

CAE

Healthcare

CAE Ares User Guide



Disclaimer

This product is a simulation device designed for training and demonstration purposes only.

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Cautions and Warnings

It is important to read and understand these cautions and warnings before you use the Product.

CAUTION: These products are not suitable for use in locations where children may be present.

Electrical Safety

IMPORTANT! Do not use the product in any manner other than specified, as safety features designed for protection may be impaired.

- This product must be connected to an electrical outlet that is properly grounded. Take precaution to ground or polarize correctly.
- Connect only to a 100-240 VAC 50/60Hz power source.
- Always use only the supplied power supplies, cords, and connectors. Do not substitute.
- Always use the supplied power adapter to run the simulator from AC.
- Do not allow excess fluids to flow on or into electronic parts.
- Do not attempt to disassemble the simulator or service any of the electrical components without receiving instructions from Customer Service.
- Do not operate the manikin in rain. Apply water to the manikin only in accordance with the supported clinical procedures explained in this guide.
- Always remove the power cable and have simulator turned off if replacing fuses. Not all manikins have user-serviceable fuses.
- For manikins with thermal fuses, replace with MINI® Blade Fuses Rated 32V (silver-plated) 3A (Littelfuse p/n 0297003.WXNV) UL248-compliant.
- The SymDefib accessory transmits live high-voltage electricity! Do not touch the manikin or the SymDefib unit when applying electrical therapy. Review *Appendix B* before using SymDefib for important information about use and personal safety.

Product Use Warnings

Review all the following information and precautions in each section:

Manikin

- Follow the instructions for use contained in this user guide.
- Make sure the manikin is set up on a stable, sturdy work surface that will not collapse and cause injury to users.
- Operate the manikin in ambient temperatures below 104°F (40°C).

Note: This only applies when using the manikin without the tablet where CAEMaestro software is installed. For information about temperature ranges for the tablet, see *Ambient Temperature Range* in the *Specifications* section of this User Guide.

Cautions and Warnings

- Do not place foreign substances into the airway, with the exception of small amounts of approved lubricant. Only perform invasive procedures supported by the Product as described in the applicable sections of the User Guide.
- Do not insert any materials into the manikin except the equipment or probes supplied.
- Do not lift the manikin by its limbs. Support the head and lift it from the torso. If necessary, have another person help you lift and move the manikin using a patient transfer device such as a patient transfer board, when available.
- Keep the manikin plugged in between training sessions due to a slow drain of the battery that occurs.
- Under normal circumstances, unplugging the external DC power used for powering and charging the manikin is not necessary because the charging stops when the battery is full. A topping charge is only applied when the battery voltage drops to a certain level.
- Do not spill fluids over the manikin's chest, abdomen, or inside the manikin's torso. This could damage the system and may also present a possible hazard for the operator. Special attention should be taken while using the the various fluid features.
- Do not use the manikin or equipment in locations where children are likely to be present.

Fluids System

For manikins such as Ares that are equipped with fluid systems:

- Do not modify the reservoirs or any assembly component.
- Always protect your eyes, skin, and clothing against accidental exposure.

Battery

Manikins and tablets use lithium batteries that all have special handling requirements to avoid hazardous situations.

For more information about battery specifications, see the *Specifications* section. For more information about battery safety, see the *Battery Safety Information* section.

Simulator Batteries

Manufacturer	RRC power solutions GmbH Technologiepark 1, D-66424 Homburg-Saar, Germany Mail: info@rrc-ps.de
Emergency phone number	+49 6841 9809-0 (8.00 – 16.00, MEZ), or contact your national poison information center.

- Always store the polymer lithium-ion battery pack indoors.
- Always keep the battery away from objects or materials with static electric charges.

- Batteries can be charged while the manikin is between 32°F (0°C) and 113°F (45°C).
- Do not store, use or charge the battery inside of an automobile as temperatures can exceed 176°F (80°C).

Battery Replacement

- If the simulator battery power diminishes significantly, contact Customer Service to replace the battery. For safety, only replace the battery with an approved make and model.
- Before disposing of a simulator battery, apply vinyl tape to its positive (+) and negative (-) terminals to avoid short circuits.
- If a simulator battery needs to be replaced, immediately remove the old battery from the equipment to ensure no damage occurs.
- Do not dispose of the simulator battery into a fire. Dispose of or recycle batteries responsibly.

Battery Safety Information

For information about battery specifications, see the *Specifications* section of this user guide.

Important: Refer to the battery manufacturer's Safety Data Sheet (SDS) for complete safety instructions and handling information.

Precautions for Handling

Hazards are associated with the contents of the cell or battery. Under recommended use conditions, the electrode materials and liquid electrolyte are non-reactive, as long as the cell or battery integrity remains, and the seals remain intact.

Potential exposure should not exist unless the cell or battery:

- leaks,
- is exposed to high temperatures,
- is mechanically, electrically or physically abused/damaged.

If the cell or battery is compromised and starts to leak, based upon the battery ingredients, the contents are classified as hazardous. In general, if liquid leaks from the battery or foul odor is detected, DO NOT use the battery and keep it away from heat or flame.

- Avoid short circuiting the battery. Do not store with coins, screws or other similar objects.
- Do not immerse in water.
- Do not disassemble or deform the battery.
- Do not expose to, or dispose of the battery in fire.
- Avoid excessive physical shock or vibration.
- Keep out of the reach of children.

Cautions and Warnings

- For rechargeable batteries, the battery must be charged in an approved charger.
- Never use a modified or damaged charger.
- Store in a cool, dry, and well-ventilated area.
- Never use a battery that has been damaged or deformed.
- Do not short-circuit the positive (+) and negative (-) terminals.
- Do not place the battery in a device with the positive (+) and negative (-) terminals in the wrong positions.
- Do not solder a battery directly.

Potential Health Effects

- Acute (short term): In the event that the cell or pack ruptures, the electrolyte solution contained within the cell will corrode and can cause burns to skin and eyes.
- Inhalation: Inhaling materials from a sealed cell is not an expected route of exposure. Vapors or mists from a ruptured cell can cause respiratory irritation.
- Ingestion: Swallowing materials from a sealed cell is not an expected route of exposure. Swallowing the contents of an open cell can cause serious chemical burns to mouth, esophagus, and gastrointestinal tract.
- Skin: Contact between the cell and skin will not cause any harm. Skin contact with the contents of an open cell can cause severe irritation or burns to the skin.
- Eye: Contact between the cell and the eye will not cause any harm. Eye contact with the contents of an open cell can cause severe irritation or burns to the eye.
- Interactions with other chemicals: Immersion in high conductivity liquids can corrode or breach the cell or battery enclosure. The electrolyte solution inside of the cells can react with alkaline (basic) materials and present a flammability hazard.

Safety Measures

Review the precautions for handling before replacing a battery utilizing guidance from CAE.

Should exposure to hazardous battery components occur, or in the event of a fire, follow all local first aid measures and safety protocols.

Transport Information

CAE complies with the most current International Air Transport Association (IATA) Dangerous Goods Regulations when transporting and shipping Li-ion batteries. The following terms are defined as follows:


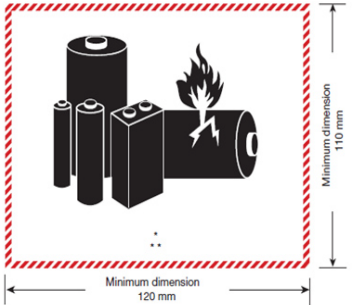
Consignment - Equivalent to the term "shipment," meaning one or more packages of hazardous materials accepted from one shipper at one time and at one address, receipted in one lot, and moving to one consignee at one destination address.

Equipment - The device or apparatus for which the lithium cells or batteries will provide electrical power for its operation.

It is the shipper’s responsibility to ensure that the consignment is packed in compliance to the latest edition of the applicable regulations. Regulations require appropriate training for shipping dangerous goods. Shipping regulations and requirements may vary depending upon:

- Wattage of the battery.
- Whether the battery is shipped independent of, contained within, or packed with the equipment.

When transporting batteries CAE follows these documentation and labeling requirements:

	Item	Description
UN No.	3480	3481
UN Shipping Name:	Lithium-ion Batteries	Lithium-ion Batteries
Transport Hazard Class:	9	9
Labeling:		 <p>Lithium battery mark</p> <p>* Place for UN number(s)</p> <p>** Place for telephone number for additional information</p>

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Specifications

All hardware and software needed for operating the simulator are provided with the shipment.

Size and Weight

Equipment	Size	Weight
Manikin/Simulator	69" H x 22" W x 15" D (175 cm x 56 cm x 38 cm)	48.5 lbs (22 kg)
Instructor Tablets	Galaxy S3 9.34" H x 6.65" W x 0.24" D (2.4 cm x 32.5 cm x 22.7 cm)	Galaxy S3 15.1 oz (429 g)
	Surface Go 9.65" x 6.9" x 0.33" (24.5 cm x 17.5 cm x 0.83 cm)	Surface Go 1.15 lb (522g)
SymDefib	2.6" H x 4.9" W x 5" D (6.6 cm x x 12.4 cm x 12.7 cm)	8 oz (227 g)

Ambient Temperature Range

Item	Operation	Storage	Relative Humidity
Manikin/Simulator	40°F to 104°F (4°C to 40°C)	40°F to 122°F (4°C to 50°C)	0% to 90% non-condensing
Tablet	50°F to 95°F (10°C to 35°C)	-13°F to 113°F (-24°C to 45°C)	0% to 90% non-condensing
SymDefib	0°C- 35°C Note: Indoor use only	-20°C – 60°C	45% to 85%

Maximum Altitude

Item	Operation	Storage	Shipping
Tablet	10,000 ft (3,048 m)	15,000 ft (4,572 m)	35,000 ft (10,668 m)

Battery

Item	Description
Commercial product name	RRC2054-2
Additional Information	Battery-System: Lithium-ion Wh rating: 99.4 Wh
SymDefib Battery	Li-ion 3.7V 2200mAh

Power

Item	Description
Power Adapter	<ul style="list-style-type: none"> AC Input: AC 100 – 240 VAC, 50/60 Hz DC Output: 19 VDC Consumption: Maximum 60 W (charging), 25 W (charged), Typical 13 W
Manikin/Simulator	<ul style="list-style-type: none"> Internal Batteries: Rechargeable Run Time: 4 hours (typical)
Instructor Tablet	<ul style="list-style-type: none"> Input: 5 V Non-removable Battery: 6000 mAh battery Run Time: 2 to 4 hours (typical)
Patient Monitor	<ul style="list-style-type: none"> See the product's user guide for power specifications.
StethoSym	<ul style="list-style-type: none"> Run Time: 2 hr 45 min while constantly reading a RFID tag and playing audio; 4 hours when ON and receiving signal (Sleep Mode) Recharge time: 50 minutes
SymDefib	<ul style="list-style-type: none"> AC input: 100-240VAC 50/60Hz Nominal DC Output: 5 V Maximum DC Current Output: 4 A Nominal Power: 20 W Run Time: 17 hours (with Pads not on manikin), 2-3 hours (with Pads on manikin)

Communications

Item	Description
Simulator Network	<ul style="list-style-type: none">• Wired: 10/100 Ethernet• Wireless: IEEE 802.11 g

Electrotherapy

Item	Description
Defibrillation	<ul style="list-style-type: none">• 20 to 360 Joules (Monophasic, Biphasic)
Pacing	<ul style="list-style-type: none">• 20 mA to 180 mA

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System Requirements

This section describes the minimum and optimal requirements to run the simulator.

Software and Hardware

Any computer (or tablet) used to operate the Maestro or Patient Monitor software must meet minimum hardware and software requirements. However, optimal requirements should be met to enhance performance. These requirements also apply to devices running Maestro Standalone.

CAE Maestro Software

The following table identifies the software version associated with the release of this user guide.

Document	Document Version	Software Version
Maestro for Ares	905K640552 v2.2	CAE Maestro v2.9
Ares User Guide	905K640152 v2.1	CAE Maestro v1.4 - 2.9

Note: Periodic system updates for Maestro can be downloaded from any device with an Internet connection. Updates are available at: <https://www.caehealthcare.com/support/software-updates/>

Windows[®] Operating System

Minimum Requirements	
Software	<ul style="list-style-type: none"> • Win 10 Pro • .NET 4.8
Hardware	<ul style="list-style-type: none"> • Surface Go • Intel Pentium Gold Processor 4425Y • 4 GB DDR3 RAM • 32 GB Hard Drive space available • 1920x1280 screen resolution • USB-C • Wireless 802.11 a/b/g/n/ac/ax

Approved Devices

Make/Model	<ul style="list-style-type: none">• Samsung Galaxy Tab S3 / SM-T820 / 9.7 in.
Software	<ul style="list-style-type: none">• Android version 7.0• Chrome version 60 or higher
Hardware	<ul style="list-style-type: none">• 2.15 GHz Quad-Core• 4 GB LPDDR4 RAM• 10 GB Hard Drive space available• 2048 x 1536 screen resolution• USB (Multipurpose) Port• Wireless 802.11a/b/g/n/ac
Make/Model	<ul style="list-style-type: none">• Microsoft Surface Go
Software	<ul style="list-style-type: none">• Windows 10• Chrome version 62 or higher (not required for Maestro v1.8 or later)
Hardware	<ul style="list-style-type: none">• Intel Core 2 Duo, 2.0 GHz• 8 GB DDR3 RAM• 32 GB Hard Drive space available• 1366x768 screen resolution• USB-C Port• Wireless 802.11b/g/n Ethernet card 100BASE-T Ethernet Adapter

Note: Upon installation, the software takes up 1.2 GB of hard drive space. For standalone versions of Maestro, the software can store approximately 30.8 GB of patient record files. If this storage capacity is expected to be maximized, plan for additional hard drive space.

Equipment Overview

The manikin includes standard equipment based on its configuration (Advanced or Complete). Optional equipment is also available to enhance learning scenarios.

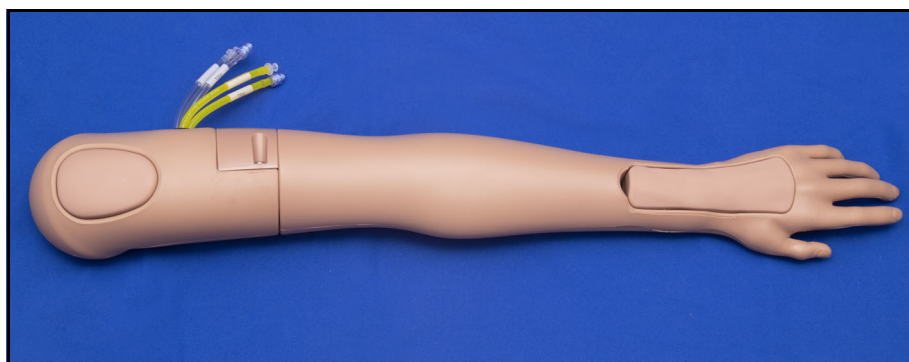
Standard Equipment

Ares comes with standard equipment for both configurations.

Standard Equipment
Basic Airway Head
IV/IO Arm
NIBP Pulse Arm
Male and Female Chest Skins
Male and Female Genitalia
Male and Female Wigs
StethoSym
Tools and Supplies
Surface Go Tablet
Maestro Software

IV/IO Arm

The IV/IO arm comes with a removable IM deltoid injection pad which can be interchanged with an IO deltoid pad.



IV/IO Arm

NIBP and Pulse Arm

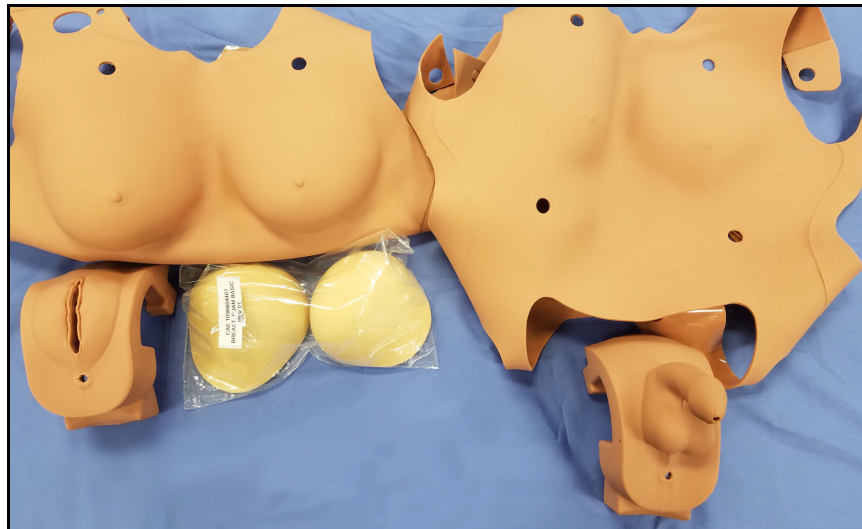
The non-invasive blood pressure and pulse arm allows users to perform blood pressure readings using a modified blood pressure cuff, palpate radial and brachial pulses, and auscultate Korotkoff sounds.



NIBP and Pulse Arm with Electronics

Gender-specific Equipment

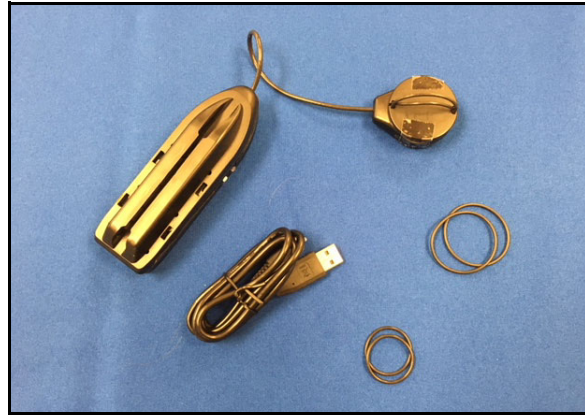
The manikin includes interchangeable male and female genitalia, chest skins, and wigs.



Female and Male Genitalia and Chest Skins

StethoSym

CAE StethoSym™ attaches to a stethoscope. Bluetooth technology allows users to auscultate heart, lung, and bowel sounds. One StethoSym is included with the manikin.



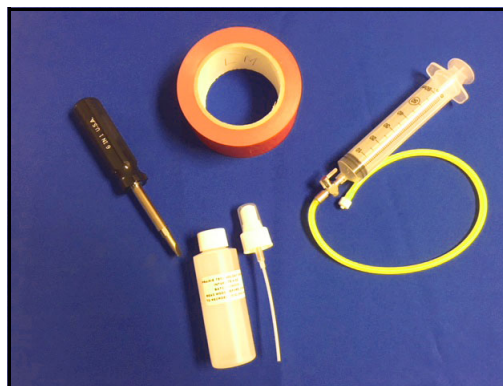
CAE StethoSym

Tools and Supplies

Additional supplies are included with the simulator.



IO Pad, Gown, and Arm Sleeves



Screwdriver, Tape, Laryngospasm Assembly, and Lubricant

Surface Go Tablet

The Surface Go provides the capabilities of a laptop in an ultra-portable tablet. This mobile workstation features a Windows 10 operating system, a 10 in (25.4 cm) touchscreen, and up to 9 hours battery life.

The Surface Go tablet comes equipped with pre-installed CAE Maestro™ instructor software to control the manikin's physiological activity during simulations.



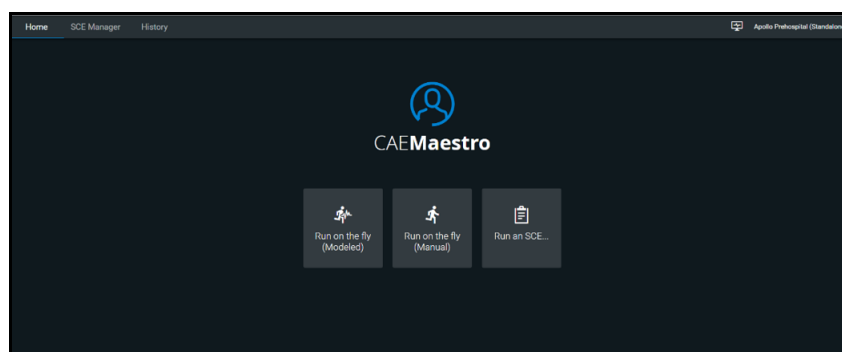
Surface Go Tablet

Tablet Carrying Case

The Surface Go tablet carrying case is a way to store and protect the Surface Go tablet. With an ergonomic design, the tablet is easy and comfortable to operate.

CAE Maestro Software

CAE Maestro™ is the software used to control and monitor the simulation training experience.



CAE Maestro™ Software

Advanced and Complete Configurations

Advanced and Complete configurations include additional equipment:

Advanced Configuration Equipment
All Standard Equipment
SymEyes

Complete Configuration Equipment
All Standard Equipment
SymEyes
SymDefib

CAE SymEyes

While the Ares Base configuration comes equipped with manually controlled Tristate eyes, the Advanced and Complete Ares configurations are equipped with software controlled CAE SymEyes™.

The SymEyes feature includes realistic blinking, eye panning and light-reactive pupils. Additional conditions can be selected to be displayed in the eyes, such as jaundice and hemorrhage.

CAE SymDefib

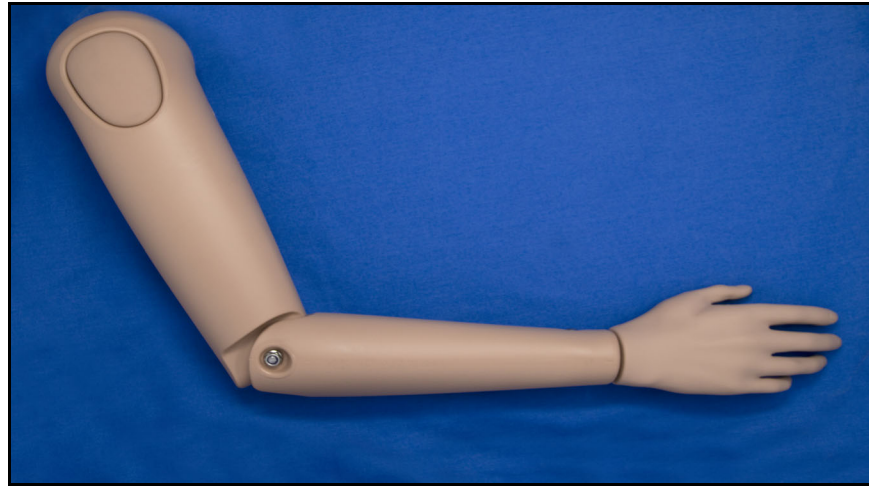
CAE SymDefib™ connects with a commercial defibrillator to support training for defibrillation, cardioversion, and pacing in the actual clinical environment with real equipment. One SymDefib is included with the Complete manikin configuration. The SymDefib can be added to the Base or Live Advanced configurations. See *Appendix B - SymDefib* for complete use instructions and safety information before using SymDefib.

Optional Equipment

To enhance the simulation experience, optional equipment is available for purchase for all configurations. Following are some of the items that may be purchased for Ares. See the *Simulator Configurations* section of this guide for more information.

Articulated Arm

The articulated arm comes with a removable deltoid injection pad for IM injections and can be interchanged with an IO deltoid pad.



Articulated Arm

Breast Examination Module

The optional Breast Examination module includes:

- Two breasts with configurable nodule inserts
- Small (10 mm) hard with peg (6)
- Small (10 mm) hard with longer peg (2)
- Medium (15 mm) hard (2)
- Medium (15 mm) soft (2)
- Large (20 mm) hard (2)
- Large (20 mm) soft (2)

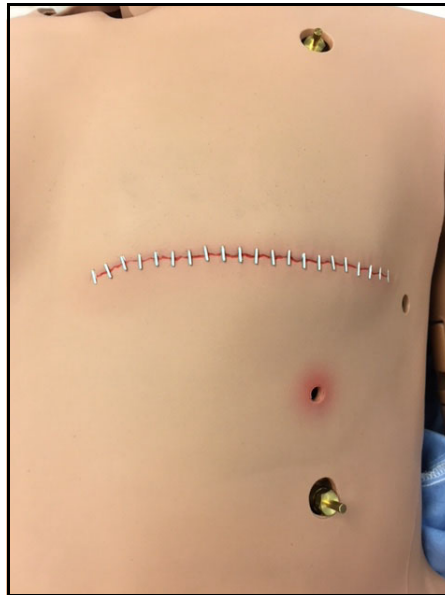


Breast Exam Module

Post-Mastectomy Module

This optional module allows for the practice of post-mastectomy care. The kit includes:

- Post-operative left total mastectomy incision with staples
- Opening for drain tube to be placed under the skin
- Normal right breast



Post-Mastectomy Module

Complete Wound Kit

This optional kit for Ares contains the following eight (8) wounds:

- Thigh incision
- Thigh suture
- Thigh bite wound
- Thigh debridement
- Lower leg with varicose veins and stasis ulcer
- Below knee amputation stump
- Foot with skin tear
- Diabetic foot with toe infection and heel ulcer

Upper Leg Wounds

The upper leg wounds are interchangeable with the upper leg IM injection pads.



Upper Leg Incision



Upper Leg Suture



Upper Leg Debridement



Upper Leg Bite Wound

Lower Leg Wound

The lower leg wound can replace the lower leg that comes with Ares.



Varicose Veins with Stasis Ulcer

Upper Leg Amputation Wound

The upper leg amputation wound can replace the right leg that comes with Ares.



Below the Knee Amputation Stump

Foot Wounds

The two (2) foot wounds can replace the foot that comes with Ares.



Foot with Skin Tear



Diabetic Foot with Toe Infection and Heel Ulcer

Moulage Kit

The STOPS Hyper-Realistic® Moulage Kit (HRMK) is a versatile and reusable special effects kit for wound treatment simulation. The customizable wound patterns support a full range of injury types that can be applied to any anatomical area of the Ares manikin.

The HRMK includes:

- Wound application and removal supplies
- Materials to produce up to 12.5 gallons of artificial blood
- Detailed wound application instructions
- Care and maintenance instructions, including:
 - Wound removal
 - Cleaning
 - Reusing
 - Storing
- Injury reference cards
- Wound patterns

Blood Pumping System

The STOPS Blood Pumping System® (BPS) is a bleed simulation kit for realistic, severe hemorrhage simulations. The BPS is wirelessly controlled and can support up to four simultaneous venous and/or arterial bleeds.

The Basic BPS model includes:

- One femoral sleeve with shorts, and protective guard
- One brachial sleeve without bone, and protective guard
- Blood concentrate (2.5 gallons)

The Deluxe BPS model includes:

- Two femoral sleeves with and without shorts, and protective guard
- Two brachial sleeves with and without bone, and protective guard
- Blast pants
- Blood concentrate (2.5 gallons)



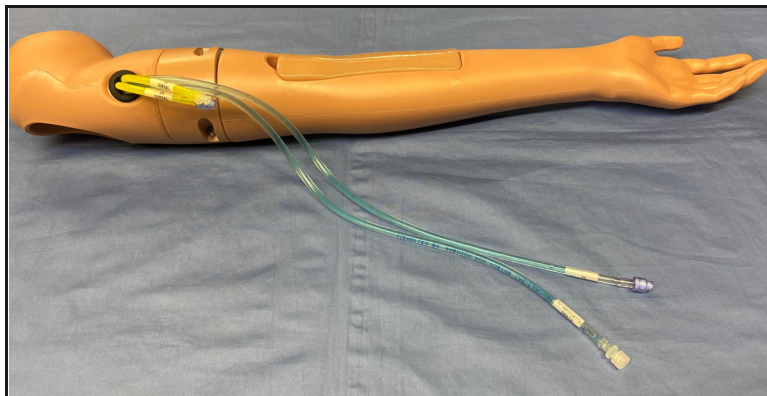
STOPS BPS® with Pack and Control Fobs

Blue Phantom Ultrasound IV-PICC Arm

The CAE Blue Phantom™ ultrasound IV-PICC arm is a replacement arm with an ultrasound insert located in the antecubital IV space. This arm module provides for realistic PICC and IV training with a durable, self-sealing design. A standard IV cannulation module is located in the hand space.

The training module includes:

- One ultrasound IV-PICC arm
- One bottle of blue fluid



CAE Blue Phantom™ Ultrasound IV-PICC Arm

Use and care instructions can be found in the CAE Blue Phantom Ultrasound IV-PICC Arm user guide.

Geriatric Face Mask

The Ares manikin can simulate a geriatric patient with the addition of the geriatric male face mask.



Geriatric Face Mask

Meet Ares

CAE Ares™ offers a comprehensive, realistic solution for emergency care team training and advanced life support training. This simulator is mobile, lightweight, easy to use, and anatomically accurate for better skills proficiency and clinical assessment. Ares configurations come with interchangeable male and female chest skins, wigs and genitalia, giving you two patient simulators in one. For information on how to change the simulator's genitalia, see *Changing the Simulator's Genitalia* in this user guide.



CAE Ares™

Simulator Configurations

The simulator is available in two configurations: Advanced and Complete.

Configuration	Components
All Ares	<ul style="list-style-type: none"> • Articulation with range of motion in hips, knees, ankles, shoulders • IV/IO arm and a NIBP/pulse arm • 4 Intramuscular sites • StethoSym • Airway anatomy (lips, teeth, tongue) • Bag-valve-mask (BVM) ventilation • Intubation: oral and nasal endotracheal; esophageal, fiberoptic, retrograde, and right main stem with detection • Transtracheal Jet ventilation • Needle and surgical cricothyrotomy • Pre-made tracheostomy • Stomach distention with esophageal intubation • Laryngospasms • Spontaneous breathing, with unilateral and bilateral movement of the chest • Bilateral needle decompression • 4-lead ECG and cardiac rhythms • 12-lead dynamic ECG display • Unilateral blood pressure measurement by auscultation and palpation • Bilateral carotid and femoral pulses, with variable intensity control • Unilateral radial and brachial pulses, with variable intensity control • Auscultation of normal and abnormal heart, lung, and bowel sounds • Audible Korotkoff sounds generated with NIBP • Two-way communication between manikin and facilitator • Prerecorded speech and vocal sounds • Interchangeable genitalia • Urinary catheterization without fluids • CAE Maestro software • Surface Go Tablet
Ares Advanced	<ul style="list-style-type: none"> • All Ares features • SymEyes
Ares Complete	<ul style="list-style-type: none"> • Advanced features • SymDefib

Configuration	Components
Optional Equipment	<ul style="list-style-type: none"> • Articulated arms • SymDefib • Additional StethoSym units • Breast exam module • Post mastectomy module • Complete wound module • STOPS Hyper-Realistic Moulage Kit (HRMK) • STOPS Blood Pumping System (BPS) • Blue Phantom Ultrasound IV/PICC arm • Geriatric male face mask

In addition to these Ares configurations and options, CAE has a number of advanced compatible systems available for purchase, which complement the Ares training experience.

These are:

- CAE Ares™ AR with HoloLens
- CAE Maestro™ Physiology for Ares
- CAE Maestro™ Standalone licenses
- CAE LearningSpace™

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Setup

This section provides instructions and guidelines to unpack, charge, and turn on the manikin. It also provides instructions on how to charge and power on the Instructor tablet and StethoSym. For SymDefib instructions and use, see *Appendix B - SymDefib*.

Unpacking the Manikin

The manikin comes in a custom-designed container that provides proper placement for all parts and accessories (skin, hospital gown, tools, etc.).

Follow the guidelines below when opening your shipment:

- Refer to the *Unpacking Your CAE Manikin* document provided in the shipping container.
- Exercise extreme caution when using sharp objects, such as a box cutter. A damaged container can lead to improper storage of the manikin, potentially damaging skin, body parts, and accessories.
- Reserve a space approximately 2 ft by 6 ft (61 cm by 183 cm) to store the shipping container. For more information, see the *Care and Maintenance* section of this user guide.
- Read and understand the Cautions and Warnings located in the beginning of this guide.
- Follow the sequence of the steps carefully. Complete all steps in order.
- Do not power on any components until instructed in the text.
- Verify the content of each item in the container against the shipping paperwork to ensure you received the correct product and parts.
- Keep original shipping materials, including boxes and foam. Warranty and repair items must be returned and shipped in their original packaging.

Setup Steps

Setup Procedure	
1	Place Ares Manikin in the Work Area
2	Prepare Ares for Legs
3	Attach Ares' Legs
4	Prepare Ares for Arms
5	Attach Ares' IV Arm
6	Attach Ares' NIBP Arm
7	Modify a Blood Pressure Cuff
8	Place Ares' Wig
9	Charge the StethoSym (Optional)
10	Power on Ares
11	Power on the Instructor Tablet
12	Connect to the Simulator's Network (Optional)
13	Set Up the Patient Monitor (Optional)
14	Launch Maestro

Initial Preparation

Before you begin setup, complete the initial preparation below to prevent damage to the simulator:

- Prior to using the manikin, ensure it reaches room temperature.
- Ensure multi-plug AC power outlets exist in the workspace to charge the simulator and its powered components. The instructor tablet is battery-operated and enabled for wireless use; however, the patient monitor must be plugged into a power source during use.
- Do not power on components unless instructed in the *Setup Steps* section of this guide.
- Do not set up, power on, or use CAE SymDefib until the simulator set up is complete. When the simulator is ready for use, see *Appendix B - SymDefib* and review all safety information, set up, and use instructions to begin using SymDefib.

Step 1: Place Ares Manikin in the Work Area

Select a work area with enough room for all equipment, providing ample space for easy access to the simulator. A minimum 10 ft x 12 ft (3 m x 4 m) work area is recommended for learners to move and position components around the simulator.

Before placing the manikin on a surface, make sure the surface can support 100 lbs (45.4 kg).

CAUTION: Never lift the manikin by the limbs. Support the manikin's head and lift it from the torso.

Step 2: Prepare Ares for Legs

To prepare Ares for attaching the legs:

- a. Reach under Ares' buttocks and pull the torso skin away from the skin attachment pegs. There are two skin attachment tabs on each peg. Only remove the top tab from each peg and leave the lower tab in place.
- b. Fold the skin over the upper torso.
- c. Remove Ares' genitalia by lifting it straight up and pulling it outwards.

Step 3: Attach Ares' Legs

The following hardware is included:

- Two (2) knurled nuts
- Two (2) springs
- Four (4) metal washers

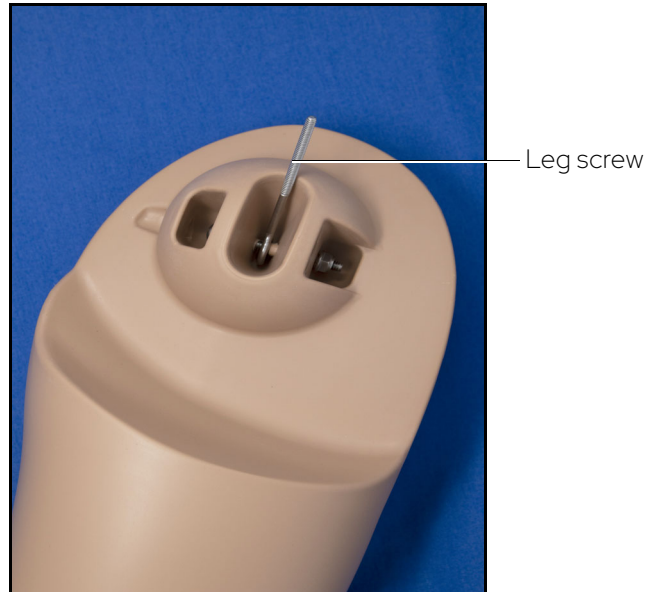


Leg Hardware

Setup

To attach the legs:

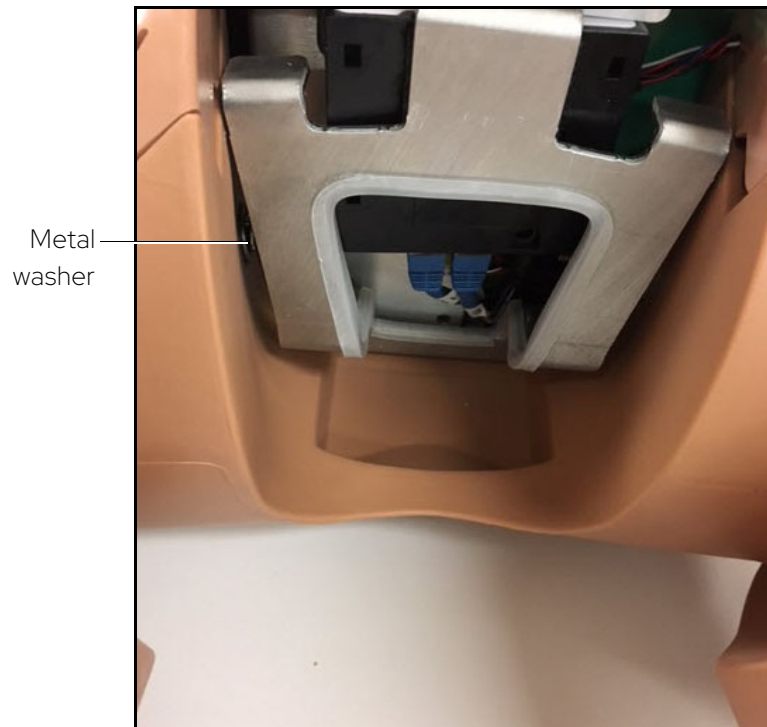
- a. Insert the leg screw attached to the top of the leg into the hip joint hole.



Ares' Leg

- b. Place the spring over the end of the knurled nut.
- c. Place a metal washer on top of the spring.
- d. Through the hole in the metal frame where the genitalia was located, fasten the assembly to the torso with the knurled nut and spring assembly. Place the spring end onto the leg screw.

- e. Ensure the metal washer is against the simulator's body. The metal washer prevents the spring from damaging the plastic.



Attaching Ares' Legs

- f. Ensure that the leg moves freely.
- g. Repeat steps a through f for the second leg.
- h. Reattach the genitalia and skin.

Step 4: Prepare Ares for Arms

The following tools and hardware are included:

- One (1) Phillips screwdriver
- Two (2) arm screws
- Two (2) joint spheres

To prepare for the arms:

- a. Remove the IM/IO pads from both arms and set them aside.

- b. Insert a screw into the flat side of a joint sphere. Repeat for the other joint sphere.



Arm Screws with Joint Spheres

- c. Insert a joint sphere and screw assembly into the mounting hole in each arm.



Attaching Ares' Arms

Step 5: Attach Ares' IV Arm

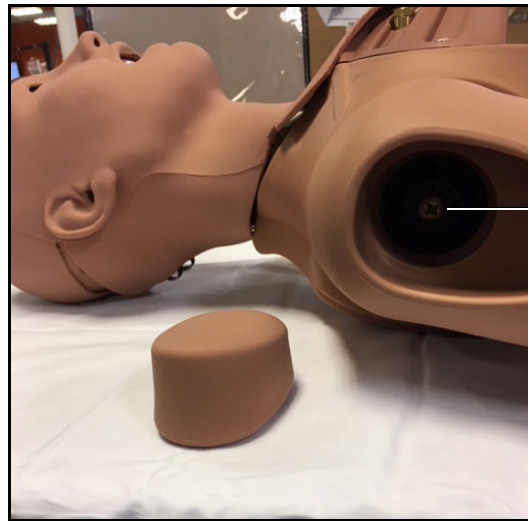
The following tools and hardware are included:

- One (1) Phillips screwdriver
- The IV arm

To attach the IV arm:

- a. Attach the mounting screw to the hole in the shoulder mount.

- b. Use the screwdriver to tighten the mounting screw until it is snug and the arm moves freely.



Mounting
screw

IM/IO Pad Removed

- c. Reinsert the IM/IO pad into the arm.



IM/IO Pad Inserted

Step 6: Attach Ares' NIBP Arm

The following tools and hardware are included:

- One (1) #2 Phillips screwdriver
- NIBP Arm

To attach the NIBP arm:

- a. Align the NIBP arm with the torso so the mounting screw is inserted into the joint sphere (shoulder mount).

- b. Use the screwdriver to tighten the mounting screw until it is snug and the arm moves freely.
- c. Reinsert the IM pad into the NIBP arm.

Step 7: Modify a Blood Pressure Cuff

Ares' blood pressure can be taken using non-invasive monitoring techniques; however, modifications to a standard blood pressure cuff are required.

The following tools and equipment are required:

- One (1) Standard Adult Blood Pressure Cuff
- Scissors
- T-shaped blood pressure adapter (included)
- Cable Ties (included)

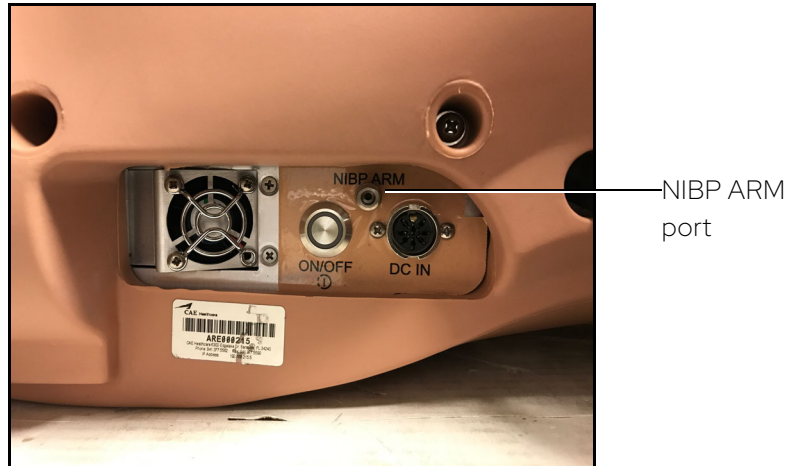


Modified Blood Pressure Cuff

To modify a standard blood pressure cuff:

- a. Cut the tubing attached to the gauge approximately 9 cm from the cuff.
- b. Locate the T-shaped blood pressure adapter.
- c. Insert the barbed connectors into the cut ends of the blood pressure cuff tubing.
- d. Secure the tubing connectors with cable ties and trim the cable ties with scissors.

- e. Connect the extension from the long end of the T-shaped blood pressure adapter to the NIBP port on Ares' right side.



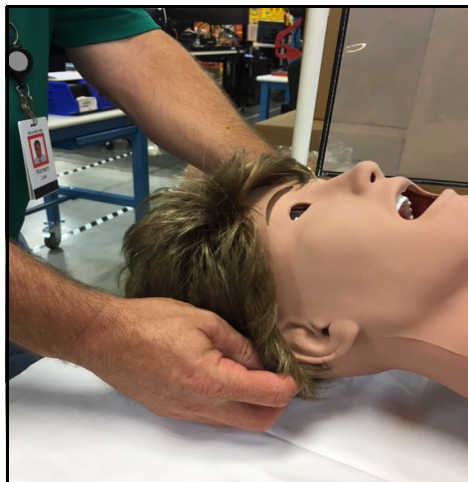
Ares Right Side Connection Ports

- f. Attach the blood pressure cuff to the manikin's arm. The blood pressure is ready to be auscultated with a stethoscope.

Step 8: Place Ares' Wig

To place the wig on Ares' head:

- a. Remove the wig from the packaging, and remove all packing materials.
- b. Place the wig on Ares' head. If the wig needs to be adjusted, see the following steps in the *Adjust the Fit of the Wig* section.



Placing the Wig

To adjust the fit of the wig:

- a. Remove the wig from Ares.
- b. Turn the wig hair side down.
- c. Locate the adjustment strip.

Setup

- d. Locate the adjustment hooks towards both ends of the adjustment strip.
- e. Use the adjustment hooks to pull the wig tighter by inserting them into loops closer to the center.
- f. Loosen the wig by moving the adjustment hooks to loops further from the center.



Tightening the Wig



Loosening the Wig

Step9: Charge the StethoSym

To charge the StethoSym, connect the power supply adapter to the USB cable and plug the micro-USB end of the cable into the stethosym module. Plug the power supply adapter into a grounded power outlet. For additional information on setting up the StethoSym, refer to *Using the StethoSym* in the *Using Ares* section of this user guide.



StethoSym Components

Refer to the table below for charging status light information.

Light Color	Power Status
Orange	Unit is charging. Orange light turns off when the unit is fully charged.
Green	Unit is on and fully charged.
Flashing Red	Battery level is low.
Blue	Unit is on and receiving signal from manikin.

Step 10: Power on Ares

To power on Ares:

- a. Connect the manikin's power supply to the DC IN connection on Ares' right side.
- b. Plug the power supply into a grounded outlet.
- c. Press the ON/OFF button on Ares' right side and hold it for three (3) seconds to initiate the boot-up process. When Ares is ready for operation, the simulator will say, "Hello" within approximately three minutes of pressing the ON/OFF button.

Step 11: Power on the Instructor Tablet

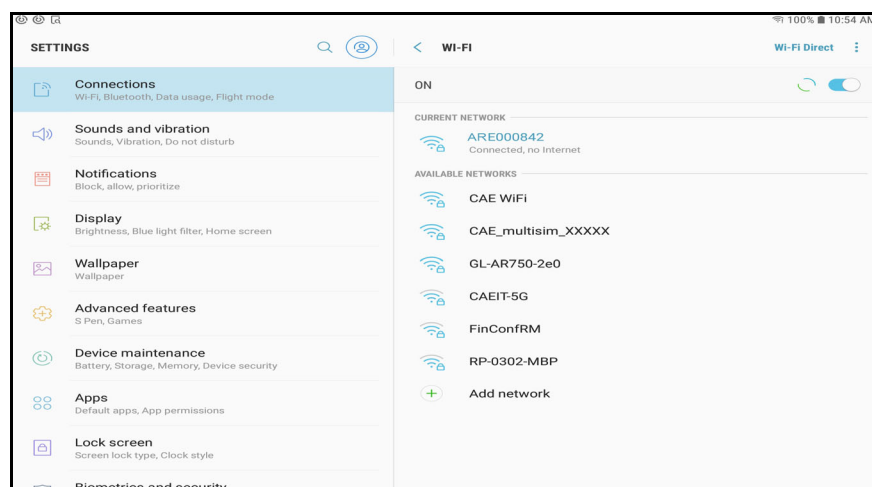
To power on the instructor tablet, press and hold the Power button located on the top of the tablet.

Step 12: Connect to Simulator's Network (Optional)

If the instructor tablet does not automatically connect to the simulator's network, use the following instructions to connect the tablet to the simulator's router.

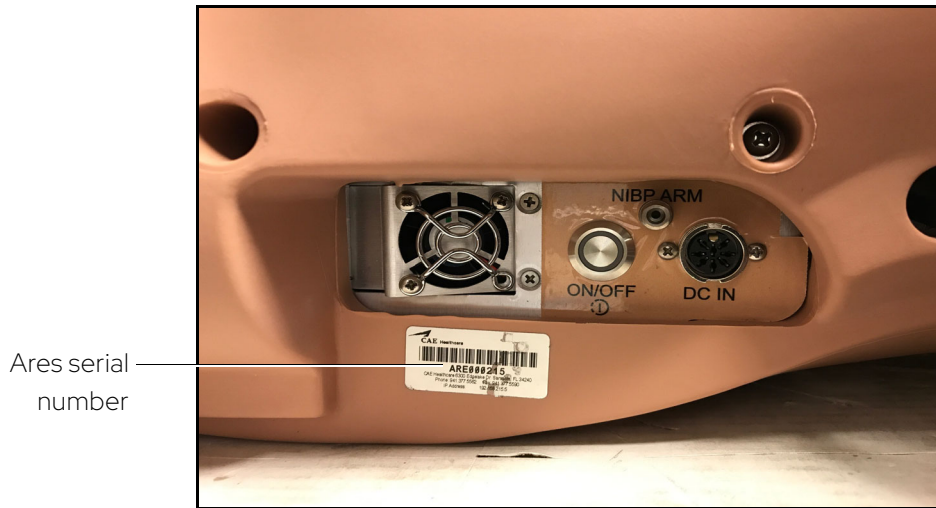
To connect to the simulator's network on the tablet:

- a. From the Home screen, swipe up to view the All Apps screen.
- b. Tap the Settings (Gear) icon.
The Connections tab will display by default.
- c. Locate the network for the simulator. For Ares, the network name is ARE00XXXX (where XXXX is the last 4 digits of Ares' serial number).



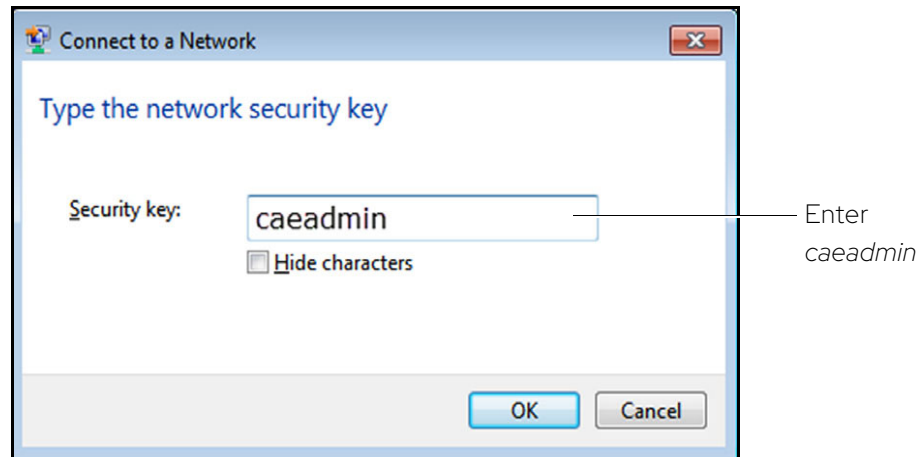
ARE00XXXX WiFi Network

Note: Ares' serial number is located on the right side of the torso by the power button.



Ares Serial Number Location

- d. Tap the Ares network.
The Connect to a Network dialog box appears.



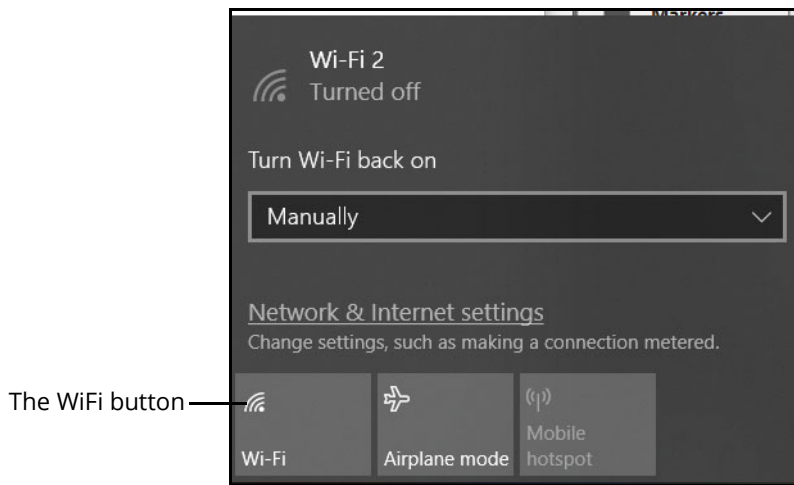
Connect to a Network Screen

- e. Enter *caeadmin* in the Security key field and click OK.
The tablet is connected to the simulator's network.

To connect to the simulator's network on the Windows Surface Go tablet:

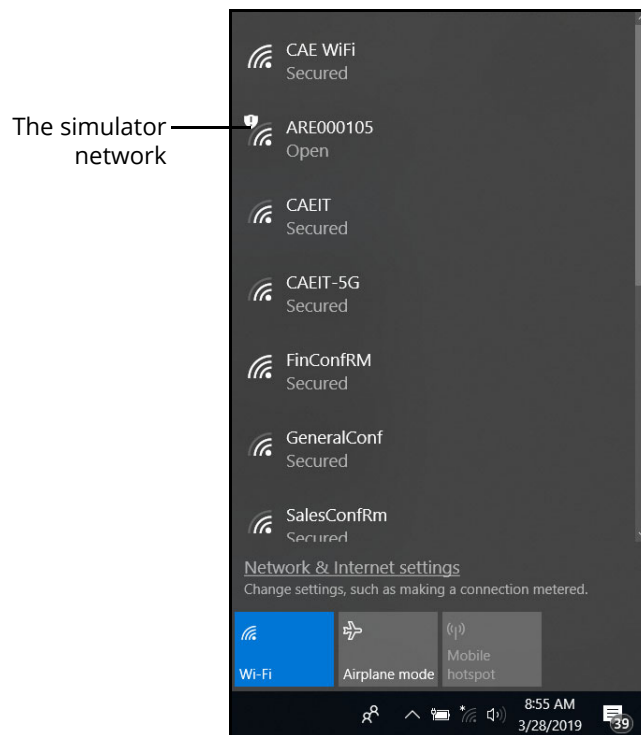
- a. From the home screen, tap the Network icon located in the lower-right corner of the screen in the taskbar.

The Network window appears.



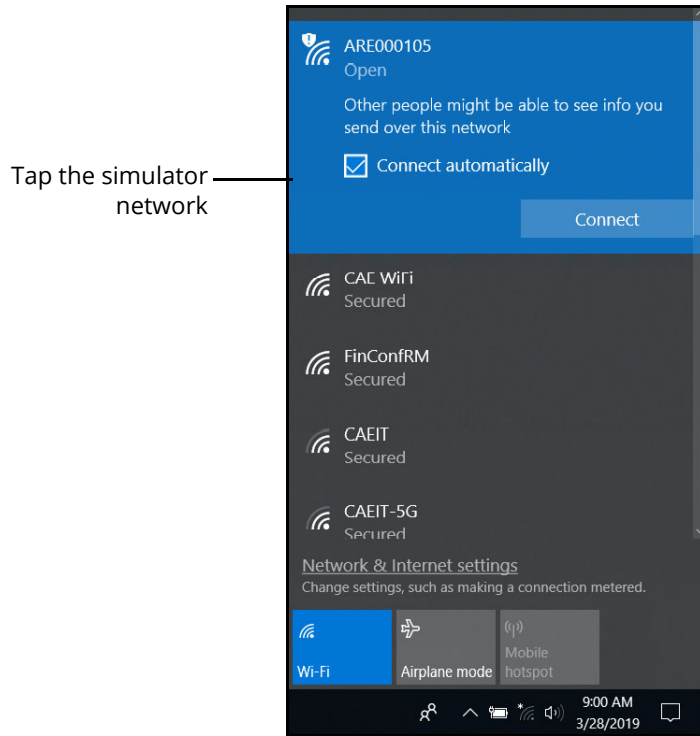
The Network Window

- b. Tap WiFi button to turn on WiFi (button turns blue).
- c. In the Network window, locate the simulator network from the list of available networks. For Ares, the network name is ARE00XXXX (where XXXX is the last 4 digits of Ares' serial number).



The Network Window

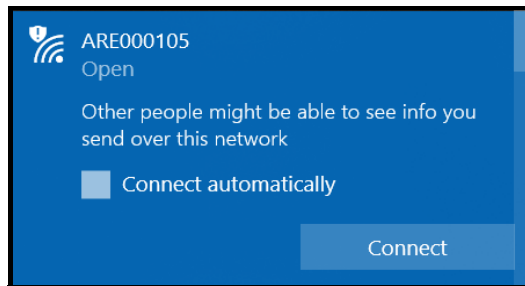
- d. Tap the simulator network.
The connection options appear.



Tap the simulator network

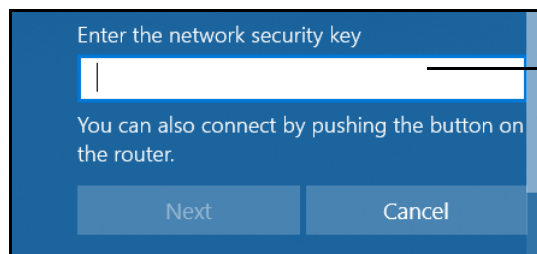
The Network Window

- e. Check the Connect automatically box.
- f. Tap Connect.



The Simulator Network

The Enter a network security key window appears.



Enter the **Security key** (password)

Entering the Security Key (Password)

- g. Tap in the Enter the network security key text field.
- h. Tap the Keyboard icon in the taskbar in the lower-right corner of the screen.
The on-screen keyboard appears.
- i. Enter *caeadmin* in the text field.
- j. Tap the X in the upper-right corner of the keyboard to exit.
- k. From the Enter a network security key window, tap Next.
The Connecting message appears, then disappears when the tablet is finished connecting to the simulator network.

Step 13: Set up Patient Monitor (Optional)

To set up the Patient Monitor, see the *Getting Started Guide* provided with the monitor.

Step 14: Launch Maestro

To launch Maestro, tap the CAE Maestro icon on the tablet desktop screen.



The Maestro App Icon

The Maestro app opens and the Maestro start screen appears.

For additional information on Using Maestro, see the *Maestro for Ares User Guide*.

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Ares Features

Ares combines the streamlined simplicity of an emergency care manikin with CAE's unrivaled modeled patient physiology, offering an entirely new training experience for prehospital and emergency care. With the right blend of clinical training features, Ares is durable and reliable through repeated lifesaving team scenarios. Ares was created to fulfill requirements for advanced life support training (ACLS) and emergency care management.

Adult Manikin

The Ares manikin displays the physical characteristics of a fully-grown adult patient. The simulator comes with interchangeable male and female genitalia. Fully operational in the supine position, the manikin can be placed on standard operating room tables, hospital beds, transport stretchers, on the ground or even in a vehicle (in the case of a simulated accident).

Physiological and Pharmacological Features

Ares presents patient reactions based on complex neurological, cardiovascular, gastrointestinal, genitourinary, respiratory, and pharmacological models. The manikin allows for the physical assessment of various clinical signs (i.e., heart, lung and breath sounds, palpable pulses, chest excursion, airway patency, etc.) that are dynamically coupled with the mathematical models of human physiology and pharmacology.

Articulation

Ares is wireless, tetherless, and offers realistic articulation for range of motion exercises in the hips, knees, ankles, neck and wrists. Ares also has cervical motion to practice patient stabilization.

In addition to the standard configuration features, optional articulated arms may be added to enhance the fidelity of the simulator.

Neurologic System

Ares is equipped with a number of features specifically targeted to support training for neurological care. The Base Ares comes with Tristate eyes which demonstrate normal or blown pupils or closed eyelids. The Advanced and Complete Ares comes with SymEyes.

For more information, see the *Using Ares* section of this user guide.

Respiratory System

The simulator represents a realistic Respiratory System to achieve an extremely accurate simulation of respiration. This system is tightly integrated with the Cardiovascular System.

Base Respiratory System Features

Upper airway sounds allow for auscultation of normal and abnormal lung sounds on the anterior torso.

Spontaneous and mechanical modes of ventilation are supported.

Base Respiratory System Features
Symmetric lung ventilation is supported in response to manual bag-valve-mask (BVM) ventilation via face mask, endotracheal tube or tracheostomy tube.
The simulated patient generates both normal and abnormal breath sounds, bilateral and unilateral, which are appropriately synchronized* with the respective phases of respiration. Breath sounds are audible over the apex of each lung with the use of standard stethoscope and StethoSym.
In the case of esophageal intubation, breath sounds, and chest excursion output are automatically absent, but the stomach distends with positive pressure ventilation attempts.
Manual bag-valve-mask (BVM) ventilation demonstrates chest rise and fall.
Allows for retrograde and fiberoptic intubation.
Allows for transtracheal jet ventilation.
Allows for right main stem intubation with detection.
Nasal packing can be performed on both nares, utilizing ribbon gauze, nasal packs or tampons.
Seesaw respiratory patterns of breathing are demonstrated on the manikin.
Direct laryngoscopy as well as oral and nasal tracheal intubation can be performed.
The airway accommodates the use of standard clinical devices such as nasopharyngeal and oropharyngeal airways, nasal cannula, nasal packing, endotracheal tube placement, and tracheostomy tube placement.

See the *Appendix A - Recommended Clinical Supplies* section of this user guide for information associated with the Respiratory System features of the simulator.

Cardiovascular System

Similar to the Respiratory System, the Cardiovascular System accurately simulates a wide variety of hemodynamic conditions and responses.

Base Cardiovascular System
The simulated patient generates heart sounds, including a range of pathological ones that are synchronized to the QRS complex of the ECG and are audible with the standard stethoscope and StethoSym assembly over the left and right upper and left lower sternal border and apex.
A four-lead ECG is emitted from the appropriate positions on the patient's chest for display on a standard monitor. The simulator generates a normal sinus ECG, as well as a broad range of abnormalities such as sinus tachycardia, bradycardia, ventricular fibrillation, and asystole.
The 12-lead dynamic ECG display is available in the Patient Monitor software app.
Defibrillation, cardioversion, and pacing using live equipment via an optional SymDefib external defib box. Using the SymDefib assembly, the delivered energy is quantified in real-time to trigger the appropriate patient response. The ECG can be monitored via the defibrillator contacts.
The simulated patient can be defibrillated or cardioverted using the simulated functions via the Maestro software. The instructor is able to adjust the levels at which the shock is delivered.

Base Cardiovascular System

Palpable bilateral carotid and femoral pulses, as well as brachial and radial pulses are provided on the right arm and are synchronous to the ECG. A pulse deficit automatically occurs if the systolic arterial blood pressure falls below the set threshold, which can be adjusted by the instructor to meet specific clinical and educational requirements.

Unilateral blood pressure measurement can be done on the simulated patient's right arm using a modified adult blood pressure cuff. Measurement can be done by both auscultation and palpation.

The manikin supports unilateral intravenous access at the antecubital fossa and dorsum of the hand sites on the left arm. Fluids and medications can be administered, and blood can be drawn via syringe or with the vacuum sealed blood collection system.

Performing CPR on the manikin provides realistic chest compression depth and resistance. Software metrics detect hand placement, rate and depth of compressions, recoil, ventilations, and ventilation:compression ratio.

Gastrointestinal System

Ares features auscultation of normal and abnormal bowel sounds using the StethoSym.

Genitourinary System

The manikin is provided with both male and female genitalia. Urinary catheterization (without fluids) may be performed on the manikin. For more information on changing the genitalia, see the *Using Ares* section of this user guide.

Reproductive System

The Ares manikin features optional accessories for practicing clinical care skills.

Reproductive System

Breast Examination

Post Mastectomy care

Medication Administration

The Ares manikin features Medication Administration capabilities for practicing emergency care skills.

Medication Administration

Unilateral IV cannulation at antecubital and dorsum of hand.

Unilateral (humeral) IO access.

Ultrasound training module insertion for venous and arterial cannulation (optional).

In addition to the IV sites in the right arm, the manikin also supports four intramuscular injection sites: bilateral vastus lateralis and bilateral deltoids.

Tibial IO access (optional)

Simulated Clinical Experiences

The Ares simulator is a manual-driven, script-controlled system designed to simulate a patient's physiological condition, clinical signs, symptoms, and responses to certain clinical interventions. Simulated Clinical Experiences, or SCEs, are process tools that enable the faculty/educator to execute a learning strategy using simulation. Each process tool provides an extensive overview and outline of the learning exercise and requires minimal additional faculty development time for use. Each SCE is comprised of a patient and the scenario.

Ares includes six preconfigured SCEs, or clinical simulations, that cover a range of events and crises

- Cardiopulmonary Arrest
- Closed Head Injury and Pneumothorax
- Heroin Overdose
- Inferior-Posterior Myocardial Infarction
- Sepsis with Hypotension
- Stroke

In addition to the SCEs that are included with the Base Ares, five CAE EMS Learning Modules are available with 10 SCEs per module. Also available is an Advanced Cardiac Life Support (ACLS) learning module with 11 SCEs based on the AHA Guidelines and a Pathogens of High Consequence learning module with 4 SCEs (COVID-19, Pandemic Flu, Ebola and SARs).

Each SCE includes the information below and can be printed from the Maestro software:

- Background information and patient history
- Synopsis
- Learning objectives
- Learning performance measures
- Equipment and supplies suggested for the simulation
- Facilitator notes
- Debriefing points
- Teaching Q&A
- References

Scenarios

Each scenario is a set of simulator commands that instruct or cause the simulator to react or respond in a specific manner. Scenarios are used to determine the initial and subsequent physiological states as well as the different conditions that arise during the simulation exercise. Each scenario also includes documentation to support its use.

By utilizing the SCE Designer feature of the Maestro software, users can copy and modify the preconfigured scenarios or create custom scenarios from scratch to meet specific educational objectives.

Instructors may also modify events within a given scenario in real-time to increase or decrease event severity and shorten or prolong the duration of an event at any time during a simulation exercise.

For instructions on modifying scenarios and creating new scenarios, refer to the *Maestro for Ares User Guide*.

System Controls

Ares is designed to allow the instructor to focus attention on learner actions and reactions by providing a flexible set of tools that adjust to the instructor's needs.

Application Software

CAE Maestro software is the application that provides the instructor a means to control all features of the simulator. Instructors can select SCEs as well as control the flow of the scenarios via the user interface. Various medication, cardiovascular, respiratory, fluid, and other parameters can be individually applied "on the fly" to enhance the course of a simulation exercise. A Patient Status Display and set of simulation log entries provide a real-time display of vital signs, blood gases, medications administered, and other events. This data can be exported into permanent storage or printed for future reference.

System Tools

An instructor workstation enables the instructor to control all aspects of the simulator. Instructors can select an SCE and control the flow of a simulation exercise while monitoring patient parameters, medications administered, and other interventions. Additionally, all patient parameters can be adjusted "on the fly" to enhance the teaching points of the simulation in progress. The software provides an intuitive, easy-to-learn, and easy-to-use operator/instructor interface.

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Using Ares

Once the simulator is assembled, the Ares manikin is ready for learners to practice and master new competencies, interventions, and skills during clinical scenarios.

To create a fully immersive simulation experience with advanced intervention capabilities and realtime data feedback, all configurations of the Ares simulator utilize instructor-led software with scenario programming capabilities.

Note: CAE recommends keeping the simulator plugged into a power source while it is in use to extend the longevity of the battery life. To optimize battery life, only remove the power plug during simulations where the patient will be moved or transferred as part of the scenario. For further information, refer to the *Storage* section of this user guide.

Neurologic System

The clinical features that can be controlled from the Neurologic view are:

- Blood temperature
- Body temperature
- Loss of consciousness

Users can also control the eyes and speech from the instructor-led software.

For more information, see the *Maestro for Ares User Guide*.

Neurologic System Controls

The clinical features for the Neurologic system are controlled manually, with the software, or both.

Neurologic System Controls			
Anatomy, Physiology and Clinical Signs	Clinical Interventions, Patient Monitoring and Scenarios.	Software Control	Manual Control
Intracranial Pressure	The intracranial pressure of a patient can be an indicator of the patient's condition.	Tap Neuro and tap ICP to adjust.	None.
Eyes	Eyes can be used as an indicator of a patient's condition and/or consciousness during an assessment.	Tap Eyes on Run screen and tap desired status.	Rotate tristate eyes (Base).
Temperature: Body	Myocardial oxygen supply and demand automatically influence the cardiac rhythm, yielding response to hypoxemia (Modeled only).	Tap Neuro and tap Temperature: Body to adjust.	None required.

Neurologic System Controls			
Anatomy, Physiology and Clinical Signs	Clinical Interventions, Patient Monitoring and Scenarios.	Software Control	Manual Control
Temperature: Blood	Changes in arterial temperature may alter the position of the standard oxyhemoglobin dissociation curve (shift). As temperature increases or pH decreases, more oxygen is released from hemoglobin and thus the patient's saturation decreases (Modeled only).	Tap Neuro and tap Temperature: Blood to adjust.	None required.

Eyes

The Ares Base configuration manikin (no longer available after February 2024) has manually-adjustable Tri-State Eyes. Each pupil can be set to a fixed diameter of 3.5 or 8 mm (normal or blown) or closed eyes by carefully rotating the eye from left to right or right to left until the proper size appears.

Matching Pupils

When physically moving the eyes, ensure that both eyes are rotated in the same direction, so the left and right pupils appear to have the same focal point.

SymEyes

The Advanced and Complete configurations are equipped with CAE SymEyes™ whose blink mode, light reactivity, pupil diameter, and blink speed can be controlled from the software.

From the Run Screen, tap on the eyes or Eyes button to open the Eyes state screen.

Eye states can be adjusted from the Eyes state menu by tapping the drop-boxes for the following eye states:

- Blink Speed: Normal, Slow, Fast, Rapid
- Blink Mode: Closed, Blinking
- Light Reactivity: Brisk, Sluggish, None
- Pupil Diameter: 2 - 6 mm

Note: Both eyes can be controlled together by tapping on the Control Eyes Together box.

The following eye states can also be turned on or off (Default: Off):

- Normal
- Jaundice
- Bloodshot
- Hemorrhage
- Keyhole Pupil
- Droopy Eyelids
- Cataracts

Panning and Consensual Pupil Response can be toggled on or off (Default: On).

For more information on how to control the SymEyes, see the *Maestro for AresUser Guide*.

Performing an Eye Exam

To examine Ares' eyes when the eyes are closed, press on the brow above the eye to mimic the act of raising the eyelid.



SymEyes

Respiratory System

The Ares manikin includes respiratory features that allow learners to practice basic assessment and life support skill sets. With the manikin, learners can:

- Manage difficult airways
- Perform cricothyrotomy
- Maintain tracheostomy site

Respiratory System Controls

Ares uses both physical and mathematical models to achieve an extremely accurate simulation of respiration. Ares' chest rises and falls, mimicking inspiration and expiration. Ares' lungs also react realistically to intubation as well as to pathophysiologic states.

Respiratory System Controls			
Feature	Clinical Interventions, Patient Monitoring and Scenarios	Software Control	Manual Control
Pneumothorax or Hemothorax	Increase in intrapleural volume, leading to asymmetrical breathing.	None required, but adjustable. VIEW: Respiratory CONTROL: Intrapleural Volume (Left/Right)	None required.
Chest Excursion	Synchronized with manual ventilation. Excursion depth proportional to tidal volume.	None.	Apply ventilation via bag valve mask.
Lung Sounds	Normal and abnormal lung sounds are independently synchronized with ventilation of the right and left lungs. Lung sounds can be auscultated over anterior anatomic locations.	None required, but adjustable. VIEW: Sounds	Utilize stethoscope with the StethoSym assembly.

Respiratory System Controls			
Feature	Clinical Interventions, Patient Monitoring and Scenarios	Software Control	Manual Control
Needle Decompression	Decompression of a pneumothorax can be performed bilaterally by inserting a needle at the midclavicular line of the second intercostal space.	<p>The instructor must adjust the amount of physiologic intrapleural air present.</p> <p>From the Run Screen, tap Respiratory and adjust Intrapleural Vol: Right and/or Intrapleural Vol: Left toggle.</p> <p>VIEW: Respiratory</p> <p>CONTROL: Needle Decompression, Intrapleural Vol: Left, Intrapleural Vol: Right</p>	Perform Needle Decompression at designated sites.
Bronchial Occlusion	Completely obstructs the right or left bronchi, simulating a lower airway obstruction (e.g., mucus plug).	<p>From the Run Screen, tap Respiratory and adjust Bronchial Occlusion toggle.</p> <p>VIEW: Respiratory</p> <p>CONTROL: Left/Right ON/OFF</p>	None required.

Nasal Packing

Ares supports nasal packing. Nasal packing can be performed on both nares, utilizing ribbon, gauze, nasal packs, or tampons.

To apply nasal packing:

1. Cut a length of ribbon gauze or use commercially available nasal pack or nasal tampon.
2. Insert the nasal packing into the nasal cavity using forceps.
3. When the simulation session is complete, remove the nasal packing material.

Airway Management

The manikin's anatomically realistic upper airway allows intubation, while various clinical signs (e.g., lung sounds, chest excursion, airway patency) can be simulated using software commands. Other airway features include a hard and soft palate, as well as oro-, naso-, and laryngopharynges.

Intubation

The upper airway of the manikin is designed to allow for intubation and laryngoscopy. Direct laryngoscopy as well as oral and nasal tracheal intubation can be performed using devices such as endotracheal tubes, nasopharyngeal airways, and oropharyngeal airways.

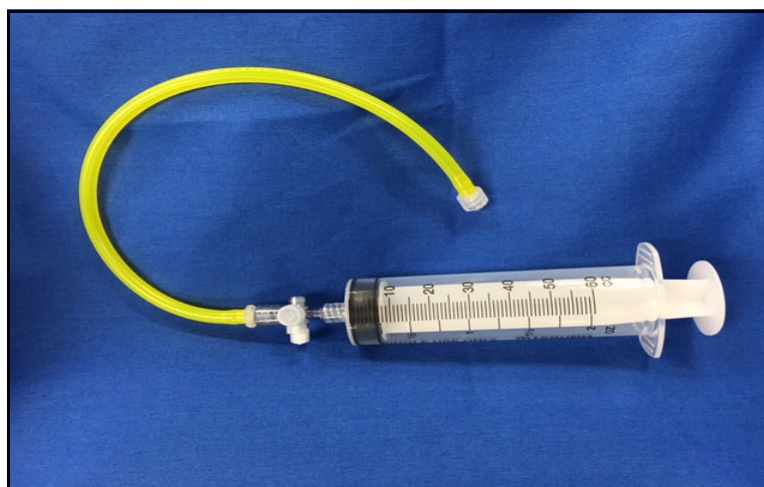
CAUTION: Airways can be damaged by improper insertion of an airway adjunct (such as an endotracheal tube). To protect the airway, lubricate the adjunct prior to insertion using the silicone oil spray provided. Use **ONLY** the provided SILICONE OIL to lubricate the adjunct. **NEVER** use a water-based lubricant which can damage the airway.

Right Mainstem Intubation

If a learner performs an intubation improperly that results in a right mainstem intubation, the left side of the chest will not rise when ventilated and sounds in the left lung will be absent upon auscultation. Additionally, an indicator appears on the Airway avatar in the Maestro software and an event for right mainstem intubation will be captured in the SCE Event log.

Laryngospasm

The Ares simulator comes with a manual laryngospasm feature to increase the difficulty of intubation and to indicate the need for a cricothyrotomy. The feature is activated by manually injecting air using the yellow tubing, stopcock, and syringe assembly.



Laryngospasm Assembly

To replicate laryngospasm:

- Attach the yellow tubing to the port on Ares' left side labeled LARYNGO.
- Pull back syringe plunger and fill syringe with 50 ml of air.
- Attach syringe to stopcock and inject air into manikin.
- Turn stopcock off to manikin and remove syringe from stopcock.
- To release laryngospasms, open stopcock to air.

Gastric Distention

During esophageal intubation or overly aggressive bag-valve-mask ventilation, gastric distention occurs. Gastric distention is relieved by putting pressure on the abdomen.

Tracheostomy Tube Placement

The following instructions provide steps for adequate tracheostomy tube placement.

Learners can:

- Clean the tracheostomy site.
- Replace the tube.

Note: The tracheostomy site is closed with a plug.

To place a tracheostomy tube:

1. Remove the neck skin band by detaching the velcro strips. Set it aside.
2. Remove the tracheal plug.
3. Prime the airway reservoir using silicone oil spray.
4. Place the tracheostomy tube into the tracheostomy site and secure it in place.
5. After the simulation, remove the tracheostomy tube and replace the plug.

Chest Excursion

The Live and Advanced configurations include spontaneous chest excursion that simulates a patient breathing without the required external ventilation. The following chest excursion parameters can be modified in Maestro:

- **Respiratory Rate:** Defines the number of excursions (chest rise) in one minute.
- **Apnea:** Disable the spontaneous chest excursion but still allows for excursion during external ventilation.
- **Tidal Volume:** Changes the height of chest excursions.
- **Intrapleural Volume:** Disables chest excursion on the affected side but still allows for excursion on the unaffected side.

Ventilation

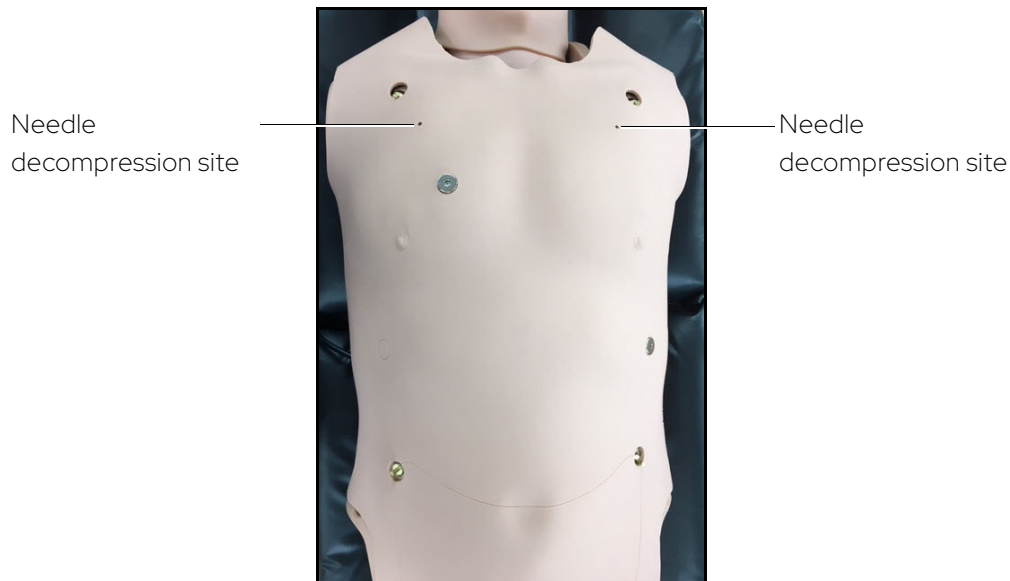
Ares supports manual bag-valve-mask (BVM) ventilation via face mask, airway adjuncts, endotracheal tube, and tracheostomy tube. Proper ventilation will demonstrate chest rise and fall.



Manual Bag-Valve-Mask (BVM) Ventilation

Pneumothorax (Needle Decompression)

By inserting a needle into the second intercostal space, mid-clavicular line, the sound of air being released can be heard and the intrapleural volume is reduced. Chest excursion and breath sounds automatically resume on the affected side.



Ares' Torso

Cardiovascular System

The Ares manikin includes cardiovascular features that allow learners to practice basic assessment and advanced life support skill sets. With the Ares manikin, learners can:

- Palpate pulses
- Place IV lines and catheters
- Administer IM and SQ injections
- Perform IO procedures
- Auscultate realistic heart sounds using a StethoSym assembly (simulated stethoscope)
- Perform chest compressions
- Perform simulated defibrillation, cardioversion, and pacing or real defibrillation with a commercial defibrillator
- Perform ECG monitoring

Cardiovascular System Controls

With Ares' Cardiovascular system, users can replicate the clinical signs associated with cardiac activity, including palpable pulses, heart sounds, and electrical activity.

Cardiovascular System Controls			
Anatomy, Physiology and Clinical Signs	Clinical Interventions, Patient Monitoring and Scenarios.	Software Control	Manual Control
Heart Sounds	Normal and abnormal heart sounds are synchronized to the cardiac cycle and audible with a standard stethoscope and a StethoSym assembly. Heart sounds can be auscultated over the left and right upper sternal border, lower sternal border and apex.	None required; specific sounds can be selected. From the Run screen, tap Sounds and select Heart tab.	Utilize stethoscope with the StethoSym assembly.
4-Lead ECG	ECG waveforms can be viewed on a standard monitor and/or on the Patient Monitor. Normal and abnormal cardiac rhythms are linked to patient physiology (e.g. blood pressure, cardiac output).	None required; specific rhythms can be selected.	ECG monitor may be utilized.
Myocardial Ischemia	Myocardial oxygen supply and demand automatically influence the cardiac rhythm, yielding response to hypoxemia.	None required, but adjustable.	None required.
Palpable Pulses	Pulses can be palpated bilaterally and are synchronous with the cardiac cycle. A pulse deficit automatically occurs if the systolic arterial blood pressure falls below specified thresholds.	None required, but adjustable. VIEW: From the Run screen, tap Pulse and tap on the pulse location desired to change intensity and/or pulse deficit.	None required.
Non-Invasive Blood Pressure Measurement	Systemic blood pressure can be measured using the return-to-flow technique. Korotkoff sounds can also be auscultated.	Volume of Korotkoff sounds can be adjusted by tapping Sounds on the Run screen and then the Korotkoff tab.	Use of modified blood pressure cuff with T-adapter. Connect T-adapter to NIBP connection and stethoscope with StethoSym assembly.

Pulses

Ares comes with:

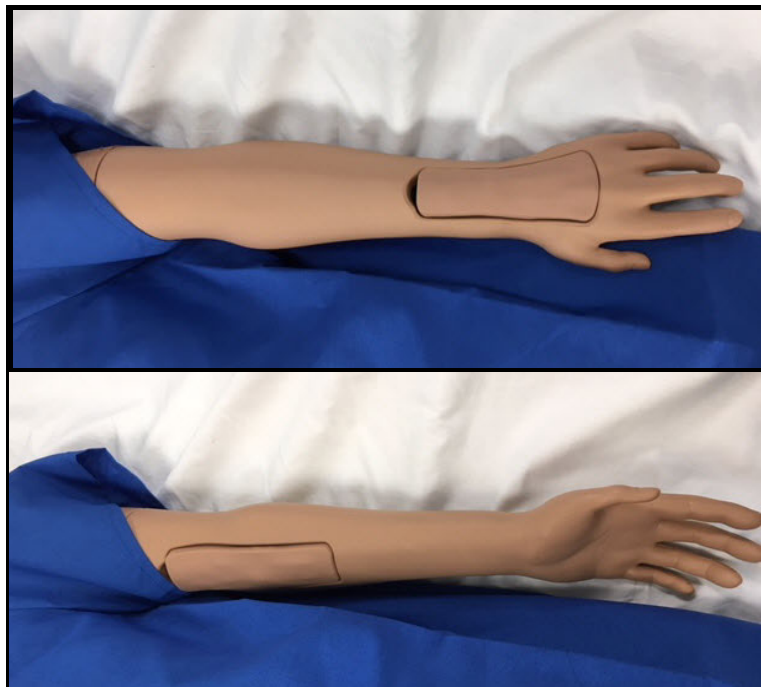
- Bilateral carotid and femoral pulses
- A right NIBP and pulse arm which has radial and brachial pulse locations

The pulses are activated when pressure is applied to the correct location. The pulse deficits can be changed using the Maestro software.

Pulses are visible and controlled from any physiological view. All pulses, unless altered by an SCE, are enabled by default.

IV Cannulation

Veins for the IV Cannulation feature are located in the dorsum of the hands, and antecubital fossa region of the arm.



IV Arm

To simulate realistic flashback, the system must be primed prior to use. Ensure all fluids have been removed from previous uses before each new use to prevent overfilling.

IV Administration

There are two IV sites on Ares' left arm, located on the dorsum of the hand and the antecubital fossa. Each IV site has an insert with a loop of tubing. The sites are filled and drained through tubing running from the IV site up to the left shoulder.



The Dorsum of the Hand IV Site



The Antecubital IV Site

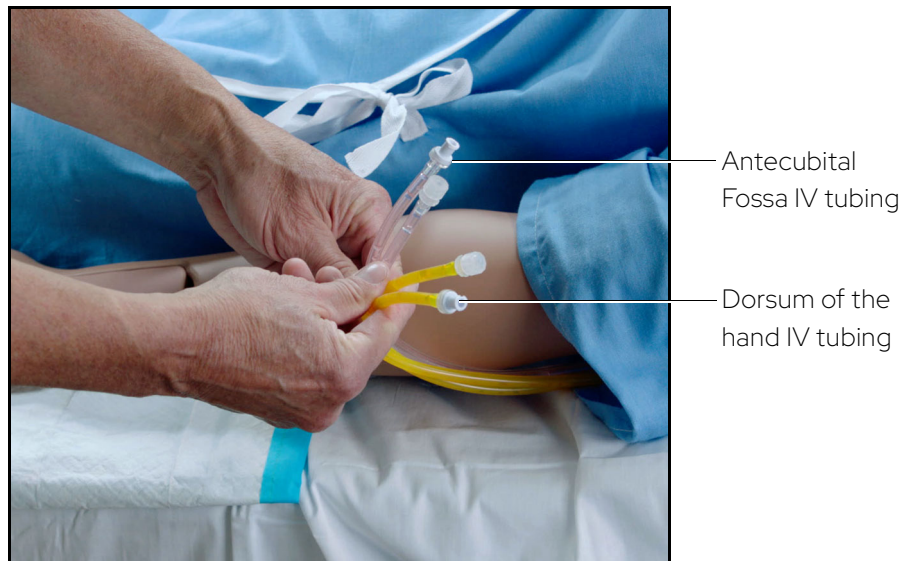
To perform IV administration, learners will need:

- Empty IV bag with IV tubing connected
- Red food coloring (if you want to make simulated blood)
- 20 gauge IV catheter
- Alcohol swab
- IV Dressing
- Extension tubing
- Full IV bag with distilled water (or red colored distilled water) with IV tubing connected
- IV pole

Practicing IV Administration Techniques

To prepare the IV site for flashback and aspiration, identify the ports that prime and drain the IV site on the left side of the manikin. One tube will be for priming, the other for drainage.

The yellow tubing is for the Dorsum IV site, and the clear tubing is for the Antecubital IV site.

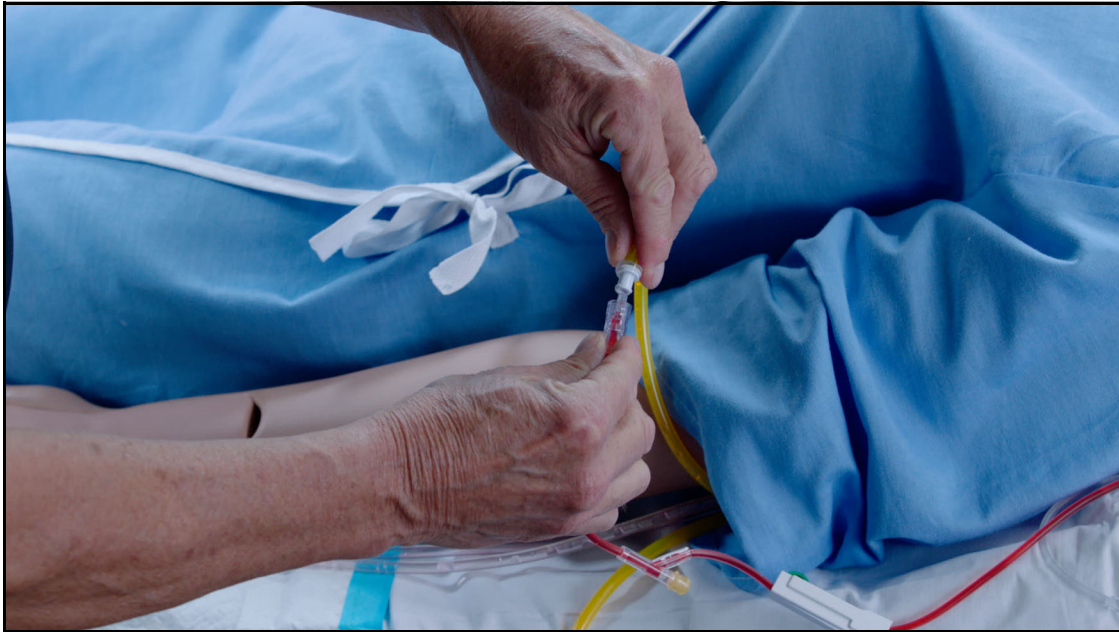


IV Tubing

To begin an IV drip:

1. Connect the end of the drain port tubing to the IV tubing and an empty IV bag.
2. Open the clamp on the IV tubing.
3. Fill an IV bag with water, or with water mixed with food coloring to simulate blood. Close the clamp on the IV tubing.

4. Hang the filled IV bag from an IV pole near the manikin's shoulder.
5. Connect the IV tubing from the filled IV bag to the appropriate prime port.



Connecting to Dorsum of the Hand IV Site

6. Infuse fluid until the fluid comes out of the drain tubing. This will prime that IV site for flashback and venipuncture.
7. Close the clamp on the drain tubing.
8. Perform venipuncture and confirm flashback. Additional red color fluid can be aspirated back from the IV site if desired.
9. Close the clamp on the IV tubing of the prime fluids.
10. Connect IV fluids/medications to the IV site to be infused.
11. Open the clamp on the IV fluids to be infused.
12. Open the IV drain tubing clamp.

Intramuscular (IM) Subcutaneous (SQ) Injection

Ares supports IM/SQ injection at four sites:

- Bilateral deltoid
- Bilateral vastus lateralis

To perform an IM/SQ injection, learners will need:

- IM/SQ injection pad
- Standard IM/SQ injection device (see *Recommended Clinical Supplies*)
- Alcohol pads
- Sharps container
- Receptacle

To administer an IM/SQ injection:

1. Insert an IM/SQ injection pad.
2. Deliver the IM/SQ injection per protocol.



The IM/SQ Injection Site

Intraosseous (IO) Cannulation and Infusion

Ares also allows for humeral intraosseous (IO) cannulation and tibial IO access and infusion. The designated IO sites are located on either deltoid side and upper tibia when using the IO leg on either the right or left side.

Note: Replace either of the IM pads with an IO access puck prior to performing IO cannulation.

Using Ares

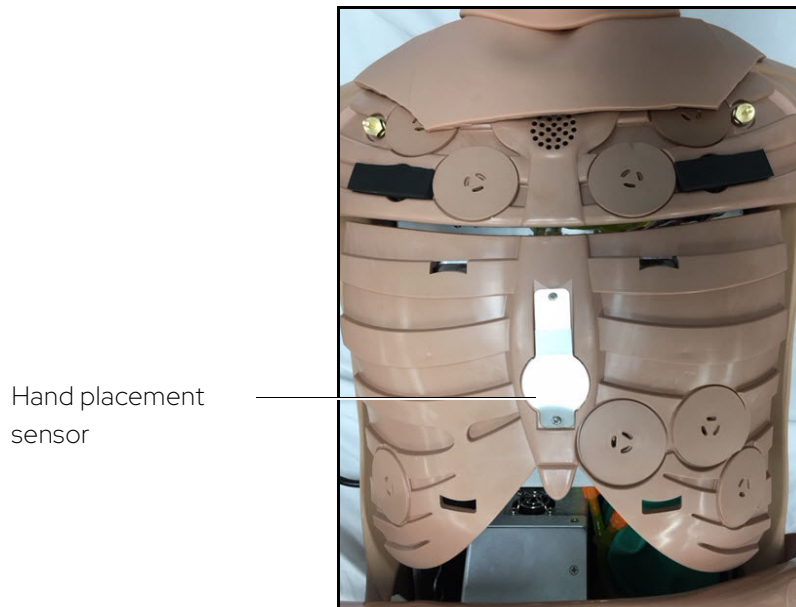
To perform the intraosseous access and infusion on the lower leg:

1. Ensure the IO leg is installed.
2. Access the IO tibia bone with the IO needle/drill.
3. Once access has been achieved, up to 100 mL of fluid can be instilled.

Note: The IO leg does not currently support aspiration of fluids after IO device placement.

Chest Compressions

Note: The following diagram of the internal chest provides information relative to hand placement when performing chest compressions. This view of the chest is only visible when the skin is removed. However, it is not advised to remove the manikin's skin. Please call CAE Customer Service if there are issues that require this level of maintenance.



Internal Chest Features

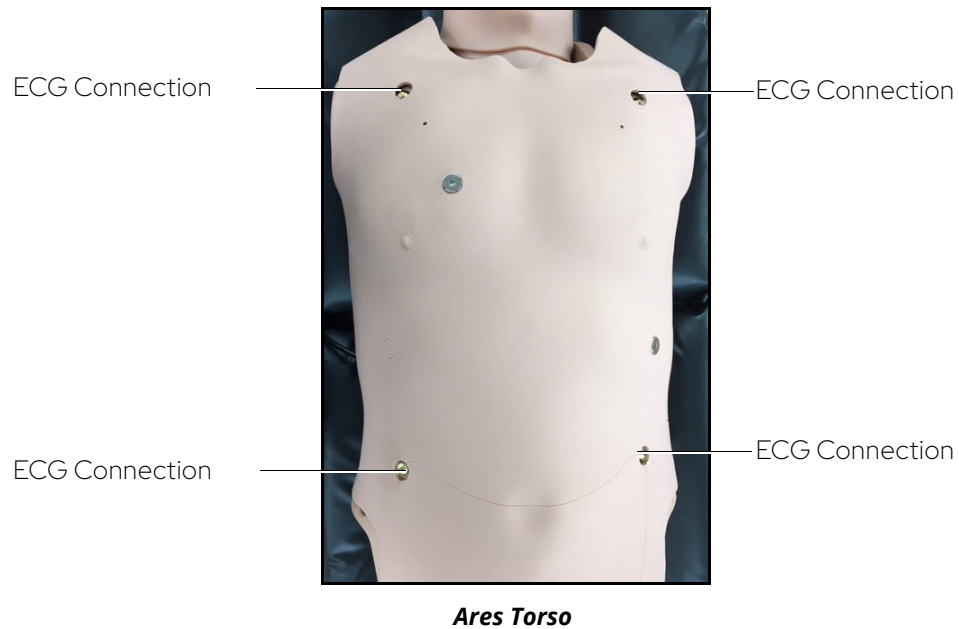
The manikin supports normal hand placement and standard compression techniques so that chest compressions can be performed.

ECG

On Ares, a 4-lead ECG signal is emitted from the appropriate positions for display on a standard monitor.

To produce ECG signals on a standard patient monitor, connect the ECG leads to the posts.

Note: The ECG posts are supplied with the accessories kit and need to be installed at the locations indicated.



The simulator generates a normal sinus ECG, as well as a broad range of abnormalities such as:

- Myocardial ischemia
- Sinus tachycardia and bradycardia
- Ventricular fibrillation and asystole

The hemodynamic response to the arrhythmias is physiologically correct. Myocardial oxygen balance and cardiac ischemia automatically influence the cardiac rhythm resulting in a realistic and automatic response of the rhythm to hypoxemia. The degree of influence can be controlled or completely overridden by the instructor.

Defibrillation, Cardioversion, and Pacing

Ares supports cardioversion, defibrillation, and pacing.

The manikin can receive simulated electrical therapy in two ways: by administering defibrillation through the software or by using the SymDefib device with a live defibrillator.

Simulated Defibrillation

For instructions on administering defibrillation through the software, refer to the *Maestro for Ares User Guide*.

Commercial Defibrillation

The manikin can safely absorb the energy from commercial defibrillators only with SymDefib. See *Appendix B - SymDefib* for information and instructions.

Cardioversion

The cardioversion procedure will vary depending upon the brand of defibrillator that is being used. However, the setup steps for the defibrillator will be the same as that described in *Appendix B*. Refer to defibrillator manufacturer's user guide for proper use.

Pacing

Pacing can be achieved by selecting the appropriate intervention in the Patient Status Panel on the right side of the Run screen. Connect the ECG leads to the posts on the manikin. This provides ECG signals for leads I – III. The learner may choose to shock either synchronously or asynchronously to the ECG rhythm. The Pacing Capture Threshold can be modified in the Maestro software. **The default threshold is set at 50 mA.**

When the current exceeds the Pacing Capture Threshold set in Maestro, the learner begins to see the effect of pacing on the ECG and Maestro logs the current being provided.

A standard transthoracic cardiac pacemaker can be connected to the simulator using the anterior contacts. The simulator automatically detects and responds to pacing signals (from 20 mA to 200 mA, in increments of 10).

For more information, see the *Maestro for Ares User Guide*.

Blood Pressure

Ares supports non-invasive blood pressure measurements, and systolic and diastolic readings can be obtained and manipulated through the software.

Systolic and Diastolic Blood Pressure

To manually adjust the systolic and/or diastolic blood pressure:

1. From the Cardiovascular panel, select the parameter of desired blood pressure.
2. Set the pressure by moving the blue slider left or right, or by typing in a value.
3. Select Accept to exit and save the changes. The switch is now orange, indicating a change has been made.
4. If using CAE Physiology (optional), return to the programmed physiologic model by selecting the switch and turning the Override switch to Modeled.

Non-Invasive Blood Pressure Measurement

Blood pressure can be taken manually on the right arm. Non-invasive blood pressure (NIBP) monitoring techniques can be used by attaching a standard cuff modified with a T-fitting and adapters and using a stethoscope modified with the StethoSym assembly.

For information on attaching the NIBP arm and modifying the blood pressure cuff, see the *Setup* section in this user guide.

To get a blood pressure reading:

1. Connect the extension from the T-fitting on the blood pressure cuff adapter to either of the NIBP port on Ares' right side.
2. Ensure the electronics tether from the NIBP arm is connected to the arm connector on Ares' right side.



Ares' Right Side

3. Connect the T-fitting extension to the hose.
4. Take the non-invasive blood pressure reading using the return-to-flow technique or by monitoring Korotkoff sounds.



Attached Blood Pressure Cuff

At appropriate cuff pressures, the radial pulse disappears and Korotkoff sounds are produced.

Gastrointestinal System

Ares produces realistic bowel sounds. Auscultation of normal and abnormal bowel sounds can be performed with the StethoSym utilizing the RFID tags. For further information, see *Using the StethoSym* in this user guide.

Genitourinary System

Ares may be configured with either male or female genitalia, either of which allows for the insertion of a urinary catheter.

Urinary Catheterization

To perform catheterization exercises, use the following items:

- 16-French urinary catheter with or without bag
- Syringe to inflate catheter balloon
- Silicone spray (included in Ares' inventory kit)

Catheterize Ares using a 16-French urinary catheter lubricated with silicone spray. Both female and male genitalia can be catheterized.

Note: Ares does not have a urinary fluid reservoir, so there will not be any fluid output.

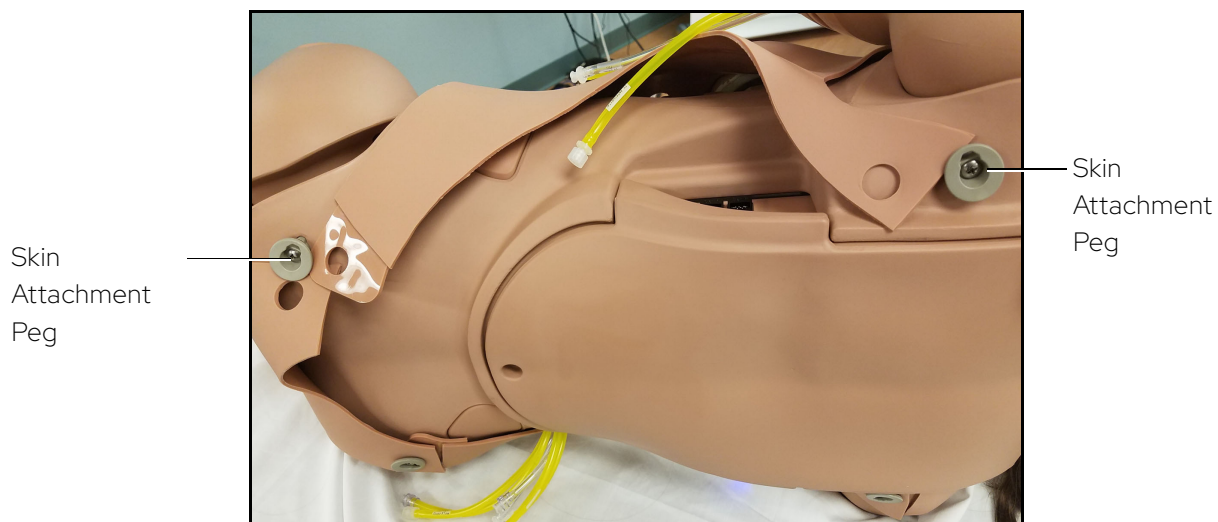
Changing the Simulator's Genitalia

Ares comes with male and female genitalia. Ares is shipped with both sets of genitalia, both chest skins and 2 wigs to accommodate these conversions.

Ares is shipped with the male chest skin in place and no genitalia.

To change the genitalia:

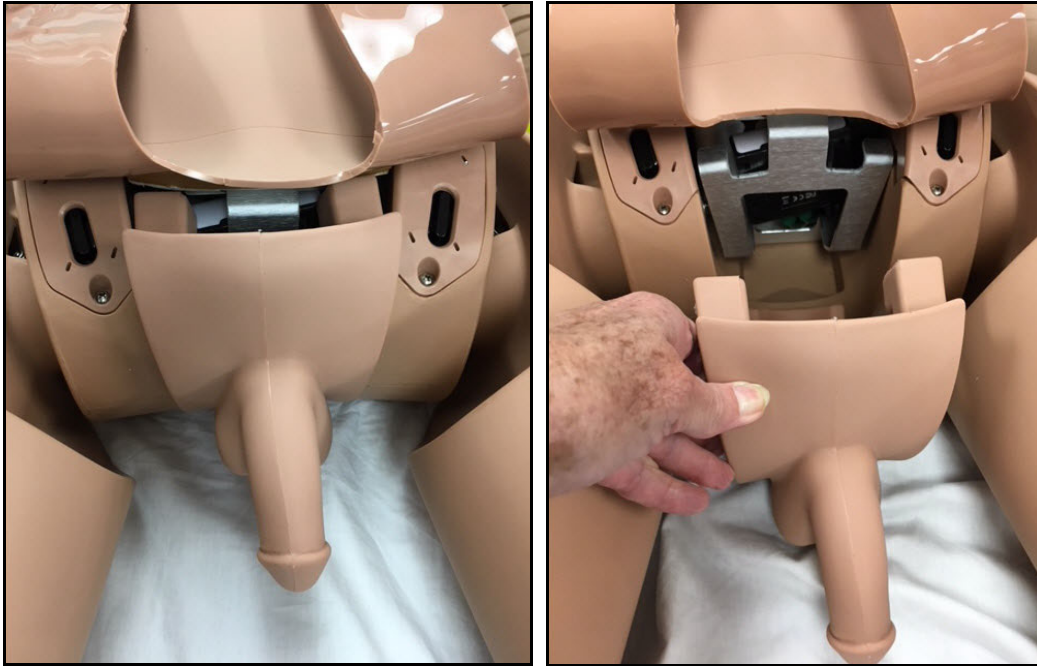
1. Roll the manikin onto its side.
2. Detach the skin from the lower torso skin attachment pegs by gently pulling the skin tabs up and over the attachment pegs.



Left Skin Detached From Attachment Pegs

3. Repeat the procedure for both upper skin attachment pegs.
4. Roll the manikin onto its back.
5. Gently lift the chest skin off the manikin.
6. Remove the abdominal plate and set it aside.

7. Gently pull the current genital insert upward to remove it.



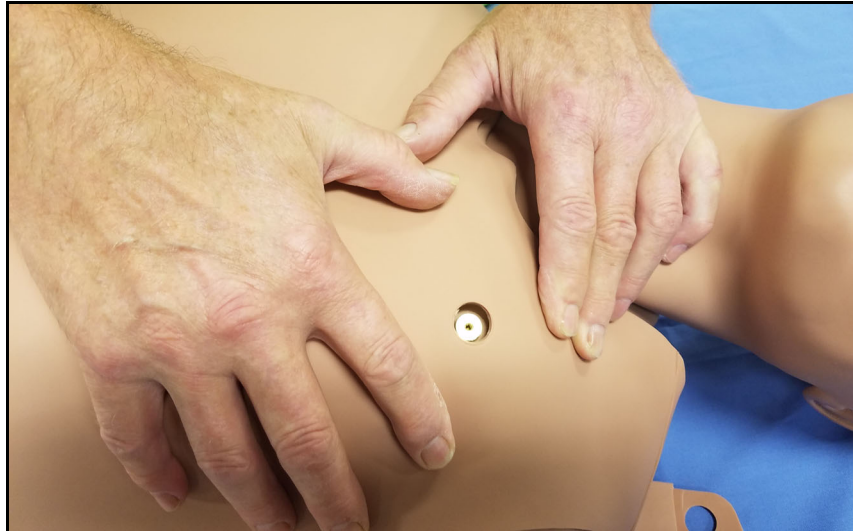
Removing the Genitalia

8. Place the new genital insert into position by flexing the bottom of the genitalia and directing it under the metal frame into the cut out area.
9. Position the upper hooks on the genitalia over the metal tabs.

Note: The genitalia hooks are not designed to sit in the middle channel.

To attach the alternate chest skin:

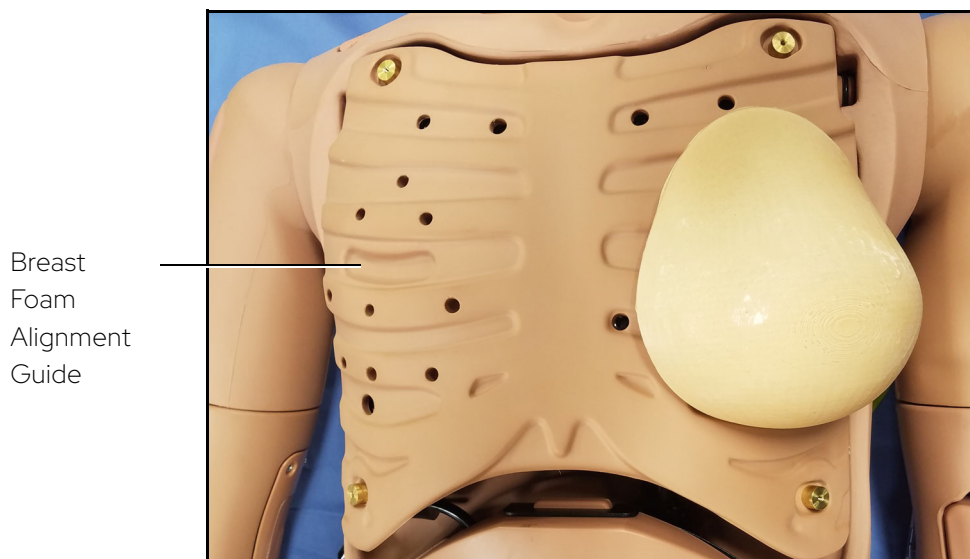
1. Position the new chest skin on the manikin and align the ECG holes.



Aligning the ECG Holes

2. Attach the upper skin tabs to the upper skin anchors.

Note: If converting from male to female, place and align the breast foam inserts on the female's chest prior to placing the chest skin. Use the breast foam alignment guides on the manikin to assist with proper placement.



Breast Foam Alignment Guide

3. Attach the lower skin tabs to the lower skin anchors.
4. Replace the wig (optional).

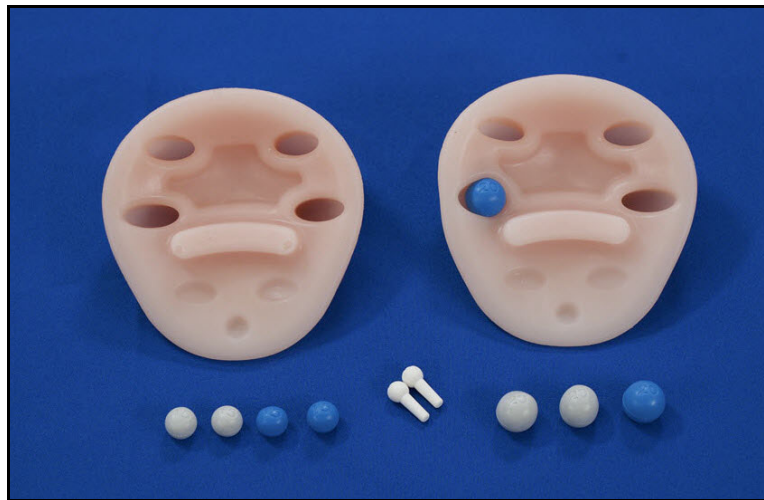
Reproductive System

The Ares manikin allows for the learner to practice:

- Breast examinations (using the optional Breast Exam Module)

Breast Examination

The Breast Exam optional module facilitates training in the recognition of breast disorders. These disorders are “movable” with the nodules placed within the openings on the inside of the breasts.



Breast Exam Module

To use the breast exam module:

1. Remove the female skin and breasts.
2. Place the nodules in the holes on the underside of the new breasts (movable). When placing the nodules, make sure to take the following size and hardness characteristics into account:
 - Medium 15 mm soft is difficult to feel when placed inside any of the breast holes.
 - Medium hard can be felt throughout.
 - Large 20 mm soft is difficult to feel if placed in the bottom row of holes inside the breast.
3. Place the breast on the chest plate and cover with the skin.

Wound Care

Learners are able to administer wound care to moulaged features on the manikin during clinical scenarios.

Wound kits are also available for purchase with the manikin for learners to practice basic and advanced wound care with enhanced realism during simulations. See the *Optional Equipment* section of this guide for more information.

Medication Administration

The administration of medication using various routes of administration can be simulated through the software, or by the physical administration of simulated medication.

Administration via Software

Certain medication administration can be simulated using the instructor software. For more information on administering medication in the software only, see the *Maestro for Ares User Guide*.

Intravenous, Intramuscular/Subcutaneous, and Intraosseous Medication

Learners can administer medications via IM/SQ injection, IV cannulation or intraosseous injection. For more information on these medication administration techniques, see the *Cardiovascular* section of this user guide.

Sounds

A variety of simulated sounds are available to enhance realism. Sounds are controlled through the instructor software.

Auscultated Sounds

To auscultate sounds on the Ares manikin, be sure to locate a stethoscope and set up the StethoSym prior to beginning a simulation.

Note: A patient must be running in the software for any sounds to be available. By default, Normal sounds are selected.

To change the sounds from normal, tap any one of the sounds on the Type drop-down menu.

To adjust the volume, tap and drag the Volume slider.

Sounds in specific/individual or all regions can be turned off using the ON/OFF toggle.

For more information on using these parameters, see the *Maestro for Ares User Guide*.

Heart, Lung, and Korotkoff Sounds

Heart sounds are synchronized with the cardiac cycle and lung sounds are independently synchronized with ventilation of the left and right lungs. Sounds can be adjusted by tapping the Sounds button on the Run screen in Maestro. When the Sounds panel appears, select one of the tabs: Heart, Lungs, or Bowel, or Korotkoff. Adjust all areas or isolate by changing the sound type per region, if applicable. Select the sounds from the Type drop-down menu. See the *Maestro for Ares User Guide* for complete details.

StethoSym

To set up StethoSym:

1. Connect the StethoSym's speaker module to the diaphragm of the stethoscope with the two elastic bands.



StethoSym Speaker Module Connected to Diaphragm

2. Pull back the lever on the StethoSym module to open the clamp and attach it to the tubing of the stethoscope.



StethoSym Clipped to Tubing

Charging the StethoSym

To charge the StethoSym, use the included power supply and micro-USB cable. Refer to the table below for status light information.

Light Color	Power Status
Orange	Unit is plugged into a power source and battery is charging. Orange light turns off when the unit is fully charged.
Green	Unit is on and fully charged.
Flashing Red	Battery level is low and needs to be charged.
Blue	Unit is on and receiving signal from manikin.

Operating the StethoSym

To connect StethoSym to the manikin:

1. Press the power button on the side of the StethoSym module.

The unit powers on and the indicator light should be Green until it synchronizes with the manikin and then turns Blue. The indicator light flashes Red if the battery is low.

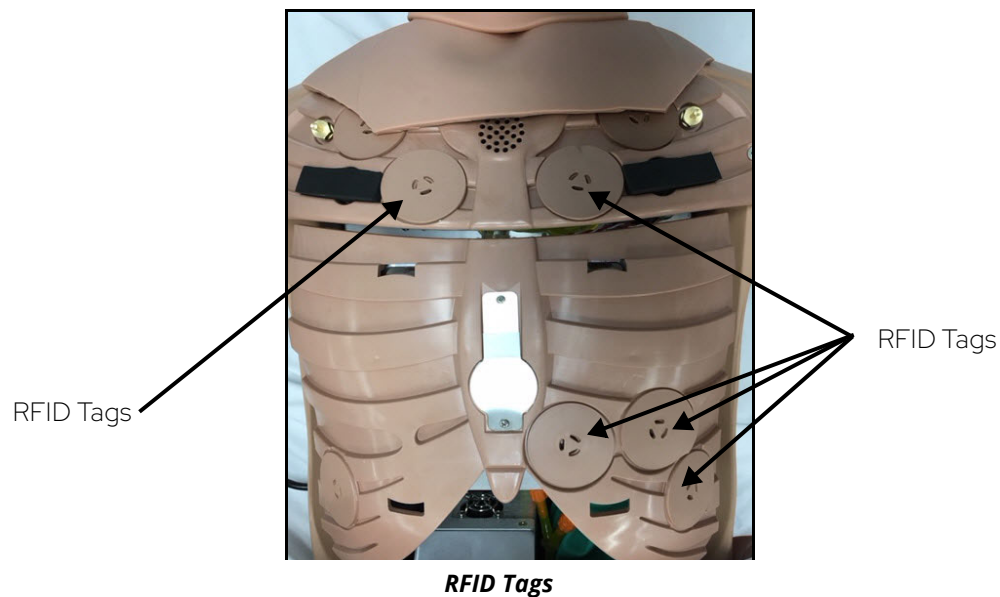
2. Place the StethoSym speaker module over a sound tag on the manikin for approximately 10 seconds. This ensures that StethoSym connects to the proper manikin. StethoSym displays a solid blue light when it is connected to the manikin.

With a patient running in Maestro, listen to any available physiologic sounds by placing StethoSym on the correct location. To control the volume and specific sound played at a sound location, use the Sounds controls on Maestro.

3. To turn StethoSym off, press the power button.

Up to five (5) StethoSyms may be used with a single simulator and with different manikins. To pair a StethoSym with a new manikin, place a powered StethoSym speaker module over a sound location on the new simulator. Once placed, the StethoSym connects automatically to the new simulator.

The following shows the RFID tag locations under the skin. Do not remove the manikin's skin. Contact CAE Customer Support if assistance is needed.



Speech

A variety of programmable vocal sounds are available. To select a sound from the Vocal Sounds Speech drop-down menu, tap the Speech button on the Run screen. Select one of the sounds from the drop-down menu. Sounds are emitted immediately and play continuously when selected from the drop-down menu. To stop playing a selected vocal sound, select None from the list.

Note: There may be a delay of up to 5 seconds for the sound clip to complete after selecting None.

The Speech Sounds buttons contain predefined phrases presented in a female or male voice depending on the gender associated with the scenario. A patient must be running for the Speech Sounds to work properly.

Microphones

In addition to the pre-programmed speech, any response can be transmitted through the speakers using the VoIP headset.

To connect the microphone headset with 3.5 mm cable, plug the cable into the headphone port on the tablet.

For more information on adjusting the VoIP "Intercom" settings in the software, see the *Using the Intercom* section in the *Maestro for Ares User Guide*.

Care and Maintenance

Maintaining the simulator requires careful treatment of electronic and mechanical components. After use, make sure all components are properly handled and correctly removed or placed into storage.

Note: Many hardware components of the simulator and the Instructor Workstation are not user-serviceable. The SymDefib unit is also not user-serviceable and must be returned to CAE Healthcare if repair is needed. Contact CAE Healthcare Customer Support for any questions and concerns regarding hardware maintenance.

CAUTION

Do not attempt to open or repair any simulator components without authorization from CAE Customer Support. Doing so may void the warranty.

General Simulator Care

- Avoid the use of writing instruments and sharp objects near the patient simulator to prevent tears or unattractive markings in or on the skin.
- A mild detergent and warm water will remove most marks and stains. Gently rub the soiled area with a soft cloth. DO NOT use ABRASIVE soaps or pads.
- Lubricate airway adjuncts, urinary catheters, nasogastric tubes, and enema tubes with silicone spray prior to insertion. DO NOT use water-based lubricant.
- Prior to using moulage of any kind, and to make cleansing the simulator's skin easier, lightly apply petroleum jelly to the simulator's skin, followed by a light amount of talcum powder (unscented baby powder).
- If the IV sites have been used, remove the fluid as described in the breakdown procedure. Failure to drain and clean the systems may cause problems with the system.
- If the IM injection site(s) have been used, remove the fluid from the sponge inside the injection site pad as described in the breakdown procedure.
- If the IO leg has been used during simulation, remove the fluid from the reservoir pouch as described in the breakdown procedure.

Breakdown

To keep the simulator in good condition, proper breakdown, cleaning and storage are essential.

The breakdown steps are detailed below:

Break down the Ares Simulator	
1	Clean the Manikin
2	Drain and Flush the IV
3	Maintain IM Injection Sites

4	Power Off the Instructor Tablet
5	Power Off the Manikin

Step 1: Clean the Manikin

To clean the simulator, use a soft cloth and warm water with a mild detergent to wipe off any moulage materials on the manikin's skin. Gently rub the soiled area with a soft cloth to remove most marks and stains. DO NOT use solvents or abrasive pads.

Inspect the manikin for damage or puncture marks. If damage exists, contact CAE Healthcare Customer Service immediately for a repair. Prompt repair prevents expansion of the damaged area.

Step 2: Drain and Flush the IV

If the simulation included use of optional IV administration equipment, perform the following procedure to remove fluids prior to storing the manikin:

1. Drain the remaining fluid from the IV tubes in the left arm.
2. If simulated blood was used, flushing the tubes with clear distilled water is recommended.
3. Fill a syringe with clear distilled water.
4. Attach the syringe to the appropriate IV prime port.
5. Infuse until clear fluid flows from the IV drain tubing.



Flushing the IV Fill/Drain Tubing

6. Disconnect the syringe and fill the syringe with air.
7. Flush the IV prime port with air until air flows from the IV drain tubing.
8. Disconnect syringe from IV prime port.
9. Disconnect the IV tubing and bag from the IV drain port.
10. Empty the IV bag.
11. Reconnect the IV tubing and empty IV bag to the drain port.

Step 3: Maintaining IM Injection Sites

If the simulation included use of IM injection equipment, perform the following steps prior to storing the manikin:

1. Remove the pad from the injection site.
2. Remove the sponge from inside the pad.



Remove the Sponge from the IM Pad

3. Squeeze all the fluid from the sponge and let air dry.



Squeezing Fluids from the Sponge

4. When dry, replace sponge back inside pad.
5. Replace the pad into the injection site.

Step 4: Power off the Instructor Tablet

To power off the Windows Surface Go instructor tablet:

- a. Tap the white back arrow at the top left of the Maestro run screen to exit the current simulation session.
- b. Tap Stop.
- c. Tap the X in the upper-right corner of the screen to exit Maestro.
The tablet desktop screen appears.
- d. Tap the Start menu icon in the lower-left corner.



Start Menu

- e. From the menu, tap the Power button.
A menu appears.
- f. From the menu, tap Shut down.

To power off the Samsung Galaxy S3 instructor tablet:

- a. Tap the white back arrow at the top left of the Maestro run screen to exit the current simulation session.
- b. Tap Stop.
- c. Tap the red X in the upper-right corner of the screen to exit Maestro.
The tablet desktop screen appears.
- d. Press and hold the power button on the side of the tablet until the Power options menu appears.
- e. Tap Power Off.
The confirmation message appears.
- f. Tap OK.

Step 5: Power Off the Manikin

To power off the manikin:

- a. Press the button located on right side of the simulator and hold it for three seconds. The LED light will start flashing Green. When it stops flashing green, the manikin is powered down. The LED light will flash Blue once every 30 seconds, indicating the system is in low power mode.
- b. Disconnect Ares' power supply to the DC IN connection on Ares' right side.
- c. Unplug the power supply from the outlet.

Storage

IMPORTANT: Do not attempt to open or repair any simulator components. Doing so may void the warranty. If damage exists, contact CAE Customer Service immediately for a repair. Prompt repair prevents expansion of the damaged area.

Prior to storing the product:

- Make certain all fluids have been flushed and drained from the manikin.
- Charge the manikin batteries.

Store all equipment and the manikin:

- Indoors
- In a dry location
- Protected from dust
- Away from direct sunlight
- Within the temperature ranges listed in the *Specifications* section of this user guide

Refer to the following short-term and long-term storage instructions for additional details.

Short-Term Storage

Follow these guidelines for short-term storage (less than two months):

- Charge the computer and manikin to 100% to increase shelf life.
- Store the manikin on a work table and cover with a sheet.
- Store the manikin and battery in a cool location to extend the life and capacity of the battery.

Long-Term Storage

Follow these guidelines for long-term storage (more than two months):

Always charge the battery before storage. Storing the battery discharged for months will likely destroy the battery. Since the simulator consumes a small amount of power even when turned off, it is best to charge the battery to 100% before storing the simulator for a month or two. Longer than that, it would be wise to disconnect the battery. Follow the *Battery Safety Information* detailed in this User Guide. Using a screwdriver, disconnect the batteries from the manikin to avoid overly drained batteries.

Store the manikin in the container the simulator arrived in and refer to the *Unpack and Repack Manual* (this document also was included when the simulator was shipped). Do not stand the container on its side with the manikin stored inside for long periods of time. The shipping container is approximately 2 feet (61cm) by 6 feet (183 cm).

Note: Prior to using the manikin again, ensure it reaches room temperature.

Appendix A - Recommended Clinical Supplies

These supplies are not provided with the simulator and need to be acquired by the facilitator for use when performing competencies during clinical scenarios. The sizes listed below are recommendations only.

Clinical Supplies	Size
Urinary Catheter	16 Fr
Nasogastric Tube Insertion	14 Fr
ETT	7 mm
Oropharyngeal Airway	100 mm
Nasal-Pharyngeal Airway	28 Fr
Tracheostomy Tube	6 mm
IV Cannula	20 g
LMA	#4, #5
King LTS-DLT-D	#4
Combitube	41 Fr
i-gel Supraglottic Airway	#4
Needle Decompression	14 g 6 cm
Face Mask	Adult, Medium

Other Supplies	
Manual Bag Valve Mask (BVM)	Lighted Stylets
Double Lumen Endobronchial Tube	Extension tubing
Empty IV bag	Alcohol swabs
Talcum Powder	Distilled water
Petroleum Jelly	Red food coloring
Mild Dish Soap	

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Appendix B – SymDefib

SymDefib uses live electricity. Review all warnings and instructions before using SymDefib.

IMPORTANT! This equipment is not suitable for use in locations where children are likely to be present.

Cautions and Warnings

SymDefib is used in conjunction with real biphasic defibrillators that transmit live electrical current at the same energy levels used with real patients. Observe the following precautions >

IMPORTANT! All safety precautions for the use of defibrillators MUST be followed exactly as if the simulator were a real patient. Consult the defibrillator’s user manual for model-specific information.

- Defibrillate with the SymDefib defibrillation pads only. If defibrillation is attempted with ECG electrodes, high voltage may be discharged from the remaining ECG connectors during the shock. This can cause personal injury and damage ECG circuitry.
- Do not connect defibrillator pads to ECG nodes on the chest. Defibrillating via an ECG node can damage the ECG circuitry. Connect pads only to the defibrillation nodes.
- Do not do more than three (3) defibrillator discharges (maximum 200 joules with a biphasic defibrillator) in a sequence, and do not exceed an average of two (2) defibrillator discharges per minute during the training session. Too many discharges may cause overheating.
- Avoid a large number of consecutive discharges. For example, 20 or 25 discharges without any recovery interval may damage the system.
- Keep electrically conductive surfaces or objects away from the simulator during defibrillation.
- Keep the simulator’s chest dry. Special attention should be taken when using the urinary system or the chest tube feature with fluids.
- Do not apply conductive gel or use real conductive defibrillation pads intended for patient use. This could damage the chest skin electrodes.
- Do not use cables or connectors with visible damage.
- Do not touch the manikin or the SymDefib unit when applying electrical therapy. SymDefib uses live electricity and misuse can cause personal harm or injury. Use the same precautions when using SymDefib in simulation as in real defibrillation. The person operating the equipment must:
 - a. review the scene for safety,
 - b. make sure all people have stepped away and are not touching the simulator,
 - c. loudly announce “CLEAR” so all are aware of the imminent use of electricity.

Observe the symbols on the warning notice label on the product:



Equipment Overview

The SymDefib equipment package includes the SymDefib unit, a power supply, connector cable, SymDefib adult pads, and various connectors.

When a shock is delivered, the live electrical current is absorbed by the SymDefib unit and does not travel to the SymDefib pads or simulator. Make sure to review the *Cautions and Warnings* section above before proceeding with setup and operation of SymDefib.



SymDefib Pads

Note: Similar to real defibrillation pads, the SymDefib pads show proper pad placement on the pads.

Using SymDefib

When using a commercial defibrillator in simulation, connect only the SymDefib magnetic defibrillator pads. (As noted in the *Cautions and Warnings* section, do not use real defibrillation pads with the simulator.) The electrocardiograph (ECG) will appear on the monitor, and shockable rhythms such as coarse ventricular fibrillation and high-rate ventricular tachycardia are automatically recognized.

With each defibrillation, Maestro automatically records the energy discharged and the time. The simulated patient response to defibrillation is determined either automatically by the scenario script or manually by instructor intervention. Thus, cardioversion is not determined by the physiological models.

Charging SymDefib

To reduce the number of cords and cables in the simulation area, the SymDefib has an internal battery to power the device during a training session. Charge the battery with the included power supply prior to use.

Note: The SymDefib power switch must be on to charge the battery.



Charging the SymDefib

If preferred, or for longer training sessions, SymDefib can also be used with the power supply connected.

Setting Up SymDefib

Follow the steps below to prepare the Symdefib for electrical therapy:

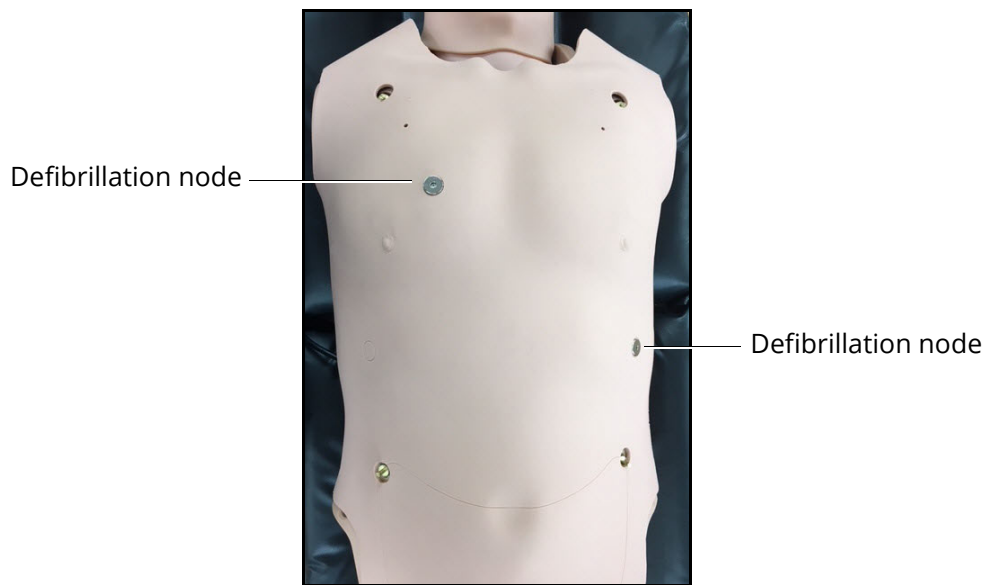
1. Connect the SymDefib to the commercial defibrillator using the cable provided.
2. If not using the internal battery, plug the power supply into the SymDefib unit (optional).
3. Connect the SymDefib defibrillator pads cable to the front of the SymDefib unit.
4. Be sure the manikin is on, then power on the SymDefib. The status light on the unit blinks green when it is ready for use.

Note: The SymDefib was paired to the simulator in the factory and should automatically connect wirelessly. It will connect only to the simulator specified on the serial number label.

Operating SymDefib

With the SymDefib on and ready, attach the Symdefib defibrillator pads to the defibrillation nodes on the manikin. The pads and nodes will connect magnetically.

SymDefib pads must be placed only on the defibrillation nodes, as shown in the following image:



SymDefib Pad Nodes

When the SymDefib pads are connected, the monitor begins to display the ECG and the SymDefib status light turns solid green.

Operate the commercial defibrillator in the same way as in a real environment: use the automated external defibrillation (AED) function to automatically defibrillate, or train using advanced skills to set joules and deliver shocks manually. Refer to the user guide for the defibrillator for operating instructions.

Note: The minimum electrical charge recognized by the circuitry within the simulator is 20 joules.

When a shock is delivered, the live electrical current is absorbed by the SymDefib unit and does not travel to the SymDefib pads or simulator. Always review the *Cautions and Warnings* section above before operating SymDefib.



Healthcare

For more information about CAE products, contact your regional sales manager or the CAE distributor in your country, or visit caehealthcare.com.

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