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**EMS SKILL**

PATIENT ASSESSMENT

**CHEST AUSCULTATION**

**PERFORMANCE OBJECTIVES**

Demonstrate proficiency in performing rapid and/or comprehensive auscultation of the anterior and posterior breath sounds.

**CONDITION**

Auscultate anterior and posterior breath sounds and perform rapid chest auscultation in critical situations on a conscious patient using a live model or respiration simulator. Necessary equipment will be adjacent to the patient or brought to the field setting.

**EQUIPMENT**

Live model or respiration simulator, stethoscope/dual teaching stethoscope, goggles, mask, gown, gloves.

**PERFORMANCE CRITERIA**

• Items designated by a diamond (⧫) must be performed successfully to demonstrate skill competency.

• Items identified by double asterisks (\*\*) indicate actions that are required if indicated.

• Items identified by (§) are not skill component items, but should be practiced.

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| **PREPARATION** |
| **Skill Component** | **Key Concepts** |
| ⧫ Establishes body substance isolation precautions | • Mandatory personal protective equipment – gloves at all times• Situational - long sleeves, goggles, masks, gown as needed |
| ⧫ Direct the patient to breathe deeply in and out through their open mouth when you are ready to listen at specific areas | * When auscultating breath sounds, you need to determine whether they are normal (vesicular), or abnormal (adventitious).

• Breathing with an open mouth increases air flow resulting in more accurate sounds.• Having the patient cough if their lungs are congested will clear secretions and result in hearing sounds such as crackles (rales) and rhonchi.* Absent breath sounds means that you cannot hear any flow of air through the bronchial tubes on one (1) side of the chest or another, or both sides.
* Clear breath sounds mean that you hear air traveling in and out of one (1) lung or the other, or both lungs, and that there are no adventitious sounds.
* Crackles (rales) are the sounds of air passing through fluid in the alveoli. Hi-pitched crackles are called “fine,” and low-pitched sounds are called “coarse.”
* Rhonchi are low pitched rattling sounds caused by mucus in the larger airway. Rhonchi clear with coughing.
* Wheezing is air moving through a constricted and/or inflamed bronchial tube. Wheezing is typically heard on exhalation but as the patient’s condition worsens, the patient may have inspiratory and expiratory wheezing.
* Stridor is the high-pitched sound heard on inspiration as air is attempting to pass through a partially obstructed airway.
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| **RAPID AUSCULTATION****PROCEDURE** |
| **Skill Component** | **Key Concepts** |
| ⧫ Place the diaphragm of stethoscope directly on patient’s skin over the auscultation site | • Hold the head of the stethoscope between the index and middle fingers and press it firmly against the chest. This allows for improved auscultation of breath sounds and reduces external noises.• The diaphragm of the stethoscope may be slipped into place, under the patient’s clothing, without exposing the patient’s chest. |

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| **Skill Component** | **Key Concepts** |
| ⧫ Listen for the presence and equality of bilateral breath sounds only:• Instruct the patient to take a deep breath - *if responsive*• Listen at the level of the 5th - 6th intercostal space mid-axillary line | • Rapid auscultation should be done in emergent situations and after placement of advanced airways.• Assess 1-2 inhalations and exhalations to confirm the presence and equality of breath sounds.• Determining the type of breath sounds requires further evaluation which is indicated during the secondary assessment. |
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| **ANTERIOR CHEST** **AUSCULTATION****PROCEDURE** |
| **Skill Component** | **Key Concepts** |
| ⧫ Place the diaphragm of stethoscope directly on patient’s skin over the auscultation site | • Hold the head of the stethoscope between the index and middle fingers and press it firmly against the chest. This allows for improved auscultation of breath sounds and reduces external noises.• The diaphragm of the stethoscope may be slipped into place, under the patient’s clothing, without exposing the patient’s chest. |
| ⧫ Auscultate three (3) bilateral anterior fields:• Apices - 1“ below the clavicle at mid-clavicular line• Mid-lung fields - 3rd - 4th intercostal spaces (ICS) at the mid-clavicular line• Bases - 6th ICS space at the mid-axillary line | * Both sides of the chest must be auscultated to determine if the breath sounds are equal bilaterally.

• Apices – The sound is more bronchial (air movement) and quieter• Mid-lung fields – Are usually heard the loudest• Bases – The sounds are more vesicular (alveolar exchange) and quieter |
| ⧫ Auscultate bilateral breath sounds for the presence and equality of bilateral breath sounds only:***\*\*Instruct the patient to take a slow deep breath***- ***if responsive******\*\*Listen at the level of the 5th - 6th intercostal space mid-axillary line*** | • Rapid auscultation should be done in emergent situations and after placement of advanced airways.• Assess 1-2 inhalations and exhalations to confirm the presence and equality of breath sounds.• Determining the type of breath sounds requires further evaluation which is not indicated at this time. |

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| **POSTERIOR CHEST** **AUSCULTATION****PROCEDURE** |
| **Skill Component** | **Key Concepts** |
| ⧫ Place the diaphragm of stethoscope directly on patient’s skin over the auscultation site | • Hold the head of the stethoscope between the index and middle fingers and press it firmly against the chest. This allows for improved auscultation of breath sounds and reduces external noises.• The diaphragm of the stethoscope may be slipped into place, under the patient’s clothing, without exposing the patient’s chest. |
| ⧫ Listen to a minimum of three (3) bilateral posterior fields:• Apices - are located at the vertebral border at the level of T-3 (3rd rib)• Mid-lung fields – are located at the inferior angle of the scapula • Bases – are located three (3) finger breadths below the inferior angle of the scapula at the level of the diaphragm (approx. 10th rib) | • In a conscious patient, have the patient roll their shoulders forward to spread scapulae in order to hear breath sounds more accurately. * In an unconscious patient, place the head of the stethoscope between the scapula

• Auscultation of the posterior chest is preferred because sounds are of better quality louder in this location.  |

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| **Skill Component** | **Key Concepts** |
| ⧫ Listen for the presence and equality of bilateral breath sounds only:• Instruct the patient to take a deep breath - *if responsive*• Listen at the level of the 5th - 6th intercostal space mid-axillary line | • Rapid auscultation should be done in emergent situations and after placement of advanced airways.• Assess 1-2 full inhalations and exhalations to confirm the presence and equality of breath sounds.• Determining the type of breath sounds requires further evaluation which is not indicated at this time. |
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| **RE-ASSESSMENT****(Ongoing Assessment** |
| **Skill Component** | **Key Concepts** |
| ⧫ Re-auscultate anterior and posterior breath sounds* The patient has shortness of breath
* Has received treatment for adventitious sounds (i.e. an inhaler)
 | • Rapid chest auscultation may be appropriate in situations where only breath sounds confirmation is needed.• Full assessment of all 6 fields anteriorly and/or posteriorly may be needed to assess changes in patient’s pulmonary status. |
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| **PATIENT REPORT AND DOCUMENTATION** |
| **Skill Component** | **Key Concepts** |
| § Verbalize/Document:• Initial and ongoing breath sounds:- type of sounds heard- absent sounds• Location of auscultation (anterior or posterior)• Site where abnormal sounds are heard  | • If breath sounds are absent or unable to obtain, document the reason the sounds could not be heard/obtained.- If absent - may be due to lobectomy, atelectasis, bronchoconstriction, bronchospasms, or an unknown reason.- If unable to obtain, may be due to environment too noisy or dangerous, patient refuses, etc.• Documenting reassessment information provides a comprehensive picture of patient’s response to treatment.• Documentation must be on either the Los Angeles County EMS Report form, ePCR, or departmental Patient Care Record form. |

Developed 3/02 Revised 10/2018



PATIENT ASSESSMENT/**CHEST AUSCULTATION**

**Supplemental Information**

**Auscultation Sites**

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| **Anterior** | **Posterior** |
| Apices – One (1) inch below the clavicle at mid-clavicular lineMid-lung fields - 3rd-4th ICS at mid-clavicular lineBases - 6th intercostal space at mid- axillary line | Apices – Are located at the vertebral border at the level of T-3 (3rd rib)Mid-lung fields – Are located at the inferior angle of the scapula Bases – Are located three (3) finger breadths below the inferior angle of the scapula at the level of the diaphragm (approx. 10th rib) |



**DEFINITIONS:**

• Adventitious - Abnormal sounds. Result from obstruction of either the large or small airways and are most commonly heard on inspiration - crackles, wheezes and rhonchi.

• Atelectasis - A collapse or airless condition of the lungs. This may be caused by obstruction, hypoventilation, mucus plugs or excessive secretions.

• Bronchial -sounds heard over a major bronchus are harsh, high-pitched sounds with an equal inspiratory and expiratory phase.

• Death Rattle - Audible rales that are heard without a stethoscope. This is usually heard as patient is dying.

• Lobectomy - The surgical removal of a lobe of the lung or any organ.

• Tracheal - sounds heard over the trachea; loud and high-pitched with a pause between inspiratory and expiratory phase (expiratory phase slightly longer).

• Vesicular - normal breath sounds heard all over the chest distal to the central airways; soft sound and is primarily an inspiratory sound. May be diminished in older, obese, or very muscular patients. Harsher sounds heard if ventilations are rapid and deep or in children due to their thin, elastic chest walls.

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| **BREATH SOUNDS** | **OTHER TERMS** | **DESCRIPTION** |
| Clear  | Normal | Clear and quiet breath sounds heard during inspiration and expiration. They are louder during inspiration. |
| Rales | CracklesCrepitationWet | Crackling, popping sound produced by air passing over airway secretions/fluid or the sudden opening of collapsed airways. They may be coarse or fine and heard usually on inspiration but can be heard on expiration. They are louder during inspiration. |
| Rhonchi | Sonorous ralesCongested | Low- pitched continuous rumbling, snoring sound produced by narrowing of the larger airways due to thick secretions or muscle spasms. Sonorous wheezing sounds may be heard on inspiration or expiration (usually expiration). This often clears or changes with coughing. |
| Wheezes | Musical rales | High-pitched continuous sound produced by narrowing of the smaller airways. Whistling sounds may be heard on inspiration or expiration - louder during expiration. ***They are more severe if heard on inspiration.*** |
| Stridor | Crowing | Brassy, crowing sound produced by obstruction in the upper airways. May be caused by epiglottitis, viral croup, or foreign body - most prominent on inspiration. They are heard best over the larynx or trachea. |

**NOTES:**

* Firm pressure must be applied with the head of the stethoscope to eliminate friction sounds of chest hairs rubbing against stethoscope.
* Breath sounds are heard more prominently at the mid-lung field because the lungs are smaller at the apices and bases.
* Compare the sounds heard bilaterally and listen to both the inspiratory and expiratory phase.
* **DO NOT** listen to breath sounds over clothing. This causes significant alteration of sounds heard.
* In pediatric patients breath sounds may be heard throughout torso.
* As patients become more severe, breath sounds may cross over and a combination of sounds may be heard, or one (1) sound may be obliterated by another.