

Avstick

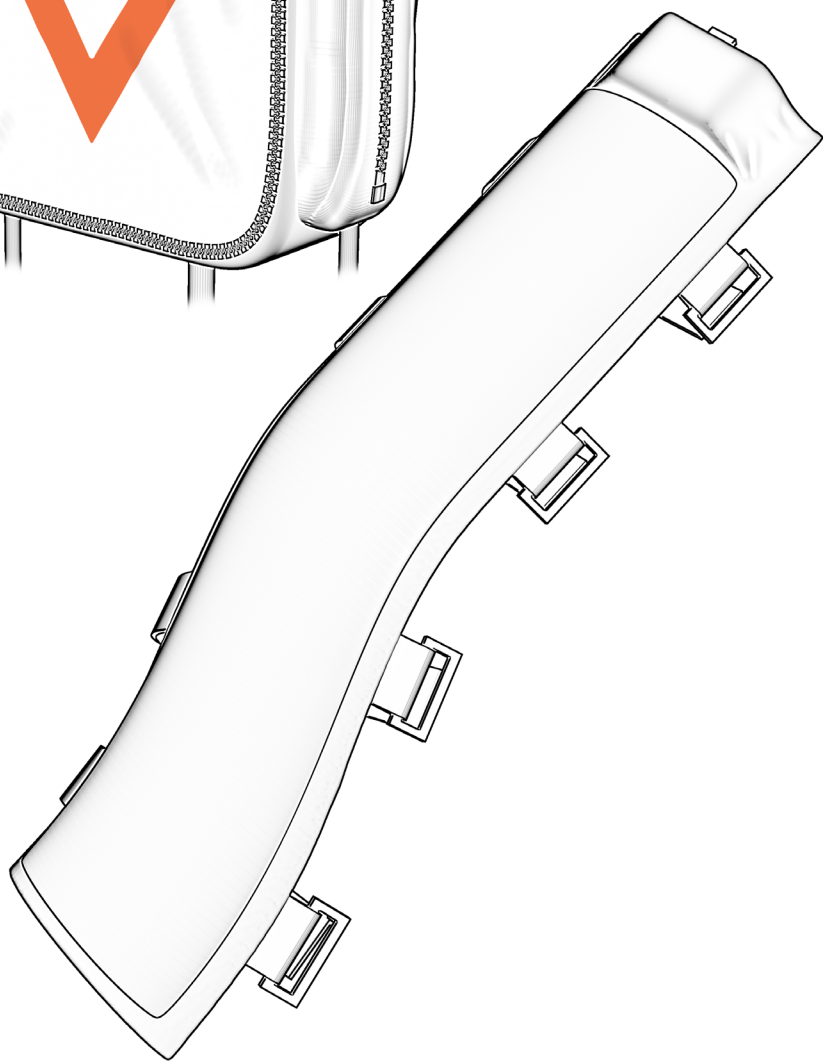
Wearable IV Simulator

USER MANUAL



Customer Assistance
302-562-2110

Technical Support
302-562-2040





BLOOD FLOW

Once the device is turned on, blood will flow through the veins. This allows for blood collection or IV fluid insertion.

SIMULATED BLOOD

The blood used in the Avstick is developed in house and has anti-microbial properties so if it is left in your device for a night (or a semester), it will not grow mold!

SENSORY FEEDBACK

Simulated participants are cued through a light vibration on their arm when the needle punctures the Smart Skin layer of the device. Learners receive real time feedback about their care through the simulated participant reactions.

REPLACEABLE TUBING

The tubing used in the Avstick is easily replaceable and can be acquired from:

Large: <https://www.mcmaster.com/5234k971>

Small: <https://www.mcmaster.com/5234k241>

WHAT'S INCLUDED

- ✓ Avstick: wearable technology for use with standardized patients.
 - Wearable arm
 - 1 “control bag” equipped with simulated blood bag, pump to pump blood through veins, electronics
- ✓ 2 half-filled 500mL bag of simulated blood
- ✓ Battery charger
- ✓ Vein replacing kit with 5 replacement latex veins (3 large, 2 small)

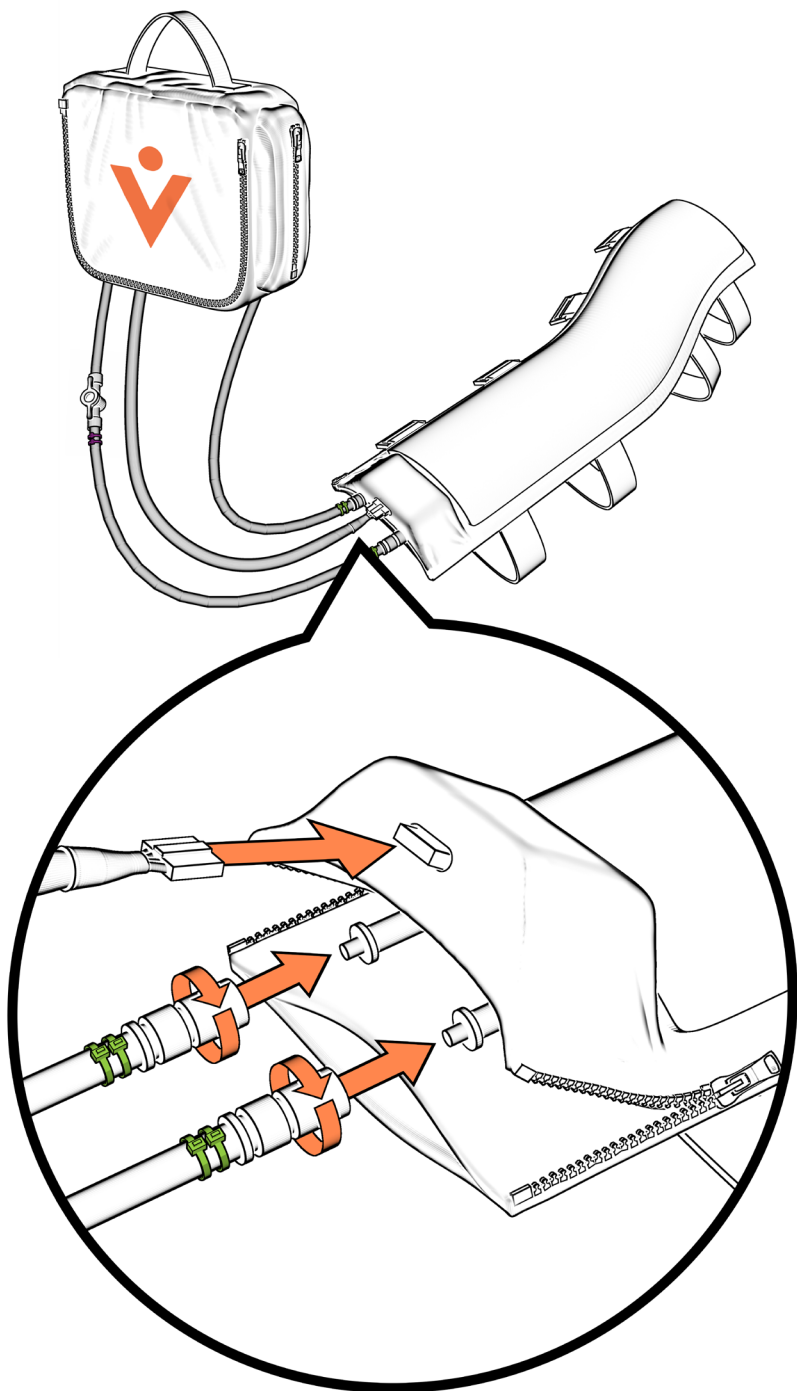
GETTING STARTED

Watch the instructional video on the customer portal and USB.

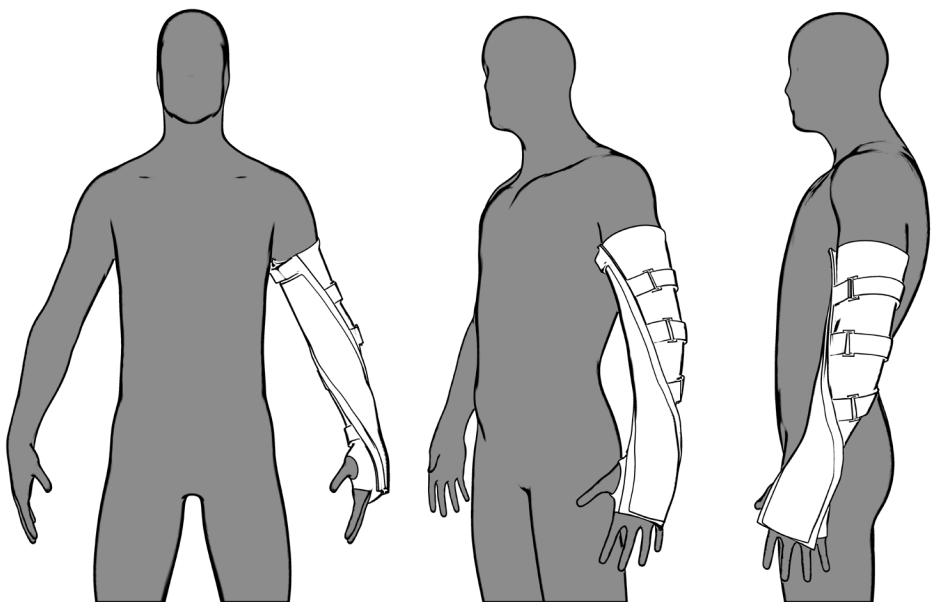
- 1 Hang the control bag off the hospital bed using the s-hook in the side pocket.



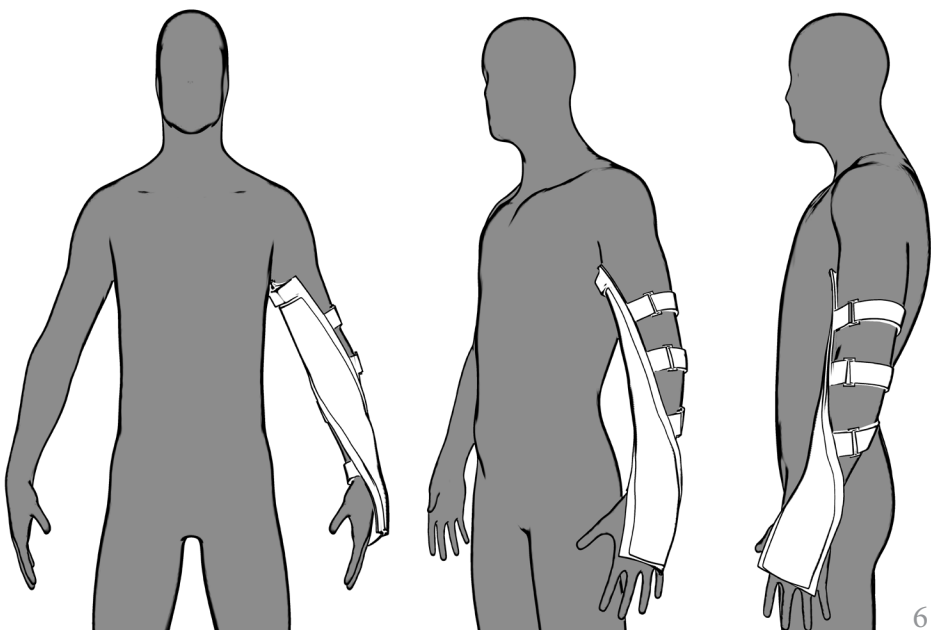
- 2** Connect the tubing and electrical connection coming from the control bag to the arm.



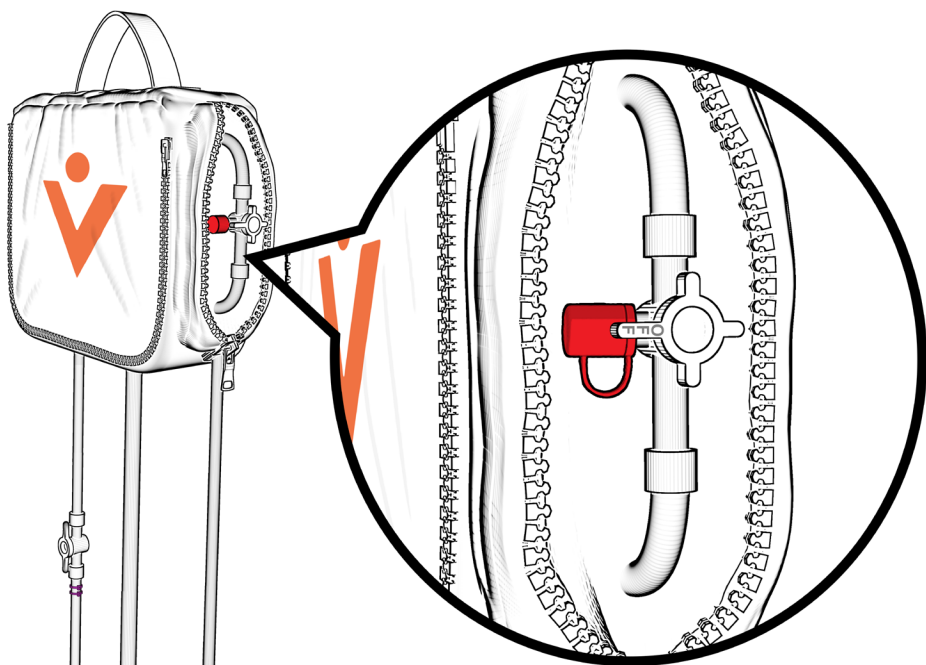
- 3** Place the Avstick on the **left** arm of the simulated participant (SP), wrapping from the top of the hand to antecubital region (inside the elbow).



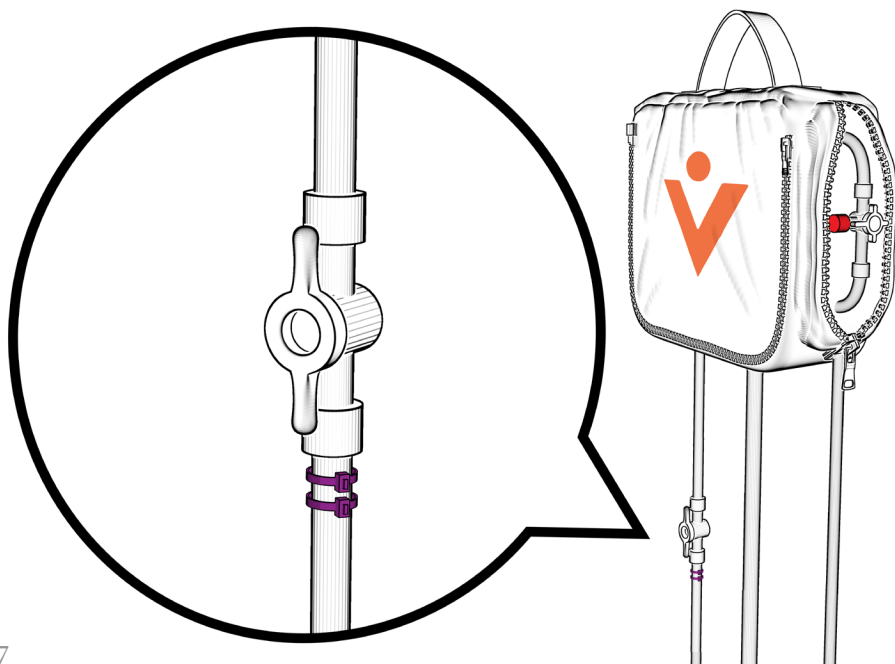
If the SP cannot comfortably fit into the sleeve of the arm, use only the straps to fit around the SP.



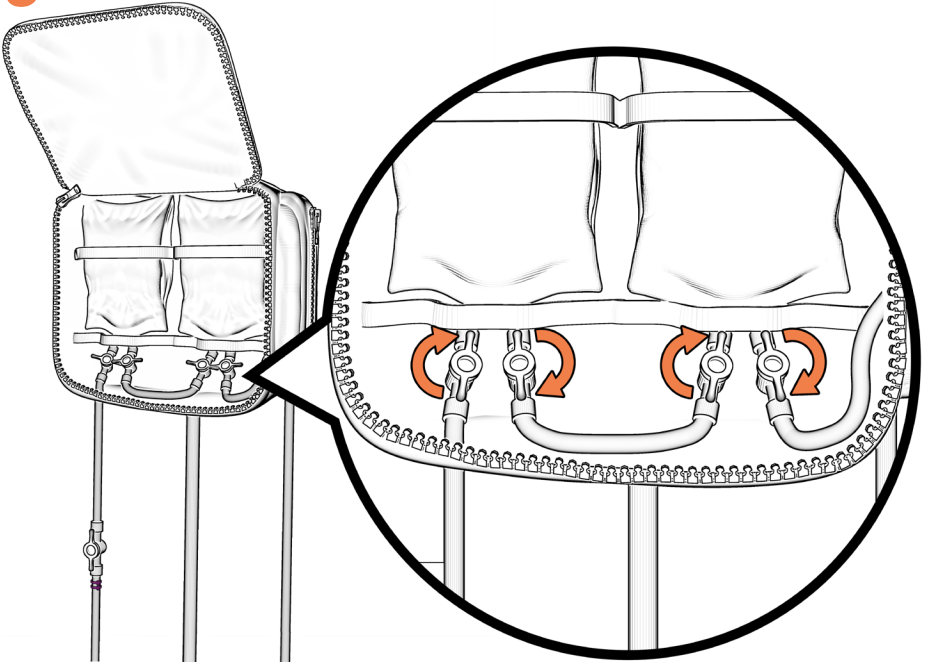
4 Position the “Drain” stopcock.



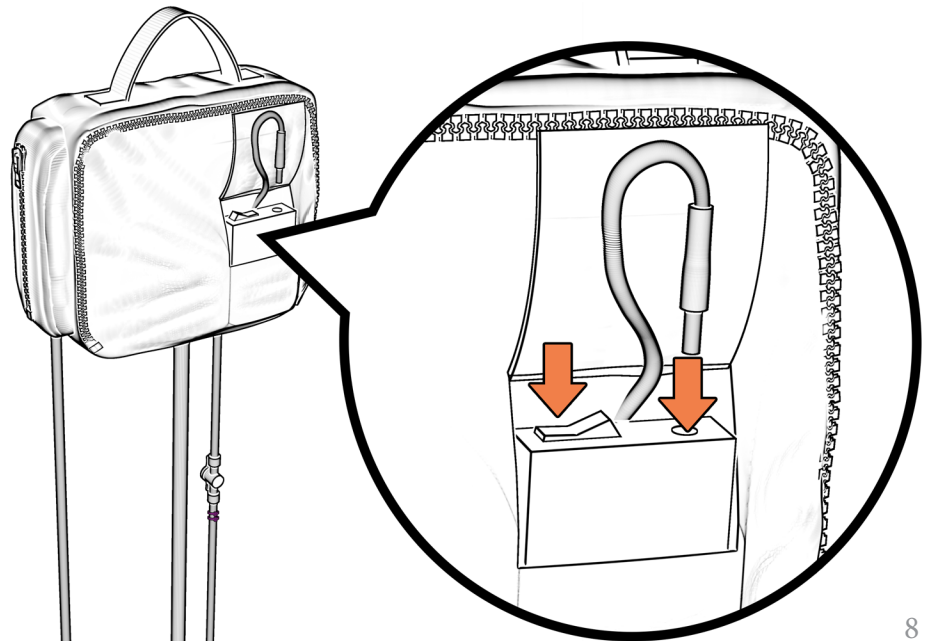
5 Open purple labeled stopcock.



- 6** Ensure blood bag stopcocks are open.



- 7** Turn on battery, located in the back pocket of the control bag (when shipped, the battery will not be plugged in, so you need to plug it in as well).



IV BAG TIPS

If inserting IV fluids: fill IV bag to 100ml

If drawing blood: fill IV bag to 400ml

If running performing IV practice: fill IV bag to 200ml

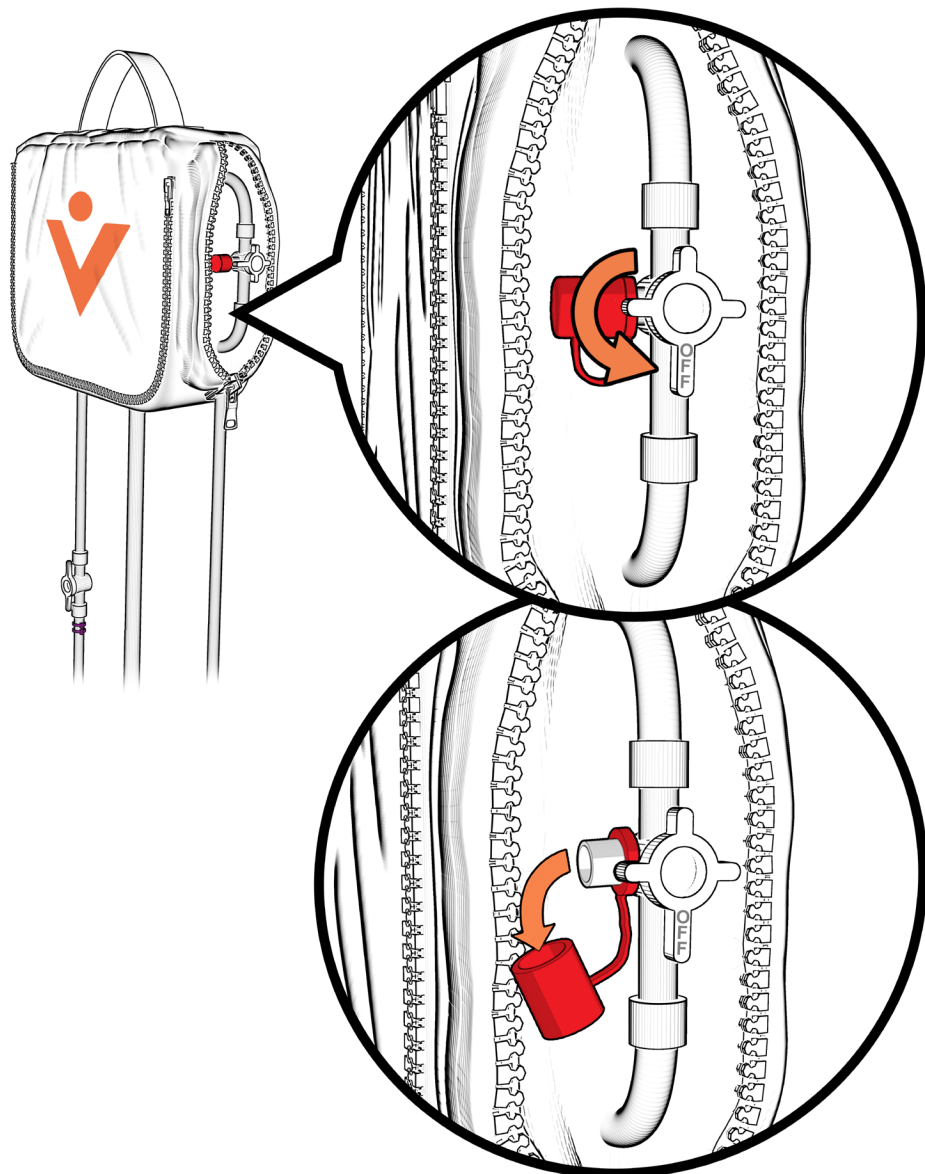
To remove the IV bag, disconnect at the stopcocks seen in the image below



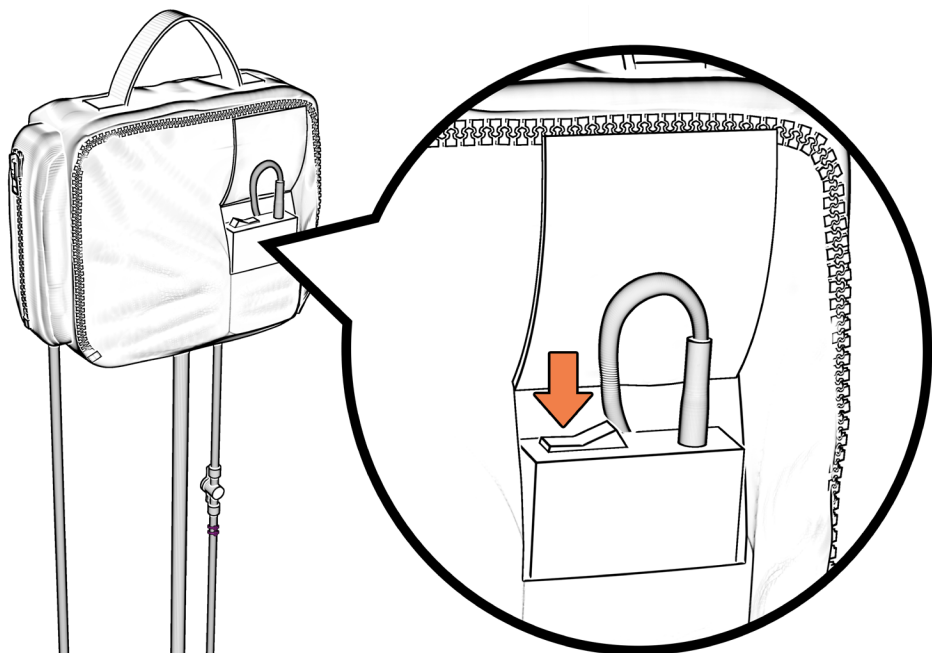
FLUSH THE SYSTEM

Before you disconnect the silicone tubing from the latex tubing in the Avstick sleeve make sure you flush the system.

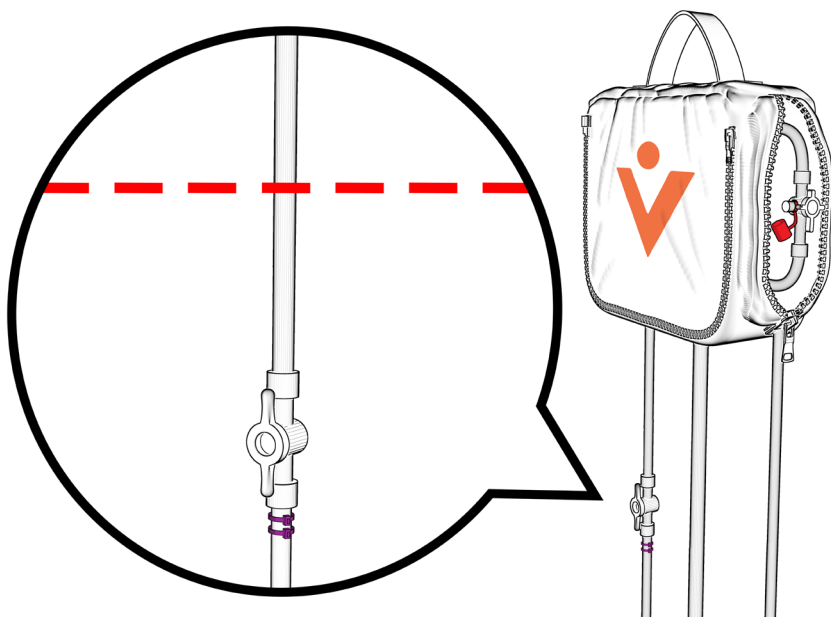
- 1 Position the Drain Stopcock and remove cap on the open air side of the stopcock.



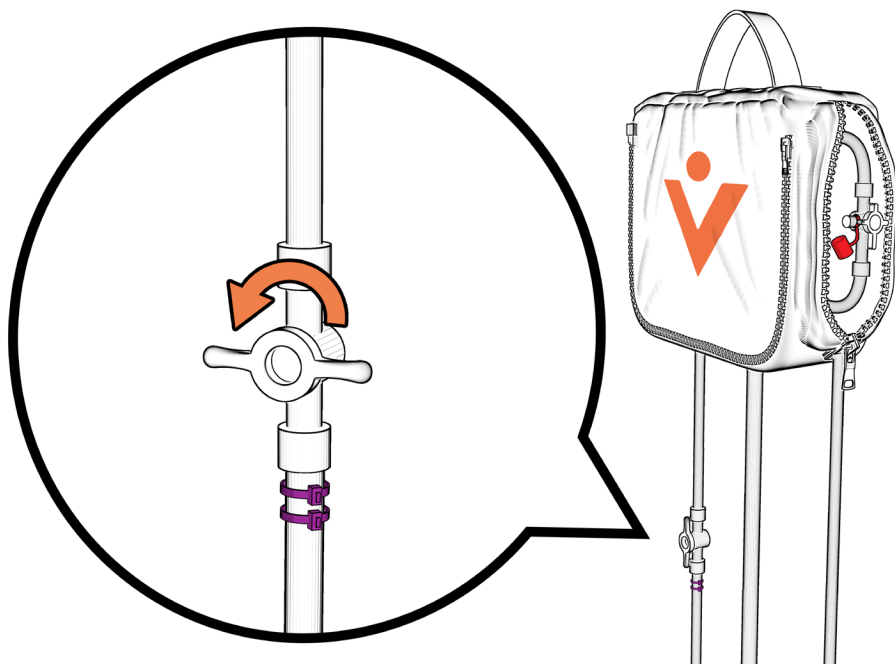
- 2** Turn on the battery to start pumping air into the system.



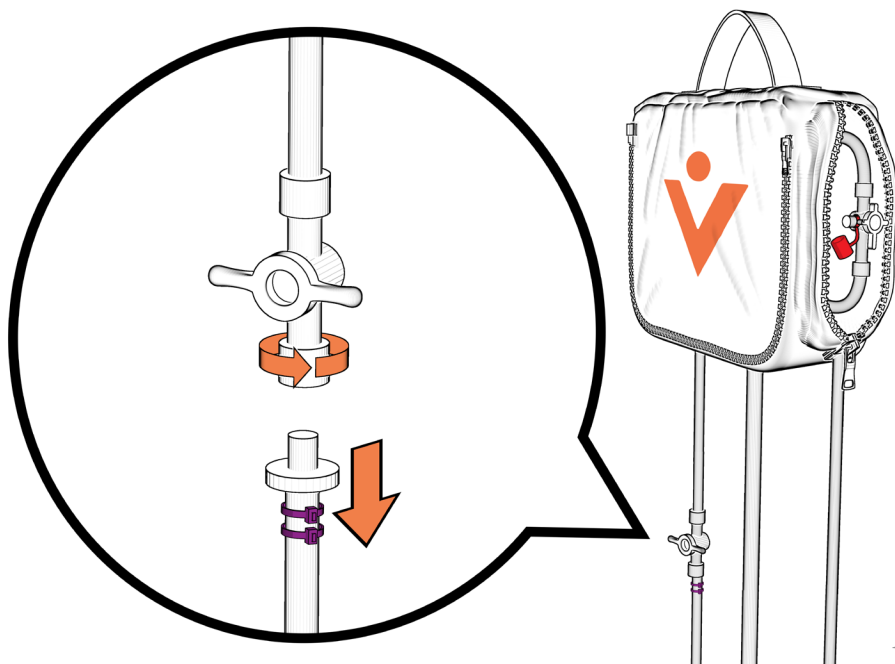
- 3** Pump until the air bubble reaches the purple labeled stopcock, then turn off the pump. Air bubble should not go higher than the red dotted line in the image below.



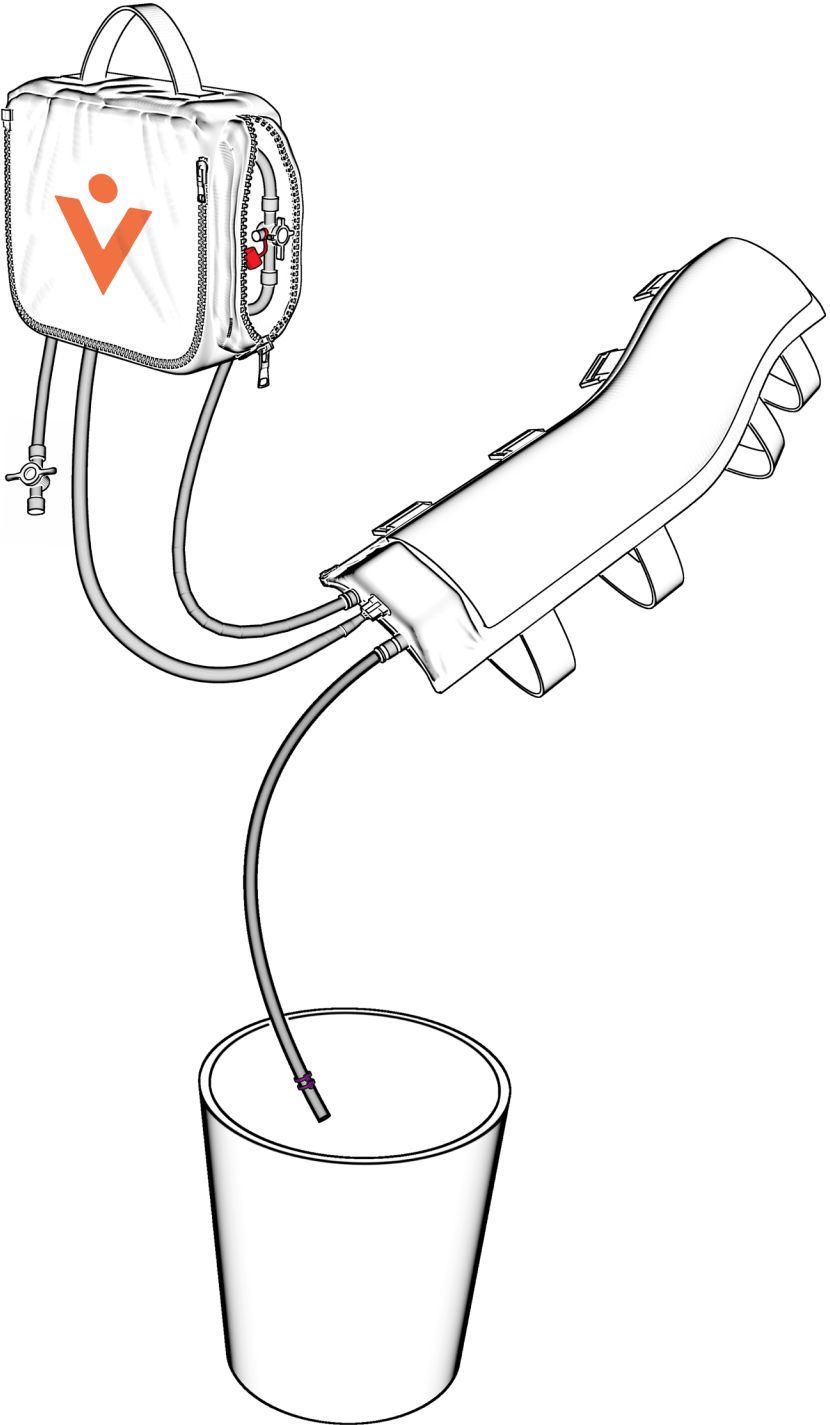
4 Close the purple labeled stopcock.



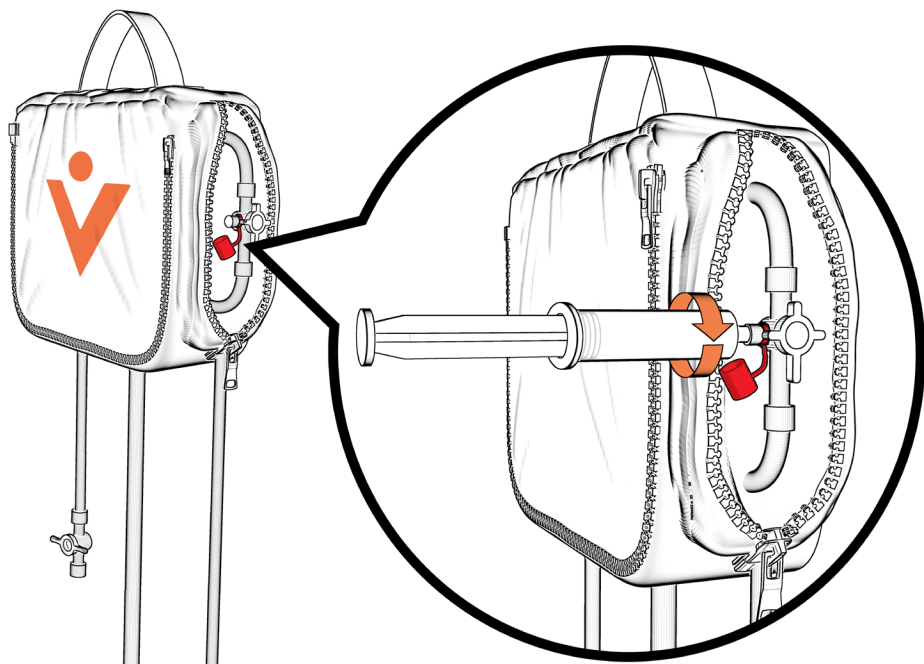
5 Disconnect tubing from arm at the purple labeled stopcock.



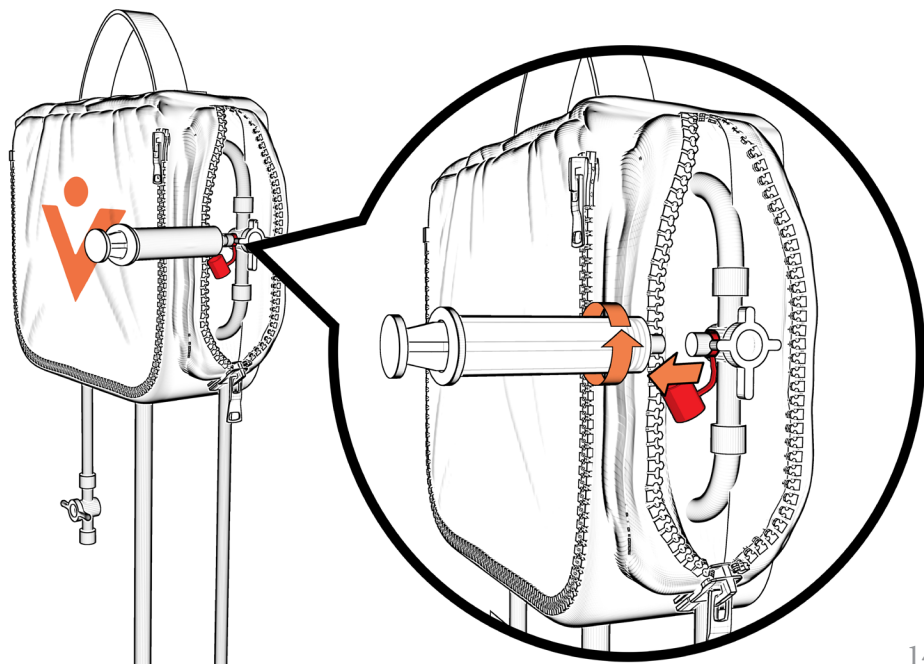
6 Put tubing end into sink or bowl.



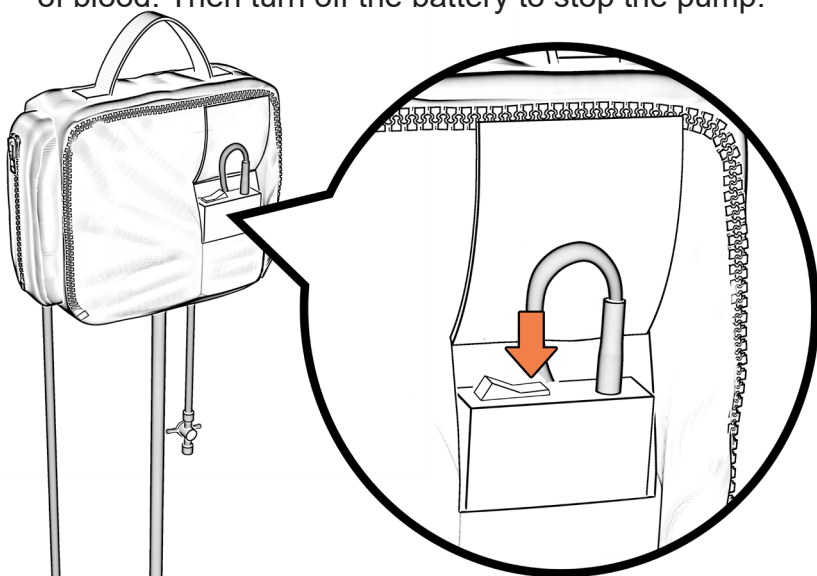
- 7** Connect 30ml syringe filled with distilled water to drain stopcock.



- 8** Turn battery on and allow pump to pull water from syringe until empty, then disconnect syringe immediately.

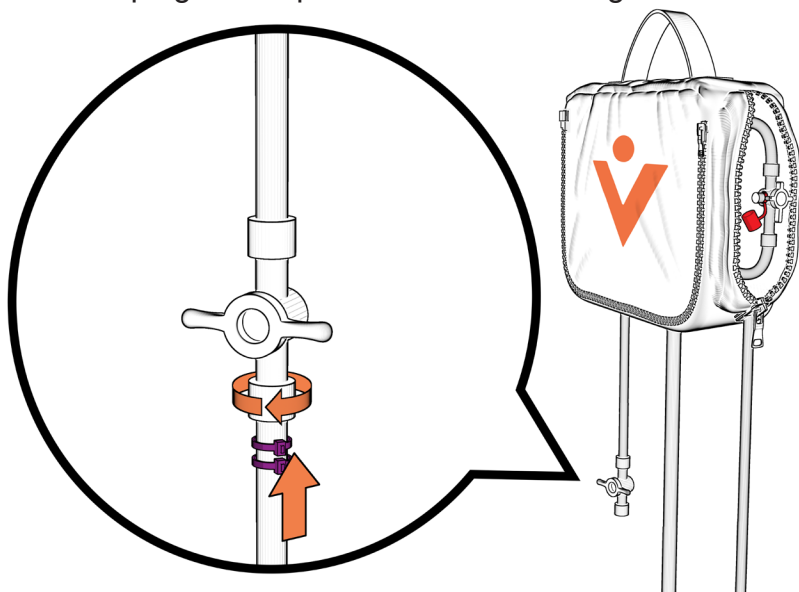


- 9** Continue to keep battery turned on, allowing pump to pump air through the system until the tubing is mostly clear of blood. Then turn off the battery to stop the pump.



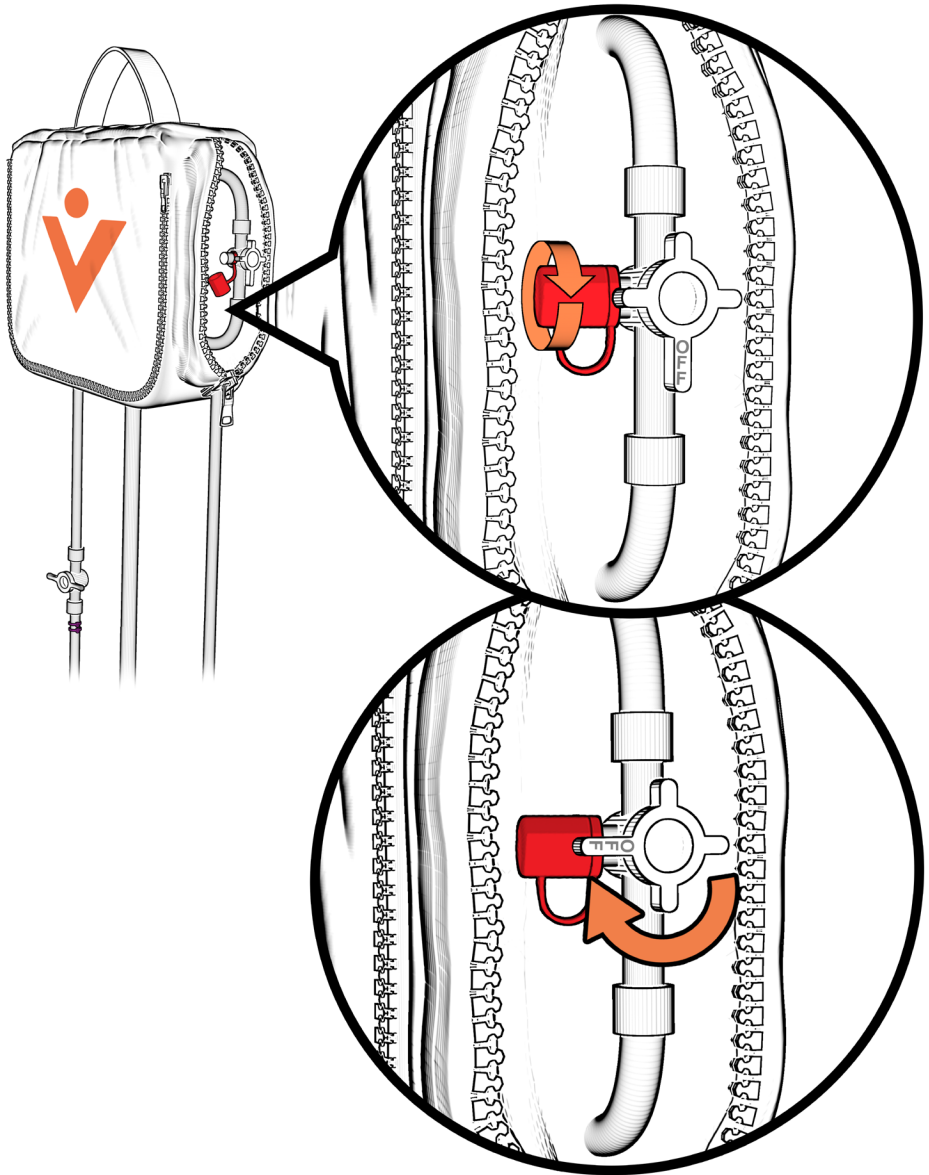
If there is a little blood left in the tubes, it is OK! The blood will slightly harden, but will dissolve the next time you pump blood through the device. The Avkin blood is antimicrobial, and will not grow mold in the device.

- 10** Connect the tubing back to the purple labeled stopcock, keeping the stopcock closed for storage.



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Screw cap back into place and position the “Drain” stopcock back to its original position, toward the red cap.



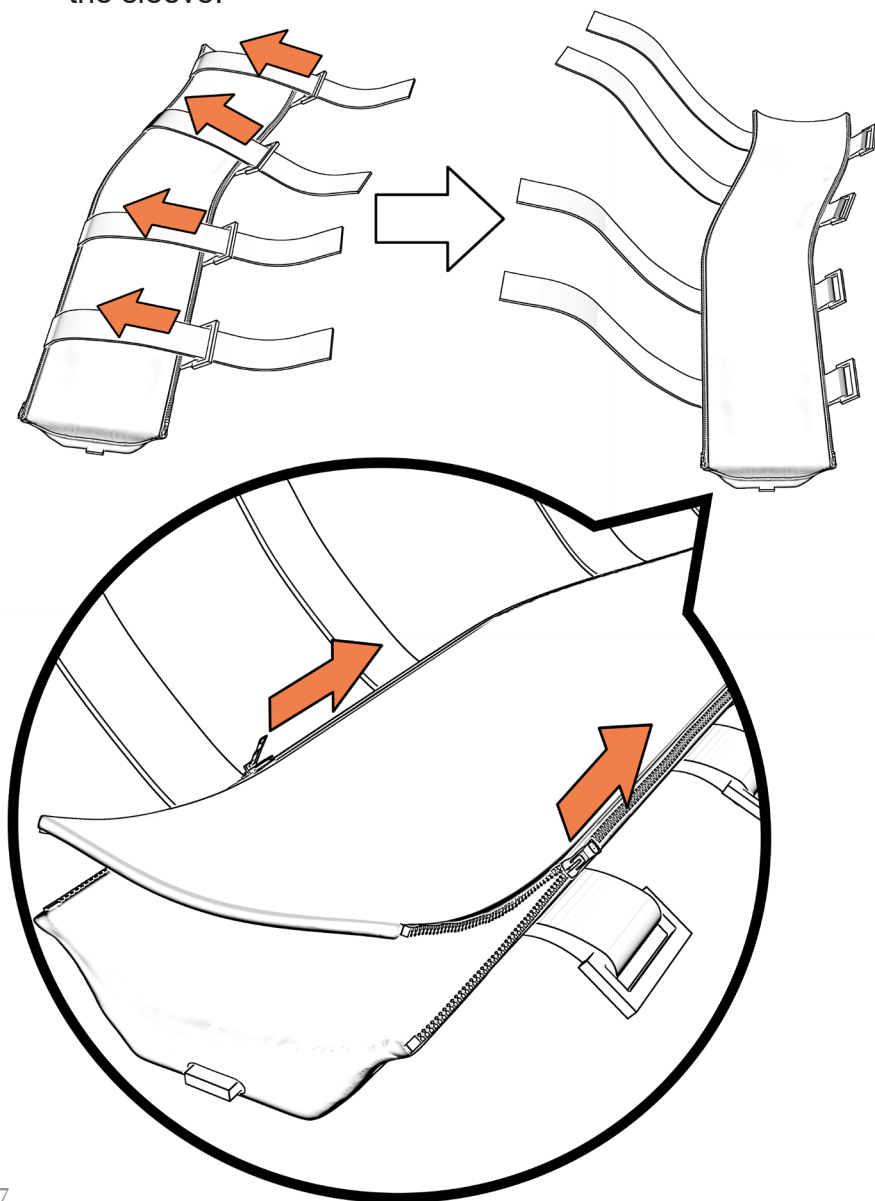
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At this point you can disconnect the veins for replacement if necessary.

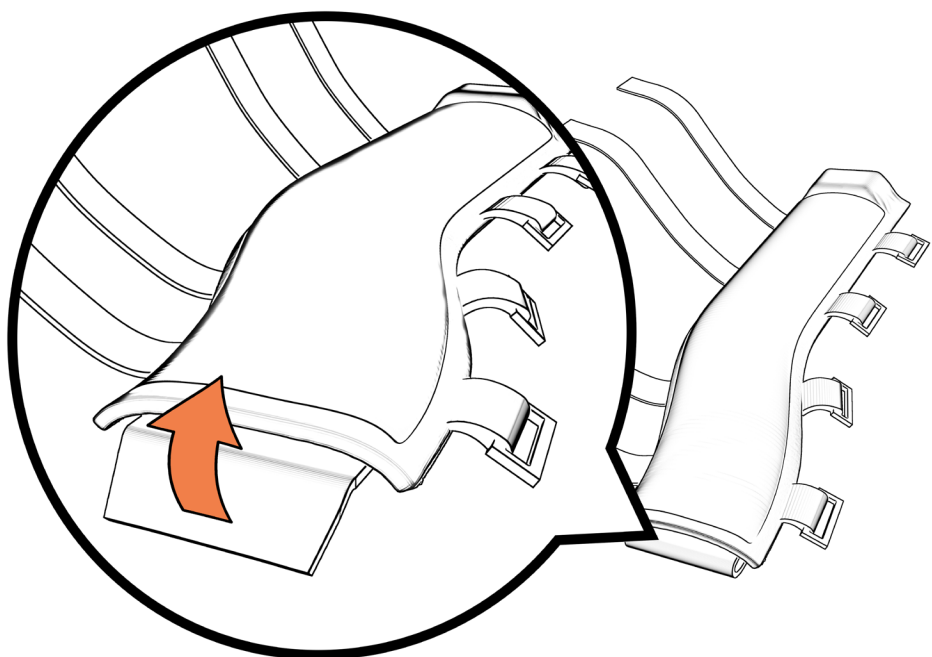
REPLACE VEINS

Be sure to flush the system (page 7) before replacing the veins.

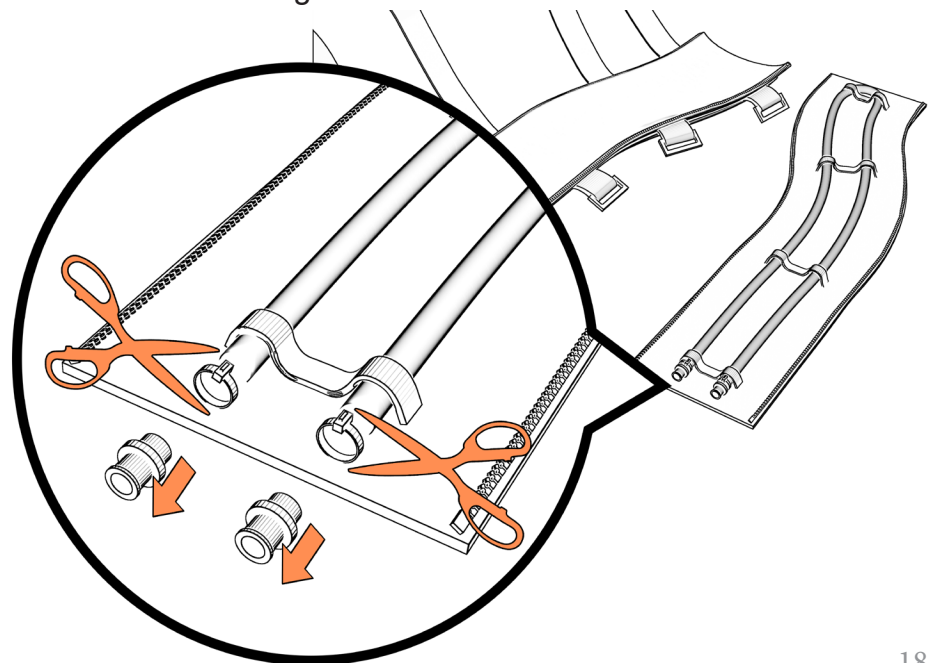
- 1 Unstrap the Velcro from the buckles and unzip the sides of the sleeve.



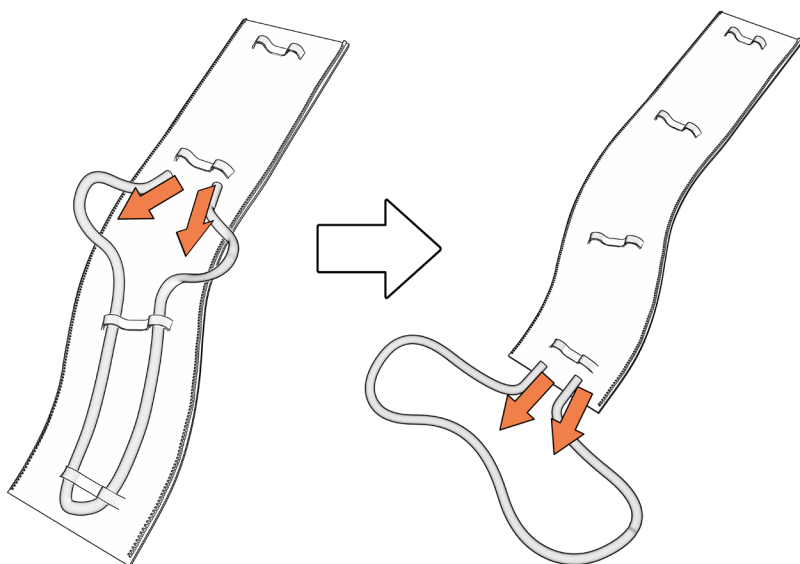
- 2** After both sides are unzipped and disconnected remove the flap at the knuckles that is in place with Velcro.



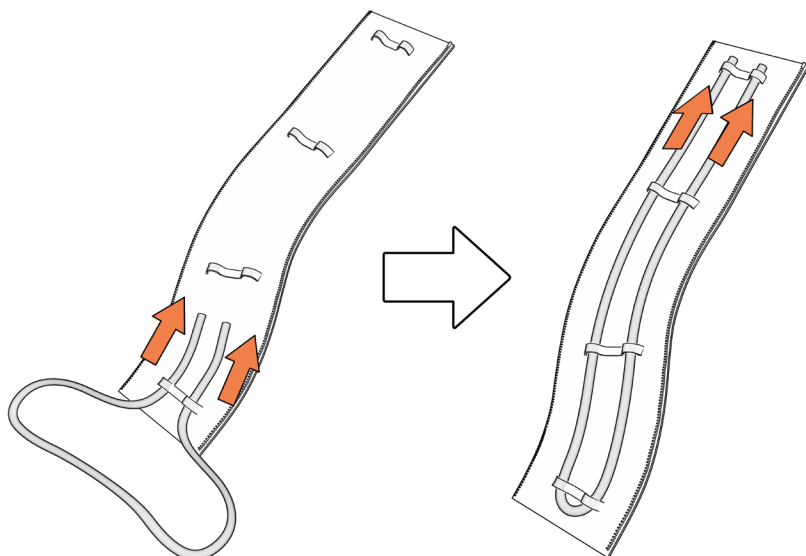
- 3** Cut off the zip ties and luer connectors from the ends of the latex tubing.



- 4** Remove latex tubing, pulling both sides towards the knuckles.

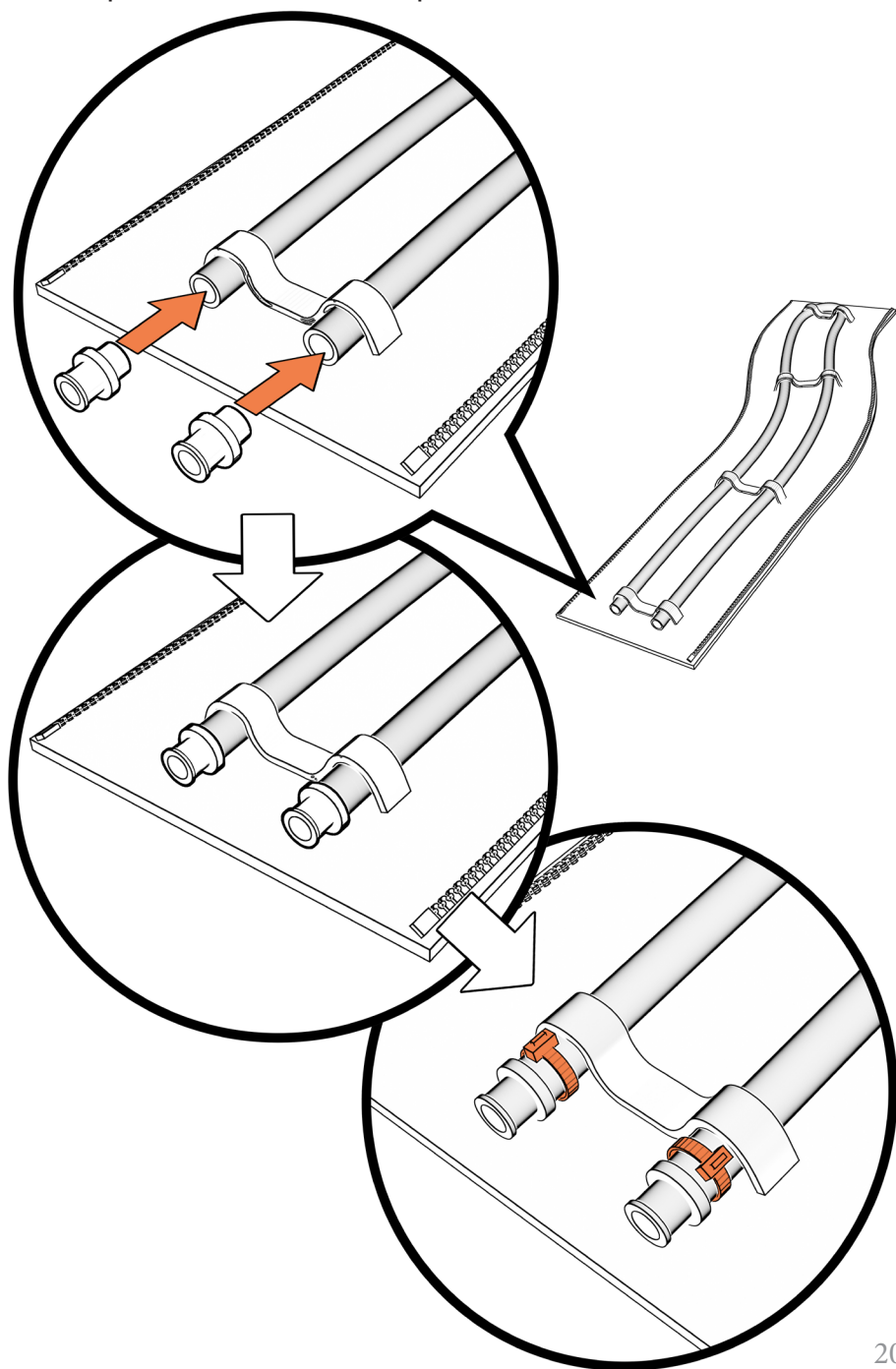


- 5** Put new latex tubing in (pick the smaller tubing to challenge your students!), starting at the knuckles insert the latex tubing down each pathway. If you struggle, getting the tube through an opening, use hemostats to pull the tubing through, otherwise, just guide it through with your hands!



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Use mineral oil or hand sanitizer on the tips of the luer connectors to easily insert them into the tubing. Then, zip tie them to secure in place.



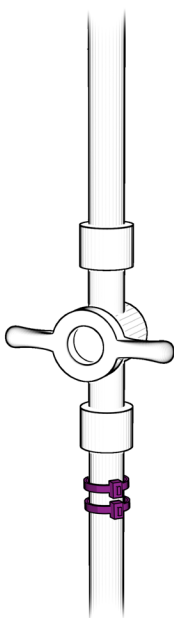
CARE AND MAINTENANCE

Only use a damp lint-free cloth to clean off the silicone skin.

Once dry, dust with baby powder to remove tackiness.

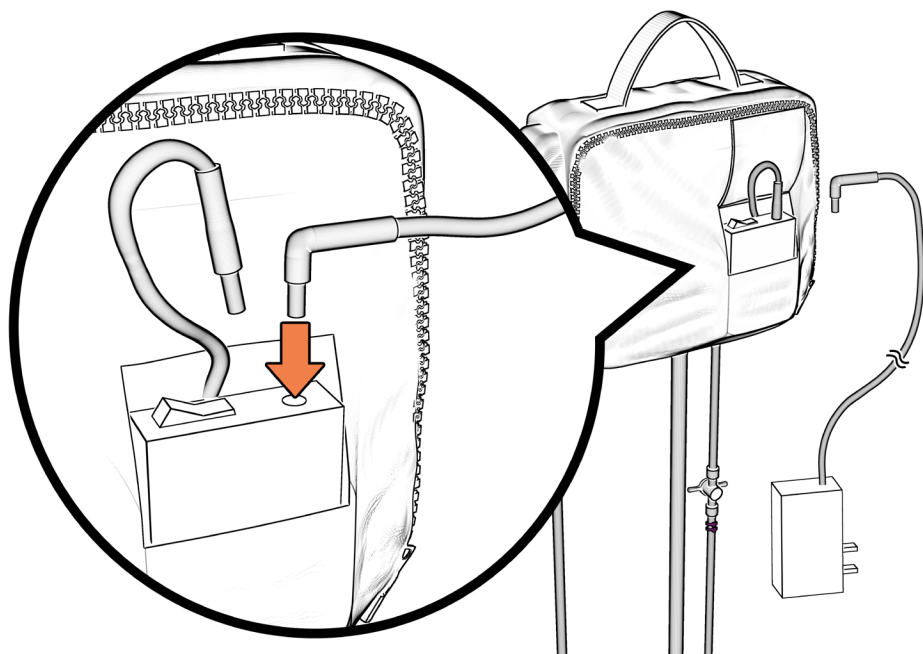
After each day of use, flush the system with air or distilled water. **Remove latex veins in the Avstick sleeve and replace with new latex tubing as necessary.**

Store with the purple labeled stopcock closed.



CHARGING

To charge the Avstick plug in charger to the battery pack located in the front pocket of the control bag.





AVSTICK BATTERY SAFETY GUIDELINES



The Avstick contains a rechargeable 12V Lithium Ion Polymer Battery that could cause injury if mishandled. Follow the proper handling procedures for the Avstick and the Avstick charger:

- Do not charge the Avstick with any other charger than the one that came with it
 - Call Avkin for a replacement if you need a new charger
- Do not charge or use unattended
- When charging, keep away any flammable or conductive materials (ex: textiles, paper, metal, etc.)
- Do not disassemble the Avstick battery
- Do not puncture the Avstick battery
- Do not immerse the Avstick in water or other liquids
- Do not expose the Avstick or its control bag to:
 - Extremely cold temperatures (below freezing, 32 deg F)
 - Extremely hot temperatures (above 130 deg F)
 - Direct sunlight
 - Hot vehicles
- Do not expose the Avstick or its control bag to mechanical impact (ex: throwing, dropping, etc.)
- Do not use the Avstick if the battery is damaged
 - Call Avkin for a replacement battery if needed
- Store the Avstick in a cool, dry place
- Keep the Avstick away from children - it is not a toy
- Refer to FAA guidelines for airplane transportation of devices with installed lithium batteries:
 - Turn the Avstick completely off (power switch on the battery)
 - It is off when all of the green lights are off
 - Protect it from accidental power-on
 - Pack it to cushion it from damage

Avstick is provided by:



www.avkin.com