# **Progress Report - Week 5**

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: February 29, 2024

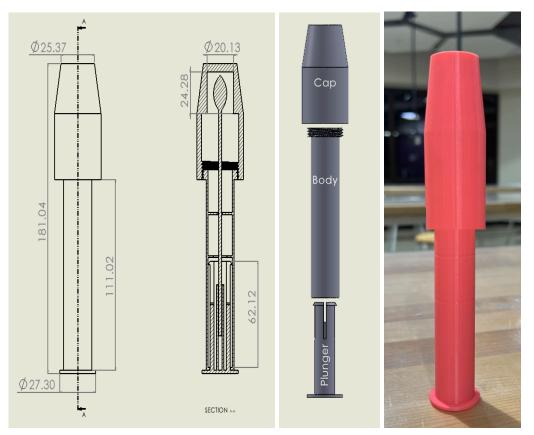
### **Problem Statement:**

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 met with Dr. Accola from the UW Health Lab that processes the STI samples. During this meeting, we learned about the machine that is used to automate the process, which is designed specifically for Hologic test tubes. Thus, we must consider this as an important factor in our next iteration of designs. We also worked on completing the preliminary presentation and the preliminary design report.

### **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		Inger Treat	Snap O	Decking mechanism	Pull Back			
Limiting contamination	30	5/5	30	3/5	18	5/5	30		
Leakage Prevention	25	4/5	20	5/5	25	4/5	20		
Ease of use	15	4/5	12	5/5	15	3/5	9		
Ease of fabrication	10	1/5	2	5/5	10	3/5	6		
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	84		86		83			

### Materials and Expenses:

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

### Major team goals for the next week:

- 1. Complete the preliminary report.
- 2. Come up with a redesign to account for sample processing.
- 3. Schedule time to meet with Dr. Accola in person to see the sample processing machine.

#### Next week's individual goals:

- Sara:
  - Finish preliminary report and peer feedback.
  - Work on design ideas to address the new requirement.
- Cherry:
  - Finish assigned preliminary report sections
  - Brainstorm design ideas to fit with the Hologic Panther Machine
- Katherine:
  - Modify design ideas to be compatible with the Aptima test tube
  - Complete preliminary report and peer feedback
- Adam:
  - Made modifications on to the designs on Solidworks
  - Worked with team to finish preliminary presentation

Task	Jan		F	eb		March				April				Мау		
IdSK	26	2	9	16	23	1	8	15	22	29	5	12	19	26	3	10
Project R&D																
Background research	Х	Х	Х	Х	Х	Х										
Design development				Х	Х	Х										
Prototyping						Х										
Testings																
Deliverables																
Progress Reports		Х	Х	Х	Х	Х										
PDS			Х													
Prelim presentation/report						Х										
Final Poster																
Meetings																
Client			Х													
Advisor	Х	Х	Х	Х	Х											
Website																
Update	Х	Х	Х	Х	Х	Х										

### Previous week's goals and accomplishments:

- Goal: Print prototypes and choose a final design.
  - We printed a couple different designs to see if they were possible to print. However, we did not choose a final design due to the new requirement of incorporating the Hologic testing machine.
- Goal: Complete the preliminary presentation and work on the preliminary report.
  - We have completed the presentation and will be presenting it on Friday. We have also begun work on the preliminary report.

### Activities:

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Katherine	2/26	2/26 Completed the CAD of the pull-back design		3	14
	2/27	3D-printed the plunger and snap-on designs.	1		
Sara	ara 2/25 Worked on SolidWorks designs and updating design matrix		2	4	13
	2/27	Completed presentation slides for preliminary presentation	2		
Cherry	2/27	Met with Dr. Accola to gain insight on STI test Processing	1	4	11.25
	2/27	Finished presentation slides	2		
	2/29	Practiced presentation with group	1		
Adam	2/27	Solidworks preliminary designs	2	4	14
	2/28	Worked on and practiced preliminary presentations	2		