

Resident and Associate Society Education Committee *of the American College of Surgeons*

SKILLS COMPETITION GUIDEBOOK

Authors: Rachel E. Hanke, MD, Joana Ochoa, MD, Joyce Pang, MD, Victoria Miles, MD, Cheyenne C. Sonntag, MD, Kaitlin A. Ritter, MD



Guidebook	1
------------------------	---

Station Modules

Carotid Patch	8
Cricothyroidotomy.....	12
Laparoscopic Skills.....	17
Negative Pressure Wound Therapy.....	20
OR Instrument Identification.....	26

What is So You Think You Can Operate?

So You Think You Can Operate? (SYTYCO) is a surgical skills competition that tests participants on a variety of surgical skills including technical procedures, clinical decision making, and teamwork. Originally designed for the American College of Surgeons (ACS) Clinical Congress, this competition allows resident teams representing their programs and chapters to demonstrate their surgical prowess in a fun and collegial event.

With pre-made skills stations vetted by the American College of Surgeon's Resident and Associate Society Education Committee, adding SYTYCO to your next meeting can be easily accomplished. The College is proud to produce and provide these resources to all ACS chapters in the spirit of resident and fellow education.

General Format

Participating teams will rotate through a set of skills stations. Teams receive a score at each station, and team points are totaled after all stations are completed. In traditional skills competitions, focus is often placed upon technical talents; SYTYCO tests not only procedural skills, but also clinical decision making, communication, and teamwork. While speed of task completion is important, quality of work and procedural efficacy is also evaluated.

The competition is directed by a host, who helps keep time, assists with team rotation, and provides colorful commentary to engage the audience. Each station is set up such that audience members can watch the event in real time, cheering on their favorite team. The number of teams and stations can be tailored to your organization's resources.

The teams with the top two scores then complete in a head-to-head competition for the ultimate prize and bragging rights.

Five Reasons to Host a Skills Competition

1. It's fun for both residents and fellows.
2. Pre-made skill stations make it easy to start your own event.
3. It's fun to cheer on your local team.
4. It promotes trainee involvement in College activities.
5. You can test your own surgical skills.

This toolkit contains all the content needed to run your own surgical skills competition. Skill stations require a variety of materials that will need to be purchased or borrowed depending upon the stations selected for use.

Game Handbook

This handbook provides you with an overview of the logistics of setting up a surgical skill competition, tips and tricks for success, and the suggested organizational flow of the event.

Skills Station Guides

The Skills Station Guides explain everything you need to know to set up expertly designed SYTYCO station modules. They include:

1. **Station Overview:** This sheet provides a broad overview of the selected station including a background, educational objective, brief station description, and checklist of station equipment. These pages can be utilized to help browse through the various prepared stations and select skills best suited for your event needs.
2. **Station Materials:** This provides a detailed list of the exact materials needed for a specific station including where materials can be purchased and an estimated cost. A list of alternate materials and substitutions is also provided to help accommodate costs and resource availability.
3. **Station Setup:** This provides a guide on how to set-up the station including step-by-step instructions for the various models that may need to be constructed. Picture guides also accompany these instructions.
4. **Station Score Sheet:** The station score sheets are broken into two parts. The first portion is a set of instructions to be read aloud to the participants summarizing the station and the task they are being asked to complete. Some instructions also include case scenarios which are also to be read aloud as part of the station. The second portion is the actual scoring criteria with a list of specific items and corresponding point value.

Residents

The *So You Think You Can Operate?* Surgical Skill competition is played annually at the American College of Surgeons Clinical Congress. Hosting a skills competition at your chapter meeting will help get residents involved in College activities and expose residents to your chapter.

Residents participate in teams of two, traditionally a senior resident (PGY 3-5) and junior resident (PGY 1-2). You need to decide on how many teams of residents you will have involved in your competition as the number of teams dictates the number of skills stations you will need.

Competition Staff

You will need to recruit Fellows of the College to help run the game.

Specific roles include:

- Someone to host the game (“Host”): The host of the event functions as the emcee, providing updates on the score, commentary about various stations, and engaging the audience in friendly competition. They will also assist with timing and directing the rotation of teams through the stations. An ideal host is outgoing, humorous, and comfortable managing a group of people.
- Someone to run and judge each station (“Station Lead/Judge”): One station lead is required for each station you include. The station lead functions to help re-set the skill between each team. This volunteer should familiarize themselves with the materials and set-up of their station before the day of the event. The lead could also fill the role of station judge scoring each team as they compete, if needed. Some stations can be very involved, so it may be beneficial to have two separate people assigned to these stations—one to judge and one to organize the station between teams.
- Someone to keep track of the score (“Scorekeeper”): A large score card should be used to track team scores at each station and displayed where the audience can see. A scorekeeper collects the score sheets from each station judge and updates the score card between each round. They additionally keep a running tally of overall score and provide updates to the host to announce.

Total personnel need to run a game: Two general event managers plus one lead per station

So You Think You Can Operate? is a surgical skills competition that tests technical/procedural skills, communication, and teamwork. The number of participating teams and stations can vary, but we recommend at least one skill station per participating team. There should also be one head-to-head competition for the final round (i.e., if 5 teams are competing there should be 5 core stations and one final head-to-head station). It is possible to have fewer stations than teams, with rest stations for teams not actively competing during a rotation.

Each team will rotate through all the core stations. A rotation schedule through the core stations should be created prior to the competition to ensure a smooth flow of play (the final head-to-head station should not be included in this rotation).

At each station, the team will perform the designated task and a station lead/judge will score the members based upon the scoring criteria. Points will be tallied and tracked by the scorekeeper on the scorecard displayed at the front of the room. Each station has a 10-minute time limit. If the team does not complete the task within the allotted time, they are scored for only the parts they finished. Once the station has been completed, the teams will move on to the next station. During team rotation, the station lead/judge will reset the station for the next team.

During the event, a station host will provide commentary about the various stations, engage with the audience, and announce the scores. Audience participation should be encouraged but should not interfere with the competing teams. *No hints or clues should be provided to the teams by the audience.*

Once all teams have rotated through all the core stations, a final tally will be performed by the scorekeeper. The two teams with the highest scores will move on to the final head-to-head station. This station will function similarly to the core stations with designated scoring criterion, but often includes a timed element as well.

The team with the highest score during this final station is crowned the *So You Think You Can Operate?* Champion!

When to Play

You will need to decide when you will host a game. Surgical skills competitions often involve a variety of simulation models which can be expensive if purchase is required. Timing your competition around an annual meeting where industry vendors and sponsors are already present may provide a valuable resource. We have found that vendors and local institutions are often willing to lend simulation models for use during these skills competitions if they were already planning to be present at a meeting.

The length of the actual competition itself varies depending upon the number of teams and skills stations you decide to include in your event. We recommend limiting each station to roughly 10 minutes in duration, as we find this length is sufficient to allow for a robust speed of play keeping both participants and audience members engaged. All stations produced by the ACS RAS Education Committee are created with this time limit in mind.

Where to Play

The room requirement for your competition will vary depending upon the number of stations you utilize, teams you have competing, and the size of the expected audience. The room should be large enough to accommodate a folding table for each of your stations, specifically with space for the competitors to work *and* for audience members to migrate as they watch the events. An area should also be reserved for a check in/administrative desk where the score keeper can work and display the score board.



User Tips

Tip 1: The station overview is a useful guide to get a sense of what a station tests and what is involved for set-up. You can use these sheets as a quick overview as you start to plan your event.

Tip 2: Premade skills stations provided by the ACS RAS Education Committee offer a list of alternative materials that can be substituted for more cost-effective stations if funding or donations are limited.

Tip 3: Reach out to institutional and industry contacts early regarding the possibility of borrowing models and materials for your event. Check your area for ACS Accredited Education Institutes that are simulation centers.

Tip 4: Have a back-up station and/or materials available for the day of the event as this will help prevent logistical issues that can often arise during skills competitions.

Prior to the start of the competition the scorekeeper should create a large easily visible scoreboard which includes a list of all competing teams and the various stations in a grid format. After each event, the scorekeeper collects the score sheets from the station judge and tallies up the points for each station. *The points tally can be completed by the station judge but should be double-checked by the scorekeeper.* The station scores are then placed in the corresponding box for the team and event. A final total is calculated once all stations have been completed by all teams.

	Trauma	Surg Science Lap Sim	3D Systems Endo Lap Sim	Open Abdomen	Vascular	Instrument ID	Retractor Race	TOTAL
Arizona	10	8	13	20	5	13	13	82
Michigan CHAPTER	12	12	5	22	17	12.5	17	97.5 ^x
South Texas	10	6	13	22	14.5	10	16	91.5
Massachusetts	8	6	6	18	16.5	18	17	89.5
Brooklyn-LI	10	6	4	20	12.5	12	13	77.5
UCSF-Fresno	9	8	14	20	17.5	17.5	17	103 ^x
New Mexico	5	8	4	13	17	10	13	70
Wake Forest	4	6	14.5	16	17	10.5	13	81
@RASACS #SYTYCO19 #ACS19								

Sample scoreboard from the So You Think You Can Operate competition at Clinical Congress 2019.

An electronic version of this scoring sheet may be created if desired, but a computer and projector will be required to display the running scores for audience and teams to see.

Before the game begins, make sure you have completed the following:

- Host, score keeper, station leads/judges
 - Did the station leads/judges review their stations and judging criteria?
 - Is the host familiar with the flow of the event, the various stations, and expectations for audience engagement?
 - Is someone available to photograph the event and promote the participants/winners on social media platforms?

- Score board created and displayed for the whole room to see
 - Do you have markers and a calculator to tally score?
 - Are team names and stations added to score board?

- Stations are set up
 - Extra materials available at each station for resetting the event between teams
 - Backup materials available if a part of the station were to break
 - Instructions and score sheets printed out and placed at corresponding station

- Rotation schedule created for each team
 - Do you know how each team will move through the various stations?
 - Have you set a timetable and communicated it to the host to make sure the competition runs on time?

- Microphone system set up and working

- Prizes for the winners acquired and available

Questions?

Please contact Alison Powers at apowers@facs.org.

Carotid Patch Station

So You Think You Can Operate

Station Designers: Katelynn Ferranti, MD, Cheyenne Sonntag, MD, Pranit Chotai, MD, Rachel Hanke, MD

Background

Carotid endarterectomy and patch angioplasty for carotid stenosis is a commonly performed vascular procedure. The indications for surgery are based on degree of stenosis and presence or absence of symptoms including stroke, transient ischemic attack, and amaurosis fugax. Knowing the indications for and how to safely perform a carotid endarterectomy with patch is critical for every general surgery trainee.

STATION DURATION: 10 minutes

Activity Objectives

- Teams will demonstrate knowledge of appropriate indications for a carotid endarterectomy with patch
- Teams will describe the correct order to clamp carotid vessels during a carotid endarterectomy
- Teams will demonstrate proper vascular suturing technique (sutures placed inside to outside on vessel wall)
- Teams will appropriately communicate throughout a complex procedure under a time limitation

Station Description

The Vascular Carotid Patch Station is designed to test junior and senior levels skills as they pertain to vascular surgery. After hearing a clinical scenario, the senior resident will verbalize the correct procedure for the patient and their clinical reasoning. They will then verbalize the step of the procedure, from administering heparin to clamping vessels. During this, they will guide the junior resident through completion of the patch anastomosis. At the end of the allotted time, the judge will score the team and anastomosis for a total of 16 points.

Station Equipment

- Common internal and external carotid simulator
- Patch simulator
- Polypropene suture, Castroviejo needle holder, scissors, scalpel, and Gerald tissue forceps
- Vessel loops or bulldog clamps
- Station table



Access Video Walkthrough

Station Materials

Below is a comprehensive list of every item required for this skill station. Quantities are listed per team. Final amounts required will depend upon total number of teams competing. Items that are reusable from team to team are noted.

ITEM	QUANTITY	COMPANY	COST
6-0 polypropene double armed suture	1 pack	Ethicon (or other)	Donated
Castroviejo needle holder	1 (reuse)	***	Donated
Gerald tissue forceps	1 (reuse)	***	Donated
Scissors	1 (reuse)	***	Donated
Vessel loops or Bulldog clamps	1 (reuse)	***	Donated
11-blade scalpel	1 (reuse)	***	Donated
Double barrel weather stripping	1	Amazon or other retailers	\$14
Red electrical tape	1	Amazon or other retailers	\$5
Wooden board	1	Joann's or other retailers	\$5
Gold eye hooks	3	Amazon or other retailers	\$5
Carotid PTFE Patch	1	GORE donation	Donated
Station table	1 (reuse)	***	***
Estimated Total:			\$30

Note: Cost is provided only for uncommon or unique station items. Many common materials (e.g., suture, surgical instruments, laparoscopic trainer boxes) are often available through donations from local institutions/surgical simulation centers. Donations of these items help to reduce total cost of each station. Actual station cost may be higher than estimated total if all items must be purchased.

Resources Link(s):

- Weather stripping:
https://www.amazon.com/dp/B07GRR7MTM/ref=cm_sw_r_oth_api_glt_fabc_FDDJYK199PG3606RBJ2J

Alternatives:

- For the carotid simulator, there are pre-prepared models like this one from SimuVasc (<https://www.medicalexpo.com/prod/simuvasc/product-128223-972796.html>) and more
- For the carotid patch, you can use expired/donated PTFE or Dacron patch, or simply cut a Penrose drain into a patch shape for the purpose of the simulation

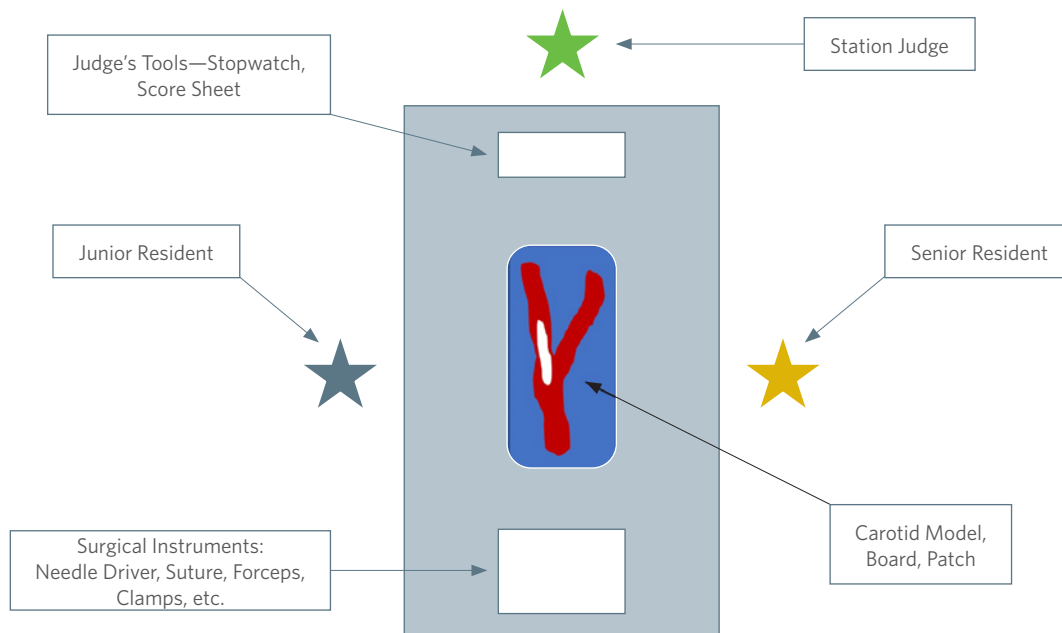
Station Set Up

Setup Instructions:

1. Assemble your carotid simulator.
 - a. Cut 12-inch section of double barrel weather stripping.
 - i. Peel the proximal 5 inches apart.
 - b. Wrap in red electrical tape in Y configuration similar to carotid bifurcation.
 - c. Then, apply the skin by hot gluing the vinyl fabric to the foam atop the felt.
 - d. Screw eye hooks through vascular model into wooden board to secure it in place.
2. Gather remaining surgical materials.
3. Place carotid simulators on table with other materials (see diagram below) on the top.



Setup Overview



Station Instructions

Instructions (to be read out loud): In this station you will be tested on your ability to safely perform critical portions of a common vascular procedure. You will be presented with a patient scenario including pertinent symptoms, physical exam findings, and imaging results. The senior resident should determine the indication for intervention, appropriate side, and procedure. The senior resident should also verbally dictate the steps of the specific procedure while guiding the junior resident through as much of the indicated procedure as possible in 10 minutes. Please note you will be evaluated based upon your description of the steps in addition to your surgical technique.

Case (to be read out loud): You are consulted to see a 68-year-old woman who was admitted to the neurology service 2 days ago. She presented with visual changes that she described as “a sheet coming down” over her **right** eye, and **left** arm weakness. On physical exam she has bilateral carotid bruits and mild left arm weakness that her daughter says is improving. She has palpable radial pulses that are symmetric. A carotid duplex was obtained and showed bilateral 80-99% stenosis. Her daughter asks you if she need surgery and, if so, why? Start with the verbalizing the procedure you intend to perform, side and indications. **Time starts now.**

Station Score Sheet

Team: _____ **Team Member:** _____

Points awarded for **verbalization** of each of the following critical steps (15 total possible points)

INSTRUMENT/USE	# OF POINTS
Verbalizes correct procedures: - Carotid endarterectomy: 1 point - Patch angioplasty: 1 point	___/2
Verbalizes indication for intervention: - Symptomatic severe carotid stenosis: 2 points - Symptomatic carotid stenosis: 1 point only - Severe carotid stenosis: 1 point only - No indication verbalized: 0 points	___/2
Verbalizes correct side (right): 1 point	___/1
Verbalizes administration of IV heparin prior to clamping: 1 point	___/1
Verbalizes correct clamp order (internal, common, external): 2 points	___/2
Correct suturing technique (inside to outside on arterial wall): 1 point	___/1
Teamwork and communication: - Senior clearly describes steps, follows with suture and coaches junior through anastomosis: 2 points - Inconsistent guidance from senior but provides some guidance: 1 point - Minimal communication between team members: 0 points	___/2
Verbalizes back-bleed and flush prior to patch completion: 1 point	___/1
Completion of patch - 100% complete: 4 points - 50-75% complete: 3 points - 25-50% complete: 2 points - 0-25% complete: 1 point	___/4
Up to 3 points may be deducted for sloppy technique at judge discretion	subtract ___/3
Total	___/16

Cricothyroidotomy Station

So You Think You Can Operate

Station Designers: Cheyenne C. Sonntag, MD, Joyce H. Pang, MD

Background

Emergent airway access is an essential surgical skill for surgery residents and a part of Advanced Trauma Life Support® (ATLS) training. It is infrequently performed by surgical residents, especially as intubation technology improves, but remains a necessary skill to know and be able to perform accurately in a critical situation.

STATION DURATION: 10 minutes

Activity Objectives

- Residents will identify and verbalize indications for emergent cricothyroidotomy
- Residents will successfully perform an emergent cricothyroidotomy on a simulation model in a timely fashion and using limited supplies provided

Station Description

Emergent airway access is an essential surgical skill for surgical residents, and a part of ATLS training. This station is designed to test residents' speed and skill with obtaining emergent airway access in addition to identifying critical knowledge regarding procedure indications. After receiving the instructions, one previously appointed resident on the team will be given a trauma scenario. They will recognize and verbalize the need for obtaining an emergent surgical airway, and then verbalize the steps of the procedure as they perform it on a simulation manikin. Points will be awarded for appropriately identifying indications for the procedure, completion of key procedural steps, and timing, for a maximum of 15 points.

Station Equipment

- Cricothyroidotomy simulator
- Scalpel (11 or 15 blade)
- Hemostat
- Cuffed tracheostomy tube or endotracheal tube
- Station table



Access Video Walkthrough

Station Materials

Below is a comprehensive list of every item required for this skill station. Quantities are listed per team. Final amounts required will depend upon total number of teams competing. Items that are reusable from team to team are noted.

ITEM	QUANTITY	COMPANY	COST
Cricothyroidotomy simulator			
1" plastic PVC pipe	1 (reuse)	Hardware store	\$3
Wooden frame 4"x6"	1 (reuse)	Hobby store or online	\$1
Wooden plaque 11"x14"	1 (reuse)	Hobby store or online	\$12
Utility hinge	1 (reuse)	Hardware store	\$2
Hook and staple latch	1 (reuse)	Hardware store	\$3
Skin-colored vinyl fabric 1.5'x54"	1	Hobby store or online	\$12
Hot glue gun	1 (reuse)	Hobby store or online	\$13
Scalpel	1 (reuse)	***	Donated
Hemostat	1 (reuse)	***	Donated
Cuffed tracheostomy tube	1 (reuse)	***	Donated
Utility knife	1 (reuse)	Hardware store	\$10
Estimated Total:			\$56

Note: Cost is provided only for uncommon or unique station items. Many common materials (e.g., suture, surgical instruments, laparoscopic trainer boxes) are often available through donations from local institutions/surgical simulation centers. Donations of these items help to reduce total cost of each station. Actual station cost may be higher than estimated total if all items must be purchased.

Resources Link(s):

- 1" plastic PVC pipe: <https://www.lowes.com/pd/Charlotte-Pipe-3-4-in-dia-x-5-ft-L-480-PSI-PVC-Pipe/3133087>
- Wooden frame 4x6": <https://www.michaels.com/rectangular-4-in-x-6-in-ready-to-finish-frame-by-artminds/10273691.html>
- Wooden plaque 11x 14": <https://www.michaels.com/plaque-rectangulaire-en-pin-artminds/10042148.html?productsource=PDPRV>
- Utility hinge: <https://www.lowes.com/pd/Gatehouse-1-in-Zinc-Mortise-Door-Hinge-2-Pack/50041806>
- Hook and staple latch: <https://www.lowes.com/pd/Gatehouse-2-Pack-Silver-Cabinet-Latch/50069683>
- Skin-colored vinyl fabric 1.5'x54": <https://www.amazon.com/VViViD-Oyster-Weatherproof-Leather-Finish/dp/B01MSYPV6J>

Alternatives:

- A *whirly tube* (purchased online or at party supply stores) may be used as an alternative trachea model
- A sheet of skin tone cloth or leather can be used as an alternative skin model
- Modeling clay can be used to create landmarks

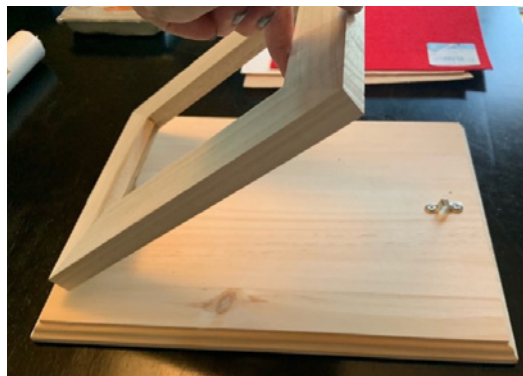
Station Set Up

Setup Instructions:

1. Assemble your cricothyroidotomy simulator.



- Gather your materials.
- Using a saw or a PVC pipe cutter, cut your PVC pipe down to a 5-inch section.
- At about the midpoint of your section of PVC pipe, cut out a small square notch of approximately 2cmx2cm. This should be a sufficient size for the tracheostomy tube to fit through.



- Assemble your frames. Take the unfinished wooden frame, removing the backing. You will now attach one side of the hinge to the frame, and the other side to the plaque so that the frame can lift up from the plaque like a door.



- Attach your hook and staple latch to the opposite side of the frame where your hinge is located, so that the frame will hook into place onto the plaque. The hook should be attached to the frame, and the staple attached to the plaque



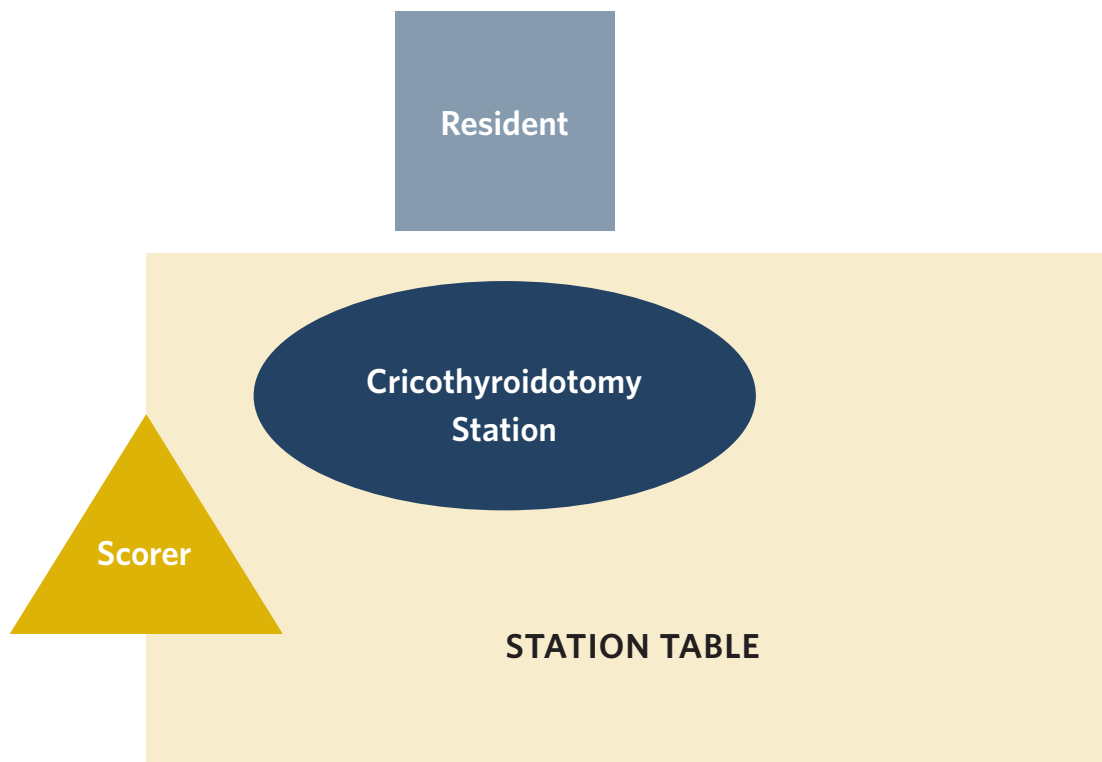
- Use your hot glue gun to form the landmarks for the cricothyroidotomy. Form a triangle to represent the thyroid cartilage and three rings to represent tracheal rings. Glue this onto the plaque in the middle of the frame, taking care to keep the side with the thyroid cartilage on the side with the hinge.

Station Set Up (continued)



- g. Place your skin-colored vinyl fabric over the trachea model and latch the frame in place over it.
- h. The station is now ready to go! Make sure each station has a set of instruments: 1 scalpel, 1 hemostat, and 1 tracheostomy tube/endotracheal tube.

Setup Overview



Station Instructions

Instructions (to be read out loud): This station is designed to test resident speed and skill with obtaining emergent airway access in addition to identifying critical knowledge regarding procedure indications. After receiving the instructions, one previously appointed resident on the team will be given a trauma scenario. You will need to verbalize the implications of the clinical scenario and procedural indications. You will then proceed to verbalize the steps of the procedure as you perform it on a simulation manikin with the limited supplies available. Points will be awarded for appropriate verbalization of indications, completion of key procedural steps, and overall timing.

Case Scenario (to be read out loud): You are the only doctor available in the rural hospital, and EMS has called to report that they are bringing you a 34-year-old unrestrained driver of a head-on vehicle collision who is unresponsive. He has sustained severe facial trauma from contact with the windshield. EMS reports that they have been unsuccessful at securing an airway in the field twice and are now having difficulty maintaining oxygenation using a bag mask. You may begin.

Station Score Sheet

Team: _____ **Team Member:** _____

	# OF POINTS
Verbalizes correct procedure (cricothyroidotomy): 1 point	/1
Verbalizes patient is supine with neck in neutral position: 1 point	/1
Verbalizes using sterile technique/prep of the neck: 1 point	/1
Verbalizes identifying appropriate landmarks <ul style="list-style-type: none"> ▪ Thyroid cartilage: 1 point ▪ Sternal notch: 1 point ▪ Cricothyroid membrane: 1 point 	/3
Makes skin incision over region of the cricothyroid membrane: 1 point	/1
Makes transverse incision in cricothyroid membrane: 1 point	/1
Hemostat or back of blade inserted and rotated 90 degrees to open airway: 1 point	/1
ET tube is inserted an appropriate depth and directed distally, cuff inflated: 1 point	/1
Verbalizes securing the tube: 1 point	/1
Verbalizes checking for bilateral breath sounds: 1 point	/1
<i>Award up to three points for speed</i> <ul style="list-style-type: none"> ▪ <30 seconds = 3 points ▪ 30 seconds - 1 min = 2 points ▪ >1min = 1 point 	/3
Total Points	/15

Laparoscopic Skills: Needle in a Haystack Station

So You Think You Can Operate

Station Designers: Joana Ochoa, MD and Rebecca Hoffman, MD

Background

Laparoscopy is a vital tool for all general surgery residents to master and is the gold standard way to perform many procedures. Laparoscopy is commonly performed by residents and is introduced early on within general surgery training in a stepwise fashion. Without knowledge and experience in laparoscopy, it is impossible to provide safe procedures for our patients.

STATION DURATION: 10 minutes

Activity Objectives

- Residents will demonstrate laparoscopic skills including picking up and transferring of objects
- Residents will simulate intraoperative communication during laparoscopic cases

Station Description

In this station, twenty surgical needles of various sizes will be hidden within a pile of cotton balls. Using a laparoscopic simulator, one resident will drive the camera while the other collects the needles. The participants will switch positions halfway through to allow both to participate. The residents must retrieve all needles and place them in a designated container. Prior to placing a needle in the designated container, the participant must perform a transfer of the needle from the right to the left hand or vice versa. Any needles dropped outside of the designated area will result in deduction of points. If the needle is dropped from the field during transfer, it may not be retrieved and the participant should move on to the next needle. Participants are scored on a variety of factors including completion of the task, efficiency, speed, and communication.

Station Equipment

- Laparoscopic simulator
- Laparoscopic instruments
- Needles
- Suture
- Fluffs/cotton balls
- Medicine cup



[Access Video Walkthrough](#)

Station Materials

Below is a comprehensive list of every item required for this skill station. Quantities are listed per team. Final amounts required will depend upon total number of teams competing. Items that are reusable from team to team are noted.

ITEM	QUANTITY	COMPANY	COST
Laparoscopic simulator (FLS type)	1 (reuse)	Applied Medical	Donated
30-degree scope	1 (reuse)	***	Donated
Laparoscopic Maryland dissector	2 (reuse)	***	Donated
Laparoscopic needle drivers	2 (reuse)	***	Donated
Laparoscopic graspers	2 (reuse)	***	Donated
RB1 needles	10 (reuse)	Ethicon (or other)	Donated
RB2 needles	10 (reuse)	Ethicon (or other)	Donated
SH needles	10 (reuse)	Ethicon (or other)	Donated
BV1 needles	10 (reuse)	Ethicon (or other)	Donated
Bag of cotton balls	1	Drug store	\$2
Suture (<i>silk, polypropene, or Vicryl dyed; can also use the suture from above needles</i>)	***	***	Donated
Medicine cup/ specimen cup	1	***	Donated
Paper			\$1
Marker			\$3
Tape			\$3
Estimated Total:			\$9

Note: Cost is provided only for uncommon or unique station items. Many common materials (e.g., suture, surgical instruments, laparoscopic trainer boxes) are often available through donations from local institutions/surgical simulation centers. Donations of these items help to reduce total cost of each station. Actual station cost may be higher than estimated total if all items must be purchased.

Resources Link(s):

- Applied Medical Laparoscopic Trainer: <https://www.appliedmedical.com/Products/Simsei/LapTrainer>
- FLS Trainer Box: <https://fls-products.com/fls>

Alternatives:

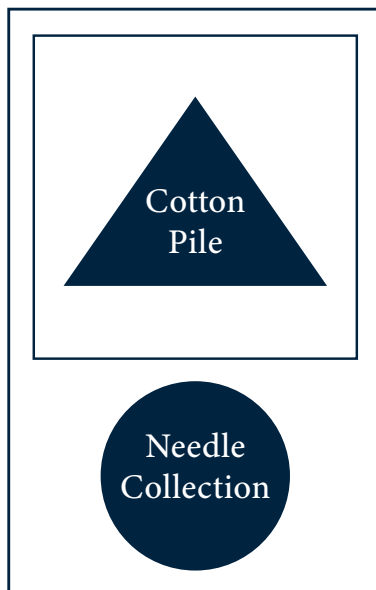
- The number of graspers are solely to allow the participant to pick which instruments they would like to use for the task. You may provide as much or as little variety in instrumentation as you have available.
- You can make this station more difficult by reducing allotted time, decreasing the size of the needles or increasing the number of needles.
- The medicine cup can be substituted for something that is more readily available (such as a specimen cup) or anything other container that might make it easier (wide base opening) or harder (narrow base opening). The container can be secured with tape so it doesn't move, or it can be left unsecured (potentially making the task harder).

Station Set Up

Setup Instructions:

1. Cut off the needles from the suture, taking note of how many needles of each size you use.
2. Cut the remaining suture into various sizes (long and short). This will be placed in the cotton ball pile with the needles to distract the participants.
3. Carefully construct a pile of cotton balls (or fluffs which have been torn apart) and intersperse the suture and 20 needles among the cotton balls.
4. On a large piece of paper which can fit into the lap simulator, draw an 8x8" square. This square will be the boundary for your operative field. The pile of cotton balls should be placed within this square. Needles that fall outside of this square are considered out of bounds.
5. A specimen cup or small pill cup should be placed in front of this.

Setup Overview



Station Instructions

Instructions (to be read out loud): Twenty needles of various sizes are hidden within a pile of cotton balls. Working as a team, you must retrieve all the needles and place them into the designated container. The more needles you recover in the allotted time frame will result in maximal points. Any loss of needles outside of the designated area will result in deduction of points. Prior to placing a needle in the designated container there must be a transfer from right to left or left to right hands of the needle. If the needle drops from the field during transfer, it may not be retrieved, and you should move on to the next needle. You will switch places halfway through the time allotted.

Station Score Sheet

Team: _____ **Team Member:** _____

COMPLETION: NUMBER OF NEEDLES OBTAINED	# OF POINTS
Retrieval of all 20 needles	10
Retrieval of 15-19 needles	8
Retrieval of 10-14 needles	6
Retrieval of 5-9 needles	4
Retrieval of 1-4 needles	2
Total Points	

SPEED (MAX OF 10 MINUTES)	# OF POINTS
Completion of task with more than 6 minutes remaining	5
Completion of task with 4-5 minutes remaining	4
Completion of task with 3-4 minutes remaining	3
Completion of task with 1-3 minutes remaining	2
Completion of task with 0-59 seconds remaining	1
Total Points	

EFFICIENCY: LOSS OF NEEDLES <small>Any needles that fall outside of marked area during retrieval process will be designated as "lost" and cannot be recovered</small>	# OF POINTS
No loss of needles	5
Loss of 1 needle	4
Loss of 2 needle	3
Loss of 3 needle	2
Loss of 4 needle	1
Total Points	

COMMUNICATION BETWEEN THE TWO TEAM MEMBERS	# OF POINTS
Effective communication allowing the team to efficiently visualize and collect needles	2
Communication occurs but could be improved	1
No communication	0
Inappropriate communication	-2
Total Points	

FINAL SCORE TALLY	MAX PTS	FINAL SCORE
Completion	10	
Speed	5	
Efficiency	5	
Communication	2	
Total Points	22	

Negative Pressure Wound Therapy Station

So You Think You Can Operate

Station Designers: Cheyenne C. Sonntag, MD, Lauren S. Nosanov, MD, Rachel E. Hanke, MD

Background

Negative pressure wound management systems are regularly encountered in general surgery training, whether it be on the abdomen, pelvis, or extremities. More frequently, incisional wound vacuums are being placed to decrease incisional seromas and improve healing in high-risk patients. In this head-to-head station, two teams will race each other to close two extremity incisions and accurately apply multi-site PREVENA™ incision management system technology (or a similar wound vacuum system).

STATION DURATION: 10 minutes

Activity Objectives

- Teams will appropriately perform a two-layer closure on a simulated extremity incision
- Teams will effectively apply a wound vacuum incision management system with appropriate protection of surrounding skin

Station Description

The Acelity Negative Wound Pressure Therapy station is designed to test residents' speed and skill with wound closure and application of negative pressure technology. After receiving the instructions, each resident on the team will be given a simulated extremity incision to close in two layers. The materials used in the model, when appropriately closed, will seal tight enough for the negative pressure dressing application to hold appropriate negative pressure therapy. This is a head-to-head station, where two teams are simultaneously competing, and points will be awarded for speed as well as precision in completion of the task for a total of 20 points. Points will be tallied by the judge at the end of the station.

Station Equipment

- Extremity or two-layered wound simulator
- Suture (for layered closure), needle driver, scissors, and pick-ups
- Two tables
- PREVENA™ incision management system technology or similar incisional wound vacuum system (or equivalent system)



Access Video Walkthrough

Station Materials

Below is a comprehensive list of every item required for this skill station. Quantities are listed **per person**. Final amounts required will depend upon total number of teams competing. Items that are reusable from team to team are noted.

ITEM	QUANTITY	COMPANY	COST
2-0 PDS suture	1 pack	Ethicon (or other)	Donated
3-0 Vicryl suture	1 pack	Ethicon (or other)	Donated
Needle driver	1 (reuse)	***	Donated
Pickups (Adson and Debakey)	1 (reuse)	***	Donated
Scissors	1 (reuse)	***	Donated
Extremity wound simulator			
Foam Roller semicircle (12 inches)	1	Amazon or other retailers	\$5
Red Spray Paint	1 can	Amazon or paint store	\$5
White Felt Sheet	12x8 inch sheet	Amazon or other retailers	\$10
Skin-colored vinyl fabric	20x10 inch piece	Amazon or other retailers	\$12
Hot glue gun & glue	1 (reuse)	Amazon or other retailers	\$5
PREVENA™ PEEL & PLACE System (therapy unit, canister, connector)	1 system (reuse)	Donation	\$398/kit
PREVENA™ PEEL & PLACE System (dressing)	1	Donation	Included above
Station table	2 (reuse)	***	***
Estimated Total:			\$40
If wound vac system requires purchase:			\$440

Note: Cost is provided only for uncommon or unique station items. Many common materials (e.g., suture, surgical instruments, laparoscopic trainer boxes) are often available through donations from local institutions/surgical simulation centers. Donations of these items help to reduce total cost of each station. Actual station cost may be higher than estimated total if all items must be purchased.

Resources Link(s):

- Extremity Simulator
 - › Foam roller:

https://www.amazon.com/CanDo-White-Foam-Roller-Round/dp/B001VAOCNY/ref=sr_1_3?dchild=1&keywords=foam+roller+6+inch&qid=1615663249&sr=8-3
 - › White felt sheet:

https://www.amazon.com/Nonwoven-Patchwork-Costumes-Classrooms-Parties/dp/B0848X2RFN/ref=sr_1_2?dchild=1&keywords=white+felt+sheets&qid=1615661718&refinements=p_85%3A2470955011&rnid=2470954011&rps=1&sr=8-2
 - › Skin-colored vinyl fabric:

https://www.amazon.com/VViViD-Oyster-Weatherproof-Leather-Finish/dp/B01MSYPV6J/ref=sr_1_6?dchild=1&keywords=tan+vinyl+material&qid=1615662466&refinements=p_85%3A2470955011&rnid=2470954011&rps=1&sr=8-6
- PREVENA™ Incision Management System:

<https://www.acelity.com/healthcare-professionals/global-product-catalog/catalog/prevena-incision-management-system>

Alternatives:

- You may also use a pool noodle cut in half as the base of your extremity simulator
- You may use any standard wound vacuum system modified for incision, but must ensure the skin is protected prior to vacuum application when it comes to judging section

Station Set Up

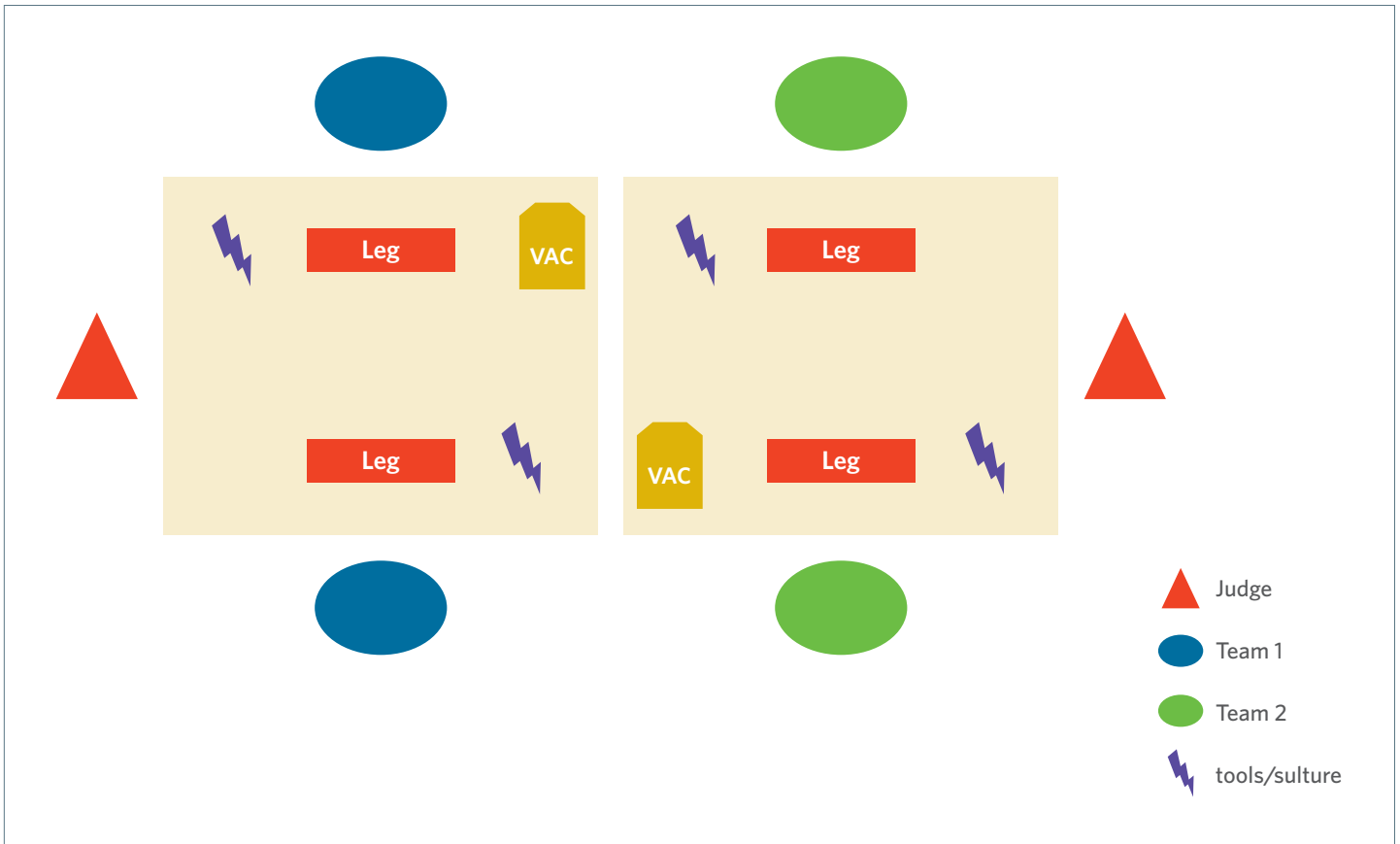
Setup Instructions:

1. Assemble your extremity simulators.
 - a. For muscle, spray foam red (if desired to simulate muscle)
 - b. For the subcutaneous tissue, hot glue white felt layer to foam (along the bottom of the roller only).
 - c. Then, apply the skin by hot gluing the vinyl fabric to the foam atop the felt.
 - d. Finally, create incision along top of simulator through the felt and vinyl layers.
2. Gather remaining materials.
3. Place simulated limbs on table with opposing teams opposite each other, and one simulated wound per team member (see diagram below).

Note: A single PREVENATM PEEL & PLACE System canister and therapy unit can be used per team to test both of their applications (they do not need to be tested simultaneously).



Setup Overview



Negative Pressure Wound Therapy Station

Instructions and Scoring

Station Instructions

Instructions (to be read out loud): In this station, you will be asked to perform a two-layer closure on a simulated extremity incision. Please close the deep layer in an interrupted fashion then perform a running closure of the skin with the materials provided. You will be evaluated based upon the quality of your closure. After closure you will place an Acelity PREVENA™ Incision Management System dressing, connect your dressings to a single vac unit, and initiate appropriate therapy. While this is a head-to-head station and extra points will be awarded to the team who completes the task the fastest, you will also be awarded points for your suturing technique and implementation of the vac therapy. Are you ready? You may begin **now**.

Station Score Sheet

Scoring Criteria (per team member):

Team: _____ **Team Member:** _____

		# OF POINTS
Suturing	Appropriate Closure Technique Deep layer interrupted: <i>1 point</i> Superficial layer running: <i>1 point</i>	/2
	Symmetry of Sutures Good spacing: <i>3 points</i> Okay spacing: <i>2 points only</i> There were stitches...: <i>1 point only</i>	/3
	Good Economy of Motion (i.e., minimal unnecessary movements) Yes: <i>1 point</i>	/1
Vac Dressing	Correct Order of Materials Application Yes: <i>1 point</i>	/1
	Degree of Vac Leak No leak: <i>2 points</i> Mild leak (yellow): <i>1 point only</i> Severe leak (red): <i>0 points</i>	/2
	Dressing Aesthetics Work of art: <i>2 points</i> I've seen better: <i>1 point only</i> I would NOT want that dressing on me: <i>0 points</i>	/2
	First to finish! <i>+5 points</i>	/5
Total Points		/16

OR Instrument Identification Station

So You Think You Can Operate

Station Designers: Victoria Miles, MD, Annie Ehlers, MD, Cheyenne Sonntag, MD

Background

Effective communication within the realm of the operating theater is critical to the success of the operative team and ultimately for the outcome of the patient. One facet of that communication requires that attending surgeons, residents, and scrub nurses utilize nomenclature to identify the instruments of choice for completing the procedure. Correctly identifying instruments by name as well as their intended surgical use is an important skill for residents of all levels to master.

STATION DURATION: 10 minutes

Activity Objectives

- Residents will appropriately identify each instrument based on palpation of the instrument without visualization
- Residents will identify the correct use for the instrument which is identified
- Overall, the instrument identification station will assist residents in their familiarity with common general surgery instruments

Station Description

The OR instrument identification station is designed to test resident knowledge of common instruments used in the operating room. After receiving the instructions, each resident will be given a sheet of paper to record their answers. There will be 10 boxes on the table, each with an instrument inside. The residents will not be able to see the instrument, but instead will have the opportunity to place both hands inside of the box to feel the instrument. In addition to naming the instrument, they will also be asked to describe for what the instrument is used (recorded on the scoring sheet). This can be in generic terms (e.g., grasping fascia) or specific terms (e.g., retracting the neck tissues when performing an open tracheostomy). One point will be given for correctly identifying the instrument, and a second point for identifying the use of the instrument for a total of 20 possible points. Points will be tallied by the judge at challenge completion.

Station Equipment

- 10 surgical instruments to be identified (NO SHARP OBJECTS)
- 10 boxes of appropriate size
- Pens
- Station table (at least 90 inches in length)
- Box cutter
- Packing tape



[Access Video Walkthrough](#)

Station Materials

Below is a comprehensive list of every item required for this skill station. Quantities are listed per team. Final amounts required will depend upon total number of teams competing. Items that are reusable from team to team are noted.

ITEM	QUANTITY	COMPANY	COST
Box, 12x8x6	10 (reuse)	Amazon	\$19.50 for 25 boxes
Instruments to be identified	10 (reuse)	***	Donated
Station table (at least 90 inches in length)	1 (reuse)	***	***
Packing tape	1 (reuse)	Amazon	\$10 for 3 rolls
Pens	2 (reuse)	***	***
Black marker	1 (reuse)	Amazon	\$4 for 4 markers
Box cutter	1 (reuse)	Amazon	\$10 for 2 box cutters
Estimated Total:			\$40

Note: Cost is provided only for uncommon or unique station items. Many common materials (e.g., suture, surgical instruments, laparoscopic trainer boxes) are often available through donations from local institutions/surgical simulation centers. Donations of these items help to reduce total cost of each station. Actual station cost may be higher than estimated total if all items must be purchased.

Resources Link(s):

- Recommended Boxes:

https://www.amazon.com/Aviditi-Corrugated-Length-Height-Bundle/dp/B00BT5FZKU/ref=sxin_9_ac_d_rm?ac_md=2-1-c2hpcHBpbmcmgYm94ZXM%3D-ac_d_rm&cv_ct_cx=mailing+boxes&dchild=1&keywords=mailing+box+s&pd_rd_i=B00BT5FZKU&pd_rd_r=d04a8d53-b900-4163-a08a-252603b189c4&pd_rd_w=zxKwE&pd_rd_wg=EJ5hm&pf_rd_p=b0625ac1-ea22-4a1c-8206-57129b08e075&pf_rd_r=MGNPFJBYN80WWAVE5AWY&psc=1&qid=1616155862&sr=1-2-12d4272d-8adb-4121-8624-135149aa9081

Alternatives:

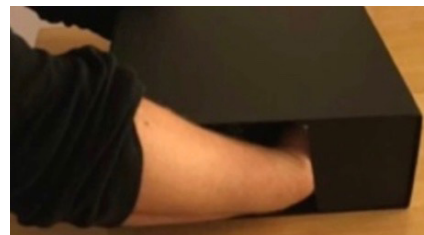
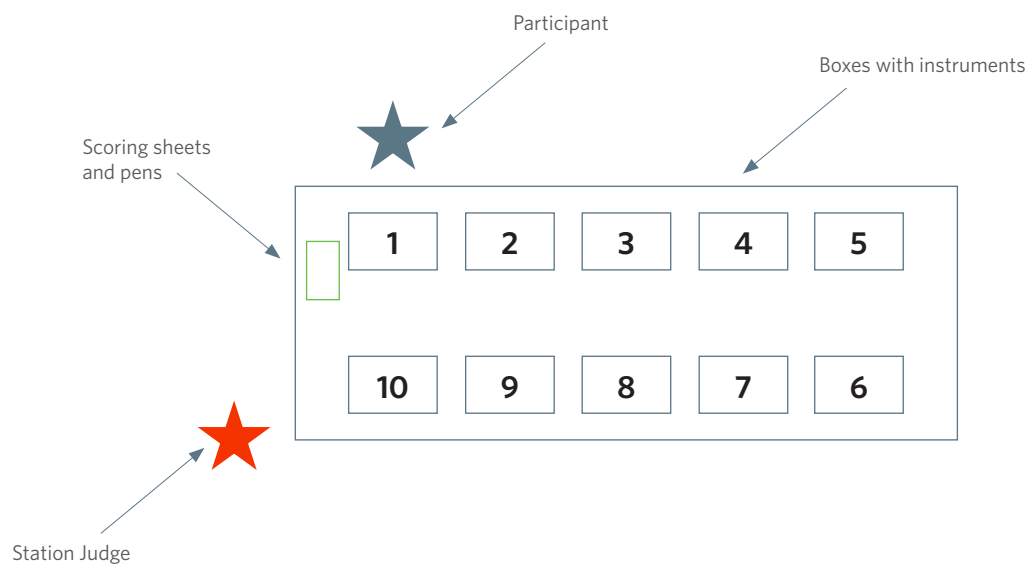
Instruments to be utilized for identification at this station may be exchanged for others dependent on the availability of these instruments at your institution. See "Instrument and Use Examples" page below.

Station Set Up

Setup Instructions:

1. Collect the above materials, including the 10 instruments to be identified in addition to the above materials.
2. Set out your boxes around the table, separated and numbered with your black marker on the top sequentially as below.
3. Assemble the boxes and cut a hole in the side of each box large enough that you can insert hand.
4. Place each instrument in the appropriate box and close the boxes.
5. Create a scoring key for the station judge.
6. Place score sheets and pens at the head of the table near box 1.

Setup Overview



OR Instrument Identification Station

Instructions and Scoring

Station Instructions

Instructions (to be read out loud): In this station, you will be asked to handle ten common instruments encountered in surgery that are hidden from your view. You may use both hands, but you are not permitted to look inside the box and view the items. There are no sharp or potentially injurious instruments in any box. Correctly identifying the name of the instrument is worth one point. After correctly identifying the instrument, you will be asked to identify at least one typical use of the instrument in question. You will record your answers on the form provided. We ask that you not discuss the instruments with others until all teams have completed the station. Good luck!

Station Score Sheet

Team: _____ **Team Member:** _____

Instructions: 1 point is awarded for correct identification of the instrument, and 1 point is awarded for correctly identifying the common use for the instrument. 20 points are possible.

BOX	INSTRUMENT/USE	# OF POINTS
1	Instrument: Use:	_____ of 2
2	Instrument: Use:	_____ of 2
3	Instrument: Use:	_____ of 2
4	Instrument: Use:	_____ of 2
5	Instrument: Use:	_____ of 2
6	Instrument: Use:	_____ of 2
7	Instrument: Use:	_____ of 2
8	Instrument: Use:	_____ of 2
9	Instrument: Use:	_____ of 2
10	Instrument: Use:	_____ of 2
Total Points		_____ of 20 possible points

Ancillary Materials: Instrument and Use Examples

INSTRUMENT	USE
Green goiter retractor	Tissue retraction during neck operations (e.g., thyroidectomy)
Satinsky clamp	Vascular clamp designed for vascular and cardiothoracic procedures
Babcock clamp	Non-perforating forceps, often used to grasp tissue or bowel
Doyen rib elevator (-0.5 points if misses 'Doyen' in description)	Elevate periosteum to allow for rib resection
Weitlaner retractor	Self-retaining retractor used for exposing a surgical site, especially in small incisions such as inguinal hernia repair or femoral vessel exposure
Metzenbaum scissors	Tissue dissection and division
Allis tissue clamp	Sharp-toothed clamp used for grasping heavy tissue
Heaney needle driver	Curved needle driver often used in obstetrics-gynecology or colorectal surgery
Castroviejo needle driver (-0.5 points if only 'Castro' in description)	Fine needle driver often used in vascular surgery
Bulldog clamp	Atraumatic clamp used in cardiac and vascular surgery to control vessels
Aortic clamp	Obtain vascular control of aorta
Bonnie forceps/Ferris Smiths/Rat tooth	Traumatic forceps used for firm grip, commonly to hold fascia
Langenbeck retractor (or appendiceal retractor)	Hand-held retractor used to retract superficial layers of abdominal wall (or subcutaneous tissues/muscles in other areas)
Crile/Snap/Stat	Used for blunt dissection, clamping small blood vessels, general grasping
Kelly/Peon	Used for blunt dissection, clamping medium blood vessels
Cushing/Bayonet forceps	Atraumatic forceps, used to facilitate work in deep and poorly exposed areas (S-shaped curve)
Adson/Adson Browns	Grasping for delicate work, closing skin
Rumel tourniquet	Vascular tourniquet, also used for Pringle maneuver
Clip applier	Apply clip in open case
Beer opener	To relax after a long day of being a surgery resident (ha-ha)