

Title: Emergency Cricothyroidotomy

Date: March 7, 2024

Client: Dr. Lenard Markman

Advisor: Darilis Suarez-Gonzalez

Team:

Katerina Smereka

Zac Mayhew

Megan Finell

Mateo Silver

Problem statement

Every year in the United States over 5,000 people die due to choking. There are only a few precious minutes between loss of the airway and brain death. By creating a device which can establish an airway in case of blockage (either caused by choking or anaphylaxis), many of these people could be saved. Crucial to the success of the device is its availability. The device will be low-cost and easy to use, so it can be added to first aid kits and placed in public areas. Unlike current devices on the market, which are expensive and difficult to use, our product aims to be accessible when emergencies occur.

Brief status update

The team has made large strides in creating a preliminary manuscript for future publication. Moreover, as the team is asking around the general Madison area for more porcine materials to test, the team has shifted testing towards airflow metrics.

Difficulties / advice requests

None to report

Current design



Materials and expenses

Item	Description	Manufacturer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Semester 1 Expenses										
All expenses									\$29.67	
Semester 2 Expenses										
Porcine Skin		N/A		Asian Midway Market		2/10/2024	1	2.97	\$2.97	
									\$2.97	
								TOTAL:	\$32.64	

Major team goals for the next week

Acquire more porcine tissues and increase testing sample size. Test puncture of device on porcine skin

Next week's individual goals

- Katerina
 - Discuss possibility of a handle to make the device more ergonomic
- Zac

- Keep updating and testing handle design since first one failed from being too thin
- Help planning outreach
- Megan
 - Obtain more porcine tissue samples
 - Help plan outreach activities
- Mateo
 - Organize outreach plan, reach out to Dr. Tracy Puccinelli

Timeline

Task	Jan	Feb				March					April				May	
	26	2	9	16	23	1	8	15	22	29	5	12	19	26	3	10
Project R&D																
Empathize	X	X	X	X	X	X										
Background...	X	X	X	X	X	X										
Prototyping				X	X											
Testings				X												
Deliverables																
Progress Reports	X	X	X	X	X	X										
Prelim presentation			X			X										
Final Poster																
Meetings																
Client		X														
Advisor	X	X	X	X	X	X										
Website																
Update	X	X	X	X	X	X										

Filled boxes = projected timeline
 X = task was worked on or completed

Previous week's goals and accomplishments

- Katerina
 - Do airflow testing on SOLIDWORKS
 - Consider increasing ergonomics with potential integration of a handle
- Zac
 - Help with sharpening device in Teamlab
 - Test sharpened device
 - Finish section of preliminary report
- Megan
 - Research butchers in the area to get additional pig skin and possibly a neck
 - Help plan future testing (airflow, MTS, etc)

- Mateo
 - Plan larger scale testing: MTS or functionality testing?
 - Look more into Anaesthesia Journal, past medical device publications
 - Calculate statistical power, sample size needed

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Katerina	3/1 3/3	Reformat preliminary manuscript Edit preliminary manuscript for clarity in scientific writing and ensuring that manuscript follows journal requirements	1 3	4	16
Zac	3/3 3/6	Review deliverables Solidworks Airflow Sim	1 1	2	15
Megan	3/3 3/6	Review deliverables and add testing to Labarchives Emailing contacts about more tissue samples	1.5 0.5	2	14.5
Mateo	3/3 3/4	Review deliverables Establish date for outreach, preliminary planning	1 1	2	17