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# SENSIBLE

a novel menstrual pad

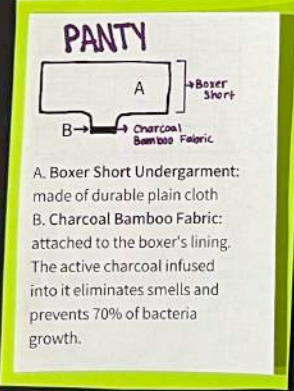
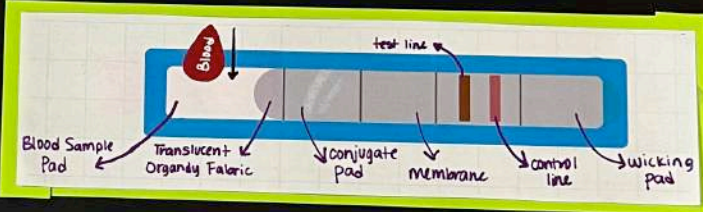
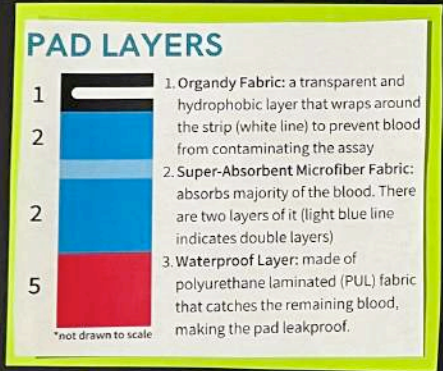
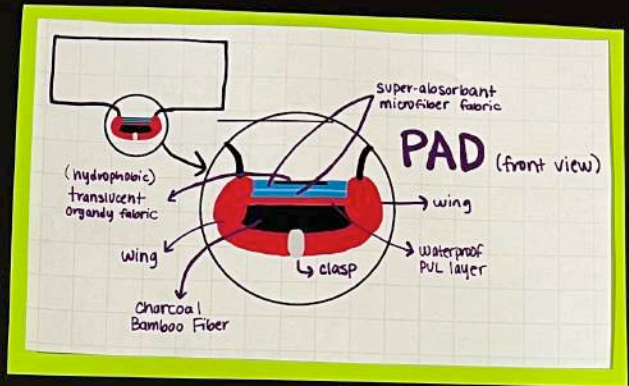
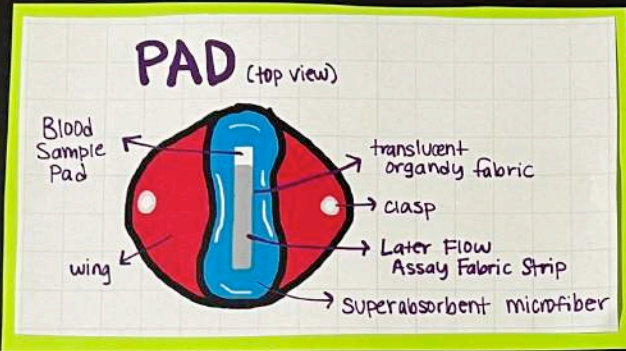
PROVIDE



PROTECT



PROSPER



### Lateral Flow Assay (LFA)

1. Menses is caught and absorbed by the blood sample pad during menstruation
2. The strip's porous material employs capillary action to allow the menstrual blood to horizontally flow across the LFA and onto the conjugate pad.
3. The conjugate pad contains (N-mAb) 26D1 monoclonal antibodies that bind to the HPV16 E6 antigen protein in the blood (if present). These antibodies are then conjugated with blue color particles to allow for a color change later in the assay.
4. Once the blood approaches the test line, the previously bound antibody-antigen pairs are sandwiched with other antibodies located atop the test line. This forces the protein pairs to stick to the line and activate the color enzyme, causing a blue line to appear if the test is positive.
5. Multiple trials are always a good practice to ensure accuracy, so the blood continues to progress towards the control line, where step 4 is repeated. If a blue line appears here as well, then the user is HPV-positive.

## COMPETITIVE ANALYSIS

	SENSIBLE	QVIn	ALWAYS MAXI	EVERYWELL
Diagnoses HPV	✓			✓
Lab-free Diagnostics	✓	✓		
Routine Testing	✓	✓		
Bacteria-resistant	✓			
Sustainable	✓			

## HOW TO USE

- 1 pack = 12 pads + a boxer short; meant to last 1 year
- Users must use a new pad for each cycle to preserve the function of the HPV diagnostic mechanism
- After daily use, the pad needs to be washed and dried so it can be used the next day. In the mean time, users can use a pad from a previous cycle.
- If there are two blue lines on the pad after washing it, then the user is HPV positive.



# BLE

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## PROSPER

### COST BREAKDOWN

Material/Part Name	Unit Price	Quantity	Price
PUL waterproof fabric	\$0.86/m	0.023 m	\$0.03
Microfiber fabric	\$3.20/m	0.046 m	\$0.36
Button clasp	\$0.01	1	\$0.01
100% cotton fabric	\$4.40/m	0.0075 m	\$0.01
Transparent organdy fabric	\$0.30/m	0.01 m	\$0.01
Charcoal bamboo fabric	\$1.00/m	0.023 m	\$0.03
Organic cotton boxer short	\$0.75	1	\$0.75
Testing kit	\$0.88	1	\$0.88
Compostable packaging	\$0.08	1	\$0.08
Labor cost	\$1.30	1	\$1.30

**Price Per Pad: \$0.42 (x12)**  
**+ Remaining Costs: \$3.04**  
**Total Cost Per Unit: \$8.08**

### TRAINING

#### Physicians

- Must understand: blue color strip = high chance patient has HPV

#### NGOs

- Distribute the product
- Fit women with their pad size using a tape measure
- Teach consumers how to use the product & contact telehealth/a physician after a color change

#### Telehealth Specialists

- Must alert a medical professional when contacted about a color change
- Counsel consumers about using the product and the anxiety of a color change

#### User (Women)

- How to use the pad
- When to use the pad
- How to clean the pad
- Call Telehealth if the LFA turns blue

### SUPPLY CHAIN

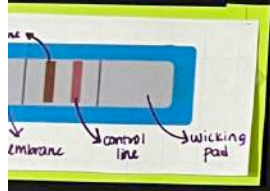
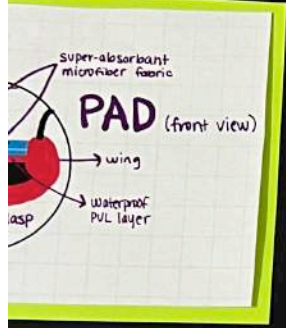
NGOs with a focus on rural and menstrual health will be recruited to distribute these packages across regions in need

To make Sensible more accessible to women in developing countries, we will collect donations to subsidize the cost of manufacturing each pack

Telehealth and traveling health specialists/doctors will likely be contacted by a user saying that their pad's turned blue. A clinical visit will then be conducted to officially confirm the diagnosis and treat the patient accordingly.

### OUR IMPACT

- Sensible addresses the disparity of women's health resources in developing countries twofold:
- We save local NGOs and those at risk of cervical cancer 1000s of dollars on treatment because our product routinely tests for its precursor.
- We also provide a sanitary & sustainable alternative to current menstrual products, mitigating the environmental costs of menstrual waste (single-use pads).
- Most importantly, we're increasing the likelihood that the cancer's detected early enough that it can be prevented and save thousands of lives.



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# SENS

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## WHAT IS THE PROBLEM?

- Human papillomavirus (HPV) is a sexually transmitted virus that causes abnormal tissue growth (like warts)
- It's a precursor to cervical cancer (CC): a malignant tumor of the cervix
- CC is very preventable, but third world countries lack the resources and infrastructure for early detection.

HPV causes **91%** of cervical cancers

HPV16 causes **65%** of cervical cancers

HPV16 is the most common high-risk strain of HPV, so it was chosen as the target-virus to cover more ground

- Women in third world countries also lack adequate access to menstrual health resources like pads
- Many use old clothes, paper, cotton/wool, and even leaves to manage their menstrual bleeding
- Such unsanitary alternatives can cause bacterial vaginosis or urinary tract infections
- Developing countries also lack proper infrastructure for waste disposal, so disposing of plastic pads can be harmful to the environment since most of them aren't biodegradable.

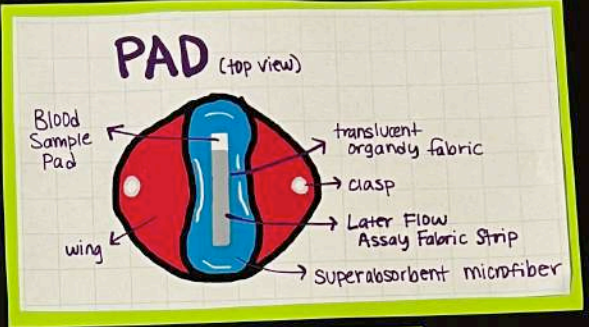
**80%** of cervical cancer deaths occur in developing areas.

CC is the 4th most fatal cancer in women worldwide, with about 286000 deaths per year. 239258 of these deaths occur in developing countries.



**500 MILLION** Women lack access to menstrual products

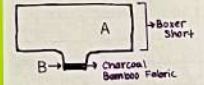
## PROVIDE PROTECT



### PAD LAYERS

1. Organdy Fabric: a transparent and hydrophobic layer that wraps around the strip (white line) to prevent blood from contaminating the assay
  2. Super-Absorbent Microfiber Fabric: absorbs majority of the blood. There are two layers of it (light blue line indicates double layers)
  5. Waterproof Layer: made of polyurethane laminated (PUL) fabric that catches the remaining blood, making the pad leakproof.
- \*not drawn to scale

### PANTY



A. Boxer Short Undergarment: made of durable plain cloth  
 B. Charcoal Bamboo Fabric: attached to the boxer's lining. The active charcoal infused into it eliminates smells and prevents 70% of bacteria growth.

Lateral Flow Assay (LFA)

## WHY MENSTRUAL BLOOD?

- Accurately diagnoses HPV 94.2% of the time
- Blood from the first day of a menstrual cycle is 87.5% accurate at diagnosing HPV
- Since menstrual cycles occur monthly, users are routinely tested for HPV hands-free

## COMPETITIVE ANALYSIS

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