

Progress Report - Week 6

Title: Vaginal Self-Swab Device to Minimize Contact Contamination

Client: Dr. Jean Riquelme

Advisor: Dr. Megan McClean

Team:

Sara Morehouse (Leader)

Cherry Qiu (Communicator)

Katherine Kafkis (BWIG and BSAC)

Adam Berdusco (BPAG)

Date: March 7, 2024

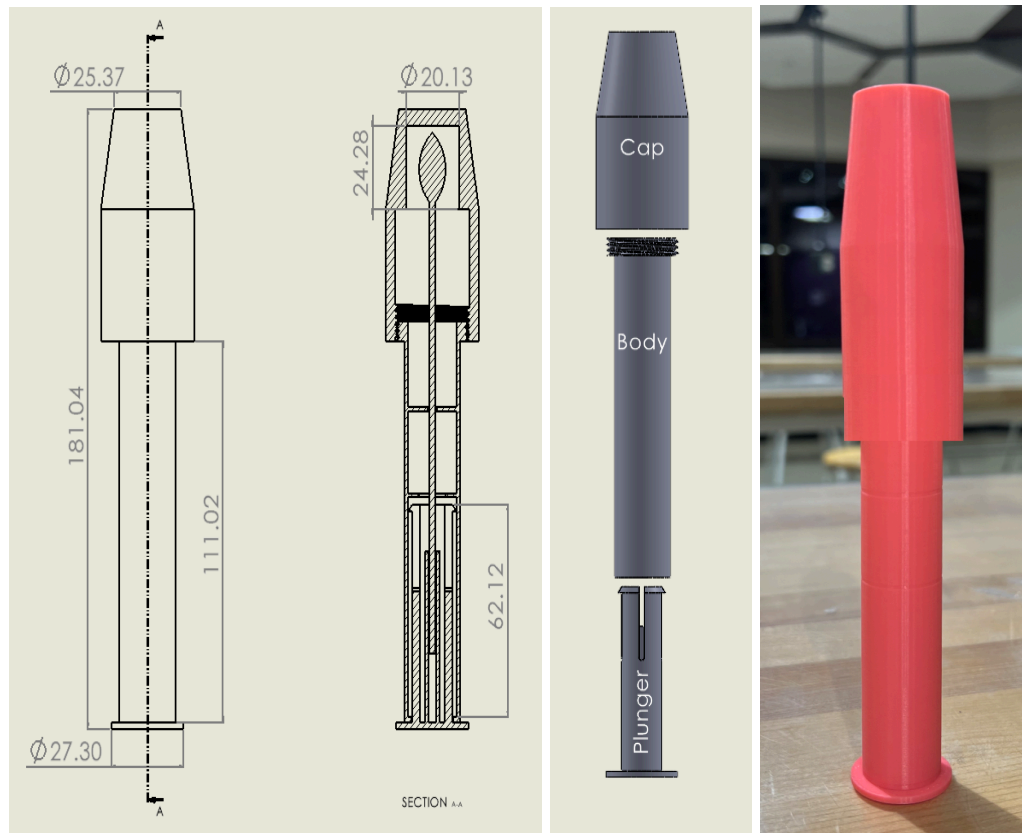
Problem Statement:

Quality sexual health is important for every woman to sustain, but with women ages 15-24 accounting for 43% of undiagnosed STI cases, the system supporting women's sexual health could use some improvement (CDC). The team has developed a novel self-swab STI testing device that allows women the privacy of swabbing themselves without the potential discomfort of a physician present. This was conceived with the goal in mind of making STI testing more accommodating while reducing contamination of the testing environment. However, the current design has issues with media leaking from the device after use, as well as with the aesthetics of the design. Additionally, the device requires the addition of a thin, puncturable film to the cap to contain transport media. The team is tasked with modifying the original design to address the issues currently being faced while still seeking to limit contamination of the device and testing environment as well as account for patient comfort.

Brief Status Update:



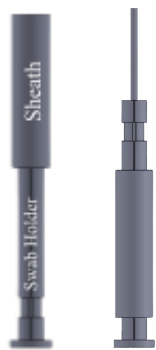
This week the team worked on writing our preliminary report. For the report, we decided to focus our content on the work we have done thus far despite the fact that we must make modifications to our designs in order to comply with the requirement of using the Hologic media tube. We have discussed this in our report, and going forward will be focusing on redesigning for this requirement.

Current Design:



The current design was developed last semester and includes a plunger, body and cap. The prototype was 3D-printed and assembled with the plunger being inserted into the bottom of the body, and the cap screws onto the top of the body. A swab is inserted through the body and into the plunger.

Design Matrix:

Criteria	Weight	1. Modified Plunger		2. Snap On		3. Pull Back	
							
Limiting contamination	30	5/5	30	3/5	18	4/5	24
Leakage Prevention	25	3/5	15	5/5	25	2/5	10
Ease of use	15	3/5	9	5/5	15	4/5	12
Ease of fabrication	10	3/5	6	5/5	10	2/5	4
Patient Comfort	10	5/5	10	4/5	8	4/5	8
Safety	5	5/5	5	5/5	5	5/5	5
Cost	5	5/5	5	5/5	5	5/5	5
Total	100	80		86		68	

Materials and Expenses:

Item	Description	Manufac - turer	Mft Pt#	Vendor	Vendor Cat#	Date	#	Cost Each	Total	Link
Preliminary prototype print	Material: PLA	n/a	n/a	Makerspace	n/a	2/27	n/a	n/a	\$3.34	n/a
-									\$0.00	
-									\$0.00	
-									\$0.00	

Meetings																	
Client			X														
Advisor	X	X	X	X	X												
Website																	
Update	X	X	X	X	X	X	X										

Previous week’s goals and accomplishments:

- Accomplishment: Completed the preliminary report.

Activities:

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Katherine	3/4/24	Modified the pull-back design to be compatible with the Aptima media tube	1	5	19
	3/5/24	Completed assigned sections of the preliminary report	2		
	3/6/24	Edited the preliminary report and submitted it to canvas as well as website	2		
Sara	3/5/24	Worked on preliminary report	2	4	17
	3/6/24	Worked on preliminary report	2		
Cherry	3/5	Worked on assigned section of preliminary report	2	3.5	14.75
	3/6	Revised assigned report sections	1.5		
Adam	3/5	Worked on preliminary report	1.5	3	17
	3/6	Revised preliminary report	1.5		