Out-of-Hospital & Mobile Integrated Healthcare Protocols

August 8, 2022

The Uniform EMS Ordinance, and related Interlocal Agreements, establishes the Metropolitan Area EMS Authority, dba MedStar Mobile Healthcare. In conjunction with each member city's fire or police EMS first-response, the MAEMSA System provides service to more than 1,100,000 residents over 438-square-miles, and responds to approximately 155,000 emergency calls a year. The mission is to provide high quality patient care in an efficient, accountable, and cost effective fashion. To ensure a high standard of clinical care for the System, the Ordinance also establishes the Office of the Medical Director & the Emergency Physicians Advisory Board (EPAB), to provide medical direction and clinical oversight to the entire system.

These protocol's jurisdictional authority pertains to the following members of the MAEMSA System:

Metropolitan Area EMS Authority

MedStar Mobile Healthcare	Bell Helicopter Fire Department
Fort Worth Fire Department	Edgecliff Village Fire Department
Fort Worth Police Department	River Oaks Fire Department
Burleson Fire Department	Saginaw Fire Department
Forest Hill Fire Department	Sansom Park Fire Department
Haltom City Fire Department	Westover Hills Police Department
Haslet Fire Department	Westworth Village Police Department
Lake Worth Fire Department	White Settlement Fire Department
Blue Mound Fire Department	*Lockheed Martin (FW) Fire Department

** EPAB does not provide direct medical oversight for these agencies*

These protocols apply only during official responses within the member jurisdictions, to personnel who are considered to be "On-Duty" by their respective agencies. Agencies responding to mutual aid requests are expected to operate under them as well.

In the case of a regional disaster, providers who normally operate under these protocols will continue to do so, regardless of the location of the disaster, until other instructions can be provided.

Questions regarding the applicability of this document within any specific jurisdiction or for a particular event should be directed to the OMD by calling 817-923-1500 or in writing to the following address:

Office of the Medical Director
2900 Alta Mere Drive
Fort Worth, Texas 76116

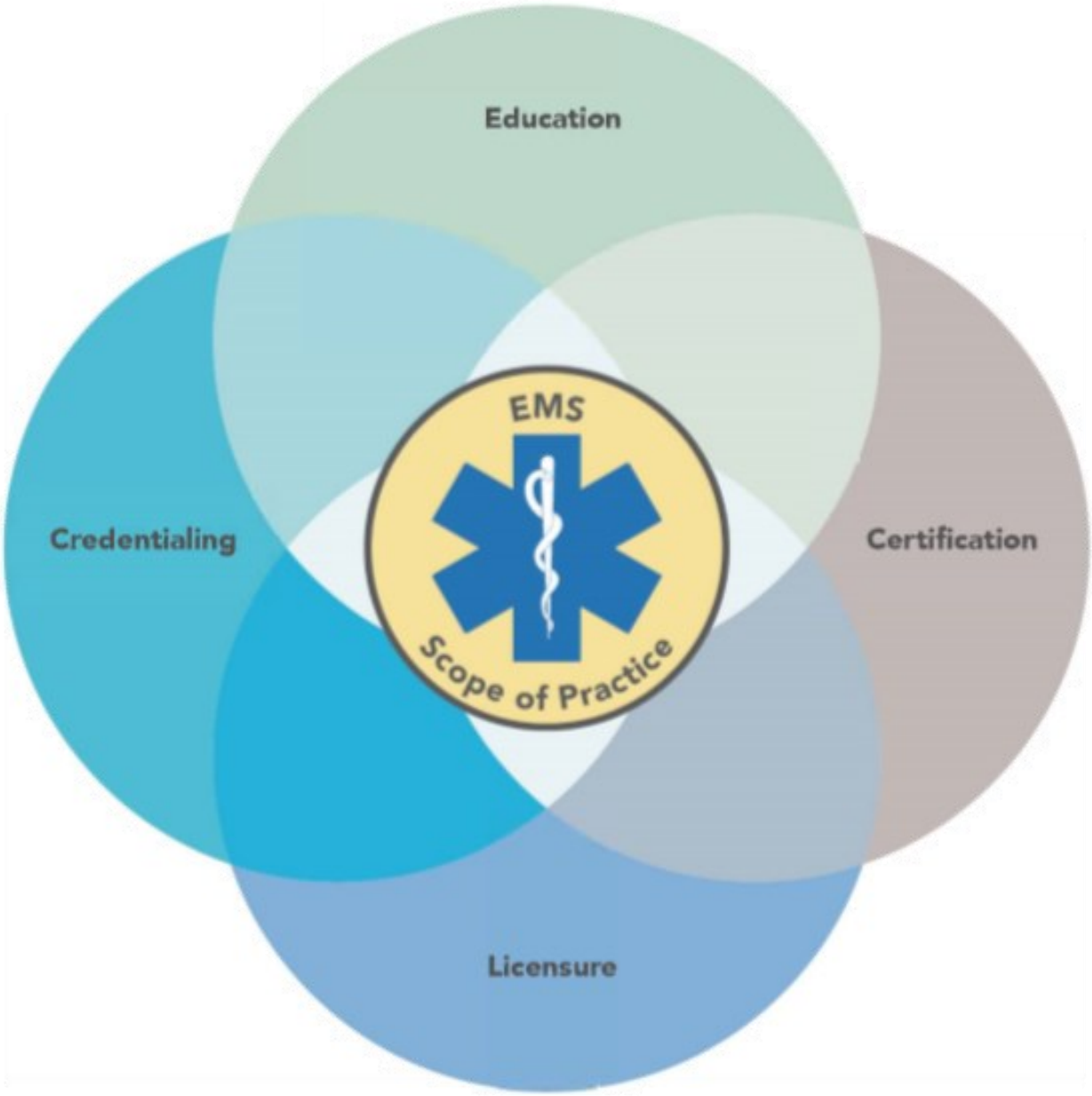
EFFECTIVE:
August 8, 2022

Veer Vithalani, M.D., FACEP, FAEMS
System Medical Director

Scope of Practice

It is the responsibility of each individual clinician to operate within their credentialed scope of practice. Credential level and scope of practice can only be changed by successful completion of the OMD credentialing process. Except when specifically detailed, such as in an OMD-approved training program, no provider may authorize or delegate clinical care to another provider, which is outside of either's scope of practice.

Intermediate credentialed providers may perform Assist/Advanced level skills only after being specifically directed by an Assist or Advanced credentialed provider and shall not make decisions independently on when to perform these skills. Intermediate providers may only administer medications within the basic scope of practice.



State Certification	ECA	EMT-B	EMT-I	EMT-P			
Credential Level	**ECA**	**Basic**	**Intermediate**	**Assist**	**Advanced**	**MIH**	**CCP**
Airway							
Pulse Oximetry		X	X	X	X	X	X
Waveform Capnography		X	X	X	X	X	X
Oxygen therapy (Nasal Cannula or Non-Rebreather Mask)	X	X	X	X	X	X	X
Airway Maneuvers (Head tilt-chin lift, Jaw-thrust)	X	X	X	X	X	X	X
Airway Adjuncts (OPA & NPA)		X	X	X	X	X	X
CPAP/BPAP (BiLevel)		X	X	X	X	X	X
Bag-valve-mask	X	X	X	X	X	X	X
Supraglottic Insertion		X	X	X	X	X	X
Endotracheal Intubation			X	X	X	X	X
Surgical Airway			X	X	X	X	X
Transtracheal Ventilation			X	X	X	X	X
Emergency Tracheostomy Exchange			X	X	X	X	X
Airway Obstruction (manual dislodgement techniques)	X	X	X	X	X	X	X
Airway Obstruction (dislodgement via Magills forceps)			X	X	X	X	X
Gastric tube insertion via SGA port		X	X	X	X	X	X
Orogastric tube placement			X	X	X	X	X
Nasogastric tube placement			X	X	X	X	X
Suctioning - Upper Airway	X	X	X	X	X	X	X
Suctioning - Tracheobronchial via Tracheostomy		X	X	X	X	X	X
Suctioning - Tracheobronchial via Endotracheal Tube			X	X	X	X	X
Needle Decompression			X	X	X	X	X
Drug-Assisted Airway (DAA)					X	X	X
Rapid Sequence Intubation (RSI)							X
High flow nasal cannula via device							X
BiPAP via portable ventilator							X
Cardiovascular							
Cardiopulmonary resuscitation (CPR)	X	X	X	X	X	X	X
Mechanical Compression Device Placement		X	X	X	X	X	X
Blood pressure manual	X	X	X	X	X	X	X
Blood pressure automated		X	X	X	X	X	X
Cardiac monitoring - 12 lead ECG acquisition & transmission		X	X	X	X	X	X
Cardiac monitoring - 12 lead ECG interpretation				X	X	X	X
Automated External Defibrillator (AED) Placement & Use	X	X	X	X	X	X	X
Manual Defibrillation			X	X	X	X	X
Electrical Cardioversion			X	X	X	X	X
Transcutaneous pacing			X	X	X	X	X
Skills - Trauma/Restraint							
Hemorrhage Control (direct pressure, tourniquet, wound packing)	X	X	X	X	X	X	X
Manual Cervical Stabilization & Cervical Collar	X	X	X	X	X	X	X
Spinal Motion Restriction (LSB, Scoop Stretcher, KED)		X	X	X	X	X	X
Extremity stabilization & splinting	X	X	X	X	X	X	X
Traction Splinting		X	X	X	X	X	X
Manual Patient Restraint	X	X	X	X	X	X	X
Skills - Access/Maintenance							
Peripheral intravenous access (extremity, truncal, external jugular)			X	X	X	X	X
Intraosseous initiation (adult, pediatric, tibial, humeral)			X	X	X	X	X
Peripherally Inserted Central Catheter Access (PICC)					X	X	X
Central Catheter Access (Broviac, Central Line) for Emergency					X	X	X
Central Line Catheter Monitoring Only					X	X	X
Skill - Miscellaneous							
Blood glucose monitoring	X	X	X	X	X	X	X
Eye irrigation		X	X	X	X	X	X
Venous blood sampling					X	X	X
Telehealth Consultation Facilitation		X	X	X	X	X	X
Emergency Childbirth	X	X	X	X	X	X	X
Medications							
Aspirin	X	X	X	X	X	X	X
Adenosine				X	X	X	X
Albuterol		X	X	X	X	X	X
Amiodarone				X	X	X	X
Atropine							
Symptomatic bradycardia				X	X	X	X
All other Indications					X	X	X
Calcium Chloride							
Entrapment/Crush/Traumatic Rhabdomyolysis				X	X	X	X
All other Indications					X	X	X
Dexamethasone					X	X	X
Dextrose 10%				X	X	X	X
Diltiazem					X	X	X
Diphenhydramine				X	X	X	X

State Certification	ECA	EMT-B	EMT-I	EMT-P			
Credential Level	ECA	Basic	Intermediate	Assist	Advanced	MIH	CCP
Epinephrine							
Auto-injector Epinephrine (patient or EMS supplied)	X	X	X	X	X	X	X
Intramuscular (anaphylaxis)		X	X	X	X	X	X
Cardiac Arrest				X	X	X	X
Intravenous Push-Dose Pressor				X	X	X	X
Intramuscular (asthma)					X	X	X
Infusion					X	X	X
Fentanyl				X	X	X	X
Glucagon					X	X	X
Oral Glucose	X	X	X	X	X	X	X
Haloperidol					X	X	X
Hydralazine							X
Hydroxocobalamin				X	X	X	X
Ipratropium		X	X	X	X	X	X
Isopropyl Alcohol	X	X	X	X	X	X	X
Ketamine							
For facilitation of pacing/cardioversion				X	X	X	X
Behavioral Emergencies/Excited Delirium					X	X	X
Respiratory Insufficiency/Failure and Airway					X	X	X
Ketorolac				X	X	X	X
Furosemide							X
Lidocaine				X	X	X	X
Magnesium					X	X	X
Methylprednisolone					X	X	X
Midazolam							
Pacing if Ketamine insufficient					X	X	X
Sedation after advanced airway obtained					X	X	X
All Other Indications				X	X	X	X
Naloxone							
Auto-injector	X	X	X	X	X	X	X
Intranasal	X	X	X	X	X	X	X
Intravenous				X	X	X	X
Nicardipine							X
Nitroglycerin		X	X	X	X	X	X
Assist with self-administration of already prescribed NTG & on scene	X						
EMS Supplied Nitroglycerin		X	X	X	X	X	X
Norepinephrine					X	X	X
Normal Saline (0.9%)				X	X	X	X
Ondansetron							
ODT for non-actively vomiting patients		X	X	X	X	X	X
Intravenous				X	X	X	X
Propofol							X
Paralytics (Succinylcholine, Rocuronium)							X
Racemic Epinephrine				X	X	X	X
Sodium Bicarbonate							
Entrapment/Crush/Traumatic Rhabdomyolysis				X	X	X	X
All other Indications					X	X	X
Tranexamic Acid (TXA)					X	X	X
Immunizations		X	X	X	X	X	X
Mobile Integrated Healthcare							
Consultation for Medical Director Refusal						X	X
Point of Care (iSTAT) Laboratory Analysis						X	X
CHF In-Home Diuresis						X	X
Foley Insertion						X	X
Critical Care							
Blood or Blood Products (excluding Albumin)							X
Invasive Line Monitoring (Arterial Line, Swan-Ganz)							X
All Chest Tubes (suction or gravity)							X
Mechanical Ventilation							X
Home Ventilator (with Home care or Facility RN accompanying)					X	X	X
Intra-Aortic Balloon Pump (IABP)							X
Impella							X
Ventricular Assist Device (VAD) NON-VAD therapy complaint					X	X	X
Ventricular Assist Device (VAD) with complaint related to VAD therapy							X
Extracorporeal Membrane Oxygenation (ECMO)							X

CCP

Critical Care protocols & procedures may be utilized by credentialed Critical Care Paramedics (CCP) for either:

- Augmenting advanced life support protocols on 911 response (unless otherwise specified);
- Interfacility transport

Protocols are written to address the standard EPAB approved treatment plan and may not address all possible circumstances or therapies. If a patient is receiving medications or therapies not addressed within the Out-of-Hospital & Mobile Integrated Healthcare Protocols, the CCP may continue the medication or therapy following the parameters ordered by the referring physician. OLPG physician shall be contacted for further guidance if the CCP is unfamiliar with the medication or therapy.

Respiratory Distress

See Respiratory Distress for initiation of treatment

If respiratory distress amenable to NIPPV, consider

- BiPAP – IPAP 10 cmH_2O & EPAP 5 cmH_2O; titrate as appropriate; $EtCO_2$ Required

Seizure/Status Epilepticus

See Seizure/Status Epilepticus for all other all other treatment

If eclamptic seizure refractory to treatment, and if MAP ≥110

- Hydralazine - 10 mg slow IV; over 1 min

Stroke/CVA/TIA

See Stroke/CVA/TIA for initiation of treatment

For Interfacility only;

- Nicardipine (25 mg/250 ml NS) - 5 mg/hr to max 15 mg/hr
  If MAP drops 25% or more
  - Decrease by 2.5 mg/hr

If Acute Ischemic Stroke

If candidate for, or if already treated with, tPA

- Titrate to SBP ≤ 180 and DBP ≤ 105

If not a candidate for tPA

- Only treat for SBP ≥220 or DBP ≥120
- Discuss blood pressure parameters with sending facility if suspected or confirmed concomitant disease process potentially requiring more aggressive anti-hypertensive management:
  (e.g. Active ischemic coronary disease, heart failure, aortic dissection, hypertensive encephalopathy, acute renal failure, or pre-eclampsia/eclampsia)

If Acute Hemorrhagic Stroke

- Titrate to SBP ≤ 150 or MAP ≤ 100

Respiratory Insufficiency/Failure & Drug Assisted Airway (DAA)

See Respiratory Insufficiency/Failure & Drug Assisted Airway for initiation of treatment Adult Pedi

If advanced airway already in place

- Ensure adequate pain control and sedation
- Apply ventilator, as appropriate; initial recommended settings (*see below*), Waveform $EtCO_2$ required

	Adult	Pediatric
TV	6-8 ml/kg ideal body weight	6-8 ml/kg to adequate chest rise
Mode	Volume Control	Volume Control
FiO_2	30%-100% (Titrate O_2 to $SpO_2 \geq 90\%$)	100%
RR	12-16 bpm (Titrate to $EtCO_2$ of 35-45 mmHg)	Peds:20-30, Adolescents:15 (Titrate to $EtCO_2$ of 35-45 mmHg)
PEEP	5 cmH_2O	5 cmH_2O
I:E	1:2 (exception of Asthma 1:4)	1:2 (exception of Asthma 1:4)
Titrate setting to patient condition		

If hypoxemic and dysynchronous with ventilator, and if refractory to optimized FiO_2 and PEEP

- Rocuronium - 1 mg/kg IVP for paralysis, IIRR x 1
- Soft restraints to prevent self-extubation, as appropriate

If advanced airway required (not already in place), and if Ketamine induction is insufficient to facilitate intubation,

- Succinylcholine - 2 mg/kg IVP, OR
- Rocuronium - 1 mg/kg IVP (if succinylcholine contraindicated)

For interfacility only with advanced airway already in place:
If hemodynamically stable (SBP ≥ 90), and if continuous sedation required

- Propofol - 10-100 mcg/kg/min, titrate as appropriate

If home ventilator failure

- Utilize home ventilator settings for transport ventilator

If unable to utilize home ventilator settings

- Use recommended settings (see above), titrate as appropriate

If hypotensive and PEEP ≥ 5 cmH_2O

- Consider reducing PEEP by progressive 2 cmH_2O reductions

Blood & Blood Products

1. A written consent is required for administration of any blood product. The consent is to be obtained by the sending facility, and a copy should be included in the patient's chart for transport to the receiving facility.
2. Every patient receiving blood or blood products is to have a recipient band in place.
3. If product is infusing at time of initial patient contact, verify facility transfusion checklist.
   a. Patient's name and hospital number matched with transfusion record form (attached to product bag).
   b. Type and number on transfusion record form matched with product bag.
   c. Pre-transfusion temperature, pulse, respirations and blood pressure are documented on transfusion record form.
   d. Nurse administering product has signed, dated and timed the transfusion record form.
   e. All original copies of the transfusion slip should remain with the patient. Sending facility should make a copy of this for their records.
4. If CCP is going to initiate the transfusion of blood or blood products during transport, verify the order and facility transfusion checklist with patient's primary RN prior to transport.
5. Obtain necessary equipment, i.e. tubing, filters, etc. from sending facility to administer transfusion.
6. Prior to administering blood or blood products en route, the CCP will complete the facility's pre-transfusion checklist and document accordingly on the product slip and in the CCP run report.
7. Blood or blood products may NOT be piggybacked into an existing IV line. When administering via a multi-lumen central venous catheter it is suggested that the most distal lumen not already in use (e.g. vasopressors) be utilized.
8. Vital signs including temperature should be obtained and recorded 15 min, 45 min and then 1 hour, at a minimum, after initiating the transfusion until completed. If patient spikes a temperature 2°F greater than baseline, discontinue the blood infusion.
9. If the transfusion is completed en route, it is the CCP responsibility to document on the transfusion slip the date and time completed, amount given, whether or not the blood is warmed, if a reaction occurred and post-transfusion vital signs. All completed bags and tubing should be turned over to the receiving facility with the patient.
10. It is the receiving facility's responsibility to return the transfusion slip to the sending facility's blood bank.

Whole Blood, Packed RBCs, Frozen RBCs, FFP, Platelets & Cryoprecipitate

1. Verify transfusion checklist.
2. Prime Y-type blood tubing with Normal Saline and begin infusion slowly.
3. Attach blood bag to Y-type blood tubing. Clamp tubing to saline. Open clamp to blood and adjust flow to run slowly for the first 15 minutes. If no adverse reaction, increase flow based on patient condition and transfusion times.
   a. Whole Blood: 1-1/2 – 3 hours
   b. Packed RBC's: 1-1/2 – 3 hours
   c. Washed Packed Cells: 2 hours maximum
   d. Fresh Frozen Plasma: 30 min (all units must be infused within 4 hours from thaw time)
   e. Platelets: 30 min max
   f. Cryoprecipitate: rapid infusion
4. Monitor vital signs as previously outlined.
5. Monitor for signs/symptoms of adverse reaction. If adverse reaction noted, stop infusion and refer to Anaphylaxis and Allergic Reaction Protocol.
6. Blood tubing should be changed after each unit. EXCEPTION: If emergent situation and several units of blood are being administered rapidly, tubing should be changed every 4 hours or every other unit.
7. If suspected febrile non-hemolytic transfusion reaction (FNHTR), including temperature rise ≥ 1° F above baseline and/or rigors, either during or within 3-hours following blood product administration:

- Acetaminophen - 1 g PO (if able to swallow), and
- Diphenhydramine - 50 mg IV

Chest Tube Management Procedure

1. Inspect the patient's chest wall to ensure that all connections are tight and that the tubing is not kinked. Also check the skin around the insertion site for subcutaneous emphysema. Be sure that all connections are tight and that all connections between the tube and the chest drain system are secured with non-porous tape.
2. Note color, consistency and amount of drainage.
3. Note any air leak in the water chamber. Ask the sending facility staff RN if there has been a prior leak.
4. Mark Pleur-evac (or other drainage system) with a pen at the current level of drainage in the system.
   - → Be alert to sudden changes in the amount of drainage.
   - → A sudden increase indicates hemorrhage or sudden patency of a previously obstructed tube.
   - → A sudden decrease indicates chest tube obstruction or failure of the chest tube or drainage system.
5. Adjust wall suction to create a gentle rolling of bubbles in the water seal chamber or until suction indicator in appropriate range. Vigorous bubbling results in water loss. Note that some systems do not include a water seal chamber and therefore may not bubble.
6. Verify the level of the suction control chamber is at the level prescribed by the physician (usually -20 cm).
7. Do not clamp the patient's drainage tube at any time during travel. The water seal in the unit prevents backflow of air, whether or not suction is applied.
8. Position patient in semi-fowlers (if condition allows) to enhance air and fluid evacuation. NEVER raise the chest tube above the chest or the drainage will backup into the chest. Avoid any dependent loops as drainage problems and tube obstruction may occur. The tubing should be coiled flat on the bed and from there fall in a straight line to the chest drainage system.
9. After placing the patient in the ambulance, place the Pleur-evac next to the cot and secure with 3" tape so that it is kept upright during transport.
10. Dislodgment of the chest tube - If the chest tube falls out or is accidentally pulled out, it is important to quickly seal off the insertion site. Use a gloved hand until petroleum gauze is available. Petroleum gauze is necessary to prevent air from entering the pleural cavity. Apply 4-sided petroleum gauze occlusive dressing. If respiratory distress and/or signs of tension pneumothorax, remove one side of the dressing in an attempt to burp the chest.
11. Dislodgment from the drainage system (Pleur-evac) - If the chest tube becomes disconnected from the Pleur-evac or other collection device, clamp the chest tube (using Kelly clamps) until corrective action can be taken.

Extracorporeal Membrane Oxygenation (ECMO) Procedure

ECMO accredited staff must be present to manage and maintain changes during transport.

Unlike standard cardiopulmonary bypass which provides cardiopulmonary support following cardiac surgery or cardiac arrest, ECMO provides longer-term support, typically over 3-10 days.

Prevention of complications is fundamental to successful ECMO care. Ensure and document the following prior to initiation of transport.

1. Securing Cannula: All ECMO lines MUST be secured at 2 points with properly adherent skin dressings. Initial securing is the responsibility of the cannulator (physician) and cannot be delegated.
2. Prior to transport, ensure that backup components of critical items are available
3. Cannula positions: Cannula position must be confirmed radiographically by medical staff prior to transport.
4. ECMO Cannula dressings: Sterility must be maintained and insertion sites kept unsoiled.
5. Patient Movement: Prevent tension or torsion to the ECMO circuits during patient movement.

During transport:

1. Monitor – vitals every 15 minutes and document all pertinent labs (i.e. INR, PLT) and medications.
2. Contact transferring physician or OLMC for additional guidance or concerns.

Hemodynamic Monitoring Procedure

All patients who are transported by a Critical Care Paramedic that have invasive pressure lines will be monitored continuously with the use of a cardiac monitor. All pulmonary artery catheters will be monitored during transport. The following standards will be achieved on all patients meeting the criteria for hemodynamic monitoring.

1. Assess the pressure waveform displayed on the sending facility monitor.
2. Obtain a pre-transport strip of waveform from sending facility's monitoring equipment as well as a post- transport strip from receiving facility's monitoring equipment.
3. Obtain current pressure readings from the monitor and patient care records.
4. The CCP will evaluate the pressure transducer for compatibility with the CCP equipment. If the line is not compatible, the pressure line must be changed to facilitate monitoring by the CCP unit during the transport.
5. Flush the invasive line prior to changing over to CCP equipment to ensure patency.
6. Once line has been changed over, flush any visible air out of line via stopcock before flushing to patient.
7. The pressure bag will be inflated to 300 mmHg.
8. The pressure cable will be connected to the monitor and the patient end will be connected to the transducer port on the pressure tubing.
9. The transducer will be placed at the Phlebostatic axis (4th intercostal space, mid-chest level) line and taped securely.
10. All excess tubing will be coiled and taped in an orderly fashion.
11. The pressure line will be zeroed and calibrated to the monitor.
12. The waveform will be identified by the labels provided in the monitor (PA, ART).
13. The waveform will be assessed on the monitor, a pressure reading will be obtained and a strip will be printed showing the waveform. The strip will be identified as to the type of tracing.
14. Pulmonary artery pressures will be documented in conjunction with the secondary survey, as well as every 10 minutes for the duration of the transport. <u>The pulmonary artery catheter should never be wedged during transport.</u>
15. Arterial pressures will be documented in conjunction with the secondary survey, as well as every 10 minutes for the duration of the transport.
16. All distal pulses, capillary refill times, skin temperature, and sensation will be assessed and documented on extremities used.

Hyperglycemic Emergencies

- Maintain NPO status
- If home continuous subcutaneous insulin pump present, disconnect tubing from "infusion set"/patch
- Review and document sending facility labs

  If no electrolytes obtained within last 2 hours
  - Perform iSTAT, recheck every 2 hours

  If $K^+ < 3.0$ mEq/L
  - Discuss with transferring physician, consider holding insulin infusion until repleted to $K^+ > 3.0$ mEq/L
  - Consider 12-lead EKG

  If K^+ 3.0-5.5 mEq/L
  - Maintain IV potassium and insulin infusion

  If no potassium repletion present
  - Discuss with transferring physician potassium replacement

  If $K^+ > 5.5$ mEq/L
  - Obtain 12-lead EKG to evaluate for hyperkalemic EKG changes
- Continue sending facility intravenous fluid bolus or maintenance fluid infusion

  If no fluid previously initiated
  - NS – 20 ml/kg IV bolus
  - Continue 500 ml/hr NS IV maintenance infusion

  If signs or symptoms of volume overload are present or develop
  - Contact OLPG
- Maintain sending facility insulin infusion (DO NOT BOLUS INSULIN)
- Assess blood glucose concentration hourly and for any signs/symptoms of hypoglycemia

  If blood glucose concentration drops below 250 mg/dl
  - Switch maintenance fluids to Dextrose 10% (25 g/ 250 ml) at 100 ml/hr
  - Recheck blood glucose after 10 minutes
  - Contact OLPG if glucose continues to fall despite Dextrose 10%

  If blood glucose concentration drops < 70 mg/dl or symptomatic hypoglycemia
  - Discontinue insulin and contact OLPG

Pearls:
- Hypovolemia is the main cause for hypotension, if adequate fluid resuscitation and hypotension/hypoperfusion persist, consider initiation of vasopressor
- HHS consists of minimal to no metabolic acidosis and ketones, elevated serum osmolality, and more severely elevated serum glucose levels (often >600 mg/dl)
- Fluid resuscitation is often more conservative in adolescent patients (max of 40 mL/kg). Monitor for signs of altered mental status/cerebral edema.
- If advanced airway required, monitor EtCO2 closely and consider matching patient's compensatory ventilatory rate

Ventricular Assist Device Procedure (IABP)

Procedure:

1. Review the most recent 12-lead EKG. Select lead with greatest R-Wave amplitude. Place patient in this lead on cardiac monitor for continuous monitoring during transport. Limit chest artifact. EKG leads for the IABP will be secured with tape to the patient's chest and maintained during transport. Lead selection may need to be changed in order to get the best R-wave and capture on the balloon pump (if EKG triggered).
2. Arterial line shall be maintained on the IABP. If a transducer is used, ensure that it is directly connected to the pump and in working order. Maintain adequate arterial tracing. If radial site is used, secure arm with arm board to protect site during transport. Secure tubing.
3. Evaluate balloon insertion site. Note balloon size in the medical record. Check dressing site appearance. Monitor site frequently (every 15 minutes and as needed) during transport. Instruct patient to keep affected leg straight. Ensure that a knee immobilizer is in place prior to transport for additional reinforcement.
4. Establish baseline condition. Evaluate hemodynamics and clinical condition.
5. Hemodynamic assessment will include: temperature; blood pressure; respiration rate and quality; heart rate and rhythm; arterial blood pressure; Augmented pressures, MAP; CVP; PAP; augmented diastolic pressure (ADP). Document findings including patient's weight.
6. Evaluate pulses, both radial sites as well as posterior tibial and dorsalis pedis to facilitate subsequent localization during transport, also capillary filling times and extremity temperature.
7. Review lab values and trends.
8. Maintain H.O.B. at lowest point tolerated by patient, never to exceed 30 degrees.
9. Evaluate and closely monitor urinary output. All patients will have an in-dwelling urinary catheter.
10. Maintain IABP at prescribed timing/ratio (i.e.: 1:1; 1:2; 1:4). Evaluate effects.
11. Document hemodynamics. Document: IABP type, model and trigger (EKG, A-Line)

Precautions:

→ Never leave balloon pump inactive in patient for more than 20-30 minutes (i.e., not inflating and deflating). Thrombosis formation could occur after 30 minutes. Utilize 60 ml syringe to manually fill and deflate balloon.

→ Balloon leak: Observe tubing for blood. If blood is observed in the pneumatic tubing, shut off the balloon pump and leave intact. Maintain sterile technique and notify the physician and receiving facility immediately.

→ IABP Failure: Evaluate patient's condition and hemodynamics. Troubleshoot the device and make every effort to correct the problem and maintain the patient's safety. If IABP is inoperable for greater than 20-30 minutes, inflate IABP manually with 60 cc syringe every 3-5 minutes to avoid clot formation (Inflate with 10cc less than balloon size).

→ Ensure IABP battery is charged and Helium tank level is sufficient for transport. The balloon pump should be plugged into the ambulance inverter or generator outlets during transport.

→ Ensure there is ample tubing length for transfer and loading the patient into the ambulance. Secure the IABP tubing at patient end and stretcher end, but not mid-line. Put loops in tubing if length permits.

→ If bleeding is observed at the insertion site, apply direct pressure to the site until bleeding stops

→ If CPR is required, the IABP should be switched to "pressure trigger" mode

Mechanical Ventilation Procedure

All patients who are transported by the Critical Care Transport Unit will be monitored closely for the following:

1. Pulse oximetry- will be continuous and these patients will maintain an O_2 saturation of 90% or above. The pulse oximeter readings will be documented on the patient care record (EPCR) prior to departure from the sending facility and every 15 minutes throughout the duration of the transport. Report from the sending facility should include the patient's normal range of SpO_2. This will set the parameters for the CCP team regarding SpO_2. Some patients will not have, nor maintain an SpO_2 of 90% or greater due to their underlying pulmonary condition. Documentation of the reason for the variance from the CCP standard of care is essential.
2. Capnography- will be continuously monitored in all intubated patients. Tracheostomy patients will have capnography/capnometry monitored when indicated. Examples would be abnormal vital signs and/or changes from normal condition. Titrations in respiratory rate and/or tidal volume may be made in order to maintain $EtCO_2$ at normal range of 35-45 mmHg or level prescribed by physician or patient condition. Some patients will not have an $EtCO_2$ within the desired range due to their underlying condition. Documentation of the reason for the variance from the CCP standard of care is essential.
3. Ventilator settings- will be documented on the run sheet, as well as any changes that are made during the transport.
4. Endotracheal- or tracheal suctioning will be performed using aseptic technique when to maintain a patent airway; the type, color and amount of secretions will be documented on the run sheet.
5. Sedation: Patients that require sedation and/or a paralytic to maintain adequate oxygenation and reduce anxiety will be provided with medication as per protocol.
6. Tracheostomy Patients: The CCP will ensure that all patients whose airway is maintained by a tracheostomy tube will be provided with the obturator and an additional tracheostomy tube prior to leaving the sending facility.
7. AMBU Bag: The CCP will ensure that a bag valve mask (BVM) resuscitator is kept with the patient at all times. This will ensure adequate ventilation management in the event of mechanical ventilator failure.
8. Communication: Communicate with a vent patient, prior to switching to the CCP vent, the differences they will experience. Continue to talk with the patient and attempt to alleviate anxiety/restlessness.
9. Scene Call- In the presence of any advanced field airway, either placed by the CCP or prior to arrival, the CCP may utilize the ventilator with the initial recommended settings setting (waveform $EtCO_2$ required)
10. Patients on home ventilators- will remain on current ventilator for transport ensuring there is adequate power supply.

Patient may be moved over to the CCP ventilator if:

a. Clinical indication (respiratory compromise) is present
b. CCP is unfamiliar with home ventilator and family is unable to accompany patient during transport
c. Equipment constantly malfunction/alarms

GOALS:

1. To maintain pulmonary management of the ventilator dependent patient during transport.
2. To maintain or improve the patient's level of care.
3. To prevent complications of oxygen toxicity/dependence by providing the appropriate FiO_2.
4. To provide quality patient care utilizing the transport team approach.
5. To prevent complications of positive pressure ventilation.

All infants requiring ventilatory support will be accompanied by either a neonatal nurse practitioner, respiratory therapist, and/or the sending/receiving neonatologist.

Mechanical Ventilator Procedure

Indications:

1. Patients who require ventilatory assistance for extended time periods (such as interfacility transfers and long-distance/extended ETA transports).
2. Ventilatory assistance includes the use of assist control (A/C or ACV), synchronized intermittent mandatory ventilation (SIMV), and continuous positive airway pressure ventilation assistance (CPAP).

Contraindications:

1. Operation and application in a hazardous materials/flammable/combustible/WMD environment or with a contaminated/contagious patient. This model of ventilator is not appropriately sealed or filtered for these environments and/or patients.

Refer to ventilator specific manual for setup and troubleshooting or questions. Verify you are using the most current procedure manual before operation.

Pulmonary Artery Catheter Procedure

1. Check and document PCWP at sending facility ONLY. Check PA systolic, diastolic and mean pressures at sending facility and every 10 minutes.
   The Pulmonary Artery Capillary Pressure (PCWP) will only be obtained at the sending facility
   a. Normal Mean Values:
      i. Pulmonary Artery Pressure (PAP) Systolic 15-30 mmHg Diastolic 4-12 mmHg
      ii. Pulmonary Artery Capillary Pressure (PCWP): 4-10 mmHg
      iii. Central Venous or Right Atrial Pressure (CVP): 0-12 mmHg
   (Therapeutic ranges may be somewhat higher than the above values)
   b. Exceptions:
      i. The optimal mean PCWP (wedge) may be 15-20 mmHg in patients with compromised left ventricular function, post-op stress or post MI.
      ii. For patients with COPD and respiratory failure, expect PCWP pressures in the range of 30-50 mmHg. PCWP should be normal in pure pulmonary hypertension.
2. Trends in PAP and PCWP pressures are the most significant factors in detecting significant physiological changes in the patient's condition. Be sure to obtain history of these values prior to transport.
3. Inspect and document the insertion site. Note and document the PA insertion depth.
4. Calibrate the transducer at the beginning of the transfer before the patient is transferred over to the stretcher and with any major position changes.
5. Maintain pressurized flush system at 300 mmHg.
6. If change in waveform occurs, contact Medical Control for direction.
7. Follow set parameters for specific IV vasoactive drips as ordered by transferring physician or see protocol for IV vasoactive pharmaceutical titrations and/or communicate with the online physician.
8. CCP must document all interventions that take place regarding PA catheter.
9. Label all pressure tracings and document the tracings on the patient care report.

Transvenous Pacemaker Procedure

1. Place a new battery in the temporary pacemaker and test it prior to use.
2. Connect pacer wires to Temporary Pacemaker Cables with leads/heartwires - the patient cable with lead or heartwire plugs into socket on top of unit. In the absence of patient cables, temporary transvenous leads plug directly into the two smaller sockets.
3. Match the positive (+) and negative (-) leads to the positive (+) and negative (-) sockets or clips (as applicable). There may be instances where the leads are reversed in polarity to obtain capture. CCP will connect in the same manner as the sending facility.
4. Set the pacemaker controls
    a. Set the sensitivity (the highest number is least sensitive; the lowest is most sensitive)
5. Demand mode - (withholds its pacing stimulus after sensing a spontaneous depolarization) set the sensitivity value to detect intrinsic activity.
    a. Set pacemaker's rate 10 bpm slower than patient's intrinsic rate (the sense indicator will flash regularly)
    b. Reduce milliamps (output) to the minimum value (this avoids risk of competitive pacing).
    c. Sensitivity should be set at its lowest value necessary to ensure mechanical capture, and should be increased only to the point of stopping any oversensing.
    d. Restore original pulse generator rate and output values.
6. If asynchronous mode is indicated (stimulates at a fixed, preset rate independently of the electrical and/or mechanical activity of the heart) turn sensitivity dial to ASYNC (not the preferred mode for critical care transport).
    a. Set the rate and milliamps (output)
    b. Set the milliamps (output) at 5 and the rate at 60 or as directed by the physician orders.
7. Turn the pacemaker ON
8. Check the monitor to ascertain that capture (depolarization of the atria and/or ventricles) is obtained- if not, increase the milliamps slowly until capture is obtained, this is the threshold (minimum electrical stimulus needed to consistently elicit a cardiac depolarization). Then set the milliamps at two (2) x the threshold.

Setting stimulation threshold:

1. Ensure the patient is connected to pacemaker and being monitored on EKG.
2. Set pulse generator rate at least 10 ppm faster than the patient's intrinsic rate (The pace indicator will be flashing regularly at the set rate).
3. Decrease the milliamps (output) until 1:1 capture is lost (the pace and sense indicators will be flashing intermittently).
4. Increase the milliamps (output) to restore 1:1 capture. This value is the stimulation threshold for the chamber being paced. (The pace indicator will be flashing; and the sense indicator will have stopped flashing.)
5. Set output value to 2-3 times the threshold value. This safety margin will allow for threshold variation while maintaining capture.
6. Restore original pacemaker rate value (60 or physician prescribed rate).

Ventricular Assist Device Procedure (Impella)

The Impella is intended for partial circulatory support using an extracorporeal bypass unit, for periods from 6 hours (Impella 2.5) to 2 weeks (Impella 5.0).

1. Confirm that Impella placement has been verified with echocardiography. Document position of the Impella as reported by sending facility. If possible, bring reports and/or imaging studies that document confirmation of placement.
2. Verify the patient's Activated Clotting Time (ACT) has been checked and is between 160-180 seconds.
   a. If the ACT is not verified, ensure it is evaluated before transport.
   b. If the ACT is <160 or >180 seconds, request that it is addressed before transport per the sending facility guidelines.
3. Evaluate and confirm Impella settings. Document and monitor:
   a. pump performance level (P2-P9)
   b. flow (1.1 to 5.3 L/min [device dependent])
   c. placement signal pulsatile [mmHg] (red waveform)
   d. purge pressure 300-1100 mmHg
   e. motor current <1000 and pulsatile (green waveform)
   f. pump position
   g. purge fluid infusion rate (2-30 mL/hr)
4. Ensure the Tuohy bore on the Impella catheter is tight to prevent catheter migration (tighten completely to the right).
5. Evaluate insertion site for signs of bleeding, swelling or hematoma, and catheter on initial assessment, following each patient transfer, and frequently (every 15 minutes and as needed) during transport. Document findings following each evaluation.
6. Evaluate pulses, capillary filling time, and temperature of affected lower extremity on initial assessment, following each patient transfer, and frequently (every 15 minutes and as needed) during transport.
7. Evaluate urine output and color on initial assessment and monitor during transport. Changes in urine color may indicate hemolysis.
8. Establish the patient's baseline condition. Evaluate hemodynamics and clinical progression.
9. Patients should remain flat throughout transport. Under no conditions is head of bed (HOB) elevation to exceed 30°.
10. Instruct the patient to keep the affected leg straight. Apply knee immobilization device if needed to prevent movement.
11. During transport, maintain pump performance level and flow rate at ordered levels. If unable to maintain ordered flow rate at ordered levels, contact OLMC for guidance.
12. If alarms occur during transport, follow on-screen troubleshooting guidance for resolution. If alarms not resolved following troubleshooting, contact OLMC for further guidance.
13. If purge solution requires replacement during transport replace with D10 solution or solution provided by sending facility.
14. Refer to the hemodynamic monitoring protocol for arterial line maintenance.

Impella Precautions: Next Page

Ventricular Assist Device Procedure (Impella)

Precautions:

→ Verify the battery charge level before unplugging and moving the Impella controller. A fully charged battery will support the system for approximately 60 minutes. The Impella controller should always be plugged in for transport.

→ Place the Impella controller must on a flat surface, where the screen is easily visible during transport. The controller must be secured during transport to avoid accidental dislodgement of the sheath and to prevent the controller from becoming a dangerous projectile. Consider using the bed mount as a loop through which to secure the device with straps.

→ Movement of the HOB is the primary cause of migration of the Impella during transport. Do not move the HOB from its initially established position.

→ Keep the stopcock on the peel-away introducer or repositioning sheath in the closed position. Significant bleeding can occur if the stopcock is in the open position.

→ Do not decrease pump performance (P) level below P2 as long as the pump is in the ventricle. Below P2, retrograde flow will occur across the aortic valve.

→ CPR should be initiated immediately per MedStar protocol if indicated. When starting CPR, reduce the Impella flow rate to P2. If return of spontaneous circulation, return the flow rate to the previous P-level, by increasing one P-level every 30-60 seconds and assess placement signals on the controller.

→ Infusion through the side port of the introducer can be done only after all air is removed from the introducer. If performed, the infusion should be done for flushing purposes only and NOT for delivering therapy or monitoring blood pressure or MAP.

→ Base the management of the patient's hemodynamic status on MAP readings from an arterial line. Target MAP to >65 mmHg or level ordered by sending facility.

→ If there are any changes in the patient's condition during transport or there are unresolved Yellow or Red alarms, contact the receiving facility with updated information so they can prepare for the proper interventions before patient arrival.

→ Contact the 24-hour clinical support line at 1-800-422-8666 with any questions or concerns during transport. Use only for general information about the device functionality only. For any orders needed for patient management, contact OLMC. the receiving facility with updated information so they can prepare for the proper interventions before patient arrival.

Ventricular Assist Device Procedure (all others)

While some VADs produce pulsatile flow, most VADs use continuous flow technology, thereby creating a non-pulsatile continuous flow. This means most patients with a VAD will not have a palpable pulse and, therefore, taking a blood pressure with a manual cuff and stethoscope will rarely allow you to auscultate a pressure. It is imperative that the type and model of VAD be identified (i.e. HeartWare HVAD vs Jarvik 2000 FlowMaker). Important aspects of transport include allowing a family member to ride along with the patient because the family member can be an invaluable resource. They are often trained in the operation of the equipment and know how to handle an emergency, and can also be a comfort to the patient.

Refer to device specific manual for setup and troubleshooting or questions. Verify you are using the most current procedure manual before operation.

If patient not responsive to pain and has capillary refill ≥ 3 seconds (inadequate perfusion)

If CPR and defibrillation can be performed on the patient (see VAD reference or documentation)

- Refer to Cardiac Arrest Protocol

If CPR and defibrillation are contraindicated

1. Check controller for alarms. (I.e. low battery, driveline malfunction, pump stopped.)
2. Auscultate and feel left upper abdominal quadrant for a continuous whirring sound and vibrations.
3. Determine if there is a "hand pump" or external device to utilize.
4. Remember not to perform chest compressions because they could dislodge the pump, making the patient bleed to death. (Unless the patient is in obvious cardiac arrest and the pump isn't working. Use the assistance of the VAD coordinator to figure this out before starting any compressions).
5. Perform all other BLS/ACLS protocols as written.
6. Avoid kinking or twisting driveline when strapping the patient onto the stretcher.
7. Keep batteries and controller in reach and secured to the patient during transport. Keep them dry.
8. Take the patient's emergency travel bag when leaving the scene. (It has an extra controller, batteries and the VAD coordinator's emergency contact number.) Access back up controller and power sources as needed.
9. Monitor and document all IBP (in hospital), EKG, and Wave form $EtCO_2$ and ventilator settings every 15 minutes.
10. Contact online medical control for further instructions.
    *If feasible, transport the patient to their implant hospital. If not, transport to the nearest most appropriate hospital.

If patient is out-of-hospital and hemodynamically stable

1. If available, utilize doppler device to auscultate blood pressure. The first sound heard is approximately equivalent to the mean arterial pressure (normal Doppler pressure range is 60–90 mmHg). A pressure of 60–90 mmHg is considered acceptable. Note that you may or may not hear normal heart tones with a stethoscope.
2. Assess the patient's $EtCO_2$, mental status, skin, and lips to assess perfusion status.
3. Take the patient's emergency travel bag when leaving the scene. It may have an extra controller, batteries, and the VAD coordinator's emergency contact number.
4. Ensure the controller and battery packs are close to the patient and aren't dangling off the side of the cot. Be sure that the driveline (the power cord of the pump) isn't pulled, kinked, or cut.

Ventriculostomy Monitoring Procedure

1. Maintain patient's head position per physician's order (usually 30 degrees).
2. Check and document dressing site and appearance.
3. Confirm level of drain and any other patient specifics in regards to monitoring, as follows.
    a. Review physician's order to place ventriculostomy to either drain or monitor.
        i. *If ventriculostomy is placed to drain*
        - Verify that the stopcock at the zero level is opened to the drainage bag side. The drip chamber is placed so that the zero level is at the foramen of Monroe (Point of communication between the 3rd and lateral ventricles of the brain). Anatomical landmark for foramen of Monroe is the external auditory canal. Ensure the Buretrol is moved so that the pressure line is at the ordered level of drainage.

        ii. If ventriculostomy is set to monitor
        - Do not collect measurements during transport.
4. The system must be secured on a pole at all times. The system is adjusted to obtain the zero level.
5. If tubing becomes occluded during transport, do not flush or manipulate line. Notify receiving staff upon arrival.
6. Document on PCR drainage amount, color, ICP and any other pertinent information.

MIH

Congestive Heart Failure (CHF) Protocol

This protocol is to be used by an appropriately credentialed Mobile Integrated Health Provider (MIHP) as standing orders for patients enrolled in an approved Mobile Integrated Health program. This protocol may be used in visits requested by partner agencies or 911 calls from program clients. The primary point of contact for all patient consultations is that individual's PCMH primary provider contact or, if unavailable, contact OLMC.

- Contact appropriate partner agency staff
- Review the patient clinical record, and interpret lab values in context of patient presentation
- Measure and document vital signs (BP, weight, O_2, pulse)
- Perform 12-lead EKG
- Perform i-STAT (ensure sample not hemolyzed)

Hypokalemia

If K^+ < 2.5 mEq/L or EKG findings consistent with hypokalemia

- Administer patient's Potassium - 40 mEq PO
- Request ambulance for transport to ED

Hyperkalemia

If there are any EKG changes consistent with hyperkalemia

- Request ambulance for transport to ED, and treat for hyperkalemia (see treatment box)

If K^+ > 7.0 mEq/L (regardless of EKG changes)

- Request ambulance for transport to ED, and treat for hyperkalemia (see treatment box)

If there are no EKG changes consistent with hyperkalemia

*If K^+ > 5.0 - 6.0 mEq/L, **AND** if the most recent K^+ > 5.0 mEq/L (within the last 72 hrs)*

- Contact partner agency staff / OLMC for further guidance to discuss plan of care, to potentially include:
  - Stop oral potassium supplementation for 2 days
  - Recheck potassium at least daily until <5 mEq/L

If the patient is not taking oral potassium AND is not scheduled for urgent diuresis

- Request ambulance for transport to ED

*If K^+ > 5.0 - 6.0 mEq/L, **AND** if the most recent K^+ < 5.0 mEq/L (within the last 72 hrs)*

- Request ambulance for transport to ED

If K^+ 6.0-7.0 mEq/L (independent of previous K^+ value)

- Request ambulance for transport to ED

If Creatinine > 3 mg/dl

- Contact PCMH

If patient is on Coumadin

- Review patient's PT/INR, when available, with the PCMH, who will provide instructions for changes in dosing and follow-up

Urgent/Emergent Treatment of Hyperkalemia

- Calcium Chloride - 1 g IV slow push
- Sodium Bicarbonate - 1 mEq/kg IV/IO (if suspected acidosis)

- Adjust diuresis and potassium dosing per CHF Protocol Dosing Schedule

Contraindications

- Weight gain of less than 2 1bs. over baseline.
- Potassium of < 2.5 or > 5.5 mEq/L (transport if present)
- Acute clinical changes such as chest pain, dyspnea, or signs of acute decompensation (transport if present)
- If in the MHP's clinical judgment the patient requires transport/ED evaluation

Considerations for Patient Education

- Educate patient on appropriate dietary and medication compliance.
- Encourage ingestion of food or milk to reduce GI upset if increasing potassium dose.
- Have patient record weight daily.

Congestive Heart Failure (CHF) Protocol (Dosing Schedules)

Diuresis Dosing Schedule

3-5 lbs. over	>5 lbs. over
• Double PO Lasix or Bumex x 3 Days. *Refer to K^+ dosing schedule below*	• Administer double the patients PO dose of Lasix as IVP x 1. • I.E. 40 mg/PO = 80 mg/IVP *Refer to K^+ dosing schedule below*
• MIHP follow-up in 24 hours.	• MIHP follow-up in 4 hours (can be phone call). • 24 hour follow-up in person
• PCP notification	• Extensivist / PCP follow up in 48 hours.
• Extensivist / PCP follow up in 48 hours.	

Potassium Dosing Schedule:

K^+ = 2.5 -2.9	K^+ = 3.0 – 3.4	K^+ = 3.5-4.9	$K^+ \geq 5.0$
Increase by 50% for the length of time patient has increased Lasix dosing.	Increase by 25% for the length of time patient has increased Lasix dosing.	No Change	Refer to protocol

PEARLS:

If diuresis is done more than 3-visits in a row refer to an advanced heart failure clinic.

1 mg Bumex = 40 mg Lasix

COPD/Asthma Protocol

This protocol is to be used by an appropriately credentialed Mobile Integrated Health Provider (MIHP) as standing orders for patients enrolled in an approved Mobile Integrated Health program. This protocol may be used in visits requested by partner agencies or 911 calls from program clients. The primary point of contact for all patient consultations is that individual's PCMH primary provider contact or, if unavailable, contact OLMC.

- Refer to Respiratory Distress Protocol
- Initiate transport if the patient fails to respond to nebulizer therapy

If patient has a positive response to nebulizer therapy

- Contact PCMH to arrange appropriate follow-up

Diabetes Protocol

This protocol is to be used by an appropriately credentialed Mobile Integrated Health Provider (MIHP) as standing orders for patients enrolled in an approved Mobile Integrated Health program. This protocol may be used in visits requested by partner agencies or 911 calls from program clients. The primary point of contact for all patient consultations is that individual's PCMH primary provider contact or, if unavailable, contact OLMC.

If patient is conscious

- Measure Blood Glucose

  If blood glucose ≤ 60 mg/dl and symptomatic

  - Oral Glucose - 15 g buccal (if intact gag reflex and able to tolerate)
  - Recheck blood glucose
  - Contact PCMH for any suggested changes in dosing and/or for appropriate follow up

  If blood glucose ≥ 300 mg/dl and asymptomatic

  - Verify with appropriate partner agency that patient is on insulin sliding scale
    - Teach and assist patient with insulin self-administration

    If patient is unable to administer insulin
    - Contact PCMH for any suggested changes in dosing and/or for appropriate follow up

  If blood glucose ≥ 300 mg/dl and symptomatic (e.g. AMS, signs of hypovolemia, suspected DKA or hyperosmolar state)

  - Perform i-STAT

    If CO_2 ≤ 16 or anion gap ≥ 20
    - NS - 1 L IV bolus
    - Contact PCMH and recommend ambulance transport to ED

If patient is obtunded, unconscious, or altered

- Follow Diabetic Emergencies Protocol and transport patient to the hospital

Failed Peripheral IV: Patient Administered Medication Protocol

This protocol is to be used by an appropriately credentialed Mobile Integrated Health Provider (MIHP) as standing orders for patients enrolled in an approved Mobile Integrated Health program. This protocol may be used in visits requested by partner agencies or 911 calls from program clients. The primary point of contact for all patient consultations is that individual's PCMH primary provider contact or, if unavailable, contact OLMC.

- Review clinical record
- Contact PCMH
- Remove and restart IV for patient
- Notify appropriate partner agency staff

First & Second Dose Antibiotic Protocol

This protocol is to be used by an appropriately credentialed Mobile Integrated Health Provider (MIHP) as standing orders for patients enrolled in an approved Mobile Integrated Health program. This protocol may be used in visits requested by partner agencies or 911 calls from program clients. The primary point of contact for all patient consultations is that individual's PCMH primary provider contact or, if unavailable, contact OLMC.

- Meet nurse at the patient's home for 1st and 2nd dose of antibiotic
- Wait with the nurse for the first 30 minutes
- Arrange ambulance transport if the patient develops severe allergic reaction or anaphylaxis.

If signs/symptoms of allergy or anaphylaxis

- Assist patient with home health anaphylaxis pack

If unavailable or if inadequate response

- Refer to Allergic Reaction/Anaphylaxis Protocol

High Utilizer Group (HUG) Protocol

This protocol is to be used by an appropriately credentialed Mobile Integrated Health Provider (MIHP) as standing orders for patients eligible for, or enrolled in, the High Utilizer Group program. Patients with frequent utilization of the 911 EMS or hospital Emergency Department system are eligible for the High Utilizer Group (HUG) program. Patient will either be referred internally or by partner agencies. MedStar will conduct a series of home visits to help enable patients to navigate themselves through the healthcare system. The primary point of contact for all patient consultations is that individual's PCMH primary provider contact or, if unavailable, contact OLMC.

Referral Criteria

High Utilizer Group patients may include individuals who meet the following criteria:

→ Requested 15 or more 911 ambulance responses during the past 90-days, OR
→ Referred by a partner agency for avoidable visits to the Emergency Department during the past 12-months

AND

→ Live in the MIH service area
→ Possesses mental capacity to support navigational assistance
→ Willing to participate in the program and allow MIHP into their home for assessment and follow-up

Initial Home Visit/Patient Assessment

- Conduct initial assessment of barriers to the patient's care, which may include:
  - → Living environment
  - → Social barriers to appropriate engagement in care
  - → Transportation
  - → Access to primary care
  - → Disease management
- Facilitate the development and implementation of a care plan by the PCMH, which may include:
  - → Primary Care Provider (PCP) assignment (if necessary)
  - → Series of home visits to educate the patient and family on appropriate care management
  - → Assistance with navigation through the patient's primary care network/resources
  - → Provision of 24/7 non-emergency number to request mobile healthcare provider support during the duration of the program enrollment

Scheduled Home Visits

Enrolled patients will receive a series of home visits to educate:

- The patient and family on appropriate ways to manage their disease process
- The patient on how to navigate the healthcare system

Unscheduled Home Visits

The patient will be provided a non-emergency phone number in the event they would like a phone consultation or an un-scheduled home visit between scheduled visits.

911 Responses

Enrolled patients will be tracked in the computer aided dispatch (CAD) system, and in the event of a 911 call to their residence, a 911 ambulance response will be initiated, along with an MIHP who will be dispatched to the scene.
Once on-scene, the MIHP may be able to intervene and navigate the patient to an alternate source of care, including PCMH, urgent care, self-care, or by employing the use of the Disease Management MIH protocols.

Record Keeping

Patients enrolled in the program have a continual electronic medical record (EMR) that allows all care providers mobile access to the patient's entire course of assessments and treatments during enrollment, including care notes, lab values, vital signs, ECG tracings and treatments initiated. These records can be provided to caregivers in accordance with the Treatment Payment Operations (TPO) definitions of Health Insurance Portability and Accountability Act (HIPAA).

High Utilizer Group (HUG) Protocol

Care Management Protocols (CMP)

The primary point of contact for all patient consultations is that individual's PCMH primary provider contact or, if unavail-able, contact OLMC. In consultation with the PCMH, patients with conditions including, Diabetes, COPD, or CHF can either have their medications adjusted in the field, or they may receive in-home therapy through Care Management Proto-cols, with an in-office follow-up appointment to minimize any unnecessary transport to the Emergency Department. Refer to the appropriate CMP (e.g. Diabetes, CHF, COPD/Asthma)

Program Length

Term of program will be a minimum of 30-days and a maximum of 90-days after acceptance into the program, based on patient compliance and meeting established program goals.

Hospice Patients

This protocol is to be used by an appropriately credentialed Mobile Integrated Health Provider (MIHP) as standing orders for patients enrolled in an approved Mobile Integrated Health program. This protocol may be used in visits requested by partner agencies or 911 calls from program clients.

If a MedStar Crew arrives on-scene first and determines the complaint is not associated with the patient's hospice diagnosis

- Consider transporting the patient to an appropriate acute care facility
    - This is only applicable if the crew feels they are unable to wait for the MIHP to arrive.

- Upon arrival on-scene, the MIHP will work with the patient/family to ensure their wishes are carried out and the appropriate care is provided, while awaiting the arrival of a hospice representative.

If the patient/family insists on being transported to the ED for reasons associated with their hospice care

- Attempt to arrange for a direct admit to an in-patient hospice care facility

If the patient/family insists on being transported to the ED for any reason not associated with their hospice care, and are not willing to wait or discuss the situation with the responding Hospice representative

- Facilitate transportation by ambulance to the appropriate acute care facility.

- Upon arrival on scene, the MIHP will assist in addressing the family/patients concerns. The MIHP will help to ensure the patient's comfort and may use the hospice supplied in-home comfort-pack if required once they have consulted with hospice provider or, if unavailable, OLMC.
- The responding MIHP will remain with the family/patient until the hospice nurse arrives or until the family and patient are comfortable with the patient's status.

Insulin Titration

This protocol is to be employed for patients with hyperglycemia or hypoglycemia on the second home visit who have recently been released from the hospital and have not seen their new PCP or the PCP has been contacted twice (on two subsequent visits) without a response.

- Contact appropriate partner agency
- Measure blood glucose

If hyperglycemia present (blood glucose ≥300 mg/dl prior to short acting insulin treatment and asymptomatic)

Hyperglycemia

- Perform iStat and calculate anion gap

If anion gap <12

- Glucose 300-400 mg/dl increase long-acting insulin by 2 units on next dose
- Glucose 400+ increase long-acting insulin by 4 units on next dose

If hypoglycemia present

- For symptomatic with hypoglycemia use Diabetic Emergencies protocol and if no transport consider Insulin Titration protocol

→ **Fasting or overnight**

Blood glucose < 54	Blood glucose 55-70 and long-acting insulin	Blood glucose 55-70 and intermediate insulin
Reduce long acting insulin by 40%	Reduce long-acting insulin by 4 units or 10% (whichever is greater)	Reduce evening intermediate insulin dose by 2 units

→ **Daytime and corresponds with sliding scale or set pre-prandial insulin dosage**

(use sliding scale insulin dosage given 30 minutes-6 hours prior to hypoglycemic episode)

Blood glucose ≤ 54	Blood glucose 55-70
Reduce sliding scale or pre-prandial insulin by 40%	Reduce sliding scale insulin dosage If sliding scale <10 units reduce by 2 units If sliding scale 11-20 units reduce by 4 units If sliding scale >20 units reduce by 8 units

→ **Daytime & Does Not Correspond with Sliding Scale**

Blood glucose ≤ 54	Blood glucose 55-70 and long-acting insulin	Blood glucose 55-70 and intermediate insulin
Reduce long-acting insulin dose by 40%	Reduce long-acting insulin by 4 units of 10% whichever is greater)	Reduce morning and evening intermediate insulin dose by 2 units

→ **Fasting or Overnight and Daytime & Corresponds with Sliding Scale**

Blood glucose ≤ 54	Blood glucose 55-70 and long-acting insulin	Blood glucose 55-70 and intermediate insulin
Reduce long-acting insulin dose by 40%	Reduce long-acting insulin by 4 units of 10% whichever is greater)	Reduce morning and evening intermediate insulin dose by 2 units

→ **Daytime and Does Not Correspond with Sliding Scale**

Blood glucose ≤ 54	Blood glucose 55-70 and long-acting insulin	Blood glucose 55-70 and intermediate insulin
Reduce long-acting insulin dose by 40%	Reduce long-acting insulin by 4 units of 10% whichever is greater)	Reduce morning intermediate insulin dose by 2 units

Pearls:
Intermediate-acting insulins (examples): Humulin N, Insulin NPH, Novolin N
Long acting (examples): Insulin glargine, insulin detemir, insulin degludec
For this protocol basal insulin is any intermediate or long-acting insulin

i-STAT Procedure

Precautions:

Avoid the Following Circumstances:

- Drawing a specimen from an arm with an I.V.
- Stasis (tourniquet left on longer than two minutes before venipuncture)
- Extra muscle activity (fist pumping)
- Hemolysis (alcohol left over puncture site, or a traumatic draw)
- Time delays before filling cartridge, especially lactate, ACT, and PT/INR

Criteria For Specimen Rejection:

- Evidence of clotting
- Specimens collected in vacuum tubes with anticoagulant other than lithium or sodium heparin
- Specimens for ACT or PT/INR collected in glass syringe or tube or with anticoagulant of any kind
- Incompletely filled vacuum tube for the measurement of ionized calcium or PCO_2
- Other sample types such as urine, CSF, and pleural fluid

Procedure:

Cartridges:

A single-use disposable cartridge contains microfabricated sensors, a calibrant solution, fluidics system, and a waste chamber. A whole blood sample of approximately 1 to 3 drops is dispensed into the cartridge sample well, and the sample well is sealed before inserting it into the analyzer. An individual cartridge may be used after standing 5 minutes, in its pouch, at room temperature. An entire box should stand at room temperature for one hour before cartridges are used. Cartridges may be stored at room temperature (18 to 30° C or 64 to 86° F) for 14 days. Cartridges should not be returned to the refrigerator once they have been at room temperature, and should not be exposed to temperatures above 30° C (86° F). If the pouch has been punctured, the cartridge should not be used. Write the date on the cartridge box or individual cartridge pouches to indicate the two-week room temperature expiration date. Cartridges should remain in pouches until time of use. Do not use after the labeled expiration date.

Testing:

Press the Power button to turn on the Handheld.
DO NOT insert the cartridge to start the test.

Press the "2" button to start a new test. Follow the handheld prompts. For "Operator ID," enter your MedStar ID number. For "Patient ID," enter the run number for the call.

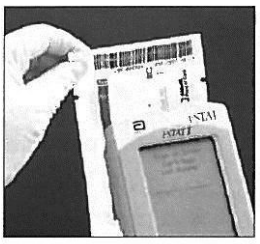
Screen 2

Screen 3

i-STAT Procedure

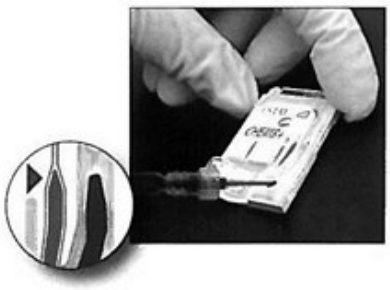
Scan the Lot Number on the cartridge pouch. Position the barcode 3-9 inches from the scanner window on the handheld. Press and hold "Scan" to activate the scanner. Align the laser light to cover the entire barcode. The handheld will beep when it reads the barcode successfully. If you cannot scan the barcode, enter the lot number using the numbered keys, ignoring any letters. DO NOT open cartridge pouch before scanning the barcode.

Screen 1



Remove cartridge from pouch. Handle the cartridge by its edges. Avoid touching the contact pads or exerting pressure over the center of the cartridge.

Mix blood and collection tube additives by inverting a tube gently at least ten times. Following thorough mixing of the sample, use a plastic capillary tube, pipette, or syringe to transfer sample from a tube to a cartridge. Direct the dispensing tip containing the blood into the sample well. Dispense the sample until it reaches the fill mark on the cartridge and the well is about half full. Close the cover over the sample well until it snaps into place. (Do not press over the sample well.)



i-STAT Procedure

Insert the cartridge into the cartridge port on the analyzer until it clicks into place. The analyzer must remain horizontal during the testing cycle. Never attempt to remove a cartridge while the LCK or "Cartridge Locked" message is displayed.

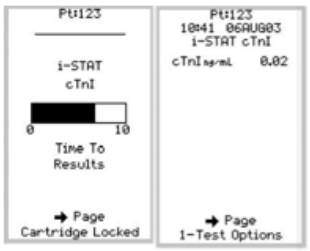
Wait until testing cycle is complete. Results are displayed numerically with their units. Electrolyte, chemistry and hematocrit results are also depicted as bar graphs with reference ranges marked under the graphs.

To print the results, turn printer on if green power light is not on. Align IR windows of analyzer and printer. Display results. Press the Print key.

Do not move analyzer or printer until printing is complete.

Note: Results printed on thermal paper will fade with time and are therefore not acceptable as a permanent chartable record.

To print a stored test record(s), select "Print Results" from the Stored Results menu. Select records to be printed by pressing the Key(s) corresponding to the numbers beside the record(s). Press the numbered key again to deselect a record. Then press the PRT Key. Do not move the analyzer while "Printing" is displayed.



Screen 4 *Screen 5*

Suppressed Results

There are three conditions under which the i-STAT System will not display results:

1. Results outside the System's reportable ranges are flagged with a < or > , indicating that the result is below the lower limit or above the upper limit of the reportable range respectively. (See the table of Reportable Ranges.) The < > flag indicates that the results for this test were dependent on the result of a test flagged as either > or <.
2. Cartridge results which are not reportable based on internal device problem are flagged with ***. **Action:** Analyze the specimen again using a fresh sample and another cartridge. If the specimen integrity is not in question, the results that are not suppressed should be reported in the usual manner.
3. A Quality Check message will be reported instead of results if the analyzer detects a problem with the sample, calibrant solution, sensors, or mechanical or electrical functions of the analyzer during the test cycle. The device should be serviced as soon as possible.

The following should be used as a guideline to determine appropriate actions when any of the following are identified:

Abnormal Lab Values - When Chem 8 values are abnormal, but not "critical", notification to client's physician's office must be made prior to terminating visit. This may be telephone or email but must also be documented in the client record.

Critical Lab Values - When Chem 8 values report in the "critical range" (as below) patient's physician must be consulted immediately. If consultation with the patient's physician cannot be completed, the Office of the Medical Director on-call physician, or delegate, must be consulted. Consider transport to appropriate facility as needed.

Test	Reference Range	Critical Levels
Sodium (Na)	138-146 mEq/L	<120 or >160
Potassium (K)	3.5-4.9 mEq/L	<2.5 or >6
Chloride (Cl)	98-109 mEq/L	<90 or >120
Ionized Calcium (iCa)	4.5-5.3 mg/dl	<4 or >6
Total CO_2 (TCO_2)	24-26 mEq/L	<10 or >40
Glucose (Glu)	10-105 mg/dl	>400
Urea Nitrogen (BUN)	8-26 mg/dl	<2 or >80
Creatinine (Crea)	0.6-1.3 mg/dl	>2.8
Hematocrit (Hct)	38-51% PCV	<20 or >60
Hemoglobin (Hgb)	12-17 g/dl	<6 or >20
Anion Gap (Agap)	10-20 mEq/L	>20

Non-Adherent HUG Protocol

This protocol is to be used by an appropriately credentialed Mobile Integrated Health Provider (MIHP) as standing orders for patients who are found to be non-adherent with the High Utilizer Group program.

Non-adherent Evaluation
When an agency official believes that an individual HUG patient may be chronically and inappropriately utilizing the 911 EMS system, a report shall be provided to the OMD with the following information:

→ Identity of the individual
→ 911 utilization before and during enrollment in the HUG program
→ Chief Complaint when calling 911
→ Past Medical History
→ Any previous history of enrollment in MIH programs, and the outcomes of those enrollments
→ History of Police utilization during prior 911 responses or patient visits
→ Frequency of hospital visits
→ Contact information for any known PCMH or other outpatient care providers (including mental health providers), and details of prior service requests, interactions, and discussions regarding facilitation of a care plan
→ Assigned home hospital
→ Copies of patient record forms completed by all EMS providers who have previously interacted with the patient

Non-adherent Assignment
The Medical Director will review the report. If the individual is deemed non-adherent, the patient will be registered as such, and a memorandum will be sent to all appropriate agencies.

Calls to 911
All 911 requests for Non-Adherent HUG patients shall receive an appropriate 911 response.

If identified as a Non-Adherent HUG patient during 911 call-taking process
- Communications Center will initiate MIHP response via radio, phone, email, or page

If not identified as a Non-Adherent HUG patient during 911 call-taking process
Responding crew shall:
- Perform and document a careful assessment on all patients
- Initiate a MIHP response via radio or phone request

If the crew identifies an emergent or possible life-threatening condition
- Initiate 911 treatment and transport, as appropriate

MIHP Response, Management, and Disposition
- Respond, if available
- Assign themselves to the CAD incident, if not already done so by the Communications Center
- Respond in non-emergency mode
- Access the client's information, if available
- Take a verbal report from the responding 911 crew to obtain the following:
  → Current complaint
  → Vital signs
  → Significant history and examination findings
- Complete a thorough assessment
- Evaluate the patient for possible navigation to an alternative source of care, or initiate 911 transport to the ED

If patient refuses recommended ED transport
- Refer to AMA Protocol

Non-Adherent HUG Protocol

If patient is a candidate for alternate source of care

- Contact OLMC for discussion of treatment, transport modality, and disposition
- Facilitate transport and allocation of additional resources, which may include:
    - Bus pass
    - Taxi voucher
    - Follow-up home visit
    - Assisting client to schedule visit with a doctor or urgent care

If patient does not necessitate ED transport, or alternate source of care

- Contact OLMC, and if agreement, assign disposition of Medical Director Refusal/Code 35

MIHP Documentation

- Complete ePCR and sign as the primary paramedic, and include summary of OLMC disposition
- Attempt to have the client sign the authorization section, acknowledging the assessment provided and assigned disposi-tion
    - If the client refuses to sign, place the client's name in the appropriate field and mark that the client "refused to sign"
- Attempt to obtain a witness signature

Quality Assurance

- A file will be maintained on each OMD registered Non-Adherent HUG patient, including ePCR documentation of all transports and non-transports
- All cases will be reviewed for renewal on Non-Adherent HUG status every 6-months
- Patients whose 911 utilization falls below 1/3 of their original usage may have their non-adherent status removed

Observation Avoidance Protocol

This protocol is to be used by an appropriately credentialed Mobile Integrated Health Provider (MIHP) as standing orders for patients eligible for, or enrolled in, the Observation Avoidance program. Patients are referred by the Emergency Department case manager or any member of the care team. The MIHP initially consults with care providers and evaluates patients while in the ED. The MIHP then performs scheduled home assessment follow-up visits until patient care is transitioned to the PCMH, within 7-days. The primary point of contact for all patient consultations is that individual's PCMH primary provider contact or, if unavailable, contact OLMC.

Referral Criteria
To be eligible for enrollment into the Observation Avoidance Program, the patient must:
→ Be referred prior to discharge, and be present in the ED when the MIHP arrives
→ Possess mental capacity to provide informed consent for treatment and management
→ Be willing to participate in the program and allow MIHP into the home for assessment and follow-up
→ Live in the MIH service area
→ Be eligible for a follow-up visit within the next 7-days

Enrollment
To enroll patients into the program, the MIHP will:
- Perform an initial visit and assessment in the ED
- Meet with the patient and referring physician to discuss patient's management following discharge and prior to PCP or specialist follow-up
- Schedule an appointment with the follow-up care provider within 7-days.
- Explain to the patient the service that will be provided
- Schedule an in-home visit
- Provide the non-emergency contact number to the patient for episodic needs while enrolled in the program.

Any change in the patient's condition, or consultation regarding the patient's condition or treatments, will be communicated to the referring Emergency Department physician or PCMH, for inclusion in the patient record.

Follow-up
The MIH coordinator or Triage Nurse will provide a report to the follow-up provider's office, including the patient's assessment, treatments provided, and any written documentation.

The MIH coordinator or ECNS Nurse will confirm the time of the patient's appointment, remind the patient of the appointment time, and ensure that the patient has transportation to the follow-up provider's appointment.

Unscheduled Home Visits:
The patient will be provided a non-emergency phone number for the MIHP in the event they would like a phone consultation or an unscheduled home visit between scheduled visits.

911 Responses
Enrolled patients will be tracked in the computer aided dispatch (CAD) system, and in the event of a 911 call to their residence, a 911 ambulance response will be initiated, along with a MIHP who will be dispatched to the scene.
Once on-scene, the MIHP may be able to intervene and navigate the patient to an alternate source of care, including PCMH, urgent care, self-care, or by employing of the use of the appropriate CMP protocols.

Record Keeping
Patients enrolled in the program have a continual electronic medical record (EMR) that allows all care providers mobile access to the patient's entire course of assessments and treatments during enrollment, including care notes, lab values, vital signs, ECG tracings and treatments initiated. These records can be provided to caregivers in accordance with the Treatment Payment Operations (TPO) definitions of HIPAA.

Program Length:
Completion of program is based on the patient's care being successfully transitioned to the PCMH. Term of program will be a minimum of 1-day and a maximum of 7-days.

Peak Flow Procedure

Indications:

→ Patients with limited or severely restricted expiratory flow

→ Patients on bronchodilator therapy

→ Patient able to understand and physically able to attempt the test

Contraindications:

→ Age or cognition does not enable ability to comprehend or cooperate

→ Facial condition or neurological condition that alters their ability to do the test.

→ Respiratory distress level to point patient could deteriorate with testing

Procedure:

- Ensure indicator is at the bottom of the number scale
- Position patient in an upright sitting or standing
- Instruct the patient to hold the peak flow meter horizontal being careful not to block the opening
- Instruct patient to inhale as deeply as possible and then place mouth firmly around the mouthpiece making a tight seal.
- Instruct patient to blow out as hard and fast as they can through the mouthpiece
- Move the indicator back to the bottom of the scale, and repeat steps 2-5 for two more attempts
- Instruct the patient to repeat this maneuver three times (if able to do so)
- Document the highest reading as the peak flow

*** Please contact the ordering community partner with the results of Peak Flow test***

Zones	Signs & Symptoms
Green **(80% of predicted)**	No asthma symptoms No nighttime cough Normal activities No need for rescue medications
Yellow **(50-80% of predicted)**	Some asthma symptoms Decreased peak flow
Red **(<50% of predicted)**	Increased asthma symptoms Decreased in peak flow Poor or no response to rescue medications

Admission/Readmission Avoidance Protocol

This protocol is to be used by an appropriately credentialed Mobile Integrated Health Provider (MIHP) as standing orders for patients eligible for, or enrolled in, the Admission/Readmission Avoidance program. Patients at risk for admission/ readmission are referred by the patient's Case Manager or PCMH. The MIHP will conduct a series of home visits to educate the patient and family on appropriate healthcare management, coordinate in-home therapy, schedule a follow-up appointment with the PCMH, or facilitate emergency transport or navigation to an alternate source of care.

Referral Criteria

To be eligible for enrollment into the Admission/Readmission Avoidance Program, the patient must:

→ Be referred during an inpatient admission or be at high risk for a preventable readmission
→ Possess mental capacity to make informed decisions regarding their disease management
→ Be willing to participate in the program and allow the MIHP into their home for assessment and follow-up
→ Have an established relationship with a PCMH
→ Must live in the MIH service area

Patient may be deemed ineligible for the program if, for example, they are:

→ Stage-3 or 4 Chronic Kidney Disease (CKD) without an attending nephrologist
→ Pregnant
→ Age 18-years or younger
→ Living outside the MIH service area
→ Currently receiving chemotherapy and/or radiation therapy
→ Homeless and not living in a shelter
→ Previously non-adherent with an MIH program

Any case, at any time, may be deemed ineligible and excluded from the MIH program after review by OMD. All reasonable efforts will be made by the MIHP to notify the client, PCMH, and home health partners of the client's status.

Scheduled Home Visits

Enrolled patients will receive a series of home visits by an MIHP to:

- Educate the patient and family on appropriate management of their disease process, including:
  - → Diet and weight management
  - → Medication compliance
  - → Healthy lifestyle changes
- Educate the patient on how to navigate their primary/specialty care network for the purpose of managing their disease process, including:
  - → When to call for an appointment
  - → Important information to share with providers

Unscheduled Home Visits

The patient is provided a non-emergency phone number for the Mobile Healthcare Provider in the event they would like a phone consultation or an unscheduled home visit between scheduled visits.

911 Responses

Enrolled patients will be tracked in the computer aided dispatch (CAD) system, and in the event of a 911 call to their residence, a 911 ambulance response will be initiated, along with a MIHP who will be dispatched to the scene.
Once on-scene, the MIHP may be able to intervene and navigate the patient to an alternate source of care, including PCMH, urgent care, self-care, or by employing of the use of the appropriate CMP protocols.

Record Keeping

Patients enrolled in the program have a continual electronic medical record (EMR) that allows all care providers mobile access to the patient's entire course of assessments and treatments during enrollment, including care notes, lab values, vital signs, ECG tracings and treatments initiated. These records can be provided to caregivers in accordance with the Treatment Payment Operations (TPO) definitions of HIPAA.

Admission/Readmission Avoidance Protocol

In consultation with the patient's PCMH, patients with a Care Management Plan (CMP), e.g. Diabetes, CHF, COPD/ Asthma, can either have their medications adjusted in the field, receive in-home therapy through their CMP, or with the PCMH. Refer to the appropriate CMP.

Suture/Staple Removal Procedure

Indications: Request from a clinician to remove staples or a known type of suture
Contraindications: Signs of wound complications, dehiscence (wound edges do not meet), or infection

Procedure:
- Visually assess the wound for uniform closure of the wound edges, absence of drainage, redness, and swelling
- Utilize non-sterile gloves and cleanse site with alcohol prep prior to beginning

Simple Interrupted Suture Removal
- Gently grasp the knot or the tail of suture with forceps and raise slightly off skin
- Place the curved tip of the suture scissors directly under the knot or on the side, close to the skin
- Gently snip the suture and remove it with forceps. Never snip both sides of the knot.
- Ensure all suture material is removed and placed on sterile gauze
- Remove every second suture until the end of the wound line.
- Assess for signs of dehiscence after each removal (*if present see below)*
- Continue removal until all sutures removed

Staple Removal
- Place the lower jaw of the staple remover under a staple
- Squeeze the handles completely to close the device bending the staple in the middle and pulling the edges of the staple out of the skin
- Gently move the staple away from the wound once both ends are visible
- Relax pressure on the staple remover's handles to release the staple onto clean gauze. Consider staple disposal into a sharps container.
- Remove every second staple until the end of the wound line
- Assess for signs of dehiscence (*if present see below)*
- Continue removal until all staples removed

Post-removal care
- Apply sterile wound strips to reduce likelihood of dehiscence
- Advise patient of ongoing self-care and warning signs for infection

Wound dehiscence care
- Discontinue suture or staple removal
- Cover wound with saline moistened gauze
- Contact referring clinician or OLPG for further guidance

Pearls:
- Document # of sutures or staples removed, any dressing/adhesive wound strips applied, and appearance of wound
- Cleaning may loosen dried blood or crusted exudate, consider moistening with saline as necessary
- Mattress or running continuous sutures are not eligible for removal

Urinary Catheter (Foley) Malfunction

This protocol is to be used by an appropriately credentialed Mobile Integrated Health Provider (MIHP) as standing orders for patients enrolled in an approved Mobile Integrated Health program. This protocol may be used in visits requested by partner agencies or 911 calls from program clients.

- Review clinical record
- Consult with appropriate partner agency.
- Flush the catheter or remove as necessary
- Re-insert new urinary catheter

If two unsuccessful attempts

- Contact appropriate partner agency staff or, if unavailable, contact OLMC

Wound VAC Malfunction Protocol

This protocol is to be used by an appropriately credentialed Mobile Integrated Health Provider (MIHP) as standing orders for patients enrolled in an approved Mobile Integrated Health program. This protocol may be used in visits requested by partner agencies or 911 calls from program clients.

- Review clinical record
- Contact appropriate partner agency staff or, if unavailable, contact OLMC
- Remove Wound VAC
- Pack wound with wet to dry dressings
- Cover dressing with 4×4 or abdominal pad and secure with tape.
- Notify appropriate partner agency staff