



University Hospitals

EMS Training & Disaster
Preparedness Institute

**Specialty Care and
Interfacility Transport
Guidelines / Protocols**

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INTRODUCTION

These Specialty care and interfacility transport guidelines / protocols are designed to be used in situations where patients are being transported from one healthcare facility to another, for continued or upgraded care. This document is an adjunct document to the current Prehospital Care Protocol and Treatment Guidelines, and that document outlines core scope of practice as well as current standard of care for out of hospital providers. Where indicated, treatment modalities described in either document may apply to a given patient situation, and knowledge of both documents contents is required.

Definitions

Prehospital Care Protocols and Treatment Guidelines are referenced as “PCP” (Prehospital Care Protocols) throughout this document. This document will be referenced as “IFTP” (Interfacility Transport Protocols) throughout this document.

Hyperlinks

This document is hyperlinked as a .PDF for rapid retrieval of information. The cover is linked to the Table of Contents and each entry is linked to the corresponding page. The header of each page is linked back to the Table of Contents.

SPECIAL REQUIREMENTS

All therapies and procedures in this document are not automatically authorized for all providers. Many sections require special training and authorization by the Medical Director. This training is to be provided by the participating EMS agency as authorized by the Medical Director or the Medical Director themselves.

The following table describes the protocols that require prior authorization before use

Protocol	Requirement	Refresher
Blood Products	Medical Director approved training	Yearly
Chest Tubes	Medical Director approved training	Yearly
High Flow Nasal Cannula Devices	Medical Director approved training	None
Medication Management	Medical Director approved training	Yearly
Medication Port Access	Medical Director approved training	Yearly
Stroke Transport (TPA)	Medical Director approved training + addition of Hydralazine (Apressoline)	Yearly
Ventilator Management (A/C)	Medical Director approved training	Yearly
Ventilator Management (Multi-mode)	Medical Director approved training	Yearly
IV Pump Management	Medical Director approved training	Yearly

INTRODUCTION

TRANSPORT CARE GENERAL GUIDELINES

General

1. Patient safety first! Do NOT transport patients who cannot be appropriately managed in an ambulance or with the level of care available. Summon appropriate resources, as necessary. Much scrutiny will come from decisions made regarding these situations. Be sure decisions are truly made because you do not have capability to manage the patient.
2. Paramedics may manage up to three (3) patient care devices per patient per call. A patient care device is defined as any externally managed device that would cause detriment to the patient if not in place or discontinued. Each medication infusion line counts as a device when running anything other than crystalloids. If additional patient care devices are required, additional help is required to manage the patient and devices. A cardiac monitor / defibrillator is not counted as a patient care device unless electrical therapy is or could be required for the patient during transport. Example: a bradycardic patient may require pacing if decompensation occurs, a monitor would be counted against the 3 patient care devices rule. If defibrillation (cardioversion) or pacing pads are on the patient for any reason at time of pickup, the monitor / defibrillator will count as a managed device.
3. Cardiac monitoring, continuous pulse oximetry, and capnography are required on all patients with medications running or attached patient care devices as defined above.
4. 2 sets of vital signs are required as a minimum, and every 10 minutes during transport as a minimum, sooner if unstable or potential for instability.
5. Contact Medical Control as necessary during interfacility transports as defined in this document.
6. Multiple protocols are likely to apply to every patient encounter.
7. Assure double the anticipated amount of medications including oxygen, are available for expected transport time.
8. Document interventions and medications given before transport by the receiving facility as such on the PCR.
9. Waveform capnography is required on all patients with NPPV or advanced airways in place.
10. Waveform capnography tracings at time of pickup, after patient movement from on bed to another and at departure are to be attached to the PCR.
11. Vital signs at time of pickup and drop off must be recorded and notated as such.

Prior to departure

12. A complete assessment shall be conducted of the patient prior to transport. Do not delay transport to obtain already obtained EKG's. If repeat EKG's are indicated, obtain during transport.
13. Receive a report on patient condition from their healthcare provider before transporting the patient. Assure patient report if from a direct healthcare provider engaged in the patient's care. Consult Physician in charge of patient if the patient is critical.
 - a. Ensure appropriate titration orders where applicable.
 - b. Ensure appropriate sedation package and plan response(s) if patient fails the sedation due to out of hospital stimulation.
 - c. Ensure and validate expected NIBP, HR, Spo2 and Co2 targets.
14. Plan for patient decompensation enroute. Put appropriate interventions or monitoring in play before transport.
15. Develop a plan with sending Physician if patient has potential for decompensation enroute before departure of the sending facility. Understand in discussion with the Physician if there is decompensation enroute, whether diversion is appropriate or if specialty care at the destination outweighs any diversion.
16. Assure all pre-established vascular access is functioning prior to departure.
17. Assure knowledge of and function of all patient treatment devices and therapies before transport.
18. Glucose values should be reevaluated prior to or during transport if patients have not eaten, have been made NPO, received large volumes of fluids, has an insulin pump, has received steroids throughout their course of treatment, is post OP, or has had their blood glucose managed as part of their course of treatment. Reassess every 30 minutes at a minimum, or if symptoms develop with patients receiving insulin or glucose products.

During Transport

19. If a patient develops complications during transport, treat per appropriate PCP.
20. Communicate any changes in patient condition during transport with receiving facility to assure proper patient care is available at the receiving.
21. Reports must be called to the receiving facility if the destination is the ED.
22. EMS is required to leave a PCR at receiving facility during all interfacility transports.

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ADVANCED AIRWAY PATIENT

Purpose:

Describes requirements and recommendations for transporting patients with advanced airways.

Overview:

Patients with advanced airways are generally managed by positive pressure ventilation. Patients who are on mechanical ventilation at the sending facility should remain on mechanical ventilation during transport unless there is a CRISIS.

Associated Protocols / Guidelines:

Ventilator Management

If Patient is Tracheostomy patient, see Tracheostomy Patient Protocol / Guidelines in this document.

Permissions:

PARAMEDICS may transport patients with advanced airways in place

ADVANCED EMT's may NOT transport patients with advanced airways in the IFT setting

EMT's may NOT transport patients with advanced airways in the IFT setting except uncomplicated, non-ventilated tracheostomy patients

General Requirements:

- Determine type of airway, and its location. Ex. Intratracheal, supraglottic, transtracheal.
- Assure device is properly positioned by auscultation, examination, and capnography.
- Wave form capnography is required for every advanced airway transport.
- Pulse oximetry is required for every advanced airway transport.
- Assure proper cuff seal on device by tactile inspection of the pilot balloon.
- Assure adequate tube restraint for transport, replace, as necessary. Tape and twill are not appropriate for the rigors of out-of-hospital transport. Use commercial tube securing devices with a bite block.
- Document tube type, depth, size placement indicators prior to departure, after every move during transport, and at the destination. Document with capnography strip attached to PCR.
- Determine last sedation / analgesia regiment (if applicable) and understand how long given agents are expected to last and correlate with anticipated transport time. Be prepared to continue sedation / analgesia.
- Determine the need for sedation / analgesia during transport. Treat per Sedation / Analgesia IFTP.
- Determine if the patient has received a paralytic and determine what agent was used. Also determine what sedation has been given. Sedation agents may be shorter acting than the paralytic. Be prepared to give additional sedatives during transport. Monitor of increasing BP, HR, tearing / crying, and wakefulness during transport.
- Calculate oxygen requirements for transports and assure adequate supply.
- If an established airway fails, treat per appropriate PCP.
- Suction must be available during transport and the movement of the patient to the receiving location.
- Continuous cardiac monitoring is required during interfacility transport of patients.

Recommendations:

- C-Collars placement may be considered on patients with advanced airways to prevent migration during transport.

Key points:

- Pulse oximetry is an indicator of oxygenation, not ventilation. Do not rely on pulse oximetry to verify proper airway placement.
- Capnography is an indicator of ventilation. A waveform indicates proper airway placement. The capnography number is the sum of metabolism, perfusion, and ventilation. Abnormalities in the number should be addressed by correcting metabolic, perfusion, or ventilation dysfunction. Identify and correct metabolic dysfunction (temperature, glucose, and oxygenation) first, perfusion second, ventilation concerns last.

ARTERIAL CATHETERS

Purpose:

To describe when it is appropriate to transport patients with arterial lines.

Overview:

Arterial access is sometimes utilized for pressure monitoring and interventional access for specialty procedures in hospital. Patients that have arterial lines shall go via Critical Care Transport.

Permissions:

PARAMEDICS may NOT transport patients with arterial catheters in place

ADVANCED EMT may NOT transport patients with arterial catheters in place

EMT may NOT transport patients with arterial catheters in place

BLOOD PRODUCTS

Purpose:

To describe when it is appropriate to continue blood products established by the sending facility.

Overview:

There is no substitute for blood. Patient care often requires blood or blood products to yield optimal outcomes.

Permissions:

PARAMEDICS are permitted to transport already established blood or blood products. Special training and competency required.

ADVANCED EMT's are NOT permitted to transport patients with blood products

EMT's are NOT permitted to transport patients with blood products

General Requirements:

- Paramedics transporting blood products must have undergone testing consistent with a Medical Director approved competency and refreshed yearly.
- The blood or blood products must be initialized by the sending facility and have been infusing for 10 minutes before transport. If patient is in extremis, this may be overridden by the sending Physician. Make sure a plan for transfusion reaction is discussed prior to departure with the Physician.
- Paramedics may not change blood or blood product bags / containers enroute.
- If being infused with an IV pump at the sending facility and the tubing is incompatible with transport IV pumps, the sending IV pump must be taken, or the infusion must be run in via gravity after consultation with the sending Physician.
- Special tubing must sometimes be utilized for administration. Use only administration devices provided by the sending facility or approved tubing.
- If a transfusion reaction occurs during transport, discontinue the infusion, and contact medical control. See IFTP Medical Control. Do not discard the blood product, it must be turned into the receiving facility.
- Type of blood product, route, volume, and completion must be documented on the PCR.
- EMS is not permitted to start or change blood products. If there is a need for multiple units of blood, they must be prepared and initiated by the sending facility prior to departure. Critical Care Transport should be considered in these cases.
- Providers may transport any other needed blood or blood products for the receiving facility to administer if necessary. These cannot be started or changed in transport.
- Use separate IV site for other medication administrations or infusions.

Key points:

- Transfusion reactions include fever, hypotension, pulmonary edema, and typical anaphylactic type reactions. Treat per anaphylaxis protocol.

BURN PATIENT

Purpose:

Describe the requirements for transportation of burn patients.

Overview:

Burn patients require evaluation and treatment at specialized burn centers for optimal outcomes. These patients will have large IV fluid requirements and frequently require aggressive analgesia.

Permissions:

PARAMEDICS are permitted to transport burn patients including those with airway involvement

ADVANCED EMT's are permitted to transport burn patients who DO NOT have airway or near-airway burns as indicated by singed nasal hairs, soot, redness, or swelling

EMT's are ONLY permitted to transport adult burn patients with extremity burns less than 15% BSA of partial depth or less grade

General Requirements:

- Establish body surface area affected.
- Determine type of burn, and understand treatment provided prior to arrival.
- Establish depth of burns. Document on PCR along with dressings.
- Calculate or obtain fluid resuscitation requirements per the Parkland Burn Formula.
- Complete a detailed assessment of the airway, oropharynx, neck, and chest to determine potential for deterioration enroute.
- Secure or have secured any potentially involved airway PRIOR to transport.
- If there is concern about airway loss during transport, discuss with the sending Physician prior to departure.
- Capnography is required on all burn transports.
- Assure multiple vascular access points are established for the administration of fluid and / or analgesia.
- If a patient becomes hypotensive despite continued fluid administration, consider augmenting care with ResQGARD assuming patient does not have an advanced airway.
- Administer / continue pain management as required per the PCP Burn Protocol.
- Sleepy, obtunded, respiratory distress, hypotensive patients, or stridorous patients require Paramedic ALS transport.
- Treat stridor aggressively per PCP and be prepared to perform cricothyrotomy.

CHEST TUBE MANAGEMENT

Purpose:

To describe the process for management of chest tubes in transport.

Overview:

Many patients require chest tubes for relief of pressure or fluids from the thorax.

Permissions:

PARAMEDICS are permitted to transport patients with chest tubes

ADVANCED EMT's are NOT permitted to transport patients with chest tubes

EMT's are NOT permitted to transport patients with chest tubes

General Requirements:

- Determine reason for chest tube; to relieve air, fluid, or both from the thorax.
- Determine location of chest tube(s).
- Assure that the tube(s) are securely affixed to the patient prior to transport. Secure additionally as required.
- Mark catheter / patient along somewhere along its length as a reference in case of migration.
- Determine what type of collection or venting process is in place (ex. one way valve, or collection set).
- If collection set being utilized, verify water seal chamber is full to indicated line.
- Collections sets must be transported upright, and lower than the patients' thorax.
- Determine if collection set is on suction and continue suction, as necessary.
- Record volumes of collected fluids in collection chamber prior to transport and at destination.
- The Paramedic must have booted hemostats available to clamp a chest tube if the collection set or valve becomes disconnected.
- Listen to and document lung sounds before moving the patient and after each move.
- Assure adequate vascular access prior to transport.
- If migration of a chest tube occurs, secure in place and assess for signs of hemo/pneumothorax. Be prepared to perform needle chest decompression. Contact medical control, refer to the IFTP Medical Control.
- If complete dislodgement occurs, cover the ostomy site with 3 sided occlusive dressing. Monitor for signs for hemo/pneumothorax. Be prepared to perform needle chest decompression. Contact medical control, refer to the IFTP Medical Control.
- Paramedics transporting chest tubes must have undergone testing consistent with a medical director approved competency and refreshed yearly.
- Paramedics transporting chest tubes must have undergone hands on training with the device consistent with manufacturers manual and established competency.
- If the patient has a drop-in blood pressure and / shortness of breath, evaluate for tension pneumothorax. Consider Medical Direction consultation for assistance with troubleshooting.

DIALYSIS PATIENT

Purpose:

To describe the requirements and recommendations during the transport of dialysis patients.

Overview:

Dialysis patients are chronically ill patients, usually with multiple co-morbidities. These patients are high risk patients for numerous life threatening issues and require detailed assessment with every encounter.

Permissions:

PARAMEDICS are permitted to transport dialysis patients

ADVANCED EMT's are permitted to transport dialysis patients

EMT's are permitted to transport dialysis patients to SNF's, dialysis centers, and scheduled non-acute patients.

General Requirements:

- A minimum of 2 set of vital signs are required on EVERY transport, including Spo2.
- A glucose is required to be assessed during transport if the patient has any alteration in normal mental status, (or unknown mental status), fever, refusing or unable to eat meals, describes malaise, or appears diaphoretic.
- Lung sounds must be obtained, and results recorded.
- Actively bleeding patients cannot be returned to SNF's.
- IV access is not permitted in extremities where active AV fistulas are present below the active fistula.
- IV access in extremities with old / inactive fistulas should be avoided.
- AV fistulas access established by dialysis center may be left in place during transport for use by EMS if the patient is or has potential to become unstable enroute. The extremity must be kept straight if fistula access is left in place.
- Patients must have their access site visible during transport for ongoing assessment of bleeding.
- Cardiac monitoring, continuous pulse oximetry and 12 lead EKGs are required on all dialysis patients being transported to the ED or for hospital admission.
- Attempt to ascertain the potassium level on hospital-to-hospital transfers prior to departure from sending and be prepared to treat hyperkalemia per the Dialysis / Renal Patient PCP if complications arise.
- No food or drink shall be provided during EMS care to a dialysis patient.

Recommendations:

- Have a high index of suspicion for decompensation with all dialysis patients.
- Glucose evaluation on most dialysis patients, especially post dialysis, may be warranted.

Key points:

- These patients have complex medical problems, and they are seen with frequency. They are not "routine".
- Patients come into dialysis hypervolemic and leave hypovolemic.
- All electrolytes are elevated pre-dialysis, and reduced post dialysis.

- Many therapeutic medications are removed during dialysis.
- Patients with indwelling catheters are incredibly high risk for introduction of infectious pathogens. They should be considered at least bacteremic and assessed for sepsis during each encounter.
- AV grafts or shunts may bleed after removal of dialysis needles post dialysis. Do not package patient such as bleeding would not be identified during transport.
- If AV graft is ripped or torn, a tourniquet may be necessary to stop bleeding. Place tourniquets above and below the site. Divert immediately to the closest ED.
- Generally bleeding from an AV graft from removal of dialysis needles can be controlled with direct pressure. Divert to and ED if bleeding does not subside with direct pressure.
- Have all access needles removed from dialysis patients before departing dialysis centers.
- If transporting a patient who is actively being treated for hyperkalemia, understand what treatments were administered and when they may wear off. These patients must be transported with cardiac monitoring in place. Treat per hyperkalemia PCP protocol if changes develop.

DRAIN SYSTEM / TUBE MANAGEMENT

Purpose:

Describe general management of various types drain tubes a patient may have.

Overview:

A patient may have various type of drain tubes inserted for any number of reasons.

Permissions:

PARAMEDICS may transport all drain tubes

ADVANCED EMT's may transport drain tubes that do not drain the chest

EMT's may transport drain tubes that do not drain the chest

General Requirements:

- Ascertain what the tube is draining, and why it was placed.
- Determine how the fluid is collected.
- Assure that the collection tube or system is secured to the patient prior to transport.
- Determine if there is any special orientation or power requirements for the collection device.
- Have a clamp available to occlude the drain tubing in the event the drain gets separated from the collection device. Clamp the patient side of any tube.
- If a drain tube gets pulled out inadvertently, cover the entry hole with sterile occlusive dressing and notify receiving facility.

EMS INITIATED VASOPRESSOR SUPPORT

Purpose:

Provide a vasopressor option for interfacility cases where push dose epinephrine will require numerous doses and the patient required vasopressor support.

Overview:

Interfacility transports may be of great distance and the patient's hemodynamic situation may also change during transport. This document is to allow the use of epinephrine drips to support hemodynamics in cases where such support was not needed or indicated at time of transfer, thus no vasopressor was initiated by the sending.

Permissions:

PARAMEDICS may prepare and administer epinephrine drips during IFT / SCT cases

ADVANCED EMT's may NOT prepare and administer epinephrine drips during IFT / SCT cases

EMT's may NOT prepare and administer epinephrine drips during IFT / SCT cases

General Requirements:

- If there is suspicion of the need for vasopressor support prior to leaving the sending facility, that needs to be discussed with the sending Physician and proper agent / titration parameters identified.
- Push dose epinephrine should first be utilized to temporize the patient's hemodynamic status prior to administering an epinephrine drip.
- An ETE to the destination of less than 10 minutes would not require the initiation of an epinephrine drip. Manage this patient with push dose epinephrine.
- If epinephrine drip is started by EMS, call ahead to the receiving facility to advise of the addition of the vasopressor and assure that your in-hospital destination will not change.
- All IV bags with admix medications are to be labeled with the medication, date / time of admix, and concentration of the end medication.
- If an epinephrine drip is started, all vital signs must be monitored every 5 minutes or sooner.
- If an epinephrine drip is started, capnography, HR, EKG, and BP must be monitored.
- The target MAP is 65 or greater.
- If epinephrine drip is started it MUST be delivered on an IV pump. Gravity drips are prohibited. If IV pumps are not available, then push dose must be used.
- Remember IV pumps deliver medications in ml/hr not in drops per minute.
- Consider your remaining transport time when mixing epinephrine drips. Assure that you have enough to finish the call with agent to spare.

Epinephrine Drip for Interfacility Transport Cases

0.1 - 0.5 micrograms / kg / minute IV infusion titrated to MAP 65 / SBP 90 (Adult)

Dose X kg X 60 / Dose on hand in mcg / ml = ml / hr to administer

Suggested to mix to a concentration of 10 mcg / ml in largest available volume i.e., 5 mg in 500 ml.

FOLEY CATHETER MANAGEMENT

Purpose:

To describe the management of foley catheters.

Overview:

Many patients have foley catheters and drain bags.

Permissions:

PARAMEDICS may transport patients with foley catheters and drain bags

ADVANCED EMT's may transport patients with foley catheters and drain bags

EMT's may transport patients with foley catheters and drain bags

General Requirements:

- Empty foley drain bags before transport and advise facility of volume.
- Record volume of output during transport.
- Keep the collection bag at a level lower than the patients' bladder.
- If a foley is inadvertently pulled out, treat any bleeding, and advise receiving facility. Do not attempt reinsertion.
- Document color and clarity of urine collected.

FOLEY CATHETER MANAGEMENT CONTINUOUS BLADDER IRRIGATION

Purpose:

To describe the management of foley catheters with continuous bladder irrigation systems.

Overview:

Patient may require uninterrupted irrigation of the bladder. Patients may have such irrigation systems in place that require maintenance during transport.

Permissions:

PARAMEDICS may transport patients with continuous bladder irrigation

ADVANCED EMT's may NOT transport patients with continuous bladder irrigation

EMT's may NOT transport patients with continuous bladder irrigation

General Requirements:

- The irrigation solution must be kept higher than the patient, just like any other IV solution.
- The drain bag must be kept lower than the patient to allow for draining.
- Assure that enough irrigation solution is available for the transport.
- If being administered on gravity drip, count rate before moving patient as a base line for reference during transport.
- If the solution is likely to run out during transport, make sure that you plan for replacement solution.
- Assure that the catheter is secured prior to transport to assure that there is not an inadvertent dislodgement.

HOSPICE PATIENT

Purpose:

To describe the management of hospice patients

Overview:

EMS is frequently requested to transport terminal or hospice patients.

Permissions:

PARAMEDICS may transport hospice patients

ADVANCED EMT's may transport hospice patients

EMT's may transport hospice patients

General Requirements:

- Have contact information for the hospice service prior to transport.
- Have a current DNR or confirmation that you are approved to not resuscitate the patient in the event of death during transport from Medical Control.
- PRIOR TO TRANSPORT - Have a plan, confirmed with the hospice providers, on EMS actions if patients die during transport.
- Consult sending providers to determine if analgesia has been given, at what time, and if additional is likely needed during transport.

HIGH FLOW OXYGEN DEVICES

Purpose:

To describe the management of patients requiring high flow oxygen.

Overview:

High flow nasal cannulas (HFNC) is an ambiguous term. For the purposes of this protocol the following definitions apply;

High Flow Nasal Cannula (HFNC) Device – is an electrically powered, heated, and humidified oxygenation system such as an Airvo, Vapotherm, or ventilator that provides similar functions
High Flow Nasal Cannula – is in reference to a nasal cannula attached to higher than “normal” flow rates. These can either be purpose made devices or standard devices used at high flow.

Permissions:

PARAMEDICS may transport HFNC devices and all other high flow nasal cannulas and masks.

ADVANCED EMT's may NOT transport HFNC devices but may transport the patient on high flow nasal cannulas and masks.

EMT's may NOT transport HFNC devices but may transport patient on high flow nasal cannulas and masks.

General Requirements:

- HFNC devices requires special training approved by the Medical Director
- High Flow Nasal Cannulas may be placed under other high flow oxygen masks or CPAP to provided needed oxygen concentrations
- By definition, high flow devices consume large amounts of oxygen. Calculate oxygen consumption and be sure there is sufficient for the transport.
- Take extra oxygen cylinders with you while away from the ambulance.

INVASIVE PRESSURE MONITORING

Purpose:

This describes that non-arterial invasive line monitoring is a critical care function but defines transportation with hardware in place, without monitoring would be acceptable.

Overview:

Patients may have various invasive pressure monitors in place for numerous conditions. These could include but are not limited to CVP or ICP.

Permissions:

PARAMEDICS are NOT permitted to monitor invasive lines, but may transport the patient with invasive lines in place assuming they do NOT need monitored and are not arterial

ADVANCED EMT's are NOT permitted to monitor invasive lines

EMT's are NOT permitted to monitor invasive lines

General Requirements:

- Determine the placement of the catheter, if venous, arterial, or otherwise.
- If placement is arterial, refer to IFTP Arterial Catheters.
- Determine if the patient can be transported without that pressure being transduced.
- If pressure transduction is required and patient care decisions made based on that information, a Critical Care Team must be summoned.

MEDICATION MANAGEMENT – Fixed and Titrated

Purpose:

To define the continuation of hospital established medications during transport.

Overview:

Medications are required for numerous reasons for patients. Proper maintenance of these medications during transport are necessary for optimal patient outcomes.

Permissions:

PARAMEDICS are permitted to manage approved medications on a fixed rate for transport.

PARAMEDICS are permitted to get verbal or written orders for titration on a per call basis.

ADVANCED EMT's are NOT permitted to manage medications other than normal saline, lactated ringers, or dextrose preparations without a pump.

EMT's are NOT permitted to manage medications during transport

General Requirements:

- Paramedics may continue approved medications on a fixed rate established by the sending hospital.
- A Paramedic may establish titration criteria with the sending Physician on a per case basis but may not titrate without orders.
- A Paramedic may communicate with Medical Control (Reference IFTP, Medical Control) regarding medication changes enroute.
- Establish that the patient is stable on a selected medication before transport. If patient is not stable, consult sending Physician to stabilize prior to transport. Refer to IFTP, Unstable at time of transport.
- If a patient becomes unstable due to a medication during transport, discontinue the medication, treat by appropriate PCP Protocol, and contact Medical Control (refer to IFTP Medical Control protocol).
- All drip medications must be on an IV pump except normal saline, lactated ringers, or dextrose products less than or equal to a 10% concentration.
- Glass bottles require vented IV tubing.
- Nitro requires special IV tubing.
- UNDERSTAND THE DIFFERENCE BETWEEN TPA AND TPN.
- **IF TPA RUNNING ON PATIENT – SEE STROKE TRANSFER**
- Paramedics transporting medications must have undergone testing consistent with a medical director approved competency and refreshed yearly.
- Paramedics transporting medications must have undergone hands on training with the device consistent with manufacturers manual and established competency.
- Document rate, concentration, route, and who initiated.
- If patient is on a PCA pump and requires augmentation of sedation or analgesia provided by the PCA, contact Medical Control. Patients with PCA pumps must be transported by a Paramedic.
- Chemotherapeutic agents cannot be transported by Paramedics.

MEDICATION PORT ACCESS

Purpose:

To define the use and access of subcutaneous medication ports.

Overview:

Medications ports are placed for numerous reasons in patients with poor vascular access or requiring frequent vascular access.

Permissions:

PARAMEDICS are permitted to manage already accessed med ports. Paramedics with special training may access med ports

ADVANCED EMT's are NOT permitted to access / manage medications ports

EMT's are NOT permitted to access / manage medications ports

General Requirements:

- Paramedics accessing med ports must have undergone testing consistent with a medical director approved competency.
- Paramedics accessing med ports must have undergone hands on training with the device consistent with manufacturers manual and established competency.
- Paramedics accessing med ports must have special Huber needles for accessing med ports.
- Paramedics may utilize prior accessed med ports consistent with requirement outlined in the indwelling venous lines IFTP.

MEDICAL CONTROL

Purpose:

To define Medical Control for interfacility transport patients.

Overview:

Multiple Physicians may be involved in the care of a patient, whom to call in which order and when is important.

Permissions:

PARAMEDICS may contact Medical Direction as required

ADVANCED EMT's may contact Medical Direction as required

EMT's may contact Medical Direction as required

General Requirements:

- The sending Physician is responsible for the patient during transport.
- As required, get contact information for the sending Physician prior to transport.
- A provider should consult the sending Physician for orders specific to the transport if the orders are within the providers' scope of practice and the provider has appropriate resources to carry the orders out safely. Orders from any Physician must be within the scope of practice of transporting EMS providers.
- If the patient condition changes during transport, the sending Physician should attempt to be contacted first,
- If the sending Physician is unavailable, and the accepting Physician is known and available, patient specific orders should be obtained from them.
- In the event the sending or receiving Physician is not available, Prehospital Medical Control may be contacted.
- Document all Medical Control contact and name of Doctor.

OB PATIENT

Purpose:

Define the parameters for successful OB patient transport.

Overview:

OB patient transports require careful assessment and planning for optimal outcome.

Permissions:

PARAMEDICS can transport OB patients including OB emergencies.

ADVANCED EMT's can transport OB patients EXCLUDING OB emergencies.

EMT's can transport OB patients EXCLUDING OB emergencies.

General Requirements:

- Patients experiencing contractions less than 5 min apart and 6 cm or more of dilation should be delivered before transport unless sending facility wishes to send trained staff.
- Patients experiencing OB emergencies should have benefit of transport carefully weighed with ability to treat and manage said emergency in an ambulance. Discuss situation with sending Physician and / or medical control, as necessary.
- Patients receiving magnesium IV should have deep tendon reflexes (DTR's), capnography, and respiratory rate monitored every 10 minutes throughout transport. Calcium must be available as an antidote.
- Collect and understand patient OB history before transport. Obtain and record Para / Gravida status, prenatal care, pre-eclampsia, and previous OB history / complications.
- C-Sections may not be performed by EMS.
- Fetal monitoring is not performed by EMS. Other healthcare providers with fetal monitoring equipment and training may be transported with the patient as the situation dictates.
- If able have a trained health care provider at sending facility use a doppler to validate fetal stability prior to departure.
- If patient is pre-eclamptic and progresses to eclampsia enroute, reference PCP for OB emergencies.
- Specialty Health Care providers may be transported with the patient in crisis situations to assist with in transport emergencies.

Key points:

- DTR's are checked by using impulses from a reflex hammer to stretch the muscle and tendon. The limbs should be in a relaxed and *symmetric* position since these factors can influence reflex amplitude. It is important to compare each reflex immediately with its contralateral counterpart so that any asymmetries can be detected.
- DTR's are difficult to properly assess during transport. Establish baseline DTR's in a manner which can be replicated in the ambulance during transport. Ex. Same position on cot for baseline as like to be during transport. In addition, DTR's are an indicator, but not the only indicator of overuse of magnesium. Trend respiratory rate and capnography on these cases. Hand grasp trending may also be helpful.

PEDIATRIC / INFANT PATIENT

Purpose:

Describe the needs and safe treatment and transport of the pediatric / neonatal patient.

Overview:

Child and Infant transports require specialized equipment and training. Good history, assessment, and planning yield optimal outcomes

Permissions:

PARAMEDICS may transport Pediatric / Infant patients requiring ALS care enroute

ADVANCED EMT's may transport Pediatric / Infant patients requiring non medicated IV fluids enroute

EMT's may transport stable Pediatric / Infant patients requiring BLS care

General Requirements:

- Pediatric / Infant patients require weight appropriate restraint devices. Refer to and follow the manufacturers recommendations for patient weight.
- Cot mounted restraint devices are NOT to be utilized anywhere but on ambulance cots.
- Caregiver supplied car seats may be utilized if instructions for proper securement are available and legible for that device and is otherwise in good working order.
- Weight based reference material for resuscitation must be available.
- Parents / caregivers are never permitted to hold the patient while sitting on the cot.
- Paramedics may NOT transport or manage acutely ventilated patients under the age of 16 years old on ventilators.
- EMS may transport patients under 16 years of age if the patient is chronically ventilated and is on their native vent and there is a family or caregiver trained to manage said device. Capnography still required if using the patient's native vent.

Recommendations:

- Patients with airway / breathing issues should be placed in flexible cot mounted restraint devices rather than traditional car seats for ease of positioning and intervention if required during transport.
- Assure venous access if needed is in place and functional prior to transport.

Key points:

- Additional non-patient children or family members are not to be transported in the ambulance.
- One caregiver, translator, or family member may accompany the patient in the back of the ambulance at the discretion of the treating crew. Allowing caregivers with the patient is a per case decision. In most cases it will be beneficial for the caregiver / responsible party to be in the back with the patient. In certain cases, it may be prudent to request the caregiver / responsible party to ride in the front of the ambulance separate from the patient. Legal rights of parents and appropriate consent are still required for all transport of minors.

Situations where it may be prudent to separate the caregivers and the patient.

- Suspected abuse / neglect
- The presence of the caregiver obviously induces anxiety.
- They will interfere with treatment.
- The patient is of an age where they request the caregiver does not ride in back with them.

PINK SLIPPED (APPLICATION FOR EMERGENCY ADMISSION) PATIENT

Purpose:

Describe the situations and care of patients who are pink slipped.

Overview:

Safety of the crew is priority. Summon law enforcement as necessary to assure crew safety.

Permissions:

PARAMEDICS may transport pink slipped patients

ADVANCED EMT's may transport pink slipped patients

EMT's may transport pink slipped patients

General Requirements:

- Summon appropriate help to assure crew and patient safety.
- If patient is restrained follow procedure for restraint in the PCP if applicable.
- The transporting crew must have a copy of the pink slip (application for emergency admission) prior to transport.
- Patient must be searched by EMS prior to transport for crew and patient safety.
- Consider elopement risk and plan accordingly. Consider sedation and restraint options.
- Eloped patients from EMS care are to be followed at a safe distance, and police summoned for recovery.
- Belongings must be kept separate from the patient.
- Secure any items in the truck that may be used as a weapon against the crew.

Recommendations:

- Lights and sirens are not to be used unless the patient experiences a medical emergency aside from the reason for restraint or crew safety is in immediate jeopardy.
- Remove shoes, pants, and transport in hospital gown to discourage elopement.

Key points:

- Same sex providers should be utilized whenever possible.

PSYCHIATRIC PATIENT TRANSFER (VOLUNTARY ADMISSION)

Purpose:

Describe the situations and care of patients who are being transported to voluntarily for psychiatric evaluation.

Overview:

Safety of the crew is priority.

Permissions:

PARAMEDICS may transport psychiatric patients

ADVANCED EMT's may transport psychiatric patients

EMT's may transport psychiatric patients

General Requirements:

- Belongings must be kept separate from the patient.
- Secure any items in the truck that may be used as a weapon against the crew.
- Voluntary patients still retain all personal rights and may change their mind at any time.

Recommendations:

- Lights and sirens are not to be used unless the patient experiences a medical emergency aside from the reason for restraint or crew safety is in immediate jeopardy.
- Remove shoes, pants, and transport in hospital gown to discourage elopement if able.

Key points:

- Same sex providers should be utilized whenever possible.

RESTRAINED PATIENT

Purpose:

Describe the care of patients transported in restraints.

Overview:

Safety of the crew is priority. Summon law enforcement as necessary to assure crew safety.

Permissions:

PARAMEDICS may transport restrained patients

ADVANCED EMT's may transport restrained patients

EMT's may transport restrained patients

General Requirements:

- Patients may NOT be transported in KEY locked leather restraints unless special critical circumstances exist. Keyless leather restraints require all 4 restraints to be applied to function correctly.
- Tie on soft restraints are permitted in any quantity.
- Restrain patient per PCP restraint procedure.
- MSP's must be checked after application and every 10 mins thereafter and documented on the PCR.
- Patients may not be transported face down.
- Place a HEPA mask or oxygen mask with oxygen supplied over patient if they are spitting. Hospital or law enforcement supplied spit hoods are permitted if they are purpose made for that application, do not obstruct the airway, and can be removed quickly in the event of an emergency.
- Use verbal de-escalation techniques during restraint and transport.
- Establish last sedation and chemical restraint from sending facility (if given) and document. Be prepared to supplement or redose as necessary per PCP.
- Eloped patients from EMS care are to be followed at safe distance and police summoned for recovery.
- Restrained or handcuffed prisoners require law enforcement to accompany the patient in the ambulance.
- If fever, tachycardia, muscle rigidity and AMS accompany a patient who has received any tranquilizer or antipsychotic drugs is indicative of Neuroleptic Malignant Syndrome and is an emergency. Begin cooling and divert to an ED immediately.
- Involuntary contractions of muscles of the extremities, face, neck, abdomen, pelvis, or larynx in either sustained or intermittent patterns that lead to abnormal movements or postures in a patient who has received any tranquilizer or antipsychotic drugs is indicative of an acute dystonic reaction (EPS Symptoms) and should be treated per the Behavioral / Psychological Emergencies Protocol PCP.
- No restraint may be made across the patient's chest. This excludes seat belts required for safe transport in a moving vehicle. Cot seat belts shall not be so tight as to provide impairment to breathing.
- Nothing is to be placed over the patient head.

Recommendations:

- Lights and sirens are not to be used unless the patient experiences a medical emergency aside from the reason for restraint or crew safety is in immediate jeopardy.

SALINE / "HEP" LOCK

Purpose:

Describe whom can transport saline locks.

Overview:

Saline locks may be present in many patients requiring transport.

Permissions:

PARAMEDICS are permitted to take patients with saline locks

ADVANCED EMT's are permitted to transport patients with saline locks

EMT's are permitted to transport patients with saline locks assuming no other ALS intervention are required enroute and there are no fluids attached or flowing through the lock.

General Requirements:

- If able by scope of practice, locks should be flushed prior to transport to assure patency.
- EMTs are permitted to transport saline locks with nothing attached given patient destination is a non-acute care destination. See above permissions.
- Advanced EMT's are permitted to transport saline locks with saline, ringers, or dextrose preparations attached.
- IV access with a lock attached must be documented as such on the PCR.
- Document location and gauge of IV on PCR.
- If the lock gets pulled out, apply direct pressure to the site. Inspect catheter to assure all has come out. Transport catheter with patient if unsure.

SEDATION / ANALGESIA

Purpose:

Describe the situations where additional sedation or analgesia are applicable during transport.

Overview:

Many patients requiring transport need or have undergone sedation or analgesia for various reasons.

Permissions:

PARAMEDICS May provide additional analgesia or sedation as required

ADVANCED EMT's may provide additional analgesia as required

EMT's may NOT provide additional analgesia or sedation

General Requirements:

- Capnography must be utilized when redosing any patient with analgesics or sedatives.
- Use like agents as given by the sending facility wherever possible, unless not indicated.
- Confer with sending Physician or medical control prior to transport for their preferred agents.
- Begin with analgesics first for patient comfort and graduate to sedation unless otherwise indicated or instructed.
- Patients on drip analgesics or sedatives should be augmented with small incremental doses of EMS supplied medications as needed unless there is a pre-approved titration order on a per case basis.
- Patients on drip analgesics and sedatives shall have documented the beginning volume, ending volume, total amount given, and what was left at receiving facility. Document nurse names at both sending and receiving.
- Patients on any type of sedation or analgesic regiment who suffer respiratory or hemodynamic compromise because of said regiment shall have the treatment stopped (if able) and resuscitated per PCP.
- Rule out other medical issues and treat underlying cause before adding additional analgesia or sedation.
- Advanced EMT's and Paramedics may provide supplemental pain management for patients experiencing symptoms of pain. Dosing is per PCP pain management protocol.
- If patient is on a PCA pump and requires augmentation of sedation or analgesia provided by the PCA, contact Medical Control.
- Determine if the patient has received a paralytic and determine what agent was used. Also determine what sedation has been given. Sedation agents may be shorter acting than the paralytic. Be prepared to give additional sedatives during transport. Monitor for increasing BP, HR, tearing / crying, and wakefulness during transport.

Recommendations:

- Understand what agents were used and know when to expect them to begin wearing off. Establish last administration and dose.

DOSING:

WITH NO PREVIOUS SEDATION OR ANALGESIA PACKAGE:

Fentanyl (Sublimaze) 50mcg. May repeat 25 mcg / bolus up to 200 mcg if S/S of pain (withdrawal, bucking, unexplained tachycardia or HTN)

Midazolam (Versed) 2.5 mg or **Lorazepam (Ativan)** 1 – 2 mg. May repeat to get / maintain Ramsey 4 – 5 with SBP > 80 for sedation.

Ketamine (Ketalar) 1-2 mg/kg if patient is acutely unmanageable, bronchoconstricted, or hemodynamically unstable to get / maintain Ramsey 4 – 5.

WITH EXISTING / PREVIOUS SEDATION OR ANALGESIC PACKAGE:

Use when agents other than propofol (diprivan) are being used, or when patient is or has been hypotensive during treatment with propofol (diprivan) or when patient requires urgent sedation.

Fentanyl (Sublimaze) 25 mcg IV as needed if S/S of pain (withdrawal, bucking, unexplained tachycardia or HTN)

Midazolam (Versed) recommended starting dose 0.5 - 1 mg as needed not to exceed 2.5 mg in a single dose w/ SBP >80 for sedation or **(Lorazepam (Ativan))** recommended starting dose of 0.5 – 1 mg not to exceed 2 mg in a single dose.

Ketamine (Ketalar) recommended starting dose 0.25 – 0.5 mg / kg not to exceeded 100 mg in a single dose.

Continued sedation: To maintain a Ramsay sedation scale of 4 or greater. For intubated patients, that may need augmentation or may have been previously or under sedated at the time of transport. Document Ramsay scale at time of pickup and when justifying the addition of additional sedation or analgesia.

Richmond Agitation Sedation Score (RASS)

+4	Combative	Overtly combative, violent, immediate danger to staff
+3	Very Agitated	Pulls or removes tube(s) or catheter(s); aggressive
+2	Agitated	Frequent non-purposeful movement, fights ventilator
+1	Restless	Anxious but movements not aggressive vigorous
0	Alert and Calm	
-1	Drowsy	Not fully alert, but has sustained awakening (eye-opening/eye contact) to voice (>10 seconds)
-2	Light Sedation	Briefly awakens with eye contact to voice (<10 seconds)
-3	Moderate Sedation	Movement or eye opening to voice (but no eye contact)
-4	Deep Sedation	No response to voice, but movement or eye opening to physical stimulation
-5	Unarousable	No response to voice or physical stimulation

Propofol (diprivan) titration

2.5 – 5 mcg / kg / min every 5 min until Ramsay score of 4 -5 and MAP >65 / SBP >90

1. Maintenance dosages of Propofol must be individualized and titrated to clinical response slowly to avoid hypotension. Therefore, bolus dosing is not allowed.
2. The infusion must already have been established by the sending facility should then be increased in 2.5 - 5 mcg / kg / min increments every 5 - 10 minutes until the desired level of sedation is achieved. Waiting at least 5 minutes between dosage adjustments is important to allow distribution to occur.
3. It is important to note that the package insert states that most adult patients can be sedated effectively within maintenance rates of 5 - 50 mcg / kg / min.
5. Use cautiously in patients who are hypotensive or hemodynamically unstable.

SPECIALTY CARDIAC SUPPORT DEVICES - MECHANICAL

Purpose:

Describe the handling and permissions associated with the transport of patients requiring specialty cardiac support devices.

Overview:

Many types of devices are attached to patients for cardiac support depending on need and disease pattern.

Permissions:

PARAMEDICS may transport patients with cardiac support devices as required

ADVANCED EMT's may transport patients with implanted cardiac support devices not requiring intervention ex. Hospital discharge or doctor's appointment.

EMT's may transport patients with implanted cardiac support devices not requiring intervention ex. Hospital discharge or doctor's appointment.

General Requirements:

- Surgically implanted devices contained within the patient body and run by external controllers may be transported by EMS.
- Capnography and heart rhythm must be monitored in addition to continuous basic vital signs for all patients having trouble because of / concurrent with use of the device.
- Care givers and patients are generally extensively trained in the operation and emergency procedures associated with implanted devices that the patient lives with. Keep persons knowledgeable in the operation of the device with the patient and use as a resource for management of the patient.
- Make sure destination is equipped and ready to receive patients with specialty cardiac devices.
- Patients requiring temporary catheter-based intervention for cardiac support must be transported by a Critical Care Transport team. Ex. ECMO, Impella, Balloon Pump (IABP).
- Take instructions, extra batteries, chargers, cords, and trained caregivers with the patient.
- Most patients sent home with cardiac support devices have are followed by specialty teams. These teams usually have an on-call number. Determine this number and contact the on-call team if there are complications from the device.
- Patients should be transported to specialty care services, determine where the patient had said support device placed and arrange transport to that facility.
- Be prepared for decompensation and have a diversion / treatment plan if the patient becomes hypotensive or arrests.

SPECIALTY CARDIAC SUPPORT DEVICES – ELECTRICAL

Purpose:

Describe the handling and permissions associated with the transport of patients requiring specialty cardiac support devices.

Overview:

Many types of devices are attached to patients for cardiac support depending on need and disease pattern.

Permissions:

PARAMEDICS May transport electrical cardiac support devices such as internal pacer, life vests, transvenous, and external pacers.

ADVANCED EMT's may NOT transport patients with electrical cardiac support devices

EMT's may NOT transport patients with electrical cardiac support devices

General Requirements:

- Identify type of device and underlying disease process requiring its use.
- Assure all documentation, batteries, charger cords are transported with the patient.
- Continuous pulse oximetry is required during transport of patients with electrical cardiac support devices.
- Cardiac monitoring is required during transport of patients with electrical cardiac support devices.
- Be prepared for decompensation and have a diversion / treatment plan if the patient becomes hypotensive or arrests.
- Sedation analgesia may be necessary during transport, dosing per the PCP.

SPECIALTY RESPIRATORY DEVICES / GASES

Purpose:

To describe the management of patients with specialty respiratory equipment or gases.

Overview:

Patients are frequently transported between facilities on respiratory equipment not typically utilized out of hospital. This may include specific devices or gas blends.

Permissions:

PARAMEDICS may transport specialty oxygen delivery devices, but not specialty gases.

ADVANCED EMT's may transport specialty oxygen delivery devices assuming patient is spontaneously breathing, but not specialty gases.

EMT's may transport specialty oxygen delivery devices assuming patient is spontaneously breathing, but not specialty gases.

General Requirements – Specialty Devices:

- Engage respiratory practitioner responsible for set-up and maintenance of the device as soon as possible. Understand treatment goals and settings.
- Determine oxygen consumption, calculate volume available, and factor in transport time with additional margin for weather and traffic to assure enough available.
- Determine if device needs flowmeter regulated oxygen or direct 50psi connection to ambulance oxygen supply. Assure oxygen connector types fit ambulance and portable tanks.
- Establish baseline vital signs including pulse oximetry and capnography.
- Formulate a back-up plan if device fails.
- Determine if there are also electrical requirements needed for the device. Assess availability during transport.
- Know the highest flow rates you can support with your equipment.
- If unable to support the patient on the device that the patient is on, consult the sending facility doctor and respiratory practitioners regarding the possibility of alternate therapies for transport. This may not always be possible.

General Requirements – Specialty Gases:

- Specialty gases are the realm of respiratory care or other pulmonary specialists.
- Specialty gases must be managed by experts in their delivery and action. EMS is not permitted to transport patients on specialty gases without a respiratory or pulmonary specialist accompanying.
- Patients requiring specialty gases should be transported by Critical Care Transport unless they are unavailable.

STEMI / CARDIAC TRANSFER

Purpose:

Define procedure and requirements for the transport of MI patients.

Overview:

MI patients may be transported to hospitals for admission or interventional needs.

Permissions:

PARAMEDICS may transport STEMI / cardiac patients

ADVANCED EMT's may NOT transport STEMI / cardiac patients

EMT's may NOT transport STEMI / cardiac patients

General Requirements:

- Differentiate patients being transported for intervention from those going for higher care, assessment for intervention, or admission.
- Patients being transported for emergent intervention should be treated as an emergency. Lights and sirens are appropriate per agency emergency vehicle operation policy.
- Patients being transported for assessment for intervention or admission are treated as urgent, but not emergent.
- Cardiac monitors are required bedside to bedside.
- Assure patient has vascular access prior to transporting.
- Cardiac monitoring, automated blood pressure, and capnography are required during transport.
- Vital signs must be evaluated a minimum every 10 minutes.
- Notify receiving facility of ETA enroute with acute MI patients going for intervention.
- Prepare for and expect decompensation enroute, have potentially needed items readily available.
- Precautionary placement of pacing / defib pads should be considered for transport.
- Limit scene time to < than 10 minutes. Document justification for scene times longer than 10 minutes.
- Do not repeat 12 lead EKGs on scene. Load and go. Repeat 12 leads may be performed enroute if indicated.

STROKE TRANSFER

Purpose:

Define procedure and requirements for the transport of acute stroke patients.

Overview:

Stroke patients may be transported to hospitals for admission or interventional needs.

Permissions:

PARAMEDICS may transport acute stroke patients

ADVANCED EMT's may transport acute stroke patients NOT requiring medication administration during transport.

EMT's may transport non-acute stroke patients to rehab and SNF's

General Requirements – ALL CASES:

- Determine type of stroke and location prior to transport (ex. hemorrhagic, or ischemic) follow appropriate section below.
- Medical Director must approve training and the addition of Hydralazine (Apresoline). Providers must be refreshed / updated on this protocol and techniques yearly.
- Obtain onset time from the sending facility.
- Assure patient has vascular access prior to transporting.
- If patient is having blood pressure controlled, understand and document target BP / MAP as discussed with the sending Physician.
- Determine if patient is being transported for intervention or just admission. Lights and siren use are permitted if there will be measurable time savings and the patient is going for urgent / emergent intervention. Patients being transported with no pending intervention shall be treated as non-emergent.
- Conduct a stroke assessment at patient contact and **every 15 minutes (or as directed)** during transport and document. **MINIMUM REQUIRED DOCUMENTATION: Glasgow Coma Score and Absence / Presence of headache** – Conduct as much of the VAN exam as possible with each reassessment interval.
- You must call receiving ED with your ETA, at least 10 minutes out.
- **COPIES OF PCR and other documentation regarding vitals and condition MUST be left at receiving facility with the patient.**
- Maintain medications enroute per the medication management IFTP.
- Limit scene time to < than 10 minutes. Document justification for scene times longer than 10 minutes.
- For all stroke types: Keep Systolic BP > 100mmHG to avoid hypotension that could worsen cerebral perfusion.
- **If type of stroke unknown – no antihypertensive medications unless directed by a Physician.**


Ischemic Stroke RECEIVING or HAS RECEIVED a THROMBOLYTIC

- Prior to transport from sending facility the patients' blood pressure must be controlled <180 systolic and <105 diastolic and must have not complaints of headache, nausea, vomiting, orolingual angioedema, or worsening neurological symptoms.

- LABETALOL (TRANDATE) or HYDRALAZINE (APRESOLINE) MUST be available for transport of ischemic stroke patients receiving a thrombolytic in case patients BP elevates out of required parameters.
- **If patient develops headache, nausea, vomiting, or orolingual angioedema during transport STOP the thrombolytic. Treat with PCP anaphylaxis protocol and, do not use epinephrine. Use extreme caution with airway management due to bleeding risk. Notify receiving facility and manage BP if required.**
- The thrombolytic is bolused by the sending facility prior to departure.
- If TPA is given, it is NOT titrated enroute and is discontinued after 60 mins. Document total volume delivered, and total delivered during transport.
- If TPA is given, and it is going to finish during the transport, attach saline to the IV line to assure all volume in line is delivered, it is within the timeframe. Administration rate must remain the same.
- If compatible IV pump to ED pump is not available for an immediate pump only switch (tubing does not get changed), the ED pump must be borrowed and returned after the call.

ONLY IF patient BP becomes greater than 180 systolic OR 105 diastolic during transport.
 LABETALOL (TRANDATE) 10mg IV over 2 min
 Re-assess BP in 10 minutes – If still greater than 180 systolic OR 105 diastolic, repeat
 LABETALOL (TRANDATE) 20mg IV over 2 min
 Contact Receiving Facility with Update

IF PATIENT IS BRADYCARDIAC OR IF LABETALOL (TRANDATE) UNAVAILABLE
 ONLY IF patient BP becomes greater than 180 systolic OR 105 diastolic during transport.
 HYDRALAZINE (APRESOLINE) 10mg IV over 2 min
 Re-assess BP in 10 minutes – If still greater than 180 systolic OR 105 diastolic, repeat
 HYDRALAZINE (APRESOLINE) 10mg IV over 2 min
 Contact Receiving Facility with Update

 If patient bradycardic and hypertensive, AND Hydralazine (Apresoline) is unavailable use NITROGLYCERIN (NITRO-STAT) to reduce BP while contacting Receiving Facility regarding the patient's condition

Ischemic Stroke or TIA NOT Receiving a thrombolytic

- Prior to transport from sending facility the patients' blood pressure must be controlled <220 systolic and <120 diastolic and must have not complaints of headache, nausea, vomiting, or worsening neurological symptoms. Allow permissive HTN to maintain cerebral perfusion.
- LABETALOL (TRANDATE) or HYDRALAZINE (APRESOLINE) MUST be available for transport of ischemic stroke patients in case patients BP elevates out of required parameters.

ONLY IF patient BP becomes greater than 220 systolic OR 120 diastolic during transport.
LABETALOL (TRANDATE) 10mg IV over 2 min
Re-assess BP in 10 minutes – If still greater than 180 systolic OR 105 diastolic, repeat
LABETALOL (TRANDATE) 20mg IV over 2 min
Contact Receiving Facility with Update

IF PATIENT IS BRADYCARDIAC OR IF LABETALOL (TRANDATE) UNAVAILABLE
ONLY IF patient BP becomes greater than 220 systolic OR 120 diastolic during transport.
HYDRALAZINE (APRESOLINE) 10mg IV over 2 min
Re-assess BP in 10 minutes – If still greater than 180 systolic OR 105 diastolic, repeat
HYDRALAZINE (APRESOLINE) 10mg IV over 2 min
Contact Receiving Facility with Update



If patient bradycardic and hypertensive, AND Hydralazine (Apresoline) is unavailable use NITROGLYCERIN (NITRO-STAT) to reduce BP while contacting Receiving Facility regarding the patient's condition

Hemorrhagic Stroke

- Prior to transport from sending facility the patients' blood pressure must be controlled <160 systolic.
- LABETALOL (TRANDATE) or HYDRALAZINE (APRESOLINE) MUST be available for transport of hemorrhagic stroke patients in case patients BP elevates out of required parameters.

ONLY IF patient BP becomes greater than 160 systolic during transport.
LABETALOL (TRANDATE) 10mg IV over 2 min
Re-assess BP in 10 minutes – If still greater than 160 systolic, repeat
LABETALOL (TRANDATE) 20mg IV over 2 min
Contact Receiving Facility with Update

IF PATIENT IS BRADYCARDIAC OR IF LABETALOL (TRANDATE) UNAVAILABLE
ONLY IF patient BP becomes greater than 160 systolic during transport.
HYDRALAZINE (APRESOLINE) 10mg IV over 2 min
Re-assess BP in 10 minutes – If still greater than 160 systolic, repeat
HYDRALAZINE (APRESOLINE) 10mg IV over 2 min
Contact Receiving Facility with Update



If patient bradycardic and hypertensive, AND Hydralazine (Apresoline) is unavailable use NITROGLYCERIN (NITRO-STAT) to reduce BP while contacting Receiving Facility regarding the patient's condition

TRAUMA TRANSFER

Purpose:

Define procedure and requirements for the transport of acute trauma patients.

Overview:

Trauma patient may need transport from non-traumas facilities to trauma facilities.

Permissions:

PARAMEDICS may transport trauma patients

ADVANCED EMT's may transport trauma patients

EMT's may NOT transport acute trauma patient that may require ALS intervention (Ex. Fluid bolus, needle decompression, etc.)

General Requirements:

- Determine type of trauma prior to transport.
- Determine time of trauma if available.
- Assure patient has vascular access prior to sending.
- If patient is being fluid resuscitated, understand and document target BP / MAP as discussed with the sending Physician.
- Determine if patient is being transported for intervention or just admission. Lights and siren use is permitted if there will be measurable time savings and the patient is going for emergent intervention. Patients being transported to be assessed for interventions shall be treated as non-emergent.
- Prepare for and expect decompensation enroute, have potentially needed items readily available.
- Patients who have had their c-spine cleared do not require re-immobilization prior to transport unless there is specific case specific reason to do so. C-collars should be left in place if present. If the transporting crew has any concerns about the patient cervical spine, a C-collar may be placed for transport.
- Vital signs must be evaluated a minimum of every 10 minutes.
- Cardiac monitoring, automated blood pressure, and capnography are required during transport.
- Patients being transported to the Trauma Center OR should be treated like a scene run, emergent transport.
- Patients going to the Emergency Department at the Trauma Center should have the decision to transport emergently discussed with the sending Physician.
- Patients being transported for trauma rehab or admission to the floor shall be non-emergent unless decompensation occurs enroute.
- Limit scene time to < than 10 minutes. Document justification for scene times longer than 10 minutes.

TRACHEOSTOMY PATIENT

Purpose:

Describe the care and treatment of patients who have existing tracheostomies.

Overview:

Patients may have existing tracheostomies in place for a variety of reasons.

Permissions:

PARAMEDICS may transport, suction, and replace tracheostomies

ADVANCED EMT's may transport and suction tracheostomies

EMT's may transport and suction tracheostomies

General Requirements:

- Identify reason patient has the tracheostomy and length of time patient has had it.
- Determine how frequently patient requires suction.
- Determine type and size of tracheostomy and document.
- Cuffed tracheostomies must be used with mechanical ventilation. Assure proper cuff fill by assessing pilot balloon. If patient does not have cuffed tracheostomy and requires ventilation, replace with a cuffed tracheostomy, or insert an endotracheal tube in the stoma.
- Take a spare inner cannula or spare tracheostomy for transport where available.
- Some pediatric tracheostomies may not have an inner cannula and require strict attention to suction need.
- Suction devices and catheters must be immediately available.
- A BVM must be immediately available bedside to bedside.
- Many different configurations of tracheostomies and stoma covers exists. Understand how each device functions prior to transport.
- If unseen bleeding is occurring from within the stoma, hyper-inflate the cuff and transport immediately. Obvious external bleeding should be controlled by traditional means.
- Tracheostomies placed within the last 1-2 weeks are extremely risky to replace through the stoma. Preventing dislodgement is imperative.

Key points:

- Uncuffed tracheostomies are used in patients who are spontaneously breathing.

UNSTABLE AT TIME OF TRANSFER

Purpose:

Define when a patient who is unstable at time of transfer is to be taken by EMS.

Overview:

Patients who are unstable at time of transfer may continue to deteriorate in transport. Every effort should be made to make the patient stable prior to transport. In only select situations should patients be knowingly transported in an unstable condition.

Permissions:

PARAMEDICS may take patients who are unstable at time of transfer

ADVANCED EMT's may NOT take patients who are unstable at time of transfer

EMT's may NOT take patients who are unstable at time of transfer

General Requirements:

- Instability is defined as BP <80 or MAP <65 with symptoms, Heart Rate <50 or greater than 130 with symptoms, EtCo2 <20, Respiratory rate < 8 or > 30 with uncorrected Spo2, Capnography, Blood gases, or otherwise not perfusing.
- EMS should interface with the Physician if any instability exists and discuss further stabilization prior to departure.
- EMS should NOT begin transport until the patient has been made stable for the transport unless special transport circumstances exist.
- Special circumstances exist when a sending facility has limited capabilities and is unable to make the patient any more stable for transport. These could include, but are not limited to, the absence of specialty interventions, interventional specialists, blood, or blood products.

UNSTABLE PATIENT DIVERSION

Purpose:

Define when a patient requires diversion to another facility from the originally defined destination.

Overview:

Patients who are stable at time of transfer may deteriorate in transport.

Permissions:

PARAMEDICS may divert patients who are unstable

ADVANCED EMT's may divert patients who are unstable

EMT's may divert patients who are unstable

General Requirements:

- Patients shall not be diverted for crew / EMS convenience.
- EMS should attempt to divert to in system hospitals if reasonable for continuity of record access unless a specialty service is required.
- Patient must be symptomatic to the event and not responding to treatment / resuscitation efforts.
- Carefully weigh need for additional stabilization and interruption of transport with the treatment goals for the patient at the initial destination. Ex. It may be prudent to continue despite ongoing deterioration to the original destination if treatments for said condition are only available at the original destination.
- Some surgical emergencies may not benefit from diversion to a hospital without appropriate interventions. Contact Medical Control if such a incidence exists if there is any doubt on whether to divert or not.

USE OF LIGHTS AND SIRENS

Purpose:

Define when it is appropriate to use lights and sirens during interhospital transports.

Overview:

The use of lights and sirens may be prudent in some patients who require time sensitive interventions at the receiving facility.

Permissions:

PARAMEDICS may use lights and sirens

ADVANCED EMT's use lights and sirens

EMT's may use lights and sirens

General Requirements:

- The use of lights and sirens must not be a solution to having the proper level of care available for the transport. Ex. A BLS crew shall not attempt to take a patient "quickly" because that are present at the sending when ALS resources are truly needed.
- Life threatening changes to the patient can prompt a change in response mode.
- Any potential time benefit must be in favor of the patient.
- The patient must be going to the receiving for a known intervention not available at the sending, not an evaluation for intervention, or admission for evaluation.
- This document does not override established organizational emergency vehicle operation policies.
- Use of lights and sirens should be used in situations where the patient is being diverted due to instability, trauma transfers to the OR, and for patient going for immediate lifesaving intervention. Ex. Stroke intervention, surgical intervention.
- Patients going to the Emergency Department at the Trauma Center should have the decision to transport emergently discussed with the sending Physician.
- Crew and patient must be restrained during transport.
- Sending Physicians may request the use of lights and sirens for critical patients and assume liability for such request.

Key points:

- The use of lights and sirens rarely saves appreciable time and creates a remarkable amount of risk.
- Priority one calls are a lights and siren response.

VENTILATOR MANAGEMENT – Assist /Control Only Device > 16 years

Purpose:

Define use of simple transport ventilators in transport.

Overview:

Most patients requiring artificial ventilation during transport use assist / control settings.

Permissions:

PARAMEDICS may use AC ventilators on patients 16 years of age or older

ADVANCED EMT's may NOT use AC ventilators

EMT's may NOT use AC ventilators

General Requirements:

- Paramedics are only permitted to manage ventilators on patients 16 years or older.
- If at any time the ventilator or patient responds poorly, the ventilator must be stripped, and the patient bagged. Troubleshooting of ventilators shall not be undertaken while attached to a patient.
- Paramedics utilizing AC vents must have undergone testing consistent with a medical director approved competency and refreshed yearly.
- Paramedics utilizing AC vents must have undergone hands on training with the device consistent with manufacturers manual and established competency.
- Slight changes may be made for patient comfort.
- Waveform capnography is required.
- The patient must be placed on the transport vent for a minimum of 5 mins prior to transfer to cot to assure they will acclimate properly.
- Take backup oxygen sources when away from the ambulance.
- Suction must be available.
- Spare ventilator tubing must be available if there are issues with the original tubing.
- Medical control must be contacted for authorization for major ventilator changes.
- Verify last sedation / analgesia and understand their duration of action. Treat per Sedation / Analgesia IFTP
- Set PEEP as designated by sending facility. If patient must be bagged for any reason, a PEEP valve must be used to assure continued PEEP.
- If patient becomes hypotensive, increase FiO2 and remove PEEP.
- A BVM must be immediately available bedside to bedside.
- Patients on extraordinarily high PEEP (>20 cmH2O) should be transported by Critical Care Resources if available. If it is necessary for ALS to transport assure the ventilator can support such pressures.
- Determine if the patient has received a paralytic and determine what agent was used. Also determine what sedation has been given. Sedation agents may be shorter acting than the paralytic. Be prepared to give additional sedatives during transport. Monitor of increasing BP, HR, tearing / crying, and wakefulness during transport.
- Patients must have their upper extremities secured during transport to prevent inadvertent extubation by the patient if the sedation wears off.
- If the patient has advanced lung disease or is prone to desaturation during suctioning or vent changes, clamp the ET tube during change to transport ventilator to preserve PEEP.

VENTILATOR MANAGEMENT - Multi Mode Device > 16 years

Purpose:

Define use of multi-mode ventilators in transport.

Overview:

Most patients requiring artificial ventilation during transport use Assist / Control settings. Some patients may require special modes requiring advanced ventilation. Such as intubated CPAP, BiPAP, SIMV, or Patients requiring Pressure Support or Pressure Control.

Permissions:

PARAMEDICS may use multi-mode ventilators with appropriate training on patents 16 years or older

ADVANCED EMT's may NOT use multi-mode ventilators

EMT's may NOT use multi-mode ventilators

General Requirements:

- Paramedics are only permitted to manage ventilators on patients 16 years or older.
- If at any time the ventilator or patient responds poorly, the ventilator must be stripped, and the patient bagged. Troubleshooting of ventilators shall not be undertaken while attached to a patient.
- Employees utilizing multi-mode vents must have undergone testing consistent with a medical director approved competency and at least refreshed yearly.
- Employees utilizing multi-mode vents must have undergone hands on training with the device consistent with manufacturers manual and established competency.
- Employees utilizing multi-mode vents must have undergone a minimum of 6 documented hours of ventilation physiology training.
- Slight changes may be made for patient comfort.
- Waveform capnography is required.
- The patient must be placed on the transport vent for a minimum of 5 mins prior to transfer to cot to assure they will acclimate properly.
- Take backup oxygen sources when away from the ambulance.
- Suction must be available.
- Spare ventilator tubing must be available if there are issues with the original tubing.
- Medical control must be contacted for authorization for major ventilator changes.
- Verify last sedation / analgesia and understand their duration of action. Treat per [Sedation / Analgesia IFTP](#)
- Set PEEP as designated by sending facility. If patient must be bagged for any reason, a PEEP valve must be used to assure continued PEEP.
- If patient becomes hypotensive, increase FiO2 and remove PEEP.
- A BVM must be immediately available bedside to bedside.
- Patients on extraordinarily high PEEP (>20 cmH2O) should be transported by Critical Care Transport if available. If it is necessary for ALS to transport assure the ventilator can support such pressures.
- Patients on pressure ventilation should go by Critical Care Transport unless the paramedic is comfortable and has had additional in-depth training and understanding of this mode.
- Determine if the patient has received a paralytic and determine what agent was used. Also determine what sedation has been given. Sedation agents may be shorter acting than the paralytic. Be prepared to give additional sedatives during transport. Monitor of increasing BP, HR, tearing / crying, and wakefulness during transport.
- Patients must have their upper extremities secured during transport to prevent inadvertent extubation by the patient if the sedation wears off.
- If the patient has advanced lung disease or is prone to desaturation during suctioning or vent changes, clamp the ET tube during change to transport ventilator to preserve PEEP.

INDWELLING VENOUS LINES

Purpose:

Define use of indwelling venous lines in transport.

Overview:

Indwelling venous lines of multiple configurations are frequently used in patient care.

Permissions:

PARAMEDICS may use indwelling venous lines

ADVANCED EMT's may NOT use indwelling venous lines

EMT's may NOT use indwelling venous lines, but may transport patients with indwelling venous line to sub-acute destinations such as nursing homes, dialysis centers, scheduled appointments, etc.

General Requirements:

- The Paramedic must establish type and location of indwelling access before beginning the transport.
- Blue capped ports are venous ports red capped port are arterial.
- Flush lines prior to transport to assure patency.
- If access is required during transport, the port must be cleaned thoroughly with alcohol prior to attaching any device.
- The paramedic must assure that the lines are securely affixed to the patient during transport to withstand the rigors of transport.
- If a venous line comes out, apply direct pressure to the site and notify receiving facility. Save the catheter.
- If a venous line becomes partially dislodged, secure in place and notify the receiving facility.
- Indwelling venous catheters may be used in patients requiring medication administration enroute and may be accessed if no medications are being infused for interventions on patients whose condition changes during transport.
- Multi-lumen lines may have different internal diameters. Understand what lumens are available and their diameter.
- Reference markings on catheter ends for size and use.
- Venous dialysis catheters are to be utilized for crisis situations / resuscitation only.

IV PUMP MANAGEMENT

Purpose:

Define the management of IV pumps in transport.

Overview:

IV pumps are necessary during transport to assure that medication and fluid deliver is at a safe and therapeutic rate.

Permissions:

PARAMEDICS may manage IV pumps

ADVANCED EMT's may NOT manage IV pumps

EMT's may NOT manage IV pumps

General Requirements:

- Paramedics utilizing IV pumps must have undergone testing consistent with a medical director approved competency and refreshed yearly.
- Employees utilizing IV pumps must have undergone hands on training with the device consistent with manufacturers manual and established competency.
- Paramedics may not titrate medications without established orders. Orders may be established with sending or receiving medical control on a per case basis.
- Blood and blood products may be taken on an IV pump if the Paramedic has undergone established training in such products.
- Medications may not be gravity dripped when on an IV pump at the sending facility. Normal saline, lactated ringers, and dextrose preparations up to 10% concentration may be gravity dripped.
- If a patient develops undesired effect(s) because of an infusion, the infusion must be discontinued, patient resuscitated per PCP protocols, and medical control contacted.
- Manufacturers specific IV tubing must be used with like IV pumps.
- Keep pumps plugged in whenever possible to assure they continue to operate.
- Note all drips and document any discontinuations prior to departure.
- Verify all drip rates / doses with sending facility before departure.
- Each medication infusion line equals 1 intervention against the 3 devices per provider limit.
- Document patient weight for weight-based medications.
- Verify dose / rate against pharmacy labels.

IV START TECHNICIAN

Purpose:

Define the use of Paramedics and Advanced EMT's as IV Technicians

Overview:

Other healthcare specialties may call upon EMS to assist in starting IVs where no providers are able or have the experience with such initiations.

Permissions:

PARAMEDICS may function as an IV tech

ADVANCED EMT's may function as an IV tech

EMT's may NOT function as an IV tech

General Requirements:

- Standard sterile technique shall be used.
- Technician must understand the need for the IV and treatment. Tailor catheter size and insertion location to the treatment modality.
- Establish if there are healthcare specialty restrictions on location or management of the IV.
- Verbal physicians' orders are required for lower extremity, scalp, and external jugular insertions.
- Technicians may establish access only. It is up to the healthcare specialty to hang medications / fluids.

SCT MEDICATIONS

HYDRALAZINE (Apresoline)

PREGNANCY CLASS	C
ACTIONS	Reduces blood pressure by decreasing peripheral vascular resistance
INDICATIONS	<ul style="list-style-type: none"> • Correction of hypertension associated with <i>ischemic stroke</i> after / during TPA treatment over 180 SBP or 105 DBP • Correction of hypertension associated with <i>hemorrhagic stroke</i> over 160 SBP • Correction of hypertension associated with <i>ischemic stroke</i> WITHOUT TPA treatment over 220 SBP or 120 SBP
CONTRAINDICATIONS	<ul style="list-style-type: none"> • Known hypersensitivity to HYDRALAZINE (Apresoline) • Coronary artery disease • Mitral valve rheumatic heart disease
SIDE EFFECTS	<ul style="list-style-type: none"> • Headache • Nausea / Vomiting • Tachycardia
SUPPLIED	20 mg / 1ml vial
ADULT DOSAGE	<p>For Interfacility Transport ISCHEMIC STROKE Patient RECEIVING thrombolytics who becomes Hypertensive: Only if BP is greater than 180 systolic or 105 diastolic then, 10 mg IV SLOW over 2 minutes first bolus 10 mg IV SLOW over 2 minutes 10 – 15 minutes after first dose and only if BP is still greater than 180 systolic or 105 diastolic Contact medical control if unchanged</p> <p>For Interfacility Transport ISCHEMIC STROKE Patient NOT Receiving thrombolytics who becomes hypertensive: Only if BP is greater than 220 systolic or 120 diastolic then, 10 mg IV SLOW over 2 minutes first bolus 10 mg IV SLOW over 2 minutes 10 – 15 minutes after first dose and only if BP is still greater than 180 systolic or 105 diastolic Contact medical control if unchanged</p> <p>For Interfacility Transport HEMORRAGIC STROKE Patient who becomes Hypertensive: Only if BP is greater than 160 systolic then, 10 mg IV SLOW over 2 minutes first bolus 10 mg IV SLOW over 2 minutes 10 – 15 minutes after first dose and only if BP is still greater than 160 systolic Contact medical control if unchanged</p>
PEDIATRIC DOSAGE	Not Indicated in the pre-hospital setting
KEY POINTS	<ul style="list-style-type: none"> • Monitor cardiac and pulmonary status during administration

SCT MEDICATIONS

LABETALOL (Trandate)

PREGNANCY CLASS	C
ACTIONS	Reduces blood pressure by decreasing peripheral vascular resistance
INDICATIONS	<ol style="list-style-type: none"> 1. Correction of hypertension associated with <i>ischemic stroke</i> after / during TPA treatment over 180 SBP or 105 DBP 2. Correction of hypertension associated with <i>hemorrhagic stroke</i> over 160 SBP 3. Correction of hypertension associated with <i>ischemic stroke</i> WITHOUT TPA treatment over 220 SBP or 120 SBP
CONTRAINDICATIONS	<ol style="list-style-type: none"> 1. Known hypersensitivity to LABETALOL (Trandate) or betablockers 2. Bradycardia 3. Heart blocks 4. Shock 5. Sick sinus syndrome 6. Heart failure
PRECAUTIONS	<ol style="list-style-type: none"> 1. Asthma / bronchospastic diseases 2. Impaired liver functions 3. Elderly 4. Thyroid disorders 5. Hypotension may occur 6. Conduction disturbances in cardiac conduction may occur
SIDE EFFECTS	<ol style="list-style-type: none"> 1. Hypotension 2. Bradycardia 3. Dizziness 4. Fatigue 5. Arrhythmias
SUPPLIED	20 mg / 4 ml vial or Carpuject or 100 mg / 20ml - vial
ADULT DOSAGE	<p>For Interfacility Transport ISCHEMIC STROKE Patient RECEIVING thrombolytics who becomes Hypertensive: Only if BP is greater than 180 systolic or 105 diastolic then, 10 mg IV SLOW over 2 minutes first bolus 20 mg IV SLOW over 2 minutes 10 – 15 minutes after first dose and only if BP is still greater than 180 systolic or 105 diastolic Contact medical control if unchanged</p> <p>For Interfacility Transport ISCHEMIC STROKE Patient NOT Receiving thrombolytics who becomes Hypertensive: Only if BP is greater than 220 systolic or 120 diastolic then, 10 mg IV SLOW over 2 minutes first bolus 20 mg IV SLOW over 2 minutes 10 – 15 minutes after first dose and only if BP is still greater than 180 systolic or 105 diastolic Contact medical control if unchanged</p> <p>For Interfacility Transport HEMORRAGIC STROKE Patient who becomes Hypertensive: Only if BP is greater than 160 systolic then, 10 mg IV SLOW over 2 minutes first bolus 20 mg IV SLOW over 2 minutes 10 – 15 minutes after first dose and only if BP is still greater than 160 systolic Contact medical control if unchanged</p>
PEDIATRIC DOSAGE	Not Indicated in the pre-hospital setting
KEY POINTS	<ul style="list-style-type: none"> • Monitor cardiac and pulmonary status during administration

APPENDIX #1 – PRE-AUTHORIZED TRANSPORT MEDICATIONS

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Transport Medications

Administrative

Medications listed in this section are permitted for transport under the UH Specialty Care and Interfacility Protocol / Guidelines and as a condition of their use, Paramedics must have completed the training outlined in that document. Medical Directors may permit other types and classes of medications beyond the medications listed in this document. Additional authorizations are outside of the scope of this document and the Medical Director must assure that proper training and competency is kept up with by the agency in addition to the medications listed here.

The doses and indications noted in this document are traditional uses and doses of these medications. Sending Physicians may choose to use in different circumstances and at doses not listed here. The Paramedic is encouraged to interface directly with the Physician to understand treatment goals and the reasoning for atypical uses to best be prepared for changes in patient condition.

The Paramedic is still required to get verbal or written orders for titration of these medications in compliance with the UH Specialty Care and Interfacility Protocol / Guidelines despite having this reference material of typical dosing.

Pre-Authorized Transport Medications

Alteplase (Activase) (TPA)

Action:	Turns plasminogen into plasmin (activates) → clot degradation
Purpose:	Break down clots Acute ischemic stroke (<4.5 hours from LKW) Massive PE → hemodynamic instability
Usual dose:	Total dose: 0.9 mg / kg (max 90mg) Bolus: 10% of dose Infusion: remaining 90% given over 1 hour
Adverse effects:	Adverse effects: bleeding, angioedema, anaphylaxis Sxs of ICH: HA, N/V, AMS, worsening neuro exam If signs of bleeding, stop infusion and treat per protocol Airway swelling or anaphylaxis → treat per anaphylaxis protocol DO NOT give epinephrine (risk of HTN and bleed too high) Use extreme caution with airway management due to risk of bleeding
Adverse effects EMS action:	Call referring physician for orders
Notes:	Duration: 1 hour after infusion stops

Pre-Authorized Transport Medications

Antibiotics

Brand:	Many antibiotics are given as an infusion Commonly used example: Vancomycin
Action:	Treat bacterial infections
Purpose:	Treat bacterial infections
Usual dose:	Vary by antibiotic
Adverse effects:	Vary by antibiotic
Adverse effects EMS action:	Allergic reaction: stop medication + treat per anaphylaxis protocol Vancomycin: red man syndrome if given too quickly No allergic reaction Treatment: slow infusion and can consider Benadryl (online command order)
Notes:	

Pre-Authorized Transport Medications

Calcium Chloride or Gluconate

Action:	
Purpose:	Hyperkalemia: we already use Hydrofluoric acid exposure: we already use Calcium channel blocker (or B-blocker OD): we already use Treatment of hypocalcemia
Usual dose:	Hypocalcemia: ~1g / hr
Adverse effects:	Cardiac arrhythmia Tissue necrosis
Adverse effects EMS action:	IV should be large proximal IV and vein CaCl higher risk than Ca gluconate Monitor IV sites for extravasation → DC if present
Notes:	1g CaCl has 3x more elemental Ca than 1g calcium gluconate

Pre-Authorized Transport Medications

Clevidipine (Cleviprex)

Action:	Calcium channel blocker that selectively affects arteries
Purpose:	Treat hypertensive emergencies
Usual dose:	No bolus Infusion: 1 - 21 mg / hr; titrate every 90 seconds until at proper dose
Adverse effects:	Hypotension
Adverse effects EMS action:	Stop infusion and call referring physician for orders
Notes:	Difference between nicardipine and clevidipine Onset: both 2-4 minutes Duration: nicardipine (<8hrs) // clevidipine (<15min)

Pre-Authorized Transport Medications

Crotalidae polyvalent immune fab (CroFab)

Action:	Venom-specific antibodies → neutralize venom toxin
Purpose:	Treat significant crotalid envenomations Crotalid = pit viper (ex = rattle snakes)
Usual dose:	Often given as intermittent boluses but can be infusions
Adverse effects:	Hypotension Allergic reaction
Adverse effects EMS action:	Stop infusion and treat per protocol Call referring physician for orders
Notes:	

Pre-Authorized Transport Medications

Dexmedetomidine (Precedex)

Action:	Selective alpha ₂ -receptor agonist
Purpose:	Sedation
Usual dose:	No bolus (risk of hemodynamic compromise) Infusion: 0.2 – 1.5 mcg / kg / <u>hour</u> Titration: 0.2 mcg / kg / <u>hour</u> every 30 minutes (unlikely to titrate during transport)
Adverse effects:	Bradycardia Hypertension (followed by hypotension)
Adverse effects EMS action:	Stop infusion and call referring physician for orders Look for other potential causes Will need to prepare alternative sedative
Notes:	Provides NO amnesia therefore should be given with an additional sedative Onset: 5 - 10 minutes Duration: 60 - 240 minutes

Pre-Authorized Transport Medications

Diltiazem (Cardizem)

Action:	Calcium channel blocker that selectively affects the AV node
Purpose:	Rate control (A Fib, A flutter, SVT) Dilate coronary vessel smooth muscle to treat anginal chest pain Dilate arterial smooth muscle to treat HTN
Usual dose:	Bolus: 0.25 mg / kg (10 – 20 mg) Initial usually by hospital Infusion: 5 - 15 mg / hr
Adverse effects:	Bradycardia Hypotension
Adverse effects EMS action:	Stop infusion and call referring physician for orders Can follow CCB overdose protocol if signs of shock (CaCl, fluids, PDE, pace)
Notes:	Do not mix up with cardene (nicardipine) Do not use in WPW

Pre-Authorized Transport Medications

Eptifibatide (Integrilin)

Action:	Antiplatelet agent // blocks receptor on platelets → prevents thrombosis and platelet aggregation
Purpose:	Blood thinner used in MI who have planned PCI
Usual dose:	Loading bolus: 180 mcg / kg (max 22.6 mg) Infusion: 2 mcg / kg / hour (max 15 mg / hour)
Adverse effects:	Bleeding
Adverse effects EMS action:	If signs of bleeding, stop infusion and treat per protocol Call referring physician for orders
Notes:	Onset: immediate Duration: 4 - 8 hours (time for new platelets to be released)

Pre-Authorized Transport Medications

Fentanyl (Sublimaze)

Action:	Stimulate mu-opioid receptor
Purpose:	Analgesia Should be given with a formal sedative
Usual dose:	Intermittent bolus dosing: 25 - 50 mcg (0.35 - 0.5 mcg / kg) every 30 – 60 min OR Infusion: start at 25 – 50 mcg / <u>hour</u> ; max 200 mcg / <u>hour</u> Titration: increase by 25 - 50 mcg / <u>hour</u> every 30 minutes (unlikely to titrate during transport)
Adverse effects:	Hypotension
Adverse effects EMS action:	Adverse reactions are rare especially with advanced airway in place Hypotension more likely to be due to another sedative or cause (consider stopping other sedative but keeping fentanyl) Call referring physician for orders
Notes:	

Pre-Authorized Transport Medications

Fomepizole (Antizol)

Action:	Inhibit alcohol dehydrogenase → decrease conversion of toxic alcohol to VERY toxic metabolite
Purpose:	Treat toxic alcohol Toxic alcohol itself not dangerous and can be removed with dialysis Alcohol dehydrogenase will convert to dangerous metabolite Block alcohol dehydrogenase → buy time for dialysis or for body to metabolize Example of toxic alcohol: ethylene glycol, methanol
Usual dose:	Loading bolus: 15 mg / kg over 30 min Intermittent blousing afterwards
Adverse effects:	Non-specific
Adverse effects EMS action:	If concerns, call referring physician for orders
Notes:	

Pre-Authorized Transport Medications

Heparin

Brand:	
Action:	potentiates antithrombin III → inactivate clotting factors → decreased clot formation
Purpose:	Blood thinner MI, DVT, PE, arterial occlusion, other clots
Usual dose:	Loading bolus: may or may not use depending on risk of bleeding Infusion: 12 - 18 units / kg / hour (max 1000 u / hour)
Adverse effects:	Bleeding HIT (Heparin Induced Thrombocytopenia) (can form clots)
Adverse effects EMS action:	If signs of bleeding, stop infusion and treat per protocol Call referring physician for orders
Notes:	Onset: immediate Can reverse easily if need be: protamine

Pre-Authorized Transport Medications

Insulin

Action:	
Purpose:	<p>DKA: goal is to reverse acidosis from ketosis</p> <p>HHS: goal is to treat AMS - NOT trying to treat hyperglycemia specifically</p> <p>Alternative purpose (rare): treat B-blocker or CCB toxicity - will use VERY high doses (1 – 10 u / kg / hr)</p>
Usual dose:	<p>Bolus: Not recommended</p> <p>Infusion: 0.1u / kg / hour</p>
Adverse effects:	<p>Hypoglycemia</p> <p>DO NOT STOP infusion unless seizure or AMS</p> <p>Give IV dextrose and call referring physician for additional orders</p> <p>Dysrhythmia - likely secondary to hypokalemia → prolonged QTc</p>
Adverse effects EMS action:	<p>Stop infusion</p> <p>Treat arrhythmias per protocol</p> <p>Call referring physician for orders</p>
Notes:	<p>Prior to transport: determine most recent K level</p> <p>Insulin shifts K into cells → low serum K → prolongs QTc → induces torsades</p> <p>Should be checked q3h while on insulin</p> <p>If <3.5 → dc insulin</p> <p>If 3.5-5.5 → should be on KCl infusion</p> <p>If note issue with K → discuss with referring physician PRIOR to transport</p>

Pre-Authorized Transport Medications

Ketamine (Ketalar)

Action:	NMDA receptor antagonist + many other things
Purpose:	Sedation Can be used as mono-therapy: sedative, amnestic, and analgesic RSI Status epilepticus
Usual dose:	Intermittent bolus dosing: 1 mg / kg every 20 minutes OR Bolus: 0.1 - 0.5 mg/kg Infusion: start at 0.2 - 0.5 mg / kg / <u>hour</u> ; max 2.5 mg / kg / <u>hour</u> Titration: increase by 0.5 mg / kg / <u>hour</u> every 30 minutes (unlikely to titrate during transport)
Adverse effects:	Hypotension HTN Salivation Tachycardia
Adverse effects EMS action:	Adverse reactions are rare especially with advanced airway in place Hypotension more likely to be due to another sedative or cause (consider stopping other sedative but keeping ketamine) Call referring physician for orders
Notes:	Onset: < 30 seconds Duration: ~ 20 mins

Pre-Authorized Transport Medications

Levetiracetam (Keppra)

Action:	Unknown
Purpose:	Antiepileptic
Usual dose:	Load: 40 – 60 mg / kg over 5 – 15 minutes (max 4.5g) No infusion afterwards
Adverse effects:	Hypotension Sedation
Adverse effects EMS action:	Hypotension uncommon May not be able to stop given need to suppress seizures Call referring physician for orders
Notes:	Onset: 5 – 30 minutes

Pre-Authorized Transport Medications

Lidocaine (Xylocaine)

Action:	Na channel blocker (class 1B)
Purpose:	Treat VT Can be used during cardiac arrest from VT/VF Can be used with/without cardioversion for stable VT
Usual dose:	Loading dose: 1 - 1.5 mg / kg , repeat q 5 – 10 min with 0.5-0.75 mg / kg (max 3 mg / kg) - Initial usually by hospital Infusion: 1 - 4 mg / min
Adverse effects:	Bradycardia
Adverse effects EMS action:	Stop infusion and call referring physician for orders
Notes:	

Pre-Authorized Transport Medications

Magnesium Sulfate

Action:	
Purpose:	Bronchodilation (asthma, COPD): we already use Eclampsia and preeclampsia: we already use Fetal neuroprotection Ventricular arrhythmias Treatment of hypomagnesium
Usual dose:	Eclampsia: 1 - 3 g / hr (if seizure can bolus 2 - 4g over 5 min with command order) Fetal neuroprotection: 1 g / hr Ventricular arrhythmia: 0.5 - 1 g / hr Hypomagnesium: 1 g / hr
Adverse effects:	Hypotension Vasodilation Sedation
Adverse effects EMS action:	Monitor reflexes → hyporeflexia occurs before hypotension and vasodilation If hyporeflexia call referring physician for orders
Notes:	

Pre-Authorized Transport Medications

Midazolam (Versed)

Action:	Stimulate GABA receptor in brain
Purpose:	Sedation Antiepileptic
Usual dose:	Sedation (ventilated patient) Intermittent bolus: 2.5 – 5 mg IV q 10 – 20 min PRN Infusion: 1 – 8 mg / hr Seizure: 0.2 mg / kg (10 mg max // max out at 50 kg)
Adverse effects:	Hypotension Hypoventilation
Adverse effects EMS action:	Adverse reactions are rare especially with advanced airway in place Call referring physician for orders
Notes:	Onset: 1 – 5 min Duration: 2 hours

Pre-Authorized Transport Medications

N-acetylcysteine (Acetadote) (NAC)

Action:	Restores glutathione in liver → decreased hepatic toxicity from acetaminophen
Purpose:	Decreased hepatic toxicity from acetaminophen
Usual dose:	Infusion: 150mg/kg over 1hr → 50mg/kg over 4 hrs → 100mg/kg over 16 hrs Note: ensure current bag will run for entire transport
Adverse effects:	Anaphylactoid reaction Occurs during first 30-60m NOT anaphylaxis (anaphylactoid = anaphylaxis-like)
Adverse effects EMS action:	Stop infusion Call referring physician for orders
Notes:	

Pre-Authorized Transport Medications

Nicardipine (Cardene)

Action:	Calcium channel blocker that selectively affects arteries
Purpose:	Treat hypertensive emergencies Severe HTN, brain bleeds, aortic emergencies, some ischemic strokes, etc.
Usual dose:	No bolus Infusion: 5 - 15 mg / hr; titrate by 2.5 mg / hr q 5 - 15min
Adverse effects:	Hypotension
Adverse effects EMS action:	Stop infusion and call referring physician for orders
Notes:	Difference between nicardipine and clevidipine Onset: both 2 - 4 minutes Duration: nicardipine (< 8 hrs) / clevidipine (< 15 min)

Pre-Authorized Transport Medications

Octreotide (Sandostatin)

Action:	Restores glutathione in liver → decreased hepatic toxicity from acetaminophen
Purpose:	Treat upper GIB with concern for variceal bleed Hx of cirrhosis → give octreotide Decrease blood flow to gut → less bleeding from varices
Usual dose:	Bolus: 50 mcg Infusion: 50 mcg / hour (no titration)
Adverse effects:	Non-specific
Adverse effects EMS action:	If concerns, call referring physician for orders
Notes:	

Pre-Authorized Transport Medications

Oxytocin (Pitocin)

Action:	Mimics natural hormone → stimulate uterine contraction → decreased post-partum hemorrhage For prevention and treatment Works only for uterine atony (most common cause of bleeding)
Purpose:	Decreased post-partum hemorrhage For prevention and treatment Works only for uterine atony (most common cause of bleeding)
Usual dose:	Bolus: 5 or 10 u Infusion: up to 10 u / hour
Adverse effects:	Cardiovascular GI
Adverse effects EMS action:	If concerns, call referring physician for orders
Notes:	

Pre-Authorized Transport Medications

Pantoprazole (Protonix)

Action:	Proton pump inhibitor → decreased gastric acid
Purpose:	Decrease acid → slow bleeding from upper GIB
Usual dose:	Most often intermittent boluses Infusion: 8 mg / hr (after the 80 mg bolus)
Adverse effects:	Non-specific
Adverse effects EMS action:	If concerns, call referring physician for orders
Notes:	

Pre-Authorized Transport Medications

Phenytoin (Dilantin)

Action:	Stabilizes neuronal membranes to decrease seizure activity Inhibit ventricular pacemaker cells
Purpose:	Antiepileptic Can be used for VT (rarely used)
Usual dose:	Load: 20 mg / kg at 25 - 50 mg / min Maintenance dose: 4 – 7 mg / kg / day (broken up into 2 - 4 doses)
Adverse effects:	Hypotension Sedation
Adverse effects EMS action:	May not be able to stop given need to suppress seizures Call referring physician for orders
Notes:	Onset: 0.5 - 1 hour

Pre-Authorized Transport Medications

Potassium Chloride

Action:	
Purpose:	Treatment of hypokalemia Use with medications that drop serum K Such as bicarb / insulin infusion
Usual dose:	10 - 20 mEq / hr Can give up to 40 mEq / hr via central line
Adverse effects:	Pain at IV site
Adverse effects EMS action:	If pain → contact referring physician before discontinuing
Notes:	

Pre-Authorized Transport Medications

Procainamide (Pronestyl)

Action:	Na channel blocker (class 1A)
Purpose:	Treat VT and SVT's with pre-excitation pathways (<u>WPW</u>) Slows accessory pathways → safe in WPW SVT + WPW AF + WPW Treats stable VT
Usual dose:	Loading dose: 10 - 17 mg / kg (100 mg every 5 min) until arrhythmia controlled - Initial usually by hospital Infusion: 1 - 4 mg / min
Adverse effects:	QTc prolongation
Adverse effects EMS action:	Stop infusion and call referring physician for orders Patient may need to be given Magnesium
Notes:	

Pre-Authorized Transport Medications

Propofol (Diprivan)

Action:	Global CNS depression (multiple receptors)
Purpose:	Sedation
Usual dose:	Can use bolus only with physician order (protocol does not allow this) Infusion: 5 - 50 mcg / kg / <u>min</u> (can go higher with referring physician order) Titration: 2.5 - 5 mcg / kg / <u>min</u> every 5 minutes
Adverse effects:	Hypotension - Cause: direct myocardial depression and vasodilation
Adverse effects EMS action:	Stop infusion Call referring physician for orders Look for other potential causes of hypotension + prepare alternative sedative
Notes:	Provides NO analgesia therefore should be given with an opioid Onset: ~ 30 seconds Duration: 3 - 10 minutes

Pre-Authorized Transport Medications

Sodium Bicarbonate

Action:	
Purpose:	Treat metabolic acidosis (severe DKA, renal tubular acidosis) Temporize hyperkalemia Aspirin overdose Na channel poisoning
Usual dose:	Infusion: 150 - 250 ml / hr Bolus: 1 - 2 amps PRN (depends on indication)
Adverse effects:	Rare
Adverse effects EMS action:	Call referring physician for orders
Notes:	Prior to transport: determine most recent K level Bicarb shifts K into cells → low serum K → prolongs QTc → induces tosades If <3.5 → dc bicarb If 3.5-5.5 → should be on KCl infusion If note issue with K → discuss with referring physician PRIOR to transport

Pre-Authorized Transport Medications

Verapamil (Calan)

Action:	Calcium channel blocker that selectively affects the AV node
Purpose:	Rate control (A Fib, A flutter, SVT) Dilate coronary vessel smooth muscle to treat anginal chest pain Dilate arterial smooth muscle to treat HTN
Usual dose:	Bolus: 5 – 10 mg Initial usually by hospital Infusion: 5 - 20 mg / hr
Adverse effects:	Bradycardia Hypotension
Adverse effects EMS action:	Stop infusion and call referring physician for orders
Notes:	Can follow CCB overdose protocol if signs of shock (CaCl, fluids, PDE, pace)