Table. Data from the classes of 2014, 2015, and 2016.

Total Cards: 92	Yes	Somewhat	No	Not Answered
Were you prepared?	77 86%	10 11%	3 3%	2
Was your team prepared?	75 85%	11 13%	2 2%	4
Were you an effective leader?	66 80%	17 20%	0 0%	9
Overall, did you communicate well with your team?	69 79%	18 21%	0 0%	5
Did you use direct, clear, closed-loop communication?	**52** **60%**	**34** **39%**	1 1%	5
Did you periodically review the plan with the entire team?	**61** **72%**	**24** **28%**	0 0%	7
Did you do a quick debriefing of the case with your staff, team or key personnel?	**39** **48%**	**13** **16%**	**29** **36%**	11

14 Adapting Gel-Wax into a Low Cost Ultrasound Guided Pericardiocentesis Model

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Background: Cardiac tamponade is a life-threatening emergency for which pericardiocentesis may be required. Real-time bedside ultrasound has obviated the need for routine blind procedures in cardiac arrest and the number of pericardiocenteses being performed has declined. Despite this fact, pericardiocentesis remains an essential skill in emergency medicine.

While commercially available training models exist, cost and durability limit their usefulness.

Educational Objectives: We sought to create a pericardiocentesis model that is realistic, simple to build, reusable and cost efficient.

Curricular Design: The model was constructed utilizing a saline filled Ping-Pong ball (simulating the left ventricle) and a 250cc saline IV bag (simulating the effusion) encased in an artificial rib cage, held in place by gel-wax with flour mixed in (Picture 1). The inner saline bag was connected to a 1L saline IV bag outside of the main assembly to act as a fluid reservoir for repeat uses. The model was mounted loosely on a piece of plywood and covered with latex exercise bands to simulate skin. The cost of the materials was <$200 (Table 1). The construction time was about 4 hours, but then an additional day was given for gel-wax to cool and set before use.

The model was introduced to Emergency Medicine residents and students during a procedure simulation lab and compared to another DIY model model previously described by dell'Orto. The learners performed ultrasound guided pericardiocentesis using both models and were asked to complete a survey regarding the realism of the two models.

Impact/Effectiveness: Learners felt our model was more realistic than the previously described model. On a scale of 1-9 with 9 being very realistic, the previous model was rated a 4.5. Our model was rated a 7.8. Additionally, 100% of students were successful at performing the procedure using our model.

In simulation, our model provided both palpable and ultrasound landmarks and held up to several months of repeated uses. It was much less expensive than commercial models while being more realistic in simulation than other described DIY models. This model can be replicated in training programs to teach the necessary skill of pericardiocentesis.

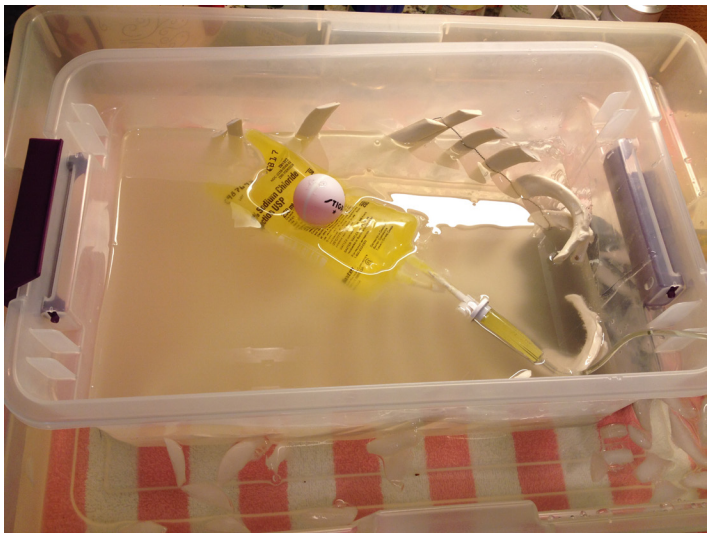

Figure.

Material	Store	Cost (USD)
Gel-Wax	Any craft supply store	$53
Rib Cage	Skeletons and More LLC. (through amazon.com)	$62.95 + $12.95 Shipping
Plastic storage bin	Target	$5
250cc fluid bag		$4.40
1000cc fluid bag		$8.29
Secondary IV tubing		$4.40
3 way stopcock		$6.99
Exercise band 6 in x 6 ft	Any sporting goods store	$17.99
Plywood	Any lumbar store	$5
Ping pong balls x 2	Any sporting goods store	$3.99

Table. List of Materials.