C. BLS PHARMACOLOGY

1. ACETAMINOPHEN

a) Indications

Patients ages 2 years and above judged to be in mild to moderate discomfort (e.g., 2–5 on FACES scale)

b) Adverse Effects

Not clinically significant

c) Precautions

Administration of acetaminophen for mild to moderate pain does not eliminate the need for transport of the patient to the hospital to receive a comprehensive evaluation of the cause of the pain and appropriate definitive treatment.

d) Contraindications

(1) Head Injury
(2) Hypotension
(3) Administration of acetaminophen or medications containing acetaminophen within the previous four hours

ALERT MANY COMMON COLD PREPARATIONS CONTAIN ACETAMINOPHEN.

(4) Inability to swallow or take medications by mouth
(5) Respiratory distress
(6) Persistent vomiting
(7) Known or suspected liver disease (including patients suspected of current alcohol ingestion)
(8) Allergy to acetaminophen
(9) Patients less than 2 years of age

e) Preparations Use Unit Dose Only

(DO NOT USE MULTIDOSE BOTTLE OF LIQUID)
Unit dose 160 mg/5 mL liquid
Unit dose 325 mg pill or tablet

f) Dosage

(1) Less than 2 years of age: Not indicated
(2) 2–4 years: Unit dose 160 mg/5 mL
(3) 5–12 years: TWO unit doses of 160 mg/5 mL each for a total of 320 mg/10 mL
(4) 13 years and above: FOUR unit doses of 160 mg/5 mL each for a total of 640 mg/20 mL OR in a form of 325 mg pill or tablet x2 for a total of 650 mg with sips of water as tolerated by the patient.

2. ACTIVATED CHARCOAL (WITHOUT SORBITOL)

a) Indications

Poisoning by mouth

b) Adverse Effects

May indirectly induce vomiting and cause nausea

c) Precautions

Does not adsorb all drugs and toxic substances

d) Contraindications

(1) Altered mental status
(2) Patients who have received an emetic

e) Preparations

(1) 25 grams/125 mL bottle
(2) 50 grams/250 mL bottle

f) **Dosage**

(1) Adult: Administer 1 gram/kg
(2) Pediatric: Administer 1 gram/kg

ALERT

POISON INFORMATION CENTER RECOMMENDATIONS SHOULD BE SOLICITED IN CONJUNCTION WITH MEDICAL CONSULTATION, BUT MEDICATION ORDERS CAN ONLY BE ACCEPTED FROM AN APPROVED BASE STATION OR CONSULTATION CENTER.

3. ALBUTEROL (PROVENTIL, VENTOLIN)

(Patient Prescribed, Patient Assisted)
(Also applies to other fast-acting bronchodilators)

a) Indications

(1) Signs and symptoms of respiratory distress
(2) Bronchospasm/wheezing associated with:
  (a) Asthma
  (b) Chronic bronchitis
  (c) Emphysema
  (d) Allergic reactions (anaphylaxis)

b) Adverse Effects

(1) Tachycardia/Palpitations
(2) Hypertension
(3) Angina
(4) Nervousness/Anxiety
(5) Tremors
(6) Dizziness
(7) Headache
(8) Sweating
(9) Nausea/Vomiting
(10) Sore throat

c) Precautions

(1) May cause severe bronchospasm from repeated excessive use.
(2) Patient must have their own physician-prescribed hand-held aerosol inhaler.

d) Contraindications

Inhaler not prescribed for the patient

e) Preparations

Hand-held (unit dose) aerosol inhaler

f) Dosage

(1) Adult: Patient may receive a maximum of 2 doses (4 puffs) over a 30-minute period.
(2) Pediatric: Patient may receive a maximum of 2 doses (4 puffs) over a 30-minute period.
(3) Additional doses may be administered with medical consultation.

4. ASPIRIN

a) Pharmacology

(1) Platelet inhibitor
(2) Anti-inflammatory

b) Pharmacokinetics

Blocks platelet aggregation

c) Indications

Chest pain when acute myocardial infarction is suspected

d) Contraindications

Known hypersensitivity

e) Adverse Effects

(1) Heartburn
(2) Nausea and vomiting
(3) Wheezing

f) Precautions

GI bleeding and upset

g) Dosage

(1) Adult: 324 mg or 325 mg chewed
(2) Pediatric: Not indicated

5. EPINEPHRINE (1:1,000)

a) Indications

(1) Moderate to severe allergic reaction with respiratory distress or mild allergic reaction with history of life-threatening allergic reaction
(2) Pediatric patients with severe asthma

b) Adverse Effects

(1) Tachycardia/Palpitations
(2) Angina
(3) Headache
(4) Nausea/Vomiting
(5) Dizziness
(6) Hypertension
(7) Nervousness/Anxiety
(8) Tremors

c) Precautions

Unless in severe allergic reaction or severe asthma, medical consultation must be obtained before administering to pregnant, cardiac, or adult asthma patients.

d) Contraindications

None in the presence of anaphylaxis

e) Preparations

Epinephrine
(Patient prescribed or EMS supplied)
(1) Vial: 1 mg in 1 mL (1:1,000)
(2) Preloaded Syringe
  (a) Adult: 0.5 mg in 0.5 mL
  (b) Pediatric: 0.15 mg in 0.15 mL

ALERT

MEDICAL CONSULTATION IS REQUIRED FOR THE ADMINISTRATION OF EPINEPHRINE TO ADULT ASTHMA PATIENTS.

f) Dosage

(1) **Patients 5 years of age or greater:**
Adult: 0.5 mg in 0.5 mL IM
(2) **Patients less than 5 years of age:**
Pediatric: 0.15 mg in 0.15 mL IM

(3) Additional doses may be administered with medical consultation.

6. EPINEPHRINE AUTO-INJECTOR

a) Indications

(1) Moderate to severe allergic reaction with respiratory distress or mild allergic reaction with history of life-threatening allergic reaction
(2) Pediatric patients with severe asthma

b) Adverse Effects

(1) Tachycardia/Palpitations
(2) Angina
(3) Headache
(4) Nausea/Vomiting
(5) Dizziness
(6) Hypertension
(7) Nervousness/Anxiety
(8) Tremors

c) Precautions

Unless in severe allergic reaction or severe asthma, medical consultation must be obtained before administering to pregnant, cardiac, or adult asthma patients.

d) Contraindications

None in the presence of anaphylaxis

e) Preparations

Epinephrine Auto-injector (single or multi-dose) only
(Patient prescribed or EMS supplied)
(1) Adult: 0.3 mg
(2) Pediatric: 0.15 mg

ALERT MEDICAL CONSULTATION IS REQUIRED FOR THE ADMINISTRATION OF EPINEPHRINE AUTO-INJECTOR TO ADULT ASTHMA PATIENTS.

f) Dosage

(1) Less than 5 years of age: 0.15 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.15 mg in 0.15 mL IM
(2) 5 years and greater: administer 0.3 mg IM in the lateral thigh via epinephrine auto-injector or manual administration 0.5 mg in 0.5 mL IM
(3) Additional doses may be administered with medical consultation.

7. NALOXONE (NARCAN) PUBLIC SAFETY AND EMR

a) Pharmacology

Reverses all effects due to opioid (morphine-like) agents. This drug will reverse the respiratory depression and all central and peripheral nervous system effects.

b) Pharmacokinetics

(1) Onset of action is within a few minutes with intranasal (IN) administration.
(2) Patients responding to naloxone may require additional doses and transportation to the hospital since most opioids/narcotics last longer than naloxone.
(3) Has no effect in the absence of opioid/narcotic.

c) Indications

To reverse respiratory depression induced by opioid/narcotic agent.

d) Contraindications

Patients under 28 days of age

e) Adverse Effects

Opioid withdrawal

f) Precautions

(1) Naloxone may induce opiate withdrawal in patients who are physically dependent on opioids.
(2) Certain drugs may require much higher doses of naloxone for reversal than are currently used.
(3) Should be administered and titrated so respiratory efforts return, but not intended to restore full consciousness.
(4) Intranasal naloxone must be administered via nasal atomizer.
(5) Naloxone has a duration of action of 40 minutes; the effect of the opioid/narcotic may last longer than naloxone and patients should be encouraged to be transported.

ALERT

PROVIDERS MUST CONTACT A BASE STATION PHYSICIAN FOR PATIENTS WISHING TO REFUSE TRANSPORT AFTER BLS ADMINISTRATION OF NALOXONE.

g) Dosage

(1) Adult: Administer 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare.
(2) Pediatric (child aged 28 days to adult): Administer 2 mg IN, dividing administration of the dose equally between the nares to a maximum of 1 mL per nare, **OR** administer 4 mg/0.1 mL IN in one nare.
(3) Repeat as necessary to maintain respiratory activity.

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8. NITROGLYCERIN

(Patient Prescribed, Patient Assisted)

a) Indications

(1) Patient must have own prescribed sublingual nitroglycerin.
(2) Chest pain

b) Adverse Effects

(1) Hypotension
(2) Headache
(3) Dizziness
(4) Tachycardia

c) Precautions

(1) Reassess blood pressure before and after administration.

(2) If systolic blood pressure drops more than 20 mmHg, obtain medical consultation before further administration.

d) Contraindications

(1) Blood pressure below 90 mmHg systolic
(2) Heart rate less than 60
(3) Medication not prescribed for the patient
(4) Pediatric patient under age 13
(5) Any patient having taken medication for Pulmonary Artery Hypertension (e.g., Adcirca™ or Revatio™) or erectile dysfunction (e.g., Viagra™, Levitra™, or Cialis™) within the past 48 hours. Medical consultation is required to override this contraindication.

e) Preparations

Spray or tablet

f) Dosage

(1) Adult: One tablet or one spray sublingually
  (a) Repeat in 3 to 5 minutes if chest pain persists
  (b) Maximum of three doses (a combination of patient-administered and EMT-administered) of nitroglycerin

(2) Pediatric: (nitroglycerin contraindicated for children under age 13)

(3) Additional doses may be administered with medical consultation.

9. ORAL GLUCOSE

a) Indications

(1) Altered mental status with known diabetic history
(2) Unconscious for an unknown reason

b) Adverse Effects

Not clinically significant

c) Precautions

Patient without gag reflex may aspirate.

d) Contraindications

Not clinically significant

e) Preparations

10–15 grams of glucose (contained in 24, 30, or 37.5 gram tube)

f) Dosage

(1) Adult: Administer 10–15 grams of glucose paste between the gum and cheek. Consider single additional dose of glucose paste if not improved after 10 minutes.
(2) Pediatric: Administer 10–15 grams of glucose paste between the gum and cheek; this may be accomplished through several small administrations. Consider single additional dose of glucose paste if not improved after 10 minutes.

10. OXYGEN

a) Pharmacology

(1) Increases oxygen content of the blood
(2) Improves tissue oxygenation
(3) Decreases energy expended for respirations

b) Pharmacokinetics

Changing the percentage of inspired oxygen results in an increased blood and tissue level equilibration within 5–20 minutes.

c) Indications

(1) If evidence of hypoxia (Less than 94% SpO_2)
(2) Respiratory distress
(3) Cardiopulmonary arrest
(4) Trauma
(5) Suspected CO exposure
(6) Dyspnea

d) Contraindications

Not clinically significant

e) Adverse Effects

High concentrations of oxygen will reduce the respiratory drive in some COPD patients; these patients should be carefully monitored.

f) Precautions

(1) Never withhold oxygen from those who need it.
(2) Oxygen should be given with caution to patients with COPD.
(3) Simple or partial rebreather face masks must be supplied with a minimum 6 lpm.
(4) Non-breather (NRB) face masks must be supplied with a minimum 12 lpm.

g) Dosage

(1) Adult: Administer 12–15 lpm via NRB mask or 2–6 lpm via nasal cannula, as needed. CO exposure: Administer 100% oxygen via NRB mask. Maintain SpO_2 at 100%
(2) Pediatric: Administer 12–15 lpm via NRB mask or 2-6 lpm via nasal cannula, as needed. CO exposure: Administer 100% oxygen via NRB mask. Maintain SpO_2 at 100%

Percent O_2 Saturation	Ranges	General Patient Care
94–100%	Normal	Give oxygen as necessary
91–93%	Mild Hypoxia	Give oxygen as necessary
86–90%	Moderate Hypoxia	Give 100% oxygen Assisting Ventilations if necessary
less than or equal to 85%	Severe Hypoxia	Give 100% oxygen Assist Ventilations If indicated, Intubate

ALERT INACCURATE OR MISLEADING SpO_2 READINGS MAY OCCUR IN THE FOLLOWING PATIENTS: HYPOTHERMIC, HYPOPERFUSION (SHOCK), CO POISONING, HEMOGLOBIN ABNORMALITY, ANEMIA, AND VASOCONSTRICTION.