

Progress Report #1

Title: Helmet for continuous laryngoscopy with exercise

Date: 09/06/2026

Client: Mr. Jacob Tangney MS, CCC-SLP

Advisor: Dr. Randolph Ashton, PhD

Team:

Evan Zheng, BME 300 - Team Leader

Hangjay Liu, BME 300 - Communicator

Joseph Hegeman, BME 200 - BSAC

Kavin Yedlapali, BME 200 - BWIG

Katherine Fletcher, BME 200 - BPAG

Regghan Ziegler, BME 200 - BWIG

Problem Statement

Patients with induced laryngeal obstruction (ILO) require continuous laryngoscopy during exercise to observe the airway when the symptoms occur. However, current systems designed for securing the laryngoscope can be unstable, uncomfortable, and difficult to adjust causing device movement, poor/obstructed image quality, and difficulties during testing. In addition, there is no standard helmet for CLE procedures and all current helmets are custom made. Thus it is important to create a helmet that is able to securely stabilize the laryngoscope while accommodating different forms of exercise and a wide range of patient head size in order to help clinicians obtain reliable images.

Brief Status Update

The team have recently met up and discussed the paper and other information related to the helmet for laryngoscopy, and came up with some ideas to improve on some of the helmet that was shown in the paper, including decreasing the swing of the laryngoscope, move the center of mass to the middle, increase comfort, and making it more accessible. 5 members contributed to the current challenge and information revolving around continuous laryngoscopy exercise for exercise inducible laryngeal obstruction, such as it is common in mostly adolescent and young adult especially in women, we have obtained a rough graph of head size, issues with securing the scope, and issue with comfort.

Difficulties / Advice / Requests

The team has difficulty in finding a time outside of the advisor meeting time when all all the team members could meet. Using when 2 meet we have found that there is only at most 4 out of the 6 members who could meet together this can be proven problematic.

Current Designs :

Materials and expenses - N/A

Item	Description	Manufacturer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total
Category 1									
									\$0.00
									\$0.00
Category 2									
									\$0.00
									\$0.00
								TOTAL:	\$0.00

Major team goals for the next week

1. Draft out the PDS since this will guide us during the designing and fabrication process of our product
2. Begin researching materials and cost-effective fabrication strategies

Next week's individual goals

- Evan Zheng
 - Research fabrication methods for brainstormed ideas
 - Research ideal materials for clinical laboratory use
 - Meet with the client to obtain materials and discuss the project requirements
- Hangjay Liu:
 - Look into laryngoscope mount
 - Research on some helmet design and ideas
 - Obtain physical scope to gauge dimension

- Joseph Hegeman
 - Attend the BSAC meeting on 9/11 and report to the team on topics discussed.
- Kevin Yedlapalli
 - Updated initial course website
 - Researched into what EILO is and the role of CLE in helping diagnose EILO
- Katherine Fletcher
 - Further research into what populations experience more intense symptoms of ILO/VCD and where treatments can be adjusted
 - Start developing possible design requirements
- Reghan Ziegler
 - Continue working on the course website
 - Research inexpensive alternatives to commonly used materials when constructing the laryngoscopy helmet

Timeline

Task	Sept			Oct					Nov				Dec	
	11	18	25	2	9	16	23	30	6	13	20	27	4	11
Project R&D														
Empathize														
Background...														
Prototyping														
Testings														
Deliverables														
Progress Reports														
Prelim presentation														
Final Poster														
Meetings														
Client														
Advisor														
Website														
Update	x													

Filled boxes = projected timeline

X = task was worked on or completed

Previous week's goals and accomplishments

- Evan Zheng
 - Researched case studies of why CLE is important, what ELIO is, and what the procedure looks like
 - Brainstormed some ideas for helmet design
- Hangjay Liu
 - Research on the head size of adolescents of age 8-18

- Reached out to client and trying to schedule a meeting time where all members can attend
- Look into some article regarding the helmet
- Joseph Hegeman
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- Kevin Yedlapalli
 - Update all initial information on to the course website
 - Research into EILO and the role of CLE to understand the laryngoscopy procedure
- Katherine Fletcher
 - Research on general causes (and triggers) and treatments for ILO/VCD
 - Research how the diagnosis affects female patients versus male patients
 - Learn why there is a difference in prevalence between female and male patients
- Reghan Ziegler
 - Research commonly used materials in constructing similar devices or pre-existing devices
 - Start working on the course website
 - Research to find either pre-existing or similar devices to see common practices within each iteration

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Evan Zheng	9/9/2026	Organized team meeting logistics, research on CLE and ELIO, Brainstormed solutions, sketched one solution	4	4	4
Hangjay Liu	9/9/2026	Team meeting, Client/advisor communication, research on design and brainstorming ideas. Digging deeper about the project.	4	4	4
Joseph Hegeman	9/9/2026	Attended initial meeting	1	1	1
Kavin Yedlapalli	9/9/2026	Team meeting. Set up initial course website. Research into what EILO is and how CLE tests are performed to gain a better understanding of the project	4	4	4
Katherine Fletcher	9/9/2026	Team meeting. Research on CLE and ILO/VCD. Developed potential helmet designs. Researched impact on women.	3	3	3
Regan Ziegler	9/9/2026	Team meeting, research on the design and sketching preliminary ideas, and research on head size of women and adolescence and how that may change	3	3	3