

## Emergency Secondary Assessment – CE

### ALERT

**Do not begin the secondary assessment until the primary assessment is complete and resuscitation procedures have been initiated as indicated.**

**Continue to monitor airway, breathing, circulatory, and neurologic status during the secondary assessment. If any life-threatening problems arise, return to the primary assessment and intervene as indicated.**

**Prioritize and initiate interventions for injuries or conditions discovered in the secondary assessment after the entire head-to-toe examination is complete.**

**Don appropriate personal protective equipment based on the patient's signs and symptoms and indications for isolation precautions.**

### OVERVIEW

The purpose of the secondary assessment is to rapidly and systematically assess injured patients from head to toe to identify all injuries and to rapidly and systematically assess critically ill patients when the cause of their signs and symptoms is unclear. Interventions for injuries or conditions discovered in the secondary assessment should be prioritized and initiated after the entire secondary assessment is complete.

### PATIENT AND FAMILY EDUCATION

- If the patient has been injured, instruct him or her to avoid moving until a spinal injury has been ruled out.
- Explain the procedure to the patient and family and why it is being performed, as time and the patient's condition allow.
- Encourage questions and answer them as they arise.

### ASSESSMENT AND PREPARATION

#### Assessment

1. Ensure that the primary assessment is complete and interventions have been initiated for life-threatening conditions.
2. Proceed immediately to the next step if already wearing personal protective equipment (PPE), including gloves and—if indicated—a mask, eye protection, and fluid-resistant gown. Otherwise, perform hand hygiene and don appropriate PPE before proceeding with the secondary assessment.
3. Assess for risk factors for spinal injury.

#### Preparation

1. If the patient is at risk for spinal injury, ensure that spinal alignment is maintained throughout each step of the primary and secondary assessments.

## Emergency Secondary Assessment – CE

### PROCEDURE

1. Perform the secondary assessment using a systematic approach to ensure that no step is forgotten. The steps below follow the mnemonic F-G-H-I-J (to continue the primary assessment mnemonic, A-B-C-D-E):<sup>5</sup>

F = full set of vital signs and family presence

G = get monitoring devices and give comfort (using the mnemonic L-M-N-O-P)

H = history and head-to-toe assessment (using the mnemonics M-I-S-T and S-A-M-P-L-E)

I = inspect posterior surfaces

J = just keep reevaluating

### **F = Full Set of Vital Signs and Family Presence**

1. Obtain and trend readings for blood pressure, pulse, respiratory rate, peripheral oxygen saturation (SpO<sub>2</sub>), and temperature at regular intervals.
2. Offer the family the opportunity to be with the patient in the treatment area if appropriate. Provide a support person to be with them to answer questions and explain procedures.

Rationale: Evidence shows that family presence during trauma resuscitation helps the family cope and supports the patient.

### **G = Get Monitoring Devices and Give Comfort**

1. Follow the mnemonic L-M-N-O-P when obtaining resuscitation monitoring devices and supports.

### **L = Laboratory Studies**

1. Obtain appropriate laboratory tests, such as arterial blood gas (ABG) analysis, lactic acid level, and type and crossmatch if indicated.
2. In the presence of the patient, label the specimen(s) per the organization's practice.<sup>4</sup>
3. Prepare each specimen for transport.

- a. Place the labeled specimen in a biohazard bag.
- b. If the specimen requires ice for transport, place the specimen in a biohazard bag, then place the bag with the specimen into a second biohazard bag filled with ice slurry.

Rationale: Placing the specimen in a separate bag protects the label from being damaged.

4. Immediately transport the specimen(s) to the laboratory.

### **M = Monitoring (Cardiac)**

1. Monitor cardiac rate and rhythm. Arrhythmias, such as premature ventricular contractions (PVCs), atrial fibrillation, or S-T segment changes, may indicate a blunt

## Emergency Secondary Assessment – CE

cardiac injury. Pulseless electrical activity may suggest cardiac tamponade, tension pneumothorax, or profound hypovolemia.

### *N = Nasogastric or Orogastric Tube*

1. Insert a nasogastric or orogastric tube if indicated or prescribed to relieve gastric distention, which helps optimize lung inflation, and to prevent vomiting and aspiration.

**Avoid the nasogastric route in patients with a suspected head injury or mid-face fractures.**

### *O = Oxygenation and Ventilation (SpO<sub>2</sub>, End-Tidal Carbon Dioxide [ETCO<sub>2</sub>])*

1. Monitor oxygenation by implementing pulse oximetry (if not performed previously). Remember that pulse oximetry is a measurement of SpO<sub>2</sub> and is not evidence of ventilation. An SpO<sub>2</sub> of 94% or greater is considered adequate oxygenation.<sup>6</sup>

**Do not rely on pulse oximetry readings in a patient with poor perfusion; they may not be accurate. Assess the quality of the plethysmographic waveform if there is any doubt.**

2. Assess ventilation by monitoring ETCO<sub>2</sub> levels via capnography. Normal values range from 35 to 45 mm Hg.

### *P = Pain Assessment and Management*

1. Assess and treat pain with pharmacologic and nonpharmacologic interventions as indicated.

### **H = History and Head-to-Toe Assessment**

1. Obtain a prehospital report of the incident or illness. A helpful mnemonic is M-I-S-T:

M = mechanism of injury

I = injuries sustained

S = signs and symptoms before arrival

T = treatment before arrival

2. Obtain the patient's history. A helpful mnemonic is S-A-M-P-L-E.

S = symptoms associated with the injury or illness

A = allergies and tetanus status

M = medications currently used, especially anticoagulants

P = past medical history (including hospitalizations and surgeries)

L = last oral intake and output (last menstrual period if female of childbearing age)

E = events and environmental factors related to the injury or illness

3. Assess the patient from head to toe.

## Emergency Secondary Assessment – CE

### *Head and Face*

1. Inspect the head and face for wounds, deformities, discolorations, or bloody or serous drainage from the nose or ears. Palpate the entire head and face for wounds, deformities, or tenderness.
2. In the conscious and cooperative patient, evaluate extraocular movements, gross vision, and dental occlusion.
3. Note any unusual odors, for example, gasoline, fruity breath, or ethanol.

### *Neck*

1. If necessary, remove the anterior portion of the cervical collar while another person maintains manual stabilization of the head and neck.
2. Inspect the anterior neck for wounds, jugular venous distention, discolorations, or deformities. Palpate the anterior neck for deformities, crepitus, tenderness, or tracheal deviation (best palpated in the notch above the manubrium).
3. Gently palpate the posterior neck from the base of the skull to the upper back for wounds, deformities, tenderness, or muscle spasms.

### *Chest*

1. Inspect the anterior and lateral chest for wounds, deformities, discolorations, respiratory expansion, symmetry, and paradoxical movement. Palpate the anterior and lateral chest for deformities, tenderness, or crepitus.
2. Auscultate breath sounds to determine whether they are present and equal bilaterally and note any abnormal sounds, such as crackles and wheezes.
3. Auscultate heart sounds to determine whether they are clear or muffled.

### *Abdomen and Flanks*

1. Inspect the abdomen and flanks for wounds, discolorations, or distention.
2. Auscultate all quadrants for the presence of bowel sounds.
3. Gently palpate the abdomen and flanks for tenderness, guarding, rigidity, or masses.

**To facilitate patient cooperation, palpate known painful areas last.**

### *Pelvis and Perineum*

1. Inspect the pelvic area and perineum for wounds, deformities, discolorations, or bleeding from the urinary meatus, vagina, or rectum.
2. Palpate for pelvic tenderness, crepitus, or instability by gently pressing in on the anterosuperior iliac crests bilaterally and pushing down on the pubic symphysis.
3. Consider placement of an indwelling urinary catheter.

**Placement of an indwelling urinary catheter is contraindicated if there is blood at the urinary meatus, perianal ecchymosis, or scrotal ecchymosis.**

### *Extremities*

1. Inspect all extremities for wounds, deformities, or discolorations.
2. Palpate all extremities for tenderness, deformities, muscle spasms, skin temperature and moisture, and distal pulses.

## Emergency Secondary Assessment – CE

3. If the patient is conscious, determine gross motor and sensory function by having the patient wiggle the toes and fingers and asking whether he or she can feel your touch.

### **I = Inspect Posterior Surfaces**

1. In the injured patient, obtain assistance to maintain cervical spine alignment and support injured extremities while log rolling the patient to the side.

**Avoid rolling the patient onto an injured extremity or side if possible. If necessary for adequate assessment of posterior surfaces, roll the patient to both sides.**

**There is evidence that the log roll maneuver can result in spinal movement. Carefully consider the risks and benefits of performing this maneuver, especially if the potential for spinal cord injury is significant.<sup>3</sup>**

**When spinal or pelvic injuries are suspected, radiographs are recommended before logrolling the patient.<sup>5</sup>**

2. Inspect the posterior surfaces for wounds, deformities, or discolorations. Palpate all posterior surfaces for wounds, deformities, or muscle spasms.

3. At this point, the practitioner may perform a rectal examination to assess sphincter tone, presence of injury to the pelvis or rectal mucosa,<sup>1</sup> and the presence of gross or occult blood.

**Prostate position as determined by rectal examination is not a reliable indicator of urethral injury.<sup>1</sup>**

4. Remove the backboard or transferring device as indicated.

### **J = Just Keep Reevaluating**

1. Continue ongoing monitoring and evaluation of the patient. Reevaluation should include the primary survey, vital signs, level of pain and any injuries identified. A helpful mnemonic is V-I-P-P:

V = vital signs

I = injuries sustained and interventions

P = primary survey

P = level of pain

### **Completing the Procedure**

1. Take the patient's temperature, if not done earlier.

2. Perform a focused assessment of any injuries or abnormalities found.

3. Obtain more detailed information about the patient's medical history, including pertinent immunizations, current medications (prescription, over-the-counter, and herbal), and past medical and surgical history.

4. Discard supplies, remove PPE, and perform hand hygiene.

5. Document the procedure in the patient's record.

## Emergency Secondary Assessment – CE

### MONITORING AND CARE

1. Evaluate the patient's evolving condition by monitoring these indicators (and any others that apply) and intervene as needed:
  - a. Airway patency
  - b. Breathing effectiveness
  - c. Pulse, skin temperature, capillary refill, and color
  - d. Neurologic status
  - e. Vital signs
  - f. Urine output
2. Assess, treat, and reassess pain.
3. Implement spinal protection measures and other interventions as indicated by examination findings.
4. Obtain diagnostic tests as indicated.
5. If the family is not already in the treatment area, offer them the opportunity to be with the patient now. Provide a support person to answer questions and explain procedures.

### EXPECTED OUTCOMES

- Complete systematic assessment of a critically ill or injured patient in whom the cause of signs and symptoms is unclear
- Identification of all injuries and abnormalities

### UNEXPECTED OUTCOMES

- Patient deterioration may result from a failure to recognize and intervene appropriately for life-threatening conditions that develop or worsen during the secondary assessment.
- In the injured patient, trauma to the spinal cord may result from a failure to maintain spinal alignment and stabilization throughout the secondary assessment.
- Patient deterioration may result from a failure to complete the secondary assessment and prioritize interventions before initiating them.
- Patient deterioration may result from intervening for noncritical problems, such as extremity fractures, before correcting life-threatening conditions.

### DOCUMENTATION

- Vital signs
- Injuries and conditions found in the secondary assessment
- Mechanism of injury or history of present illness, if known
- Interventions performed (including name and dosage of medications administered)
- Unexpected outcomes and related interventions
- Patient's response to interventions
- Collection of evidence and chain of custody for evidence handoffs, if applicable
- Patient and family education

## Emergency Secondary Assessment – CE

### PEDIATRIC CONSIDERATIONS

- Infants and young children have immature thermoregulatory capability and are susceptible to iatrogenic hypothermia. Keep children covered and provide warming as indicated.
- Unlike adults and older children, the infant’s skull can accommodate blood loss significant enough to cause hypotension and shock. The infant’s anterior fontanels should be observed for bulging.
- Children should be weighed as soon as possible because medication doses, fluid resuscitation, and other interventions are influenced by the child’s size. If obtaining a weight is not feasible, a length-based resuscitation tape can be used to estimate weight.
- The normal range for vital signs in children varies by age.

<b>Age</b>	<b>Heart rate (beats/min)</b>	<b>Blood pressure (mm Hg)</b>	<b>Respiratory rate (breaths/min)</b>
Premature	120-170*	55-75/35-45 <sup>†</sup>	40-70 <sup>‡</sup>
0-3 mo	100-150*	65-85/45-55	35-55
3-6 mo	90-120	70-90/50-65	30-45
6-12 mo	80-120	80-100/55-65	25-40
1-3 yr	70-110	90-105/55-70	20-30
3-6 yr	65-110	95-110/60-75	20-25
6-12 yr	60-95	100-120/60-75	14-22
12+ yr	55-85	110-135/65-85	12-18

\* In sleep, infant heart rates may drop significantly lower, but if perfusion is maintained; no intervention is required.

<sup>†</sup> A blood pressure cuff should cover approximately two thirds of the arm; too small a cuff yields spuriously high-pressure readings, and too large a cuff yields spuriously low-pressure readings.

<sup>‡</sup> Many premature infants require mechanical ventilatory support, making their spontaneous respiratory rate less relevant.

(Reprinted with permission from Kliegman, R.M. and others. [2020]. *Nelson textbook of pediatrics* [21st ed.]. Philadelphia: Elsevier.)

- The heart and respiratory rates may be altered by fear, pain, and anxiety, in addition to physiologic problems, such as hypoxia and hypovolemia. In children, blood pressure may be maintained in the presence of significant hypovolemia. Therefore, other assessments of circulatory status (heart rate, capillary refill, skin color, and so forth) should be monitored closely. Hypotension is defined as a systolic blood pressure less than the fifth percentile for the child’s age.<sup>2</sup>

## Emergency Secondary Assessment – CE

### GERONTOLOGICAL CONSIDERATIONS

- A supine position may be poorly tolerated and cause respiratory distress in older adults, especially those with significant preexisting pulmonary or cardiac disease.
- Older adults with kyphosis may require additional support under the head to maintain their normal (baseline) head and neck position for spinal stabilization.
- In older adults, the decreased sensitivity of baroreceptors, decreased response to beta stimulation, and medications may prevent a compensatory tachycardia in response to decreased systemic perfusion.
- Older adults may have less subcutaneous fat and lose body heat easily. Keep them covered and provide warming as indicated.
- Older adults are at increased risk for pressure ulcers. Pad bony prominences when immobilizing older adults and remove them from backboards as soon as possible.

### REFERENCES

1. American College of Surgeons (ACS). (2018). Chapter 5: Abdominal and pelvic trauma. In *Advanced trauma life support: Student course manual* (10th ed., pp. 82-101). Chicago: ACS. ([Level VII](#))
2. American Heart Association (AHA). (2016). Part 3: Systematic approach to the seriously ill or injured child. In *Pediatric advanced life support: Provider manual* (pp. 29-67). Dallas, TX: AHA. ([Level VII](#))
3. Emergency Nurses Association (ENA). (2016). ENA topic brief—Avoiding the log roll maneuver: Alternative methods for safe patient handling. Retrieved March 10, 2020, from [https://www.ena.org/docs/default-source/resource-library/practice-resources/topic-briefs/avoiding-the-log-roll-maneuver.pdf?sfvrsn=78887c44\\_8](https://www.ena.org/docs/default-source/resource-library/practice-resources/topic-briefs/avoiding-the-log-roll-maneuver.pdf?sfvrsn=78887c44_8) ([Level VII](#))
4. Joint Commission, The. (2020). National patient safety goals: Hospital accreditation program. Retrieved March 10, 2020, from [https://www.jointcommission.org/-/media/tjc/documents/standards/national-patient-safety-goals/npsg\\_chapter\\_hap\\_jan2020.pdf](https://www.jointcommission.org/-/media/tjc/documents/standards/national-patient-safety-goals/npsg_chapter_hap_jan2020.pdf) ([Level VII](#))
5. Powers-Jarvis, R. (2020). Initial assessment. In *TNCC™: Trauma nursing core course—provider manual* (8th ed., pp. 25-43). Schaumburg, IL: Emergency Nurses Association. ([Level VII](#))
6. Siemieniuk, R.A.C. and others. (2018). Oxygen therapy for acutely ill medical patients: A clinical practice guideline. *BMJ*, 363, k4169. doi:10.1136/bmj.k4169 ([Level VII](#))

#### Elsevier Skills Levels of Evidence

- **Level I** - Systematic review of all relevant randomized controlled trials
- **Level II** - At least one well-designed randomized controlled trial
- **Level III** - Well-designed controlled trials without randomization
- **Level IV** - Well-designed case-controlled or cohort studies
- **Level V** - Descriptive or qualitative studies
- **Level VI** - Single descriptive or qualitative study
- **Level VII** - Authority opinion or expert committee reports

## **Emergency Secondary Assessment – CE**

### **SUPPLIES**

- PPE (gloves, mask, eye protection, and fluid-resistant gown if indicated)
- Trauma scissors to cut clothing, if necessary
- Stethoscope
- Pulse oximeter
- Capnometer
- Cardiac monitor
- Appropriate-size blood pressure cuff or noninvasive blood pressure monitor
- Temperature measuring device (e.g., thermometer, temperature sensing urinary catheter)
- Blanket or other warming device

Clinical Review: Andrea Slivinski, DNP, RN, ACNS-BC, CEN, CPEN

Revised: Marlene L. Bokholdt, MS, RN, CPEN, TCRN, CEN

Published: September 2019

Revised: March 2020