each shift. Students worked 7 unpaired shifts and 6 paired shifts, alternating which format took place first. Students anonymously completed a survey of likert scale questions and one free response area comparing the modalities and their impact on the quality of teaching, overall educational experience, ability to evaluate the program and the ability of the program to evaluate them.

Impact and Effectiveness: 48 M4's completed the survey with 66% of respondents feeling they were better able to evaluate us as a residency program through the paired format. This format improved educational experience, direct teaching time, fostered an environment in which students were comfortable asking questions and the perception that the program was able to better evaluate them as applicants. There was no significant difference in teaching time by attendings. Unexpectedly, while students overall preferred the paired format, many stated that the combination of the two schedules provided the best balance between maximizing education and getting to know the entire program.

Table 1.

	"More" or "much more" with resident schedule	No difference	"More" or "much more" with unpaired schedule
Which schedule format allowed you to receive more direct teaching time?	31/48 (64.6%)	13/48 (27.1%)	4/48 (8.3%)
Which schedule format allowed you to maximize your educational experience during the rotation?	33/48 (68.8%)	11/48 (22.9%)	4/48 (8.3%)
In which schedule format where you more comfortable asking questions about patient care and medical knowledge?	35/48 (72.9%)	12/48 (25.0%)	1/48 (2.1%)
Which schedule format allowed you to demonstrate your knowledge of emergency medicine better?	25/48 (52.1%)	20/48 (41.7%)	3/48 (6.3%)
Which schedule format allowed for more direct teaching time from attending physicians?	7/48 (14.6%)	32/48 (66.7%)	9/48 (18.8%)
Which schedule format gave you a better ability to learn about and evaluate the residency program?	32/48 (66.7%)	13/48 (27.1%)	3/48 (6.3%)
Which schedule format do you feel allowed the program to get to know you better as an applicant?	32/48 (66.7%)	11/48 (22.9%)	5/48 (10.4%)

3 Innovations in Airway Education: 3D Printed Neonatal and Pediatric Needle Cricothyrotomy Trainers

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Introduction/Background: Pediatric needle cricothyrotomy is a rarely performed, yet high stakes procedure that is expected to be within the skill set of a training ED physician. Prior studies have shown benefit with low cost, low fidelity trainers, but there is scant amount of information discussing the production of a high fidelity trainer that remains at low cost. To bridge that gap we created a trainer that can be easily incorporated into simulation and hands-on training.

Learning Objective: The objective was to create a low cost, high fidelity pediatric needle cricothyrotomy trainer that increases the resident's ability to prepare and perform this difficult procedure.

Curricular Design: We used a .STL file from The Airway App, manipulating the design with Blender, a 3-D modeling program and Slic3r, to prepare it for 3D printing, creating scaled models at 50%, 33% and 25% of the original adult cricothyroid trainer (Image 1). A Pursa MK3 3D printer was then used to produce the scaled models.

Our goal was to create an evidence-based neonatal cricothyroid model in order to practice needle cricothyrotomy. Once printed, these trainers were used for resident simulation. SimSkin was placed over the trainers and residents performed the procedure with angiocatheters, syringes, and endotracheal tubes. All participants completed a survey after the simulation.

Impact/Effectiveness: Participants completed a post-simulation assessment survey in which comfortability was measured on a 1-5 scale, with 5 being completely comfortable in performing the procedure. Average pre-simulation and post-simulation scores were calculated and statistical analysis was completed using a single tail paired T-test. Average pre-simulation score was 1.87 and average post-simulation score was 3.57, for a median change of 2 ($p<0.05$). 96% of participants felt that the simulation was realistic and 100% of participants would recommend it for residents or attendings in the future (Table 1). Our data confirms the efficacy of this low-cost, high fidelity trainer in resident simulation.

Image 1.

Table 1.

	Participants	Comfort Pre Sim (1-5)	Comfort Post Sim (1-5)	Change	Was it realistic?	Is it valuable for other residents/attendings?
Totals	23	43	82	39		
Mean		1.87	3.57	1.70	96%	100%
Median				2		
Paired T-test (1 tail)				0.0000000002		