

Comprehensive Advanced Life Support Course Content

CALS Mission: CALS is committed to improving patient care by providing evidence-based advanced life support education to rural healthcare providers. These CALS-trained healthcare professionals will become confident, competent providers of life-saving care.

Enclosed is a summary outline of the curriculum covered in the CALS manual, Provider Course and Benchmark Skills Lab. The curriculum covers specific medical and traumatic conditions found in both adult and pediatric patients. Participants study the CALS Provider Course manual, complete a study guide, take pre- and post-tests, experience realistic scenario stations, and attend a hands-on training laboratory for rural emergency care management.

Goals and Objectives

The primary goal of the Provider Course is to improve patient care by:

1. Presenting an educational experience in advanced life support that encompasses all critical areas of emergency care.
2. Developing a team approach to patient management.
3. Providing material in a variety of instructional formats to allow for self-directed learning and to provide a balance of cognitive, affective, and psychomotor skills.
4. Providing an information resource and rapid retrieval system with the use of algorithms and treatment plans.
5. Providing means for updating and maintaining knowledge and skills of advanced life support providers.

On completion of the course, the health professional will be able to:

1. Demonstrate the ability to problem solve in a variety of clinical situations.
2. Identify key threats and demonstrate therapeutic interventions.
3. Discuss roles of each team member involved in patient evaluation and treatment.
4. Perform skills consistent with the provider's role on advanced life support team.

CALS Universal Approach to the Advanced Life Support Patient

Activate Team: Team Leader and Member Roles

Team Leader Role

- Assignment of team members
- Directs team and relays information to whole team
- Initial Survey: Identify and treat all life threats-airway, breathing, and circulation AVPU, DON'T and SAMPLE history
- Focused Survey
- Develop working diagnosis
- Continue ongoing assessment and resuscitation of the patient
- Determine a plan for patient disposition

Team Member Role

- Immediate control of patient
 - Appropriate workstation
- Patient interventions to consider
 - Airway control
 - Expose and look for medic alert information
 - Vital signs including temperature and SaO₂
 - Monitor placement
 - Start 2 large bore IVs
 - Obtain O-negative blood
 - Insert orogastric tube
 - Insert urinary catheter as needed
 - Relay information to team leader and document on patient record
 - Anticipate next steps and equipment needed
- Patient transfer guidelines

Resuscitation of the Trauma Patient Airway, Breathing and Circulation Procedures

Airway

Intubation

- In-line immobilization
- Use of different types of laryngoscope blades
- Use of ET tube introducer
- Use of lighted-stylet

Rescue airway – Combitube™

Rapid sequence intubation

Laryngeal mask airway (nonintubating/intubation)

Transtracheal needle ventilation/Moonlighter's device
Foreign body removal: adult & child
Retrograde intubation
Cricothyrotomy
Tracheostomy*
Adjunct airway equipment

- Esophageal intubation detector
- Big Stick oropharyngeal suction
- Suction bracket
- CO2 monitoring

Airway cart/Airway equipment
Replacement of a faulty endotracheal tube
Determination of the proper airway management option

Breathing

Detecting stomach and breath sounds
Chest wall palpation
Tracheal shift detection
Distended neck veins
Needle thoracostomy
Chest tube insertion*

- Chest drainage collection
- Heimlich valve
- Banding of chest tubes
- Autotransfusion

Circulation

Fluid resuscitation

- Use of warm fluids
- Use of a pressure bag

Peripheral line placement

- Converting to a large bore IV using an introducer

Central line placement

- CVP measurement and monitoring
- Internal jugular & subclavian technique

Transfusions

- Use of O negative / O positive blood

Arterial line placement*

External hemorrhage control

- Raney Clips

Circulation (continued)

Pelvis fracture evaluation

- X-ray interpretation
- Pelvic stabilization devices
- Suprapubic catheterization in a disrupted urethra

Ultrasound examination of the heart and aorta*

Lab test decisions and use of prepackaged patient identification

Saphenous vein cut down

Pericardiocentesis

Emergency thoracotomy

- Pericardiotomy*
- Aortic compression*
- Cardiac massage*
- Internal defibrillation*
- Stapling cardiac wounds*

Extremity injury

- Amputation
- Compartment syndrome

Resuscitation of the Trauma Patient

Disability assessment and management

Determination of Glasgow coma scale
C-spine immobilization techniques
Trauma series x-rays
C-spine x-ray evaluation

- Recognition of central cord syndrome
- Recognition for need of cervical spine reduction

Management of a head injury patient

- Recognition of a herniation syndrome
- Intubation and airway control
- Treatment of increased intracranial pressure (ICP)
- Seizure management
 - Use of benzodiazepines – route administration
 - Fosphenytoin or phenytoin infusion

Signs of an acute epidural hematoma

- CT interpretation
- Skull trephination

Other conditions of the trauma patient

Assessment and management of Environmental injuries**

Hypothermia

- Rewarming techniques
- Frozen limb

Hyperthermia/heat stroke

Burns

Near-drowning

High altitude illness

Resuscitation equipment

Proper use of the equipment

Resources for obtaining equipment

Resuscitation of the Cardiac Patient

Detection and treatment of cardiac rhythm disturbances

- Ventricular fibrillation
- Ventricular tachycardia
- Pulseless electrical activity
- Tachycardia
- Bradycardia
- Asystole

Management of acute coronary syndrome

- ECG interpretation in myocardial infarction
- Treatment algorithm based on initial 12-lead ECG
- Therapeutic agents / procedures in acute coronary syndrome
- Transfer guidelines

Management of hypertension** (drug therapy)

Management of Digitalis toxicity**

Management of CHF / pulmonary edema (airway in addition to topics covered in trauma)

- Noninvasive ventilatory support
- Invasive ventilatory support
- CPAP/BiPAP
- Initial ventilator settings
- Drug therapy

Management of acute neurological event

- Subarachnoid hemorrhage
- Stroke (thrombolytic therapy)
- Status epilepticus

Resuscitation of the Adult Medical Patient

Management of asthma

- Heliox
- Drug therapy

Management of anaphylaxis

- Use of transtracheal needle ventilation
- Drug therapy

Management of diabetes

- Fluid resuscitation
- Drug therapy
- Arterial line placement
- Blood gas analysis

Management of Shock

- Causes – SHRIMPCAN

Management of acid-base imbalance**

- Causes**

Management of endocrine disorders**

- Thyroid Storm
- Myxedema

Management of infection**

- Pneumonia
- Meningitis
- Sepsis

Management of toxicology**, a systematic approach and essential antidotes

- Acetaminophen
- Alcohol
- Aspirin
- Cocaine
- Flumazenil
- Organophosphate
- Tricyclic
- Calcium Channel Blocker
- Beta Blocker
- Narcotic overdose
- Carbon Monoxide
- Cyanide
- Iron

Management of patient with altered LOC

- DON'T
- TIPS from the VOWELS

Resuscitation of the Pediatric Patient

Resources

- Broselow tape
- Hennepin pediatric emergency Manuel
- Modified Lund Browder Chart**
- Physiologic and anatomic considerations
- Pediatric assessment of LOC

Assessment and Management of Airway problems

- Intubation
- Tracheal foreign body
- Croup**
- Epiglottitis**
- Asthma**
- Tracheitis**
- Bronchiolitis*
- Pneumonia**
- Diphtheria**

Additional assessment and management

- Intraosseous placement
- Seizure

Resuscitation of the Obstetric Patient

Physiologic considerations

Use of ultrasound**

Bleeding in early pregnancy**

- Miscarriage**
- D&C**

Malpresentations and malpositions

- Shoulder dystocia

Third stage and postpartum emergencies

Thromboembolic disease and pregnancy

Fetal heart tone monitoring and interpretation

Bleeding in the second half

Forceps and vacuum delivery

Hypertension in pregnancy

Preterm labor

Trauma in pregnancy

Resuscitation of the Neonatal Patient

Assessment and management of the neonatal patient with physiologic and anatomical considerations

- Use of O₂
- Intubation
- Proper use of BVM
- Cm of water gauge
- Meconium suctioning
- Transtracheal needle ventilation
- Tracheostomy
- Intraosseous
- Fluid bolus
- Peripheral IVs*
- Blood glucose determination
- Temperature control
- Use of chemical warming
- Umbilical catheterization

Neonatal ALS evaluation and resuscitation

- Treatment algorithm
- Resuscitation technique
- Resuscitation medications
- Chest tube insertion in the newborn

*Due to the broad scope of Comprehensive Advanced Life Support, not all content is covered in every format. Content that is covered only in the laboratory is designated by an *. Content covered only in the manual is designated by **.*