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
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(1073,604),(1073,604)
  • 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**
- Epiglottis**
- Asthma**
- Tracheitis**
- Bronchiolitis*
- Pneumonia**
- Diphtheria**

**Additional assessment and management**
- Intraosseous placement
- Seizure

**Resuscitation of the Neonatal Patient**

**Assessment and management of the neonatal patient with physiologic and anatomic considerations**
- Use of O₂
- Intubation
- Proper use of BVM
- Cm of water gauge
- Meconium suctioning
- Transtracheal needle ventilation
- Tracheostomy

**Additional assessment and management**
- Intraosseous
- Fluid bolus
- Peripheral IVs*
- Blood glucose determination
- Temperature control
- Use of chemical warming
- Umbilical catheterization

**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

*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 **.*