

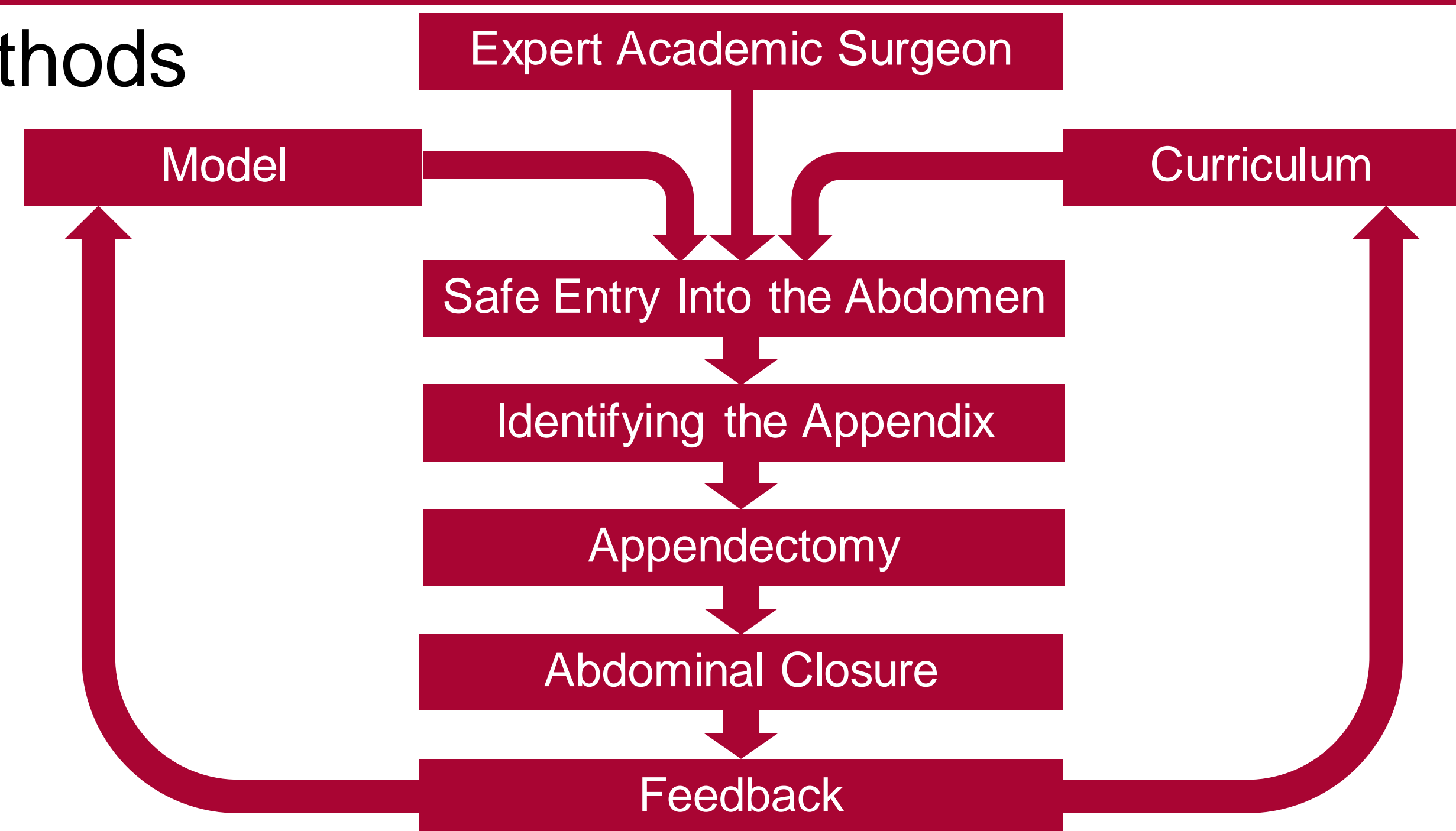
Background

- The Lancet Commission proposed a target of 20 specialty-trained surgical, anesthesia and obstetric (SAO) providers per 100,000 population by 2030.¹
- Kenya has a density of 2.42 SAO providers per 100,000 population.²
- Due to a geographic shortage of SAO providers within Kenya, general practitioners without surgical training are expected to complete emergency surgical procedures.
- One such emergency surgical procedure is the appendectomy, as acute appendicitis is a common indication for surgery in sub-Saharan Africa.^{3,4,5}
- Training in the appendectomy may be limited by access to experienced surgeon instructors and/or resources that are often expensive and difficult to obtain.

Objective

- To address the SAO provider shortage and surgical education limitations, the Academic Model Providing Access to Healthcare (AMPATH) surgical team is developing an education module dedicated to the skills necessary to complete the open appendectomy.
- The education module will be delivered via mobile phone app and self-made simulators.
- We hypothesize that our model and curriculum will provide a low-cost method of effectively simulating the open appendectomy.

Methods



Results

- A total of 8 expert surgeons were consulted on the model, each presented with an updated version of the appendectomy model and procedure based on feedback.
- Experts provided feedback on the model and each substep of the curriculum.
 - 6 experts provided feedback via RedCap and recorded video.
 - 2 experts provided feedback via recorded video only.

Safe Entry Into the Abdomen

How clear were the instructions?

Total Count	Missing	Unique	Min	Max	Mean	StDev	Sum	Percentile	0.05	0.10	0.25	0.50	0.75	0.90	0.95
6	0	5	23.00	98.00	76.83	27.08	461.00	37.75	52.50	82.00	83.50	89.50	94.50	96.25	

How realistic was the model?

Total Count	Missing	Unique	Min	Max	Mean	StDev	Sum	Percentile	0.05	0.10	0.25	0.50	0.75	0.90	0.95
6	0	5	25.00	50.00	44.67	9.75	268.00	30.25	35.50	46.50	48.50	49.75	50.00	50.00	

Identifying the Appendix

How clear were the instructions?

Total Count	Missing	Unique	Min	Max	Mean	StDev	Sum	Percentile	0.05	0.10	0.25	0.50	0.75	0.90	0.95
6	0	6	24.00	97.00	71.00	28.26	426.00	30.50	37.00	57.00	82.50	89.25	93.50	95.25	

How realistic was the model?

Total Count	Missing	Unique	Min	Max	Mean	StDev	Sum	Percentile	0.05	0.10	0.25	0.50	0.75	0.90	0.95
6	0	6	23.00	72.00	49.00	21.12	294.00	24.25	25.50	31.25	52.00	66.00	69.50	70.75	

Appendectomy

How clear were the instructions?

Total Count	Missing	Unique	Min	Max	Mean	StDev	Sum	Percentile	0.05	0.10	0.25	0.50	0.75	0.90	0.95
6	0	6	50.00	96.00	78.67	18.22	472.00	53.25	56.50	67.75	86.00	90.75	93.50	94.75	

How realistic was the model?

Total Count	Missing	Unique	Min	Max	Mean	StDev	Sum	Percentile	0.05	0.10	0.25	0.50	0.75	0.90	0.95
6	0	5	46.00	82.00	65.17	16.90	391.00	47.00	48.00	51.00	65.50	80.75	82.00	82.00	

Abdominal Closure

How clear were the instructions?

Total Count	Missing	Unique	Min	Max	Mean	StDev	Sum	Percentile	0.05	0.10	0.25	0.50	0.75	0.90	0.95
6	0	5	50.00	98.00	82.83	16.73	497.00	58.75	67.50	85.25	87.50	89.00	93.50	95.75	

How realistic was the model?

Total Count	Missing	Unique	Min	Max	Mean	StDev	Sum	Percentile	0.05	0.10	0.25	0.50	0.75	0.90	0.95
6	0	6	38.00	98.00	68.17	22.49	409.00	41.00	44.00	52.75	69.50	82.50	91.00	94.50	

Conclusion

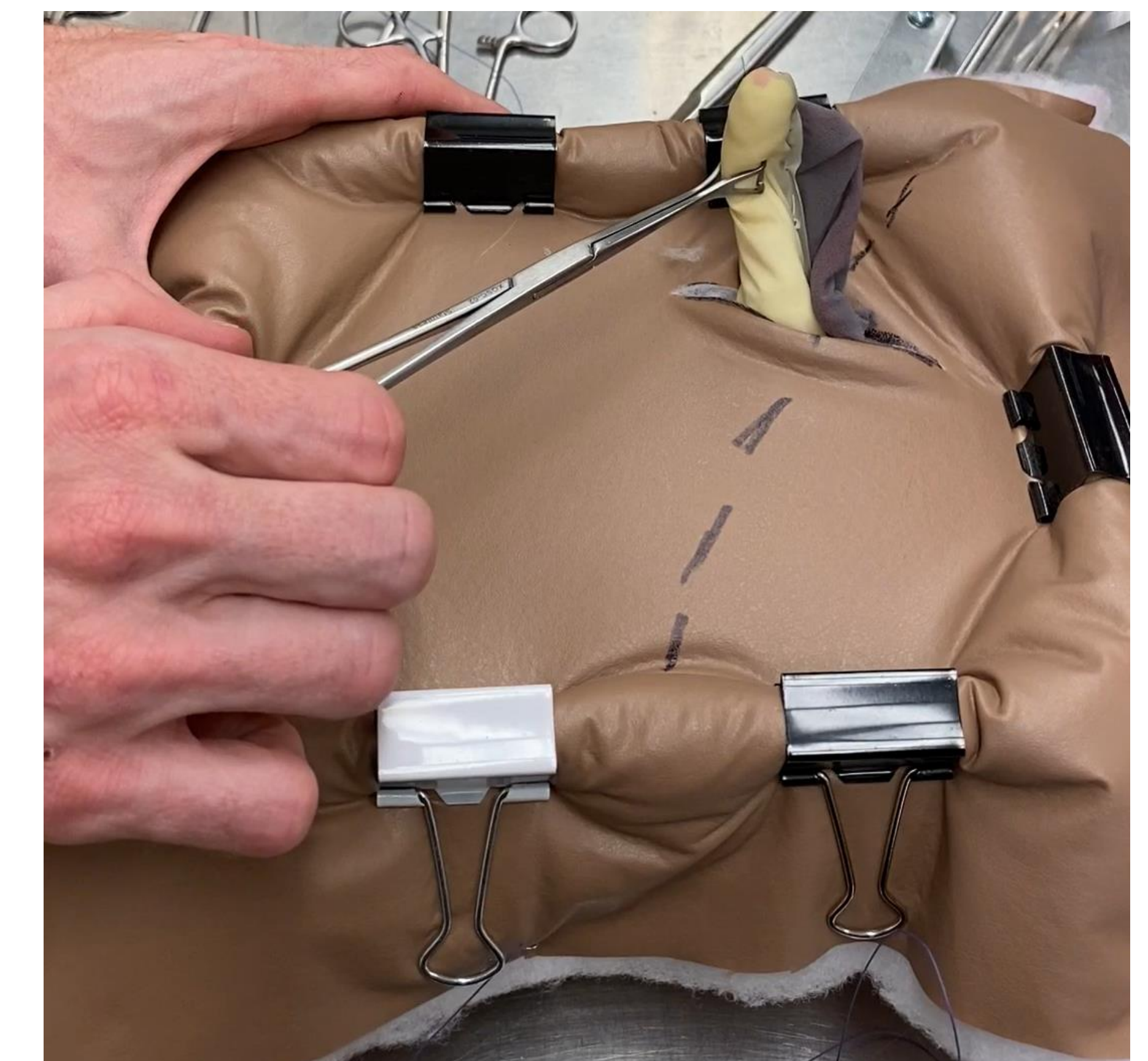
- A low-cost appendectomy model with corresponding curriculum was developed, and refined with expert feedback, to facilitate this project's transition to its next stage – testing on medical trainees.
- Additionally, the model and curriculum will enable the development of an AI algorithm to give the learner real-time feedback as they perform the simulation.
 - This will be developed in part from annotated videos of the expert academic surgeons performing the appendectomy.

Implications

- Ultimately, this study may create a platform that increases access to best possible practice and improves outcomes in settings where surgical education is limited.

References

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Model



- Skin = Vinyl
- Subcutaneous Tissue = Polyester
- Scarpa's Fascia = Plastic Wrap
- Fatty Tissue = Polyester Batting
- Aponeurosis = Cotton
- Muscle = Cotton Batting
- Muscle = Cotton Batting
- Peritoneum = Plastic Wrap