

INSTRUCTION MANUAL

**AUSCULTATION SIMULATOR WITH VIRTUAL
STETHOSCOPE™**

**INTERACTIVE TEACHING SYSTEM FEATURING
SITE SPECIFIC HEART AND LUNG SOUNDS
AND
AIRWAY MANAGEMENT TRAINER**

S314.300

PEDIATRIC--FIVE YEAR

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Patents Pending

PLEASE READ THE FOLLOWING INSTRUCTIONS PRIOR TO
COMMENCING TRAINING EXERCISES ON YOUR NEW MANIKIN.

HANDLE YOUR SIMULATOR IN THE SAME MANNER AS YOU
WOULD HANDLE YOUR PATIENT - WITH CARE AND
CONSIDERATION.

SHOULD YOU HAVE ANY QUESTIONS AFTER READING THIS
INSTRUCTIONAL MANUAL, PLEASE CONTACT GAUMARD.

INTRODUCTION

This teaching system features a five year upper torso and head with intubatable airway and palpable anatomic landmarks. Sensors are hidden beneath the skin in a total of thirteen (13) locations; nine (9) on the front and four(4) on the back. Included is a Virtual Stethoscope™ which is powered by a 9V cell. Remove the battery housing and place a fresh battery inside being sure to make secure connections.

Menus of available heart and lung sounds are attached listing the location, the sound and a brief description of the physiological condition associated with each sound.

Hear the appropriate heart or lung sound as the bell of the stethoscope is moved across the front or the back of the torso. An external speaker, which must be powered through a wall outlet, is supplied so that the Instructor can allow the Classroom to hear what the Student is hearing through the stethoscope.

Note that the Virtual Stethoscope has a description of the available sounds on the back of the Virtual Instrument®. Note the slide switch next to the description. Slide the switch to one of the five (5) colors and hear those sounds at each of the 13 site specific locations. This means that, for example, Base heart sounds are only heard when the bell of the stethoscope is placed at a position above the base of the heart and that tracheal sounds are heard only when the bell of the Virtual Stethoscope is placed just beneath the cricoid cartilage.

To create the best possible learning experience we have designed the system to require fairly precise positioning of the Virtual Stethoscope so start with sounds that are easy to find like TRACHEAL SOUNDS and then continue.

Through the use of our Virtual Instrument technology you will obtain the same results as you would expect in a real human!

CAUTION: The S314.300 is supplied with TWO (2) ribcages. Use the ribs with electronic disks ONLY for the auscultation exercise. Use the conventional ribs for CPR or airway management activities.

OPERATION

For those customers familiar with our patented Code Blue III computer interactive simulators, you will immediately recognize the connection between those state of the art systems and this Auscultation Simulator . Now let's get started!

AUSCULTATION TRAINING

1. Carefully unpack the Auscultation Simulator and inventory the contents.
2. Note that the torso of the simulator has numerous brightly colored and removable identification dots located where each of the heart and lung sounds are normally heard. These brightly colored dots can be removed at any time so that the Student must properly palpate to locate the auscultation sites on the front and the back of the simulator.
3. Lift the soft outer skin covering the torso and note that beneath each removable identification dot is a small ID disk embedded so that the Student cannot see or feel the auscultation locations. Note also that the torso features ribs, heart and lungs useful for properly palpating each site as well as demonstrating how each auscultation location relates to the physiology of the torso. You will find there are nine (9) ID disks on the anterior side and four (4) ID disks on the posterior side of the torso.
4. Your VIRTUAL STETHOSCOPE is powered by a conventional 9V battery. Open the battery cover on the back of the unit and properly install the battery. Close the cover.
5. Locate the small stereo jack on the VIRTUAL STETHOSCOPE and attach the speakers provided. Plug the speakers into a wall outlet and turn the speakers ON. Either 110 or 220 volt speakers are available. The speakers allow everyone in the Classroom to hear what is being heard through the earpieces in the VIRTUAL STETHOSCOPE. If the speakers are disconnected then only the student will hear the heart and lung sounds through the ear pieces on the VIRTUAL STETHOSCOPE.
6. Locate the ON/OFF switch on the front of the VIRTUAL STETHOSCOPE and turn it ON.

To get started, palpate the simulator and place the "bell" of the VIRTUAL STETHOSCOPE at the 5th Intercostal Space on the left side of the simulator along the midclavicular line. This is the APEX point where sounds from the mitral valve and the left side of the heart are best heard. By placing the "bell" over the ID disk embedded within the fifth intercostal space you will hear one of the five possible sounds APEX heart sounds.

7. Note that the back of the VIRTUAL STETHOSCOPE contains the label shown below and a five (5) position slide switch. Each of the five positions is color coded: RED, ORANGE, GREEN, BLUE AND BLACK.

8. Place the switch in the RED position and hear the sounds highlighted in RED at the nine locations on the front of the manikin and the four locations on the back of the manikin. Change the switch to the GREEN position and hear a different sound menu at the locations on the front and back of the manikin. Continue through the remaining switch positions. Alternatively, you may want to choose one position like the APEX and move the slide switch through each of the five sounds available there. The menu is conveniently located on the back of the VIRTUAL STETHOSCOPE so that the Student can not easily see it while auscultating the manikin.

9. The volume of the heart and lung sounds can be adjusted. Locate the adjustment screw on the back of the Virtual Stethoscope near the slide switch. Turn the stethoscope on and place the bell over an auscultation point. Insert a small electric screwdriver through the clearance hole, and rotate the screw clockwise or counter-clockwise until desired volume is achieved

10. Remember, your Auscultation Simulator contains five sounds at each of 13 points located on the front and back of the simulator. Use them all!!

AIRWAY TRAINING

The S314.300 trainer is designed to present the same airway challenges experienced by paramedics and physicians in the real world. Use of this simulator will enable students to obtain the confidence and skills required in a real life situation.

FEATURES

- Fully articulated head, neck, and jaw, permitting head tilt/chin lift, jaw thrust, and neck extension into the “sniffing” position.
- Anatomically accurate airway with crico cartilage, allowing the Sellick maneuver.
- Realistic trachea, bronchi, lungs, and distensible stomach.
- Replaceable tongue and airway assemblies.
- Custom carrying bag.
- Instruction manual.

CAUTION: REMEMBER TO USE THE CONVENTIONAL RIBCAGE FOR CPR AND AIRWAY MANAGEMENT EXERCISES.

INTUBATION

Opening the Airway

During your BLS training the ABC's of resuscitation were emphasized again and again. Remember that the "A" stands for airway and "B" stands for breathing. Therefore, the mechanics of properly opening the airway are essential.

Intubation may be indicated in the unconscious patient or when the patient is not breathing properly. Successful intubation provides:

- means for oxygen and positive pressure ventilation
- alternative route for providing certain medications if an IV is not available
- access for suctioning the trachea and bronchi

The **KEYS** to successful intubation are:

- hyperventilation before intubation
- patient position
- using laryngoscope to visualize the vocal cords
- passing the endotracheal tube between vocal cords
- practice, practice, practice

Hyperventilation Before Intubation

During intubation attempts, the patient will **NOT** receive adequate oxygen. Therefore, the rescuer must provide 100% oxygen before attempting intubation, **AND MUST HYPERVENTILATE THE PATIENT BETWEEN EACH ATTEMPT.**

Patient Position

The objective is to position the patient so that the rescuer will have the **BEST VIEW OF THE VOCAL CORDS**. Inserting an endotracheal tube (ET tube) must be a well-rehearsed procedure. Each **CORRECT** step makes the **NEXT STEP** that much easier.

Remember to ventilate the patient **BEFORE** and **BETWEEN** each intubation attempt.

Place the patient on his back. Use the **HEAD TILT/CHIN LIFT** or **JAW THRUST** method.. A towel may be placed under the neck of the patient's head. This places the patient in the so-called "**SNIFFING**" position. This provides the rescuer with the **BEST VIEW** of the vocal cords.

Visualizing The Vocal Cords

The rescuer is normally positioned above and behind the head of the patient so that the line of sight is across the forehead, over the nose and along the axis of the patient's airway. The **laryngoscope** is used to lift the tongue and epiglottis out of the line of sight so that the vocal cords may be **CLEARLY** seen.

The laryngoscope may be fitted with two types of blades; the straight **Miller** or the curved **Macintosh**. The Miller traps the top edge of the epiglottis against the tongue while the Macintosh lifts the epiglottis by lifting the tongue at the vallecula. Blade selection is largely an individual preference.

In the event that you can **STILL** not see the vocal cords, use the **SELLICK** maneuver as follows:

1. Have an associate depress the crico cartilage; this forces the airway posteriorly, providing a better view of the vocal cords.
2. Locate the cricoid by finding the "Adam's Apple" or thyroid cartilage.
3. Move the hand lower and feel the crico-thyroid membrane.
4. Move further below and locate the cricoid cartilage.

Positioning The Endotracheal Tube

With the patient in the sniffing position, and the rescuer behind the patient, place the ET tube as follows:

1. Use the left hand to insert the blade along the right side of the mouth, sweeping the tongue to the **LEFT** until the blade is midline.
2. Lift the tongue and the epiglottis up and away.
3. Keep low behind the patient and observe the vocal cords.
4. Use the Sellick maneuver if necessary.
5. Slide the ET tube along the right side of the blade and between the vocal cords.
6. Position the entire cuff below the vocal cords.
7. Carefully withdraw the laryngoscope blade.
8. Inflate the cuff. Under-inflation will allow air leakage; over-inflation may cause a reduction in blood flow to the trachea and subsequent ischemia.
9. Attach oxygen supply.

Confirming Correct Placement

- Look, listen, and feel for bilateral lung expansion.
- In a patient:
 - auscultate for chest sounds and air entry.
 - observe ET tube. Note fogging of the expelled air. You should **NOT** see the gastric contents.
- Secure the ET tube and **VENTILATE**.
- Check the patient:
 - for **COLOR**
 - for the **EFFORT** of breathing.
 - is the **RESPIRATION RATE** reasonable?
 - for **BLOOD PRESSURE** and **HEART RATE**.

GENERAL NOTES

Lubrication

The S314.300 Airway Management Trainer is designed to simulate the sensitivity of the human airway. Therefore, **ALWAYS** use a lubricant when attempting to intubate this simulator, such as a water based silicone spray, a non-aerosol cooking spray, or soap and water. This will help to simulate the natural fluids within the human airway. **NEVER** attempt to introduce an ET tube, NP tube, OP tube, or other invasive device without the use of a lubricant. **BOTH** the device and the simulator airway must be lubricated. Failure to use a proper lubricant may result in damage to the simulator.

MENU OF AVAILABLE HEART SOUNDS

LOCATION	HEART SOUND	COMMENT
Base Right	Venous Hum	This continuous murmur may be found in children aged 3 to 6 years. It occurs as a result of turbulence in the jugular venous system and is only heard when the child is in the upright position. The rate is about 96 beats per minute.
Base Right	Aortic Stenosis	This systolic murmur is loudest over the ascending aorta. Duration and intensity vary with the severity of stenosis. An ejection click may be heard.
Base Left	Split S2	Sounds are rather normal. Degree of splitting increases with inspiration and decreases with expiration. Wide split suggests prolonged RV ejection or shortened LV ejection; narrow split suggests early closure of pulmonary valve.
Base Left	Pulmonary Stenosis	This systolic murmur is normally loudest over the main pulmonary artery. Duration and intensity vary with the severity of stenosis.
Base Left	Systolic Fixed S2	Fixed S2 does not change width during respiration. The absence of split S2 usually indicates a condition that prolongs RV ejection time or shortens LV ejection. Conditions include volume/pressure overload and RBBB.
Apex	One Year Heart	Normal heart sounds heard in a 12 month old infant. The rate is 120 beats per minute.
Apex	Six Year Heart	Normal heart sounds heard in a 6 year old child. The rate is 84 beats per minute.

MENU OF AVAILABLE HEART SOUNDS (CONTINUED)

<u>LOCATION</u>	<u>HEART SOUND</u>	<u>COMMENT</u>
Apex	Stills Murmur	The vibratory murmur may be found in children between ages 3 to 6 years and sounds like "twanging string", or squeaking/buzzing at a low frequency. During inspiration, murmurs increase on the right side and decrease on the left.
Apex	Mitral Valve Regurgitation	This systolic murmur is produced by lesions, more often rheumatic than congenital in origin. Chest films may show pulmonary vein congestion, pulmonary edema, or an enlargement of the left atrium/ventricle.
Apex	Split S1	S1 relates to closure of mitral and tricuspid valves. Not common in normal children, and may indicate RBBB or other anomalies. Sound can be confused with an ejection click on S4.

MENU OF AVAILABLE LUNG SOUNDS

LOCATION	LUNG SOUNDS	COMMENT
Trachea	Normal Infant	Expiration sounds are louder, have a higher pitch, and are of longer duration than during inspiration. The silent period or pause following expiration is longer than the one between expiration and inspiration.
Trachea	Normal Child	Expiration sounds are louder. Have a higher pitch, and are of longer duration than during inspiration. The silent period or pause following expiration is longer than the one between expiration and inspiration.
Trachea	Stridor Sounds	Patient has marked respiratory distress, and a narrow aperture between the vocal cords that produces a high pitched tone during both inspiration and expiration. During the end of expiration, there is an abrupt drop in pitch.
Upper Anterior (2 sites) and Lower Anterior (2 sites)	Wheezing Sounds	These musical wheezing sounds are often heard in asthma patients. During inspiration, the wheeze is slightly higher in pitch than during expiration. Wheezing in asthmatics is often present in either one or both phases of respiration.
Upper Posterior (2 sites) and Lower Posterior (2 sites)	Crackles, Ronchi	Coarse crackles are present during both inspiration and expiration. There are also some very low pitched repetitive sounds that are ronchi. High pitched squeaks are also audible against a background of bronchial breath sounds.

DESCRIPTION OF AVAILABLE SOUNDS LOCATED
ON THE **PEDIATRIC** VIRTUAL STETHOSCOPE

ADULT	CHILD
AORTIC STENOSIS	NORMAL INFANT
AORTIC STENOSIS	NORMAL CHILD
VENOUS HUM	STRIDOR SOUNDS
VENOUS HUM	STRIDOR SOUNDS
VENOUS HUM	STRIDOR SOUNDS
SPLIT S2	WHEEZING SOUNDS
SYSTOLIC FIXED S2	WHEEZING SOUNDS
SYSTOLIC FIXED S2	WHEEZING SOUNDS
PULMONIC STENOSIS	WHEEZING SOUNDS
PULMONIC STENOSIS	WHEEZING SOUNDS
PULMONARY STENOSIS	WHEEZING SOUNDS
PULMONARY STENOSIS	WHEEZING SOUNDS
SPLIT S1	WHEEZING SOUNDS
SPLIT S1	WHEEZING SOUNDS
SPLIT S1	WHEEZING SOUNDS
1 YEAR HEART	RONCHI CRACKLES
6 YEAR HEART	RONCHI CRACKLES
STILLS MURMUR	RONCHI CRACKLES
SPLIT S1	RONCHI CRACKLES
MITRAL VALVE REGURG.	RONCHI CRACKLES

CONTENTS

1	Five year torso and head with site specific sensors and intubatable airway
1	Conventional Ribcage for CPR and Airway Exercises
1	Virtual Stethoscope™ with 9 Volt cell
1	Pair of External Speakers for Classroom
1	Instruction Manual
1	Carrying Bag

REPLACEMENT PARTS

314.200.001	Virtual Stethoscope™ with instruction for use
314.200.002	Set of 13 ID disks with adhesive and instructions for use
314.200.003	Ribcage for placement of ID disks
314.200.004	Ribcage Conventional

Contact Customer Service for any other items you may require.

CLEANING AND STORAGE

1. The skin of the S314.300 PEDIATRIC FIVE YEAR INTERACTIVE TEACHING SYSTEM may be cleaned with a mild detergent, or soap and water.
2. Indelible marks made with ballpoint pens, ink or magic markers will remain.
3. Do not wrap this or any GAUMARD simulator in newsprint.
4. Do not use povidone-iodine on the simulator.
5. Improper storage may damage the manikin - keep the manikin stored in the box provided
6. Do not stack or keep heavy materials on top of the box
7. Keep the manikin in a cool area

SHOULD YOU HAVE ANY QUESTIONS AFTER READING THIS INSTRUCTION MANUAL, PLEASE CONTACT OUR CUSTOMER SERVICE DEPARTMENT FOR FURTHER ASSISTANCE:

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