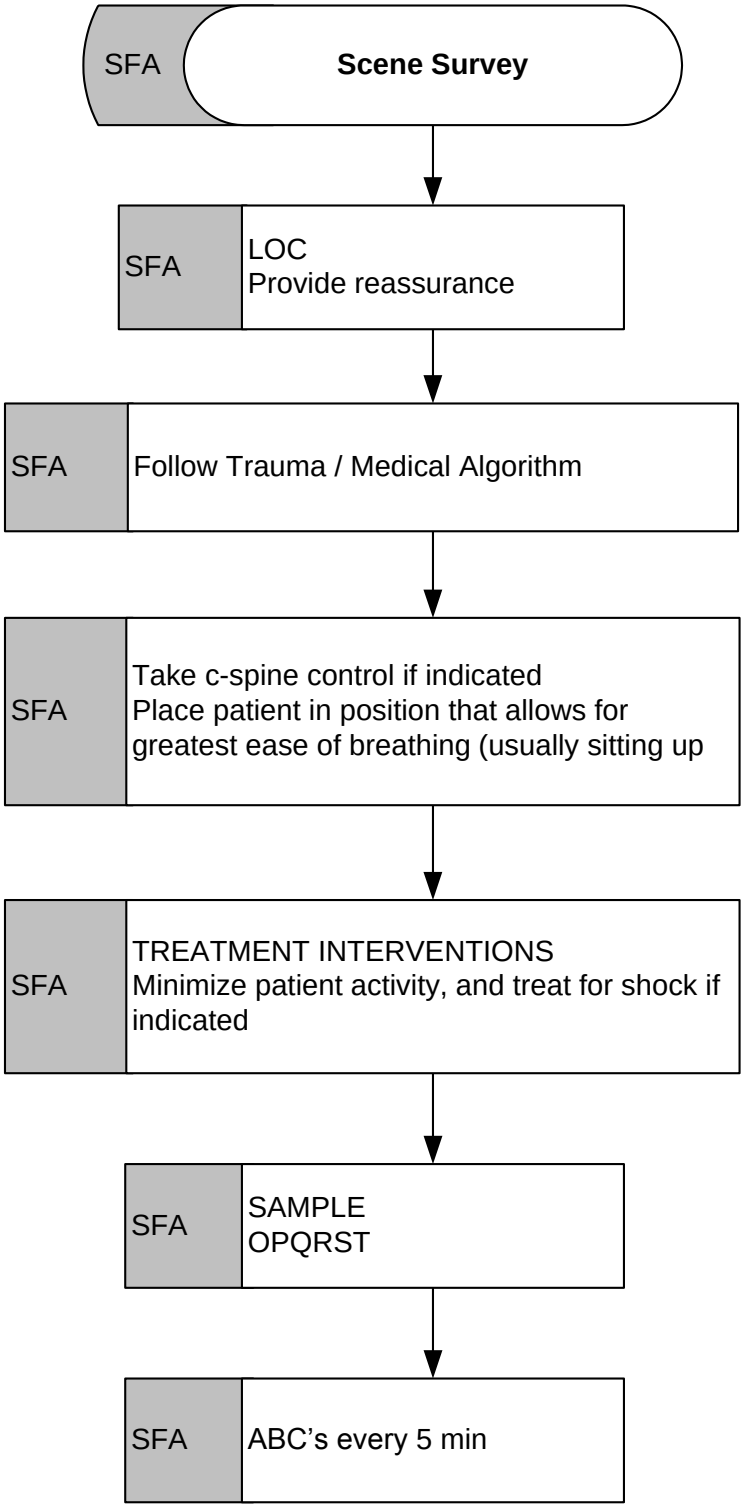
***DRIED**
Decapitation
Rigor Mortis
Incineration
Evisceration
Decomposition

****DNR / Goals of Care Directive**
Document must be physically present. Verbal orders are not valid
If in doubt, do not delay resuscitative efforts

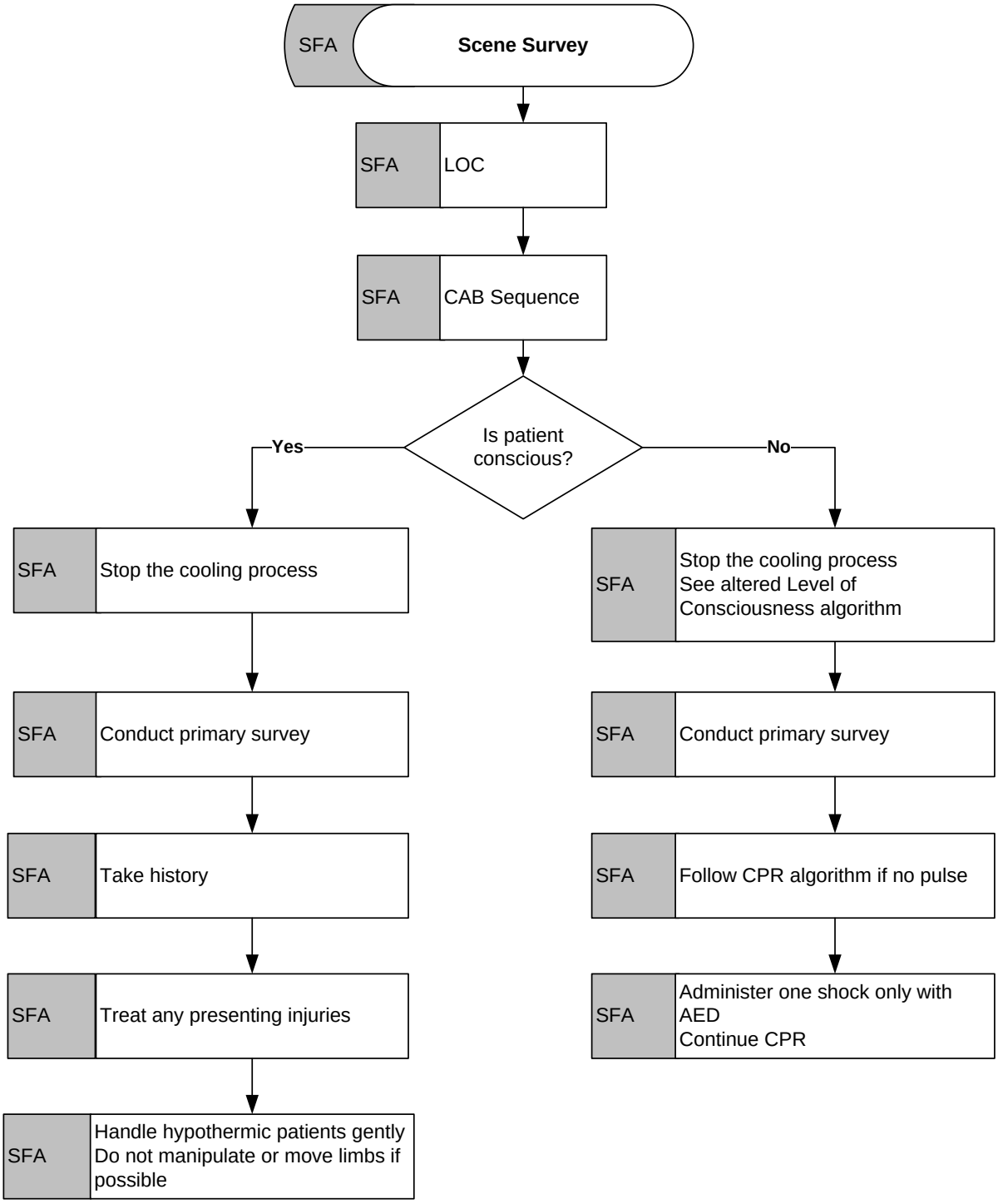
Algorithm 13 Drowning / Near Drowning



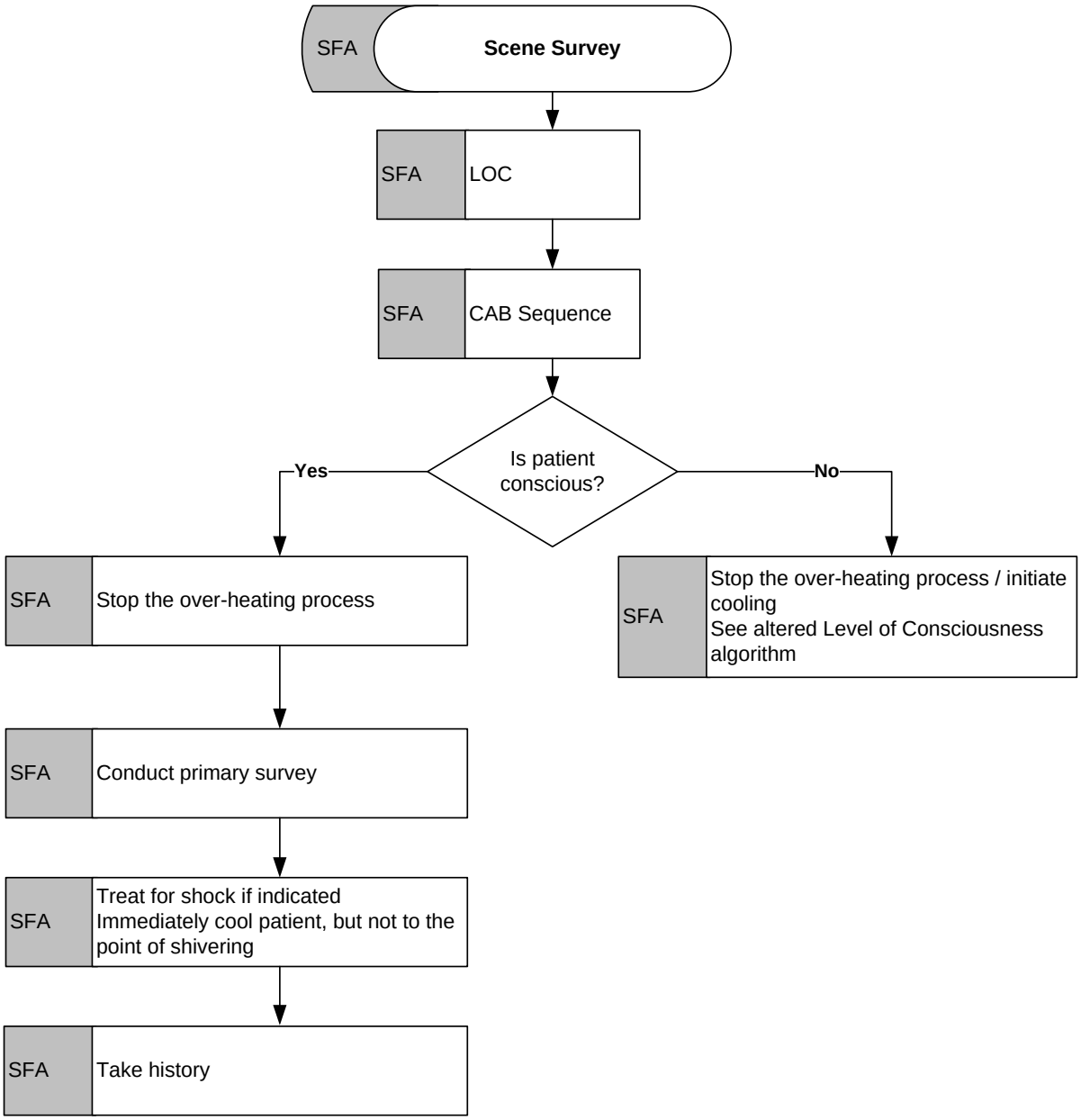
Algorithm 14 Dyspnea (shortness of breath)



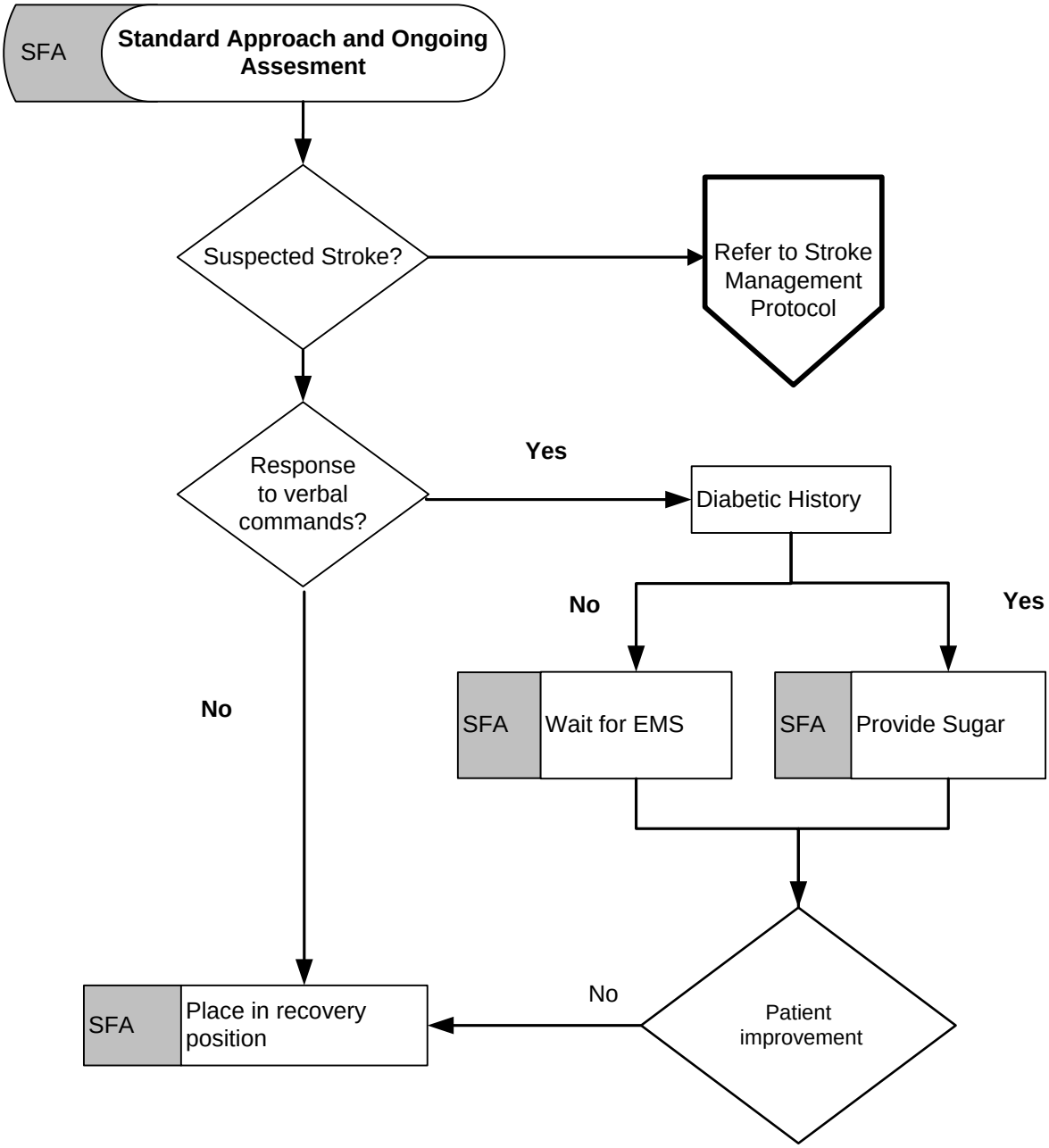
Algorithm 15 Environmental Emergencies – Cold Related



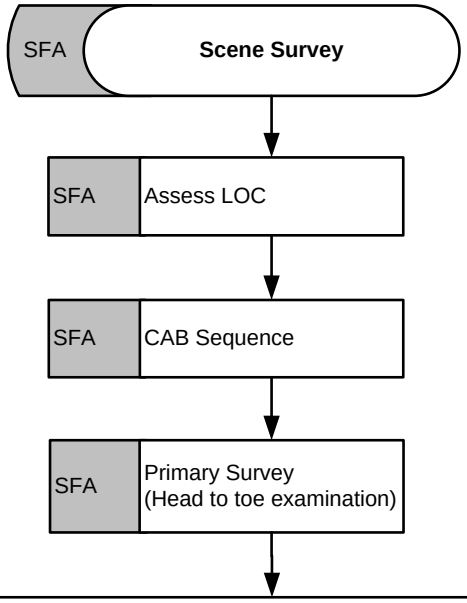
Algorithm 16 Environmental Emergencies – Heat Related



Algorithm 17 Hypoglycemia



Algorithm 18 Initial Assessment Protocol



Head
Look for DCAP-BLS and feel for TIC.
Look for **battle signs** and **racoon eyes.** Look for CSF in the ears.
Look to see if the pupils are **PEARL**.
What is the pupil size, and are the pupils equal and reactive to light?

Neck
Look for **DCAP-BLS** and gently palpate for **TIC.**
Look at the **neck veins.** Note if they are flat or distended.
Look at and feel the trachea. Note if it is mid-line or deviated.
Look for a Medic Alert tag. Check accessory muscle use.

Chest
Look for **DCAP-BLS** and feel for **TIC.**
Auscultate the lungs at the apices and bases. (**EMR/EMT** skill)
Note if breathing sounds are present and equal.
Look for flail chest, sucking chest wounds, and feel for subcutaneous emphysema.
Look for equal bilateral expansion. Is there any paradoxical movement?

Abdomen
Look for **DCAP-BLS**.
Feel for **DRT** in all four quadrants of the abdomen.

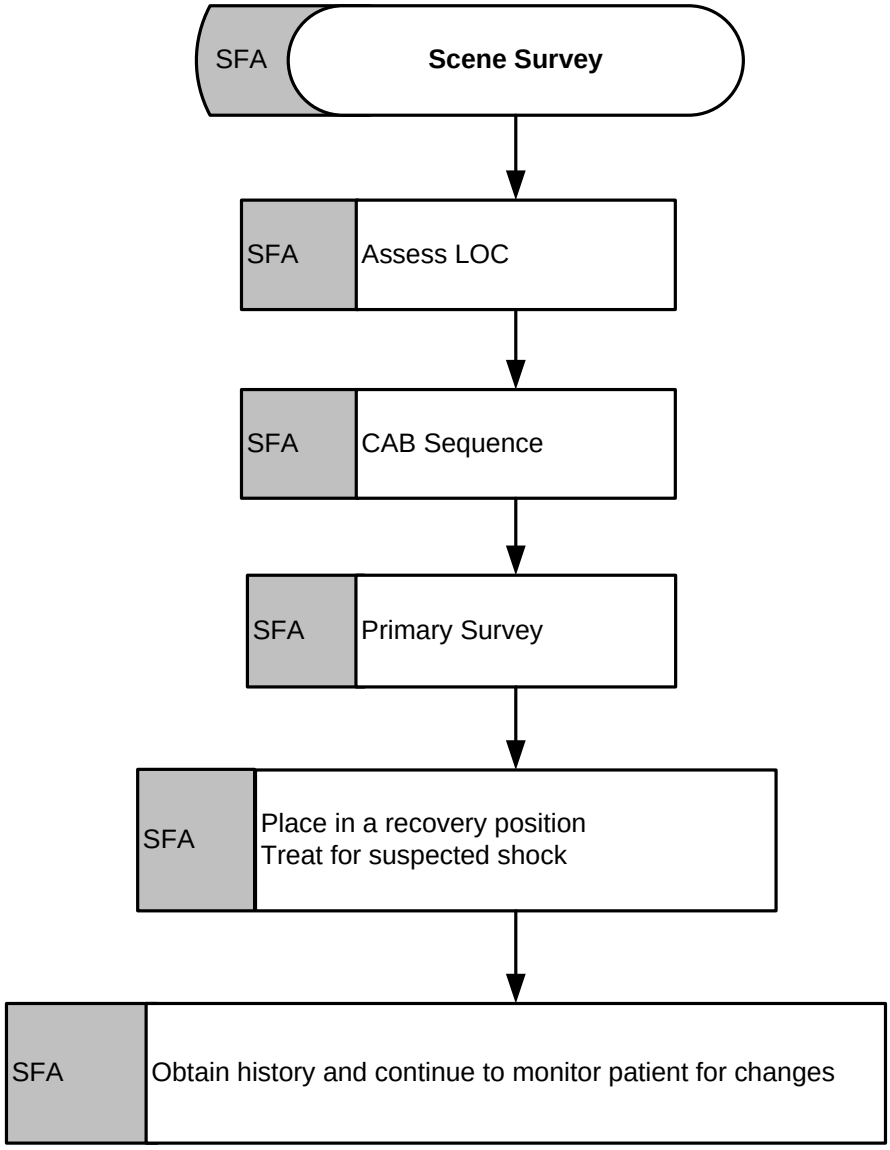
Pelvis
Look for **DCAP-BLS** and feel for **TIC.**
Look for priapism and incontinence.

Lower Extremities
Look for **DCAP-BLS.**
Feel for **TIC** and **PMS**.
Check for skin colour and temperature.

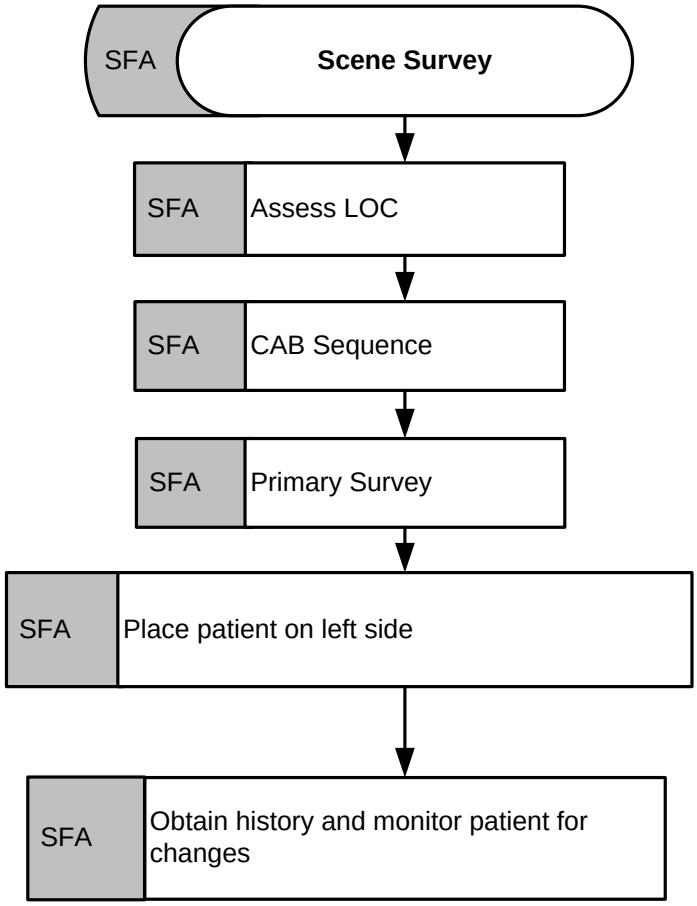
Upper Extremities
Look for **DCAP-BLS**.
Feel for **TIC** and **PMS**.
Check for skin colour and temperature.

Back
Look for **DCAP-BLS**.
Feel for **TIC**
Observe any blood pooling.

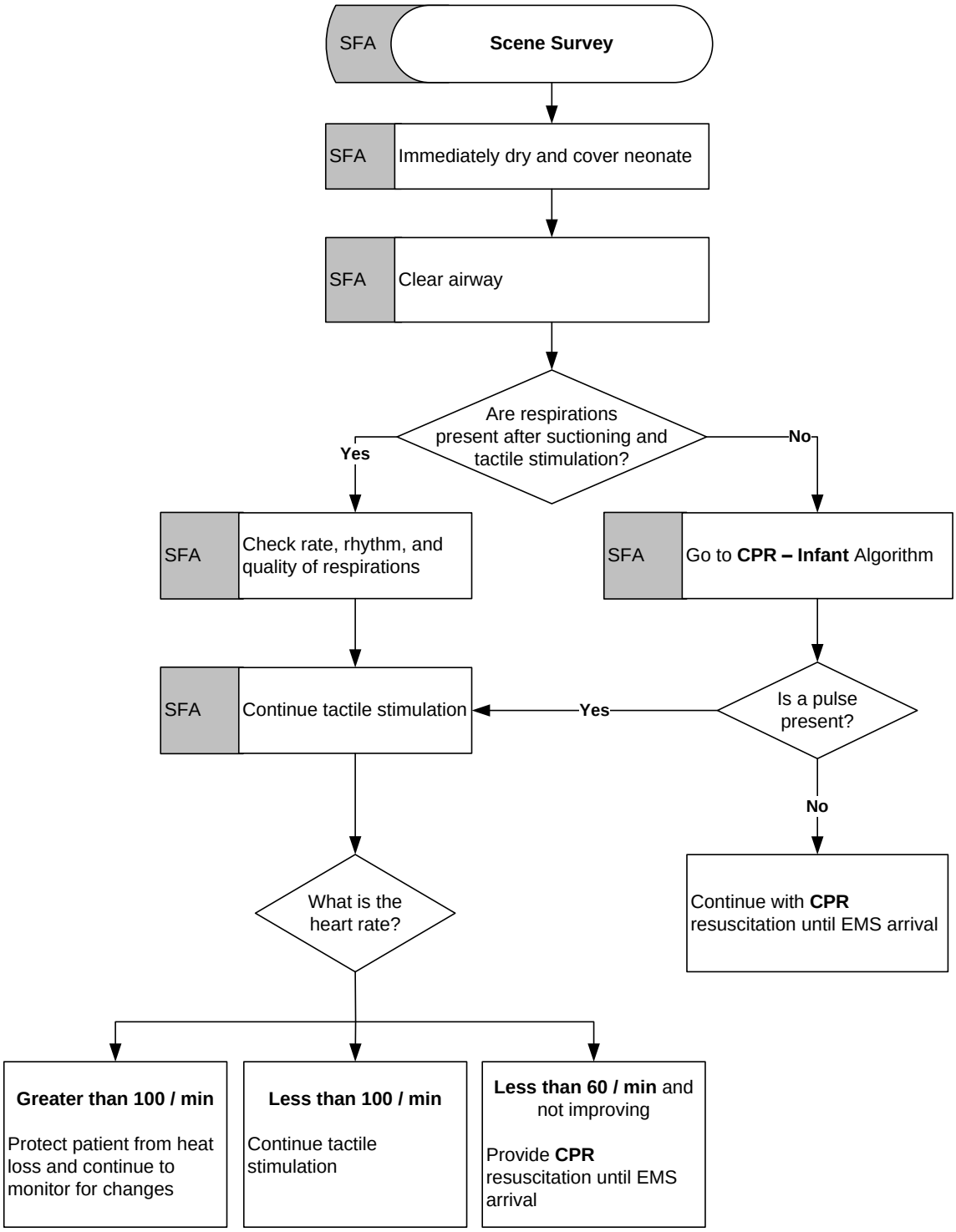
Algorithm 19 Obstetrics and Gynecological – Vaginal Bleeding



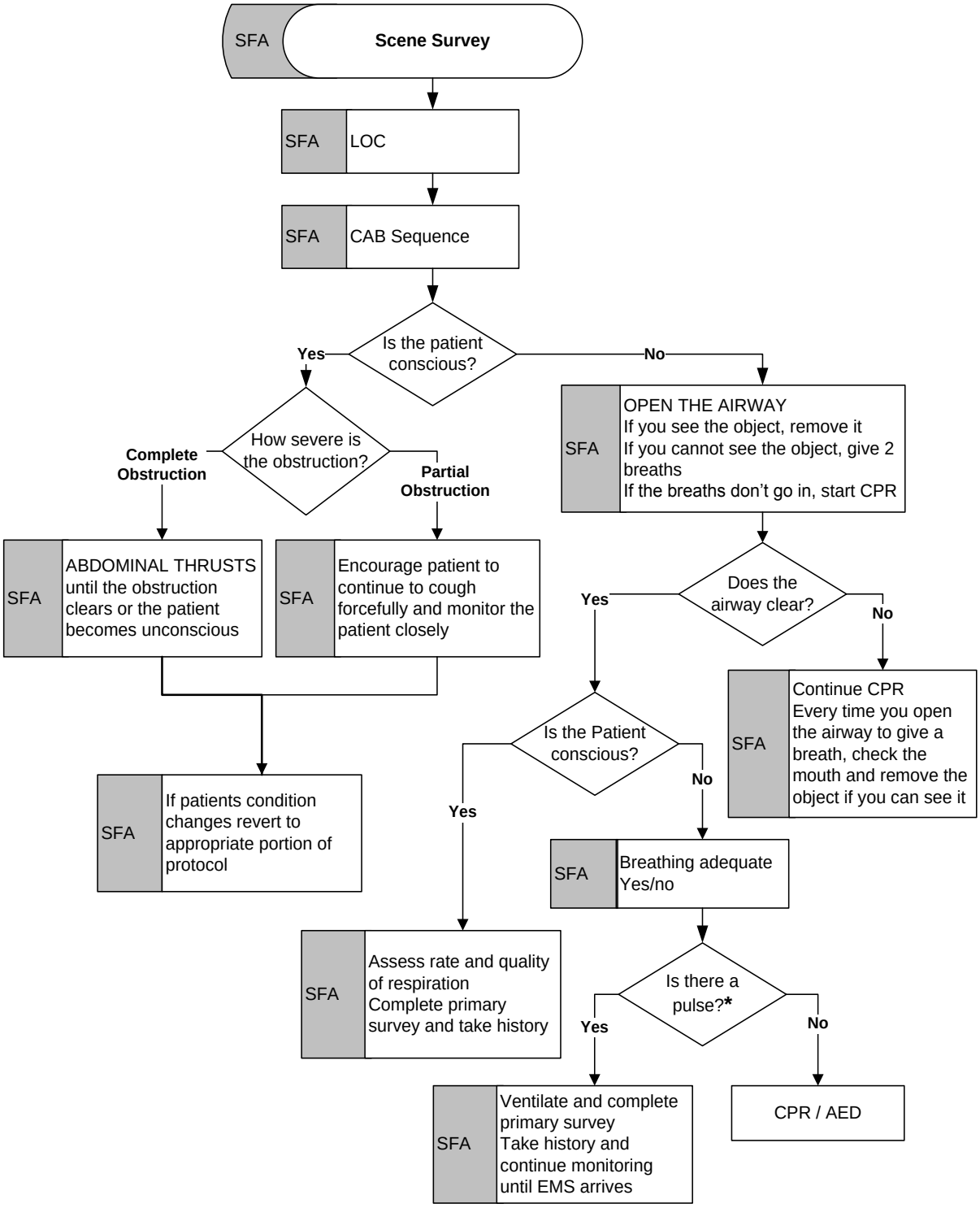
Algorithm 20 Obstetrics and Gynecology – Childbirth



Algorithm 21 Obstetrics and Gynecology – Neonatal Resuscitation

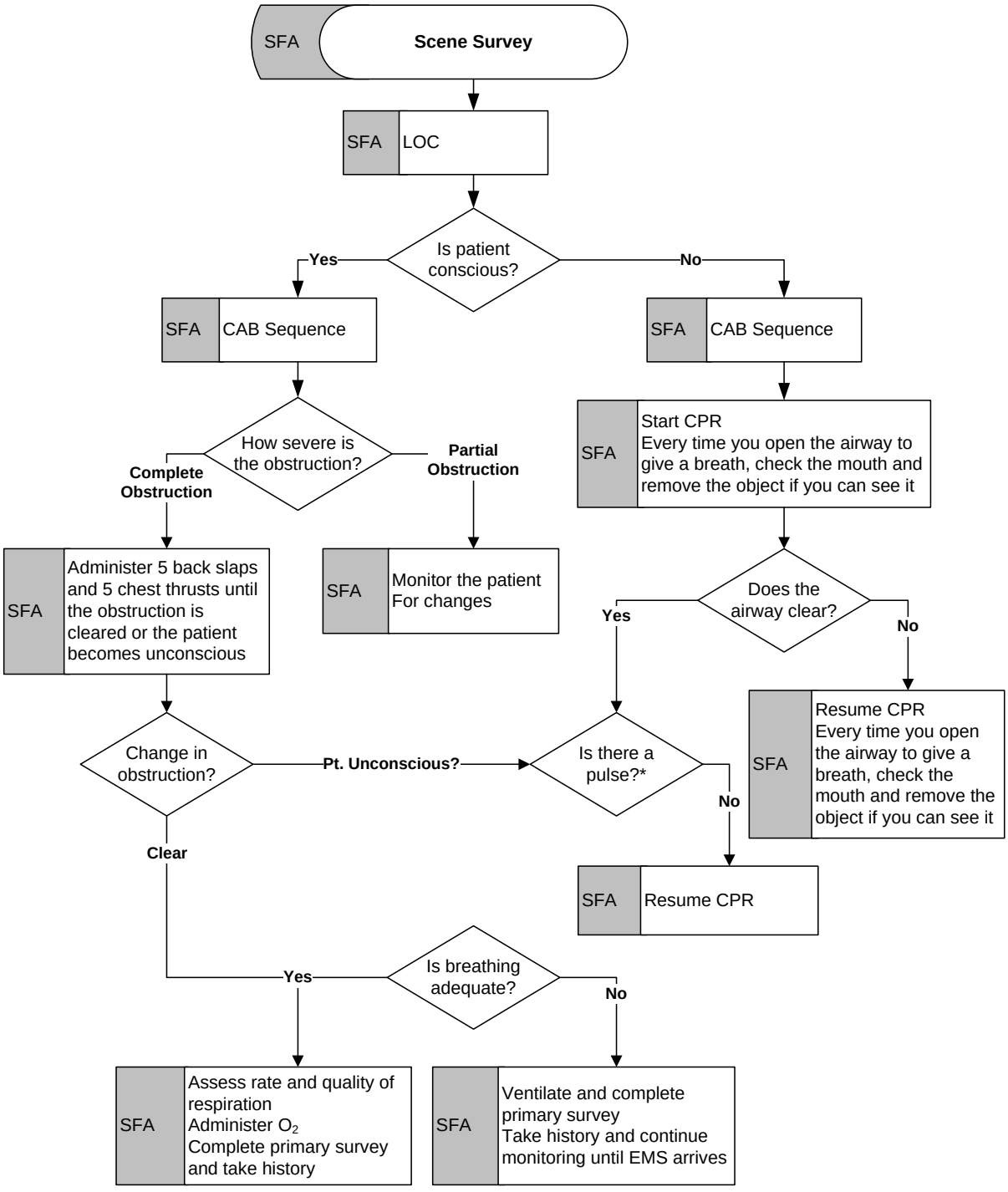


Algorithm 22 Obstructed Airway – Adults / Children



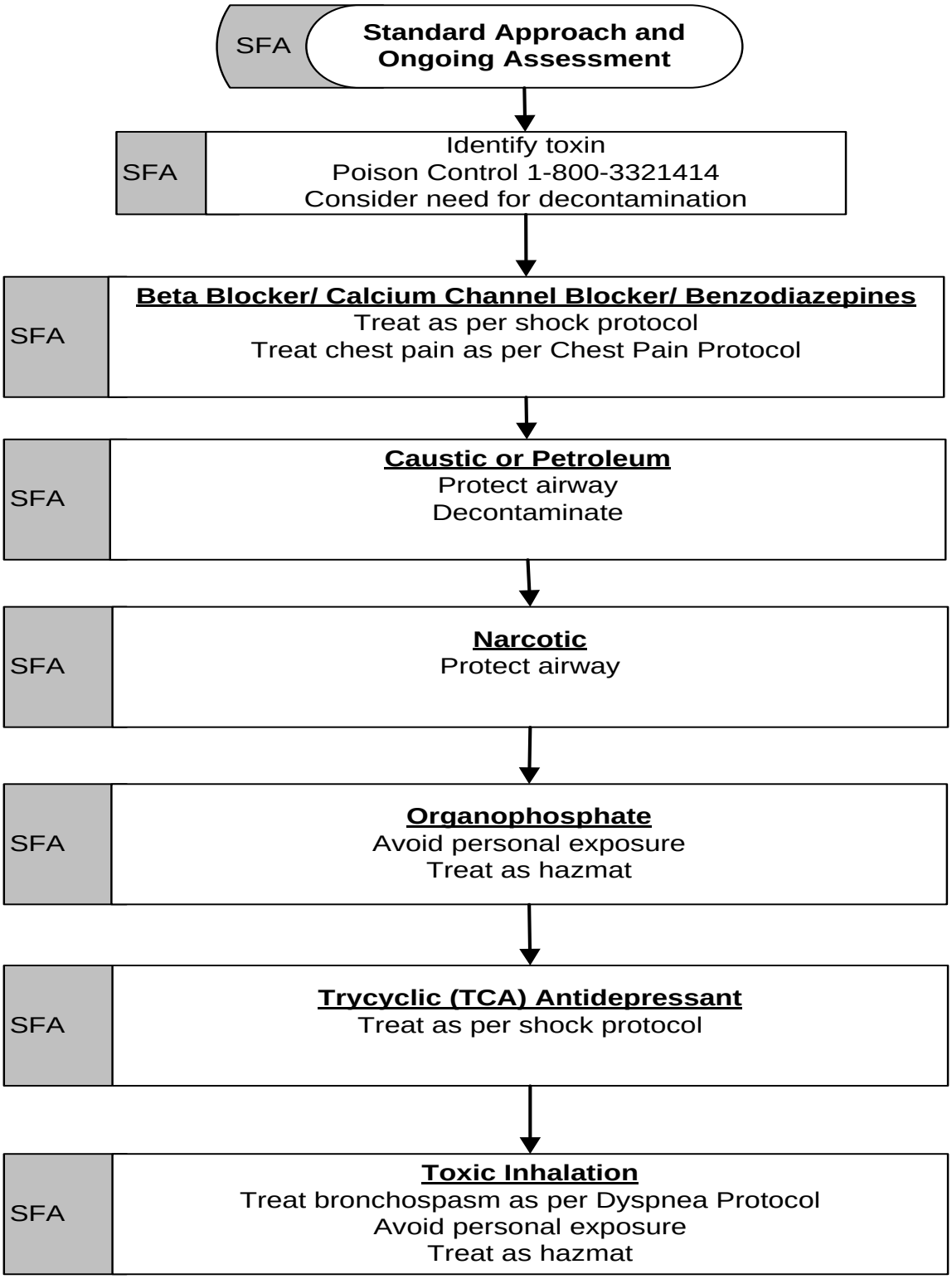
***In the unlikely event there is a pulse but no breathing, provide mouth to mask/shield ventilations 1 every 5-6 seconds

Algorithm 23 Obstructed Airway – Infants (Birth – 1 Year)

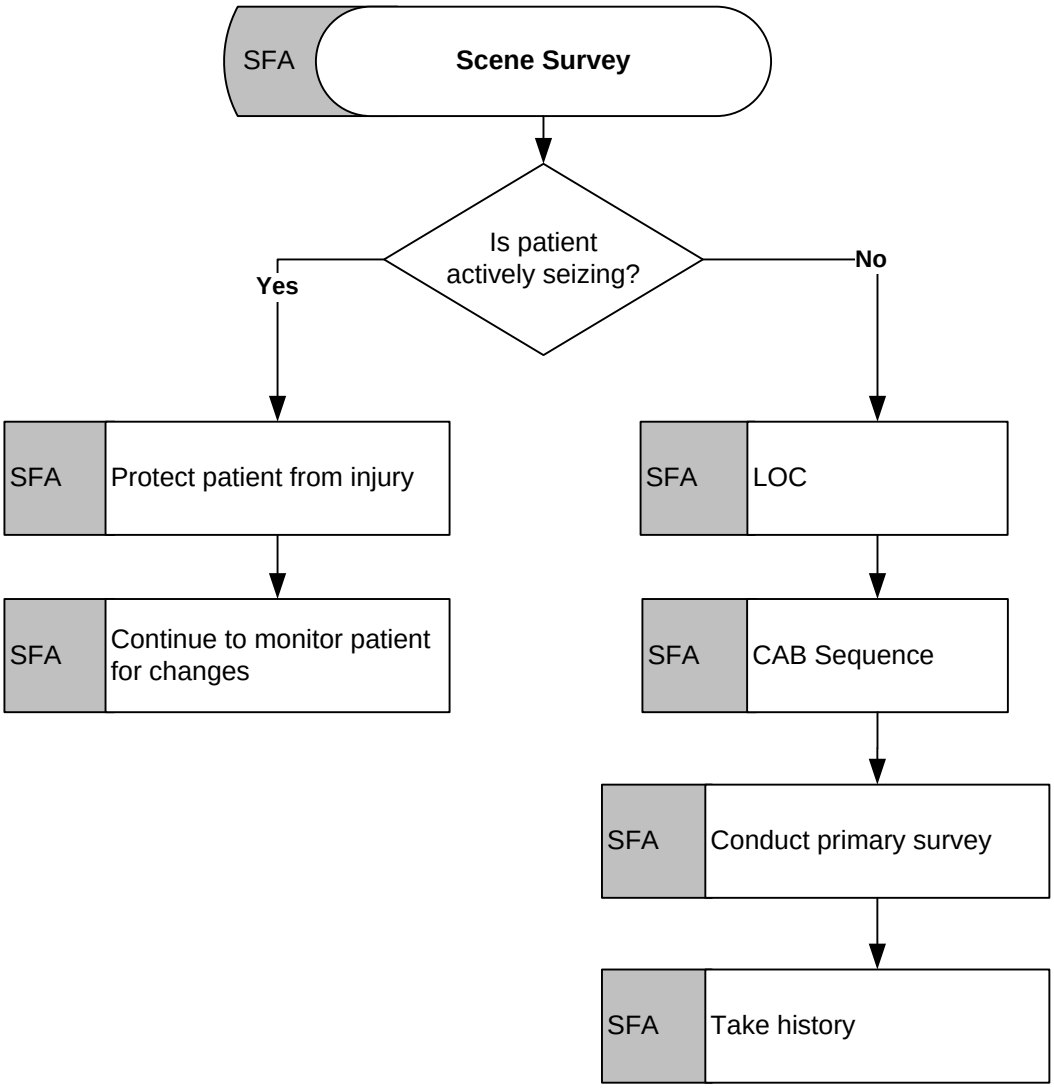


*****In the unlikely event there is a pulse but no breathing, provide mouth to mask/shield ventilations 1 every 3-5 seconds

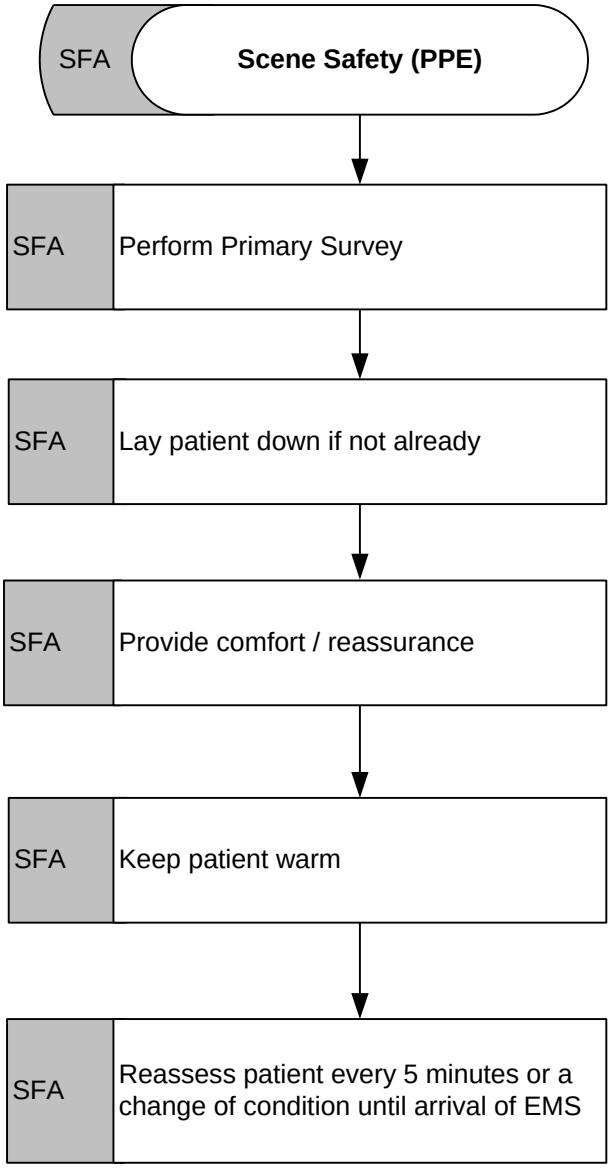
Algorithm 24 Poisoning



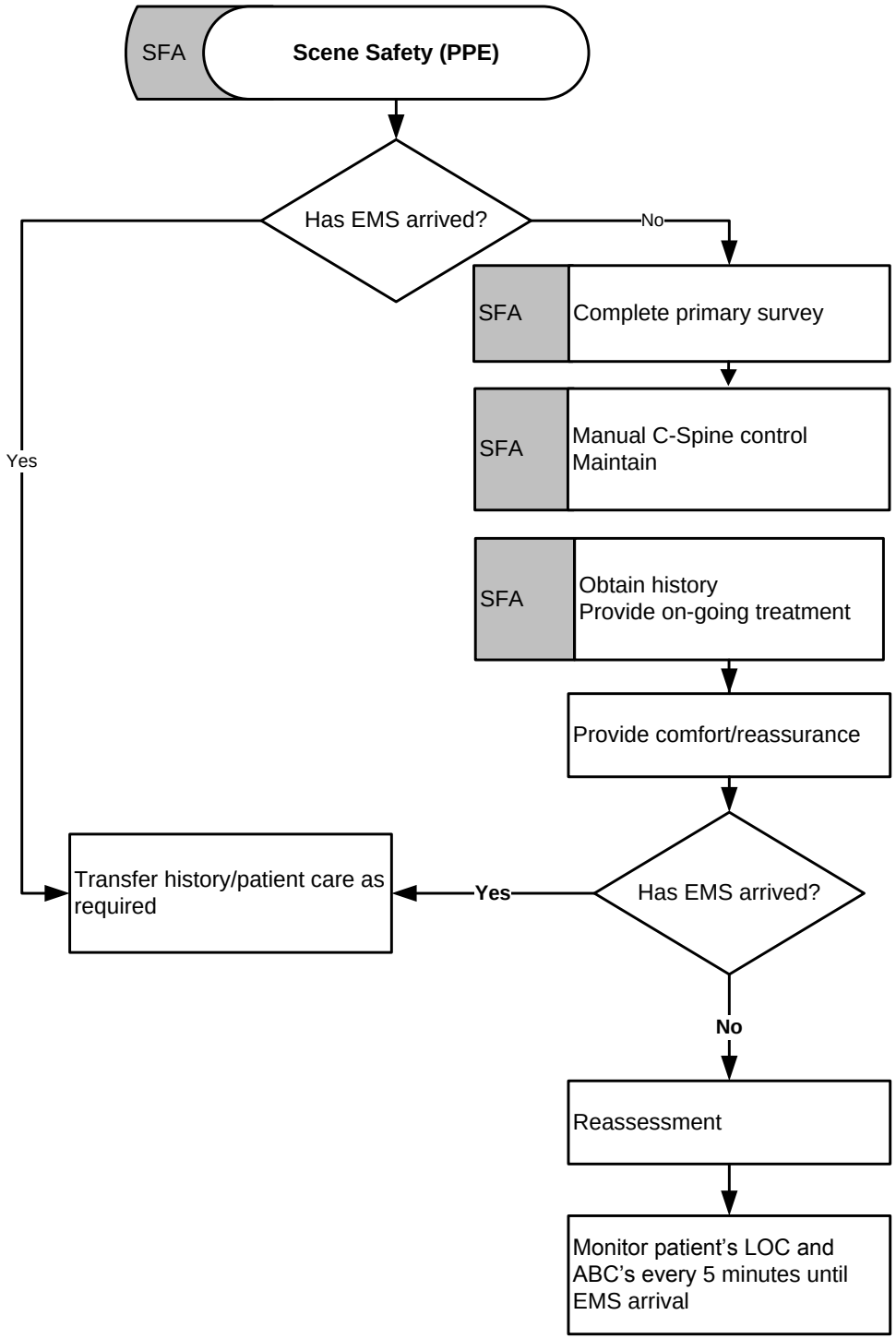
Algorithm 25 Seizure



Algorithm 26 Shock



Algorithm 27 Trauma / Medical Patient Assessment Protocol



Addendum

Medical First Responder

Introduction

Role of the Medical First Responder

Scope of Practice

Medical First Response is intended to provide basic life support and comfort to a patient or patients until the arrival of the Emergency Medical Services (EMS) or higher level of care. The Medical First Responder may provide medical care to an injured or ill person provided that the care follows the responder's level of training and/or licensure and the local community's administration supports that level of care.

Consent

The Medical First Responder should always obtain the consent of each patient they are treating, even if the patient(s) are the ones that activated your response. There are two general types of consent:

Expressed Consent

The patient provides you with verbal or other form of acknowledgement that they are alright with your assistance.

Implied Consent

The patient is unable to respond to your offer of assistance however is in obvious need of help (unconscious, choking, etc.).

Abandonment

Once care is started, the Medical First Responder is expected to continue this care until relieved by someone who has similar or higher training. Only if there is a direct danger to the rescuer should care be stopped without being relieved.

Negligence

The Court System of Canada describes negligence as performing a skill that is outside of a person's level of training, or, failing to act in what is known as "the reasonable man test". This test dictates that your actions would be measured against that of what any reasonable person would do in a similar situation.

Legal Requirements

First Aid (Non ACP registered responders)

Providers of first aid and AED's are covered from legal liability in most countries through Good Samaritan Laws. The Legislative Assembly of Alberta has enacted the *Emergency Medical Aid Act*. This Act provides legal protection to any person who provides emergency medical care to another person who is ill, injured or unconscious as a result of an accident or other emergency.

This person is not liable for damages for injuries to or the death of that person alleged to have been caused by an act or omission on his or her part in rendering the medical services or first aid assistance, provided they meet the following:

> *"The care was provided voluntarily and without expectation of compensation or reward unless it is established that the injuries or death were caused by gross negligence on his or her part."*

Legal Position – Automated External Defibrillator

There is very little legal or liability risk for a person that uses an AED correctly. The concept of having an AED on site has been widely promoted by over 50 heart health organizations in Canada, including the Heart and Stroke Foundation. Having an AED on site is rapidly becoming a basic standard of emergency care, equivalent to the value of having a smoke alarm. In fact, facilities that install AED's are now reducing their liability by providing this potentially life-saving service.

Health Disciplines Act/Health Professions Act

Medical First Responders who provide care as a licensed practitioner must follow the *Health Disciplines Act (HDA)* or the *Health Professions Act (HPA)* which ever legislation is enacted by the Government of Alberta to govern regulated emergency medical professions. The Acts are intended to protect the public by ensuring only competent, ethical professionals practice in the healthcare setting. Those responders not licensed by the Alberta College of Paramedics should provide care at the level of a Standard First Aider or equivalent.

In the case of the *HPA* all self regulating professions are governed under one umbrella legislation with common processes for registration, ongoing competence, and discipline.

The Act increases flexibility in the provision of care through elimination of exclusive scopes of practice and implementation of overlapping professional roles. *HPA* introduces restricted activities or health services that only qualified practitioners are authorized to perform. More than one regulated professional may be authorized to perform the same restricted activity. The Act allows the removal of regulatory barriers that limit interdisciplinary collaboration.

The practitioner must be diligent to follow the standard of care outlined by their professional regulation.

Confidentiality

Every attempt should be made to ensure that the patient's personal information is kept strictly confidential. Patient Care documentation should be restricted to only those responsible for the care of the patient and administration of records.
By using the Patient Care Report – Medical First Response format provided by the Alberta Health Services you are agreeing to conform to the following disclaimer:

"The information that you provide on this form is collected under the authority of Section 19 of the Alberta Health Information Act and Section 33 (c) of the Freedom of Information and Protection of Privacy Act. It may be shared with affiliates of Alberta Health Services and will be used for internal management purposes including, but not limited to quality assurance and auditing. Your personal information is protected by Alberta's Health Information Act and can be accessed on request. If you have any questions about the collection or use of this information contact your local EMS Service."

Scene Assessment

Determine the type of environment you are entering into and assess for dangers, access and egress. Ensure that hazards are assessed and controlled, look for the cause of the illness or injury, and note the number of patients involved.

Call for appropriate back up assistance dependant on the type of emergency call:

- Medical Emergency
- Traumatic Injuries
- Motor Vehicle Collisions
- Water Rescue
- Ice Rescue
- Hazardous Materials
- Fires
- Confined Spaces
- Other

Quality Patient Care

Safety

Responders should always place safety as their first priority and enter an emergency scene only when safe to do so. Consider the following when deciding to help:

- Self – donning personal protective equipment (PPE)
- Crew – ensuring everyone on team is protected
- Patient – your involvement will not place them at further risk
- Public – provide a visual or verbal warning to everyone who may inadvertently enter the scene

Routine Practice

Applies to every patient contact and involves:

- Hand hygiene (HH) at the point of care (POC)
- Using aseptic technique for all invasive procedures
- Dedicating all commonly used medical equipment to a single patient between cleaning and disinfection
- Disposing of all sharps in the proper containers
- Changing stretcher linens after each use
- Disposing of both general and biomedical waste in the proper receptacle
- Cleaning and disinfecting all medical equipment and transport vehicle after use
- Additional Precaution
- Use of the correct Infection Prevention Control (IPC) PPE after assessing the clinical presentation, the anticipated procedures or learning of the diagnosis which categorizes the infection in to contact, droplet or airborne precautions.
- Hand washing is the single most important way to reduce the spread of infections
- Perform HH at POC during non- emergent events
- During emergent events performing HH at POC may not be practicable, during these events sanitize your hands while gaining access to the patient and prior to donning gloves
- Where available soap and water must be used when hands are visibly soiled
- Alcohol based hand rubs are the only approved products for sanitizing hands.

Mnemonics

BLS – Burns, **L**acerations, **S**welling
DCAP – Deformities, **C**ontusions, **A**brasions, **P**enetrations
DCAPP – Deformities, **C**ontusions, **A**brasions, **P**enetrations, **P**aradoxical motion
DRT – Distension**, R**igidity**, T**enderness
JVD – Jugular **V**ein **D**istension
PEARL – Pupils **E**qual **A**nd **R**eactive to **L**ight
PMS – Pulses, **M**otor function, **S**ensation
TIC – Tenderness, **I**nstability, **C**repitation

EMS Pre-arrival Care

Keep the following questions in mind when attending at a medical call while waiting for EMS to arrive:

- Type of call?
- Age and sex of patient?
- Location of the incident?
- Access and egress to the incident?
- How long ago did the incident occur?
- Any Medical First Responders or law enforcement personnel on the scene?
- Has an EMS unit been dispatched?
- Number of patients?

- What treatment or stabilization procedures will be required?
- What are the roles of each team member?
- Gather medical information – history, medications?
- Time dispatched?

Standard Approach and Ongoing Assessment

The following should be performed as necessary on all patients:

- Assess LOC, Circulation, Airway, Breathing
- Application of AED
- Perform CPR
- Secure Airway
- Administer oxygen
- Establish effective ventilation
- Perform physical exam
- Pulse oximetry
- Vital signs
- Determine blood glucose level
- Obtain detailed history
- Establish vascular access
- Spinal immobilization
- Consider differential diagnosis
- Frequent reassessment
- Assist EMS with patient care

Abdominal Pain

Abdominal pain is often very difficult to identify a cause. The causes of abdominal pain can range from relatively minor conditions to life-threatening emergencies.
Patients will often position themselves in an attempt to relieve the discomfort. This should be encouraged if not already done.

Patient Care

Ensure adequate breathing
Provide comfort measures until EMS arrival
Avoid giving anything to eat or drink

Airway Control

Conscious Patients

This includes patients who are awake or who can be awakened with verbal or painful stimuli.

Confirm a Clear Airway

On initial contact, rescuers **must** ensure that all patients have an open and adequate airway.
The head-tilt/chin-lift or modified jaw thrust manoeuvre is used to open the airway of patients who are unable to do so on their own. The modified jaw thrust is used on patients who have suspected c-spine trauma.
Noisy respirations indicate airway obstruction. Snoring respirations are usually relieved with proper airway positioning. Gurgling respirations indicate fluid in the oropharynx and these patients require placing in a Recovery Position.
The inability to ventilate a patient after the airway has been cleared and repositioned once indicates an airway obstruction and the **OBSTRUCTED AIRWAY** algorithm is referred to at this point.

Evaluate Respirations

Determine the rate, rhythm, and quality of respirations by looking and listening.
See if the chest is fully expanding. Count the breaths/min. See if the patient has accessory muscle use or has cyanosis (blue) around the mouth. Does the patient look like he/she is having difficulty breathing?
Listen to the breathing. Is it shallow or laboured? How many words can the patient speak in a sentence?
Consider rates below 8 slow and rates above 20 fast with signs of inadequate oxygenation, hypoxia, or a decreased LOC.

Patients Benefiting from Oxygen

If crews are equipped and trained to use oxygen, the following patients would benefit from oxygen treatment:

- Any patient whose chief complaint involves the airway, breathing, circulation, or nervous system
- Any patient suspected of being hypoxic or who has a history that indicates the potential for hypoxia
- Any patient with a history of Altered LOC
- Any patient with chest pain
- Signs of smoke or toxic gas inhalation
- History of pulmonary edema
- Signs of shock
- Head injury or evidence of stroke
- Seizures
- Drowning/near drowning
- Trauma
- Poisoning or overdose

Vomiting

Patients who vomit require immediate provision for airway protection.
If supine, vomiting patients are placed on their side and allow the emesis to drain.
Patients with suspected spinal injury are maintained in alignment while they are rolled onto their side
If oxygen administration is discontinued due to vomiting and the vomiting episode lasts more than 30 seconds, consider applying a nasal cannula at 2 - 4 litres/min until the administration of high-flow oxygen can be resumed.
Once vomiting is completed, the patient's status is re-evaluated using the primary survey.

Position

Avoid laying anyone in respiratory distress flat.
Keep patients sitting upright in a position of comfort.
Consider c-spine precautions.

Unconscious Patients

This includes patients who do not respond to verbal or painful stimuli.

Confirm a Clear Airway

The head-tilt/chin-lift or modified jaw thrust maneuver is used to open the airway. The modified jaw thrust is used on patients with suspected c-spine trauma. An inability to ventilate a patient after the airway has been cleared and repositioned once indicates an **airway obstruction** and the **OBSTRUCTED AIRWAY** algorithm is referred to at this point.

Evaluate Respirations

Determine the rate, rhythm, and quality of respirations by looking, listening, and feeling.

Feel the patient's breath on the side of your face to assess whether it is present. Feel the chest for movement.
See if the chest is fully expanding. Count the breaths/min. Is the rate too `fast or too slow? See if the patient has accessory muscle use or has cyanosis around the mouth. Listen to the breathing. Is it shallow or laboured?

Patients Benefiting from Oxygen

If crews are equipped and trained to use oxygen, the following patients would benefit from oxygen treatment:

- Any patient whose chief complaint involves the airway, breathing, circulation, or nervous system
- Any patient suspected of being hypoxic or who has a history that indicates the potential for hypoxia
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Once vomiting is completed, the patient's status is re-evaluated using the primary survey.

Position

Place an unconscious patient in a recovery position, ensuring that the airway is open and clear of fluid or objects
Consider c-spine precautions.

Altered Level of Consciousness

Consciousness is defined as an awareness of self and the environment.
Of all the central nervous system functions, mental status is the earliest indication of advancing disease.

Changes in a patient's LOC may be extremely subtle, with the patient appearing awake and alert, but disoriented to person, place, time, or event. Patients who appear asleep represent a more obvious alteration of consciousness and should be immediately evaluated for response levels. This includes noting the response to verbal stimuli and tapping the shoulder.

Causes of altered levels of consciousness are many and varied. The mnemonic **AEIOU TIPS** provides a general overview of some common reasons for decreased or altered consciousness and includes:

- **A** **A**lcohol, ingested drugs, **A**rrhythmias
- **E** **E**ndocrine disorder, **E**pilepsy
- **I** **I**nsulin (too much, too little)
- **O** **O**verdose, **O**piates, hyp**o**xia "**O**xygen"
- **U** **U**nderdose, **U**remia, (renal problems) hypertension

- **T** **T**rauma, **T**emperature, **T**umour, **T**oxins
- **I** **I**nfections
- **P** **P**sychiatric, **P**oison
- **S** **S**hock, **S**troke, **S**eizures

Management of patients exhibiting an **Altered LOC** includes performing a primary survey with early administration of oxygen (if trained and equipped). Airway control and maintenance, although always a priority, requires continuous monitoring in a patient with diminished LOC.

Anaphylaxis

Etiology

Anaphylaxis is a severe systemic allergic reaction. It is a life-threatening medical emergency requiring immediate treatment.

Clinical Criteria for Diagnosing Anaphylaxis
Anaphylaxis is highly likely when either of the following criteria is fulfilled:
Acute onset of an illness (minutes to several hours) after exposure to a known or suspected allergen and any of the following:
Altered level of consciousness
Airway edema
Systolic BP less than 90 mmHg or associated symptoms of end-organ dysfunction (e.g. hypotonia – collapse, syncope, incontinence)
Acute onset of an illness (minutes to several hours) after exposure to a known or suspected allergen and any two of the following:
Persistent gastrointestinal symptoms (e.g. cramping, abdominal pain, vomiting)
Dyspnea
Bronchospasm

The majority of anaphylactic reactions (approximately 80%) include skin symptoms, such as generalized hives, pruritis or flushing. Persistent gastrointestinal symptoms have been associated with severe outcomes in anaphylactic reactions. Practitioners must be vigilant in identifying the rare patient whose only sign of anaphylaxis is hypotension.

Mild / Moderate Anaphylaxis

- Mild dyspnea or bronchospasm
- Urticaria
- Angioedema

May have tachycardia but vital signs remain otherwise stable (no hypotension or clinical evidence of shock)

Severe Anaphylaxis

Signs and symptoms as in mild anaphylaxis as well as:
Altered level of consciousness
Respiratory failure (SpO2 less than 85% refractory to oxygen)
Airway compromise
Systolic BP less than 90 mmHg
When a severe anaphylaxis is suspected, be prepared for a sudden, rapid drop in blood pressure

Interventions

Remove the allergen if possible
Stingers should be removed by scraping the skin with the dull side of trauma shears to avoid squeezing more venom into the site

Automated External Defibrillation (AED)

Providing CPR and early defibrillation in the event of cardiac arrest is recognized as the highest priority in emergency cardiac care. Restoration of a perfusing rhythm requires immediate CPR and defibrillation within a few minutes of the initial arrest.

Defibrillation is the therapeutic use of electrical current delivered in large amounts over very brief periods of time. The defibrillation shock temporarily depolarizes a fibrillating heart and thus, allows more co-ordinated contractile activity to resume.

The Automated External Defibrillators (AED's) are highly sophisticated machines, embedded with a microprocessor-based device that monitor, assess and automatically treat patients with life-threatening heart rhythms. Built into this processor is a detection system that analyzes the rhythm of a patient's electrocardiogram (ECG) for characteristics of ventricular fibrillation (VF) and ventricular tachycardia (VT). If VF or VT is present, the AED advises the operator to deliver a shock.

All AED's are configured to store and retrieve patient ECG patterns for further analysis by medical authorities or for quality improvement. Some devises are equipped to record an audio file of the event. Once the AED is turned on do not turn it off until patient care has been transferred to a higher authority. It will continue to analyze and if the victim lapses again, the AED will recommend a shock if needed. When Emergency Medical Services personnel are on the scene, they can remove it.

For **unwitnessed** cardiac arrest in both adults and children, perform the CAB Sequence until the AED is ready for use. For any **CPR in progress** cardiac arrest, use the AED as soon as it's ready for use. If EMS arrives prior to delivery of the first shock, early liaison with the attending EMS crew should occur, as all attempts to deliver the appropriate shock rapidly should occur.

NOTE: A delay to change over to the EMS monitor should not occur until after the initial shock if the Medical First Responder AED is ready to deliver the shock. Electrical shock delivery via an AED is equivalent to a cardiac heart monitor for the initial shock delivery in cardiac arrest.

Operation of the AED

Use the AED only when the patient has no response to verbal command or touch, no breathing, and no pulse. If the patient is not breathing, follow these steps:

Automated External Defibrillator

A. Single Responder

1. Confirm arrest and ensure that an emergency response is activated
    a. If alone retrieve the AED prior to starting patient care
    b. Use the AED as soon as available
    c. Continue to **Step 3**

B. Multiple Responders

2. Initiate CPR with the CAB Sequence while another is preparing the AED
3. Position the patient on their back
4. Turn on the AED and follow instructions
5. Bare patient's chest and wipe away any moisture and remove any hair/medical patches and so on
6. Attach one pad to the patient's upper right chest and one to the lower left side. The pads will be labelled with a picture of where they go
7. Plug the wire from the pads into the AED if they are not already attached
8. Push the 'Analyze' button or let the AED automatically begin its analysis. Wait for the analysis to complete its cycle
9. The machine will prompt: "ANALYZING NOW, STAND CLEAR."
    a. Make sure no one is touching the patient so the AED can analyze correctly
    b. **Shockable rhythm**, the machine will begin to charge and advise you when to press the shock button
        i. Keep everyone clear of the patient
        ii. Press the 'shock' button
        iii. Once the shock is delivered the machine will prompt, "START CPR."
    c. **Non-Shockable rhythm**, it will give you the prompt, "NO SHOCK ADVISED."
10. Continue with the CAB Sequence until the next AED re-analyze cycle
11. Do not turn off the AED until exchange of patient care with EMS
12. If patient shows obvious signs of live, place the patient in a recover position and monitor them continuously
13. Return to Step 10 if a pulse is lost or no signs of life

Notes:
Always **stand clear of the patient** during analysis.
Clear the patient before delivering the shock to avoid injury to yourself and your partners.
Deliver the SHOCK.
After delivering the shock, immediately begin CPR.
If there is a **no shock advised** prompt, immediately begin CPR and ventilations for 5 cycles or 2 min. Continue until EMS arrives. Recheck the pulse every 2 min or when the AED prompts.

AED Pads

For infants and children less than 8 years of age or 55 lbs (25 kg), use pediatric pads (reduced energy defibrillation electrodes). For AED's that are not pediatric capable the use of adult pad is acceptable but not recommended by the guidelines issued by the Heart and Stroke Foundation of Canada.
For adults and children who are 8 or older or weigh more than 55 lbs (25 kg), use adult pads.
Use anterior/posterior (A/P) placement on children under 8 years old.
Do not place pads on infants.

Special Situations

Hairy chest – Shave the area with a razor if the pads don't stick to the skin.
Patient in water or with water on the chest – If the patient is in water, pull the patient out of the water. If the patient is lying in snow or a small puddle, you may use the AED. If the chest is wet, quickly wipe the chest before applying the pads.
Pacemakers – You may feel the pacemaker as a hard lump beneath the skin of the upper chest or abdomen. Place the AED pads at least 1 inch away from the device.
Medication patches – Remove all medication patches before applying the AED pads.
Hypothermic / cold water drowning – If the patient is hypothermic due to cold exposures, minimize the amount of shocks to 1. (AED will continue to prompt to shock, simply leave device alone and it will automatically drop the charge internally after 15 seconds)

Post-Resuscitation Care

If the patient regains a pulse:
Maintain airway control and ventilatory assistance using a BVM at 10 - 12 breaths/min in adults and 12 - 20 breathes/min in pediatrics.
Use 100% oxygen at 15 - 25 litres/min.
Be prepared for vomiting. Roll the patient and suction the airway if vomiting occurs.
Continue to monitor the patient while awaiting EMS arrival. Checking a pulse every 20-30 seconds is paramount to detect early the loss of cardiac output.

Reassessment

If patient loses pulse after regaining it:
Re-ANALYZE with AED immediately (witnessed).
Deliver shock if advised to. If no shock is advised and the patient remains pulseless, start CPR.

Electric Shock

Cardiopulmonary arrest in electric shock is the primary cause of immediate death. Ventricular fibrillation or Asystole may occur. Aggressive resuscitation measures are indicated even for those who appear dead on initial evaluation.
Electrocution may involve trauma caused by a fall. Therefore, consider taking c-spine precautions when appropriate.

Lightning Strike

Lighting acts as a massive DC counter shock. When multiple victims are struck simultaneously by lighting, the highest priority is given to patients in cardiac arrest because their condition is highly reversible if intervention is rapid.

Bronchospasm

Etiology

Bronchospasm is an abnormal contraction of the smooth muscle of the bronchi, resulting in an acute narrowing and obstruction of the lower airway. A cough with generalized wheezing usually indicates this condition. Wheezing is produced by the movement of air through constricted airways. It is critical to recognize there may be little or no air flow in severe bronchospasm attacks with the result being minimal audible wheezing. In cases of severe bronchospasm audible wheezing may be absent prior to treatment. In these cases, the onset of wheezing following treatment may be indicative of improved airflow.

Patients (especially children) with inspiratory stridor are more likely to have a partial upper airway obstruction (i.e. croup, epiglottitis, foreign body). Audible wheezing on inspiration is likely referred upper airway noise from stridor.

Asthma

Asthma is a reversible obstructive lung disease characterized by:

1. Bronchial smooth muscle contraction
2. Mucosal and submucosal inflammation and edema
3. Increased mucous production and congested airways

Asthma may be triggered by extrinsic factors (e.g. pollution, exercise, cold air, pharmacological products) or intrinsic factors (e.g. allergies

Chronic Obstructive Pulmonary Disease (COPD)

COPD is a disease process which causes chronic outflow obstruction; its two dominant forms are:

1. Emphysema (Pink Puffers): characterized by an abnormal enlargement of the air spaces distal to the terminal bronchioles accompanied by the destruction of their walls
2. Chronic Bronchitis (Blue Bloaters): characterized by inflamed and edematous airways filled with secretions. Copious respiratory secretions contribute to expiratory obstruction
3. Despite the risk of suppressing the hypoxic respiratory drive, oxygen should never be
4. withheld from a symptomatic patient or any COPD patient with an SpO2 less than 90%
5. Practitioners must be prepared to assist ventilation; assisted ventilations are also indicated for patients who are unable to maintain an SpO2 greater than 90% by other adjuncts or whose mentation is compromised by hypoxia.

Pneumonia

Pneumonia is an inflammatory condition of the lung, affecting primarily the microscopic air sacs known as alveoli. It is usually caused by infection with viruses or bacteria and

less commonly other microorganisms, certain drugs and other conditions such as autoimmune diseases.

The most common symptoms of pneumonia are:

- Cough (may be productive – greenish/yellow mucus, or even bloody mucus)
- Fever
- Shaking / chills
- Shortness of breath

Patient Safety Considerations

Remember, "**All that wheezes is not asthma.**" Practitioners must consider other causes of bronchospasm such as CHF, toxic inhalation and pneumonia. Asthma or COPD may present as a "Silent Chest."

Burns

Airway

If the patient was in an enclosed space at the time of the burn, whether chemical or thermal, a strong possibility of airway damage exists.
Continually monitor the airway for evidence of obstruction and be aware that respiratory problems due to damage of airway tissues may not develop immediately.

- Signs of Upper Airway Burns
- Burns to the face
- Singed eyebrows or nasal hair
- Burns in the mouth
- Sooty sputum
- Brassy cough
- Hoarseness
- History of being in an enclosed space when burned

Signs of Smoke Inhalation

- Exposure to smoke in an enclosed space
- Unconscious while exposed to smoke or fire
- Cough developing after exposure to smoke or fire
- Shortness of breath after exposure to smoke or fire
- Chest pain after exposure to smoke or fire
- Hoarseness after exposure to smoke or fire

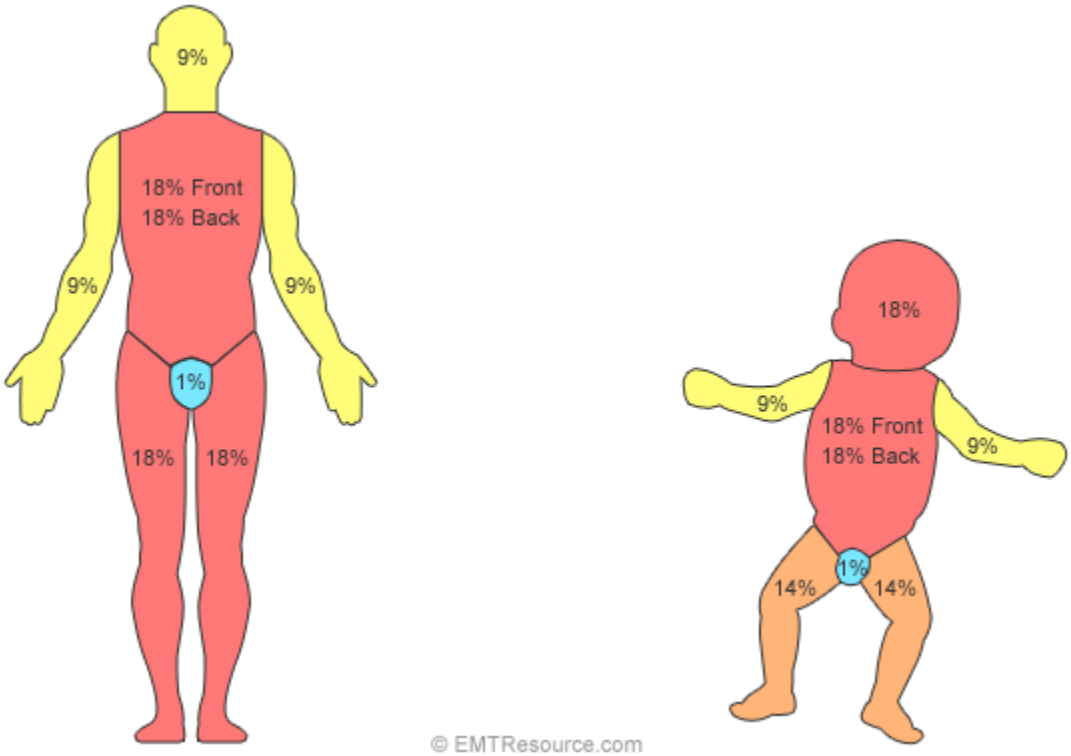
Oxygen Instructions

All patients who are suspected of suffering from airway exposure to fire, smoke, toxic chemicals, or gases should receive high flow oxygen therapy when it is safe to do so.

Burn Measurement

Small Burns
Rule of Palms - Using the rule of palms, the surface of the patient's palm represents approximately 1% of body surface area and is helpful in estimating the area of small burns.

Large Burns
Rule of Nines - To approximate the percentage of burned surface area, the body has been divided into eleven sections: Head, Right arm, Left arm, Chest, Abdomen, Upper back, Lower back, Right thigh, Left thigh, Right leg (below the knee), Left leg (below the knee) .



B. Figure 1 – Rule of Nines

Chest Pain

Although there are many potential causes of chest pain, all patients with acute onset chest pain should be approached as having a myocardial infarction. Some of the life-threatening causes of chest pain are:

- Unstable angina
- Acute myocardial infarction
- Aortic dissection
- Pulmonary embolus
- Spontaneous pneumothorax
- Esophageal rupture

Symptom Recognition

Prompt recognition that a **acute myocardial infarction (AMI)** or heart attack is occurring is critical, since most deaths associated with acute myocardial infarction (AMI) are due to electrical instability and occur suddenly, often before arrival at the hospital. It is important to aggressively treat patients with symptoms of myocardial infarction since ventricular fibrillation is fifteen times more likely to occur during the first hour after onset of symptoms than at any other time.

Angina Pectoris (Chest Pain)

Is induced by exertion, usually lasts 5 to 15 min and is relieved by rest or by nitro-glycerine.

The pain of **AMI** generally lasts longer than 15 - 30 min. The pain of AMI typically builds to its maximum, whereas pain from **aortic dissection or pulmonary embolus** is usually severe from the onset.

Any angina pain that lasts longer than 15 min, is not relieved by the patient's own nitro-glycerine, or is accompanied by diaphoresis, dyspnea, nausea, or vomiting, suggests an AMI.

About 20% of AMI's are not accompanied by chest pain, especially in elderly persons, females, and/or diabetic patients. When pain is present, it generally has a retro-sternal component; and it may radiate to the neck, shoulders, lower jaw, back, or down the inside of the left or both arms. This pain is typically described as a heavy or squeezing sensation. It may be mild to severe, but it tends to increase in severity over a period of minutes. In some patients, high epigastric discomfort may be a symptom of AMI and is often dismissed by the patient as indigestion.

The following are at highest risk for sudden death:
Patients with a new onset of chest pain either at rest or with ordinary or usual activity.
Patients who experience a sudden change in a previously stable pattern of angina pain, such as an increase in frequency or severity, or occurrences at rest for the first time.
Patients who are experiencing chest pain and have known coronary heart disease
Chest pain or discomfort that is unrelieved by rest and/or nitro-glycerine.

Oxygen Instructions (if trained and equipped)

Oxygen should be administered as early as possible. Supplemental oxygen helps reduce both the magnitude and extent of damage in patients with AMI. Patients should be allowed to remain in the position of greatest comfort and ease of breathing.
N/C at 2 - 4 litres/min is appropriate unless shortness of breath (SOB) is present.

Early Defibrillation

Providing early CPR and defibrillation in the event of cardiac arrest is recognized as the highest priority in cardiac care.

Questions to Consider

- Did the pain/discomfort begin suddenly?
- What was the patient doing when the pain/discomfort began?
- Has the patient ever had the pain/discomfort before?
- Has the pain/discomfort become better or worse?
- Has the patient ever had a heart attack?

Refer to the History Taking Guidelines

Myocardial Infarction

<table>
<tr><td colspan="2">Signs and Symptoms of Myocardial Infarction
Ischemia Signs</td></tr>
<tr><td>• Tachypnea
• Dysrhythmias
• Cyanosis
• Diaphoresis
• Vomiting
• Agitation
• Cardiac arrest
• Cardiogenic shock
• Chest and/or abdominal pain</td><td>• Palpitations
• Shortness of breath
• Sweating
• Nausea
• Light-headedness / Pre-syncope
• Confusion
• Weakness
• Anxiety / Feeling of fear or impending</td></tr>
<tr><td colspan="2">Differential Diagnosis
Limited differential diagnoses for chest pain include:</td></tr>
<tr><td>• Angina
• Pulmonary embolism
• Dissecting thoracic aortic aneurysm
• Gastrointestinal cause (e.g. esophageal spasm)</td><td>• Myocardial infarction
• Pericarditis
• Pneumonia
• Pneumothorax
• Pleurisy</td></tr>
</table>

• Hyperventilation • Musculoskeletal cause (e.g. chest wall pain)	• Dermatologic cause (e.g. shingles) • Doom

Life Threatening and Serious Causes of Non-ACS Chest Pain		
Life Threatening	**Potential Life-threatening**	**Less Serious**
Aortic dissection Acute pericardial effusion and tamponade Acute pulmonary embolism Tension pneumothorax	Peptic ulcer, perforated Esophageal rupture Acute pneumonia Aortic stenosis (chest pain, syncope, extertional dyspnea) Acute cholecystitis, cholelithiasis, ruptured gall bladder Acute pancreatitis	Gastroesophageal reflux disease (GERD) Esophagitis, gastritis Hiatal hemia Musculoskeletal chest pain Costochondritis

Patient Safety Considerations

25% of AMI patients present with reproducible chest wall tenderness.

The patient may be encouraged to take their own ASA medication and nitro-glycerine as prescribed by a physician.

First Aiders are not to provide some else's medication or any medication carried in their kit.

Control of External Bleeding

Management

Direct targeted pressure to the bleeding area with elevation of the limb if possible.

Elevation

If a fracture is suspected in an extremity, do not elevate the limb or subject the patient to unnecessary motion until the fracture has been immobilized in a splint.

Note: Maintain as clean a technique as possible. NEVER expose a patient to the blood or body fluids of another patient. Put on a new set of gloves for each patient.

Epistaxis (Nosebleed)

Nosebleeds are quite common and are usually controlled with manual, external compression, and tend to be self-limited.
Severe nosebleeds can be profuse, persistent, and life threatening. They are complicated by airway compromise and vomiting of swallowed blood.

Caution

Anyone in close proximity must be aware that this patient they may be spitting up blood which could splatter. Bodily fluid precautions are required.

Management of Epistaxis

- Have adequate PPE on.
- Keep the patient sitting up and leaning slightly forward unless there are signs of shock.
- If blood is flowing from the nostrils, pinch the entire soft part of the nose right under the nasal bone and hold for 5 min. If the patient is still bleeding, repeat this step once. Then if the patient continues to bleed, maintain pressure until EMS arrives.
- Instruct the patient not to swallow blood and have the patient spit his/her blood into a container.
- If blood has been swallowed, the patient may vomit.
- Maintain a clear airway and carefully suction the mouth if required.
- If signs of shock are present, keep the patient supine with his/her head or entire body turned to one side (see the SHOCK algorithm).

Cardio Pulmonary Resuscitation (CPR)

The CPR skills described in this document are targeted towards the Health Care Provider (HCP). For responders who have not completed HCP CPR continue to provide care at the level of your training.

CPR for Adults

Adults – Patients that have signs of puberty and older. Signs of puberty include breast development in females; and underarm, chest, and facial hair in males.

Scene Survey

LOC – Confirm unresponsiveness.
Open Airway – Use head-tilt/chin-lift or modified jaw thrust if c-spine concern. Look, listen, and feel for the rate, rhythm, and quality of the breathing. (Take at least 5 seconds and no more than 10 seconds.)
If no adequate breathing –use a BVM, one way valve mask or shield to provide ventilations at a rate of 1 breath every 5 to 6 seconds*.
If no breathing – start CPR
Check carotid and radial pulse – Take at least 5 seconds and no more than 10 seconds to find the pulse. If no pulse start CPR.
Ratio – 30:2, (30 compressions to 2 breaths) for one or two rescuers performing CPR. Use 5 cycles at 100 compressions/min.
Depth – 1 1/2 to 2 inches of chest depth. Push hard, deep, and fast; and release completely. Allow the chest to recoil completely. Minimize interruptions.

Notes:
A witnessed arrest is one that is actually witnessed by **crews**.
If high quality CPR is already being performed by someone on-scene, crews do not need to perform the initial 2 minute CPR cycle and can use the AED immediately
To avoid fatigue, crews should switch every cycle of 2 minutes.
Check for DNR or Goals of Care designation

*In the unlikely event there is a pulse but no breathing, provide BVM or mouth to mask/shield ventilations 1 breath every 5 to 6 seconds.

CPR for Children

Children – 1 year of age to puberty. Signs of puberty include breast development in females; and underarm, chest, and facial hair in males.

Scene Survey

LOC – Confirm unresponsiveness.
Open airway – Use head-tilt/chin-lift or modified jaw thrust if c-spine concern. Look, listen, and feel for the rate, rhythm, and quality of the breathing. (Take at least 5 seconds and no more than 10 seconds.)
If no adequate breathing –use a BVM, one way valve mask or shield to provide ventilations at a rate of 1 breath every 3 seconds*.
Check carotid and radial pulse – Take at least 5 seconds and no more than 10 seconds to find the pulse. If no pulse start CPR.
If no breathing – start CPR.
Ratio – 15:2 (15 compressions to 2 breaths) for two rescuers performing CPR and 30:2 for 1 rescuer performing CPR. Use 5 cycles at 100 compressions/min.
Depth – 1/3 – 1/2 of chest depth. Push hard, deep, and fast; and release completely. Allow the chest to recoil completely. Minimize interruptions.

Notes:
A witnessed arrest is one that is actually witnessed by **crews**.
If high quality CPR is already being performed by someone on-scene, crews do not need to perform the initial 2 minute CPR cycle and can use the AED immediately.
Anterior/posterior defibrillator pad placement may have to be considered.
Use Pediatric pads and setting if available. For AED's that are not pediatric capable the use of adult pad is acceptable but not recommended by the guidelines issued by the Heart and Stroke Foundation of Canada.

- For adults and children who are 8 or older or weigh more than 55 lbs (25 kg), use adult pads.
- Use anterior/posterior (A/P) placement on children under 8 years old.
- To avoid fatigue, crews should switch every cycle.
- Check for DNR or Goals of Care designation.

***In the unlikely event there is a pulse but no breathing, provide BVM ventilations – 1 breath every 3 seconds.

CPR for Infants

Infant – Neonatal period to 1 year (12 months).

Scene Survey

LOC – Confirm unresponsiveness.
Open airway – Use head-tilt/chin-lift or modified jaw thrust if c-spine concern. Do not hyper-extend the neck. Look, listen, and feel for the rate, rhythm, and quality of the breathing. (Take at least 5 seconds and no more than 10 seconds.)
If no adequate breathing –use a BVM, one way valve mask or shield to provide ventilations at a rate of 1 breaths every 3 seconds*.
Check carotid and radial pulse – Take at least 5 seconds and no more than 10 seconds to find the pulse. If no pulse start CPR.
If no breathing – start CPR.
Ratio – 15:2 (15 compressions to 2 breaths) for two rescuers performing CPR and 30:2 for one rescuer performing CPR. Use 5 cycles at 100 compressions/min.
Depth – 1/3 - 1/2 of chest depth. Push hard, deep, and fast; and release completely. Allow the chest to recoil completely. Minimize interruptions.

Notes
A witnessed arrest is one that is actually witnessed by **crews**.
If high quality CPR is already being performed by someone on-scene, crews do not need to perform the initial 2 minute CPR cycle and can use the AED immediately.

- AED is indicated for children less than 1 year. Do not place pads on newborn (one day old).
- A manual defibrillator is preferred but if not available then use an AED equipped with a pediatric dose attenuator.
- If a pediatric dose attenuator is not available then use an AED with adult pads

To avoid fatigue, crews should switch every cycle of 5.
Check for DNR or Goals of Care designation.

*In the unlikely event there is a pulse but no breathing, provide BVM or mouth to mask/shield ventilations 1 breaths every 3 seconds.

Crime Scene

If crews are dispatched to a medical call where there is a death or possible crime, it is imperative that all possible precautions are taken to preserve the scene.
The mere presence of Medical Responders may contaminate evidence.

Some things to consider:

- Ensure appropriate safety precautions and PPE
- Consider extreme risk hazards such as **improvised explosive devices** (**IED)**
- Do not touch anything unnecessarily.
- If something must be moved to provide patient care, make note of where it was.
- If crews open a window or turn on a light, this must be noted.
- If the call involves a suicide, don't disturb any potential evidence such as a note or pill bottle.
- If the crew turns off a motor vehicle found running, make note of it.
- If the crew must cut ropes or similar devices to provide patient care, DO NOT cut or un-tie any knots.
- If the patient is obviously dead, follow the acronym **DRIED**
- Secure the scene and wait outside for police.

Death on Scene

Discontinuation Criteria

Medical Co-Response **cannot** withhold resuscitation unless the patient is **obviously** dead, a do not resuscitate (DNR)/Goals of Care designation has been made, or a medical doctor with documented credentials is present and directs crews not to resuscitate.

"Under extenuating circumstances (i.e. prolonged code/extrication, obvious futility, and terminal care with no DNR present) the crew's medical lead may contact the receiving hospital and seek further medical control advice to consider discontinuation."

Obvious death removes the need for attempting resuscitation. Follow the acronym **DRIED**:
Decapitated – the head is completely severed from the body
Rigor mortis – temporary rigidity of muscles occurring after death
Incineration – complete burning of the body
Evisceration – removal of the internal organs forced outside the body cavity
Decomposition – process by which tissues of a dead body break down

Personal Directives

A patient may present with any one of the following directions for end of life care:

Do Not Resuscitate Order (DNR)
A valid do not resuscitate order tells medical professionals not to perform cardiopulmonary resuscitation (CPR) on a patient. DNR orders are beneficial in preventing unnecessary or unwanted treatment at the end of an individual's life. Ask to see the DNR during patient assessment but before resuscitation is attempted.

Goals of Care Designation
Patients with in a Health Care Facility **–** Goals of care designation must be "presented and verified."

Goal of Care Designations Designation	Description
R1	Full Resuscitation
R2	Resuscitation without chest compressions
R3	No Resuscitation
M(all)	No Resuscitation
C(all)	No Resuscitation

Medical Direction

In some situations a medical doctor may be in attendance and has assumed care of the patient. Follow the directions of this on scene physician if they decide to take the medical leadership role. If the physician does not want to be part of the resuscitative efforts, follow existing protocols.

Drowning / Near Drowning

The most important consequence of prolonged, underwater submersion without ventilation is **hypoxia**. Therefore, restoration of ventilation and perfusion should be accomplished as rapidly as possible.

Every submersion victim, even one who requires only minimal resuscitation and regains consciousness at the scene, should be transferred to a medical facility for follow-up care. Oxygen should be administered continually and the patient status should be frequently evaluated since pulmonary injury may develop several hours after submersion.

Successful resuscitation with full neurological recovery has occurred in near-drowning victims with prolonged submersion in extremely cold water. Since it is difficult for rescuers to estimate length of submersion, resuscitation efforts should be initiated unless there is obvious physical evidence of death, such as decomposition or rigor mortis (DRIED).

Try to determine the length of submersion, water temperature, water type (salt, fresh), and whether a diving accident is involved. This will determine the course of treatment and the likelihood of survival of the patient.

Hypothermia

If the average temperature of outdoor water is 5 - 10° C, hypothermia should be suspected in drowning or near-drowning patients.

Hazards

When attempting to rescue a near-drowning victim, the rescuer should get to the victim as quickly as possible while maintaining personal safety. Responders need to have appropriate PPE, training and equipment when working around the water's edge or attempting to use a throw bag.

C-Spine

In all drowning and near-drowning patients, neck injury should be suspected, the neck should be supported in the neutral position, and the victim should be floated supine onto a back support before being removed from the water.

Airway

Initial treatment consists of opening and maintaining the airway. Oxygen should be administered at 100% by NRB.

- **If no adequate breathing** – Provide ventilation with a one way valve mask or shield as necessary.
- Provide high-flow oxygen (if trained and equipped) as soon as possible. Check for a pulse every 2 min.

Complete the Primary survey

A rapid initial survey is essential in determining the patient's status and the presence of immediate life-threatening injuries.

Dyspnea (Shortness of Breath)

Patients with breathing difficulties can present as one of the most challenging emergency calls that responders attend to. Dyspnea can be from several causes including medical or traumatic origin including:
Blunt force injury to the chest
Shock
Asthma
Anaphylaxis
Cardiac emergencies

Symptom Recognition

Rapid or extremely slow breathing
Abnormally deep or shallow breaths
Noisy breathing (wheezes, snoring, gurgling, rattles)
Irregular breathing
Blue lips, pale or gray coloured skin
Frequent need to pause speech to catch their breath

Treatment

Patients should be allowed to remain in the position of greatest comfort and ease of breathing.
Provide reassurance
Offer coaching on rate of breathing if it is too fast or to slow
Do not offer a paper bag if hyperventilating (no longer an acceptable treatment)
Encourage patient to inhale through their nose and hold each breath for several seconds, then exhale slowly (This may be unsuccessful at first so continue to offer encouragement).
If breathing is too slow, offer a rhythm that will help them (1, 2, 3, breathe / 1, 2, 3, breathe)

Oxygen Instructions

Oxygen should be administered as early as possible. Supplemental oxygen helps reduce the patients stress level. Use a non-rebreather mask with 100% oxygen at 12 – 15 litres/min for patients who require high-flow oxygen

Use a nasal cannula with 100% oxygen at 4 – 6 litres/min for patients who do not require high-flow oxygen or are unable to tolerate a face mask. (i.e. mild shortness of breath, nauseated)
If time and condition and capabilities warrant, and oxygen saturation acquired prior to oxygen placement may facilitate future care decisions. Do not delay administering oxygen for patients in respiratory distress.
Report the oxygen saturations to responding EMS crews.

Environmental Emergencies – Cold Related

Severe hypothermia (body temperature below 30° C (86° F) is associated with marked depression of cerebral blood flow and oxygen requirement, reduced cardiac output, and decreased arterial pressure. Full resuscitation with intact neurological recovery is possible. The victim's peripheral pulses and respiratory efforts may be difficult to detect, but life-saving procedures should not be withheld on clinical presentation.

Recognizing Frostbite

Cold exposure injuries to the skin and underlying tissues can vary in degree from superficial to deep. Superficial injuries are observed as skin that appears pale and does not return to normal colour with palpation although the underlying structures are soft. Deep injuries involve freezing of the underlying tissues with permanent cell damage. The skin appears white and waxy and the part feels firm when gently palpated. There may be blisters or swelling. When thawed or partially thawed, the skin may appear red with areas of purple or white.

When treating frostbite injuries in the pre-hospital setting, constrictive jewellery must be removed and the area covered with dressing. Do not break blisters or apply heat. Do not try to rewarm the area in deep tissue injuries. Do not rewarm superficial frostbite if re-freezing is likely.

Recognizing Hypothermia

The signs and symptoms of hypothermia gradually become more severe as the core temperature falls. A general assessment of the patient's core temperature can be made by feeling the skin temperature of the abdomen with the back of your hand. If the abdomen feels cool to the touch, it is likely that the patient is experiencing a decreased core temperature.
At the onset of hypothermia, the patient is usually alert and shivering. As the core temperature drops, shivering stops and muscular activity decreases. Fine muscle co-ordination will be affected first. Eventually, all muscle activity stops. As the core temperature drops to 34° C (93° F), the patient's LOC begins to decrease.

Poor coordination, memory disturbances, impaired judgment, dizziness, and difficulty speaking follow. Below 30° C (86° F), the vital signs begin to diminish. The pulse slows and becomes weaker or may be completely absent. Respirations are extremely shallow or absent. The patient may appear dead.

Management

Cold Exposure - Remove from cold environment and protect from further heat loss, remove wet cloths, do not attempt to re-warm frozen limbs

Conscious Patients

Stop the Cooling Process
It is important to prevent further heat loss from the patient's body core by removing wet garments; insulating the patient in warm, dry material; and shielding the patient from the wind.

Complete the Initial Survey
Pulse and respirations may need to be checked for longer periods to detect minimal cardiopulmonary efforts. The pulse should be checked for a span of 30 - 45 seconds to confirm pulselessness or profound bradycardia in severe hypothermia.
Manipulation of limbs should be kept to a minimum in order to avoid precipitating ventricular fibrillation. The patient should be moved in the horizontal position to avoid aggravating hypotension.

Administer Oxygen
Airway management and patient movement should be undertaken as gently as possible to avoid precipitating ventricular fibrillation. Provide high-flow oxygen (if trained and equipped) as soon as possible.

Unconscious Patients

Stop the Cooling Process
Prevent further heat loss from the patient's body core by gently removing wet garments; insulating the patient in warm, dry material; and shielding the patient from the wind.
Assess the Patient
Determine the LOC (**AVU**).
Assess the **ABCs**.

Assist Ventilations

If no adequate breathing – Provide ventilation with a one way valve mask or shield as necessary.
Provide high-flow oxygen (if trained and equipped) as soon as possible. Check for a pulse every 2 min. Complete an initial survey.

CPR
Begin CPR in the pulseless patient. Patients that are hypothermic only receive one shock with the AED. If the AED begins to charge so that it can deliver additional shocks,

wait 15 seconds without touching the shock button and the machine will dump the charge internally.

Environmental Emergencies – Heat-Related

Hyperthermia results when the body gains or retains more heat than it can lose, resulting in a high core temperature. Mechanisms for body cooling include sweating and dilation of the blood vessels in the skin. When these mechanisms are overwhelmed and the body can no longer tolerate the excessive heat, serious injury results.
High humidity reduces the body's ability to lose heat by evaporation. Vigorous exercise or prolonged strenuous activity leads to fluid and electrolyte loss. Elderly and pediatric patients are at greatest risk for heat injury. Newborns and infants have poor thermo regulation and can overheat easily.

Heat Exposure

Cramping (apply direct pressure to muscles with your hand),
Conscious (remove from heat source, lie down, elevate legs, give water or diluted sports drink),
Unconscious (remove from heat source, cool patient with wet towels)

Heat Cramps

These painful muscle spasms occur after vigorous activity and usually involve the legs or abdomen. Heat cramps are the result of loss of salt and other electrolytes through sweating without adequate replacement.

Heat Exhaustion

Heat exhaustion is the most common form of heat injury. It results from fluid and electrolyte depletion from excess sweating. These patients are mildly hypovolemic and their skin is usually cool, clammy and has poor colour. Their blood pressure is usually normal but their pulse may be elevated. If untreated, heat exhaustion can lead to heat stroke.

Heat Stroke

Heat stroke is the least common heat injury, but if it is not promptly treated, it can be fatal. In heat stroke, the normal mechanism for heat release from the body is overwhelmed and body temperature rises to dangerous levels. The skin is usually hot, dry, and flushed; but in early heat stroke, the skin may still be sweaty and pale. As body temperature increases, the LOC decreases. Immediate cooling of the core temperature is vital.

Note: These protocols do not apply to hyperthermia caused by a patient fever.

Hypoglycemia – Diabetic Emergencies

In a diabetic emergency, giving sugar to someone with low blood glucose can be a life saving measure but providing sugar to someone with high blood glucose will have little negative effect. If in doubt, provide the patient with sugar. If a Medical First Responder program or Medical Co-Response system has practitioners licensed to provide a blood glucose level utilizing a blood glucometer, a BGL should be acquired early as the vital signs are acquired in patients with suspected diabetic emergencies. A BGL is considered one of the core 5 vital signs in patients that have suspected hyperglycemia, hypoglycemia, seizures, or altered level of consciousness.

A conscious patient can be encouraged to drink or eat something sweet but must have a confirmed history of diabetes, no serious illness and able to swallow. If this is not the case provide comfort measures until EMS arrival.

Treatment

Prepare a glass of juice (orange/apple) and stir in two tablespoons of sugar. Hand the glass to the patient and encourage them to drink. If unable to comply, do not attempt to force the liquid into their mouth.
In the absence of juice, water/milk with added sugar or soda pop/sports drink with sugar as the main ingredient can be substituted. Avoid diet drinks due to their absence of sugar.

Injuries to Bone, Joint and Muscle

Bone Injury

Injuries to bones are often very painful and depending on the location of the injury may prevent them from being able to move. Patients should be encouraged to lie still so that they don't cause further injury to the surrounding tissue. Fractures to large bones run the risk of causing major blood loss so monitor for signs of shock.

Joint Injury

Likewise, an injury to a joint may require that the patient not move until medical assistance is available.

Muscle Injury

Muscle injuries can also be very painful but likely won't prevent the patient from being able to move the affected area. You can still encourage the patient not to move or put strain of the area until assessed by medical staff.

Patient Care

Stabilize the affected area using your hands to hold the extremity (pad with a pillow or blanket)
Cover any open wounds with dry dressings (apply gentle direct pressure to steady bleeding)
Apply ice or cold pack to the injuries area ensuring that a towel or cloth is between the skin and the cold compress
Elevate if able to do so (if in too much pain, then leave in the position found)
Splint only if EMS will be delayed or patient needs to be moved before their arrival

Note:
In addition to assessing DCAP BLS TIC, check for a distal pulse, skin temperature and colour. It is very important to document and report to EMS your findings of the injured limb as once it is bandaged or splinted it will be covered.

Medical

Primary survey

The purpose of the primary survey is to provide an organized and consistent means of evaluating patient status in a prioritized manner, so that life threatening conditions are quickly identified.

Assessment for Responsiveness:

- Introduction of yourself and level of training – tell the patient not to move
- If unconscious - Tap and shout (painful stimulus is not within the scope of the first aider)
- Painful stimulus
- Assess for level of consciousness (LOC)
- Opens eyes to verbal stimulus
- Opens eyes to tapping on shoulder
- Remains unconscious and unresponsive
- Assess airway, breathing and circulation
- If evidence of mechanism of injury, manually maintain the head and spine in a neutral alignment and apply Spinal Motion Restriction devices

Interruptions

The primary survey should not be interrupted except when:

- There is complete airway obstruction or partial airway obstruction without adequate air exchange.
- There is cardiac or respiratory arrest.
- You are stopping major severe external bleeding.
- Anything occurring that may cause harm to the patient if not immediately dealt with.

Oxygen

Oxygen should be administered if response personnel are trained and equipped:

- If required, as early as possible, preferably no later than immediately following assessment of the airway and breathing
- To all multiple trauma patients
- To all patients whose mechanism of injury or physical findings suggest the potential for shock
- To all patients with difficulty breathing
- To all patients with chest pain
- To all patients with an altered or diminished LOC

O_2 Delivery

If oxygen is warranted, provide the following:

- If possible, acquire oxygen saturation prior to oxygen administration

- Use a non-rebreather mask with 100% oxygen at 12 – 15 litres/min for patients who require high-flow oxygen
- Use a nasal cannula with 100% oxygen at 4 – 6 litres/min for patients who do not require high-flow oxygen or are unable to tolerate a face mask. (i.e. mild shortness of breath, nauseated)

Primary Survey Repetition

The Primary survey should be repeated every 5 minutes or when there is a change in the patient's condition, such as a change in LOC, a seizure, a change in respiratory rate and quality, vomiting, or a change in circulatory status.

Evidence of Shock

Shock is a term used when there is a failure within the circulatory system to provide an adequate amount of oxygen rich blood to the body. Responders should assess for evidence of shock in all medical and traumatic emergencies.

Shock may be evident when:

- There is an altered level of consciousness (ALOC)
- The skin appears pale, cool and/or clammy with cold extremities
- Lips and nail beds are blue
- Rapid breathing and pulse
- The pulse feels rapid and weak.
- The pulse at the wrist is weak or absent.
- Capillary refill is delayed more than 2 seconds (pediatrics).

Considerations

Be aware that:

- What constitutes a minor blood loss in an adult may represent a serious blood loss in a pediatric patient.
- Pediatric patients develop skin pallor quite easily.
- Due to their healthy vascular supply and strong vascular responses, pediatric patients can initially sustain a normal blood pressure (BP) in the presence of serious fluid loss.
- Young, healthy patients may not initially exhibit signs or symptoms of shock even with a 25% - 30% fluid loss.
- Pregnant patients can lose 30% - 35% of their blood volume before exhibiting signs or symptoms of shock.

Follow Up Care

Patients should be reassessed every 5 minutes or whenever there is a change in the patient's condition. Reassess LOC, airway, breathing, and circulation (ABC) and all interventions by performing a primary survey.

Medical – Patient Management

Standard Approach and Ongoing Assessment

Follow body substance isolation precautions (PPE).
Are there any **hazards**?
Do you see, hear, or smell anything dangerous?
What is the mechanism of injury or illness?
Are there any **other patients**? (Ask the patient and bystanders, and look around the area.)
Do you need more resources?

C-Spine Control

On approach, tell the patient, “Please do not move until we have checked you for injuries.”
Delegate manual c-spine control while assessing the patient.
C-Spine Control can be ruled out in most medical patients when and if appropriate

Level of Consciousness

AVU (Alert, Verbal, Unresponsive):

- Does the patient **appear** to be **awake and alert**?
- Does the patient respond to **verbal stimulus**?
- Is the patient **unresponsive**?

Alert and Oriented x 4

If the patient is responsive to verbal stimuli, ask the patient his/her name, where he/she is, what day or year it is, and what happened:

- Person
- Place
- Time
- Event

Airway

- Is the airway open and clear?
- Open airway with Head-Tilt, Chin-Lift technique
- Once open, airway must be continually maintained
- Use Jaw-Thrust Manoeuvre if Head-Tilt, Chin-Lift technique unsuccessful or evidence of traumatic injuries or unknown cause of unconsciousness
- Breathing Rate
- Present or absent?

If breathing is absent and pulse is present assist ventilations with OPA, King LT, LMA (Pediatrics) and BVM.
Continue assisting ventilations until return of breathing, relieved by EMS or physically unable to.

Assisted Breathing Instructions

Rescue Ventilations using a BVM with OPA, King LT or LMA (Pediatrics):

- Inspect that the valve is in place
- Place mask on patient's face with the nose covered by the tip end
- Hold mask firmly to patient's face to ensure a complete seal around lips and nose
- Use Head-Tilt, Chin-Lift technique or modified jaw thrust if C Spine injury suspected or cannot be ruled out.
- If using an advanced Airway connect the filter and the BVM directly to the advanced airway.

Return of Respirations

If return of respirations, provide the following support:

- Place the patient in a recovery position to prevent aspiration of fluids into the lungs if not contraindicated due to spinal injury
- Use a non-rebreather mask with 100% oxygen at 10 - 15 litres/min for patients who require high-flow oxygen.

Circulation

Are pulses present at the neck and wrist?
What are the rate, rhythm, and quality of the pulse at the neck and at the wrist?
Is there evidence of circulation?
What are the colour, condition, and temperature of the skin?
Perform a quick blood scan. Look and feel for significant bleeding and control as necessary.
If no evidence of circulation, begin Cardiopulmonary Resuscitation (CPR) and continue CPR until return of circulation, relieved by EMS or physically unable to continue.

Physical Examination

It is important to perform an examination on medical patients from head to toe to determine if they are experiencing any other problems that are secondary to their main complaint.

Skin
Warm and dry?
Pale?
Moist?
Cool or hot?

Head
Pupils equal and reactive to light (**PEARL)?**
Drooling?
Headaches, dizziness, or visual disturbances?
Facial droop (left or right side)?
Inability to speak or incomprehensible speech?

Neck
Pain/discomfort?
Accessory muscle use?
Medical alert?

Chest
Symmetrical expansion?
Accessory muscle use?
Surgical scars?
Medication patches?
Pacemaker?
Internal defibrillator?
Evidence of barrel chest?
Evidence of chest pain/discomfort?
Shortness of breath (SOB), decreased air to the lungs/wet sounds, or wheezes?

Abdomen
Surgical scars?
Needle marks?
Pulsating masses?
Pain (radiating)?
Nausea and vomiting?
DRT? (Distension, Rigidity, Tenderness)

Pelvis
Incontinence (feces or urine)?
Painful urination?
Blood in urine?
Black tarry stool?
Vaginal bleeding?

Extremities
Pulses?
Swelling of the ankles (pedal edema)?
Motor/sensory function?
Surgical scars?
Numbness/tingling?

History Taking Guidelines

Obtaining a history may be time dependant but responders should attempt to gather any information appropriate to care for the patient.

On initial contact with a conscious patient, after determining that the scene is safe and taking c-spine control (if required), determine if the patient is Alert and Orientated X 4 (**A/O x 4)**:

- **Person** – What is your name?
- **Place** – Do you know where you are?
- **Time** – Do you know what day it is?
- **Event** – Do you know what happened?

After completing the primary survey and performing critical interventions, a history may be taken. The history follows the mnemonic, SAMPLE:

- **S**ymptoms **–** Why have you called for help?
- **A**llergies – Do you have any allergies to medications or anything else?
- **M**edication **–** What medications are you currently taking?
- **P**ertinent medical history **–** Do you have any other medical problems? Have you ever had this problem before?
- **L**ast oral intake – When and what did you last eat and drink?
- **E**vents leading up to illness or injury – What happened today?

As part of history taking and in cases of patients who are experiencing pain or discomfort (such as chest pain, headache, and abdominal pain or discomfort), further information about the patient's condition can be gathered based on the **OPQRST** mnemonic:

- **O**nset – What were you doing?
- **P**rovocation – What makes the pain or discomfort worse or better?
- **Q**uality – In your own words, describe the type of pain or discomfort you are having.
- **R**adiating – Does the pain or discomfort go anywhere else?
- **S**everity **–** On a scale of 1 to 10, rate your pain or discomfort with 10 as the worst.
- **T**ime – When did this start and has it changed?

Medication Assistance

Assisting a patient to take their own medication, place in patients hand and encourage them to take the prescribed dose (i.e. asthma medication). Ensure that this is the patient's own medication and it is the correct one for this problem.
Only the following medications can be given as a patient assist:

Medications

- Patient assist administration via inhalation nebulizers – Bronchodilators
- Salbutamol (ventolin)
- Ipratropium Bromide (atrovent)
- Patient assist administration via intramuscular route – Adrenergic agonists
- Epinephrine (adrenalin)

- Trade names include **EpiPen**, **Anapen** and **Twinject**
- Prescribed medication administration via oral route – Platelet Inhibitors
- Acetylsalicylic acid (ASA)
- Anti-hypoglycemic agents
- Oral glucose gel
- Common trade names include GlucoBurst Glucose Gel, Insta-Glucose and Glutose
- Contains 15 grams of glucose

Mental Health Emergencies

A mental health emergency may be difficult to identify but often there are some common signs and characteristics that may be recognizable.
A crisis may occur at any time and may erupt from any event that interrupts the normality of the person's life. Environmental conditions, physical events, changes in social status and life cycle passage may all be situations that create an emotional event.

Common Signs

- Inappropriate anger
- Anxiety
- Confusion
- Depression
- Fear
- Loss of contact with reality
- Mania
- Withdrawal

Patient Care

- If patient is uncooperative ensure safety to yourself and others by removing yourself from their presence
- Contact police if any sign of concern
- Provide reassurance
- If possible remove person from any source of disruption
- Take care not to over sympathise or patronise
- Instruct them to focus on their breathing (couch them to slow down their breathing if hyperventilating)
- Determine risk of suicide by asking straight forward questions – **"Are you thinking about harming yourself or someone else?"**
- Provide comfort until EMS arrival.

Obstructed Airway – Adults / Children

Etiology

The causes of airway obstructions include foreign bodies, the tongue, swelling of the upper airway, trauma to the airway, and infections. Differentiating the cause of the airway obstruction is essential in order to determine the most appropriate treatment. Airway obstructions may be partial or complete.

Conscious Patients

Conscious patients with obstructed airways are classified into two groups: those with partial obstruction and those with complete obstruction.

Partial Airway Obstruction

Patients with partial airway obstruction are further classified into two subgroups: those with good air exchange and those with poor air exchange.

Good air exchange
Do not intervene as long as air exchange is adequate
Keep the patient relaxed and comfortable
Do not allow these patients to leave your care.

Poor air exchange
Perform abdominal thrusts only
Continue until successful or patient becomes unconscious:

- This is treated as though it were a **complete airway obstruction.**

Complete Airway Obstruction (Unconscious with poor air exchange)

Assist the patient into the supine position
Look in the mouth. If a foreign body can be seen, remove it. Do not perform blind finger sweeps because this may result in the foreign body pushed back into the airway. Open the airway with a head/tilt chin-lift or modified jaw thrust, and attempt to ventilate. If air does not go in, reposition the airway and attempt to ventilate again.
If air still does not go in, perform CPR. Every time you open the airway give 2 breaths, check the mouth and remove the object if you can see it.

The technique for relieving a complete airway obstruction is based upon the patient's age. Use abdominal thrusts to relieve choking in adults and children over 1 year of age. Do not use abdominal thrusts in infants.

Adults / Children Complete Airway Obstruction

Conscious, standing adults and children are given abdominal J-thrusts to relieve complete airway obstruction. (The term 'abdominal thrust' is used synonymously with 'Heimlich manoeuvre') When performing this manoeuvre, the area over the xiphoid process (or the lower margin of the rib cage) should never be compressed. The thrusts should be applied below this area but above the navel in the mid-line. Regurgitation

may occur and medical responders should be prepared. Abdominal thrusts are performed until the obstruction is relieved or the patient becomes unconscious.

Alternatively, if the patient is obese or pregnant, standing chest thrusts may be performed until the obstruction is relieved or the patient becomes unconscious. Chest thrusts can also be used if the patient is seated or supine.

Adults / Children Airway Obstruction – Patient Becomes Unconscious

Assist the patient into the supine position.
Look in the mouth. If a foreign body can be seen, remove it. Do not perform blind finger sweeps because this may result in the foreign body being pushed back into the airway.
Open the airway with a head-tilt/chin-lift or modified jaw thrust, and attempt to ventilate.
If air does not go in, reposition the airway and attempt to ventilate again.
If air still does not go in, perform CPR. Every time you open the airway to give 2 breaths, check the mouth and remove the object if you can see it.

Adults / Children Relief of Choking – Patient Still Unconscious

If you have successfully removed an airway obstruction in the unresponsive patient, you will feel air movement and see the chest rise when you give breaths. After you have relieved the choking in the unresponsive victim:

- Provide 2 breaths.
- Check for a pulse.
- **If there is no pulse** – Perform chest compressions and attach the AED.
- **If there is a pulse but no breathing** – Continue ventilations provide ventilations with a one way valve mask or shield as necessary and check for a pulse every 2 min.
- **Pulse / Breathing** – Administer oxygen, place the patient in the recovery position, complete the primary survey, take history, and continue monitoring the patient until EMS arrives.

Obstructed Airway – Infants (Birth – 1 Year)

Conscious Patients

Conscious patients with obstructed airways are classified into two groups: those with partial obstruction and those with complete obstruction.

Partial Airway Obstruction

Patients with partial airway obstruction are further classified into two subgroups: those with adequate air exchange and those with inadequate air exchange.

Adequate air exchange – In partial airway obstruction with adequate air exchange, the infant can cough forcefully, although frequently there is wheezing between coughs. The infant's LOC remains alert, and the skin colour is pink or red. As long as the patient's LOC, skin colour, and ability to cough remain unchanged; the patient should be observed closely and oxygen should be administered.

Inadequate air exchange – In partial airway obstruction with inadequate air exchange, the patient exhibits a weak, ineffective cry, makes a high-pitched noise while inhaling, and experiences increased respiratory difficulty which may be indicated by bluish skin. There may also be a decreased LOC. This is treated as though it were a **complete airway obstruction.**

Complete Airway Obstruction

- If the patient is unable to cry or make any sounds, a complete airway obstruction is present.
- Air movement is absent.
- Unconsciousness will develop quickly.
- The technique for relieving a complete airway obstruction is based upon the patient's age. For the purposes of this protocol, infants are classified as persons less than 1 year of age. Do not use abdominal thrusts in infants. Use chest thrusts and back slaps if the infant is conscious.

Conscious Infants with Complete Airway Obstruction

Responsive, conscious infants are given 5 back slaps and then 5 chest thrusts to relieve complete airway obstruction at the basic life support level. Back slaps are given forcefully in the middle of the back between the infant's shoulder blades, using the heel of your hand while maintaining the infant in a head-lower-than-body position. Back slaps are then followed by chest thrusts. Chest thrusts are given in the same location as chest compressions, which is just below the nipple line using two fingers to perform thrusts. Continue until the airway obstruction is relieved or the infant becomes unconscious.

Infants Airway Obstruction – Infant Becomes Unconscious

- Place infant supine on a hard surface.
- Look in the mouth. If you see a foreign body, remove it. Do not perform blind finger sweeps because this may result in the foreign body being pushed back into the airway. Open the airway with a head-tilt/chin-lift or modified jaw thrust and attempt to ventilate. If air does not go in, reposition the airway and attempt to ventilate again.
- If air still does not go in, stop giving back slaps and perform CPR. Every time you open the airway to give 2 breaths, check the mouth and remove the object if you can see it.

Infants Relief of Choking – Infant Still Unconscious

If you have successfully removed an airway obstruction in the unresponsive infant, you will feel air movement and see the chest or abdomen rise when you give breaths. After you have relieved choking in the unresponsive victim:

- Provide 2 breaths.
- Check for a pulse.
- If there is no pulse – Start CPR.
- **If there is a pulse but no breathing** – Provide ventilation with a one way valve mask or shield as necessary check for a pulse every 2 min. Complete an primary survey
- **Pulse / Breathing** – Complete a primary survey, take history, and continue monitoring the patient until EMS arrives.

Obstetrics and Gynecological

Vaginal bleeding or pelvic pain is found and managed by performing a primary survey, assessing and initiating early oxygen (if trained and equipped), and treating for shock, even in the absence of obvious signs and symptoms.

All women of child-bearing age who are presenting with abnormal vaginal bleeding and/or abdominal pain should be considered to have an ectopic pregnancy until proven otherwise. Prompt on-scene assessment and treatment for shock are essential. Spontaneous abortion (miscarriage) is the loss of pregnancy before 20 weeks gestation. A potential abortion is indicated by vaginal bleeding and cramping. The products of conception should always be saved and transported to hospital with the patient. (Gestational age and fetal viability are difficult to estimate in the field. When in doubt, assume the fetus is potentially viable.)

Vaginal bleeding in the third trimester should always be regarded as a critical emergency. Bleeding may abruptly become very massive. In order to determine external blood loss, the patient should be asked how many pads she has soaked over the last 30 - 60 min. More than three pads in 30 min or more than five pads in 60 min

are indicative of a serious hemorrhage. The total number should be recorded on the PCR and the EMS crew should be informed upon their arrival.

In any type of vaginal bleeding do not under any circumstances place dressings inside the vagina. Instead, apply bulky dressing externally.

To avoid embarrassment to the patient, it is important to make every attempt to preserve the patient's privacy and dignity. The number of personnel in immediate attendance should be limited to only those needed for the patient's care. It is extremely important to maintain a professional demeanour, and to be empathetic and discreet. Provide emotional support for the patient.

Obstetrics and Gynecology – Childbirth

Assisting at a childbirth delivery is classified in the **EMR** scoop of practice. If delivery is imminent and there is no EMR present, then the first aider will provide assistance where required but must use caution not to over extend their skill competency. If you haven't been trained and licensed to perform the following then avoid these skills.

Identify Imminent Birth

- Ask target questions:
- Is this your first baby?
- How far along in your pregnancy are you?
- Are you having twins?
- How many minutes apart are your contractions?
- Do you have an urge to push or to move your bowels?
- Has your water broken?
- Are there any complications with this pregnancy?

Perform a Visual Examination (with discretion and permission)

1. Vulvar bulging, or the appearance of the top of the neonate's head during or between contractions indicates that birth is near (crowning).

2. Head Presentation (Cephalic)
    a) Prepare the Mother and the Site for Delivery
    b) Provide privacy and prepare all equipment including the obstetric kit and a pediatric BVM.
    c) Remove the patient's clothing from the waist down and place her in the delivery position on her back with her knees flexed.
    d) Place a disposable yellow blanket underneath her buttocks and another blanket over her abdomen and legs.
    e) Encourage the partner to remain with you and the mother during the delivery.

3. Deliver the Head
    a) Encourage her to push with her contractions.
    b) Maintain gentle pressure on the fetal head with your palm to prevent explosive birth.
    c) Once the head is delivered, instruct the patient to stop pushing (puff, puff), check for and relieve nuchal cord (cord wrapped around neck), and suction the neonate (mouth first then nostrils – "M before N").

4. Nuchal Cord (umbilical cord around the baby's neck)
    a) Attempt to slip the cord over the head.

b) If the cord is too tight to remove, clamp the cord in two places as far apart as possible and immediately cut the cord between the clamps. Use caution!

5. Encourage the mother to push to expel the torso.
   a) Deliver the Torso
   b) After checking the neck, instruct the patient to resume pushing with her contractions.
   c) Guide the neonate's anterior shoulder and then its posterior shoulder. The body will quickly follow.

6. Suction and Dry
   a) Suction the mouth and then the nostrils ('M' before 'N').
   b) Briskly dry and cover the neonate.
   c) Maintenance of body warmth is a priority (silver swaddler).
   d) Place the baby on the mother's bare chest. Keep the baby level with the mom.

7. Cut the Cord
   a) The cord is made of tough fibrous material. To cut it:
   b) Ensure that the cord has stopped pulsing.
   c) Place a clamp on the cord 6 inches from the baby.
   d) Place a second clamp 9 inches from the baby.
   e) With the scalpel, cut the cord in-between the clamps.
   f) Use extreme caution and be prepared for blood.

Caution: If the stump is actively bleeding, hold direct pressure on it. Without appropriate action, the baby could quickly bleed to death.

Placenta

The placenta will naturally deliver shortly after the baby. When it does, place it in the plastic bag provided in the OB kit, and give it to EMS. The placenta must be evaluated in the hospital.

APGAR Score

Provided for reference only:

Assess the APGAR score at 1, 5, and 10 minutes; and record the scores on a Patient Care Report.			
	0 Points	1 Point	2 Point
Appearance	Body Blue/Pale	Extremities Blue	Body Fully Pink
Pulse	Absent	< 100	> 100
Grimace	No Response	Some Motion	Vigorous Cry
Activity	Flaccid	Some Flexion	Active Movement
Respiratory Effort	Absent	Weak Cry	Strong Cry

Obstetrics and Gynecology – Neonatal Resuscitation

In the course of a normal delivery, most neonates born in a pre-hospital setting do not require major resuscitation efforts. Drying, warming, stimulation, suction, and blow-by oxygen will be all that most infants require.

Major resuscitation efforts should be anticipated in the following types of deliveries:

- **Premature labour** – labour occurring three or more weeks before the due date around 37 weeks.
- **Multiple pregnancy** – the mother is carrying more than one fetus. In this case, multiple resuscitations should be anticipated.
- **Meconium staining** – this is the passage of a green-brown fluid from the vagina which indicates a fetal bowel movement in utero. This indicates fetal distress.
- **Abnormal presentation** – a presentation other than the head.

Resuscitative Measures

Maintain Body Warmth
The neonate should be vigorously dried and then placed in a clean, dry, warm material or silver swaddler with attention to keeping the neonate's scalp covered.

Suction
Upon delivery, the infant must be thoroughly suctioned using a bulb syringe (mouth first and then nose). Ensure that the bulb syringe is squeezed prior to entering the mouth and nose. Release the bulb and suction only on the way out of the oropharynx and nostrils.

Tactile Stimulation
Vigorous drying, flicking the soles of the feet, and suctioning provide tactile stimulation which causes most infants to take their first breath.

Oxygen
Perform a gentle chin-lift and provide oxygen (if trained and equipped) via a pediatric mask at 10 litres/min blow-by.

Further Measures
If the neonate exhibits inadequate respirations (less than 20 /min, noisy, cyanotic, etc.) after 15 - 30 seconds of the above measures or an APGAR score less than 8, then the

First Medical Responder should proceed in the following manner:

- Dry and Wrap the Neonate
- The neonate should be covered as soon as it is born. If the infant has not already been dried, thoroughly dry the infant with minimal exposure to the ambient air. Once this is accomplished, the dried infant is placed naked in the silver swaddler and the scalp is covered. Do not place the silver swaddler inside any other kind of wrapping because this may lead to HYPERTHERMIA.

Clamp and Cut the Cord
Cutting the umbilical cord **immediately** after birth is **only** done in a resuscitative emergency. A non-breathing neonate who cannot be stimulated by 15 - 30 seconds of tactile stimulation and oxygen administration requires more aggressive resuscitative measures.

Insert Oropharyngeal Airway and Ventilate with the Infant BVM
Using the infant BVM and 100% oxygen at 15 litres/min, the neonate should be ventilated at a rate of 40 - 60 /min. This first ventilation will be difficult to instil if the neonate has not yet taken a breath. Ventilate only to the point at which the chest rises.

Evaluate the Heart Rate
The neonatal pulse is palpated at the brachial artery. If the neonatal heart rate is less than 100, provide BVM ventilations. If the neonatal heart rate is less than 60 beats/min, start CPR. Compressions are performed with two fingers, one finger-breadth below the inter-mammary line at 1/3 to 1/2 of chest depth at a rate of at least 100 compressions/min.

Seizure

Seizures may be caused by a number of conditions including hypoglycaemia, fever, head injury, stroke, infection, pregnancy, hypoxia, and epilepsy.

They can be focal, involving only a certain area of the body; or they can be tonic-clonic, involving the entire body.

Most patients experiencing a seizure will lose consciousness and some will vomit.
The focus of the Medical First Responder is to ensure patient safety, prevent injury, and ensure airway patency.

Management

- Do not attempt to restrain the patient.
- Move furniture and other objects away from the patient.
- Consider c-spine precautions because the patient may have fallen when the seizure began.
- Provide high-flow oxygen (if trained and equipped) as soon as possible.
- Patients may become combative as they recover from the seizure.
- Document the duration of the seizures and the areas of the body involved.
- Acquire a blood glucose level if time allows

Conscious Patients

Stop the Overheating Process
All patient activity must cease and the patient must be immediately moved to a cooler environment. Excessive outer clothing should be removed to facilitate cooling. Active cooling of the body temperature is instituted in suspected heat stroke by fanning the patient, placing cool compresses in the groin and armpits, or wet-sponging the skin.
Do not put ice packs directly onto the patient's skin as it may cause injury.
Do not cool the patient to the point at which shivering takes place because this produces heat.

Complete the Primary survey
Provide oxygen (if trained and equipped) by NRB at 10 - 15 litres/min.

Treat for Shock If Indicated
If the patient has an increased heart rate, is pale, cool, has clammy skin, experiences dizziness/faintness, or is weak or exhausted; treat the patient for shock as per the SHOCK algorithm.

Unconscious Patients

- Determine the LOC (**AVU**).
- Assess the **ABC**.
- Treat for shock.

Shock

Perform an Primary survey
Assessment of the mechanism of injury is helpful in determining the potential for the development of shock in trauma. It is also essential to quickly search for immediate life-threatening injuries, such as profuse external bleeding and to perform critical interventions.
Patients who are suspected of being in shock or who have the potential to develop shock should be placed in a recumbent position as soon as possible.

Oxygen Instructions (if trained and equipped)

Oxygen should be administered as early as possible in shock or potential shock patients. Oxygen is a high-priority treatment since it is capable of slowing the progress of shock.

Conserving Body Warmth

Maintaining body warmth requires the use of oxygen. By covering the patient with blankets and reducing metabolic demands for thermo regulation, the patient's need for oxygen is lessened.

Elevation of Lower Extremities

This should be done only if there is no risk of spinal injury or fractures of the legs. Patients who are secured on a spine board and are in shock can have the lower end of the board elevated.

Reassess the LOC (AVU)

Assess the **ABC**.
A baseline set of vitals is important in determining changes in the patient's status. Vitals should be repeated frequently, preferably over 5 min intervals in order to monitor cardiovascular and neurological changes.

Decrease in peripheral vascular resistance, can be caused by:

Anaphylaxis

Histamine release causes peripheral vasodilation and a shift of fluid from intravascular spaces into interstitial space

Neurogenic

Spinal cord injury results in unopposed vagal tone
Characterized by bradycardia and hypotension with warm, dry skin

Sepsis

Pathogen releases toxins that cause peripheral vasodilation

Obstructive

Physical obstruction of the heart or great vessels
May be caused by tension pneumothorax, pulmonary embolism, or cardiac tamponade

Shock can be divided into three stages:

a) Compensated
The body is capable of meeting its metabolic needs through a series of compensating actions

b) Decompensated
Compensatory mechanisms begin to fail

c) Irreversible
The body's cells die in quantities with the result that the organs can no longer carry out their normal functions.

Resuscitation may restore blood pressure, but multi-system organ failure leads to death

Interventions

Search For and Treat Possible Causes

- The priority in shock management is to identify and treat the cause of the shock
- Control any external hemorrhage
- Treat shock due to anaphylaxis as per the Anaphylaxis Protocol
- Treat shock due to tension pneumothorax as per the Pneumothorax Protocol
- Perform fluid resuscitation to maintain a systolic BP 90 mmHg or greater after an identified cause has been treated, if applicable:
- Uncontrolled fluid resuscitation can impact the clotting process leading to increased hemorrhage
- Septic shock may require significantly larger volumes of fluid resuscitation

Poisoning

The following information is taken from the Alberta Poison and Drug Information Service (PADIS) ©2010

If the victim is breathing and conscious ensure that **EMS** is activated and call the Poison Centre:

1-800-332-1414

Ensure that **EMS** is activated if the person is:

- Unconscious
- Not Breathing
- Convulsive

For poisons that are swallowed

Chemicals or household products
Give a glass of water or milk **unless** the person cannot swallow.
Have the container or label of the poison with you
Call the Poison Centre at 1-800-332-1414
DO NOT follow the treatment instructions on the container until you have checked with the Poison Centre.
DO NOT give salt water or mustard.
DO NOT put your finger down the throat of a poisoned person, or make them vomit.

Medications
DO NOT give anything by mouth
Have the container or label of the medication with you
Call the Poison Centre at 1-800-332-1414

Plants that are swallowed
Choking is the immediate concern when a child places a plant part in his/her mouth. If the child is gagging or choking, finger-sweep his/her mouth if you can see the object and remove any remaining parts of the plant.
Perform appropriate intervention if choking – refer to Obstructed Airway Protocol
Algorithm 11 (adult/child, page 50)
Algorithm 12 (infant, page 53)
If the child continues to choke, ensure that **EMS** is activated.
Gently wipe mouth and surrounding area with a wet cloth.
Check for irritation, swelling, discoloration, or difficulty in swallowing.
If the child has no difficulty swallowing, give half a glass of water or milk.
Call the Poison Centre at 1-800-332-1414
DO NOT make the child vomit.
DO NOT wait for symptoms to appear. Symptoms can be delayed.

For poisons that are spilled on the skin
Ensure appropriate safety precautions and PPE – refer to page 14
Remove all soiled clothing.
Avoid getting poison on yourself.
Rinse the skin under running water for 15 minutes, then wash gently with soap and water and rinse again.

For poisons that are breathed in
Ensure appropriate safety precautions and PPE – refer to page 14
Consider breathing protection for the responder, i.e. self-contained breathing apparatus (SCBA) or a supplied air respirator (SAR)
Remember to consider the possibility of a poison gas if a person has collapsed in an enclosed space.
Move the victim into fresh air if you can do so without putting yourself in danger.
Open all doors and windows.
DO NOT breathe the fumes.
Call the Poison Centre at 1-800-332-1414
If the person is not breathing, start artificial respiration and ensure that **EMS** is activated.

For poisons that are splashed in the eye
Rinse the eye with lukewarm water for 15 minutes, by pouring lukewarm water from a large glass 2 to 3 inches above the eye, or by standing in the shower.
Have the person blink as often as possible while rinsing the eyes.
Call the Poison Centre at 1-800-332-1414
DO NOT force the eyelids open.
Ensure that **EMS** is activated.

For poisons that are injected (puncture or injection)
Apply gentle direct pressure if bleeding
Clean the wound with soap and water
Soak in warm water for 15 minutes
Bandage
Apply ice to reduce pain and swelling
Call the Poison Centre at 1-800-332-1414
Watch for signs of an allergic reaction or anaphylactic shock
Ensure that **EMS** is activated.
Provide airway management if the victim has airway or breathing problems – refer to airway management.

The priority in managing toxic exposures is to protect responders, the patient, and hospital staff from further harm by reducing the contamination as much as possible

Contamination Reduction (Decontamination)

Do not approach the patient until properly trained and equipped personnel are able to perform contamination reduction:

1. Remove all clothing from the contaminated patient
2. Wash the patient with copious amounts of water; be sure to contain contaminated runoff

Identify Toxin / Agent / Product

Use history taking, scene assessment, and patient signs and symptoms to assist in identification of the toxin; look for:
Dangerous goods placards
WHMIS labels
Medication containers
Household chemicals
Other clues that may aid your assessment

Special Circumstances

1. Anticholinergic OD
   Common signs and symptoms include: dementia with mumbling speech, tachycardia, dry flushed skin, dilated pupils, myoclonus, temperature elevated, urinary retention
   - Red as a beet
   - Mad as a hatter
   - Dry as a bone
   - Hot as Hades
   - Blind as a bat

   Common sources: antihistamines, anti-parkinsonism meds, atropine, antipsychotics, scopolamine, antidepressants, antispasmodics, mydriatics, skeletal muscle relaxants and many plants.

Odour Field Guide

Odour	Possible Causative Agents
Bitter almonds	Cyanide
Garlic	Arsenic, organophosphates, phosphorus, thallium
Acetone	Methyl alcohol, isopropyl alcohol, aspirin
Wintergreen	Methyl salicylate
Pears	Choral Hydrate
Fruity	Isopropanol, acetone, nail polish remover
Minty	Mouthwash , rubbing alcohol
Mothballs	Napthalene, p-dichlorobenzene
Peanuts	Vacor rat poisons
Shoe polish	Nitrobenze

Opiate Overdose Notes

Etiology

Opiates, or narcotics, mimic the actions of endogenous endorphins responsible for sedation and analgesia. Overdoses cause depression of the central nervous and respiratory systems. Examples of opiates include fentanyl, hydromorphone, meperidine, methadone, morphine, sufentanil, codeine, heroin, darvon, dilaudid and oxycodone.

Common signs of an opiate overdose include:
1. Miosis
2. Hypotension
3. Respiratory depression
4. Hypothermia
5. Decreased LOC
6. Pulmonary edema (non-cardiogenic)

Organophosphate Poisoning Notes

Etiology

Organophosphate compounds include insecticides (e.g. malathion, parathion) and nerve agents (e.g. sarin, VX). These compounds have a very high affinity for acetylcholinesterase and irreversibly bind with the enzyme preventing it from metabolizing acetylcholine. Acetylcholine is the neurotransmitter responsible for the transmission of a nerve impulse from one nerve to another or a target organ, gland, or muscle. Normally, acetylcholinesterase almost instantly metabolizes the acetylcholine to stop the stimulation of the target receptor site.

Carbamate compounds include insecticides (e.g. carbofuran, Furadan, carbaryl) and polyurethanes (e.g. bisphenol-A). These compounds act similarly to organophosphates in that they bind to acetylcholinesterase; however, an important difference is that the bond formed between carbamates and acetylcholinesterase is reversible.

When the acetylcholinesterase is bound to one of the above compounds, the acetylcholine remains active and continues to stimulate the target receptor site causing adverse physiologic effects. This means the organs, glands, and muscles act continuously, eventually leading to respiratory system failure, cardiovascular effects, paralysis of skeletal muscles, and over-stimulation of the brain causing convulsions and death.

Signs and symptoms of organophosphate / carbamate poisoning develop rapidly (less than 1 minute to 60 minutes) after exposure and in order of appearance and severity include:

- Constricted pupils (miosis) and dim vision
- Running nose, excessive salivation
- Feeling of tightness in the chest
- Muscular weakness
- Intestinal cramps and diarrhea – indicates a severe organophosphate exposure
- Difficulty breathing
- Convulsions

A useful mnemonic to remember these signs and symptoms is **SLUDGEM**:

- S Salivation
- L Lacrimation
- U Urination
- D Defecation
- G GI upset
- E Emesis
- M Miosis

Other chemicals such as cholinergics and cholinesterase inhibitors (e.g. nicotine, muscarine / poisonous mushrooms, neostigmine, cevimeline) have similar effects on the nerve synapses. Treatment for these chemicals is the same as for organophosphates.

Signs and symptoms of poisons that affect the nerve synapses depend on whether they are affecting the muscarinic or nicotinic receptor sites. Muscarinic receptors are predominantly in the parasympathetic nervous system while nicotinic receptors are in the sympathetic system.
A mnemonic to remember the signs and symptoms of muscarinic poisoning is DUMBELS and nicotinic poisoning is MTWHF (Monday-Tuesday-Wednesday-Thursday-Friday).

Muscarinic

- D Diarrhea
- U Urination
- M Miosis
- B Bradycardia, Bronchorrhea, Bronchospasm
- E Emesis
- L Lacrimation
- S Salivation, Secretion, Sweating

A mnemonic to remember the signs and symptoms of nicotinic poisoning is MTWHF (Monday-Tuesday-Wednesday-Thursday-Friday).

Nicotinic

- M Mydriasis
- T Tachycardia
- W Weakness
- H Hypertension, Hyperglycemia
- F Fasciculations

Interventions

Contamination Reduction (Decontamination)

Request assistance from the local fire department and hazardous materials units if available.

Do not approach the patient until properly trained and equipped personnel are able to perform contamination reduction:

a) Remove all clothing from the contaminated victim
b) Wash the victim with copious amounts of water; be sure to contain contaminated runoff

Patient Safety Considerations

The priority in managing organophosphate exposures is to protect responders, the patient, and hospital staff from further harm by reducing the contamination as much as possible.

Toxic Inhalation Notes

Etiology
Toxic inhalations occur when a patient has inhaled smoke or fumes which damage the lungs or poison the body. Chemicals that directly damage the lungs cause a chemical pneumonia. Other chemicals such as carbon monoxide and hydrogen sulphide enter the body via the respiratory system, but affect other organs.

Carbon monoxide (CO) is a colorless, odorless gas produced by the incomplete combustion of a material containing carbon. It has a much higher affinity for hemoglobin than oxygen, resulting in hypoxemia. The smaller the patient's body size, the greater the effect of CO.

Signs and symptoms include:

- Headache
- Nausea
- Flushed skin
- SOB
- Altered level of consciousness
- Dizziness
- Ischemic chest pain

Patient Safety Considerations

Fetal hemoglobin has a much greater affinity for CO than adult hemoglobin; pregnant patients may exhibit mild to moderate symptoms, yet the fetus may have devastating outcomes.

Hydrogen sulphide (H2S)

A colorless gas that can smell like rotten eggs; however, at higher concentrations, it impairs the olfactory nerves and has no smell. H2S is produced as a result of the bacterial breakdown of organic matter in the absence of oxygen and also occurs in natural gas (sour gas). H2S blocks cellular respiration by preventing oxygen from binding in the mitochondria.

Signs and symptoms include:

- Ocular / respiratory irritation

- SOB
- Sudden collapse
- Cardiac arrest

Interventions

- High Flow Oxygen

Administer oxygen to all patients suspected of suffering a toxic inhalation regardless of their SpO2 reading; CO bonds with hemoglobin forming carboxyhemoglobin which gives a false (high) reading on SpO2 monitors

CO Monitoring

Monitor SpCO levels (if available) in patients suspected of being exposed to CO; SpCO levels of greater than 5% are considered significant.

Treat the patient based on presentation, not on SpCO level.

Atmospheric monitoring of CO levels (if available) can prepare you for the patient's condition; their actual condition is based on the concentration, duration of exposure, and minute ventilation rate:

CO ppm	Duration of exposure	Signs & Symptoms
200	2 – 3 hours	Mild headache, fatigue, nausea, dizziness
400	1 – 2 hours	Serious headache, other symptoms intensify Life-threatening if exposure greater than 3 hours
800	45 minutes	Dizziness, nausea, convulsions Unconscious within 2 hours, death within 2 – 3 hours
1600	20 minutes	Headache, dizziness, nausea Death within 1 hour
3200	5 – 10 minutes	Headache, dizziness, nausea Death within 1 hour
6400	1 – 2 minutes	Headache, dizziness, nausea Death within 25 – 30 minutes
12800	1 – 3 minutes	Death

Stroke

A stroke is a sudden loss of brain function. It is caused by the interruption of flow of blood to the brain (ischemic stroke) or the rupture of blood vessels in the brain (hemorrhagic stroke).

The interruption of blood flow or the rupture of blood vessels causes brain cells (neurons) in the affected area to die. The effects of a stroke depend on where the brain was injured, as well as how much damage occurred.

Symptoms

- **Weakness** - Sudden loss of strength or sudden numbness in the face, arm or leg, even if temporary.
- **Trouble speaking (aphasia)** - Sudden difficulty speaking or understanding or sudden confusion, even if temporary.
- **Vision problems** - Sudden trouble with vision, even if temporary.
- **Headache** - Sudden severe and unusual headache.
- **Dizziness** - Sudden loss of balance, especially with any of the above signs.

Stroke Treatment

In the last few years, important new advances have been made in stroke treatment. However, these new treatments must be started within a few hours of the onset of symptoms in order to be effective. That's why it's so important to recognize the warning signs of a stroke as soon as they appear and immediate medical assistance is activated.

Patient Care

Ensure adequate breathing
Ensure that **EMS** is activated.
Provide appropriate airway management with oxygen – refer to page 17
Provide comfort measures until EMS arrival.

Trauma

Primary Survey

The purpose of the primary survey is to provide an organized and consistent means of evaluating patient status in a prioritized manner, so that life threatening conditions are quickly identified.

- Assessment for Responsiveness:
- Introduction of yourself and level of training – tell the patient not to move
- If unconscious - Tap and shout.)
- Assess for level of consciousness (LOC)
- Opens eyes to verbal stimulus
- Opens eyes to tapping on shoulder
- Remains unconscious and unresponsive
- Assess airway, breathing and circulation
- If evidence of mechanism of injury, manually maintain the head and spine in a neutral alignment and apply Spinal Motion Restriction devices.

Interruptions

The primary survey should not be interrupted except when:
There is complete airway obstruction or partial airway obstruction without adequate air exchange.
There is cardiac or respiratory arrest.
You are stopping major severe external bleeding.
Anything occurring that may cause harm to the patient if not immediately dealt with.

Helmets

Full-face motorcycle helmets impede your ability to access and manage the airway; they must be removed in order to assess, evaluate, and maintain the patient's airway.
All open-face helmets, such as football helmets, are best left in place with the face guard removed.

Primary Survey Repetition

The Primary survey should be repeated every 5 minutes or when the patient's condition changes, such as a change in LOC, a seizure, a change in respiratory rate and quality, vomiting, or a change in circulatory status.

Sucking or Bubbling Chest Wound

Patients with a sucking or bubbling chest wound should be immediately hand sealed upon initial discovery, then quickly delegated to other team members for hand sealing and application of an occlusive dressing.

Evidence of Shock

Shock is a term used when there is a failure within the circulatory system to provide an adequate amount of oxygen rich blood to the body. Responders should assess for evidence of shock in all medical and traumatic emergencies.

Shock may be evident when:

- There is an altered level of consciousness (ALOC)
- The skin appears pale, cool and/or clammy with cold extremities
- Lips and nail beds are blue
- Rapid breathing and pulse
- The pulse feels rapid and weak.
- The pulse at the wrist is weak or absent.
- Capillary refill is delayed more than 2 seconds (pediatrics).

Considerations

Be aware that:

- What constitutes a minor blood loss in an adult may represent a serious blood loss in a pediatric patient.
- Pediatric patients develop skin pallor quite easily.
- Due to their healthy vascular supply and strong vascular responses, pediatric patients can initially sustain a normal blood pressure (BP) in the presence of serious fluid loss.
- Young, healthy patients may not initially exhibit signs or symptoms of shock even with a 25% - 30% fluid loss.
- Pregnant patients can lose 30% - 35% of their blood volume before exhibiting signs or symptoms of shock.

Oropharyngeal Airways

Oropharyngeal airways (OPA's) should be used:

- On all unconscious patients who do not have a gag reflex. (Test for a gag reflex by flicking the patient's eyelashes with your finger. If there is any response, the patient may still have a gag reflex.)

Advanced Airways

- King LT
- LMA (Pediatrics)

Ventilation Instructions

- Insert an OPA, King Lt, LMA (Pediatrics) if the patient is unconscious and a gag reflex is absent.
- Assist with bag valve mask (BVM) and 100% oxygen at 15 litres/min if the patient's respirations are inadequate. Ventilate at a rate of 10 - 12/min and only sufficiently to appreciate rise and fall of the chest.

Oxygen

Oxygen should be administered:

- If required, as early as possible, preferably no later than immediately following assessment of the airway and breathing status
- To all multiple trauma patients

- To all patients whose mechanism of injury or physical findings suggest the potential for shock
- To all patients with difficulty breathing
- To all patients with chest pain
- To all patients with an altered or diminished LOC

O_2 Delivery

If oxygen is warranted, provide the following:

- Use a Non-Rebreather mask with 100% oxygen at 12 – 15 litres/min for patients who require high-flow oxygen
- Use a nasal cannula with 100% oxygen at 4 – 6 litres/min for patients who do not require high-flow oxygen or are unable to tolerate a face mask. (i.e. mild shortness of breath, nauseated)
- If time and condition and capabilities warrant, and oxygen saturation acquired prior to oxygen placement may facilitate future care decisions. Do not delay administering oxygen for patients in respiratory distress.
- Report the oxygen saturations to responding EMS crews.

Trauma – Patient Management

Standard Approach and Ongoing Assessment

- Follow body substance isolation precautions (PPE).
- Are there any **hazards**?
- Do you see, hear, or smell anything dangerous?
- What is the mechanism of injury?
- Are there any **other patients**? (Ask the patient and bystanders, and look around the area.)
- Do you need more resources?

C-Spine Control

- On approach, tell the patient, “Please do not move until we have checked you for injuries.”
- If no response then assume c-spine control.
- Delegate manual c-spine control to another crew member while assessing the patient.
- Place a cervical device on patient’s neck as indicated once assessment of the neck and cervical spine complete. For medical patients, rule out c-spine if appropriate.

Level of Consciousness

AVPU (Appear, verbal, painful, unresponsive)

- Does the patient **appear** to be **awake and alert**?
- Does the patient respond to **verbal stimulus**?
- Does the patient respond to **painful stimulus**?

- Is the patient **unresponsive**?

Alert and Oriented x 4

If the patient is responsive to verbal stimuli, ask the patient his/her name, where he/she is, what day or year it is, and what happened:

- **Person**
- **Place**
- **Time**
- **Event**

Airway

- Is the airway open and clear?
- Open airway with Head-Tilt, Chin-Lift technique
- Once open, airway must be continually maintained
- Use Jaw-Thrust Manoeuvre if Head-Tilt, Chin-Lift technique unsuccessful or evidence of traumatic injuries or unknown cause of unconsciousness
- Breathing Rate
- Present or absent?
- If breathing is absent and pulse is present assist ventilations with OPA, King LT, LMA (Pediatrics) and BVM.
- Continue assisting ventilations until return of breathing, relieved by EMS or physically unable to.

Assisted Breathing Instructions

- Rescue Ventilations using a BVM with OPA, King LT or LMA (Pediatrics):
- Inspect that the valve is in place
- Place mask on patient's face with the nose covered by the tip end
- Hold mask firmly to patient's face to ensure a complete seal around lips and nose
- Use Head-Tilt, Chin-Lift technique or modified jaw thrust if C Spine injury suspected or cannot be ruled out.
- If using an advanced Airway connect the filter and the BVM directly to the advanced airway.

Return of Respirations

If return of respirations, provide the following support:

- Place the patient in a recovery position to prevent aspiration of fluids into the lungs if not contraindicated due to spinal injury
- Use a non-rebreather mask with 100% oxygen at 10 - 15 litres/min for patients who require high-flow oxygen.

Circulation

- Are pulses present at the neck and wrist?
- What are the rate, rhythm, and quality of the pulse at the neck and at the wrist?

- Is there evidence of circulation?
- What are the colour, condition, and temperature of the skin?
- Perform a quick blood scan. Look and feel for significant bleeding and control as necessary.
- If no evidence of circulation, begin Cardiopulmonary Resuscitation (CPR) and continue CPR until return of circulation, relieved by EMS or physically unable to continue.

Physical Examination

It is important to perform an examination from head to toe to determine if the patient has any hidden injuries.

Head
Look for DCAP-BLS and feel for TIC.
Look for **battle signs** and **racoon eyes.**
Look for CSF in the ears.
Look to see if the pupils are **PEARL**. What is the pupil size, and are the pupils equal and reactive to light?

Neck
Look for **DCAP-BLS** and gently palpate for **TIC.**
Look at the **neck veins.** Note if they are flat or distended.
Look at and feel the trachea. Note if it is mid-line or deviated.
Look for a Medic Alert tag.
Check accessory muscle use.

Chest
Look for **DCAP-BLS** and feel for **TIC.**
Auscultate the lungs at the apices and bases. (**EMR** skill)
Note if breathing sounds are present and equal.
Look for flail chest, sucking chest wounds, and feel for subcutaneous emphysema.
Look for equal bilateral expansion. Is there any paradoxical movement?

Abdomen
Look for **DCAP-BLS**.
Feel for **DRT** in all four quadrants of the abdomen.

Pelvis
Look for **DCAP-BLS** and feel for **TIC.**
Look for priapism and incontinence.

Lower Extremities
Look for **DCAP-BLS.**
Feel for **TIC** and **PMS**.

Check for skin colour and temperature.

Upper Extremities
Look for **DCAP-BLS**.
Feel for **TIC** and **PMS**.
Check for skin colour and temperature.

Back
Look for **DCAP-BLS**.
Feel for **TIC**
Observe any blood pooling.

History Taking Guildlines

Obtaining a history may be time dependant but responders should attempt to gather the pertinent information required in caring for the trauma patient. The acronym **SAMPLE** is helpful to remind yourself:

- **S**ymptoms
- **A**llergies
- **M**edications
- **P**ast Medical History
- **L**ast oral intake
- **E**vents leading up to current problem

Follow Up Care

Patients should be reassessed every 5 minutes or whenever there is a change in the patient's condition. Reassess LOC, airway, breathing, and circulation (ABC) and all interventions by performing a primary survey.

APPENDIX A

Adult Drug Reference **If trained and equipped.*

Generic Name: Medical Oxygen
Trade Name:
Classification: medicinal gas
Supplied: compressed gas cylinder
Actions (Pharmacodynamics): • Colorless, odorless, tasteless gas essential to respiration • At sea level, oxygen makes up approximately 10% - 16% of venous blood and 17% - 21% of arterial blood • Transported from the lungs to the body's tissues attached to hemoglobin in the red blood cells • Inhalation/administration will increase arterial oxygen tension (PaO_2) and hemoglobin saturation
Indications: • Hypoxia from any cause • Chest pain due to cardiac ischemia • Altered level of consciousness
Dosage: **Nasal Cannula**: @ 1-6 L/min (24% - 40% O_2 concentration) **Simple & Pocket Mask**: @ 6 – 10 L/min (40% - 60% O_2 concentration) **Partial/ Non-Rebreather** (NRB): @ 10 – 15 L/min (up to 98% O_2 concentration) **Bag-Valve Mask** (BVM): @ 10 – 15 L/min (up to 100% O_2 concentration) **Venturi Masks**: @ 4 L/min (24% - 28% O_2 concentration) @ 8 L/min (35% - 40% O_2 concentration) **Note**: liter flow is dependent on the Venturi mask used. **Route:** Inhalation
Contraindications: • None for emergency use.
Precautions: • *Respiratory:* In some cases of COPD, oxygen administration may reduce the patient's respiratory drive **Note:** This is not a reason to withhold oxygen, but be prepared to assist ventilations. • Oxygen that is not humidified may dry out or irritate mucous membranes

End of Document