Jackson County
Emergency Medical Services
Standing Orders

Mission Statement
The mission of Jackson County Emergency Medical Services is to provide quality and state-of-the-art pre-hospital care at a reasonable cost to the people of Jackson County.

Acknowledgments
I would like to thank the following individuals who have contributed to these protocols:

EMT Review Committee

Tim James, Paramedic
Leslie Terrell, Paramedic, RN

Mercy Flights
Mercy Flights

And thanks to the EMT Reviewers who have provided feedback.

Clerical Support
Linda Hurst, Jackson County EMS Office
MEMO REGARDING AEROMEDICAL PROTOCOLS

This memorandum provides the authority for the EMS Providers - Emergency Medical Responders (EMRs), Emergency Medical Technicians (EMTs), Advanced Emergency Medical Technicians (AEMTs), Oregon EMT-Is, Paramedics - and Registered Nurses (RNs) employed by or providing volunteer services for Mercy Flights to function under their appropriate scope of practice and the written protocols contained herein.

These written protocols for aeromedical pre-hospital and intra-hospital transfer, to be used in conjunction with the current Jackson County EMS Standing Orders, operate on the principle that the EMS Providers and RNs assume considerable latitude in the decisions regarding assessment and treatment of patients at the scene and during transport. The success of these protocols depends on the training, continuing education, clinical judgment, and personal integrity of all who provide medical services under this agreement.

These protocols shall be in effect July 1, 2016 until June 30, 2017 unless revised or amended. These new protocols supersede and make void any and all protocols written and approved prior to this date.

Paul S. Rostykus, MD, MPH
Supervising Physician
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<td>Aeromedical Transport Protocol</td>
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<tr>
<td>Esmolol</td>
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<td>May 1, 2003</td>
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<td>July 1, 2005</td>
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<tr>
<td>Heimlich Valve</td>
<td>July 1, 2003</td>
</tr>
<tr>
<td>Heparin</td>
<td>July 1, 2013</td>
</tr>
<tr>
<td>Hydralazine</td>
<td>July 1, 2005</td>
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<tr>
<td>Labetalol</td>
<td>January 7, 2004</td>
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<tr>
<td>Lorazepam</td>
<td>July 13, 2012</td>
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<tr>
<td>Mannitol</td>
<td>July 1, 2005</td>
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<td>Metoprolol</td>
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<td>Nitroprusside</td>
<td>January 7, 2004</td>
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<td>Packed O-neg Red Blood Cells</td>
<td>January 7, 2004</td>
</tr>
<tr>
<td>Tirofiban (Aggrastat)</td>
<td>January 7, 2004</td>
</tr>
</tbody>
</table>
AEROMEDICAL TRANSPORT PROTOCOL

Interhospital transfer protocol applies to aeromedical transports

During interhospital aeromedical transports medication not included in these protocols may be ordered by the patient’s physician. These medications should be given as ordered unless specific medical contraindications exist.

It is the responsibility of the medical flight crews to be familiar with the effects, dosages, indications, contraindications, and adverse reactions associated with drugs used in the treatment of critically ill and injured patients.

Drugs frequently ordered during aeromedical transport:
- Cardiovascular agents: amrinone (Inocor), dobutamine (Dobutrex), nitroprusside (Nipride)
- Gastrointestinal agents: hydroxyzine (Vistaril), famotidine (Pepcid), ranitidine (Zantac), cimetidine (Tagamet), ondansetron (Zofran)
- Narcotics: morphine, fentanyl
- Paralytics: pancuronium (Pavulon), rocuronium (Zemuron)
- Sedatives: propofol (Diprovan)

Preflight Assessment

A. Altitude can cause detrimental effects to the patient transported by air. Prevention is the key. To provide good patient care during air transport it is essential that all medical personnel understand the effects of altitude on patients.

B. The patient should be evaluated for potential altitude problems during the primary and secondary survey.

C. Prophylactically treat altitude problems (i.e., NG tube placement, needle thoracentesis or placement of chest tube).

D. Unusual patient characteristics – weight or height.

Altitude Of Our Region

A. On the flight out evaluate the potential altitude of the return flight and use this as a frame of reference when preparing the patient for flight.

B. Service Areas:
   - Coastal range: 2,000 - 4,000 feet
   - Medford: 1,330 feet
   - Cascade range: 5,000 - 10,000 feet (passes through the range vary around 5,000 feet)
   - Bend: 3,450 feet
   - Willamette Valley and Eugene: sea level to 500 feet
   - Route up to Portland if bad weather: 8,000 - 18,000 feet
C. Points to consider:
The patient’s needs should determine the route. 
Weather conditions will affect this decision 
Good communications with the pilot is essential in order to make the best mutual decision regarding the return flight.

**Altitude Effect On Body Systems**

A. **General Symptoms or Signs:** Fatigue, insomnia, anorexia, thirst, drowsiness, altered mental status, dehydration.

B. **Cardiac/Respiratory Symptoms or Signs:** Chest pain, breathlessness, Cheyne Stokes respirations, cyanosis, hypoxia, arrhythmias, pulmonary edema, blood pressure alterations, increase in heart or respiratory rate.

C. **Musculoskeletal Symptoms or Signs:** Weakness, stiffness or poor coordination.

D. **GI Symptoms or Signs:** Nausea, vomiting, diarrhea, abdominal cramps, indigestion or bloating.

E. **Neurologic Symptoms or Signs:** Headache, visual changes, confusion, psychosis, hallucinations, dizziness or memory loss.

**The Ten Stresses Of Flight**

A. **Decrease in partial pressure of the gases**
   Definition: The barometric pressure is the total pressure \( P_T \) of all of the gases in the air which decreases with increased altitude.
   1. The pressures and effects of a particular altitude on a patient are estimated by the following equation:

\[
P_{i\text{O}_2} = \text{Barometric Pressure} - \text{H}_2\text{O vapor} \times 0.21
\]

\[
P_{a\text{O}_2} = P_{i\text{O}_2} - (P_{a\text{CO}_2} - R \times 0.8)
\]

\[R = \text{respiratory exchange ratio, slightly < 1}\]

\[P_{a\text{CO}_2} = \text{partial pressure of gas in arterial blood}\]

<table>
<thead>
<tr>
<th>Altitude (Feet)</th>
<th>( P_T ) (mmHg)</th>
<th>( P_{a\text{O}_2} )</th>
<th>( P_{a\text{CO}_2} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea Level</td>
<td>760</td>
<td>103</td>
<td>40</td>
</tr>
<tr>
<td>5,000</td>
<td>632</td>
<td>81</td>
<td>37</td>
</tr>
<tr>
<td>11,000</td>
<td>523</td>
<td>61</td>
<td>35</td>
</tr>
<tr>
<td>15,000</td>
<td>475</td>
<td>45</td>
<td>32</td>
</tr>
<tr>
<td>18,000</td>
<td>380</td>
<td>38</td>
<td>31</td>
</tr>
<tr>
<td>20,000</td>
<td>349</td>
<td>35</td>
<td>30</td>
</tr>
</tbody>
</table>

B. **IV Bottles:**

With glass bottles air expansion will affect the drip rate, therefore, plastic bags are usually
preferred. Always keep the drip chamber half full if volutrols are used or regulate with an IV pump.

C. **Chest Tubes:**
Observe for clogging, and transport in an airplane with Pleurevac drainage with an RN in attendance.

D. **Dental Work:**
Due to the possibility of trapped air, for example a root canal, crew members should not fly for 24 hours after receiving dental work.

E. **Humidity:**
As the temperature or atmospheric pressure decreases, the air becomes dryer.

ET tubes will plug easier, especially in pediatric patients with small diameter tubes. Keep these moist with saline.

Corneas will dry out, contacts should be removed, and on long flights the use of isotonic or artificial tears may be helpful.

F. **Drug Potentiation:**
CNS depressants, antihistamines and narcotics are potentiated at altitude and may depress respirations and increase hypoxia. Morphine and diazepam should be given in smaller doses at more frequent intervals.

G. **Noise:**
*Ear protection* may be needed for the patient and crew. Breath sounds may be difficult or impossible to hear. Doppler may facilitate blood pressure determinations. Use of your vision and touch in order to assess your patient.

H. **Nausea:**
Flying may cause your patient to develop air sickness with symptoms of headache, stomach awareness, pallor, perspiration, nausea or vomiting.

I. **Thermal Effects:**
Temperature decreases with altitude; usually a 2°C drop for every 1000 foot elevation gain. Consider the chill factors during the winter. Keep the patient warm; mummy wrap them, use hot packs, etc. Children will cool faster due to their larger body surface area to weight ratio.

J. **G Forces:**
In fixed wing transport G forces will affect the patient more. Load the patient facing the cockpit with the head of the bed up 30 degrees, if possible. This will put most of the force towards the abdomen and hip area. Adequate restraints are needed to ensure stabilization in flight.
K. **Vibration in the aircraft:**
   Overall, the aircraft offers a very smooth ride, but there is a low vibration level. Traction devices cannot have dangling weights. Equipment settings should be rechecked. Screws and bolts loosen over long periods of time and need regular tightening.

L. **Fatigue:**
   This is the sum total of all the above. Fatigue increases in illness, not enough rest and with poor nutrition. This is a very important factor for the flight crew to keep in mind and to keep in good physical shape.

**Special Considerations**

1) **Intubated and Ventilated Patients**
   Intubated patients requiring interfacility transport have special requirements for care to ensure their safety and stability.

   For many transports patient may need to be intubated, paralyzed and ventilated mechanically. This offers much greater control and consistency of volumes, rate and pressures. ET tube placement should always be confirmed pre-transport by auscultation and after each stage of movement (i.e. into ambulance, into aircraft, etc.) with documentation of tube position. Conscious, non-paralyzed patients should be restrained with soft restraints to prevent accidental tube displacement. Sedation should be considered for any intubated patient and administered per standing order. Paralysis should be considered in the combative intubated patient or the ventilated patient who is unable to maintain adequate saturations on 100% O$_2$ as this will reduce the oxygen demand from the work of breathing. Remember that paralysis MUST be accompanied by sedation, and that pain control must also be continued if injuries exist. SaO$_2$ monitoring is mandatory on all patients. It is recommended that all ventilated patients be transported on maximum concentration of O$_2$. If specific transport orders call for lower concentrations, titration may be necessary to keep saturation >90%.

2) **Chest Tubes**
   Patients with chest tubes require special attention to prevent blockage or disconnection during transport.
Patients being transported with chest tubes for pleural drainage of air or fluids must be protected from accidental disconnection of tubes from the drainage/suction device. Prior to transport ensure that the chest tubes are well secured to the patient with sutures and tape, that all connections are well secured, and that the drainage/suction device is operating correctly. It is important to maintain the drainage/suction device below the level of the chest tubes at all times to prevent reflux of drainage into the chest. It is important to maintain the device in an upright position to ensure delivery of appropriate suction or maintenance of water seal. If suction is ordered to be maintained for transport, ensure that the water level in the suction device is at the appropriate level for the ordered suction pressure, and that the suction chamber is having continuous vacuum, indicated by light bubbling. Portable battery powered suction devices are not designed to provide continuous high pressure suction and will tend to overheat if run continuously. They should be used for chest tube suction only as bridging devices between connection to the main suction in the ambulance or aircraft. Ensure that the suction unit is functioning properly in the transporting unit prior to transport. Suction devices will require release of internal pressure during ascent and descent in flight. A pressure equalization release button is provided on the device for this purpose and should be used frequently during periods of altitude change.

3) Blood Pressure Monitor
Non-invasive Blood Pressure Monitoring (NIBP) may be utilized in situations in which manual BPs are not practical or when auscultation is impossible.

Remember to treat the patient, not the machine! NIBP readings should always be correlated to the clinical presentation of the patient. Baseline comparison between manual and machine readings should be obtained prior to transport. If the machine reading does not correlate with the manual readings and cannot be corrected by repositioning the cuff or changing arms, the NIBP should not be used to guide patient care. Frequency of readings should be guided by patient condition. As with all BP measurements, be sure to use an appropriately sized cuff to obtain accurate readings.

4) Transvenous Pacemakers
Patients with transvenous pacemakers require special attention to ensure proper function and to prevent dislodgement of the pacing leads.

Check equipment for proper function prior to transport. A spare fully charged battery should be available. Check that the device is properly functioning by observing appropriate sensing and capture. Avoid turning the patient to the right side, as this places tension on the cardiac leads and may result in dislodgement.
Medical Control During Transport
Medical Control during an interhospital transfer will be primarily the responsibility of the sending physician, and if unavailable, then the receiving physician. In the event of a serious deterioration in the patient’s condition the nearest appropriate medical facility will be utilized.

Procedure:
A. All patients undergoing interfacility transport will be provided with the appropriate written orders and any necessary medications by the transferring physician or facility.

B. Routine medications such as antibiotics, or breathing treatments which are indicated during the transport and have been provided by the transferring facility, may be administered as ordered.

C. Treatments not otherwise specified shall be delivered in accordance with these Jackson County EMS Standing Orders.

D. In the event the transport orders conflict with the standing orders or the medical opinion of the transporting crews, care shall be delivered under standing orders. Every effort should be made to discuss changes with the transferring physician prior to transporting the patient. If the transferring physician is unavailable or unwilling to alter his orders, on-line medical control may be sought from the receiving physician or the transporting unit’s medical control if the destination facility is outside this system.

E. In the event of a serious deterioration of the patient’s condition en route, diversion to the nearest hospital may be needed. Ground transportation arrangements and alerting of the local facility to the situation are essential so that they may be prepared. If no communication with dispatch is available due to location, the pilot may be able to accomplish this using the aircraft’s radios.
DANGEROUS PATIENT: REFUSAL TO TRANSPORT

Paramedic, RN - AEROMEDICAL ONLY

SUBJECTIVE:
Any bizarre behavior or change in behavior, including but not limited to: suicidal ideas, alcohol or drug intoxication, toxic exposure, head trauma, psychiatric disorders or unusual patient history.

OBJECTIVE:
Assess level of consciousness and orientation.
Assess the patient’s level of cooperation.

ASSESSMENT:
Any behavior that the flight crew deems potentially dangerous.

TREATMENT:
SAFETY OF THE FLIGHT MUST NEVER BE COMPROMISED

<table>
<thead>
<tr>
<th>Paramedic:</th>
<th>RN:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss case and hazards involved with referring and receiving physician. If patient can be chemically or physically restrained to the satisfaction of the crew the transport can continue. Monitor patient closely. If patient cannot be chemically or physically restrained then the aeromedical crew should cancel the flight. Assist referring physician with alternative forms of transport. It would be rare, yet acceptable, for the air medical crew to accompany ground transport to the nearest hospital if medical treatment had been initiated by the aeromedical crew.</td>
<td></td>
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</tbody>
</table>

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ESMOLOL

Paramedic, RN - AEROMEDICAL ONLY

ACTION:
Intravenous adrenergic beta blocker

INDICATIONS:
By physician order only
STEMI with Hypertension and Tachycardia
Malignant Hypertension
Aortic Aneurysm

CONTRAINDICATIONS:
❖ Hypotension
❖ Bradycardia or Heart block
❖ Cardiogenic Shock

SIDE EFFECTS & PRECAUTIONS:
Use with caution in asthmatics

ROUTE & DOSAGE:

<table>
<thead>
<tr>
<th>Route</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paramedic</td>
<td>500 mcg/kg/min IV bolus over 1 minute.</td>
</tr>
<tr>
<td>RN</td>
<td>Titrate upwards at 50 mcg/kg/min IV increments every 3-4 minutes. Maximum 300 mcg/kg/min.</td>
</tr>
</tbody>
</table>
FOLEY CATHETER

Paramedic (Optional), RN

INDICATIONS:
Paramedic: Initiate placement of a urinary catheter for trauma patients in a pre-hospital setting who have received diuretics and where transport time is greater than 30 minutes.
RN: Aeromedical transports.

PRECAUTIONS:
This is a sterile technique. Insertion of foley catheter into a male with an enlarged prostate may be impossible. Use extreme caution with suspected pelvic fractures; do not insert if blood at urethral meatus.

PROCEDURE:
1. Prepare Equipment - 16 Fr catheter tray.
2. Open outer wrapper of kit with sterile technique.
3. Remove sterile towel and place under patient.
4. Put on gloves with sterile technique - everything else is sterile.
5. Open disinfectant solution and pour over cotton balls. Fill balloon with 6-10 cc saline to check patency, then remove saline. Lubricate foley with water soluble jelly.
6. Remove catheter from wrapper; place catheter back in sterile box.
7. Place foley catheter box within reach.
8. Female patients.
   a. Have patient bend knees and let legs fall open (as if having a baby).
   b. Use non-dominant hand to spread labia apart - this hand is no longer sterile.
   c. Wipe from top to bottom with one cotton ball at a time, noting location of urethra.
9. Male patients.
   a. Hold penis with non-dominant hand - this hand is no longer sterile.
   b. Pull back foreskin and clean head of penis with one cotton ball at a time. Clean in circular motion.
10. All patients.
    a. Insert catheter into urethra and advance until urine flows, then advance another 1-2 inches.
11. Inflate balloon with 6-10 cc sterile water or saline and secure tubing to patient’s leg.
FOSPHENYTOIN

Paramedic, RN - AEROMEDICAL ONLY

TRADE NAME:
Cerebryx

ACTION:
Anticonvulsant

INDICATIONS:
- By physician order only
- Seizures.
- Severe head injury.

CONTRAINDICATIONS:
- Known sensitivity to fosphenytoin.
- Sinus bradycardia, sino-atrial block, 2º or 3º degree AV block.

SIDE EFFECTS & PRECAUTIONS:
Use cautiously if patient is hypotensive or bradycardic.
Fosphenytoin is dosed as phenytoin equivalent (PE).

ROUTE & DOSAGE:
- Paramedic: 20 mg phenytoin equivalent (PE) mg/kg IV or IO infusion.
- RN: Maximum 150 phenytoin equivalent (PE) mg/minute IV infusion.
HEIMLICH VALVE - (AIR MEDICAL ONLY)

Changing an intrapleural maintenance device (Pleurevac) to a Heimlich valve  
Paramedic, RN

INDICATIONS:
The Heimlich valve is an optional chest drainage system used primarily for treating a pneumothorax and helps maintain the integrity of the intrapleural space. Indicated for inter-facility helicopter or fixed wing transport of patients with chest tube(s) when available space for equipment, or position of patient on the aircraft needs to be considered.

PRECAUTIONS:
Use of the valve and benefit to the patient should be carefully considered; requires a “break” in the chest tube system. Do not use the valve for flight team convenience. Two chest tube clamps must be with the patient at all times. Be sure the chest tube is secured by tape or dressing. There is potential for occlusion of the valve by drainage or clots; never occlude the distal end with tape or dressing as this can lead to tension pneumothorax. Monitor valve for fluttering, which corresponds to closure of the valve before inhalation. Absence of fluttering could indicate that the lung has fully expanded or the valve has become obstructed. Other considerations to have:
● Inability to detect air leak.
● Absence of suction.
● Do not discontinue valve and leave chest tube open to air.
● Remember pain control.

PROCEDURE:
1. Prepare Equipment  
a. Heimlich valve.  
b. Two padded chest tube clamps.  
c. Drainage collection device (gauze dressing, or vented urine leg bag or foley bag, cut slit in top of bag to vent).  
d. Tape.  
e. Sterile scissors.  
2. Double clamp chest tube.  
3. Trim rubber tubing connected to chest tube to desired length for patient comfort and accessibility (about 2-3 inches).  
4. Remove chest drainage device (Pleurevac).  
5. Insert proximal (blue) end of Heimlich valve into rubber tubing, with arrow on valve pointing away from the patient (towards the feet).  

Steps 2 through 5 should be completed within 30 seconds - the patient is at risk for tension pneumothorax with chest tube clamped.  
6. Remove clamps (do not leave clamps on longer than 30 seconds to 1 minutes).  
7. Attach vented drainage collection device, if needed, to distal (clear) end of Heimlich valve.  

The Heimlich valve can be re-attached to a chest tube drainage system (Pleurevac) on arrival to the receiving facility, or the valve can be discontinued and the chest tube drainage system attached. This can be accomplished by the receiving staff according to their protocols.
HEPARIN

Paramedic, RN - AEROMEDICAL ONLY

ACTION:
Intravenous anticoagulant

INDICATIONS:
By physician order only
ST Elevation MI
Invasive Pressure Monitoring System Flush

CONTRAINDICATIONS:
❖ Known sensitivity to heparin.
❖ Active bleeding.
❖ Recent major surgery, CVA or major trauma (within 1 week)
❖ Recent CPR (within 24 hours)

SIDE EFFECTS & PRECAUTIONS:
May cause CVA or severe bleeding.

HOW SUPPLIED:
5,000 unit/ml
1,000 unit/ml

ROUTE & DOSAGE:
<table>
<thead>
<tr>
<th>Paramedic:</th>
<th>ST EMI: 4,000 unit IV bolus</th>
</tr>
</thead>
<tbody>
<tr>
<td>RN:</td>
<td>Pressure line flush: 1,000 units mixed in 1000 ml crystalloid equipped with a pressure bag.</td>
</tr>
</tbody>
</table>
HYDRALAZINE

Paramedic, RN - AEROMEDICAL ONLY

ACTION:
Direct vasodilator

INDICATIONS:
• By physician order only
• Hypertension.

CONTRAINDICATIONS:
♀ Known sensitivity to hydralazine.

SIDE EFFECTS & PRECAUTIONS:
May cause reflex tachycardia.

ROUTE & DOSAGE:

| Paramedic: | Adult: 10 - 20 mg slow IV push every 30 minutes. Maximum 40 mg. |
| Pediatric: | 0.1 – 0.5 mg/kg slow IV push every 30 minutes. Maximum 20 mg/dose or 40 mg total. |
LABETALOL

Paramedic, RN - AEROMEDICAL ONLY

ACTION:
Intravenous adrenergic alpha and beta blocker

INDICATIONS:
By physician order only
Malignant Hypertension
Pregnancy Induced Hypertension
Aortic Aneurysm

CONTRAINDICATIONS:
 Known sensitivity to labetalol
 Hypotension
 Cardiogenic or Hypovolemic Shock
 Bradycardia or Heart block
 Congestive Heart Failure

SIDE EFFECTS & PRECAUTIONS:
Use with caution in asthmatics.

ROUTE & DOSAGE:

<table>
<thead>
<tr>
<th>Role</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paramedic</td>
<td>20 mg q 10 min slow IV push over 2 minutes.</td>
</tr>
<tr>
<td>RN</td>
<td>Maximum 300 mg.</td>
</tr>
</tbody>
</table>
LORAZEPAM

Paramedic, RN – AEROMEDICAL ONLY

TRADE NAME:
Ativan

ACTION:
Benzodiazepine with anticonvulsant, skeletal muscle relaxant, anxiety reducing, amnesic and sedative effects.

INDICATIONS:
- Seizure
- Sedation for painful procedures or injuries or combative patients
- Post RSI sedation

CONTRAINDICATIONS:
- Known sensitivity to lorazepam.

SIDE EFFECTS & PRECAUTIONS:
Respiratory depression. Hypotension. Sedation. Paradoxical excitement or agitation may occur. Use with caution in the presence of other sedating agents: alcohol, barbiturates, benzodiazepines or opiates. May be out of refrigeration for 30 days maximum – date and time container.

ROUTE & DOSAGE:

<table>
<thead>
<tr>
<th>Paramedic</th>
<th>RN</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.05-0.1 mg/kg IV or IO. Titrate to effect.</td>
<td>Maximum single dose of 4 mg. Maximum total dose of 16 mg.</td>
</tr>
</tbody>
</table>
MANNITOL

Paramedic, RN - AEROMEDICAL ONLY

TRADE NAME:
Osmitrol

ACTION:
Osmotic diuretic

INDICATIONS:
• By physician order only
• Head injury with increasing neurological abnormalities.

CONTRAINDICATIONS:
♀ Known sensitivity to mannitol.
♀ Renal failure.

SIDE EFFECTS & PRECAUTIONS:
May cause volume depletion.

ROUTE & DOSAGE:

<table>
<thead>
<tr>
<th>Route</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paramedic</td>
<td>0.5 gm - 2 gm/kg IV over 30-60 minutes.</td>
</tr>
<tr>
<td>RN</td>
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</tr>
</tbody>
</table>

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METOPROLOL

Paramedic, RN - AEROMEDICAL ONLY

**ACTION:**
Intravenous adrenergic beta blocker

**INDICATIONS:**
By physician order only
STEMI

**CONTRAINDICATIONS:**
- Hypotension
- Heart block
- Bradycardia
- Cardiogenic Shock
- Congestive Heart Failure

**SIDE EFFECTS & PRECAUTIONS:**
Use with caution in patients with asthma.

**ROUTE & DOSAGE:**
- Paramedic: 5mg slow IV push q 5 min x 3, maximum of 15mg.
- RN:
NITROPRUSSIDE

Paramedic, RN - AEROMEDICAL ONLY

TRADE NAME:
Nipride

ACTION:
Direct vasodilator

INDICATIONS:
• By physician order only
• Hypertension.

CONTRAINdications:
CREASE
Known sensitivity to nitroprusside.
Pregnancy.

SIDE EFFECTS & PRECAUTIONS:
Can cause severe hypotension.
Use with caution in cases of head injury; may cause increased intracranial
pressure.
Protect solution and tubing from light by wrapping in aluminum foil. Use within
24 hours of mixing.

ROUTE & DOSAGE:

<table>
<thead>
<tr>
<th>Role</th>
<th>Dosage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paramedic</td>
<td>0.25 - 10 mcg/kg/min IV. Titrate to effect.</td>
</tr>
<tr>
<td>RN</td>
<td></td>
</tr>
</tbody>
</table>
PACKED O-NEG RED BLOOD CELLS

Paramedic, RN - AEROMEDICAL ONLY

ACTION:
Red blood cell replacement

INDICATIONS:
By physician order only
Red blood cell replacement for significant blood loss

CONTRAINDICATIONS:
-any misidentification or inconsistency in labeling of patient or blood
-Religious Objection - Jehovah’s Witness

SIDE EFFECTS & PRECAUTIONS:
All patients are at risk for transfusion reactions/anaphylactoid reactions.
Transfusion reactions can occur with most blood products but are most common with whole blood. Transfusion reactions can occur with O-neg blood due to the presence of “minor factors”.
Transfusion reactions often begin with anxiety, fever, shortness of breath or urticaria (hives). If untreated hemolysis, anaphylaxis and kidney failure can result.
In case of suspected transfusion reaction immediately stop the transfusion and remove the entire infusion set from the IV catheter. Bag and save the blood and infusion set for later analysis. Connect a new infusion set with normal saline and infuse at 100cc/hr or more to maintain blood pressure. Diphenhydramine 50 mg IV will help control the reaction. Use epinephrine 1:1000 0.3mg SQ to maintain blood pressure if necessary.

ROUTE & DOSAGE:

| Paramedic: | Simultaneous intravenous saline infusion. |
| RN:        | Use appropriate tubing. |
|            | Watch for signs of transfusion reaction. |
|            | Take pre-transfusion temperature then record temperature 15 min. into the transfusion. Repeat this procedure for each unit transfused. |
|            | Maintain and complete paperwork for each unit that was transfused. |
|            | Keep one copy with the patient care record. |
TIROFIBAN (AGGRASTAT®)

Paramedic, RN - AEROMEDICAL ONLY

TRADE NAME:
Aggrastat

ACTION:
Intravenous glycoprotein IIB/IIIB platelet inhibitor

INDICATIONS:
By physician order only
Acute coronary syndrome
Acute myocardial infarction

CONTRAINDICATIONS:
- Known sensitivity to tirofiban
- Active bleeding.
- Recent major surgery, CVA or major trauma (within 1 week)
- Recent CPR (within 24 hours)

SIDE EFFECTS & PRECAUTIONS:
May cause CVA or severe bleeding.
Often used in conjunction with Heparin and Aspirin

ROUTE & DOSAGE:

<table>
<thead>
<tr>
<th>Role</th>
<th>Dosage Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paramedic</td>
<td>Loading dose: 0.4 mcg/kg/min for 30 minutes.</td>
</tr>
<tr>
<td>RN</td>
<td>Maintenance dose: 0.1 mcg/kg/min for 12 hours</td>
</tr>
</tbody>
</table>