Region VIII Procedure Manual

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Region VIII Procedure Manual
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Section S
Disclaimer

1. Strict aseptic technique will be utilized during the performance of the following procedures:
    - IV insertion
    - IO insertion
    - IM injection
    - blood glucose sampling
    - surgical cricothyroidotomy
    - needle cricothyroidotomy

- Policy S-3, Infection Prevention and Control, will be adhered to for all patient contacts

- System Specific Addendum
    - if the word “yes” appears next to a System name under this heading at the top of each procedure, there is a component of that procedure that is specific to that System
    - System-specific components are found at the end of the specific procedure
    - if the word “no” appears after each System name, all portions of that procedure will be followed by all providers within all four Systems

Procedure: Aseptic Technique for Invasive Procedures	**Section:** S-1
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- To prevent infection during any invasive procedure, including but not necessarily limited to:
    - IV insertion
    - IO insertion
    - IM injection
    - blood glucose sampling
    - surgical cricothyroidotomy
    - needle cricothyroidotomy
    - endotracheal intubation

Contraindications:

Alcohol Prep Pad	2% Chlorhexidine with 70% Isopropyl Alcohol
• None in pre-hospital setting	• Do not use on infants < 2 months ○ use alcohol prep pad • Allergy • No other contraindications in pre-hospital setting

Potential Complications:

Alcohol Prep Pad	2% Chlorhexidine with 70% Isopropyl Alcohol
• None in pre-hospital setting	• Allergic reaction is rare

Equipment:

Alcohol Prep Pad	2% Chlorhexidine with 70% Isopropyl Alcohol
• Blood glucose finger sampling • IM injection	• IV insertion • IO insertion • Surgical cricothyroidotomy • Needle cricothyroidotomy • Pleural decompression

Procedure:

Alcohol Prep Pad	2% Chlorhexidine with 70% Isopropyl Alcohol
1. Beginning in the center of intended site prep area, move in concentric circles for 30 seconds 2. Allow product to air dry	1. Beginning in the center of intended site prep area in concentric circles for 30 seconds 2. Allow product to air dry

Note:

Clinical studies no longer support the use of povidone iodine as an antiseptic, therefore it is no longer to be used as a skin prep for invasive procedures.

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Wade, R. G., Burr, N. E., McCauley, G., Bourke, G., & Efthimiou, O. (2021). The Comparative Efficacy of Chlorhexidine Gluconate and Povidone-iodine Antiseptics for the Prevention of Infection in Clean Surgery: A Systematic Review and Network Meta-analysis. *Annals of Surgery*, *274*(6), e481–e488. https://doi.org/10.1097/SLA.0000000000004076

Pages, J., Hazera, P., Mégarbane, B., du Cheyron, D., Thuong, M., Dutheil, J.-J., Valette, X., Fournel, F., Mermel, L. A., Mira, J.-P., Daubin, C., & Parienti, J.-J. (2016). Comparison of alcoholic chlorhexidine and povidone–iodine cutaneous antiseptics for the prevention of central venous catheter-related infection: a cohort and quasi-experimental multicenter study. *Intensive Care Medicine*, *42*(9), 1418–1426. https://doi.org/10.1007/s00134-016-4406-4

Procedure: BSI / PPE	**Section:** S-2
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indication:

- To reduce the risk of occupational exposure to bloodborne pathogens and other potentially biohazardous materials
    - occupational exposure
        - "reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties"

Contraindications:

- None

Potential Complications:

- Non-compliance or inappropriate donning and/or doffing may result in exposure to bloodborne pathogens and/or other potentially hazardous materials

Equipment:

Exam gloves	Face mask
Heavy duty gloves	Head cover
Gown	Shoe / boot cover
Goggles	Biohazard bags
N-95 mask	Sharps containers

Procedure:

- Use the correct equipment for the task at hand

TASK	GLOVES	MASK	EYE	GOWN
Aerosolized medication	Required	Required	Required	Available
Airway management	Required	Required	Required	Available
Bleeding control	Required	Available	Available	Available
Blood glucose	Required	Available	Available	Available
Childbirth	Required	Required	Required	Required
Cleaning / disinfecting	Required	Available	Available	Available
Cough	Required	Required	Available	Available
CPR	Required	Available	Available	Available
IV / IO / medication	Required	Available	Available	Available
Oxygen	Available	Available	Available	Available
Patient assist	Required	Available	Available	Available
Pleural decompression	Required	Required	Required	Available
Rash	Required	Available	Available	Available
Sores – open, weeping, wet	Required	Available	Available	Available

Procedure: BSI / PPE	**Section:** S-2
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

TASK	GLOVES	MASK	EYE	GOWN
Spitting	Required	Required	Required	Available
Suctioning	Required	Required	Required	Available
Vital signs	Available	Available	Available	Available
Vomiting	Required	Available	Required	Available

Region VIII Procedure Manual
Section S

Procedure: Infection Prevention and Control	**Section:** S-3
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indication:
- To reduce the risk of occupational exposure to bloodborne pathogens and other potentially infectious materials
  - occupational exposure
    - "reasonably anticipated skin, eye, mucous membrane, or parenteral contact with blood or other potentially infectious materials that may result from the performance of an employee's duties"

Contraindications:
- None

Potential Complications:
- Non-compliance may result in exposure to bloodborne pathogens and/or other potentially infectious materials

Equipment:
- BSI / PPE
- Alcohol-based hand sanitizer
- Soap and running water
- Surface disinfectant agent that covers a broad spectrum of pathogens:
  - bactericidal
  - tuberculocidal
  - virucidal

Procedure: Per OSHA 29 CFR 1910.1030

- **Universal Precautions**
  1. Treat all human blood and certain human body fluids as if they were known to be infectious
  2. Decrease likelihood of exposure
     - do not wear artificial fingernails or extenders when having direct contact with patients
     - keep natural nail tips less than ¼ inch long
     - wear gloves during contact with blood or other potentially infectious materials
     - remove gloves after caring for a patient
     - do not wear the same pair of gloves for the care of more than one patient
     - change gloves during patient care if moving from a contaminated body site to a clean body site
       - no recommendation can be made regarding wearing rings in health-care settings

- **Hand Hygiene**
  1. The Centers for Disease Control and Injury Prevention recommend the following in regards to hand hygiene:
     -

    - If soap and water are not available, use an alcohol-based hand sanitizer that contains at least 60% alcohol. Alcohol-based hand sanitizers can quickly reduce the number of germs on hands in some situations, but sanitizers do not eliminate all types of germs
      - hand sanitizers are not effective when hands are visibly dirty
  2. How to properly use hand sanitizer
     - apply the product to the palm of one hand
     - rub your hands together
     - rub the product over all surfaces of your hands and fingers until your hands are dry

- **Hand Washing**
  1. The Centers for Disease Control and Injury Prevention recommend the following in regards to hand washing:
     - “washing hands with soap and water is the best way to reduce the number of germs on them
  2. When should you wash your hands?
     - after removing exam gloves
       - as soon as able after hygiene is performed
     - whenever your hands are visibly soiled
  3. How to properly wash your hands
     - Wet your hands with clean running water (warm or cold) and apply soap
     - Rub your hands together to make lather and scrub them well; be sure to scrub the backs of your hands, between your fingers, and under your nails
     - Continue rubbing your hands for at least 20 seconds
       - Need a timer? hum the “Happy Birthday” song from beginning to end twice
     - Rinse your hands well under running water
     - Dry your hands using a clean towel or air dry

- **Securing Sharps**
  1. Each vehicle that stocks sharps will have a minimum of one approved sharps container with appropriate labeling per 29 CFR 1910.1030
  2. Whenever sharps are in use, the sharps container will be in close enough proximity to the individual performing the task so that the sharps do not need to pass over or around any individual
     - no safety device on any sharps should ever be bypassed
  3. If it becomes necessary to utilize a syringe and needle system and the needle must be re-capped to maintain sterility, only the two following methods are approved:
     - one handed method
     - use of mechanical device
       - scalpels are excluded from this method and must be disposed of immediately and properly

• **Procedure:** Infection Prevention and Control	**Section:** S-3
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

- **Biohazard Bags**
    1. What goes in a red bag?
        - visibly bloody gloves, plastic tubing, or personal protective equipment (PPE)
        - gauze, bandages or other items saturated with blood
            - rule of thumb: if wringing it out will produce dripping, put it in a red bag

- **Sharps Containers**
    1. Must be easily accessible to personnel and located as close as is feasible to the immediate area where sharps are used or can be reasonably anticipated to be found
    2. Must be maintained upright throughout use
    3. Must be replaced routinely and not be allowed to overfill
    4. Must be properly sealed and disposed of according to procedure at each individual hospital

- **Cleaning and Decontamination of Equipment**
    1. Be familiar with the range of pathogens that the product combats
    2. Be familiar with the “contact to kill” time of each product
    3. Be familiar with biohazards associated with each product
        - most are carcinogens and gloves must be worn
    4. Be familiar with product procedures
        - all products are effective only when wet

https://www.cdc.gov/infectioncontrol/pdf/guidelines/isolation-guidelines-H.pdf

Region VIII Procedure Manual
Section S

Procedure: Rights of Medication Administration	**Section:** S-4
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indication:

- Whenever medications are administered, a systematic and conscientious check of the medication drug, dose, route, time, and patient will be utilized to decrease the chance of medication error
    - Paramedic peer to paramedic peer
    - EMT peer to EMT peer whenever a BLS crew is responsible for administering medication(s) within their scope of practice and per System protocol

Contraindications:

- None

Potential Complications:

- Drug, dose, route, time, patient, and/or documentation errors

Procedure:

1. Prior to the administration of any medication, confirm the following “Rights” with a peer:
    - Right drug
    - Right dose
    - Right route
    - Right time
    - Right patient
2. While authoring the PCR:
    - Right documentation
        - include narcotic waste

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2957754/#:~:text=Most%20health%20care%20professionals%2C%20especially,standard%20for%20safe%20medication%20practices.

Grissinger M. The Five Rights: A Destination Without a Map. P T. 2010 Oct;35(10):542. PMCID: PMC2957754.

https://www.jems.com/commentary/pro-bono-staying-current-on-data-can-reduce-liability/

Procedure: Oropharyngeal Airway	**Section:** A-1
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Unresponsive patients:
  - with absent gag reflex
  - who are unable to maintain own airway
  - being ventilated with a bag-valve mask
- Bite block to protect endotracheal tube

Contraindications:

- Intact gag reflex
- Foreign body airway obstruction

Potential Complications:

- Improper size/insertion may displace tongue and obstruct hypopharynx
- Stimulation of gag reflex may cause vomiting and/or aspiration

Equipment:

- Assorted sizes of oropharyngeal airways
- Tongue depressor
- Suction

Procedure:

Adult and Pediatric ≥ 4 years	**Pediatric < 4 years**
1. Select appropriate sized airway • measure airway from the corner of the mouth to the earlobe or angle of the jaw 2. Open patient’s mouth using jaw thrust or cross-finger techniques 3. Insert airway with the tip pointed toward patient’s cheek 4. Rotate airway 90° with tip toward hypopharynx when no resistance is felt and the airway reaches the soft palate 5. Monitor, suction and ventilate patient as necessary	1. Select appropriate sized airway • measure airway from the corner of the mouth to the earlobe or angle of the jaw 2. Open patient’s mouth using jaw thrust or cross-finger techniques 3. Utilizing a tongue depressor, depress patient’s tongue and insert airway following normal curvature of airway to protect undeveloped hard palate 4. Monitor, suction and ventilate patient as necessary

https://www.merckmanuals.com/professional/critical-care-medicine/how-to-do-basic-airway-procedures/how-to-insert-an-oropharyngeal-airway

Procedure: Nasopharyngeal Airway	**Section:** A-2
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Unresponsive patients:
    - with intact gag reflex
    - being ventilated with a bag-valve mask

Contraindications:

- Nasal obstruction
- Facial/head trauma
    - maxillo-facial trauma such as nasal, nasal-ethmoid, LeForte II, III, and/or cribriform plate fractures
- Anomalous facial features / pathologic nasopharyngeal deformities
- Deviated septum
- Bleeding disorders or patients receiving anticoagulation therapy (use with caution)
- Children < 4 years of age

Potential Complications:

- May cause trauma/bleeding to nasal mucosa
- May enter the esophagus, causing gastric distention, gagging and possibly vomiting
- Sinus infection
- May invade cranial vault if there is cribriform plate damage
- May stimulate gag reflex causing gagging, coughing, or vomiting

Equipment:

- Assorted sizes of nasopharyngeal airways (#12-32)
- Water-soluble lubricant
- Suction

Procedure:

1. Select appropriate sized airway
    - measure the airway from the nostril to the earlobe or nostril to the angle of the jaw
2. Lubricate device using water soluble jelly
3. Slowly insert the airway into the larger nostril with the bevel toward the septum
    - right nare is typically larger than the left
4. Gently advance along nasal floor, parallel to the mouth until the flange rests against the nostril

https://www.merckmanuals.com/professional/critical-care-medicine/how-to-do-basic-airway-procedures/how-to-insert-a-nasopharyngeal-airway

Region VIII Procedure Manual
Section A

Procedure: Oral Endotracheal Intubation	**Section:** A-3
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – Yes	**Edward – Yes**	Good Sam – No	Loyola – No

Indications:

- Failure of the patient to maintain a patent airway
- Failure of the patient to adequately oxygenate and ventilate
    - cardiac or respiratory arrest or impending arrest
    - decreased level of consciousness (GCS < 8)
    - unresponsive or unconscious with risk of aspiration
    - profound respiratory depression
    - impending airway compromise (i.e., trauma, burns, anaphylaxis)
    - traumatic brain injury

Contraindications:

- Inability to visualize glottic opening
- Suspected or known cervical spine injury
    - refer to A-4: In-Line Intubation

Potential Complications:

- Hypoxia
- Bradycardia
- Esophageal placement
- Right mainstem intubation
- Equipment malfunction
- Soft-tissue trauma
- Dental trauma
- Injury to tissues in the mouth and hypopharynx
- Vocal cord damage, avulsion of arytenoid cartilage
- Conversion of C-Spine injury without neurological deficit to injury with deficit
- Infection/pneumonia
- Vomiting/aspiration

Equipment:

- Laryngoscope handle
- Laryngoscope blade
- Endotracheal tube
- 10-20 mL syringe
- Water soluble lubricant
- Oropharyngeal airway
- Tape or commercial tube immobilizer
- Forceps (Magill)
- Bag-valve-mask device with oxygen source
- Suction

Procedure: Oral Endotracheal Intubation	**Section:** A-3
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – Yes	**Edward – Yes**	Good Sam – No	Loyola – No

- Stylet (optional)
- Stethoscope
- Pulse oximetry
- End Tidal CO_2 detector or capnography

Procedure:

1. Take appropriate PPE precautions
2. Place patient's head in sniffing position unless contraindicated
   - refer to A-4: In-Line Intubation for suspected or known c-spine injury
   - pediatrics: pad beneath shoulders as appropriate to prevent flexion of neck
3. Open airway and insert oropharyngeal airway and/or nasopharyngeal airway
4. Pre-oxygenate with high FiO_2 for 2 – 3 minutes
   - adult: 10 – 12/minute (1 breath every 5-6 seconds)
   - pediatric: 12 – 20/minute (1 breath every 3-5 seconds)
5. Place pulse oximetry and evaluate SpO_2 reading
6. Place waveform capnography adjunct and evaluate $ETCO_2$ reading, waveform, and rate of ventilations
7. Assemble and check equipment
8. Lubricate distal end of tube including cuff
9. Stop ventilations and remove oral airway
10. Insert laryngoscope blade into right side of mouth, sweeping tongue to left, to the depth of the appropriate landmark
    - curved blade: place into the vallecula
    - straight blade: place into distal epiglottis
      - ○ straight blade for pediatrics
11. Lift laryngoscope up and away from patients face at 45^{o} angle elevating patients jaw
    - **DO NOT apply pressure to teeth, or use** the teeth as a fulcrum
12. Visualize vocal cords in glottic opening
13. Insert ET tube through the right corner of the mouth
14. Visualize its entry through the vocal cords
15. Remove laryngoscope from mouth; turn off light
16. Remove stylet from ET tube if utilized
17. If cuffed tube: Inflate cuff with 5 mL to 10 mL of air and immediately detach syringe from inflation port
18. Confirm proper placement with waveform capnography
19. Connect BVM, ventilate, and confirm absence of gastric sounds and presence of bilateral breath sounds
20. Secure ET tube, note tube depth
21. Reconfirm proper tube placement after any patient movement or any time that assessment changes suggest hypoxia
22. Using waveform capnography, titrate rate of ventilations to achieve target ETCO2 level

Procedure: Oral Endotracheal Intubation	**Section:** A-3
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – Yes	**Edward – Yes**	Good Sam – No	Loyola – No

Note:

- Limit each attempt to no more than 30 seconds
- Re-oxygenate patient 2 – 3 minutes in between unsuccessful intubation attempts
- Consider **Adult** Drug Assisted Intubation per current System SOP
- Consider **Pediatric** Drug Assisted Intubation per current System SOP
- Consider alternate airway device after two (2) unsuccessful intubation attempts

https://www.ncbi.nlm.nih.gov/books/NBK538221/

https://www.merckmanuals.com/professional/critical-care-medicine/respiratory-arrest/tracheal-intubation?query=intubation

https://www.ems1.com/ems-products/medical-equipment/airway-management/articles/capnography-a-vital-sign-for-every-ems-patient-IxGyzWyx8C7QgGYa/

Procedure: In-Line Intubation	**Section:** A-4
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Patients with suspected or known cervical spine injury when any of the following are present:
    - Failure of the patient to maintain a patent airway
    - Failure of the patient to adequately oxygenate and ventilate
        - cardiac or respiratory arrest or impending arrest
        - decreased level of consciousness (GCS < 8)
        - unresponsive or unconscious with risk of aspiration
        - profound respiratory depression
        - impending airway compromise (i.e., trauma, burns, anaphylaxis)
        - traumatic brain injury

Contraindications:

- Inability to visualize glottic opening
- Patient wearing a cervical collar
    - Cervical collar must be removed to perform in-line intubation

Potential Complications:

- Hypoxia
- Bradycardia
- Esophageal placement
- Right mainstem intubation
- Equipment malfunction
- Soft-tissue trauma
- Dental trauma
- Injury to tissues of the mouth and hypopharynx
- Vocal cord damage, avulsion of arytenoid cartilage
- Conversion of C-Spine injury without neurological deficit to injury with deficit
- Infection/pneumonia
- Vomiting/aspiration

Equipment:

- Laryngoscope handle
- Laryngoscope blade
- Endotracheal tube
- 10-20 mL syringe
- Water soluble lubricant
- Oropharyngeal airway
- Tape or commercial tube immobilizer
- Forceps (Magill)
- Bag-valve-mask device with oxygen source
- Suction

Procedure: In-Line Intubation	**Section:** A-4
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

- Stylet (optional)
- Stethoscope
- Pulse oximetry
- End Tidal CO$_2$ detector or capnography

****This procedure requires two rescuers**

- One rescuer, while facing the patient, should immobilize the head and neck by holding the face and head. Place thumbs on the cheekbones, fingers on the sides of the head
    - If a cervical collar has been applied, the rescuer should remove it prior to the intubation attempt and maintain manual in-line stabilization of c-spine
- Intubation to be attempted while manual C-Spine stabilization is being applied
    - If patient is on ground, the paramedic who will attempt to intubate may either do so while lying prone on the ground, or while sitting and holding the patient's head between their legs

Procedure:

1. Take appropriate PPE precautions
2. Maintain neutral cervical spine alignment
3. Remove C-Collar, maintain C-Spine immobilization manually
4. Open airway with modified jaw thrust
5. Open airway and insert oropharyngeal airway
6. Pre-oxygenate for with high FiO$_2$ for 2 – 3 minutes
    - adult: 10 – 12/minute
    - pediatric: 12 – 20/minute
7. Place pulse oximetry and evaluate SpO$_2$ reading
8. Place waveform capnography adjunct and evaluate ETCO$_2$ reading, waveform, and rate of ventilations
9. Assemble and check equipment
10. Lubricate distal end of tube including cuff
11. Stop ventilations and remove oral airway
12. After inserting the laryngoscope blade into right side of the patients mouth, the paramedic leans back and sweeps tongue to left, to the depth of the appropriate landmark
    - curved blade: place into the vallecula
    - straight blade: place into distal epiglottis
        - straight blade for pediatrics
13. Lift laryngoscope up and away from patients face at 45° angle elevating patients jaw
    - **DO NOT apply pressure to teeth, or use** the teeth as a fulcrum
14. Visualize vocal cords in glottic opening
15. Insert ET tube through the right corner of the mouth
16. Visualize its entry through the vocal cords
17. Remove laryngoscope from mouth; turn off light

Procedure: In-Line Intubation	**Section:** A-4
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

18. Remove stylet from ET tube if utilized
19. If cuffed tube: Inflate cuff with 5 mL to 10 mL of air and immediately detach syringe from inflation port
20. Confirm proper tube placement with waveform capnography
21. Connect BVM, ventilate, and confirm absence of gastric sounds and presence of bilateral breath sounds
22. Secure ET tube, note tube depth
23. Reapply C-Collar
24. Reconfirm proper tube placement after any patient movement or any time that assessment changes suggest hypoxia
25. Using waveform capnography, titrate rate of ventilations to achieve target ETCO2 level

Note:

- Limit each attempt to no more than 30 seconds
- Re-oxygenate patient 2 – 3 minutes in between unsuccessful intubation attempts
- Consider **Adult** Drug Assisted Intubation per current System SOP
- Consider **Pediatric** Drug Assisted Intubation per current System SOP
- Consider alternate airway device after two (2) unsuccessful intubation attempts

Tienpratarn W, Yuksen C, Aramvanitch K, Suttapanit K, Mankong Y, Yaemluksanalert N, Meesawad S. Success Rate of Endotracheal Intubation Using Inline Stabilization with and without Cervical Hard Collar; a Comparative Study. Arch Acad Emerg Med. 2020 Oct 10;8(1):e81. PMID: 33244516; PMCID: PMC7682630.

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7682630/

Procedure: Blind Nasotracheal Intubation	**Section:** A-5
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Spontaneously breathing patient that requires definitive airway management
    - i.e.: COPD, asthma, pulmonary edema, overdose, bronchospasm
    - Known or suspected cervical spine injury
    - Trismus or temporomandibular joint (TMJ) dislocations
- Failure of the patient to maintain a patent airway
- Failure of the patient to adequately oxygenate and ventilate
    - cardiac or respiratory arrest or impending arrest
    - decreased level of consciousness (GCS < 8)
    - unresponsive or unconscious with risk of aspiration
    - profound respiratory depression
    - impending airway compromise (i.e., trauma, burns, anaphylaxis)
    - traumatic brain injury

Contraindications:

- Children < 4 years of age
- Apneic patient
- Suspected midface fracture (evidence of CSF drainage from nose)
- Deviated septum
- Frequent cocaine use
- Bleeding disorders, epiglottitis, presence of large nasal polyps or abscesses

Potential Complications:

- Hypoxia
- Bradycardia
- Esophageal placement
- Right mainstem intubation
- Equipment malfunction
- Vocal cord damage, avulsion of an arytenoid cartilage
- Conversion of C-Spine injury without neurological deficit to injury with deficit
- ET tube entry into cranial vault
- Bleeding (trauma to nasal septum and turbinates)
- Retropharyngeal perforation
- Damage to adenoid and nasal tissues, pressure necrosis of nasal mucosa
- Increased risk of infection due to nasal bacteria being introduced into the trachea
- Infection/pneumonia
- Vomiting/aspiration

Equipment:

- Endotracheal tube
- 10-20 mL syringe

Procedure: Blind Nasotracheal Intubation	**Section:** A-5
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

- Water soluble lubricant
- Nasopharyngeal airway
- Tape or commercial tube immobilizer
- Forceps (Magill)
- Bag-valve-mask device with oxygen source
- Suction
- Stethoscope
- Pulse oximetry
- End Tidal CO_2 detector or capnography

Procedure:

1. Take appropriate PPE precautions
2. Place patient's head/neck in neutral in-line position
    - refer to A-4: In-Line Intubation for suspected or known c-spine injury
    - pediatric: pad beneath shoulders as appropriate to prevent flexion of neck
3. Open airway and insert nasopharyngeal airway
4. Pre-oxygenate for with high FiO_2 for 2 – 3 minutes
    - adult: 10 – 12/minute
    - pediatric > 4 years: 12 – 20/minute
5. Place pulse oximetry and evaluate SpO_2 reading
6. Place waveform capnography adjunct and evaluate $ETCO_2$ reading, waveform, and rate of ventilations
7. Assemble and check equipment
8. Lubricate distal end of tube including cuff
9. Stop ventilations and remove nasal airway
10. Preform tube if desired
    - do not use a stylet
11. Insert ET tube in selected nostril
12. Gently but firmly guide tube along septum, advancing during each spontaneous inspiration
    - visualize the tube passing through the oropharynx; stopping when tube is just superior to the vocal cords
        - Magill forceps may be used to guide the tube
13. If cuffed tube: Inflate cuff with 5 mL to 10 mL of air and immediately detach syringe from inflation port
14. Confirm proper tube placement with waveform capnography
15. Connect BVM, ventilate, and confirm absence of gastric sounds and presence of bilateral breath sounds
16. Secure ET tube, note tube depth
17. Reconfirm proper tube placement after any patient movement or any time that assessment changes suggest hypoxia
18. Using waveform capnography, titrate rate of ventilations to achieve target ETCO2 level

Region VIII Procedure Manual
Section A

Procedure: Blind Nasotracheal Intubation	**Section:** A-5
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Note:

- Limit each attempt to no more than 30 seconds
- Re-oxygenate patient 2 – 3 minutes in between unsuccessful intubation attempts
- Consider **Adult** Drug Assisted Intubation per current System SOP
- Consider alternate airway device after two (2) unsuccessful intubation attempts

Region VIII Procedure Manual
Section A

Procedure: Tactile/Digital Orotracheal Intubation	**Section:** A-6
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Laryngoscope malfunction
- Confined space, limited patient access, or seated patient
- Bariatric patient or patient with short neck
- Obstructed view of glottic opening due to secretions
- Known or suspected cervical spine injury
- Failure of the patient to maintain a patent airway
- Failure of the patient to adequately oxygenate and ventilate
    - cardiac or respiratory arrest or impending arrest
    - decreased level of consciousness (GCS < 8)
    - unresponsive or unconscious with risk of aspiration
    - profound respiratory depression
    - impending airway compromise (i.e., trauma, burns, anaphylaxis)
    - traumatic brain injury

Contraindications:

- Spontaneously breathing patient
- Intact gag reflex; may cause patient to bite down on providers fingers
- Patient is not deeply unresponsive
- May be difficult to perform in the pediatric patient due to small oropharynx

Potential Complications:

- Hypoxia
- Bradycardia
- Esophageal placement
- Right mainstem intubation
- Equipment malfunction
- Vocal cord damage, avulsion of an arytenoid cartilage
- Conversion of C-Spine injury without neurological deficit to injury with deficit

Equipment:

- Endotracheal tube
- 10-20 mL syringe
- Water soluble lubricant
- Oropharyngeal airway
- Tape or commercial tube immobilizer
- Bag-valve-mask device with oxygen source
- Suction
- Stylet
- Stethoscope

Procedure: Tactile/Digital Orotracheal Intubation	**Section:** A-6
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

- Pulse oximetry
- End Tidal CO_2 detector or capnography

****This procedure requires two rescuers**

- Rescuer one, maintains neutral alignment of patient's head during ventilations
- Optimal position for the paramedic performing the intubation is facing the patient at their left side

Procedure:

1. Take appropriate PPE precautions
2. Place patient's head/neck in neutral in-line position
    - pediatric: pad beneath shoulders as appropriate to prevent flexion of neck
3. Open airway and insert oropharyngeal airway
4. Pre-oxygenate for with high FiO_2 for 2 – 3 minutes
    - adult: 10 – 12/minute
    - pediatric: 12 – 20/minute
5. Place pulse oximetry and evaluate SpO_2 reading
6. Place waveform capnography adjunct and evaluate $ETCO_2$ reading, waveform, and rate of ventilations
7. Assemble and check equipment
    - insert stylet into the tube and shape distal end into a "J"
8. Lubricate the distal end of the tube including cuff
9. Stop ventilations and leave oral airway in place to serve as a bite block
10. Using your left hand, insert your middle and index finger into the patient's mouth
11. Simultaneously shift the patient's tongue forward as you advance your fingers toward the larynx
12. Palpate and lift the epiglottitis with your middle finger
13. Insert and advance the ET tube with your right hand and guide it between the vocal cords with your left index finger
14. Remove stylet from ET tube
15. If cuffed tube: Inflate cuff with 5 mL to 10 mL of air and immediately detach syringe from inflation port
16. Connect BVM, ventilate, and confirm absence of gastric sounds and presence of bilateral breath sounds
17. Confirm proper tube placement with waveform capnography
18. Secure ET tube, note tube depth
19. Reconfirm proper tube placement after any patient movement or any time that assessment changes suggest hypoxia
20. Using waveform capnography, titrate rate of ventilations to achieve target ETCO2 level

Note:

- Limit each attempt to no more than 30 seconds
- Re-oxygenate patient 2 – 3 minutes in between unsuccessful intubation attempts
-

Procedure: Tactile/Digital Orotracheal Intubation	**Section:** A-6
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

- Consider **Adult** Drug Assisted Intubation per current System SOP and oral tracheal intubation as able/indicated
- Consider **Pediatric** Drug Assisted Intubation per current System SOP and oral tracheal intubation as able/indicated
- Consider alternate airway device after two (2) unsuccessful intubation attempts

Procedure: Needle Cricothyroidotomy	**Section:** A-7
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Used for patient's whose airways cannot be secured by other conventional means
    - adults and pediatrics < 15 years old
- Upper airway obstruction that cannot be relieved by laryngoscope and Magill forceps
- Inability to insert an ET tube past edema
- Destructive facial injury precluding the use of ALS upper airway adjuncts

Contraindications:

- > 15 years of age
- Inability to properly identify anatomic landmark (cricothyroid membrane) due to:
- Crush injuries to the larynx
- Tracheal transection
- Underlying anatomic abnormalities, i.e. trauma, tumors, subglottic stenosis
- Cervical spine fracture (relative contraindication)
- Ability to secure airway by less invasive means

Potential Complications:

- Hypoxia
- Bradycardia
- False placement of angiocatheter
- Equipment malfunction
- Conversion of C-Spine injury without neurological deficit to injury with deficit
- Mild to severe bleeding
- Damage to larynx and vocal cords
- Tracheal or esophageal perforation/laceration
- Subcutaneous or mediastinal emphysema
- Delayed or unsuccessful cannulation of the trachea
- Injury of recurrent laryngeal nerve
- Upper airway obstruction may impede exhalation
- Use of ATV is not indicated as increased pressure may cause pneumothorax and other barotrauma

Insertion Site:

- Trachea via the cricothyroid membrane

Equipment:

- Chlorhexidine skin prep
- 14g or 18g Angiocatheter (catheter over needle type)
- Connector from 3.0 mm or 3.5 mm ET tube
- 12-20 ml syringe
- Tape

Procedure: Needle Cricothyroidotomy	**Section:** A-7
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

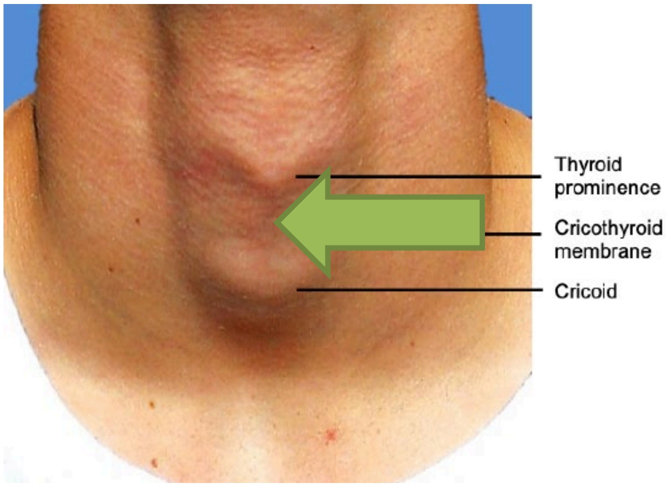
CDH – No	Edward – No	Good Sam – No	Loyola – No

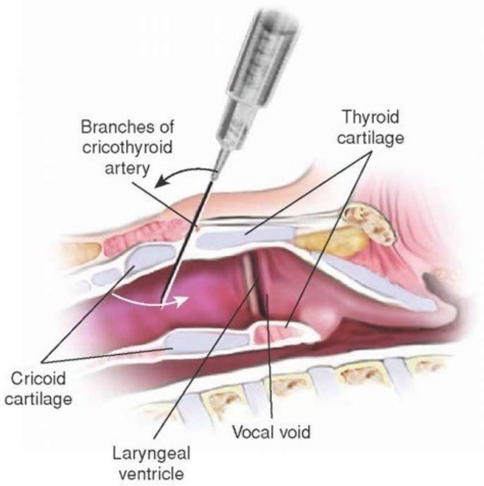
- 4x4's
- Towel
- Bag-valve-mask device with oxygen source
- Suction
- PosiTube (optional)
- Stethoscope
- Pulse oximetry
- End Tidal CO_2 detector or capnography

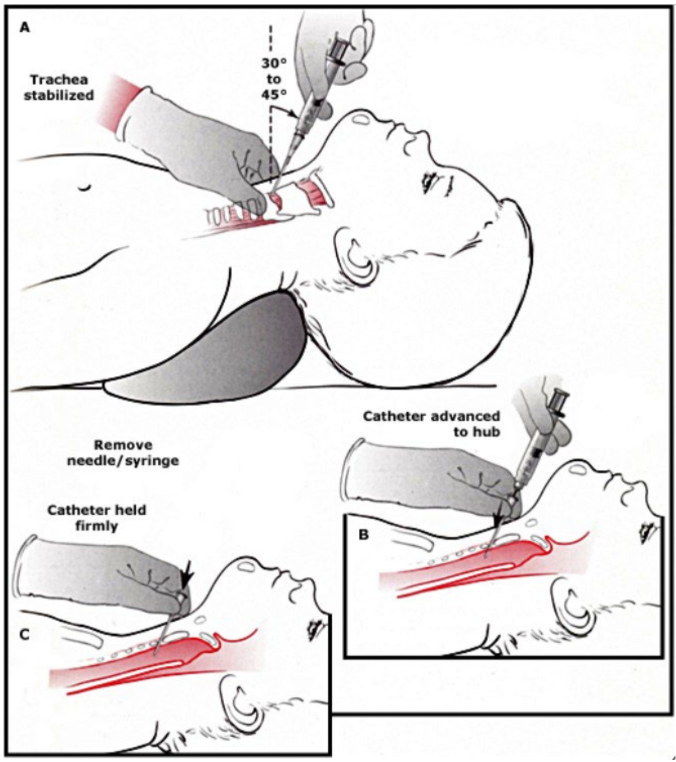
Procedure:

1. Place patient's head/neck in slightly hyperextended position by placing a folded towel under the shoulders unless contraindicated by cervical spine injury
2. Pre-oxygenate for with high FiO_2 for 2 – 3 minutes
    - adult: 10 – 12/minute
    - pediatric: 12 – 20/minute
3. Assemble and check equipment
4. Palpate for and identify the cricoid membrane
5. Cleanse area using aseptic technique
6. Stabilize the trachea with your non-dominant hand
7. Insert angiocatheter through cricothyroid membrane in the mid-line, at a 90° angle (perpendicular to skin), until a "popping" sensation is felt
8. Immediately direct the needle tip downward (caudally) and posteriorly at a 30° angle, to avoid damaging the vocal cords
9. Connect syringe to catheter, if not already done, and aspirate air to confirm position in tracheal lumen
10. Gently advance catheter over the needle to its hub
11. Remove metal needle
12. Use caution not to kink catheter or to perforate posterior tracheal wall
13. Secure needle hub with tape. (Do not encircle neck with tape)
14. Place the ET tube adapter on catheter
15. Connect BVM, ventilate, and confirm absence of gastric sounds and presence of bilateral breath sounds
16. Attach $ETCO_2$ or capnography
17. Secure catheter (do not tape neck circumferentially)
18. Reconfirm proper placement after any patient movement or any time that assessment changes suggest hypoxia
    - anticipate resistance when bagging
    - use gentle, slow pressure and allow adequate time for exhalation
    - may need to compress chest to assist exhalation

Note: A second catheter may be inserted alongside the first to aid in exhalation with the needle


Thyroid prominence
Cricothyroid membrane
Cricoid


Branches of cricothyroid artery
Thyroid cartilage
Cricoid cartilage
Laryngeal ventricle
Vocal void


A
Trachea stabilized
30° to 45°
B
Catheter advanced to hub
Remove needle/syringe
C
Catheter held firmly


acheal Tube
3.0 mm I.D.
4.3 mm O.D.
Cat. No. 86223
Lot# M037470
I.D. 3.0
O.D. 4.3
Mallinckrodt
Discard after sing
CAUTION: See instructions fo
CKRODT

Region VIII Procedure Manual
Section A

Procedure: Needle Cricothyroidotomy	**Section:** A-7
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

https://www.nremt.org/CMSPages/GetAmazonFile.aspx?path=~%5Cstorage%5Cmedia%5Cnational-registry%5Cnremt-documents%5Cfp414-needle-cricothyrotomy-(percutaneous-translaryngeal-ventilation)-skill-lab-form.pdf&hash=01efa3d6dbf1cd817f73cc25a221703f763ad5cb731f0fc34d75004c04559a04

Procedure: Surgical Cricothyroidotomy	**Section:** A-8
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Used for patient’s whose airways cannot be secured by other conventional means
    - adults and pediatrics ≥ 15 years old
- Upper airway obstruction that cannot be relieved by laryngoscope and Magill forceps or by direct by AHA methods
- Inability to insert an ET tube past edema
- Destructive facial injury precluding the use of ALS upper airway adjuncts

Contraindications:

- ≤ 15 years of age
- Inability to properly identify anatomic landmark (cricothyroid membrane) due to:
- Crush injuries to the larynx
- Tracheal transection
- Underlying anatomic abnormalities, i.e. trauma, tumors, subglottic stenosis
- Cervical spine fracture (relative contraindication)
- Ability to secure airway by less invasive means

Potential Complications:

- Hypoxia
- Bradycardia
- False placement of tube
- Right mainstem intubation
- Equipment malfunction
- Conversion of C-Spine injury without neurological deficit to injury with deficit
- Laceration of the external jugular vein(s)
- Mild to severe bleeding
- Laceration of thyroid gland
- Damage to larynx and vocal cords
- Tracheal or esophageal perforation/laceration
- Subcutaneous or mediastinal emphysema
- Thyroid perforation, hematoma
- Delayed or unsuccessful cannulation of the trachea
- Injury of recurrent laryngeal nerve

Equipment:

- Chlorhexidine skin prep
- Cuffed endotracheal tube (minimum 6.0 mm)
- #10 disposable scalpel
- Curved hemostat
- 12-20 ml syringe

Procedure: Surgical Cricothyroidotomy	**Section:** A-8
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

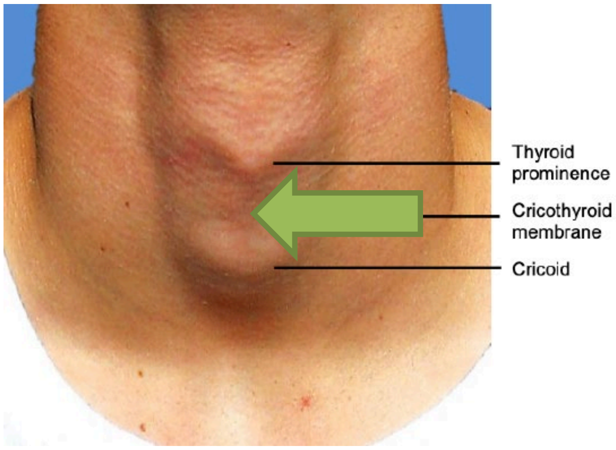
System Specific Addendum

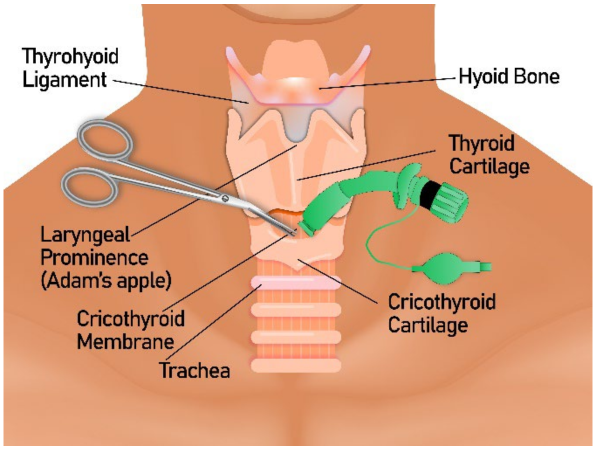
CDH – No	Edward – No	Good Sam – No	Loyola – No

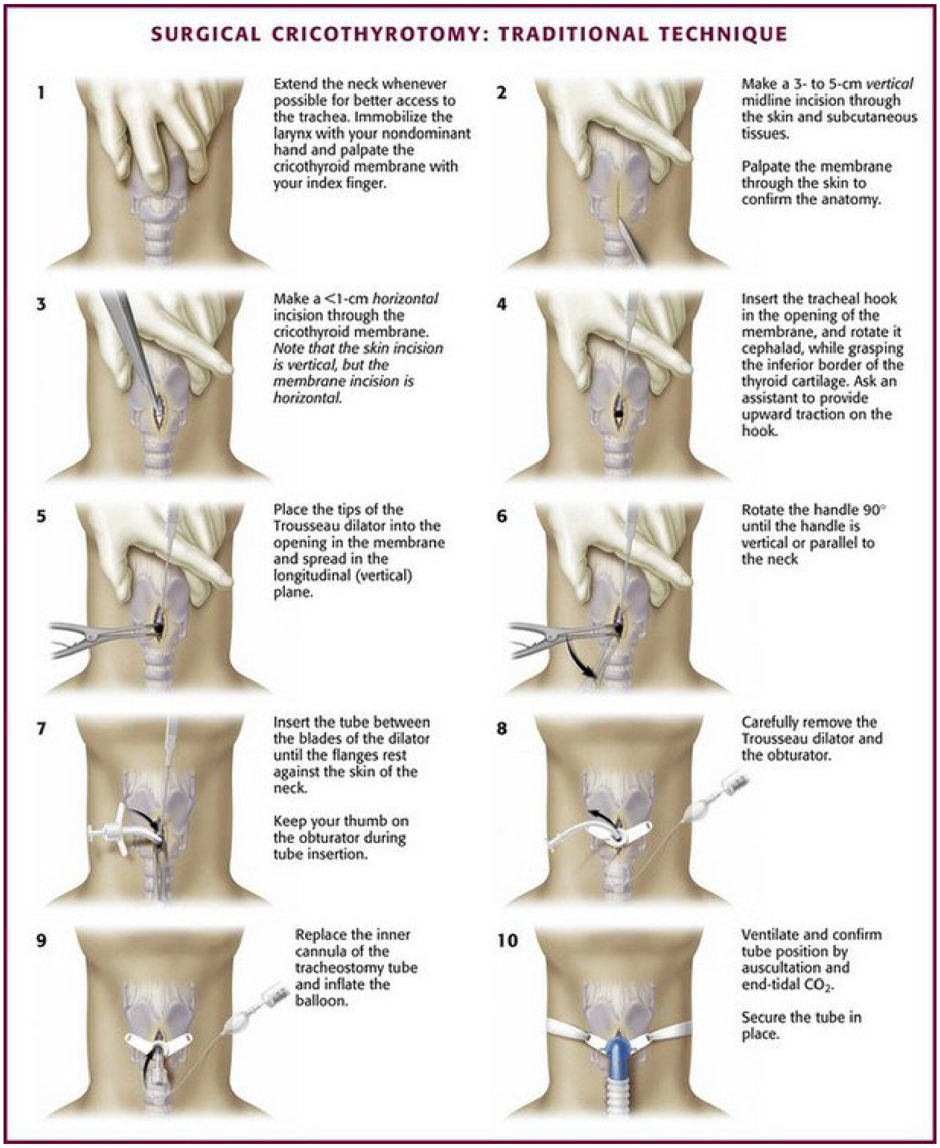
- Tape or commercial tube immobilizer
- 4x4's
- Drain sponge
- Towel
- Bag-valve-mask device with oxygen source
- Suction
- PosiTube (optional)
- Stethoscope
- Pulse oximetry
- End Tidal CO_2 detector or capnography

Note:
The NAR Tactical Cric Kit found in the Region VIII tactical bag may also be utilized depending on the situation. All steps are the same as the procedures listed herein

Procedure:
1. Place patient's head/neck in slightly hyperextended position by placing a folded towel under the shoulders unless contraindicated by cervical spine injury
2. Pre-oxygenate for with high FiO_2 for 2 – 3 minutes
    - adult: 10 – 12/minute
    - pediatric: 12 – 20/minute
3. Assemble and check equipment
4. Palpate for and identify the cricoid membrane
5. Cleanse area using aseptic technique
6. Stabilize the trachea with your non-dominant hand
7. Make a ¼" to ½" mid-line vertical incision through the skin only at the cricothyroid level
8. Incise the cricothyroid membrane with a transverse (horizontal) stabbing or popping incision
9. Insert a curved hemostat and rotate it 90° to spread the cartilage and to help maintain the opening
10. Insert an appropriately sized cuffed ET tube through the incision directing it inferiorly
11. Use the hemostat to maintain the opening while inserting the tube being careful not to tear the cuff
12. Inflate cuff with 5 mL to 10 mL of air and immediately detach syringe from inflation port
13. Connect BVM, ventilate, and confirm absence of gastric sounds and presence of bilateral breath sounds
14. Attach $ETCO_2$ or capnography
15. Place drain sponge around ET tube over incision and secure ET tube (do not cut gauze)
16. Reconfirm proper tube placement after any patient movement or any time that assessment changes suggest hypoxia







SURGICAL CRICOTHYROTOMY: TRADITIONAL TECHNIQUE

1 Extend the neck whenever possible for better access to the trachea. Immobilize the larynx with your nondominant hand and palpate the cricothyroid membrane with your index finger.

2 Make a 3- to 5-cm *vertical* midline incision through the skin and subcutaneous tissues.

Palpate the membrane through the skin to confirm the anatomy.

3 Make a <1-cm *horizontal* incision through the cricothyroid membrane. *Note that the skin incision is vertical, but the membrane incision is horizontal.*

4 Insert the tracheal hook in the opening of the membrane, and rotate it cephalad, while grasping the inferior border of the thyroid cartilage. Ask an assistant to provide upward traction on the hook.

5 Place the tips of the Trousseau dilator into the opening in the membrane and spread in the longitudinal (vertical) plane.

6 Rotate the handle 90° until the handle is vertical or parallel to the neck

7 Insert the tube between the blades of the dilator until the flanges rest against the skin of the neck.

Keep your thumb on the obturator during tube insertion.

8 Carefully remove the Trousseau dilator and the obturator.

9 Replace the inner cannula of the tracheostomy tube and inflate the balloon.

10 Ventilate and confirm tube position by auscultation and end-tidal CO_2.

Secure the tube in place.

https://www.ncbi.nlm.nih.gov/books/NBK537350/

Procedure: Oral and Nasal Pharyngeal Suctioning	**Section:** A-9
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Upper airway compromise or obstruction by excessive secretions, blood, vomitus, or foreign body

Contraindications:

- Oral Suctioning: None in the presence of upper airway compromise/obstruction
- Nasal Suctioning: CSF leak, suspected facial and/or basilar skull fracture

Potential Complications:

- Bradycardia
- Hypotension
- Hypoxia
- Stimulation of gag reflex
- Vomiting
- Increased intracranial pressure
- Decreased tidal volume
- Airway mucosal trauma / bleeding
- Worsening foreign body airway obstruction

Equipment:

- Suction unit (wall mounted or portable)
    - capable of reaching 300 mmHg within 4 seconds of clamping tubing
- Short, large bore connecting tube (vacuum regulator to connection tubing)
- Suction tubing (canister to suction device)
- Suction catheters
    - Rigid tip
    - French tip
- BVM
- Oxygen
- Pulse oximetry

Procedure:

1. Position patient to facilitate passive clearing of obstruction unless contraindicated
2. Pre-oxygenate patient as indicated
3. Adjust vacuum level

Adult	Child	Infant
80 – 160 mmHg	80 – 120 mmHg	40 – 80 mmHg

Procedure: Oral and Nasal Pharyngeal Suctioning	**Section:** A-9
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

4. Select the appropriate suction device and lumen size

Route	Adult	Child	Infant
Oral	Rigid tip or catheter	Rigid tip or catheter	Rigid tip or catheter
Nasal	14f – 18f	10f – 12f	8f

5. Select appropriate length if using catheter

Route	Adult	Child	Infant
Oral	Mouth to angle of jaw	Mouth to angle of jaw	Mouth to angle of jaw
Nasal	Nose to angle of jaw	Nose to angle of jaw	Nose to angle of jaw

6. To open moth use cross-finger technique
7. Insert suction device and apply vacuum while withdrawing

Adult	Child	Infant
15 seconds	10 seconds	5 seconds

8. Re-oxygenate patient

Procedure: Endotracheal Suctioning	**Section:** A-10
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:
- Increased resistance to ventilations
- Secretions, blood, and/or vomitus contained in or being expelled from ET tube
- Absent or diminished breath sounds, wheezes

Contraindications:
- There is no absolute contraindication to endotracheal suctioning when it is indicated

Potential Complications:
- Bradycardia
- Hypotension
- Hypoxia
- Stimulation of gag reflex
- Increased intracranial pressure
- Decreased tidal volume
- Airway mucosal trauma / bleeding
- Worsening foreign body airway obstruction

Equipment:
- Suction unit (wall mounted or portable)
    - capable of reaching 300 mmHg within 4 seconds of clamping tubing
- Short, large bore connecting tube (vacuum regulator to connection tubing)
- Suction tubing (canister to suction device)
- Sterile French tip suction catheter
- Sterile gloves
- BVM
- Oxygen
- Pulse oximetry

Procedure:
1. Position patient in neutral alignment
2. Pre-oxygenate patient as indicated
3. Adjust vacuum level
4. Select appropriate length if using catheter

Select	Adult	Child	Infant
Vacuum setting	80 – 160 mmHg	80 – 120 mmHg	40 – 80 mmHg
Catheter lumen size	14f – 18f	10f – 12f	8f
Catheter length for oral ET	mouth to angle of jaw	mouth to angle of jaw	mouth to angle of jaw
Catheter length for nasal ET	nose to angle of jaw	nose to angle of jaw	nose to angle of jaw
Suction duration	15 seconds	10 seconds	5 seconds

*catheters used for endotracheal suctioning should take up no more than 50% of the interior tube lumen

5. Insert suction device and apply vacuum while withdrawing
    - Normal saline **SHOULD NOT** be instilled into the ET Tube or tracheostomy tube at any time prior to, during, or after suctioning
6. Re-oxygenate patient

Procedure: iGel Supraglottic Airway	**Section:** A-11
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – Yes	**Edward – Yes**	Good Sam – No	**Loyola – Yes**

Indications:

- Apneic patient when endotracheal intubation is not indicated or not possible
- Patient must be unconscious, without a gag reflex
- No history of esophageal foreign body, esophageal disease, or caustic ingestion
- Failed endotracheal intubation attempts in absence of epiglottitis and obstruction below the glottis opening
- Cardiac arrest without airway complication

Contraindications:

- Conscious or semi-conscious patient
- Intact gag reflex
- Obstructive lesions below the glottis.
  - Foreign body airway obstruction
  - Anaphylaxis
  - Airway burns
  - Laryngospasm
- Trismus, limited mouth opening, pharyngo-perilaryngeal abscess, trauma or mass.
- Angioedema
- Epiglottitis
- Vomiting
- Inappropriately sized device

Considerations:

- Do not allow peak airway pressure of ventilation to exceed 10cm/H_2O.
- Do not use excessive force to insert the device.
- As with all supraglottic airway devices, particular care should be taken with patients who have fragile and vulnerable dental work, in accordance with recognized airway management.
- Use care to avoid the introduction of lubricant in or near the ventilatory openings

Procedure:

1. Take appropriate PPE precautions
2. Place patient's head/neck in neutral in-line position
   - pediatric: pad beneath shoulders as appropriate to prevent flexion of neck
3. Open airway and insert oropharyngeal airway
4. Pre-oxygenate for with high FiO_2 for 2 – 3 minutes
   - adult: 10 – 12/minute
   - pediatric: 12 – 20/minute
5. Place pulse oximetry and evaluate SpO_2 reading
6.

System Specific Addendum

CDH – Yes	**Edward – Yes**	Good Sam – No	**Loyola – Yes**

7. Place waveform capnography adjunct and evaluate $ETCO_2$ reading, waveform, and rate of ventilations
8. Assemble and check equipment
9. Choose the correct size of iGel Resus Pack for your patient.
    - Size 3 (yellow): Small Adult. Ideal body weight: 30-60kg (66-132lbs)
    - Size 4 (green): Medium Adult. Ideal body weight: 50-90kg (110-198lbs)
    - Size 5 (orange): Large Adult. Ideal body weight: 90+kg (>198lbs)
10. Open the packaging and take out the protective cradle containing the device. Remove the accessory pack that includes the support strap and packet of lubricant from the protective cradle and place to one side and within easy reach.
11. Remove the iGel and transfer it to the palm of the same hand holding the protective cradle, supporting the device between the thumb and index finger.
12. Open the packet of lubricant and place a small bolus on the middle of the smooth surface of the protective cradle.
13. Grasp the iGel with the opposite (free) hand along the integral bite block and lubricate the back, sides, and front of the cuff with a thin layer of lubricant. Ensure that any excess lubricant is removed prior to insertion.
14. Grasp the lubricated iGel firmly along the bite block. The patient should be in the ‘sniffing the morning air’ position with the head extended and neck flexed.
15. Position the device so that the iGel cuff outlet is facing towards the chin of the patient. Introduce the leading soft tip into the mouth of the patient towards the hard palate.
16. Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt.
17. Once insertion has been completed, the tip of the airway should be located into the upper esophageal opening, with the cuff located against the laryngeal framework. The incisors should be resting on the bite block.
18. Secure the device by sliding the airway support strap underneath the pateint’s neck and attaching to the hook ring. Take care to ensure there is sufficient tension to hold the iGel securely in place, but not excessive tension that may cause trauma. Some adjustment of the strap may be needed to ensure optimal positioning.
19. Once the iGel has been correctly prepared, inserted and secured, positive pressure ventilation can commence in accordance with applicable resuscitation guidelines.
20. Connect BVM, ventilate, and confirm absence of gastric sounds and presence of bilateral breath sounds
21. Attach $ETCO_2$ or capnography
22. Secure catheter (do not tape neck circumferentially)
23. Reconfirm proper placement after any patient movement or any time that assessment changes suggest hypoxia
    - anticipate resistance when bagging
    - use gentle, slow pressure and allow adequate time for exhalation
    - may need to compress chest to assist exhalation

Features and benefits

The i-gel® has a host of features that provide significant benefits to the patient and the clinician.

15mm connector
Reliable connection to any standard catheter mount or connection

Proximal end of gastric channel

Clearly displayed product information
For quick easy reference. Includes confirmation of size and weight guidance

Position guide (adult sizes only)
Easy confirmation of optimum insertion depth

Gastric channel
The i-gel® incorporates a gastric channel (except size 1). It provides an early warning of regurgitation, allows for the passing of a nasogastric tube to empty the stomach contents and facilitates venting

Integral bite block
Reduces the possibility of airway channel occlusion

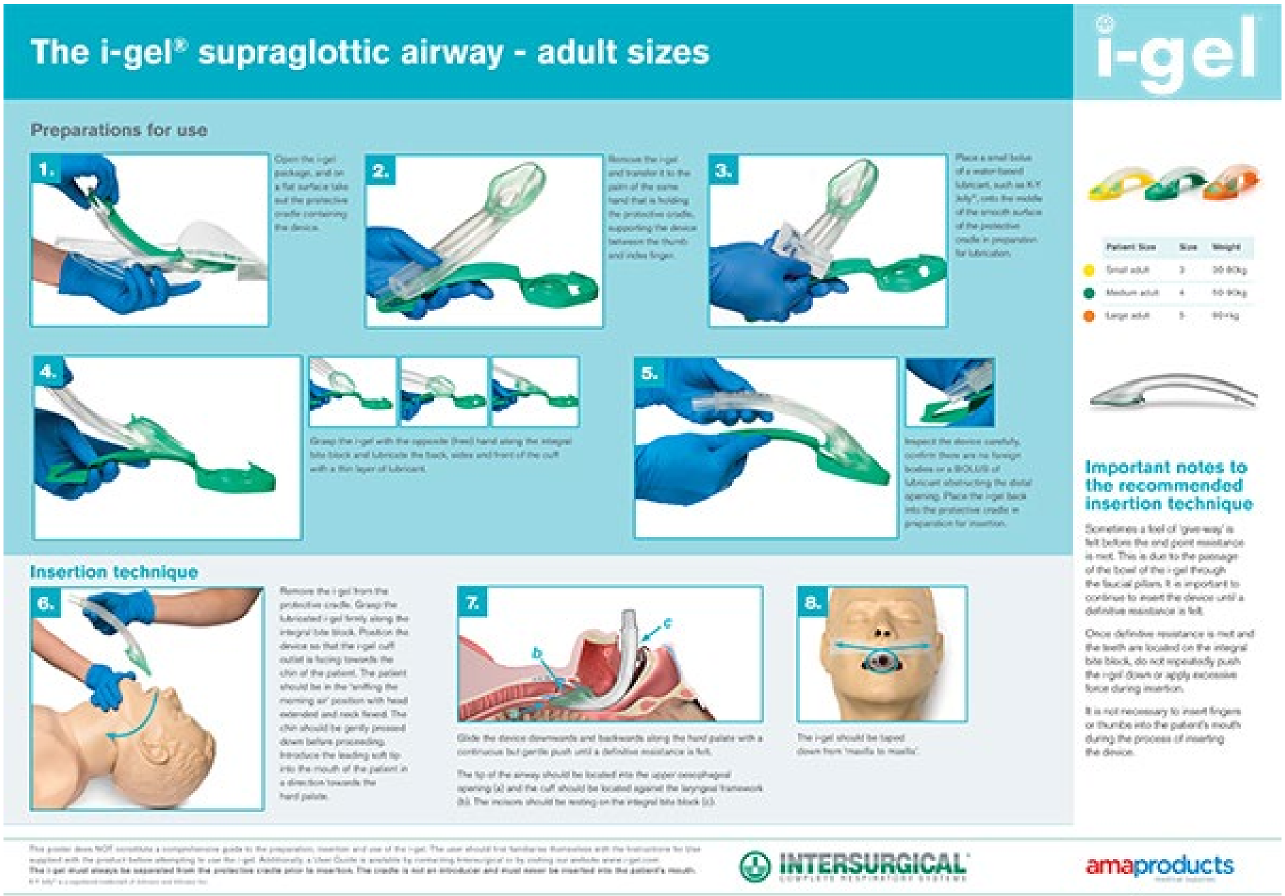
Buccal cavity stabiliser
Aids insertion and eliminates the potential for rotation

Epiglottic rest
Reduces the possibility of epiglottic 'down folding' and airway obstruction

The non-inflatable cuff
Made from a unique soft gel-like material allowing ease of insertion and reduced trauma

Distal end of gastric channel

The adult sizes of i-gel® can be used as a conduit for intubation under fibreoptic guidance in a known or unexpectedly difficult intubation



The i-gel® supraglottic airway - adult sizes

Preparations for use

1. Open the i-gel package, and on a flat surface take out the protective cradle containing the device.

2. Remove the i-gel and transfer it to the palm of the same hand that is holding the protective cradle, supporting the device between the thumb and index finger.

3. Place a small bolus of a water based lubricant, such as K-Y Jelly®, onto the middle of the smooth surface of the protective cradle in preparation for lubrication.

4. Grasp the i-gel with the opposite (free) hand along the integral bite block and lubricate the back, sides and front of the cuff with a thin layer of lubricant.

5. Inspect the device carefully, confirm there are no foreign bodies or a BOLUS of lubricant obstructing the distal opening. Place the i-gel back into the protective cradle in preparation for insertion.

	Patient Size	Size	Weight
🟡	Small adult	3	30-60kg
🟢	Medium adult	4	50-90kg
🟠	Large adult	5	90+kg

Insertion technique

6. Remove the i-gel from the protective cradle. Grasp the lubricated i-gel firmly along the integral bite block. Position the device so that the i-gel cuff outlet is facing towards the chin of the patient. The patient should be in the 'sniffing the morning air' position with head extended and neck flexed. The chin should be gently pressed down before proceeding. Introduce the leading soft tip into the mouth of the patient in a direction towards the hard palate.

7. Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt.

The tip of the airway should be located into the upper oesophageal opening (a) and the cuff should be located against the laryngeal framework (b). The incisors should be resting on the integral bite block (c).

8. The i-gel should be taped down from 'maxilla to maxilla'.

Important notes to the recommended insertion technique

Sometimes a feel of 'give-way' is felt before the end point resistance is met. This is due to the passage of the bowl of the i-gel through the faucial pillars. It is important to continue to insert the device until a definitive resistance is felt.

Once definitive resistance is met and the teeth are located on the integral bite block, do not repeatedly push the i-gel down or apply excessive force during insertion.

It is not necessary to insert fingers or thumbs into the patient's mouth during the process of inserting the device.

This poster does NOT constitute a comprehensive guide to the preparation, insertion and use of the i-gel. The user should first familiarise themselves with the Instructions for Use supplied with the product before attempting to use the i-gel. Additionally, a 'User Guide' is available by contacting Intersurgical or by visiting our website www.i-gel.com.

The i-gel must always be separated from the protective cradle prior to insertion. The cradle is not an introducer and must never be inserted into the patient's mouth.

K-Y Jelly® is a registered trademark of Johnson and Johnson Inc.

Procedure: Bougie-Assisted Endotracheal Intubation	**Section:** A-12
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – Yes	Edward – No	Good Sam – No	Loyola – No

Indications:

- Same indications as those for endotracheal intubation for patients 16 years of age or older

Contraindications:

- Conscious or semi-conscious patient
- Intact gag reflex
- Trismus/limited mouth opening
- Pharyngo-perilaryngeal abscess, trauma or mass.
- Angioedema
- Epiglottitis
- Vomiting
- Inappropriately sized device
- Patients 15 years of age or younger

Potential Complications:

- Esophageal intubation
- Tracheal/bronchial perforation
    - Pneumothorax
    - Pneumomediastinum
    - Subcutaneous emphysema
- Esophageal perforation
- Infection

Procedure:

1. Take appropriate PPE precautions
2. Place patient’s head in sniffing position unless contraindicated
    a. refer to A-4: In-Line Intubation for suspected or known c-spine injury
3. Open airway and insert oropharyngeal airway and/or nasopharyngeal airway
4. Pre-oxygenate with high FiO_2 for 2 – 3 minutes
    a. adult: 10 – 12/minute (1 breath every 5-6 seconds)
5. Place pulse oximetry and evaluate SpO_2 reading
6. Place waveform capnography adjunct and evaluate $ETCO_2$ reading, waveform, and rate of ventilations
7. Gather endotracheal intubation equipment, including:
    - Bougie device
    - Properly functioning laryngoscope or video laryngoscope
    - Properly-sized cuffed endotracheal tube
    - 10mL syringe
    - Waveform $ETCO_2$ ETT adjunct

Procedure: Bougie-Assisted Endotracheal Intubation	**Section:** A-12
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – Yes	Edward – No	Good Sam – No	Loyola – No

8. Lubricate the distal ½ of the Bougie device (with the curved tip) and the distal tip and cuff of the ETT with a water-based lubricant
9. Upon completion of preoxygenation and, if applicable, administration of DAI medications, stop ventilations and remove oropharyngeal airway
10. Insert the laryngoscope blade into the right side of the mouth, sweeping the tongue to the left, to the depth of the appropriate landmark
    - curved blade: place into the vallecula
    - straight blade: place into distal epiglottis
11. Lift laryngoscope up and away from patient's face at 45° angle elevating patients jaw
12. Visualize the vocal cords in the glottic opening (preferable) or, if the vocal cords cannot be visualized, the epiglottis and the arytenoids
13. Introduce the Bougie device into the mouth with the curved tip pointed anteriorly, pass through the vocal cords if they are visible
    - If unable to visualize vocal cords, attempt to pass Bougie below the epiglottis and above the arytenoids
14. Gently advance the Bougie until resistance is met or "clicking" against the cricoid rings is felt
    - Note: the absence of resistance indicates esophageal placement of the Bougie
15. Withdraw the Bougie to a depth sufficient to allow for placement of the ET Tube and proximal control of the Bougie
16. While maintaining proximal control over the Bougie, gently railroad the ET Tube over the Bougie and pass the tube to its appropriate depth
    - If unable to pass the adequately lubricated ET Tube through the vocal cords, slightly withdraw the ET tube and rotate counterclockwise to position the bevel posteriorly, then gently attempt to advance the ET Tube
    - If counterclockwise rotation of the ET Tube and gentle advancement are unsuccessful in passing the ET Tube, gentle advancement of the ET Tube under direct laryngoscopy can be attempted while an assistant stabilizes the proximal end of the Bougie
17. Once the ET Tube is introduced to its appropriate depth, remove the Bougie while holding the ET Tube in position
18. Confirm correct ET Tube with waveform capnography, absent epigastric sounds, and present bilateral lung sounds
19. Secure ET tube, note and document tube depth
20. Using waveform capnography, titrate rate of ventilations to achieve target ETCO2 level
21. Reconfirm proper tube placement after any patient movement or any time there is a reduction in SpO2 or unexpected change in $ETCO_2$

Note:

- Limit each attempt to no more than 30 seconds
- Re-oxygenate patient 2–3 minutes in between unsuccessful intubation attempts
- Consider **Adult** Drug Assisted Intubation per current System SOP
- Consider alternate airway device after two (2) unsuccessful intubation attempts

Procedure: Oxygen Management	**Section:** B-1
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- To ensure personnel, patient, and bystander safety when oxygen cylinders or in use or stored on vehicles
- Estimate oxygen consumption time based on cylinder size and liter flow

Contraindications:

- Not applicable

Potential Complications:

- Explosion / rapid combustion
    - do not use near open flame
    - do not defibrillate in close proximity to free-flowing oxygen
    - do not use grease or oil on cylinder, valve assembly, or regulator
    - hands must be clean when handling oxygen cylinders
- If cylinder is pressurized and sustains damage, cylinder can become a projectile
    - cylinder should be properly secured at all times
    - cylinder should be carried by base, and never by the regulator, protective caps, valves, or valve guards

Equipment:

- Oxygen cylinder
- Pressure regulator with flow meter
- Dedicated wrench free of grease or oil
- Gaskets/O-rings

Tank Capacity:

D cylinder	E cylinder	M cylinder	G cylinder	H cylinder
350 liters	625 liters	3,450 liters	5,300 liters	6,900 liters
0.16L/psi	0.28L/psi	1.56L/psi	2.41L/psi	3.14L/psi

Duration of Flow:

- Dependent on cylinder size, pressure, and flow
- To calculate remaining duration of oxygen flow, multiply conversion factor by psi remaining in tank and then divide by flow rate
    - D cylinder: 0.16 x psi remaining divided by liter flow = minutes until cylinder is empty
        - E.g. 2,000psi at 15LPM
        - $\frac{(0.16\text{x}2{,}000\text{psi})}{15\text{LPM}}$ = 21 min
    - E cylinder: 0.28 x psi remaining divided by liter flow = minutes until cylinder is empty
        - E.g. 2,000psi at 15LPM
        - $\frac{(0.28\text{x}2{,}000\text{psi})}{15\text{LPM}}$ = 37 min

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

- M cylinder: 1.56 x psi remaining divided by liter flow = minutes until cylinder is empty
  - E.g. 2,000psi at 15LPM
  - $\frac{(1.56\text{x}2{,}000\text{psi})}{15\text{LPM}}$ = 208 min
- G cylinder: 2.41 x psi remaining divided by liter flow = minutes until cylinder is empty
  - E.g. 2,000psi at 15LPM
  - $\frac{(2.41\text{x}2{,}000\text{psi})}{15\text{LPM}}$ = 321 min
- H cylinder: 3.14 x psi remaining divided by liter flow = minutes until cylinder is empty
  - E.g. 2,000psi at 15LPM
  - $\frac{(3.14\text{x}2{,}000\text{psi})}{15\text{LPM}}$ = 419 min

Procedure: Oxygen Delivery Devices	**Section:** B-2
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:
- Signs and symptoms of hypoxia or hypoxemia
- Known or suspected systemic asphyxiant poisoning (e.g. carbon monoxide, cyanide, hydrogen sulfide, methemoglobin-forming agents)

Contraindications:
- Hyperoxia is contraindicated in uncomplicated myocardial infarction / STEMI, post-cardiac arrest, acute exacerbation of COPD, stroke, and newly born / neonatal resuscitation
    - if supplemental oxygen is used in these patients, the goal is to relieve hypoxemia without causing hyperoxia
    - Target SpO_2:
        - No history of COPD: 94-98%
        - History of COPD: 92%
    - Newly born / neonatal resuscitation
        - All reasonable efforts should be made to avoid hyperoxia in newly-borns
        - Oxygen SHOULD ONLY be administered during newly born/neonatal resuscitation if hypoxia is suspected, evidence includes but is not necessarily limited to:
            - Poor responsiveness
            - Weak or absent respiratory effort
            - Low APGAR scores
        - SpO_2 levels during the first 10 minutes of life are normally low. Target SpO_2 during the first 10 minutes of life should be:
            - 1 min: 60-65%
            - 2 min: 65-70%
            - 3 min: 70-75%
            - 4 min: 75-80%
            - 5 min: 80-85%
            - 10 min: 85-95%
        - Oxygen should be discontinued immediately if:
            - Hypoxia is resolved
            - The administration of oxygen worsens the newly-born's condition
- Demand-valve oxygen delivery devices should not be used
- Unless System approved and can accommodate weight/size-based volume, automatic transport ventilators may not be used

Potential Complications:
- Oxygen toxicity
    - cellular damage caused by accumulation of toxic molecules
- Absorptive atelectasis
    - collapse of the alveoli due to the loss of the partial pressure of nitrogen within the lungs
- Carbon dioxide narcosis

  - If excess O_2 eliminates hypoxic drive in patients with COPD
- Drying of mucosal membranes
- Increased tidal volume if incorrect BVM size is used for pediatric patients

Equipment:

- Oxygen source
- Delivery device
- Pulse oximetry
- Stethoscope

Procedure:

Pocket Mask

Indication	• Non-breathing or agonal patients requiring ventilation
Precaution	• Incorrect hand placement during assisted ventilation may occlude airway • Failure to maintain an adequate seal may ~~facilitate~~ cause/worsen hypoxia
Procedure	1. Ensure mask is properly inflated 2. Place narrow portion of mask over patient's nose and base between lower lip and chin 3. Maintain airtight seal while lifting the lower jaw 4. Ventilate 5. Allow for exhalation 6. Re-assess and repeat as necessary

Nasal Cannula

Indication	• Patients who require supplemental oxygenation, who have spontaneous respirations, and who are nose-breathing • Low FiO_2 administration supported by clinical assessment including history and SpO_2
Precaution	• Prolonged oxygenation (> two hours) with this device can cause increased irritation of nasal mucosa due to the drying effect of oxygen
Procedure	1. Insert nasal prongs into nostrils so they curve curving posteriorly toward nasopharynx 2. Place straps around ear lobes and ~~tighter~~ tighten enough to secure in place 3. Attach to oxygen source and adjust liter flow • 1 L/min = 25% FiO_2 • 2 L/min = 29% FiO_2 • 3 L/min = 33% FiO_2 • 4 L/min = 37% FiO_2 • 5 L/min = 41% FiO_2 • 6 L/min = 45% FiO_2 4. Re-assess

Procedure: Oxygen Delivery Devices	**Section:** B-2
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Non-rebreather

Indication	• Patients who require supplemental oxygenation who have spontaneous respirations • High FiO_2 administration supported by clinical assessment including history and SpO_2
Precaution	• Oxygen flow-rate must be sufficient to keep reservoir bag inflated during inspiration • Reservoir bag must be inflated with oxygen before application • Remove mask immediately if patient vomits
Procedure	1. Attach mask to oxygen source and fill bag by pressing rubber diaphragm inside mask 2. Place apex (narrow end) of mask over bridge of nose and place base (wide end) under the chin 3. Secure elastic strap around head 4. Attach to oxygen source and adjust liter flow • 10 to 15 liters = 80% to 90% FiO_2 5. Re-assess

OxyMask™

<table>
<tr><td>Indication</td><td>• Patients who require supplemental oxygenation who have spontaneous respirations
• Depending on liter flow:
○ low FiO_2 administration supported by clinical assessment including history and SpO_2
○ high FiO_2 administration supported by clinical assessment including history and SpO_2</td></tr>
<tr><td>Precaution</td><td>• No contraindications when used per instructions</td></tr>
<tr><td>Procedure</td><td>1. Attach mask to oxygen source and fill bag by pressing rubber diaphragm inside mask
2. Place apex (narrow end) of mask over bridge of nose and place base (wide end) under the chin
3. Secure elastic strap around head
4. Attach to oxygen source and adjust liter flow
<table>
<tr><td>1 liter = 24% - 27% FiO_2</td><td>4 liters = 33%-66% FiO_2</td><td>10 liters = 53%-85% FiO_2</td></tr>
<tr><td>2 liters = 27%-32% FiO_2</td><td>5 liters = 36%-69% FiO_2</td><td>12 liters = 57%-89% FiO_2</td></tr>
<tr><td>3 liters = 30%-60% FiO_2</td><td>7 liters = 48%-80% FiO_2</td><td>>15 liters = 60%-90% FiO_2</td></tr>
</table>
5. Re-assess</td></tr>
</table>

Procedure: Oxygen Delivery Devices	**Section:** B-2
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Bag-valve and mask

Indication	• To assist/maintain respirations in a patient whose respiratory rate is inadequate or absent
Precaution	• Inadequate seal or increased compression rate may cause gastric distention • Bradycardia may occur if mask is pressed over the eyes, stimulating the vagus nerve • Consider tidal volume when ventilating pediatrics; do not overinflate lungs • Avoid over-inflation of lungs: squeeze BVM only enough to achieve chest rise • Avoid hyperventilation • If available, use capnography to titrate rate and depth of assisted ventilations
Procedure	1. Connect O_2 tubing to bag and turn flow rate to 12-15 LPM. 2. Open airway using head tilt-chin lift or, if c-spine injury suspected, modified jaw thrust 3. Insert an appropriately-sized oropharyngeal and/or nasopharyngeal airway, as indicated 4. Place the apex (narrow end) of the mask over the bridge of the nose and the base (wide end) under the lower lip 5. Hold the mask firmly in place using the “E/C” method 6. Compress bag giving adequate time for exhalation Squeeze bag enough to achieve chest rise, allow adequate time for exhalation 7. Squeeze BVM at appropriate rate, avoid hyperventilation • Adults: 1 breath every 6-8 seconds • Children: 1 breath every 5-6 seconds • Infants: 1 breath every 3-5 seconds • Newborns: 1 breath every 2-3 seconds • If available, use capnography to titrate rate and depth of assisted ventilations
Newly born special consideration: • To achieve an FiO_2 between 29-41%, set flow meter between 2-5LPM	

Procedure: Pleural Decompression	**Section:** B-3
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

Tension Pneumothorax

- Evidence of two or more of the following
  - Absent or severely diminished breath sounds on affected side
  - Severe dyspnea and respiratory distress
  - Hypoxia/hypercarbia
  - Difficult ventilation despite an open airway
  - Increased resistance to bagging
  - Hypotension
  - Narrowed pulse pressure
  - Jugular venous distention (may not be present if patient is hypovolemic)
  - Tracheal deviation away from affected side (very late sign, and not always present)
  - Pulsus paradoxus
  - Signs of impending cardiovascular collapse
  - Traumatic cardiac arrest

Contraindications:

- None in the presence of a tension pneumothorax

Potential Complications:

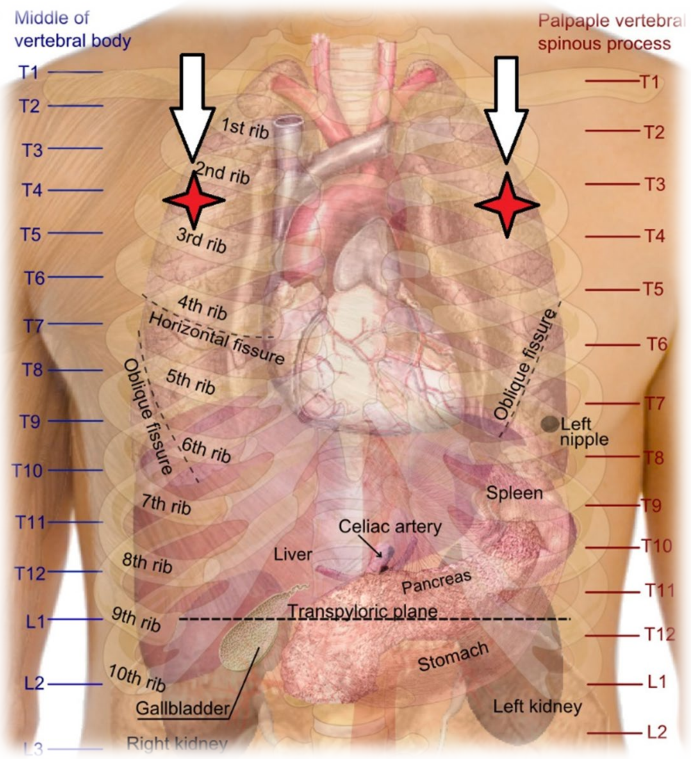
- Hemothorax or nerve damage if procedure performed incorrectly

Insertion Site:

- Affected side (absent/severely diminished lung sounds)
- Mid-clavicular line, 2nd intercostal space, up and over top of the 3rd rib

Equipment: Air Release System (ARS) needle	**Equipment:** Over the Needle Catheter
• Air Release System (ARS) needle • Chlorhexidine prep (alcohol < 2 months) • Tape • Flutter valve (optional)	• 14g x 2” or larger angiocatheter • Chlorhexidine prep (alcohol < 2 months) • Tape • Glove tip (flutter valve – optional) • Flutter valve (optional)
Procedure:	**Procedure:**
1. Identify appropriate site Landmark 2. Cleanse site 3. Remove cap with a twisting motion 4. Remove ARS from case 5. Insert ARS through skin at 90° angle 6. Insert ARS into the pleural space 7. Listen for escape of air 8. Remove needle portion of ARS and leave the catheter in place 9. Secure catheter in place	1. Identify appropriate site Landmark 2. Cleanse site 3. Remove needle sheath 4. Insert angiocatheter through skin at 90° angle 5. Insert angiocatheter into the pleural space 6. Listen for escape of air 7. Remove needle and leave catheter in place 8. Secure catheter in place

10. Attach flutter valve if available and desired 11. Monitor patient 12. Consider additional decompressions if indicators of tension redevelop	9. Attach flutter valve if available and desired 10. Monitor patient 11. Consider additional decompressions if indicators of tension redevelop



Procedure: Pulse Oximetry	**Section:** B-4
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- To be used in virtually any situation to determine the patient's baseline value oxygenation status, to help guide patient care and to monitor the patient's response to therapeutic interventions

Contraindications:

- None in the pre-hospital setting

Potential Complications:

- In the following instances readings may be unobtainable or inaccurate
  - Hypotension (value may be falsely low)
  - Hypothermia (value may be falsely low)
  - carbon monoxide poisoning (value may be falsely high, use CO-Oximetry if available)
  - Cyanide poisoning (value may be falsely normal or high)
  - anemia; abnormally low hemoglobin (value may be falsely high)
  - motion
  - incorrect placement
  - peripheral vascular disease, or those abnormalities which result in poor tissue perfusion
  - direct arterial compression to extremity to which sensor is applied (i.e., BP cuff, tourniquet)
  - increased levels of methemoglobin (e.g. benzocaine toxicity, nitrate/nitrite poisoning)

Equipment:

- System approved Pulse Oximeter
- Appropriate sensor (probe) for unit and type of patient

Procedure:

- Assess airway and manage as indicated
- Select appropriate sensor (i.e., adult, pediatric, ear, forehead)
- Connect the probe to the device according to manufacturer instructions
- Turn unit on and apply sensor to appropriate appendage on patient
- Titrate oxygen based on patient assessment , history, and oxygen saturation levels

Target SPO2 between 94% and 98% (92% if history of COPD)

Respiratory Assessment / Findings	**Oxygen Administration**
Adequate rate/depth, minimal distress, mild hypoxia, baseline SPO_2 92% - 94% (88% - 91% COPD)	Low FiO_2
Adequate rate/depth, moderate/severe distress, mild hypoxia, baseline $SPO_2 < 92\%$ (< 88% COPD)	High FiO_2
Inadequate rate/depth with moderate/severe distress, unstable	High FiO_2 by BVM ventilation

Note: if the patient's condition allows, obtain the patient's oxygen saturation level on room air

Region VIII Procedure Manual
Section B

Procedure: Automatic Transport Ventilators	**Section:** B-5
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- The intubated apneic adult patient who requires ventilatory support
- Apneic pediatric patient as approved by Medical Control

Contraindications:

- Suspected pneumothorax or tension pneumothorax
- Traumatic Arrest
- Children < 5 years of age
- Pulmonary over pressurization injury (i.e., blast or water ascent injury)
- Airway obstruction
- Needle cricothyroidotomy
- Lack of training and competency on ventilator/equipment

Potential Complications:

- Rapid depletion of oxygen cylinder
- Undetected increased airway resistance
- Delayed recognition of dislodgement of ET tube
- Delayed recognition of ET Tube Obstruction
- Pneumothorax; tension pneumothorax
- Equipment failure

Equipment:

- System approved automatic transport ventilator (ATV)
- Oxygen source
- BVM
- ET Tube
- Waveform capnography
- In-line suctioning equipment
- 10-20mL syringe

Procedure:

1. Establish definitive airway (ETT or surgical cricothyroidotomy)
2. Assemble ATV and ensure proper working condition
3. Determine proper Tidal Volume and Respiratory Rate:
    - tidal volume: 6-8mL/kg ***ideal body weight*** (***when*** in doubt round down)
    - respiratory rate: adult 12-15 breaths per minute
    - respiratory rate: pediatric 20-24 breaths per minute (or rate ordered by medical control)
4. Continue to assess for proper function of ATV and the return of spontaneous respirations
5. If spontaneous respirations return stop use of the ATV and assist ventilations with BVM
6. Document the initial settings and any subsequent changes on the patient care report.

Note: Follow specific manufacturer instructions regarding cleaning and maintenance

Procedure: Continuous Positive Airway Pressure	**Section:** B-6
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Spontaneously breathing adult patient who is in respiratory distress due to congestive heart failure/pulmonary edema
- Spontaneously breathing adult patient who is in respiratory distress due to asthma/COPD exacerbation
- Respiratory distress with two (2) or more of the following
    - retractions / accessory muscle use
    - respiratory rate > 25/minute
    - SPO_2 < 90%
    - exam consistent with congestive heart failure/pulmonary edema
    - bilateral or diffuse rales or crackles

Contraindications:

- Unconscious, unresponsive, inability to protect airway
- GCS ≤10
- Inability to sit up
- Respiratory arrest or agonal respirations
- Nausea/vomiting
- Hypotension; systolic BP <100 mmHg
- Suspected pneumothorax
- Cardiogenic shock
- Penetrating chest trauma
- Facial anomalies/trauma/burns
- Closed head injury; stroke
- Active upper GI bleeding or history of recent gastric surgery

Potential Complications:

- Respiratory fatigue
- Equipment malfunction
- Patient inability to tolerate
- Hypotension

Equipment:

- System approved CPAP unit
- Compatible CPAP breathing circuit
- Adequate oxygen supply

Procedure:

1. Begin treatment per Adult Pulmonary Edema (Due to Heart Failure) ~~SOP~~ SMO or Adult Acute Asthma COPD with Wheezing Reactive (Lower) Airway Disease SMO
2. Determine if patient meets inclusion criteria
3. Ensure that patient has no contraindications
4. Connect generator to oxygen and turn unit on

Procedure: Continuous Positive Airway Pressure	**Section:** B-6
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

5. Assemble breathing circuit and place on patient while coaching them how to breathe with CPAP unit
6. Set parameters Titrate PEEP setting to achieve desired therapeutic effect (do not exceed 10cm/H_2O)
7. Re-assess
    - discontinue CPAP if hypotension or worsening respiratory distress occur

Procedure: Capnography	**Section:** B-7
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Assessment of quantitative, real-time exhaled carbon dioxide levels in the ventilated or spontaneously breathing patient, or in the patient with a definitive airway or alternative airway device
    - may also be useful in assessment of bronchospasm, shock, and acidosis

Contraindications:

- None in the pre-hospital setting

Potential Complications:

- Waveform accuracy may be affected by:
    - secretions
    - low airflow
    - monitor not calibrated correctly
    - low cardiac output
    - saturation of CO_2 sensor

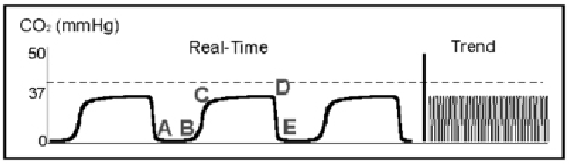
Equipment:

- System-approved capnography monitor
- Tube airway adapter / sensor
- Nasal cannula with capnography flange

Procedure:

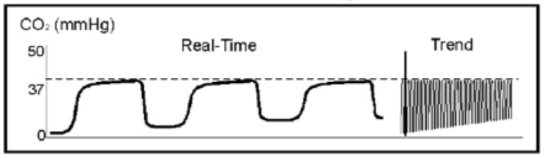
- Assess airway and manage as indicated
- Attach capnography (sensor or cannula as indicated)
- Assess patient's respiratory rate, waveform, and numeric $ETCO_2$ measurement and take corrective action as indicated

Patient Condition	↑ $ETCO_2$	↓ $ETCO_2$
Spontaneously breathing	Hypoventilation, bronchospasm	Hyperventilation/panic attack, compensation for metabolic acidosis, low cardiac output
Apneic with a pulse	Ventilations being assisted too slowly	Ventilations being assisted too rapidly



- A – B Baseline
- B – C Expiratory Upstroke
- C – D Expiratory Plateau
- D $ETCO_2$ value
- D – E Inspiration Begins

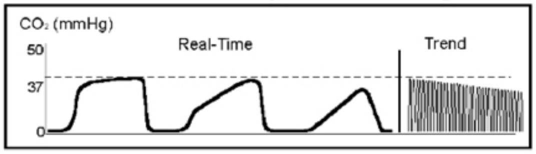
Rebreathing



Possible Causes:

- Faulty expiratory valve
- Inadequate inspiratory flow
- Insufficient expiratory time
- Malfunction of CO_2 absorber system

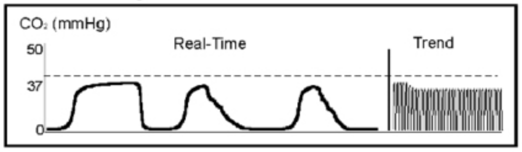
Obstruction in Airway or Breathing Circuit



Possible Causes:

- Partially kinked or occluded artificial airway
- Presence of foreign body in the airway
- Obstruction in expiratory limb of breathing circuit
- Bronchospasm

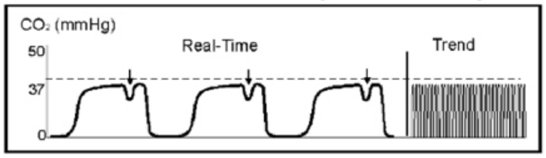
Inadequate Seal Around ET Tube



Possible Causes:

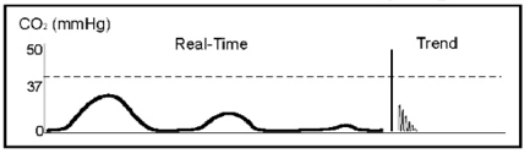
- Leaky or deflated endotracheal or tracheostomy cuff
- Artificial airway is too small for the patient

Muscle Relaxants (curare cleft)



- Appear when muscle relaxants begin to subside
- Depth of cleft is inversely proportional to degree of drug activity

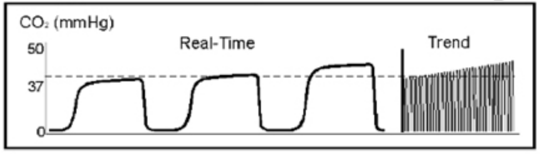
Endotracheal Tube in Esophagus



Possible Causes:

- Missed intubation
- A normal capnogram is the best evidence that the ET tube is correctly positioned
- With ET tube in the esophagus, little or no CO_2 is present

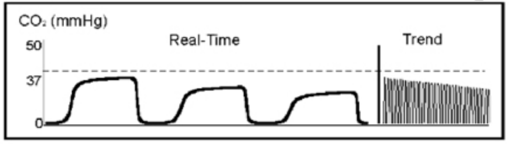
Hypoventilation (Increase in $ETCO_2$)



Possible Causes:

- Decrease in respiratory rate
- Decrease in tidal volume
- Increase in metabolic rate
- Rapid rise in body temperature (hyperthermia)

Hyperventilation (Decrease in $ETCO_2$)



Possible Causes:

- Increase in respiratory rate
- Increase in tidal volume
- Decrease in metabolic rate
- Fall in body temperature

Region VIII Procedure Manual
Section B

Procedure: Capnography	**Section:** B-7
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

https://www.ems1.com/ems-products/medical-equipment/airway-management/articles/capnography-a-vital-sign-for-every-ems-patient-lxGyzWyx8C7QgGYa/

https://www.ems1.com/ems-products/capnography/articles/capnography-in-the-patient-with-severe-neurological-injury-5ksMR7FvD9Fgp9b3/

Procedure: CO-Oximetry	**Section:** B-8
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Known or suspected exposure to carbon monoxide
  - Smoke inhalation
  - Exposure to indoor combustion (e.g. running vehicle, grill indoors, etc.)
  - Headache and malaise affecting multiple individuals

Contraindications:

- None

Potential Complications:

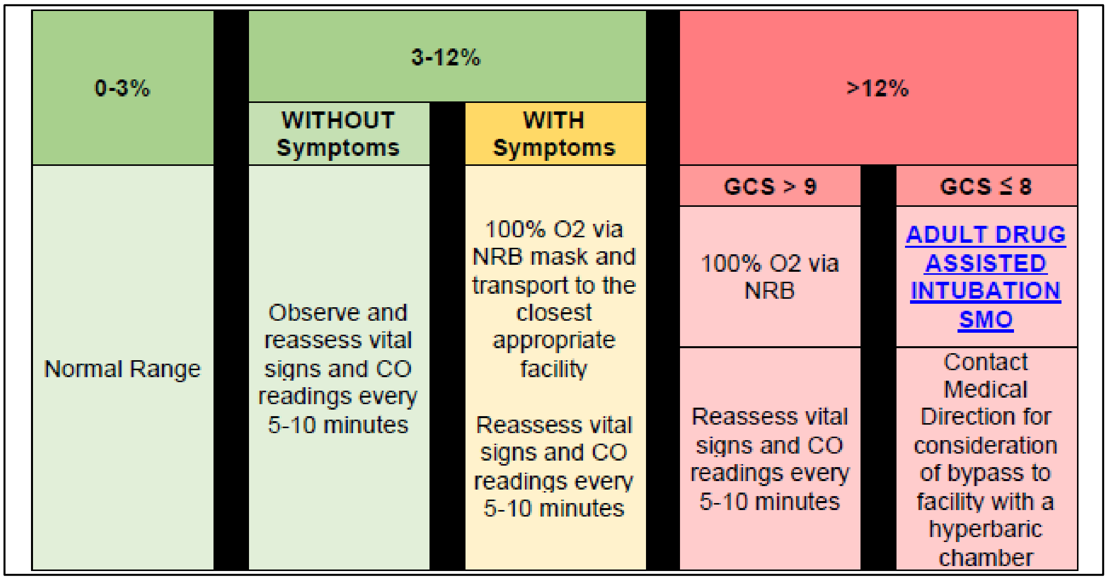
- Accuracy may be affected by:
  - motion
  - incorrect placement
  - poor tissue perfusion

Equipment:

- Masimo Rad-57 CO-Oximeter

Procedure:

- Assess airway and manage as indicated
- Select appropriate sensor
- Apply sensor to patient
- Ensure adequate pleth waveform
- Note and document SpCO reading
- Treat and transport per applicable Adult or Pediatric Carbon Monoxide Exposure SMO



0-3%	3-12%		>12%	
	WITHOUT Symptoms	WITH Symptoms	GCS > 9	GCS ≤ 8
Normal Range	Observe and reassess vital signs and CO readings every 5-10 minutes	100% O2 via NRB mask and transport to the closest appropriate facility Reassess vital signs and CO readings every 5-10 minutes	100% O2 via NRB Reassess vital signs and CO readings every 5-10 minutes	ADULT DRUG ASSISTED INTUBATION SMO Contact Medical Direction for consideration of bypass to facility with a hyperbaric chamber

Procedure: Cardiac Monitoring	**Section:** C-1
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Any patient who meets Region VIII SOP criteria for initiation of ALS Care
- For use as a diagnostic tool during patient assessment

Contraindications:

- None

Potential Complications:

- Equipment malfunction
- Dry electrodes
- Tracing impedance / artifact due to skin condition, hair, electronic interference
- Infection from razor skin prep
- Depletion of battery
- Misplacement of leads
- Misinterpretation of data

Equipment:

- System approved cardiac monitor
    - 3 or 4 wire cable
    - battery (in use and charged spare)
    - AC adapter
    - recording paper
- Electrodes
- Razor

Procedure:

1. Remove clothing from the patient's chest while respecting patient’s modesty
2. Prep patient’s skin if necessary
    - Ensure that skin is dry
    - If needed to ensure adequate electrode contact with skin, shave area intended for electrodes
3. Attach electrodes to wires
4. Remove plastic/paper backing from the adhesive portion of an electrode making sure that the gel in the center is soft and pliable
5. Place the electrodes on the patient
    - 3-wire: RA/LA/LL
        - RA to be placed on right arm or right upper chest
        - LA to be placed on left arm or left upper chest
        - LL to be placed on left leg or left upper quadrant (LUQ) of abdomen
        - Either all electrodes should be placed on the extremities, or all electrodes should be placed on the torso

Procedure: Cardiac Monitoring	**Section:** C-1
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

- 4-wire: RA/LA/RL/LL
    - RA to be placed on right arm or right upper chest
    - LA to be placed on left arm or left upper chest
    - RL to be placed on right leg or right side of abdomen
    - LL to be placed on left leg or left side of abdomen
    - Either all electrodes should be placed on the extremities, or all electrodes should be placed on the torso
    - Placement must be symmetrical; (i.e. shoulder/shoulder, wrist/wrist, lower leg/lower leg, etc.)
- 12-Lead ECG: See Procedure C-2

6. Turn unit on and interpret rhythm
7. Perform 12-Lead as indicated
8. Communicate STEMI early to Medical Control (time sensitive)

Procedure: 12-Lead ECG	**Section:** C-2
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Any patient with known or suspected Acute Coronary Syndrome (ACS)
- Any patient presenting with “classic” signs/symptoms suggestive of cardiac etiology, including but not necessarily limited to:
    - Chest pain or chest pressure
    - Radiating pain to arms, neck, or jaw
    - Palpitations or abnormal sensation in chest
    - Shortness of breath in absence of obvious respiratory etiology
    - Pallor and/or diaphoresis
- Any patient presenting with “atypical” signs and symptoms of acute coronary syndrome (ACS), including but not necessarily limited to:
    - Shortness of breath of unknown etiology
    - Syncope or near syncope
    - Dizziness/lightheadedness
    - Epigastric pain
    - Sudden onset nausea/vomiting
    - Upper back pain of unknown etiology
    - Pallor or flushing
    - Sweating/diaphoresis at rest
- Adult patient presenting with:
    - Marked hypotension or marked hypertension of unknown etiology
    - Marked bradycardia or marked tachycardia of unknown etiology
    - Any junctional or ventricular dysrhythmia
    - Any type of AV block
- Suspected stroke

Contraindications:

- None in the pre-hospital setting

Potential Complications:

- Equipment malfunction
- Dry electrodes
- Tracing impedance / artifact due to skin condition, hair, electronic interference
- Infection from razor skin prep
- Misplacement of leads
- Misinterpretation of data

Equipment:

- System approved cardiac monitor with 12-Lead capability:
    - 4-wire cable (RA/LA/RL/LL)
    - Wire attachment for precordial leads (V1-V6)
    - battery (in use and charged spare)

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

  - AC adapter
  - recording paper
- Electrodes
- Razor
- Transmission capability (optional)

Procedure:

1. If patient's presentation is consistent with myocardial ischemia, a 12-lead ECG should be acquired as soon as possible
    - Goal to acquire within 10 minutes of patient contact
    - 12-lead should be acquired before administration of nitroglycerin
2. Prep patient's skin as necessary
    - dry, shave area intended for electrodes
3. Attach electrodes to wires
4. Remove plastic/paper backing from the adhesive portion of an electrode, ensure that the gel in the center is soft and pliable
5. Place the electrodes on the patient
    - avoid areas with a large amount of adipose tissue or bony prominences
        - V1 – right sternum, 4th intercostal space
        - V2 – left sternum, 4th intercostal space
        - V4 – midclavicular line, 5th intercostal space
        - V6 – midaxillary line at same level as V4
        - V3 – midway between V2 and V4
        - V5 – midway between V4 and V6
6. Perform 12-Lead as indicated
7. Interpret; communicate STEMI early to Medical Control (time sensitive)
    - Transmit 12-lead to receiving facility as capable

Procedure: Defibrillation	**Section:** C-3
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Ventricular fibrillation
- Monomorphic Ventricular tachycardia without a pulse
- Torsades de Pointes/polymorphic ventricular tachycardia without a pulse
- Unstable torsades de pointes/polymorphic ventricular tachycardia with a pulse

Contraindications:

- Monomorphic Ventricular tachycardia with a pulse
- Absence of a ventricular tachydysrhythmia
- Asystole or pulseless electrical activity (PEA)

Potential Complications:

- Equipment failure
- Accidental contact with patient by EMS provider
- Medication patches
- May pose fire hazard in the presence of pure oxygen, alcohol, or other combustible gasses or liquids
- Damage to implanted cardiac devices
- Conversion of cardiac rhythm to ventricular fibrillation, monomorphic ventricular tachycardia, or torsades de pointes/polymorphic ventricular tachycardia
- Conversion of cardiac rhythm to asystole or PEA

Equipment:

- System approved cardiac monitor with manual defibrillation capabilities
- Appropriately sized pads (defibrillation or multi-function)
    - if using paddles, they must be appropriately sized and used with approved conduction medium (saline gel pads, conductive jelly)
- Razor

Procedure:

1. Position patient supine and away from water, metal, or other conductive surfaces/materials
2. Begin treatment per appropriate Region VIII / System SMO
3. Prep patient's skin as necessary
    a. dry, shave area intended for pads, remove medication patches
4. Apply pads per manufacturer's instructions and at least 1 inch away from implanted devices
5. Select defibrillation mode
6. Select appropriate energy setting per manufacturer instruction
7. Ensure crew safety, always announce "I'm clear, you're clear, we're all clear" and visually confirm that no one is in physical contact with the patient prior to discharging defibrillator
8. Discharge energy

9. Evaluate patient Initiate/resume chest compressions if patient does not immediately regain consciousness
10. Continue treatment per System SMO

Procedure: Synchronized Cardioversion	**Section:** C-4
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Unstable wide complex tachycardia with a pulse
- Unstable supraventricular tachycardia

Contraindications:

- Hemodynamically stable patient
- Pulseless patient
- Sinus tachycardia
- Non-tachycardic heart rhythm

Potential Complications:

- Equipment failure
- Accidental contact with patient by EMS provider
- Medication patches
- May pose fire hazard in the presence of pure oxygen, alcohol, or other combustible gasses or liquids
- Damage to implanted cardiac devices
- Conversion of cardiac rhythm to ventricular fibrillation, ventricular tachycardia, or torsades de pointes
- Conversion of cardiac rhythm to asystole or PEA

Equipment:

- System approved cardiac monitor with synchronized cardioversion capabilities
- Appropriately sized pads suitable for synchronized cardioversion
    - if using paddles, they must be appropriately sized and used with approved conduction medium (saline gel pads, conductive jelly)
- Conductive medium (saline gel pads, conductive jelly)
- Razor

Procedure:

1. Position patient supine or in semi-Fowler’s and away from water, metal, or other conductive surfaces/materials
2. Begin treatment per appropriate Region VIII / System protocol SMO
3. Prep patient’s skin as necessary
    - dry, shave area intended for pads, remove medication patches
4. Apply pads per manufacturer’s instructions and at least 1 inch away from implanted devices
5. Select synchronized cardioversion mode, ensure that each R-wave is marked on the monitor
6. Select appropriate energy setting
7. Ensure crew safety, always announce “I’m clear, you’re clear, we’re all clear” and visually confirm that no one is in physical contact with the patient prior to discharging device

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

8. Re-Confirm that “R-wave” is marked and that the monitor is in “sync” mode
9. Press and hold discharge button until energy is discharged
10. Reassess patient
11. Continue treatment per System protocol
    - If repetition of cardioversion is necessary, re-confirm that sync mode is on, that each R-wave is marked on the monitor, and that the correct energy setting is selected

Procedure: Transcutaneous Pacing – Adult	**Section:** C-5
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Unstable bradycardia with a pulse
    - Sinus bradycardia
    - Atrial fibrillation or atrial flutter with slow ventricular response
    - 2º or 3º AV Block
    - Junctional escape rhythm or junctional bradycardia
    - Idioventricular escape rhythm

Contraindications:

- Asymptomatic patient
- Hemodynamically stable patient
- Pulseless patient
- Non-bradycardic patient

Potential Complications:

- Equipment failure
- Incorrectly sized pads/paddles
- Medication patches
- May pose fire hazard in the presence of pure oxygen, alcohol, or other combustible gases or liquids
- Damage to implanted cardiac devices
- Conversion of cardiac rhythm to ventricular fibrillation, ventricular tachycardia, or torsades de pointes
- Conversion of cardiac rhythm to asystole or PEA

Equipment:

- System approved cardiac monitor with transcutaneous pacing capabilities
- Appropriately sized pads suitable for transcutaneous pacing
    - if using paddles, they must be appropriately sized and used with approved conduction medium (saline gel pads, conductive jelly)
- Conductive medium (saline gel pads, conductive jelly)
- Razor

Procedure:

1. Position patient or in semi-Fowler's supine and away from water, metal, or other conductive hazards
2. Begin treatment per Region VIII / System protocol
3. Prep patient's skin as necessary
    - dry, shave area intended for pads, remove medication patches
4. Place patient on cardiac monitor per Procedure C-1
    -

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

   - Most monitors require that the patient be connected to the pads ***and*** the monitor cables in order to initiate and resume TCP
   - If the monitor will not initiate TCP, or if TCP stops suddenly, assess the monitor cables and ensure that they are appropriately attached to the patient

5. Apply pads per manufacturer’s instructions and at least 1 inch away from implanted devices
6. Select pacing mode on cardiac monitor
7. Set initial rate at 70bpm
8. Set mA output to zero and increase to evidence of electrical and mechanical capture
   - electrical – observe pacer spike followed by wide QRS complexes and tall “T-waves”
   - mechanical – palpable radial pulse at 70bpm
9. Continue treatment per System protocol
   - Note: It ***is*** safe to touch a patient while TCP is in progress. Any necessary assessments and interventions may be safely performed while patient is being paced.

Procedure: Automatic External Defibrillator	**Section:** C-6
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Unresponsive and pulseless patient

Contraindications:

- Patient not in cardiac arrest; pulse present
- AED confirms that no shock is advised

Potential Complications:

- Equipment failure
- Accidental contact with patient by EMS provider
- Incorrectly sized pads/paddles
- Medication patches
- Expired pads
- May pose fire hazard in the presence of pure oxygen, alcohol, or other combustible gasses or liquids
- Damage to implanted cardiac devices
- Conversion of cardiac rhythm to ventricular fibrillation, ventricular tachycardia, or torsades de pointes
- Conversion of cardiac rhythm to asystole or PEA

Equipment:

- System approved AED
- Appropriately sized pads compatible with AED in use
- Razor

Procedure:

1. Turn unit on
2. Begin compressions per AHA guidelines
3. Apply pads per manufacturer's instructions and at least ~~1"~~ 1 inch away from implanted devices
4. Connect pads to AED
5. Follow prompts by AED
    - Clear patient
    - Allow AED to analyze the heart rhythm
    - Deliver shock if advised
6. Continue to follow voice prompts
    - if ALS crew arrives, do not interrupt defibrillation cycle(s) to apply monitor / defibrillator
7. Continue treatment per Region VIII / System protocol

Note – American Heart Association – PALS 2010

-

Procedure: Automatic External Defibrillator	**Section:** C-6
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

- For children from 1 to 8 years of age, an AED with a pediatric dose-attenuator system should be used if available
- If an AED with a dose attenuator is not available, a standard AED may be used
- For infants (<1 year of age), a manual defibrillator is preferred
- If a manual defibrillator is not available, an AED with a pediatric dose attenuator is desirable
    - if neither is available, an AED without a dose attenuator may be used

Procedure: Implanted Cardiac Devices	**Section:** C-7
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Treatment of patients with implanted cardiac defibrillators (ICD), automatic implanted cardiac defibrillators (AICD), and (PCD) who are experiencing a cardiac event
- Applies to defibrillation, synchronized cardioversion, and transcutaneous pacing

Contraindications:

- Not applicable

Potential Complications:

- Equipment failure including implanted device
- Accidental contact with patient by EMS provider
- Incorrectly sized pads/paddles
- Medication patches
- Expired pads
- May pose fire hazard in the presence of pure oxygen, alcohol, or other combustible gasses or liquids
- Pacemakers
    - Depleted battery
    - Atrial, ventricular, and dual chamber pacemakers: failure to sense and/or capture
    - Ventricular and dual chamber pacemakers: distortion of ST-segment
- Implanted cardiac defibrillators (ICDs) and automatic implanted cardiac defibrillators
    - Inappropriate discharge of device

Equipment:

- System approved cardiac monitor with defibrillation capabilities
- Appropriately sized pads (defibrillation or multi-function)
    - if using paddles, they must be appropriately sized and used with approved conduction medium (saline gel pads, conductive jelly)
- Razor

Procedure:

1. Place patient in position of comfort
2. Begin treatment per appropriate Region VIII / System protocol
3. Prep patient's skin ~~if~~ as necessary if placement of pads and/or electrodes is indicated
    - dry, shave area intended for pads, remove medication patches
4. If placement of pads is indicated, Apply pads per manufacturer's instructions and at least ~~1"~~ 1 inch away from implanted devices
    - If device is implanted in right upper chest, consider anterior-posterior pad placement
5. Any defibrillation attempts should performed per the usual manufacturer's recommendations and System protocol

Procedure: Implanted Cardiac Devices	**Section:** C-7
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

6. Any synchronized cardioversion attempts should be performed per the usual manufacturer's recommendations and System protocol
    - If patient's ICD/AICD is firing repeatedly, consider administering anxiolytic/amnestic medication (e.g. midazolam) as indicated by System protocol
7. Any transcutaneous pacing attempts should be performed per the usual manufacturer's recommendations and System protocol

Procedure: Mechanical Chest Compression Device - LUCAS	**Section:** C-8
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Delivery of chest compressions during cardiac arrest

Contraindications:

- Patients not in cardiac arrest
- Inability to properly size device to patient

Potential Complications:

- Equipment failure
- User error
- Patient injury from inappropriate application of device
- Depleted battery

Equipment:

- LUCAS Device

Procedure:

1. Don appropriate PPE
2. If patient in cardiac arrest, initiate manual chest compressions and resuscitative efforts per level of licensure
3. Expose patient's chest, remove clothing if able
4. If placement of pads is indicated, apply pads per manufacturer's instructions and at least 1 inch away from implanted devices
5. Apply mechanical chest compressions device to patient per manufacturer's recommendations while minimizing disruptions in CPR
   a. Remove LUCAS back plate from carrying case
   b. While minimizing interruptions in chest compressions, place back plate under patient's back, directly inferior to armpits
   c. Remove the LUCAS from the carrying case, hold the handles on the legs of the device
   d. Ensure that suction cup is attached to compression portion of device
   e. Pull the release rings on legs of device to open claw locks
   f. While minimizing interruptions in chest compressions, attach LUCAS device to back plate while holding claw locks open, allow claw locks to close once device is attached to back plate
   g. Ensure that lower edge of suction cup is immediately superior to the bottom of the sternum
   h. Place device in 'adjust' mode, allow device to adjust on patient
   i. Once device is appropriately adjusted, initiate mechanical chest compressions as appropriate
6. Assess for mechanical pulse during chest compressions
7. Resume resuscitative efforts per appropriate SMO, pause device as needed during pulse checks
8. Continually reassess remaining life of battery, change batteries as needed

Region VIII Procedure Manual
Section C

Procedure: Mechanical Chest Compression Device - AutoPulse	**Section:** C-9
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:
- Delivery of chest compressions during cardiac arrest

Contraindications:
- Patients not in cardiac arrest
- Inability to properly size device to patient

Potential Complications:
- Equipment failure
- User error
- Patient injury from inappropriate application of device
- Depleted battery

Equipment:
- ZOLL AutoPulse Device

Procedure:
1. Don appropriate PPE
2. If patient in cardiac arrest, initiate manual chest compressions and resuscitative efforts per level of licensure
3. Expose patient’s chest, remove clothing if able
4. If placement of pads is indicated, apply pads per manufacturer’s instructions and at least 1 inch away from implanted devices
5. Apply mechanical chest compressions device to patient per manufacturer’s recommendations while minimizing disruptions in CPR
    a. Power on AutoPulse device, ensure that no user advisory, fault, or system error messages occur on the display
    b. If AutoPulse display indicates that it is ready for use, prepare to place device on patient
    c. If patient is wearing clothing, sit patient up and cut down back of clothing
    d. While patient is sitting up, place AutoPulse beneath patient
    e. Lay patient down into supine position, remove clothing from torso
    f. Ensure that patient is centered on device and that armpits are aligned with positioning guides
    g. Close the LifeBand around the patient’s chest
        i. Place band 1 on top of patient’s chest
        ii. Locate mating slot of band 2 over alignment tab 1
        iii. Press the bands together and engage the Velcro fastener
        iv. Lift up the LifeBand to its fullest extension, ensure that there are no twists, folds, or obstructions

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

        v. Center the LifeBand on the patient’s chest over the area upon which manual chest compressions would be performed
        vi. Press and release the Start/Continue button once; the AutoPulse automatically adjusts the bands to the patient’s chest
        vii. If device is properly positioned and it is safe to do so, initiate mechanical chest compressions

6. Assess for mechanical pulse during chest compressions
7. Resume resuscitative efforts per appropriate SMO, pause device as needed during pulse checks

Procedure: IV Cannulation / Jugular Vein Cannulation	**Section:** D-1
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Administration of IV fluids
- Administration of IV medication

Contraindications:

- Injury, infection, edema of the limb
- Lymphadenopathy
- Mastectomy on intended side
- Fistula on same extremity
- PICC line on same extremity
- Failed IV attempt superior to intended site

Potential Complications:

- Local
  - Infection, air embolism, infiltration, occlusion, vein irritation, thrombophlebitis, cellulitis, hematoma, and nerve, tendon, and/or ligament damage
- Systemic
  - arterial puncture, allergic reaction, pyrogenic reaction, circulatory overload, air embolism, vasovagal reaction, catheter shear

Equipment:

- IV start kit
  - 2% chlorhexidine/70% alcohol, tourniquet, tape, transparent dressing, 2x2
- Needleless IV extension / saline lock
- 10 mL saline flush
- 1,000 mL normal saline
- Macro drip tubing (10 gtts/mL or 15 gtts/mL)
- Angiocatheter with needle safety mechanism
- Arm board (optional)

Procedure: saline lock with and without bag/tubing

1. Explain procedure to patient
2. Prepare equipment using clean technique
3. Remove protective cap, flush IV extension / saline lock and replace protective cap
4. Identify appropriate potential insertion site in consideration of patient's size, vasculature, presenting problem, and indicated IV fluid and medication therapies:
   - trauma
   - fluid replacement
   - medication considerations
5. Apply constricting band
   - maximum time $\leq$ 2 minutes

- If external jugular access is being attempted, place patient in Trendelenberg position if not contraindicated by patient condition. This will increase blood-flow through the vein.
    - DO NOT place constricting band if external jugular venous access is being attempted
    - Contraindications to placing patient in Trendelenberg position include:
        - Head injury or suspected increased intracranial pressure
        - Suspected stroke
        - Respiratory distress
        - Inability to maintain airway
        - Marked hypertension
        - Vomiting
        - Patient inability to tolerate

6. Palpate and identify suitable vein
7. Cleanse site according to Aseptic Technique for Invasive Procedure, # S-1
8. Select suitable angiocatheter and remove from package maintaining needle sterility
    - inspect angiocatheter for burrs
    - loosen angiocatheter from hub with a twisting motion
9. Stabilize the vein and extremity
10. Warn patient to expect to feel a needle stick
    - If attempting external jugular venous access, immediately prior to venipuncture, request that patient bear down if possible and not contraindicated. This will increase blood-flow through the vein.
        - DO NOT request that patient bear down in the following circumstances:
            - Head injury or suspected increased intracranial pressure
            - Suspected stroke
            - Bradycardia
            - Respiratory distress
            - Marked hypertension
            - Vomiting
            - Patient unable to tolerate
11. Insert with bevel up and a 15° to 30° angle
12. Feel for a “pop” as needle enters vein; assess for dark red blood in flash chamber
13. Lower needle and complete insertion
14. Stabilize needle and slide catheter forward until hub touches skin
15. Release constricting band, if applicable
16. Occlude vein proximal to catheter
17. dispose of needle into sharps container
18. Remove protective cap of saline lock and attach to angiocatheter
19. Flush saline lock with remaining saline
    - clamp extension tubing
    - assess for signs of local complications

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

20. Apply occlusive dressing over insertion site of angiocatheter
21. Secure saline lock and tubing as appropriate to insertion site
22. Apply arm board (optional)
23. Re-assess patient
    - Assess IV site for:
        - Blood return upon aspiration of flush
        - Pain upon flushing the IV
        - Resistance upon flushing IV
        - Swelling or redness to IV site
    - If success of IV attempt is not certain, remove angiocatheter, apply a pressure dressing, and reattempt IV access at a different suitable site if appropriate and patient allows
24. If IV fluids are indicated:
    - attach macro drip tubing to 1,000 mL bag of normal saline
    - prime tubing to remove all air bubbles
    - connect tubing to saline lock
    - unclamp saline lock
    - open tubing and adjust flow rate
    - re-assess patient

Procedure: IO Cannulation	**Section:** D-2
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- When intravenous fluids and/or life-saving medications are needed **AND**
- A peripheral IV cannot be established in 90-seconds or in two (2) attempts **AND**
- The patient is unresponsive to verbal stimuli **AND**
- The patient exhibits signs of non-hypoglycemic shock, or hypoperfusion
  - shock, arrest, or impending arrest

Contraindications:

- Patients who are responsive to verbal stimuli
- Inability to locate anatomical landmarks
- Infection or fracture at desired site
- History of IO attempt in intended limb within past 24 hours
- Prosthesis or signs of orthopedic surgery at site of procedure
  - Including known history of knee replacement or presence of surgical scar near desired site
- Osteogenesis imperfecta
- Weight ≤ 3kg (EZ-IO)

Potential Complications:

- Insertion into joint space
- Local
  - Infection, infiltration, extravasation, occlusion, osteomyelitis, cellulitis, hematoma, and nerve, bone fracture
- Systemic
  - pyrogenic reaction, circulatory overload, embolism,

Insertion Site:

- Humeral head (preferred)
- Tibial tuberosity

Equipment:

EZ-IO (> 3 kg)	**Manual Needle (≤ 6 years old)**
• EZ-IO® Driver • EZ-IO AD® or EZ-IO PD® Needle Set ○ needle ○ 90° extension tubing ○ wrist band ○ NeedleVISE® sharps block • EZ-IO® stabilizer (optional)	• Disposable bone marrow aspiration needle ○ 14-18 gauge • Chlorhexidine skin prep • 10 mL saline flush • 1,000 mL normal saline • Regular IV tubing

• Chlorhexidine skin prep • 10 mL saline flush • 1,000 mL normal saline IV fluid • Regular drip IV tubing • 4x4's and tape • Sterile gloves • Pressure infuser	• 4x4's and tape • Sterile gloves • IV extension tubing / saline lock ○ do not open EZ-IO® needle set for extension tubing; use single package • Pressure infuser

Procedure:

EZ-IO	Manual Needle
1. Select appropriately sized needle set • 15mm = 3 kg to 39 kg • 25 mm = > 3 kg • 45 mm = > 40 kg 2. Unlock clamp on extension tubing and prime with normal saline 3. Prime 1,000 mL bag of normal saline with macro drip tubing 4. Place pressure infuser around normal saline bag, do not inflate 5. Attach needle set to driver 6. Landmark insertion site 7. Cleanse site according to Aseptic Technique for Invasive Procedure, # 1-1 8. With finger(s) off trigger, Push needle set through skin at 90^{O} angle until tip touches bone 9. Squeeze trigger and apply moderate steady pressure 10. Advance needle set and release trigger • Pediatrics: release trigger when sudden "give" or "pop" is felt, indicating entry into medullary space • Adult: advance approximately 1-2 cm after entry into medullary space 11. Stabilize hub, disconnect driver, and remove stylet • place stylet into NeedleVISE® or sharps containment 12. Optional: place EZ-IO® stabilizer over hub; adhere to skin after step # 15 13. Attach extension tubing to hub 14. Flush needle set with remaining saline and assess for signs of infiltration 15. Disconnect syringe 16. Attach primed IV set to extension tubing 17. Assure all clamps are open and fully open IV tubing roller clamp 18. Inflate pressure infuser as needed to maintain desired flowrate of IV fluids 19. Secure hub with 4x4's and tape if EZ-IO® stabilizer is not utilized in step #12	1. Select appropriately sized needle set • 15 g > 9 months of age • 18 g ≤ 9 months of age 2. Unlock clamp on extension tubing and prime with normal saline 3. Prime 1,000 mL bag of normal saline with macro drip tubing 4. Place pressure infuser around normal saline bag, do not inflate 5. Landmark insertion site 6. Cleanse site according to Aseptic Technique for Invasive Procedure, # S-1 7. Stabilize posterior leg opposite of insertion site 8. Push needle set through skin at 90^{O} angle until tip touches bone 9. Use a firm twisting motion to advance needle into the medullary space 10. Stop when a sudden "give" or "pop" is felt • place stylet into sharps containment 11. Attach extension tubing to hub 12. Flush needle set with remaining saline and assess for signs of infiltration 13. Disconnect syringe 14. Attach primed IV set to extension tubing 15. Assure all clamps are open and fully open IV tubing roller clamp 16. Inflate pressure infuser as needed to maintain desired flowrate of IV fluids 17. Secure hub with 4x4's and tape

Confirm catheter placement with the following recommended methods:

stability of catheter in the bone
ability to aspirate after flush
adequate flow rate

Region VIII Procedure Manual
Section D

Procedure: IV Push Medication	**Section:** D-3
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Whenever an immediate drug effect is necessary
- Administration of drugs which cannot be diluted
- Administration of drugs which cannot be given via a less invasive route
- To achieve peak drug levels in the bloodstream in patients with impaired absorption

Contraindications:

- The medication or route is not indicated by patient condition or by Standing Medical Orders (SMOs)
- Known allergy to intended medication

Potential Complications:

- Infection
- Thrombosis
- Allergic reaction / anaphylaxis
- Extravasation / infiltration
- Tissue necrosis
- Inappropriate dose / volume if verbal and visual safety measures are ignored

Equipment:

- Prescribed medication
- Appropriately sized syringe and needle **OR**
- Pre-filled medication syringe
- Alcohol prep pad
- IV flush or 1,000mL bag of normal saline

Procedure:

1. Select appropriate medication per patient condition and SMO
2. Verify allergies or lack thereof
3. Review and confirm the “rights of medication administration” with paramedic peer
4. Check expiration date, package integrity, and medication clarity
5. Vial
    - assemble syringe and needle
    - remove cap and cleanse membrane with alcohol prep pad
    - draw desired dose / volume in to syringe
    - remove needle and discard in sharps container
6. Pre-filled syringe
    - remove caps and thread syringe in to barrel with twisting motion until resistance is met
7. Expel air from syringe
8. Re-verify appropriate dose / volume drawn with paramedic peer
9. Administration through IV with tubing

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

   - cleanse intended injection port with alcohol prep pad
   - occlude fluid flow above injection port
   - attach syringe and depress plunger at appropriate rate for medication
   - flush with 20 mL normal saline
   - release tubing and return fluid flow

10. Administration through saline lock
    - cleanse injection port
    - slide tubing clamp open
    - attach and depress plunger at appropriate rate for medication
    - flush with 20 mL normal saline
    - close slide tubing clamp
11. After each medication bolus, assess:
    - for signs of extravasation / infiltration
    - for signs of allergic reaction
    - for signs of adverse reaction(s)
    - for therapeutic effects of medication
    - pulse, respirations, blood pressure

Procedure: IM Injection	**Section:** D-4
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- When the desired therapeutic effects of a medication could most effectively be achieved via administration through the intramuscular (IM) route
- When an IV cannot be established and IM is an approved route for the medication being administered

Contraindications:

- The medication or route is not indicated by patient condition or by ~~SOP~~ SMO
- May be contraindicated in patients with coagulopathies or those who take anticoagulants
- Known allergy to intended medication
- Current injury to extremity of desired site

Potential Complications:

- Infection
- Soft tissue injury
- Allergic reaction / anaphylaxis
- Inappropriate dose / volume if verbal and visual safety measures are ignored
- Compartment syndrome if volume administered is excessive
- Extravasation injury if medication not approved for IM route

Equipment:

- Prescribed medication
- Appropriately sized syringe and needle
- Filter needle (for use with glass ampules)
- Alcohol prep pad

Procedure:

1. Select appropriate medication per patient condition and SMO
2. Verify allergies or lack thereof
3. Review and confirm the “rights of medication administration” with paramedic peer
4. Check expiration date, package integrity, and medication clarity
5. Assemble syringe and needle
    - use filter needle if drawing from glass ampule
6. Cleanse membrane with alcohol prep pad if drawing from vial
    - if drawing from glass ampule, hold neck with gauze or alcohol prep pad and snap away from you
7. Draw desired dose / volume in to syringe
8. Expel air from syringe
9. Re-verify appropriate dose / volume drawn with paramedic peer
10. Identify and cleanse appropriate injection site
    - Deltoid muscle (maximum volume 3mL in adults). Site approved for use in adults.

Procedure: IM Injection	**Section:** D-4
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

  - Vastus lateralis muscle (maximum volume 5mL in adults). Site approved for use in adults, children, and infants.
  - Gluteus maximus muscle NOT approved for medication administration in Region VIII.

11. Stretch skin
12. Insert needle with firm thrust at 90° angle
13. Release skin and aspirate while observing for blood return
14. If no blood return is observed depress plunger at appropriate rate for medication
    - if blood is observed in syringe do not administer; withdraw needle and begin procedure again
15. Remove and properly dispose of needle
16. Apply direct pressure to area
17. After administration assess::
    - for signs of allergic reaction
    - for signs of adverse reaction
    - for therapeutic effects of medication
    - pulse, respirations, blood pressure

Procedure: Auto-Injectors	**Section:** D-5
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Epinephrine: Anaphylaxis
- Mark I / DuoDote Kit: Nerve Agent / Organophosphate Poisoning

Contraindications:

- None when used as indicated

Potential Complications:

- Infection
- Soft tissue injury
- Accidental arterial or venous injection if administered at inappropriate site

Equipment:

- Epinephrine, Mark I, or DuoDote Autoinjector
- Alcohol Prep Pad
- Bandage

Procedure:

1. Don appropriate PPE
2. If possible, remove clothing from leg intended for injection
3. Locate the middle of the vastus lateralis muscle (lateral side of thigh, midway between groin and knee
4. Using sterile technique, clean site intended for injection
5. Hold the auto-injector with needle side pointed downward
6. Remove the safety release on top of the auto-injector by pulling it straight up
7. Stabilize the leg intended for injection
8. Hold the auto-injector against the injection site
9. Push the auto-injector down until a click is felt and heard (the click signals that the injection has started)
10. Hold auto-injector firmly in place without removing it for at least 3 seconds
11. Remove auto-injector from thigh, dispose of in sharps container
12. Massage injection area for at least 10 seconds
13. Place bandage over injection site
14. Reassess patient

Procedure: IV Piggyback	**Section:** D-6
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:
- Used when a medication is to be infused over time

Contraindications:
- The medication or route is not indicated by patient condition or by SMO
- Known allergy to intended medication
- Questionable position and/or patency of IV or IO

Potential Complications:
- Infection
- Soft tissue injury
- Extravasation injury
- Allergic reaction / anaphylaxis
- Inappropriate dose / volume if verbal and visual safety measures are ignored

Equipment:
- 1,000mL bag of 0.9% normal saline
- Prescribed medication
- Secondary IV fluid solution to which medication will be added, or which contains the medication
- 60 gtts/mL secondary IV tubing administration set with extension hook
- Appropriately sized syringe and needle
- Alcohol prep pad
- Tape
- Timekeeping device with second-hand or equivalent

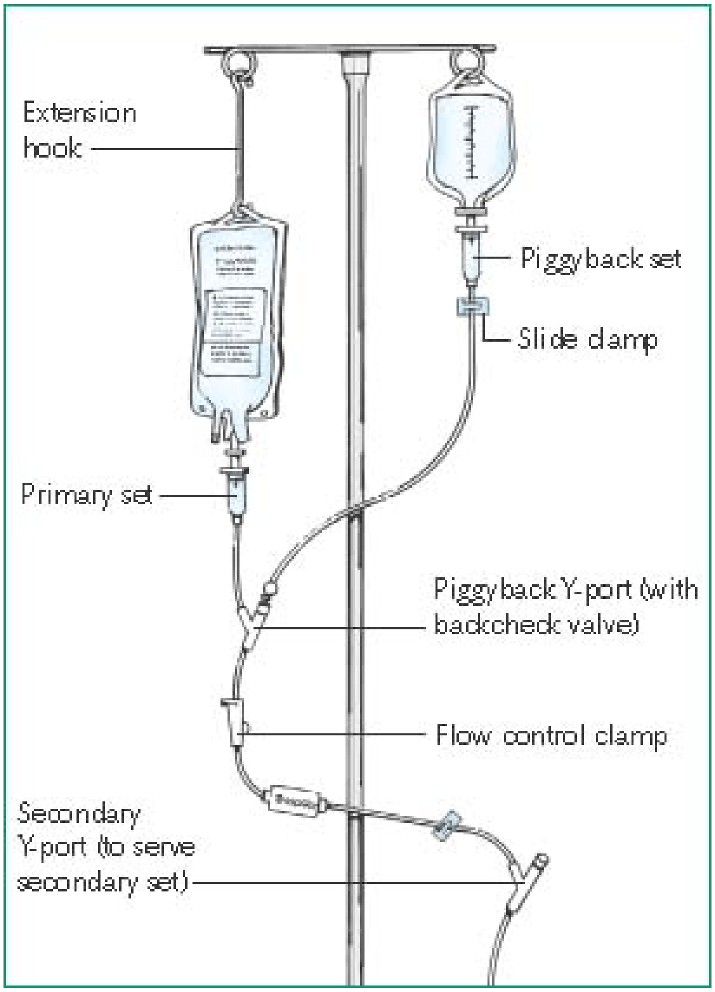
Procedure:
1. Select appropriate medication per patient condition and ~~SOP~~ SMO
2. Verify allergies or lack thereof
3. Review and confirm the “rights of medication administration” with paramedic peer
4. Check expiration date, package integrity, and medication clarity
5. Assemble syringe and needle
6. Cleanse vial membrane with alcohol prep pad
7. Draw desired dose / volume in to syringe
8. Re-verify appropriate dose / volume drawn with paramedic peer
9. Cleanse injection port on secondary IV solution bag
10. Inject medication and gently agitate bag to mix medication into IV fluid
11. Properly dispose of needle
12. Connect secondary tubing to secondary solution/medication bag and prime
13. Suspend1,000 mL primary IV bag from plastic hanger
14. Suspend secondary solution/medication bag higher than primary IV bag
15. Ensure primary IV site patency and fully open roller clamp

Procedure: IV Piggyback	**Section:** D-6
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

16. Cleanse proximal injection port on primary IV tubing
17. Connect secondary tubing to primary tubing
18. Open roller clamp on secondary solution/medication bag and adjust drip per ~~SOP~~ SMO
19. Assess for extravasation / infiltration
20. After administration, adjust drip rate of primary IV bag as indicated by patient condition / ~~SOP~~ SMO
21. After administration assess:
    a. for signs of allergic reaction
    b. for signs of adverse reaction
    c. for therapeutic effects of medication
    d. pulse, respirations, blood pressure



Procedure: IV Piggyback	**Section:** D-6
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Drip Rates of Region VIII IVPB Medications:

- **AMIODARONE**
    - **Indication: Stable Wide-Complex Tachycardia**
    - **Dosage: 150mg over 10 minutes**
    - **Packaging/concentration: 150mg in 100mL D5W**
    - **Drip rate:** $\frac{100\text{mL}}{10\text{min}} = 10mL/min$
        - **10gtts/mL tubing:** $\left(\frac{10mL}{min}\right) x \left(\frac{10\text{gtts}}{\text{mL})}\right) = \frac{100gtts}{min}$
            - $\left(\frac{100\text{gtts}}{\text{min}}\right) x \left(\frac{1\text{min}}{60\text{ sec}}\right) = \mathbf{5\ drops\ every\ 3\ seconds}$
        - **60gtts/mL tubing:** $\left(\frac{10mL}{min}\right) x \left(\frac{60\text{gtts}}{\text{mL})}\right) = \frac{600gtts}{min}$
            - $\left(\frac{600\text{gtts}}{\text{min}}\right) x \left(\frac{1\text{min}}{60\text{ sec}}\right) = \mathbf{10\ drops\ per\ second}$

- **MAGNESIUM SULFATE**
    - **Indications: Pre-eclampsia/eclampsia, severe asthma/COPD exacerbation, Torsades de Pointes**
    - **Dosage:**
        - **Pre-eclampsia, severe asthma/COPD exacerbation: 2 grams over 10 minutes**
        - **Eclampsia, Torsades de Pointes: 2 grams over 2 minutes**
    - **Packaging/concentration: 2g/50mL, 2g/100mL**
    - **Drip rate:**
        - **2 grams over 10 minutes**
            - **2g/50mL:** $\frac{50\text{mL}}{10\text{min}} = 5mL/min$
                - **10gtts/mL** $\left(\frac{5\text{mL}}{\text{min}}\right) x \left(\frac{10\text{gtts}}{\text{mL}}\right) = 50gtts/min$
                    - **5 DROPS EVERY 6 SECONDS**
                - **60gtts/mL** $\left(\frac{5\text{mL}}{\text{min}}\right) x \left(\frac{60\text{gtts}}{\text{mL}}\right) = 300gtts/min$
                    - **5 DROPS PER SECOND**
            - **2g/100mL:** $\frac{100\text{mL}}{10\text{min}} = 10mL/min$
                - **10gtts/mL** $\left(\frac{10\text{mL}}{\text{min}}\right) x \left(\frac{10\text{gtts}}{\text{mL}}\right) = 100gtts/min$

            - **5 DROPS EVERY 3 SECONDS**
        - **60gtts/mL** $\left(\frac{100\text{mL}}{\text{min}}\right) x \left(\frac{60\text{gtts}}{\text{mL}}\right) = 600gtts/min$
            - **10 DROPS PER SECOND**

- **<u>2 grams over 2 minutes</u>**
    - **2g/50mL:** $\frac{50\text{mL}}{2\text{min}} = 25mL/min$
        - **10gtts/mL** $\left(\frac{25\text{mL}}{\text{min}}\right) x \left(\frac{10\text{gtts}}{\text{mL}}\right) = 250gtts/min$
            - $\left(\frac{250\text{gtts}}{\text{min}}\right) x \left(\frac{1\text{min}}{60\text{ sec}}\right) =$
            - ***25 DROPS EVERY 6 SECONDS***
            - **4.17 DROPS EVERY SECOND**
        - **60gtts/mL** $\left(\frac{25\text{mL}}{\text{min}}\right) x \left(\frac{60\text{gtts}}{\text{mL}}\right) = 150gtts/min$
            - $\left(\frac{150\text{gtts}}{\text{min}}\right) x \left(\frac{1\text{min}}{60\text{ sec}}\right) =$
            - ***5 DROPS EVERY 2 SECONDS***
    - **2g/100mL:** $\frac{100\text{mL}}{2\text{min}} = 50mL/min$
        - **10gtts/mL** $\left(\frac{50\text{mL}}{\text{min}}\right) x \left(\frac{10\text{gtts}}{\text{mL}}\right) = 500gtts/min$
            - $\left(\frac{500\text{gtts}}{\text{min}}\right) x \left(\frac{1\text{min}}{60\text{ sec}}\right) =$
            - **25 DROPS EVERY 3 SECONDS**
            - **8.33 DROPS EVERY SECOND**
        - **60gtts/mL** $\left(\frac{500\text{mL}}{\text{min}}\right) x \left(\frac{60\text{gtts}}{\text{mL}}\right) = 3000gtts/min$
            - $\left(\frac{3000\text{gtts}}{\text{min}}\right) x \left(\frac{1\text{min}}{60\text{ sec}}\right) =$
            - **50 DROPS PER SECOND**

Procedure: IV Piggyback	**Section:** D-6
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

- **DOPAMINE**
    - **Indications: Cardiogenic shock, neurogenic shock, distributive shock, unstable bradycardias**
    - **Dosage: 5-20mcg/kg/min**
    - **Packaging/concentration: 800mg/500mL (1,600mcg/mL)**
    - **Drip rate: Variable depending on patient's weight and desired therapeutic effects,**
        - **REFER TO CHART IN SMOs FOR WEIGHT-BASED DOSING OF 1,600mcg/mL CONCENTRATION**
            - **4 drops every second = 240gtts/min**
            - **3 drops every second = 180gtts/min**
            - **2 drops every second = 120gtts/min**
            - **1 drop every second = 60gtts/min**
            - **1 drop every 2 seconds = 30gtts/min**
            - **1 drop every 3 seconds = 20gtts/min**
            - **1 drop every 4 seconds = 15gtts/min**
            - **1 drop every 5 seconds = 12gtts/min**
            - **1 drop every 6 seconds = 10gtts/min**
            - **1 drop every 10 seconds = 6gtts/min**

Body Weight		Dopamine mcg / kg / min			
		5	10	15	20
Lbs	Kg	mcgtts / min ↓	mcgtts / min ↓	mcgtts / min ↓	mcgtts / min ↓
80	36	7	14	20	27
100	45	9	17	26	34
120	55	10	20	31	41
140	64	12	24	36	48
160	73	14	27	41	55
180	82	15	31	46	61
200	91	17	34	51	68
220	100	19	38	56	75
240	109	20	41	61	82
260	118	22	44	66	89
280	127	24	48	72	95

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

- **Tranexamic Acid**
  - **Indications: Suspected or known hemorrhage with hypotension (90mmHg) AND arrival time at a Level 1 Trauma Center >30 minutes from onset of injury.**
  - **Dosage:**
    - **1g in 100mL over 10 minutes**
  - **Packaging/concentration: 1g in 10mL**
    - **Requires injection into 100mL 0.9% normal saline**
  - **Drip rate:**
    - **1 gram over 10 minutes**
      - **1g/100mL:** $\frac{100\text{mL}}{10\text{min}} = 10mL/min$
        - **10gtts/mL** $\left(\frac{10\text{mL}}{\text{min}}\right) x \left(\frac{10\text{gtts}}{\text{mL}}\right) = 100gtts/min$
          - **5 DROPS EVERY 3 SECONDS**
        - **60gtts/mL** $\left(\frac{100\text{mL}}{\text{min}}\right) x \left(\frac{60\text{gtts}}{\text{mL}}\right) = 600gtts/min$
          - **10 DROPS PER SECOND**
- **Cyanokit (Hydroxocobalamin)**
  - **Indications: Known or suspected cyanide poisoning**
  - **Dosage:**
    - **5g in 200mL over 15 minutes**
  - **Packaging/concentration: 5 grams in vial**
    - **Requires injection of 200mL 0.9% normal saline into vial containing 5 grams of hydroxocobalamin (diluent not included in kit)**
    - **Once 200mL 0.9% normal saline added, repeatedly invert or rock vial for 60 seconds prior to infusion. Do not shake vial. Ensure that no particulate matter remains in solution.**
  - **Drip rate:**
    - **5 grams over 15 minutes**
      - **5g/200mL:** $\frac{200\text{mL}}{15\text{min}} = 13.3mL/min$
        - **10gtts/mL** $\left(\frac{13.3\text{mL}}{\text{min}}\right) x \left(\frac{10\text{gtts}}{\text{mL}}\right) = 133gtts/min$
          - **2.2 Drops per Second**
        - **60gtts/mL** $\left(\frac{13.3\text{mL}}{\text{min}}\right) x \left(\frac{60\text{gtts}}{\text{mL}}\right) = \frac{800gtts}{min}$
          - **13.3 DROPS PER SECOND**

Region VIII Procedure Manual
Section D

Procedure: Medication by Nebulizer	**Section:** D-7
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- To relieve:
    - reactive lower airway disease
    - partial upper airway obstruction / epiglottitis
    - wheezing associated with inhalation injury, bronchospasm, and or pneumonia

Contraindications:

- The medication or route is not indicated by patient condition or by SMO
- Known allergy to medication

Potential Complications:

- Allergic reaction / anaphylaxis
- Inappropriate dose / volume if verbal and visual safety measures are ignored
- Hypokalemia associated with Albuterol
- Tachydysrhythmias, ectopy, hypertension associated with epinephrine

Equipment:

- Prescribed medication
- Small volume nebulizer / HHN
- In-line nebulizer
- Non-rebreather mask
- Oxygen
- Pulse oximetry
- Cardiac monitor
- BVM

Procedure: small volume nebulizer / HHN

1. Provide supplemental oxygen or ventilate as indicated by patient condition
2. Select appropriate medication per patient condition and SMO
3. Verify allergies or lack thereof
4. Review and confirm the "rights of medication administration" with paramedic peer
5. Check expiration date, package integrity, and medication clarity
6. Instill medication into chamber and assemble nebulizer using all packaged parts
    - Follow manufacturer recommendations regarding maximum allowable volume of fluid in chamber
7. Re-verify appropriate dose / volume with paramedic peer
8. Attach tubing to oxygen source
9. Have patient hold the nebulizer to self-administer medication
10. Adjust oxygen flow rate to achieve mist (typically 4-8LPM)
    - increasing oxygen flow above manufacturer recommendation may decrease efficacy of nebulizer, thereby decreasing the dose/volume of medication that the patient receives

Procedure: Medication by Nebulizer	**Section:** D-7
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

11. Coach patient in their breathing
12. During and after administration, assess:
    - oxygen saturation
    - end-tidal CO_2
    - signs of respiratory fatigue
    - ECG for ST-segment and/or T-wave abnormalities
    - for signs of allergic reaction
    - for signs of adverse reaction
    - for therapeutic effects of medication
    - pulse, respirations, blood pressure, breath sounds

Procedure: small volume nebulizer with non-rebreather

1. Provide supplemental oxygen or ventilate as indicated by patient condition
2. Select appropriate medication per patient condition and ~~SOP~~ SMO
3. Verify allergies or lack thereof
4. Review and confirm the “rights of medication administration” with paramedic peer
5. Check expiration date, package integrity, and medication clarity
6. Instill medication into chamber and assemble nebulizer using all packaged parts
    - Follow manufacturer recommendations regarding maximum allowable volume of fluid in chamber
7. Re-verify confirm appropriate dose / volume with paramedic peer
8. Remove reservoir bag from non-rebreather
9. Insert nebulizer chamber directly into bottom of mask
10. Place mask on patient and adjust strap
11. Attach tubing to oxygen source and adjust flow rate to achieve mist (typically 4-8LPM)
    - increasing oxygen flow above manufacturer recommendation may decrease efficacy of nebulizer thereby decreasing the dose/volume of medication that the patient receives
12. Coach patient in their breathing
13. During and after administration assess:
    - oxygen saturation
    - end-tidal CO_2
    - signs of respiratory fatigue
    - ECG for ST-segment and/or T-wave abnormalities
    - for signs of allergic reaction
    - for signs of adverse reaction
    - for therapeutic effects of medication
    - pulse, respirations, blood pressure, breath sounds

Procedure: in-line nebulizer

1. Intubate or place patient on CPAP as indicated by patient condition
2. Select appropriate medication per patient condition and SMO
3. Verify allergies or lack thereof

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

4. Review and confirm the “rights of medication administration” with paramedic peer
5. Check expiration date, package integrity, and medication clarity
6. Instill medication into chamber and assemble nebulizer using all packaged parts
    - Follow manufacturer recommendations regarding maximum allowable volume of fluid in chamber
7. Re-verify confirm appropriate dose / volume with paramedic peer
8. Attach nebulizer tubing to oxygen source
9. Attach nebulizer to endotracheal tube or CPAP mask
10. Attach BVM or CPAP circuit to nebulizer
11. Ensure adequacy of ventilations and misting of medication
12. During and after administration assess:
    - oxygen saturation
    - end-tidal CO_2
    - ECG for ST-segment and/or T-wave abnormalities
13. After administration assess:
    - oxygen saturation
    - end-tidal CO_2
    - signs of respiratory fatigue
    - ECG for ST-segment and/or T-wave abnormalities
    - for signs of allergic reaction
    - for signs of adverse reaction
    - for therapeutic effects of medication
    - pulse, respirations, blood pressure, breath sounds

Region VIII Procedure Manual
Section D

Procedure: Nasal Atomizer	**Section:** D-8
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- When indicated by SMO:
  - rapid administration of medication
  - as an alternate route when an IV cannot be established

Contraindications:

- Medication or route is not indicated per SMO
- Medication not approved for use via the intranasal route
- Epistaxis, nasal congestion, or mucous discharge all prevent mucosal contact of drug
- Destruction of nasal mucosa from surgery or cocaine use

Potential Complications:

- Adverse reaction or allergic reaction to medication
- Incorrect dose and/or volume

Equipment:

- Prescribed medication
- Atomizer
- Syringe
- Medication needle
- Alcohol prep pad

Procedure:

1. Oxygenate / ventilate patient as indicate
2. Select appropriate medication per patient condition and SMO
3. Verify allergies or lack thereof
4. Review and confirm the “rights of medication administration” with peer of equal or higher level of licensure
5. Check expiration date, package integrity, and medication clarity
6. Assemble syringe and needle
7. Cleanse vial membrane with alcohol prep pad
8. Draw desired dose / volume in to syringe
9. Re-confirm appropriate dose / volume drawn with peer of equal or higher level of licensure
10. Disconnect needle and dispose of in sharps container
11. Attach atomizer to syringe
12. Insert atomizer 1.5 cm into nostril and briskly depress plunger
    - maximum 1 mL of fluid volume per nostril
13. After administration assess:
    a. for signs of allergic reaction
    b. for signs of adverse reaction
    c. for therapeutic effects of medication
    d. pulse, respirations, blood pressure

Procedure: Push-dose Epinephrine	**Section:** D-9
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	**Edward – Yes**	Good Sam – No	Loyola – No

Indications:

- Persistent hypotension despite fluid administration (≥500mL) in patients with return of spontaneous circulation (ROSC) from cardiac arrest

Contraindications:

- Absence of ROSC or cardiac arrest
- Normotensive patient
- Hypovolemia or absence of adequate fluid resuscitation
- Ventricular dysrhythmia

Potential Complications:

- Ventricular dysrhythmia
- Tachycardia
- Hypertension

Equipment:

- 1mg/10mL epinephrine syringe (A.K.A. 10mL epinephrine 1:10,000)
- 10mL 0.9% normal saline flush
- Stopcock or needle

Procedure:

1. Retrieve 10mL 0.9% normal saline flush
2. Waste 1mL of 0.9% normal saline from syringe (9mL of fluid should remain in flush)
3. Retrieve preloaded 1mg/10mL epinephrine syringe
4. Assemble preloaded 1mg/10mL epinephrine syringe
5. If stop-cock available:
    a. Connect stop-cock to preloaded 1mg/10mL epinephrine syringe
    b. Connect syringe containing 9mL 0.9% normal saline to stop-cock
    c. Push 1mL from epinephrine syringe into normal saline syringe to make push-dose epinephrine syringe
6. If stop-cock unavailable
    a. Attach needle to preloaded 1mg/10mL epinephrine syringe
    b. Insert tip of needle from epinephrine syringe into syringe containing 9mL normal saline
    c. Push 1mL from epinephrine syringe into normal saline syringe to make 10mL push-dose epinephrine syringe
7. Gently shake syringe to create mixture
8. Label syringe "epi 10mcg/mL"
9. To deliver push-doses of 10mcg of epinephrine, administer 1mL from epi 10mcg/mL syringe

Procedure: Medication Administration Crosscheck (MACC)	**Section:** D-10
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indication:
- Administration of medication to a patient

Contraindications:
- None

Potential Complications:
- Medication administration error

Equipment:
- Calculator (if medication math required)

Personnel:
- Two licensed EMS providers operating within their scope of practice

Procedure:

1. Provider 1, the individual who is to administer the medication, initiates the procedure by stating "medication check"
2. When ready to perform MACC, Provider 2 will reply "ready to proceed with medication administration crosscheck"
3. Provider 1 states "I am going to administer…" followed by the name of the medication and the "rights" of medication and any other pertinent information, including:
    - Patient and their weight
    - Medication name
    - Dosage/rate
    - Route
    - Indication
4. Provider 2 will either concur with Provider 1 on the "rights" of medication administration or will not concur
    - If Provider 2 does not concur, the procedure is to be halted until any disagreement is resolved
    - If Provider 2 does concur, the MACC shall proceed to Step 5
5. Provider 2 shall ask "are there any contraindications?" Provider 1 must then:
    - Check the medication's expiration date
    - Verify that the patient's vitals are appropriate for the medication administration
    - Inquire about and/or confirm any allergies or lack thereof
6. Provider 1 will either identify any contraindications or will not identify any contraindications
    - If any absolute contraindications are identified, the procedure is to be halted, and the medication is to be withheld
    - If any relative contraindications are identified, and one or both providers believe that the benefits of administering the medication outweigh the risks, the crew shall contact online medical control (OLMC), explain the situation, and follow any orders/guidance given

Procedure: Medication Administration Crosscheck (MACC)	**Section:** D-10
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

- If no contraindications are identified, Provider 1 will state "no contraindications," and the MACC shall proceed to step 7

7. Provider 2 will then inquire about the quantity/volume/rate of medication to be administered
8. Provider 1 will state the quantity/volume/rate of medication to be administered and will show the container to Provider 2
9. Provider 2 will, within their scope of practice, verify that the name, concentration, expiration date, and calculated dosage are correct.
    - If Provider 2 does not agree that the name, concentration, expiration date, or calculated dosage are correct, the medication is to be withheld until any disagreement is resolved
    - If Provider 2 verifies that the name, concentration, expiration date, and calculated dosage are all correct, the medication may be administered

Notes:

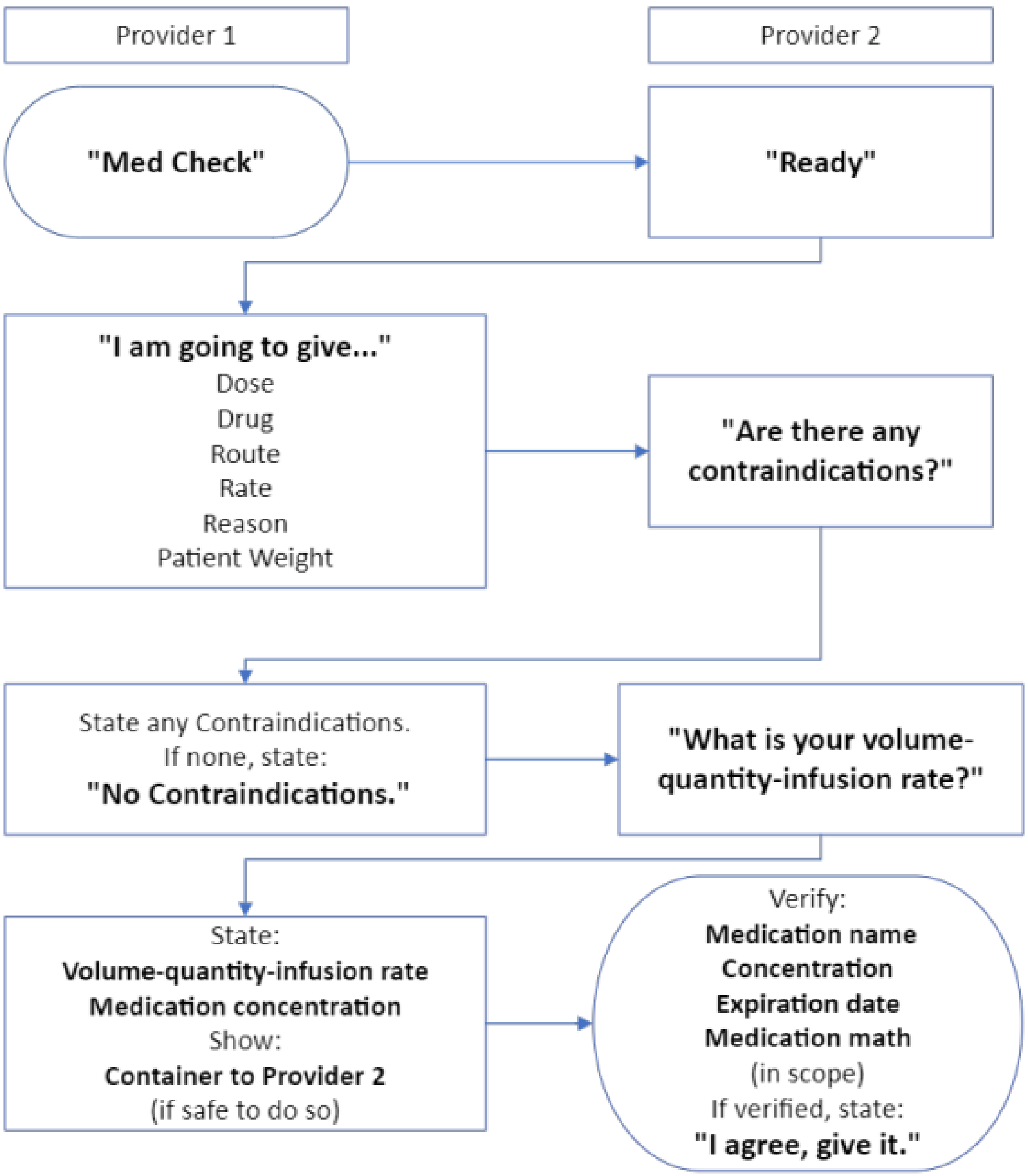
- The MACC must be completed prior to the administration of any medication
- If there is an interruption in the procedure or a change in the patient's condition, Provider 1 must restart the procedure from the beginning
- Any disagreement during any step of the MACC must be resolved before moving on to the next step or administering the medication

Procedure: Medication Administration Crosscheck (MACC)	**Section:** D-10
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

ACCESS Medication Administration Cross Check (MACC)



NEVER give the contents of an unlabeled syringe without visualizing the vial or ampule from which it was immediately drawn.

Region VIII Procedure Manual
Section E

Procedure: Cervical Collar	**Section:** E-1
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- When spine motion restriction (SMR) is indicated

Contraindications:

- Inability to appropriately size cervical collar to patient
- Impaled object in neck
- Cricothyroidotomy
- Major swelling to neck tissues
- Open wound to neck

Potential Complications:

- Airway compromise ~~due to aspiration of vomit~~
- Aspiration of vomit, blood, or secretions
- Worsened c-spine injury if c-collar inappropriately sized
- Increased intracranial pressure if c-collar inappropriately sized
- Patient discomfort

Equipment:

- System approved cervical collar

Procedure:

Stifneck™ Extrication Collar

1. Assess patient and determine the need for cervical collar application
2. Check and document circulation, motor function, and sensation (CMS) in all extremities
3. Maintain adequate airway and ventilation throughout procedure
4. Match the appropriate collar size to the patient using the following guidelines:
    - measure the distance between the top of the patient's shoulder and the bottom plane of the patients chin
    - measure on the cervical collar the distance between the sizing post and the bottom of the rigid plastic band
5. While holding the patient's head immobilized in a neutral position, slide the collar up the patient's chest until the chin is supported by the chin rest in the collar. The chin should cover the plastic fastener in the chin piece
6. While holding adequate stabilization to prevent any torsion of the patient's neck, wrap the collar around the neck of the patient and fasten with the Velcro fasteners. When properly tightened, the collar should be tight enough to hold the patient's chin over the plastic fastener in the chin piece of the collar
7. Ensure that after final tightening the cervical collar does not impede the patient's airway and stabilizes the head in a neutral position
8. Recheck the patient's vital signs and the CMS

9. Place patient either in supine position or in semi-Fowler's position with head-of-bed angle ≤30◦
10. Advise patient to minimize movement until instructed otherwise by a physician
11. When moving patient, one rescuer should manually stabilize c-spine. An adequate number of personnel to ensure a smooth movement during the transfer should be assembled. The transfer should occur at the count of the rescuer who is holding c-spine.

Ambu® Perfit® Ace® Collar

1. Assess patient and determine the need for cervical collar application
2. Check and document circulation, motor function, and sensation (CMS) in all extremities
3. Maintain adequate airway and ventilation throughout procedure
4. Hold collar and flip the chin piece from the back to the front
5. Match the appropriate collar size to the patient using the following guidelines:
    a. measure the distance between the top of the patient's shoulder and the
    b. measure on the cervical collar the distance between the sizing line and the bottom of the rigid plastic band
6. Unlock safety locks on both sides by pulling up
7. Pull out the ratchet latches on both sides
8. Adjust collar to appropriate size
9. Push the ratchet latches in on both sides
10. Push safety locks down
11. Slide the front of the collar along the patient's chest
12. Rest the patient's chin securely in the chin piece in a neutral alignment position
13. Hold the collar in place
14. Wrap the back of the collar around the back of the patient's head/neck
15. Secure Velcro tab
16. Ensure that after final tightening the cervical collar does not impede the patient's airway and stabilizes the head in a neutral position
17. Recheck the patient's vital signs and the CMS
18. Place patient either in supine position or in semi-Fowler's position with head-of-bed angle ≤30◦
19. Advise patient to minimize movement until instructed otherwise by a physician
20. When moving patient, one rescuer should manually stabilize c-spine. An adequate number of personnel to ensure a smooth movement during the transfer should be assembled. The transfer should occur at the count of the rescuer who is holding c-spine.

Procedure: Rapid Extrication	**Section:** E-2
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- This technique may be used when:
    - the vehicle or scene is unsafe
    - the patient cannot be properly assessed before being removed from the vehicle
    - the patient needs immediate interventions that require a supine position
    - the patient is obstructing access to another more seriously injured patient

Contraindications:

- None when indicated

Potential Complications:

- Conversion of C-Spine injury without neurological deficit to injury with deficit

Equipment:

- Backboard
- 3 sets of straps (minimum)
- Cervical collar

Procedure:

1. Rescuer #1
    - positioned inside vehicle if able otherwise reach in vehicle
    - provides manual in-line stabilization of the head and neck
    - applies cervical collar as indicated (may need to be applied once patient is removed)
2. Rescuer #2:
    - positions self outside of the vehicle
    - serves as team leader and gives the commands to coordinate the team's moves
    - provides continuous support of the patient's torso until they are supine on the backboard
    - maintains the torso as a unit, preventing twisting
3. Rescuer #3
    - positions self inside of the vehicle as able
    - carefully move patient's nearer leg laterally without rotating the patient's pelvis or lower spine
    - carefully lifts and moves the second leg next to first leg
4. Rotate patient 90° so that their back is facing out and their feet are on the seat
    - movements should be coordinated and performed in three or four short moves
5. Place the backboard against patient's buttock (do not wedge board under patient)
6. Rescuer #4 holds the backboard in place
7. Rescuers #2 and #3 move the patient onto the backboard
    - as the patient is being removed, Rescuer #3 will need to assume temporary cervical spine control just until Rescuer #1 can reposition themselves outside the vehicle and continue cervical spine control

8. Rescuer #3 moves along the seat to facilitate movement of the patient’s pelvis and lower extremities
9. The patient is positioned on the backboard
10. While maintaining manual stabilization, the patient is moved to a safe location and then appropriately secured to the backboard

Procedure: Backboard Application – Supine Patient	**Section:** E-3
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:
- Moving patient requires the use of long backboard

Contraindications:
- None when indicated

Potential Complications:
- Conversion of C-Spine injury without neurological deficit to injury with deficit
- Patient discomfort and movement
- Airway obstruction
- Aspiration of blood, vomit, or secretions
- Increased intracranial pressure
- Formation of decubitus ulcers

Equipment:
- Backboard
- 3 sets of straps (minimum)
- Cervical collar

Procedure:
1. Assess patient and determine the need for use of backboard
2. If trauma suspected, Manually stabilize head and neck in neutral alignment
3. Check and document circulation, motor function, and sensation (CMS) in all extremities
4. If trauma suspected, Apply cervical collar according to procedure E-1 Cervical Collar
    - do not release manual stabilization until patient is secured to the backboard
    - application of a cervical collar is recommended but not mandatory at this point, assuming adequate manual stabilization
5. Place the long backboard next to the patient
6. Rescuers then position themselves next to the patient opposite the backboard
7. With manual cervical stabilization still in place, log roll the patient as a single unit toward rescuers
    - assess the posterior torso
8. Roll the patient as a single unit onto the backboard
    - center the patient
9. Apply cervical collar according to procedure E-1 Cervical Collar if not already performed
10. Secure the upper torso to the backboard
11. Secure the pelvis and legs to the backboard using padding as needed
12. Pad voids and re-adjust straps as needed
13. Check and document circulation, motor activity and sensation (CMS) in all extremities

Procedure: Traction Splinting – Hare and Sager	**Section:** E-4
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- Immobilization of isolated closed femur fracture
    - stabilize bone ends
    - reduce bleeding
    - relieve pain

Contraindications:

- Fracture of the pelvis, hip, knee, tibia, fibula, ankle, or foot
- Fracture of the hip or pelvis
- Open femur fracture
- Existence of unaddressed life-threats

Potential Complications:

- Soft tissue injuries from pressure from the splint
- Compartment syndrome in the foot resulting in arterial damage and thrombosis
- Peroneal nerve damage

Equipment:

- Hare traction device **or**
- Sager traction device

Procedure:

Hare	Sager
1. Expose the injured limb and check pulse, motor, and sensory function 2. Place splint beside the uninjured limb, adjust attachment point to ankle hitch to proper length • 8 – 12 inches past sole of foot 3. Support the injured limb as your partner fastens the ankle hitch One rescuer places ankle hitch on injured limb and applies manual traction 4. Another rescuer slides splint under the injured limb 5. Pad the groin and fasten the ischial strap 6. Connect loops of ankle hitch to end of splint as one rescuer continues to apply manual traction 7. Carefully tighten ratchet splint to the point that splint holds adequate traction 8. Secure and check support straps 9. Re-check pulse, motor, and sensory function	1. Expose the injured extremity and check pulse, motor, and sensory function 2. Adjust the thigh strap of the splint 3. Estimate the proper splint length and lock shaft 4. Fit the ankle pads to the patient's ankle 5. Place the splint along the inner thigh 6. Secure the ankle harness 7. Snug the cable ring against the bottom of the foot 8. Pull out the inner shaft of the splint to apply traction 9. Secure the limb to the splint 10. Check pulse, motor, and sensory function 11. Secure patient to a long backboard • Depending on design of ambulance, patient may need to be placed into patient compartment feet first to allow for closure of rear doors

10. Secure the patient and splint to long board for transport - Depending on design of ambulance, patient may need to be placed into patient compartment feet first to allow for closure of rear doors	

Procedure: Helmet Removal	**Section:** E-5
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- The helmet and chin strap fail to hold the head securely as with a loose fitting helmet
- The helmet and chin strap design prevent adequate airway control, even after removal of the face piece
- Cervical spine immobilization is not possible unless helmet is removed
    - a securely fitting helmet can provide a degree of stabilization and under the proper circumstances can assist in maintaining the spine in neutral position
- Management of other life threatening illness or injury necessitates removal of the helmet

Contraindications:

- None in the presence of airway compromise or the inability to maintain in-line spinal immobilization

Potential Complications:

- Conversion of C-Spine injury without neurological deficit to injury with deficit
- Facial trauma

Equipment:

- Minimum of two (2) rescuers

Procedure:

1. Position Rescuer #1 above or behind the patient, then manually place and maintain the patient's head in the neutral, in-line position
2. Rescuer #2 is positioned to the side of the patient and removes the chin strap
3. Rescuer #2 then assumes cervical stabilization by placing one hand behind the neck and the second hand on the anterior neck
4. Rescuer #1 now gently pulls the helmet laterally to free patient's ears while pulling up to remove the helmet
    - full face helmets may require a small tilt backwards to clear the patient's nose
5. As the helmet is removed, Rescuer #2 slides their hand up the back of the head to support the weight of the patient's head after helmet is removed
6. Once helmet is completely removed, Rescuer #1 now reassumes manual in-line stabilization
7. Rescuer #1 gently guides patients head down to ground to achieve true, neutral, inline stabilization
8. Rescuer #1 stops if the patient experiences an increase in pain or there is resistance in the neck
    - stop if this occurs and place padding under head and immobilize in place
9. Rescuer #2 then applies an appropriately sized cervical collar

Note:

- Football helmets may not need to be removed when the patient is wearing properly sized shoulder pads. The "grill" on the football helmet is easily removed by either unscrewing or cutting at the plastic keeper tabs
- Team trainers are typically well-trained in helmet removal and often have the necessary tools available; enlist their aid when possible

Procedure: HyFin® Vent Chest Seal	**Section:** E-6
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- For the treatment of open chest wounds (A.K.A. “sucking chest wounds”)

Contraindications:

- None when clinically indicated

Potential Complications:

- Risk of tension pneumothorax is minimal
    - The HyFin Vent® Chest Seal design provides 3-vented channels that prevent airflow into the chest cavity during inspiration while allowing air to escape through the vent channels during exhalation
    - The 3-vent channels allow blood to escape and also provide a backup fail-safe system, as even if two of the three channels become obstructed, the vent will remain fully operational

Equipment:

- HyFin Vent® Chest Seal

Procedure:

1. Wipe wound dry with gauze
2. Grip red tab to peel liner from dressing
3. Place dressing adhesive side down, centering vent over wound
4. Firmly press dressing to skin for good seal
    - assess for additional wounds (multiple entry or entrance/exit) and repeat steps

Procedure: Combat Application Tourniquet (C.A.T.)	**Section:** E-7
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- For the management of uncontrolled hemorrhage from amputation or extremity injury that cannot be controlled with direct pressure and/or pressure points

Contraindications:

- None when clinically indicated

Potential Complications:

- Damage to underlying soft tissue
- Ischemia and rhabdomyolysis to affected extremity
- Nerve damage to affected extremity
- Increased blood loss if applied incorrectly

Equipment:

- Orange Combat Application Tourniquet (C.A.T.)

Procedure:

1. Route the self-adhering band around the extremity, proximal to the wound
2. Pass the free-running end of the band through the inside slit of the friction adaptor buckle
3. Pass the band through the outside slit of the buckle
    - utilizing the friction adaptor buckle will lock the band in place
4. Pull the self-adhering band tight
5. Securely fasten the band back on itself
6. Twist the windlass (rod) until bleeding has completely stopped
7. Lock the windlass (rod) into the clip
8. Secure the windlass (rod) with the strap
    - grasp the strap, pull it tight, and adhere it to the opposite hook on the clip
9. Write time of application on tourniquet

Procedure: Emergency Trauma Dressing (ETD)	**Section:** E-8
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- For the management of uncontrolled hemorrhage

Contraindications:

- None if clinically indicated

Potential Complications:

- No data available

Equipment:

- Emergency Trauma Dressing

Procedure:

1. Open package and place the sterile non-adherent pad over the wound and wrap the bandage around the limb
2. Pull the ETD tight and wrap to cover the pad area by beginning on the edge farthest from the torso
3. If you feel the need for additional pressure
    - twist the bandage so the twisted portion of the bandage is over the pad
    - wrap around the limb
    - twist back
    - finish the wrap
4. Secure the bandage
5. Assess color, motor, and sensation

Region VIII Procedure Manual
Section E

Procedure: QuikClot® Combat Gauze	**Section:** E-9
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- For the management of uncontrolled hemorrhage

Contraindications:

- None if clinically indicated

Potential Complications:

- Clotting agent may not become fully activated if pressure not held for full 3-5 minutes
- Do not cut bandage; use entire roll
    - clotting agent will leak out of bandage if cut

Equipment:

- QuikClot® Combat Gauze

Procedure:

1. Open package, remove gauze, & keep empty package
2. Place gauze over wound and use it to apply pressure
3. Continue to apply pressure for 3-5 minutes or until bleeding stops
4. Wrap & tie bandage to maintain pressure

Note:

More severe and traumatic wounds may require additional dressings. In such cases, multiple QuikClot® devices may be used

Procedure: Broselow® Length-Based Resuscitation Tape	**Section:** F-1
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- To correctly size pediatric patients for resuscitation purposes
    - reduce errors in care

Contraindications:

- Adult patients
- Pediatric patients with contracted lower extremities
- Pediatric patients at the extremes of weight ranges (i.e. emaciated or obese)
    - Manual weight-based medication calculations will be required
    - EMS Provider will need to determine appropriate sizes of equipment based on patient's physique
- Pediatric patients that are longer or larger than can be measured with tape
    - resuscitate based on patient age and weight per SOP

Potential Complications:

- Incorrect use could result in medication dosing errors and/or use of inappropriately sized equipment

Equipment:

- Broselow® Length-Based Resuscitation Tape
- Pediatric resuscitation equipment and medications

Procedure:

1. Place child supine on a flat surface with the color-coded, weight side visible
    - never measure a child in a seated position
2. Use one hand to hold the red end of the tape so it is even with the child's head
    - remember "red to head"
3. While maintaining one hand on the red portion at the top of the child's head, use your free hand to run the tape down the length of the child's body
4. Measure the child's length from head to heel
    - If able, confirm weight approximated by Broselow Tape with patient's parent/guardian
5. Identify appropriate equipment and medication doses based on identified color zone
6. During prearrival report, Communicate color zone to receiving facility so that Emergency Department can better prepare for the patient

Procedure: Use of Restraints	**Section:** G-1
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:

- For the control of violent behavior or behavior that is dangerous to self or others

Handcuffs are to be applied by police officers ONLY. Once applied, the arresting officer with the key must accompany the patient so that they are available in the event that the patient's condition requires immediate removal of the handcuffs

Contraindications:

- Alert and decisional patient
- Unresponsive patient
- Prone position
- All less restrictive methods of controlling patient's behavior (i.e. de-escalation, redirection, etc.) have not been attempted

Potential Complications:

- Chafing, pressure ulcers, skin tears
- Reduced circulation, nerve damage to distal extremity
- Aspiration, restricted breathing
- Bone fractures
- Psychological distress, agitation, depression, humiliation, fear, anger
- Sudden cardiac arrest

Equipment:

- Neoprene / Velcro
- Posey® "soft" restraints

Procedure:

1. Determine the need for the application of restraints
    - Type and extent of restraint should be the minimum required to prevent/control violent behaviors from patient
    - Excessive force should NEVER be used
2. The EMS Provider should ensure that number and capabilities of present personnel are sufficient to safely restrain patient
3. The EMS Provider should attempt verbal de-escalation and/or redirection with therapeutic communication, as appropriate
    - If the situation permits, the EMS Provider should inform the patient of behaviors which will lead to the application of restraints, and should allow ample opportunity for patient to cease those behaviors
4. If attempts at de-escalation and redirection fail, the EMS Provider should choose the safest, least restrictive, and most effective method(s) of physical restraint required to guarantee the safety of the patient and others

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

5. Patient should be placed in supine or semi-Fowler's position
    - Patients should NEVER be restrained in the prone position
    - Patients should NEVER be restrained in the "hog-tied" position
    - Force should NEVER be applied to the head, face, neck, chest, back, or abdomen
    - The patient's ability to ventilate adequately must be assured AT ALL TIMES during and after the restraint process
6. Apply limb restraint(s) and secure each limb individually to the frame of the stretcher
    - Restraints should NEVER be secured to a side-rail
    - Limbs should not be restrained together
    - Patients should NEVER be restrained with both arms above their head
    - EMS Providers must be capable of releasing any and all restraints at any time
    - ALS Providers should consider the use of medication for severe agitation or excited delirium, as appropriate per SMO
7. All extremities in restraints should be assessed for circulation, motor function, and sensation immediately after restraints are applied, and at 15-minute intervals thereafter
8. The patient should be continually monitored following the application of restraints, and should not remain in restraints for any longer than necessary to cease violent behaviors
9. The EMS Provider should thoroughly document:
    - Circumstances and behaviors which led to the application of restraints
    - All efforts to avoid the application of restraints, including attempts at de-escalation and redirection
    - The manner in which the patient was restrained, including type of restraints used
    - Any injuries which were already present prior to the application of restraints
    - Any injuries which were sustained by the patient during the restraint process
    - Any complaints of pain and/or injury voiced by the patient prior to, during, or after the restraint process
    - Patient's behaviors after the restraint process
    - Dosage, route, and site of any medications administered
    - Assessment and reassessment of patient's ventilatory status and vital signs
    - Assessment and reassessment of circulation, motor function, and sensation in extremities

Note:

Handcuffs may be utilized however they must be applied by a police officer. A police officer with the key must ride in the patient care compartment; the handcuff key may not be given to the crew for use during transport

Procedure: Eye Irrigation	**Section:** G-2
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	**Loyola – Yes**

Indications:

- Chemical splash/burn to eye(s)
- Flushing out of foreign body that is not impaled

Contraindications:

- Penetrating trauma to the globe
- Suspected or actual rupture of the globe
    - do not remove impaled object; do not instill tetracaine

Potential Complications:

- Injury to globe secondary to forceful flow
- Infection, contamination, or injury from irrigation device

Equipment:

- 1,000 mL bag normal saline
- Marco drip IV tubing (10 gtt or 15 gtt)
- Towels
- 4x4's
- Basin
- Pain management consideration as indicated by SOP

Procedure:

- Obtain gross visual acuity as able
- Read, count fingers, perceive hand motion, perceive light
- Assess pain scale
    - administer IV/IN/IM pain medication as indicated
- Remove contact lenses if worn; do not delay irrigation if difficult to remove
- Position patient supine
- Instill anesthetic as indicated
- Tilt head slightly to the side to be irrigated
    - use towels or basin to catch runoff
- Irrigate the external area around eye lid
- Gently separate the patient's lids with your thumb and fingers, hold lids open
    - using a 4x4 may help with grip; avoid touching globe with gauze
    - do not apply pressure to globe
- Encourage patient to keep eye(s) open and look in all directions during irrigation
- Hold irrigation tube 1" to 1 ½" from globe
- Irrigate, aiming the stream from the inner toward the outer aspect of the eye at an angle into the lower conjunctival cul-de-sac
    - minimum 500 mL per eye
    - alkali burns require more fluid for a longer period of time
- Reassess gross visual acuity and pain scale
- Repeat steps as indicated/necessary during transport

Region VIII Procedure Manual
Section G

Procedure: Blood Glucose Monitor	**Section:** G-3
Effective Date: 10/1/2025	**Reviewed:** 10/1/2025

System Specific Addendum

CDH – No	Edward – No	Good Sam – No	Loyola – No

Indications:
- Known or suspected diabetic emergency
- Altered mental status

Contraindications:
- None when clinically indicated

Potential Complications:
- Erroneous result typically due to incorrectly-performed procedure

Equipment:
- Microdot® Xtra blood glucose meter
- Microdot® Xtra test strip
- Alcohol prep pad
- Lancing device

Procedure:
- Select the test site
    - use either the pad of the finger or the side
    - avoid finger-tip when possible due to nerve endings
    - avoid thumb and index finger when possible as these are digits used most frequently
- Cleanse area with an alcohol prep pad or chlorhexidine
    - allow area to air dry to avoid contamination of sample and anticoagulant effects of alcohol
- Insert Test Strip into meter
    - do not touch the test zone or contact bars
    - put the vial cap back on right away
    - push the strip in firmly until it stops
    - after 2 seconds, the code number will appear; check that the code on the meter matches the code on the vial
- Lance the site
    - gently squeeze the finger just above the first knuckle to produce an adequate drop of blood
        - squeeze; do not “milk” the finger as this can crush capillary bed and dilute sample with interstitial fluid
- Apply Sample
    - touch and hold the blood drop to the top edge of the test strip until blood has completely filled the test zone
    - do not smear or attempt to scrape blood into the strip
    - once the test zone of the strip is full, the meter will beep (if enabled) and the 10 seconds count down will start
    - if the test zone does not fill up, the count-down will not begin
    - stop the test and retest with a new strip
    - do not add blood to the test zone

Note:

Perform control testing per manufacturer’s instructions

References

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    - All procedures

2. NREMT, Paramedic Psychomotor Competency Manual, lab proficiency skills sheets, 2015 & 2018
    - Direct Orotracheal Intubation Adult
    - Direct Orotracheal Intubation Pediatric
    - Nasotracheal Intubation Adult
    - Supraglottic Airway Device Adult
    - Needle Cricothyroidotomy
    - CPAP and PEEP
    - Trauma Endotracheal Intubation Adult
    - Pleural Decompression (Needle Thoracostomy)
    - Spinal Immobilization Adult (Supine Patient)
    - Spinal Immobilization Adult (Seated Patient)
    - Traction Splinting
    - Intravenous Therapy
    - Intravenous Bolus Medication
    - Intravenous Piggyback
    - Intraosseous Infusion
    - Intramuscular Medication Administration
    - Intranasal Medication Administration
    - Inhaled Medication Administration
    - Glucometer
    - 12-Lead ECG
    - Synchronized Cardioversion
    - Defibrillation
    - Transcutaneous Pacing

3. OSHA 29 CFR 1910.1030
    - BSI / PPE
    - Infection Prevention and Control

4. Prevantics™ Clinical Compendium
    - Aseptic Techniques for Invasive Procedures

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    - King airway

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    - Suction catheter size: an assessment and comparison of three different calculation methods; Russian, Gonzalez, Henry 2013

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    - American Heart Association 2015 Guidelines

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    - Region VIII 2016 Standard Operating Procedures, Adult Initial Medical Care

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    - Allied Healthcare Products, AutoVent 2000 and AutoVent 3000, User Guide

12. Continuous Positive Airway Pressure
    - Region VIII 2016 Standard Operating Procedures, Adult Pulmonary Edema (Due to Heart Failure)

13. 12-Lead ECG
    - American Heart Association

14. Automatic External Defibrillator
    - American Heart Association, 2015, Guidelines
    - American Heart Association, 2010, PALS

15. Implanted Cardiac Devices
    -

16. IO Cannulation
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    - Medscape.com
17. Nasal Atomizer
    - Roberts and Hedges; Clinical Procedures in Emergency Medicine, Elsevier, 6th edition

18. Cervical Collars
    - Ambu Perfit Ace
    - Laerdal

19. Traction Splint – Hare and Sager

- The Traction Splint W. Gandy, JD, LP AND S. Grayson, NREMT-P, CCEMT-P, EMS World 7/31/14

20. MAST / PASG
    - An Evaluation of the Pneumatic Anti-Shock Garment (PASG) In Various Clinical Settings; Robert E. O'Connor, MD, Robert M. Domeier, MD

21. HyFin® Vent Chest Seal
    - North American Rescue

22. CAT Tourniquet
    - North American Rescue

23. Emergency Trauma Dressing
    - North American Rescue

24. QuickClot® Combat Gauze
    - North American Rescue

25. Broselow Resuscitation Tape
    - Enhancing Pediatric Safety Duke University Medical Center, Karen Frush, M.D., P.I. Emergency Medical Services for Children