



**NORTHWEST  
COMMUNITY  
EMERGENCY  
MEDICAL  
SERVICES  
SYSTEM**

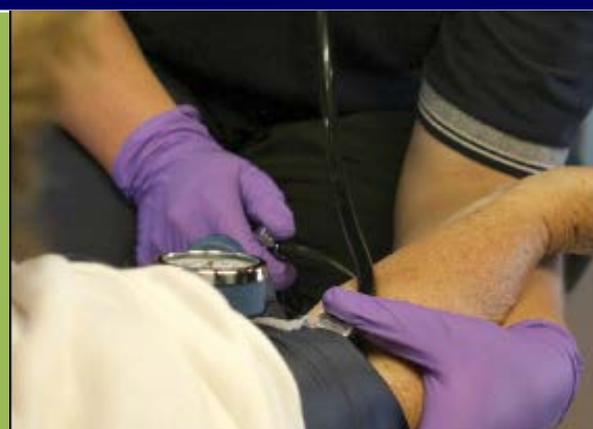
**Aug 2019  
CE**

**SOPs: Initial trauma care /GCS/RTS**

**Triage & transport criteria**

**Procedures: Trauma Assess / GCS / BP**

**Policies: A2 Aeromedical transport**



### **Objectives:**

After completing the class and reading the referenced documents, each participant will do the following with a degree of accuracy that meets or exceeds the standards established for their scope of practice without critical error:

**Cognitive:** Explain the major provisions and rationales of the ITC, shock, and trauma triage SOPs and the A2 policy; so they are applied appropriately to patient situations.

**Psychomotor:** Accurately obtain an auscultated BP, calculate IV fluid needs, appropriately warm IV fluids, assess a GCS, and determine appropriate patient destinations for adult and pediatric trauma patients.

**Affective:** Advocate for scene safety, risk mitigation, prioritized and competently performed assessments, rapid detection/resuscitation of life-threats, appropriately executed interventions, and safe and timely transport of trauma patients to appropriate healthcare facilities



**Goal:** All EMS practitioners are well-informed about evidence-based updates to care and translate this knowledge into clinical practice.

Questions and comments welcome.  
Direct to:

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EMS Administrative Director

**Northwest Community EMS System Continuing Education**  
**Initial Trauma Care – August 2019**

**Scenario**

1840: Dispatched to a residence for a person with seizures. Patient: male; 68 kg (150 lbs); 18 y/o.

The patient was found lying supine in the living room, alert and oriented X 3. Father reports that he had moved the pt to the living room, after he heard a “thud” and “gurgling” coming from the pt’s bedroom, and finding him face down, nose bleeding, on his bedroom floor. Pt was last seen “normal” “one minute” prior to this event, sitting in a chair playing video games.

Paramedics noted that within a few minutes, the pt was oriented to self; he did not know where he was or how he got there. This change from initial assessment was noted and confirmed by the same paramedic that found the pt A&O X 3 initially. As minutes passed, the pt began responding to questions repeatedly with “blue” or “blue and gold”. He repeatedly asked where he was. When asked what was wrong, the pt stated he was unable to see. The quality and appropriateness of the pt’s responses were noted to deteriorate, and become briefer, throughout the call.

**S:** AMS; father reported seizure

**A:** None

**M:** Azithromycin; ondansetron; denies drug use

**P:** Strep and mono (currently being treated); ADHD

**E:** See above

**OPQRST:** O: sudden, rapid. P: NA. Q: NA. R: NA. S: NA. T: < 15 min.

**Assessment:**

Head: WNL

Face: Bloody nose

Eyes: Dilated / 8 mm bilaterally; reactive; reassessment unchanged; vision loss

Neck: No deformities

Chest: Lungs clear bilaterally

Abd: Soft nontender all 4 quadrants

Pelvis: Normal

Extremities: WNL

Back/spine: WNL

Skin: Warm, moist

Mental status: Oriented to person only; short-term memory loss; speech deteriorated to “words”

Neuro: Gross motor normal, symmetrical strength; cerebellar function normal

**Vital Signs:**

TIME	BP	Method	MAP	HR	Pulses	ECG	RR	Effort	SpO2	O2	ETCO <sub>2</sub>	GCS	Temp	Glu	Stroke
1849	128/60	Ausc	83	120	Strong	ST	22	Norm	98%	RA		14	36.6	108	
1854	132/64	Ausc	87	124	Strong	ST	22	Norm	98%	RA		14			Incl.
1900	138/66	Ausc	90	124	Strong	ST	22	Norm	98%	RA	34 sqr	14	36.8		
1906	128/60	Ausc	83	118	Strong	ST	24	Norm	97%	RA	38 sqr	14			

**What major clues in Hx and/or PE should be considered in creating a differential diagnosis?**

1. **Post trauma:** \_\_\_\_\_
2. **Syncope** \_\_\_\_\_
3. **Big 4:Hs** \_\_\_\_\_  
 \_\_\_\_\_
4. **Hyperdynamic state?** \_\_\_\_\_
5. **Neuro:** \_\_\_\_\_
6. **Intracranial event?** \_\_\_\_\_  
 \_\_\_\_\_

7. Hx strep and mono on antibiotic:

Suspected infection? \_\_\_\_\_

ETCO<sub>2</sub> 31 or less? \_\_\_\_\_

**qSOFA:** Quick Sequential [Sepsis-related] Organ Failure Assessment **criteria**

? **AMS**

**RR 22 or greater?**

**SBP ≤ 100 (adult)?**

**≥ 2 criteria present?**

**A stroke alert was called** by EMS during transport during radio report, 1 minute into transport.

**ED labs: pCO<sub>2</sub> 16 (21 - 32); Anion Gap 22 (5 – 15); Lactate 7.6!**

1956: MD note: Pt was in CT when he started to become combative. He started having sonorous respirations. Decision made to intubate to protect airway and facilitate testing . Pt's eyes more dilated than before.

cefTRIAxone (ROCEPHIN) 2 g in sodium chloride 100 mL IVPB MINI @ 2010

**Outcome:** Flown to Lurie Children's Hospital:

- He became febrile prior to transport
- In PICU for about 6 days,
- No clear discharge diagnosis!
- Positive for strep and positive for Epstein Barr virus (causes mono)
- CSF cultures negative—no growth; Meningitis and encephalopathy ruled out
- Renal status impacted, but improving
- Mental status improving (unknown if returned to baseline)
- Drug tox still pending - will take several more weeks
- All antibiotics stopped before discharge
- Continues to be followed by neuro

**Great example of casting a wide net and considering many possible causes of S&S!**

**ITC SOP; select sections of the procedure and policy manuals**

1. What should be included in the trauma scene size up?

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2. Which equipment should be brought to all trauma patients?

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3. How should the airway be initially opened and maintained?

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4. List at least three hazards or complications of suctioning. (See procedure manual)

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15. What is the process for packing a deep wound with Celox and what must be done to help tamponade the bleeding after the dressing is placed? (See procedure manual)
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
16. How quickly should Celox rapid stop the bleeding? \_\_\_\_\_
17. What type of tourniquet should be applied to a mangled extremity with uncontrolled hemorrhage?
- \_\_\_\_\_
18. Where on a limb in relation to the wound should a tourniquet be applied?
- \_\_\_\_\_
19. What should be assessed and documented after tourniquet application?
- |                          |       |                          |
|--------------------------|-------|--------------------------|
| <input type="checkbox"/> | _____ | <input type="checkbox"/> |
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| <input type="checkbox"/> | _____ |                          |
20. Once a tourniquet is applied, should it be loosened or removed by EMS?
- \_\_\_\_\_
21. Which of these is true regarding use of a tourniquet?
- A. Lactic acid & potassium can accumulate and anaerobic metabolism can occur
  - B. Use a thin or narrow constricting band to avoid tissue damage
  - C. Released tourniquet every 10 min to maintain circulation
  - D. Apply tourniquet so arterial blood flow remains intact
22. What is the preferred method to control internal bleeding after a pelvic fracture?
- \_\_\_\_\_
23. What three life threats must be found under the C: Circulatory assessment?
- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_
24. An adult has been extricated from an MVC. The patient is awake and anxious (GCS 15), complaining of severe RUQ pain and intense thirst. VS: BP 110/78; P 110; R 24; SpO<sub>2</sub> 100% on 15 L of O<sub>2</sub>/NRM; ETCO<sub>2</sub> 31. Skin is pale, cool, and moist. Which of these is indicated?
- A. Transport, start IV enroute
  - B. Give the patient small sips of water
  - C. Start large bore IV on scene, run WO up to 2 L
  - D. Transport BLS to the nearest Level I trauma center

25. An unconscious adult presents following multi-system blunt trauma from a MVC with chest and abdominal injuries and a suspected fractured femur. VS: BP 78/56; HR 120; RR 28; SpO<sub>2</sub> 90%; EtCO<sub>2</sub> 20. Which of these is indicated immediately?
- A. IV NS TKO due to need for permissive hypotension
  - B. Cold NS at 30 mL/kg (max 2 L) as rapidly as possible
  - C. 14-16 g IV with warm NS WO up to 1 L to reach SBP 90 (MAP 65)
  - D. Two large bore IVs with warm NS on pressure infusers run wide open

26. What are the indications for vascular access in a trauma patient?
- 
- 

27. If IO access is required in a trauma patient, what is the preferred site for rapid fluid administration? (Procedure manual trauma assessment)
- 

28. What is the lethal triad of trauma? (Procedure manual: trauma assessment)
- 

**Note:** Body must warm "room temp" IVF to 98.6° F. This requires ATP. In shock, there is an ATP deficit. Room temp IVF will cool the patient.

**Warming IVF:** Volumes ≥150mL can be warmed in their plastic over-pouches to temperatures not exceeding 40°C (104°F), and for a period no longer than 14 days.

Label bags with warming expiration date before placing in the warmer.

Once IVs have been warmed for their max time period, remove container from warming source and label as having been previously warmed. DO NOT rewarm.

Return to regular stock - They may be used until the manufacturer's labeled expiration date provided they have not been warmed more than once (Baxter, 2015).

29. If IV fluids are needed for a pt in shock from hemorrhage, what size IV catheter should be used?
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30. What is the maximum amount of NS that may be given by EMS to a trauma patient?
- 

31. What are the dangers of exceeding BP targets and giving too much IV fluid to a pt with trauma?
- 
- 

32. What is the maximum SBP target in mmHg when giving IVF challenges to a pt with penetrating torso trauma?

- A. 70 (MAP 40-50)
- B. 80 (MAP 50-60)
- C. 90 (MAP 60-65)
- D. 110 (MAP>65 or higher)

This is referred to as: \_\_\_\_\_

33. If a patient has blunt abdominal trauma, what is the maximum SBP target when infusing IV fluids?
- 

34. What is the minimum SBP to achieve in a patient with head trauma? \_\_\_\_\_

35. Under what circumstances should the ECG be monitored on an adult following trauma?
-

36. What factors should be assessed under disability?

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37. How should severe pain be treated in a patient with trauma who is hemodynamically stable?

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Watch the video on the revised GCS assessment: <https://www.glasgowcomascale.org/>

38. Where on an apparently unconscious patient's body should the initial pressure stimulus be applied first to determine responsiveness?

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39. An adult does not respond to any verbal stimuli. When deep pressure is applied, he briefly opens his eyes then closes them again, moans without words, and moves his hand above his clavicle to shove the paramedic's hand away. What is the GCS?

Eye opening		Verbal		Motor	
Spontaneously	4	Oriented	5	Obeys commands	6
To speech	3	Confused	4	Localizes pain	5
To pressure	2	Words	3	Normal flexion	4
None	1	Sounds	2	Abnormal flexion	3
Not testable		None	1	Extension	2
		Not testable		None	1

- A. 8
- B. 9
- C. 10
- D. 11

40. An unconscious patient does not respond in any way when you apply a pressure stimulus. He does not open his eyes, makes no verbal sounds, and does not move even reflexively. His GCS is:

- A. 0
- B. 3
- C. Not testable
- D. Inconclusive

41. Where are the instructions about requesting and facilitating the scene response of an aeromedical helicopter located for the NWC EMSS? (See Policy Manual)

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42. Who must approve use of an aeromedical service for a scene response in the NWC EMSS?

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43. If a helicopter is approved for a scene response, what must be communicated to the aeromedical service?

- a. \_\_\_\_\_
- b. \_\_\_\_\_
- c. \_\_\_\_\_
- d. \_\_\_\_\_
- e. \_\_\_\_\_
- f. \_\_\_\_\_
- g. \_\_\_\_\_
- h. \_\_\_\_\_
- i. \_\_\_\_\_

**Secondary assessment**

44. What is the range for a normal pulse pressure? \_\_\_\_\_ (see BP procedure and section below)

45. What is the range for a normal mean arterial pressure? \_\_\_\_\_  
What is the usual target MAP in an adult? \_\_\_\_\_

46. What are orthostatic changes to the vital signs and what do they suggest with respect to the patient's status?

\_\_\_\_\_  
\_\_\_\_\_

May indicate

47. What is included in the secondary assessment besides DCAP, BLS, and TIC?

**HEAD, FACE, EARS, NOSE, MOUTH:** \_\_\_\_\_

What elements should be assessed and reported when examining the **eyes**? (See trauma assessment procedure)

\_\_\_\_\_  
\_\_\_\_\_

**NECK:** \_\_\_\_\_

\_\_\_\_\_

**CHEST:** \_\_\_\_\_

What two problems should be suspected if there is a unilateral absence of breath sounds over one side of the chest in a trauma patient?

\_\_\_\_\_

**ABDOMEN:** \_\_\_\_\_

\_\_\_\_\_

**PELVIS/GU:** \_\_\_\_\_

**EXTREMITIES:** \_\_\_\_\_

**BACK/flank:** \_\_\_\_\_

**Neuro:** \_\_\_\_\_

\_\_\_\_\_

**SKIN/SOFT TISSUE:** \_\_\_\_\_

48. What elements must be documented to calculate a revised trauma score?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

49. What is the national goal for maximum trauma scene times for patients who are time sensitive?

\_\_\_\_\_

50. Which Level I trauma center are accessible within 30 minutes by ground for NWC EMSS members?

\_\_\_\_\_



**Desired outcomes in all trauma patients**

- A patent airway and adequate tissue oxygenation are maintained at all times.
- Euvolemia is achieved/maintained unless contraindicated by penetrating trauma.
- Adequate cardiac output / perfusion is achieved / maintained.
- Normothermia is achieved / maintained.
- Pain is tolerable.
- Physiologic responses are monitored; complications recognized/reported early
- Psychological support is provided and needs are met.
- Spiritual needs are met.
- Family / significant others' fears / questions are addressed and information is provided to help them cope with the injury within the confines of HIPAA.

**Standard respiratory monitoring:**

- Adequacy of ventilations: respiratory rate, pattern, depth, effort (work of breathing)
- Airway patency; correct position/placement of adjuncts; S&S impairment, need for suctioning
- Adequacy of gas exchange; Oximetry: SpO<sub>2</sub>, ETCO<sub>2</sub>
- Integrity/appropriateness of O<sub>2</sub> delivery and FiO<sub>2</sub>
- Breath sounds
- Amount/contents of airway aspirate

**Standard cardiovascular monitoring enroute**

- Peripheral pulses
- BP; PP; MAP; orthostatic changes
- Skin color/temp/moisture; turgor
- ECG rhythm, intervals, conduction; ischemia
- Heart sounds
- Vascular access sites for patency/infiltration
- Fluid volumes by type/amount
- Adequacy of hemostasis

**Standard neurological monitoring enroute**

- Mental status exam; GCS; S&S ↑ICP and/or herniation
- CN exam: Visual acuity, loss of visual fields; pupils, EOMs, facial motion/sensation, gag
- Gross motor exam changes
- Cerebellar exam changes
- Sensory exam changes
- Pain status
- Seizure activity

**Blood pressure measurement**

1. Every patient must have a manual BP auscultated at least once before an automated BP monitor is used.
2. "The force the blood exerts on the inside of the walls of the arteries is known as blood pressure, and is dependent upon three factors:
  - Volume of blood in the arterial system;
  - Peripheral vascular resistance, which is determined by blood vessel diameter, viscosity of the blood, and length of the vessel; and
  - Cardiac output, which is a function of heart rate x stroke volume.
3. Pressure within the vascular system is the primary determinant of tissue perfusion. As such, the importance of its accurate measurement during patient assessment can't be overstated.
4. The meter used to measure a BP is known as a sphygmomanometer ("sphygmo" is the Greek word for pulse and a manometer is a pressure meter). When the Korotkoff sounds appear and move through the five phases, they correspond to given readings on the sphygmomanometer.
5. **Aneroid sphygmomanometers are more accurate than automated devices in their ability to measure both the systolic and diastolic blood pressures;** diastolic accuracy is particularly improved (98.7% accuracy using an aneroid manometer vs. 67.7% using digital technology). Automated blood pressure technology doesn't make use of auscultation, but relies instead on oscillometry, which measures the amplitude of various pulse pressures in the cuff overlaying the

artery. The systolic and diastolic pressures are determined using a complex mathematical algorithm that extrapolates the diastolic and systolic pressures from the mean value of these measurements.

Even manufacturers of the technology warn against relying on automatic BPs in cases of shock with hypotension, stating "...shock may result in a blood pressure waveform that has a low amplitude, making it difficult for the monitor to accurately determine the systolic and diastolic pressures."

Arrhythmias, muscle tremors and other disorders commonly encountered in the field skew these values even further beyond the inaccurate readings already inherent in automated blood pressure measurement.

Rock, M. (2018). Ditch the machine to improve accuracy in blood pressure measurement and diagnostics. JEMS on line, October 25, 2018. <https://www.jems.com/articles/2018/10/ditch-the-machine-to-improve-accuracy-in-blood-pressure-measurement-and-diagnostics.html>

*Beaubien ER, Card CM, Card SE, Biem HJ, Wilson TW. (2002). Accuracy of the Dinamap 1846 XT automated blood pressure monitor. J Hum Hypertens. 16(9):647-52. Despite widespread use of automated devices, there is limited published evidence for their reliability and accuracy. We recommend that this device not be used when accurate BP measurement is needed for therapeutic decision-making.*

*Davis JW, Davis IC, Bennink LD, Bilello JF, Kaups KL, Parks SN. (2003). Are automated blood pressure measurements accurate in trauma patients? J Trauma. 55(5):860-3. Automated BP devices should not be used for field or hospital triage decisions. Manual BP determinations should be used until systolic blood pressure is consistently > or = 110 mm Hg.*

## 6. Technique – see procedure

[https://www.jems.com/articles/2018/10/taking-a-manual-blood-pressure-techniques-pitfalls.html?cmpid=enl\\_jems\\_cardiac\\_resuscitation\\_report\\_2018%E2%80%A6](https://www.jems.com/articles/2018/10/taking-a-manual-blood-pressure-techniques-pitfalls.html?cmpid=enl_jems_cardiac_resuscitation_report_2018%E2%80%A6)

### Physiology of auscultation

When the cuff is filled with air to sufficient pressure so that the pressure in the cuff exceeds the blood pressure in the brachial artery, blood flow through the artery stops. Auscultation just distal to the point of occlusion, reveals no sounds as there's no blood flowing through the artery.

As pressure is gradually released inside the cuff, there will come a point when the left ventricle is able to eject blood at a high enough pressure to overcome the pressure exerted by the cuff. At this moment—when the pressure in the artery during cardiac systole is equal to the pressure measured inside the cuff—a thumping sound is heard as the sudden return of blood flow strikes the inner wall of the artery. **This is the systolic blood pressure.**

The thumping sounds are named Korotkoff sounds, after the Russian doctor who first discovered them. They are heard as long as the pressure in the artery exceeds the cuff pressure during systole; but they're not heard during cardiac diastole, when the pressure inside the artery is much less, and blood flow is occluded by pressure from the cuff.

As cuff pressure continues to be released, eventually the cuff pressure will become equal to the pressure inside the artery during diastole. When this occurs, blood flow past the cuff is no longer occluded during diastole, and the surge of blood returning to a formerly occluded artery goes away—as do the Korotkoff sounds. Therefore, the first point where we no longer hear Korotkoff sounds is the **diastolic blood pressure.**

Due to the difficulty in measuring something that's absent, accepted practice is to record the DBP as the very last Korotkoff sound during Phase 4. Although some texts do advocate using Phase 5 as a more accurate measure of the actual pressure in the arteries during diastole.

**Diastolic BP** reflects peripheral vascular resistance when the heart is resting (diastole).

### Common problems that account for inaccurate BP readings

- Cuff over clothing: Higher by 10-40 mmHg
- A full bladder: 10-15 mmHg
- Talking while reading is taken: 10-15 mmHg
- Unsupported arm: 10 mmHg
- Unsupported back: 5-10 mmHg
- Crossed legs: 2-8 mmHg
- Arm bent during automated readings

**Average BP norms** vary based on age and gender.

Ave. BP in a healthy adult is less than 120/80, but above levels that signal hypotension. Females usually have a lower BP until menopause, but that is not always true. For **children 8 or less**, use the formula **90 + 2 X age in years** for the targeted average systolic BP.

**Hypertension (HTN):** The National Heart, Lung, and Blood Institute & AHA have released federal guidelines regarding BP levels that put people at risk for hypertension (2017).

	SBP	DBP
Normal	<120 and	<80
Elevated BP	120-129 and	<80
Stage 1 HTN	130-139 or	80-89
Stage 2 HTN	≥140 or	≥ 90
HTN crisis	> 180	> 110

**Hypertensive crisis will have evidence of end organ damage**

#### Causes

- CV disease
- Kidney disease
- Stroke
- ↑ ICP: Head trauma with traumatic brain injury

**Hypotension:** Relative based on pt's normal BP. Generally, considered to be a SBP less than 90 mmHg in most adults. However, this may not signal hypoperfusion in all patients. Examine mental status, and signs of perfusion adequacy. Ask the patient about their usual readings. **Do not define hypotension by numbers as much as evidence of hypoperfusion.** Isolated readings are not nearly as important as trends.

Must always try to detect if CV compromise is due to a **rate, rhythm, volume, vascular, or pump problem** and treat inciting cause.

**Vasodilatory shock:** Sepsis; Anaphylactic; Neurogenic

#### Obstructive

- Tension pneumothorax
- Cardiac tamponade
- Pulmonary embolism

#### Cardiogenic

- Arrhythmia (tachy or brady)
- Ischemic
- Valve dysfunction
- Cardiomyopathy (enlargement)

#### Toxicologic

- Calcium or beta channel blockers
- Digoxin toxicity
- Opiates
- Sedatives
- Valproic acid (for seizures)
- Tricyclic antidepressants (TCA)
- Phenothiazines
- Carbon monoxide (CO), cyanide (CN)

#### Hypovolemic

- Hemorrhage in chest, abd, retroperitoneum, GI tract, thigh or externally
- Vomiting, diarrhea
- Inadequate fluid intake
- Diuresis, hyperglycemia
- Diaphoresis, hyperthermia

- Cirrhosis, pancreatitis
- Burns

**Metabolic**

- Hypoadrenalism
- Hypo/hyperthyroidism

**Pulse pressure (PP)** = Difference between the systolic & diastolic pressures

Systolic BP is normally about 30-50 mmHg greater than diastolic

**Abnormal**

**Widened pulse pressure:** Difference of > 50 mmHg. Example: Increased intracranial pressure

**Narrowed pulse pressure:** Difference of less than 30 mmHg. Indicates ↓ CO in the face of peripheral vascular constriction (compensatory response).

- Tension pneumothorax
- Cardiac tamponade
- Volume deficit of 15% or greater

**Mean Arterial Pressure****Better reflection of perfusion to**

- Coronary arteries; brain; kidneys
- Peripheral tissues

$BP = CO \times SVR$

**MAP = DBP + 1/3 PP**

- DBP counts twice as much as SBP because  $\frac{2}{3}$  of cardiac cycle is spent in diastole
- Automatically calculated by NIBP; number in brackets ( ) after systolic and diastolic readings 190/80 (94)
- **Normal 70-110**
- Minimum target MAP to perfuse protected organs (heart, brain) = usually 65

**Pulsus paradoxus**

- Inflate cuff per procedure; slowly deflate at 2-3 mmHg/heart beat  
If the difference between the systolic pressure measured when Korotkoff sounds first disappear during inspiration and when they are present during both inspiration and expiration is greater than 10 mmHg, then clinically significant pulsus paradoxus is present.
- Confirm peak SBP during expiration
- Listen again. Determine SBP when sounds are audible during inspiration & expiration
- If SBP drops >10 mmHg during inhalation, this is a serious sign. Patient has possible COPD, asthma, tension pneumo, pericardial tamponade, hypovolemia or pericardial effusion
- Such an observation is easily made by a skilled provider with the use of an aneroid sphygmomanometer and a stethoscope, but won't be able to be determined through the use of an automated blood pressure device.

**Orthostatic changes to vital signs:**

↑ P & ↓ BP 30-60 seconds after moving from a supine to seated or seated to standing position

Positive if HR increases 10-20 BPM or if SBP drops  $\geq 20$  or DBP drops  $\geq 10$ . Change in HR is more sensitive.

May indicate a volume deficit of 15% or greater or blunting of homeostatic mechanisms (elderly)

**NWC EMSS Skill Performance Record**  
**BLOOD PRESSURE ASSESSMENT- Auscultation**

Name:	1 <sup>st</sup> attempt: <input type="checkbox"/> Pass <input type="checkbox"/> Repeat
Date:	2 <sup>nd</sup> attempt: <input type="checkbox"/> Pass <input type="checkbox"/> Repeat

**Instructions:** You are asked to assess the patient's BP using the auscultatory method.

<b>Performance standard</b>	<b>Attempt 1 rating</b>	<b>Attempt 2 rating</b>
0. Step omitted (or leave blank) 1. Not yet competent: Unsuccessful; required critical or excess prompting; marginal or inconsistent technique 2. Successful; competent with correct timing, sequence & technique , no prompting necessary		
<b>Equipment needed:</b> Aneroid sphygmomanometer with multiple cuff sizes        Stethoscope		
<b>*Select the arm closest to you. Do not use</b> one that has an injury, shunt or graft, or is on the side of a mastectomy. A mastectomy should be considered a relative contraindication, not an absolute one.		
<b>Properly expose the patient / remove clothing that covers the arm if possible</b> Assess BP during secondary assessment, which begins with exposing the pt. Sources vary in reporting BP variability if cuff placed over clothing. If possible, place cuff directly on skin (unless burned).		
<b>*Properly position patient:</b> Seat comfortably with back supported or supine, Uncross legs. Place arm in a relaxed, slightly flexed position close to the level of the heart. Do not lift arm during procedure.		
<b>*Select appropriate size cuff.</b> Must fit arm appropriately for accurate reading. Should completely encircle upper arm with 80% of cuff length. If it takes >80%, cuff is too small. Width should cover ~2/3 height of the upper arm. For most adults, use large size cuff (15 cm). Using wrong size cuff (too wide, narrow, long, or short) will result in an inaccurate measurement. <ul style="list-style-type: none"> <li>▪ Cuff too small: Falsely high reading</li> <li>▪ Cuff too large: Falsely low reading</li> </ul> If patient very <b>obese</b> , may need to use a thigh cuff on the arm, but is often too wide. Alternative: place arm cuff around forearm and auscultate over radial artery.		
<b>*Palpate the brachial artery</b> With arm fully extended, feel for brachial pulse. Failure to fully extend arm will result in difficulty in locating the artery and in auscultating Korotkoff sounds. In most people, pulse is felt at the medial aspect of the antecubital fossa, where the artery comes closest to the skin.		
<b>*Properly position the cuff.</b> Wrap cuff smoothly and snugly around the arm with the lower cuff margin positioned 1 inch above point where the pulse was located. (Difficult to make cuff too tight to the arm; easy to make it too loose). Find center of the bladder (usually marked with an ↓) and place directly over the artery to properly occlude blood flow when cuff is inflated. Clear tubing away from the cuff.		
<input type="checkbox"/> <b>*Place manometer so you can see it.</b> <input type="checkbox"/> <b>*Ask patient not to talk while the reading is being obtained.</b>		
<b>*Use palpation to estimate systolic BP</b> While palpating the radial or brachial artery, inflate cuff to ~30 mmHg above point where pulse disappears. Slowly deflate cuff until pulse returns and note reading (palpated SBP). Deflate cuff entirely. Many skip this step which can lead to overinflation of the cuff for most patients and an underestimation of the SBP in the presence of an auscultatory gap (condition in which Korotkoff sounds disappear for up to 30 mmHg before reappearing. Typically noted during Phase 2, the auscultatory gap has been associated with serious vascular disease and chronic hypertension). As with pericardial tamponade, only by using an aneroid sphygmomanometer can one observe this clinically significant finding, which in turn can inform diagnostic decisions.		
<input type="checkbox"/> <b>*Place stethoscope head over point where brachial pulse was palpated;</b> hold firmly in place. <input type="checkbox"/> <b>*Inflate cuff to 30 mmHg above palpated SBP.</b> This avoids under- and over-inflation.		
<b>*Deflate cuff:</b> Turn control valve counterclockwise slowly to deflate cuff at a rate of 2-3 mmHg per beat while looking straight-on at the sphygmomanometer. Don't deflate too fast or too slow! Looking at the manometer at an angle can result in parallax error—an inaccurate measurement due to optics.		
<b>*Accurately auscultate (Korotkoff) sounds</b> Five distinct phases of Korotkoff sounds are acknowledged to be significant in BP measurement: Phase 1: First appearance of thumping or tapping sounds that gradually increase in loudness (Systolic);		

<b>Performance standard</b> 0. Step omitted (or leave blank) 1. Not yet competent: Unsuccessful; required critical or excess prompting; marginal or inconsistent technique 2. Successful; competent with correct timing, sequence & technique , no prompting necessary	<b>Attempt 1 rating</b>	<b>Attempt 2 rating</b>
Phase 2: Sounds take on a fainter, swishing sound; Phase 3: Sounds become loud and sharper again; Phase 4: Sounds suddenly become muffled; and Phase 5: Sounds disappear entirely. Diastolic pressure note at end of phase 4 or phase 5.		
<b>*If readings are unclear or not distinctly heard, fully deflate cuff. Wait 30 seconds, let the artery rest, and try again. DO NOT pump the cuff up again from a partially inflated state. It may cause the artery to spasm and will change the accuracy of the reading.</b>		
<b>Critical Criteria - Check if occurred during an attempt</b> <input type="checkbox"/> Failure to take or verbalize body substance isolation precautions <input type="checkbox"/> Failure to position patient appropriately <input type="checkbox"/> Failure to select and correctly apply an appropriately sized cuff <input type="checkbox"/> Failure to extend arm and palpate brachial pulse <input type="checkbox"/> Failure to estimate palpated SBP <input type="checkbox"/> Failure to properly inflate or deflate cuff <input type="checkbox"/> Failure to accurately interpret systolic and diastolic readings <input type="checkbox"/> Exhibits unacceptable affect with patient or other personnel		

**Factually document below your rationale for checking any of the above critical criteria.**

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**Scoring:** All steps must be independently performed in correct sequence with appropriate timing and all starred (\*) items must be explained/ performed correctly in order for the person to demonstrate competency. Any errors or omissions of these items will require additional practice and a repeat assessment of skill proficiency.

**Rating: (Select 1)**

- Proficient:** The paramedic can sequence, perform and complete the performance standards independently, with expertise and to high quality without critical error, assistance or instruction.
- Competent:** Satisfactory performance without critical error; minimal coaching needed.
- Practice evolving/not yet competent:** Did not perform in correct sequence, timing, and/or without prompts, reliance on procedure manual, and/or critical error; recommend additional practice

CJM 7/19

\_\_\_\_\_  
Preceptor (PRINT NAME – signature)

**Notes on patients with mastectomies**

- Mastectomy and other breast CA treatments often involve axillary lymph node dissection or radiation on the affected side, which impairs the normal lymph drainage of that upper extremity. This can lead to a condition called lymphedema that can be problematic both medically and socially. Patients are told to be meticulous about skin care on that extremity.
- From a practice guideline published by the Canadian Medical Association Journal: "Scrupulous skin care should be encouraged. Women should avoid cuts, pin pricks, hangnails, insect bites, contact allergens or irritants, pet scratches and burns to the affected extremity. Whenever possible, patients should avoid medical procedures such as vaccination, blood drawing, intravenous access, blood pressure monitoring, acupuncture, venography and lymphangiography in the affected arm."
- If the patient has had bilateral mastectomy: Take the pressure. Guidelines recommend to "avoid whenever possible." If you do have to take a BP on an affected arm, perform skill as gently as possible.

**NWC EMSS Skill Performance Record  
TRAUMA ASSESSMENT**

Name:	1 <sup>st</sup> attempt: <input type="checkbox"/> Pass <input type="checkbox"/> Repeat
Date:	2 <sup>nd</sup> attempt: <input type="checkbox"/> Pass <input type="checkbox"/> Repeat

**Instructions:** You are asked to assess the patient, intervene as needed, and call your findings in to the hospital.

<b>Performance standard</b>	<b>Attempt 1 rating</b>	<b>Attempt 2 rating</b>
0 Step omitted (or leave blank)		
1 Not yet competent: Unsuccessful; required critical or excess prompting; marginal or inconsistent technique		
2 Successful; competent with correct timing, sequence & technique , no prompting necessary		
<b>SCENE SIZE UP</b>		
* Determine scene safety; control & correct hazards; remove pt/crew from unsafe environment ASAP		
If a potential crime scene, make efforts to preserve possible evidence		
* Determine nature of illness; scan environment for clues; DNR/POLST orders		
Universal blood/body secretion & sharps precautions; use appropriate PPE prn		
Determine number of patients & triage if necessary. Determine need for additional assistance and request additional help if necessary, Weigh risk of waiting for resources against benefit of rapid transport to definitive care. Consider if medium or large scale MPI declaration is needed.		
<b>PRIMARY ASSESSMENT/RESUSCITATION (IMC) Time assessment began:</b>		
*Determine responsiveness/level of consciousness		
* <b>Airway:</b> Assess for impairment		
*Verbalize interventions for airway access/control if necessary		
<b>Breathing/ventilatory/gas exchange status; assess for impairment</b>		
<input type="checkbox"/> *Assess for spontaneous ventilations; general rate (fast or slow)		
<input type="checkbox"/> *Assess WOB; symmetry of expansion; use of accessory muscles; retractions		
<input type="checkbox"/> * <b>Assess gas exchange; apply SpO<sub>2</sub> monitor; assess for signs of hypoxia</b>		
<input type="checkbox"/> Assess capnography number and waveform if ventilatory, perfusion, metabolic complaint		
<input type="checkbox"/> *Assess breath sounds if in ventilatory distress		
<input type="checkbox"/> <b>Assess for immediate life threats:</b> tension pneumo; open pneumo; flail chest		
<input type="checkbox"/> *Verbalize appropriate resuscitative intervention for life-threat		
<input type="checkbox"/> Ensures adequate ventilations based on work of breathing, breath sounds, ETCO <sub>2</sub>		
<input type="checkbox"/> *Initiate appropriate O <sub>2</sub> therapy based on SpO <sub>2</sub> and level of distress		
<input type="checkbox"/> *Provides approp. EMS interventions for injuries that may compromise ventilations/gas exchange		
<b>Circulatory status; assess for impairment (C-A-B-C-D-E approach if sign external bleeding)</b>		
<input type="checkbox"/> *Assess for and control/limit major bleeding per ITC SOP if present		
<input type="checkbox"/> *Central and peripheral pulses for presence, general rate/quality/rhythmicity		
<input type="checkbox"/> *CPR if indicated (rapid transport decision for patient in traumatic arrest)		
<input type="checkbox"/> *Skin (verbalizes color, temperature, moisture, turgor)		
<input type="checkbox"/> Assess neck veins for distension		
<input type="checkbox"/> * <b>Assess for immediate life threats:</b> Cardiac tamponade; blunt aortic or cardiac injury; shock		
<input type="checkbox"/> *Verbalize appropriate resuscitative intervention for life-threat		
<input type="checkbox"/> *Verbalize need for ECG monitor if pulse absent/irregular; actual or potential CR compromise		
<input type="checkbox"/> * Initiate appropriate vascular access (lg peripheral vein; proximal humerus IO) and (warm) IV fluids		
<input type="checkbox"/> Maintain circulating volume while avoiding complications of aggressive crystalloid IVs (Edema, abdominal compartment syndrome, acute lung injury; exacerbation of anemia, thrombocytopenia and dilutional coagulopathy (starts at ~750 mL); exacerbation of bleeding due to clot disruption)		
<b>Disability if altered mental status</b>		
<input type="checkbox"/> *Assess glucose level (verbalizes) <input type="checkbox"/> *Assess pupils for size, shape, equality, reactivity		
<input type="checkbox"/> *Assess Glasgow Coma Score: Tests pt response to a stimulus. (Stimulus: voice, fingertip pressure; trapezius pinch; supraorbital notch); see GCS Do it this way reference.		
<input type="checkbox"/> <b>Pain mgt</b> if SBP ≥ 90 (MAP≥ 65): <b>FENTANYL or KETAMINE</b> standard doses per pain mgt SOP		
<input type="checkbox"/> <b>Nausea:</b> <b>ONDANSETRON</b> standard dose per IMC		
<b>Exposure/environment</b>		
<input type="checkbox"/> Discretely undress patient to inspect appropriate body areas; protect patient modesty		
<input type="checkbox"/> Keep patient warm: <b>Prevent lethal triad:</b> hypothermia; acidosis; coagulopathy.		
*Identify time-sensitive priority patients/make transport decision to appropriate hospital		

Performance standard		Attempt 1 rating	Attempt 2 rating
0	Step omitted (or leave blank)		
1	Not yet competent: Unsuccessful; required critical or excess prompting; marginal or inconsistent technique		
2	Successful; competent with correct timing, sequence & technique, no prompting necessary		
<b>SECONDARY ASSESSMENT</b>			
<b>Vital signs</b>			
<input type="checkbox"/> *BP (MAP); obtain 1 <sup>st</sup> manually, trend pulse pressure; orthostatic changes prn <input type="checkbox"/> *Pulse: rate, quality, rhythmicity <input type="checkbox"/> *Resp: rate, pattern, depth <input type="checkbox"/> Temp based on skin			
<b>History of present illness/trauma</b>			
<input type="checkbox"/> Onset <input type="checkbox"/> *Quality <input type="checkbox"/> *Severity <input type="checkbox"/> *Provocation/palliation <input type="checkbox"/> *Region/Radiation <input type="checkbox"/> *Time <input type="checkbox"/> Associated complaints			
<b>*SAMPLE history</b> from patient/family/bystanders			
<input type="checkbox"/> Allergies <input type="checkbox"/> Past medical hx <input type="checkbox"/> *Events leading to injury/MOI <input type="checkbox"/> Medications <input type="checkbox"/> Last meal/LMP <input type="checkbox"/> Age <input type="checkbox"/> Approx wt.			
<b>PHYSICAL EXAM (Review of Systems) – must touch the patient</b>			
<b>Head/eyes, ear, nose throat (HEENT)</b>			
<input type="checkbox"/> Inspect: DCAP-BLS, drainage from eyes, nose, mouth (open/close jaw)/malocclusion, face, scalp, ears <input type="checkbox"/> *Palpate: skull, orbits, nasal and facial bones			
<b>Neck: May temporarily remove anterior c-collar to assess neck</b>			
<input type="checkbox"/> *Inspect: DCAP, BLS; jugular veins; sub-q emphysema <input type="checkbox"/> *Palpate: position of trachea; C-spines, carotid pulses			
<b>Chest</b>			
<input type="checkbox"/> *Inspect: DCAP-BLS <input type="checkbox"/> *Palpate TIC <input type="checkbox"/> *Auscultate breath/heart sounds <input type="checkbox"/> Discover injuries: trauma to thoracic aorta; fractured ribs, hemothorax, pneumothorax			
<b>Abdomen/pelvis</b> - in correct order			
<input type="checkbox"/> *Inspect <input type="checkbox"/> Auscultate bowel sounds <input type="checkbox"/> *Palpate <input type="checkbox"/> Discover S&S of injury/peritonitis by quadrant: contour, visible pulsations, pain referral sites, localized tenderness, guarding, rigidity; evidence of rebound tenderness <input type="checkbox"/> <b>PELVIS/GU:</b> Inspect perineal bruising; blood at urinary meatus/rectum; swollen ecchymotic scrotum <input type="checkbox"/> If suspected pelvic fracture; apply commercial pelvic binder; upside down KED			
<b>Lower extremities</b>			
<input type="checkbox"/> *Inspect for position, false motion, skin color, and signs of injury <input type="checkbox"/> *Palpate <input type="checkbox"/> *Assesses SMV status of each limb			
<b>Upper extremities</b>			
<input type="checkbox"/> Inspect for position, false motion, skin color, and signs of injury <input type="checkbox"/> *Palpate <input type="checkbox"/> *Assesses SMV status of each limb			
<b>Posterior thorax/flank and buttocks</b>			
<input type="checkbox"/> *Inspect <input type="checkbox"/> *Palpate (assess for muscle spasms)			
<b>Neurologic</b>			
<b>*Mental status:</b> Affect, behavior, cognition (verbalizes); memory/orientation; GCS			
<b>Cranial nerves</b> (Select)			
<input type="checkbox"/> *Visual acuity/visual fields <input type="checkbox"/> Eye position/ptosis <input type="checkbox"/> EOMs/gaze palsies <input type="checkbox"/> Hearing <input type="checkbox"/> *Pupil size, shape, equality; reactivity (direct & consensual) <input type="checkbox"/> Facial sensation <input type="checkbox"/> Facial movement/symmetry/eyelid closing <input type="checkbox"/> Gag <input type="checkbox"/> Stick out tongue			
<b>Cerebellar exam:</b> Assess for ataxia			
<input type="checkbox"/> <b>Eyes:</b> nystagmus <input type="checkbox"/> <b>Upper extremities:</b> Have pt touch their index finger to their nose and then reach out to touch examiner's finger; OR perform alternating movements by rapidly pronating and supinating hands; OR bring fingers to thumb in rapid succession <input type="checkbox"/> <b>Lower extremities:</b> Have pt slide heel of one foot rapidly up and down shin of opposite leg.			
<b>Skin: Integumentary assessment</b> (integrated above) color (variation), moisture, temp, texture, turgor, lesions/burns; breakdown; hair distribution;			
*State paramedic impression:			
Verbalize treatment plan using appropriate SOP			
*Select appropriate receiving hospital based on trauma triage criteria			
<b>Actual total time to complete assessment in minutes</b>			
<b>On-going assessment</b>			
Repeat primary assessments			
Evaluate response to treatments			
Reassess VS/pt. responses. Every transported pt. should have at least 2 sets of VS.			
<input type="checkbox"/> <b>Stable:</b> At least q. 15 min & after each drug/CR intervention; take last set shortly before arrival at receiving facility <input type="checkbox"/> <b>Unstable:</b> More frequent reassessments; continue to reassess all abnormal VS & physical findings			

<b>Performance standard</b>	<b>Attempt 1 rating</b>	<b>Attempt 2 rating</b>
0 Step omitted (or leave blank)		
1 Not yet competent: Unsuccessful; required critical or excess prompting; marginal or inconsistent technique		
2 Successful; competent with correct timing, sequence & technique, no prompting necessary		
Document/report Revised Trauma Score (SOP p. 44) GCS conversion points; RR, SBP		
<b>OLMC REPORT</b>		
<b>Identification</b>		
<input type="checkbox"/> *Hospital being contacted		
<input type="checkbox"/> *EMS provider agency and unit #; call back number		
<input type="checkbox"/> *Age, gender, approximate weight of patient		
<input type="checkbox"/> *Level of consciousness (conscious/unconscious responds to ....)		
<b>Chief complaint S&amp;S:</b>		
<input type="checkbox"/> Onset <input type="checkbox"/> *Region/radiation/recurrence <input type="checkbox"/> *Provokes/palliates		
<input type="checkbox"/> *Severity 0-10 <input type="checkbox"/> *Quality <input type="checkbox"/> *Time		
Associated complaints		
<b>History</b>		
<input type="checkbox"/> *Allergies		
<input type="checkbox"/> *Medications (current): time and amount of last dose if applicable		
<input type="checkbox"/> *Past medical history (pertinent)		
<input type="checkbox"/> Last oral intake, LMP if indicated		
<input type="checkbox"/> *Events leading up to present illness/injury (history of present illness)		
<b>Vital signs</b>		
<input type="checkbox"/> *BP: <input type="checkbox"/> *Respirations: rate, pattern, depth, effort		
<input type="checkbox"/> *SpO <sub>2</sub> ; capnography <input type="checkbox"/> *Pulse: rate, regularity, quality		
*Physical examination; include pertinent positive and negative findings		
<input type="checkbox"/> HEENT <input type="checkbox"/> Abdomen <input type="checkbox"/> Extremities <input type="checkbox"/> Skin		
<input type="checkbox"/> Chest <input type="checkbox"/> Pelvis/GU <input type="checkbox"/> Back		
<b>Treatments initiated</b> prior to hospital contact (ITC) and pt response to treatment		
ETA		
<b>Handover report at hospital:</b> EMS time out		
<b>CRITICAL CRITERIA in addition to starred items</b>		
<input type="checkbox"/> Failure to initiate or call for transport of the patient within 10 minute time limit		
<input type="checkbox"/> Failure to take or verbalize body substance isolation precautions		
<input type="checkbox"/> Failure to determine scene safety		
<input type="checkbox"/> Failure to assess for and provide spinal protection when indicated		
<input type="checkbox"/> Failure to voice and ultimately provide correct FiO <sub>2</sub>		
<input type="checkbox"/> Failure to assess/provide adequate ventilation		
<input type="checkbox"/> Failure to find or appropriately manage problems associated with airway, breathing, hemorrhage or shock [hypoperfusion]		
<input type="checkbox"/> Failure to differentiate pt's need for immediate transport vs cont. assessment/treatment at scene		
<input type="checkbox"/> Does secondary assessment before assessing/treating threats to airway, breathing, and circulation		
<input type="checkbox"/> Failure to manage the patient as a competent paramedic		
<input type="checkbox"/> Exhibits unacceptable affect with patient or other personnel		
<input type="checkbox"/> Uses or orders a dangerous or inappropriate intervention		

**Factually document your rationale for checking any of the above Critical Criteria items**

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**Rating: (Select 1)**

- Proficient:** The paramedic can sequence, perform and complete the performance standards independently, with expertise and to high quality without critical error, assistance or instruction.
- Competent:** Satisfactory performance without critical error; minimal coaching needed.
- Practice evolving/not yet competent:** Did not perform in correct sequence, timing, and/or without prompts, reliance on procedure manual, and/or critical error; recommend additional practice



## CHECK

For factors Interfering with communication, ability to respond and other injuries



## OBSERVE

Eye opening , content of speech and movements of right and left sides



## STIMULATE

Sound: spoken or shouted request  
Physical: Pressure on finger tip, trapezius or supraorbital notch



## RATE

Assign according to highest response observed

### Eye opening

Criterion	Observed	Rating	Score
Open before stimulus	✓	Spontaneous	4
After spoken or shouted request	✓	To sound	3
After finger tip stimulus	✓	To pressure	2
No opening at any time, no interfering factor	✓	None	1
Closed by local factor	✓	Non testable	NT

### Verbal response

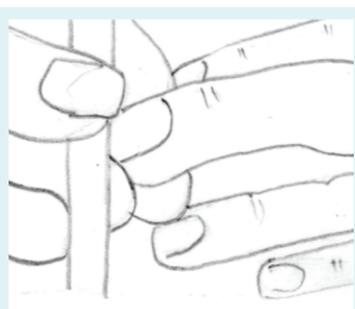
Criterion	Observed	Rating	Score
Correctly gives name, place and date	✓	Orientated	5
Not orientated but communication coherently	✓	Confused	4
Intelligible single words	✓	Words	3
Only moans / groans	✓	Sounds	2
No audible response, no interfering factor	✓	None	1
Factor interfering with communication	✓	Non testable	NT

### Best motor response

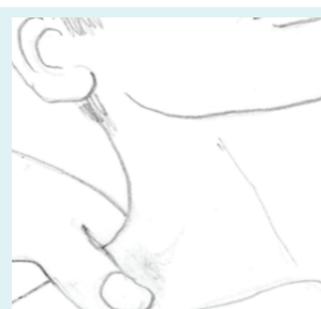
Criterion	Observed	Rating	Score
Obey 2-part request	✓	Obeys commands	6
Brings hand above clavicle to stimulus on head neck	✓	Localising	5
Bends arm at elbow rapidly but features not predominantly abnormal	✓	Normal flexion	4
Bends arm at elbow, features clearly predominantly abnormal	✓	Abnormal flexion	3
Extends arm at elbow	✓	Extension	2
No movement in arms / legs, no interfering factor	✓	None	1
Paralysed or other limiting factor	✓	Non testable	NT

### Sites For Physical Stimulation

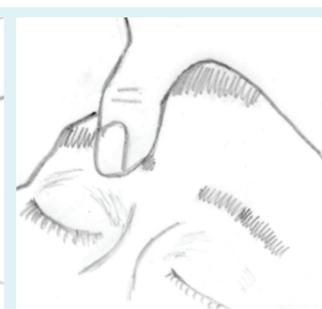
Finger tip pressure



Trapezius Pinch



Supraorbital notch



### Features of Flexion Responses

Modified with permission from Van Der Naalt 2004  
Ned Tijdschr Geneeskd

#### Abnormal Flexion

Slow Stereotyped  
Arm across chest  
Forearm rotates  
Thumb clenched  
Leg extends



#### Normal flexion

Rapid  
Variable  
Arm away from body

<b>Policy Title: Use of Aeromedical Transport Vehicles</b>			<b>No. A - 2</b>
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## I. POLICY

The NWC EMSS strongly encourages ground transport. The decision to transport a patient by Aeromedical transport is a medical decision that should be made by a physician after a risk benefit analysis.

Under select circumstances, it may be in the patient's best interest to be transported by an aeromedical service. After consultation with, and approval by, the OLMC physician at the system resource hospital (NCH) initial arrangements for aeromedical transport shall be made by OLMC personnel. Completion of these arrangements will be made by scene/ground personnel. The helicopter service should be selected based on response times, type of mission to be performed, desired medical credentials of the crew, and special drugs or equipment that may be needed.

## II. Circumstances potentially requiring helicopters

- A. High acuity patients when time is critical for survival and/or distances are long, i.e., need for expeditious transport when helicopter response time to scene and flight time to tertiary center is faster than ground transport.
- B. Patients inaccessible due to weather, disasters, or mass-casualty situations, i.e., where there is a potential for delays, including road obstacles and traffic conditions which might allow patient deterioration. Examples: Following heavy rains, snow or other severe weather, a helicopter may be the only mode of transportation available.
- C. Patients requiring transport to a trauma center involving circumstances in which scene and ground transport time will be significantly greater than 40 minutes (e.g., acceptable 10 minute scene and 30 minute transport time).
- D. Special skills or equipment are needed at the scene (e.g., blood products, chest tubes, paralytics for RSI) that are not allowed or otherwise available.

## III. Indications for air transport per SOP: Patients requiring direct transport to one of the following, when ground transport would take longer than air response plus transportation time.

- A. Level I Trauma Center (see criteria) after prolonged extrication in a patient who meets criteria for a Level I Trauma Center.
- B. Replantation center (LGH, ABMC) for amputations above the ankle and wrist.
- C. Hyperbaric center for a severely confused patient (GCS 13 or less) with suspected CO/smoke inhalation or a diver with nitrogen narcosis.
- D. Need for access to a more distant trauma center, i.e., disaster/mass casualty situation.

## IV. Scene personnel responsibilities

- A. Scene survey: Rapidly analyze MOI; number of victims, nature and severity of injuries. Perform initial assessments and triage as necessary. Determine need for air transport.
- B. Initiate care per SOP.
- C. As soon as possible - contact OLMC physician at system resource hospital (NCH) for an order to utilize aeromedical transport. Obtain and document name of physician on PCR.

## V. System Resource Hospital (NCH) Responsibilities

- A. Use of ACEP's "Appropriate Utilization of Air Medical transport in the Out-of-Hospital Setting" decision tree is encouraged (page 5).
- B. Questions to answer before calling a helicopter (use worksheet pg 6)
  1. What criteria does the pt have for transport to a Level I Trauma Center? Refer to SOP or worksheet for confirmation.
  2. What is ground transport time from scene to the specialty referral center? If 30 minutes or less, it is generally more appropriate to transport by land.
  3. What is the traffic like right now? Known to anticipated congestion may tip the scales in favor of air transport.
  4. Does the patient require extrication? What is anticipated extrication time? Call the helicopter early so it can be at the scene before the patient is packaged.

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5. How many critical patients are present?  
With multiple patients, the most critical may be better served by air transport while the less injured are transported by land.
6. What skill level, based on scope of practice, is available at the scene?  
Does the patient require care that cannot be provided by scene personnel?

**C. If aeromedical transport approved by OLMC physician:**

1. Obtain following information, to give to aeromedical service (worksheet):
  - a. Call back number (cell/radio frequency/PL) for ground contact person
  - b. Number of patients requiring air transport
  - c. Desired receiving hospital
  - d. Pt age, gender, weight
  - e. Type of incident; mechanism, and/or acuity of illness/injuries
  - f. Brief description of patient's condition; VS and pertinent medical history
  - g. Care already performed
  - h. Special devices and/or personnel required to transport patient
  - i. Ambulance transporting to and from landing site, if indicated
  - j. Inter-hospital transfer: Desired receiving hospital; referring and accepting physician's names
2. Advise scene personnel, aeromedical service will contact them to complete flight arrangements, and if they do not hear from them within 5-8 minutes to recontact Resource hospital (NCH OLMC) for follow-up.

**D. HELICOPTER CONTACT: Hospital personnel initiate flight arrangements**

An ECRN shall contact the Aeromedical service closest to the incident site (see map pg 7) or the one that best meets patient care needs to make initial arrangements.

a. <b>Flight for Life</b>	McHenry	1 RN, 1 EMT-P	815- 344- 1000
b. <b>Air Med</b>	DuPage	1 RN, 1 EMT-P	800- 832- 2000
c. <b>Life Star</b>	Joliet	1 RN, 1 EMT-P	866- 480- 6030
d. <b>Lifeline</b>	Rockford	1 RN, 1 EMT-P	309- 624- 2386
e. <b>REACT</b>	Rockford	2 RN's	800- 637- 3228
f. <b>UCAN</b>	Chicago	1 MD, 1 RN	800- 621- 7827

1. Determine their ability to take the flight. If aircraft is available, ask them to initiate flight response. If aircraft is not available, call an alternate service.
2. Provide the dispatcher with department name and contact numbers and information listed in section V.C.
3. Once the authorization for lift-off has been given by the hospital, all further communication will take place directly between scene and helicopter personnel to coordinate a landing zone and communicate updated patient information.
4. If a later decision is made not to use the helicopter, cancel the request ASAP.
5. Call patient report to the receiving hospital based on scene report.

**VI. Scene Personnel Responsibilities - Information Needed by OLMC and Helicopter Dispatcher to Complete Flight Arrangements (See helicopter request worksheet)**

- A. Name of requesting agency, your name, ground contact person, and call back number or radio frequency (PL number) and call sign.
- B. Number of patients requiring air transport. Name and age, if available.
- C. Type of incident; mechanism, and/or acuity of illness/injuries.
- D. Brief description of patient's condition; VS and pertinent medical history, pt weight
- E. Care already performed

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- F. Landing site location: Describe the landing zone. Use highways or road names (not streets), major landmarks (water towers, lakes, cities or towns) and/or GPS coordinates (latitude/longitude) and identify hazards
- G. When the patient is to be picked up
- H. Special devices and/or personnel required to transport patient
- I. Ambulance transporting to and from landing site, if indicated
- J. Weather conditions at scene, if adverse
- K. Interhospital Transfer: Desired receiving hospital; referring and accepting physician's names

#### VII. **Landing zone safety**

- A. Site should have a 100 sq. ft. perimeter. (150 sq. ft. at night or in high winds).
- B. Site should be clear of trees, wires, debris, emergency vehicles, signs, other obstacles, or presence of any hazards i.e., fires.
- C. Should be far enough away from patients to provide safety from rotor winds.
- D. Site should be as smooth and flat as possible, no more than a nominal (8°) slope.
- E. **Mark landing zone for helicopter pilot**
  - 1. DAY: Hand signal. When signaling, stand with your back to the wind. Depart when the helicopter is on final approach.
  - 2. NIGHT: One light (anchored flare) or headlight at each corner; 5th light upwind. Helpful to place a vehicle at two of the corners with their headlights crossing in the center of the area. Keep lights out of pilot's eyes.
- F. Emergency vehicle(s) present with overhead revolving lights flashing.
- G. If roadway is used, have traffic stopped in both directions.
- H. Security: Use rope, barricades or vehicles to secure area. Keep bystanders at least 150 ft. from landing area. Request police assistance for crowd control if necessary. Pilot may refuse to land if too many people in landing zone.
- I. If two or more rescuers are at the landing site, one should be toward the front and the other to the side, within the pilot's view. If you can see the pilot, he can see you.
- J. Fire department personnel to stand by during landings/take-offs, if possible. At minimum, provide one dry chemical and one CO<sub>2</sub> fire extinguisher.
- K. Protect yourself and the patient from dust and debris whipped up by rotor wash. The highest winds and the greatest amount of flying debris are produced just before the helicopter touches the ground. Wear protective eye covering.
- L. No vehicles, smoking or running within 50 feet of aircraft.
- M. Departments are strongly encourage to assess for, and establish, predetermined safe landing zones.

#### VIII. **Approaching/Loading the aircraft**

- A. Do not approach a helicopter until it has settled firmly on the landing site and the rotor blades have completely stopped, unless the pilot signals you to approach.
- B. Approach aircraft within a 30°-45° angle from front. One assertive team member should be assigned to ensure responders stay clear of tail rotor - may be invisible when rotating.
- C. Approach and depart helicopter from the downhill side if a sloped terrain.
- D. When approaching aircraft with patient while engines are running: secure straps on cot over top of blanket covering the patient. Secure all loose objects such as long hair, hats, stethoscopes, clothing and equipment.
- E. Carry all equipment below waist and walk in a crouched position. Never raise anything above head near helicopter, since main rotor dips lowest at the very front of the aircraft.
- F. Allow flight crew to open and close helicopter doors.
- G. Flight personnel will direct loading and unloading of patients. Do not assist unless asked to do so. Do not assist crew members with opening or closing doors.

<b>Policy Title: Use of Aeromedical Transport Vehicles</b>			<b>No. A - 2</b>
<b>Board approval:</b> 11/14/13	<b>Effective:</b> 1/1/14	<b>Supersedes:</b> 10/1/10	<b>Page:</b> 4 of 6

**IX. Time savers**

- A. Request authorization to transport by helicopter early in the incident.
- B. Direct the helicopter to land as close as is safely possible to the scene. If impossible, get the patient to the landing site as soon as possible.
- C. Perform full spine immobilization on those patients who require it. The patient must be immobilized before moving to the aircraft.
- D. Leave the patient's arms free and chest exposed if possible. This makes it easier for the flight crew to attach monitors and assess the patient enroute.
- E. Explain to the conscious patient that he or she will be transported by air and the reasons why. Help reduce flight anxiety.
- F. Search patients for possible weapons.
- G. Total ground scene time for helicopter should be no more than 10 minutes, including the load time if the ground crew is ready to assist the flight crew, no critical interventions are necessary, and the aircraft is able to land at the scene.
- H. If weather appears to be poor, call for the helicopter if needed, but have a back-up plan of ground transportation available. Helicopters cannot safely operate in fog, hail storms, heavy snow, zero visibility or strong, gusty winds over 40 miles per hour.

**X. Special patient considerations**

- A. Femur or lower extremity fractures: Most medical helicopters have a limited amount of interior space and access to lower extremities may be limited. Traction splints should not extend beyond the end of the backboard in most instances.
- B. Obese patients: Most medical helicopters have a weight limit, especially when transporting more than one patient. If presented with a morbidly obese patient, contact the helicopter with the patient's estimated weight ASAP.
- C. Combative patients: Most medical helicopters will transport combative patients but they may need to be adequately restrained and/or sedated before flight.
- D. Patients contaminated with hazardous materials: These patients cannot be transported by air if there is any possibility that the flight crew may become contaminated.
- E. Patients in cardiac arrest: Can be transported by air and given ALS care in flight but a risk/benefit analysis should be done by medical control.

**XI. Transfer of care:** Give patient report to the helicopter crew upon their arrival. Complete a PCR to the extent of your involvement as soon as possible after the call indicating your participation as treat, transferred care. Fax a copy of your report to the receiving hospital ASAP.

**XII. Quality improvement monitoring:** All EMS runs using helicopters shall be reviewed to measure compliance with system standards and seek opportunities for improvement. Forward "NWC EMSS Helicopter Request Worksheet" (page 6) to EMSS office within 24 hours of all requests (both approved and denied).

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Matthew T. Jordan, M.D., FACEP  
EMS Medical Director

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Connie J. Mattera, M.S., R.N., LP  
EMS Administrative Director

# NWC EMSS Helicopter Request - Worksheet Information Needed by OLMC & Helicopter Dispatcher

## Completed by OLMC at NWC EMSS Resource Hospital (NCH):

Date		Time		Requesting Agency	
Type of Incident Mechanism				# patients requiring air transport	
Criteria for Transport to Level I Trauma Center		<input type="checkbox"/> GCS 13 or less w/ head injury		<input type="checkbox"/> Flail chest	
		<input type="checkbox"/> SBP < 90		<input type="checkbox"/> 2 or more proximal long bone fx	
		<input type="checkbox"/> R <10 or > 29 (<20 in infant <1y)		<input type="checkbox"/> Crushed, degloved, mangled extremity	
		<input type="checkbox"/> Open or depressed skull fx		<input type="checkbox"/> Amputation proximal to wrist or ankle	
		<input type="checkbox"/> Penetrating injury head, neck, torso, extremity proximal to elbow/knee		<input type="checkbox"/> Pelvic fx	
				<input type="checkbox"/> Paralysis	
What is the estimated ground transport time to Level I Trauma Center?					
Is extrication required? <input type="checkbox"/> NO <input type="checkbox"/> YES   What is anticipated extrication time?					
Is there a need for specialized skill/equipment - not available on scene? <input type="checkbox"/> NO <input type="checkbox"/> YES					
Age		Gender		Weight	
Patient condition Acuity/Injuries					
BP	P	R	PMH if known		
Treatment					
Desired receiving hospital					
<b>Order for Aeromedical Transport:</b> <input type="checkbox"/> Approved <input type="checkbox"/> Denied   Physician (signature) <b>X</b>					
Scene/Ground contact person			Call back # - cell, radio frequency/PL		
Aeromedical Service Contacted Time  _____;	<input type="checkbox"/> Flight for Life	McHenry	1 RN, 1 EMT-P	815- 344- 1000	ETA (minutes):
	<input type="checkbox"/> Air Med	DuPage	1 RN, 1 EMT-P	800- 832- 2000	
	<input type="checkbox"/> Life Star	Joliet	1 RN, 1 EMT-P	866- 480- 6030	
	<input type="checkbox"/> Lifeline	Rockford	1 RN, 1 EMT-P	309- 624- 2386	
	<input type="checkbox"/> REACT	Rockford	2 RN's	800- 637- 3228	
	<input type="checkbox"/> UCAN	Chicago	1 MD, 1 RN	800- 621- 7827	

## EMS Scene/Ground Personnel to communicate to HEMS service:

Landing description & site location (highways, road names, major landmarks, GPS coordinates, hazards):

Special needs or personnel requirements

Weather conditions at site if adverse

**NCH OLMC – Fax worksheet to EMS office (x4489) within 24 hrs**



# PBPI Committee Screen Report Trauma Screen

1/1/2018 TO 12/31/2018

Total Number of Incidents in Query = 6901

Average Patient Age = 59.76

Child Trauma Patient Count = 267

Infant Trauma Patient Count = 17

GSC Under 13 (%) : 2

*numerator* = 137  
*demoninator* = 6901

GCS Under 13 with Head Injury (%) 1.2

*numerator* = 83  
*demoninator* = 6901

Systolic BP Under 90 (%) 1.4

*numerator* = 94  
*demoninator* = 6901

Multiple Systolic BP Under 90 (%) : 0.5

*numerator* = 32  
*demoninator* = 6901

Decreased or Increased Respiratory Rate (%) : 2.4

*numerator* = 164  
*demoninator* = 6901

Level 1 GCS Transports (%) : 50.6

*numerator* = 42  
*demoninator* = 83

Level 1 SBP Transports (%) : 24.5

*numerator* = 23  
*demoninator* = 94

Level 1 Respiratory Transports (%) : 20.1

*numerator* = 33  
*demoninator* = 164

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"This report is not part of any patient's permanent medical record. All information provided, including any appended materials, is furnished as a report of quality management and is privileged and confidential, to be used solely in the course of internal quality control for the purpose of reducing morbidity and mortality and improving the quality of patient care in accordance with Illinois Law (735ILCS 5/8-2004 et seq)."



# PBPI Committee Screen Report Trauma Screen

1/1/2018 TO 12/31/2018

## Hospital Destination Count

Hospital Destination	Incident Count
Northwest Community Hospital	2577
Alexian Brothers MC	1290
AMITA Health St. Alexius Medical Center	881
Lutheran General Hospital	710
Advocate Good Shepherd Hospital	683
Advocate Condell Medical Center	245
AMITA Health Adventist MC GlenOaks	244
Glenbrook Hospital	141
Northshore Hospital - Highland Park	65
Northwestern Lake Forest Hospital	28
Northwestern Central DuPage Hospital	26
Advocate Good Samaritan Hospital	4
Northwestern Delnor Community Hospital	2
Advocate Sherman Hospital	1
	1
Edward Hospital	1
Elmhurst Memorial Hospital	1
AMITA Health Alexian Brothers Behavioral Health Hosp	1

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# PBPI Committee Screen Report Trauma Screen

1/1/2018 TO 12/31/2018

## Injury Cause Count (Top 43 out of 166 listed)

Injury Cause	Incident Count
"Fall from standing position due to slipping, tripping and stumbling, or other"	2711
"Car vehicle traffic accident"	975
"Other fall"	388
"Fall from bed"	258
"Fall from stairs and steps"	227
"Fall from chair"	196
"Assault by bodily force"	147
"Striking against or struck by other objects"	137
"Crashing of motor vehicle, undetermined intent"	131
"Overexertion from strenuous movement or Lifting or bending"	104
"Fall due to ice and snow"	95
"Fall from toilet"	85
"Slipping, tripping and stumbling without falling"	83
"Suicide attempt"	81
"Contact with blunt object, undetermined intent"	81
"Fall from wheelchair"	53
"Accidental hit, strike, kick, twist, bite or scratch by another person"	47
"Motorcycle in unspecified traffic MVC"	45
"Caught, crushed, jammed or pinched in or between objects"	45
"Fall from ladder"	45
	44
"Contact with knife, sword or dagger"	44

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# PBPI Committee Screen Report Trauma Screen

1/1/2018 TO 12/31/2018

"Assault by blunt object"	41
"Struck by thrown, projected or falling object"	39
"Contact with unspecified sharp object, undetermined intent"	37
"Contact with sharp glass"	36
"Accidental striking against or bumped into by another person"	35
"Fall from other furniture"	34
"Striking against or struck by sports equipment"	32
"Fall from playground equipment"	31
"Contact with unspecified machinery"	26
"Dog Bite"	22
"Assault by unspecified sharp object"	22
"Contact with other powered hand tools and household machinery"	22
"Intentional self-harm by unspecified sharp object"	22
"Car collision with pedestrian or animal"	21
"Pedestrian collided with car, pick-up truck or van"	20
"Unspecified vehicle accident"	19
"Intentional self-harm by other specified means"	16
"Assault by being hit or run over by motor vehicle"	16
"Assault by other specified means"	16
"Falling, lying or running into moving object"	16

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