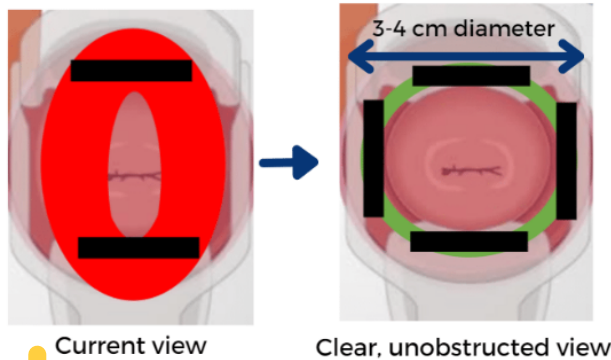


# Supportive Speculum for Cervical Screening in Underserved Communities

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## NEED

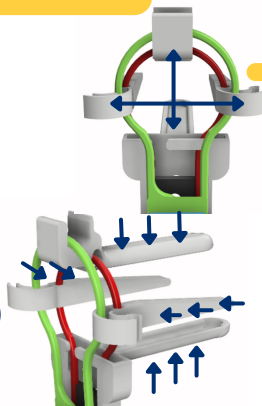
- **Vaginal wall prolapse** occurs within obese and multiparous patients during cervical screenings.
- **50M** Pap Smears are performed each year.
- Commonly available specula are not designed to address vaginal wall prolapse.



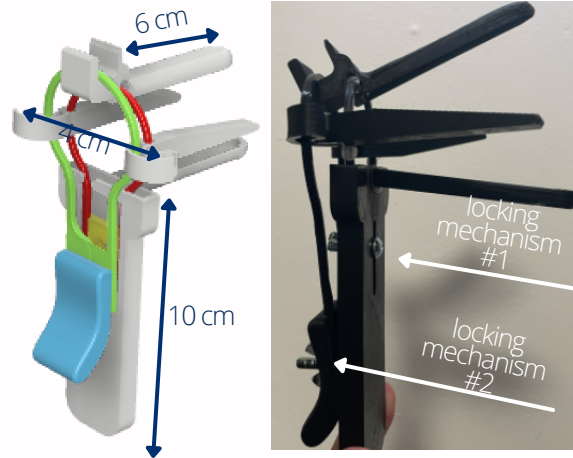
## REQUIREMENTS

**R.1.** Provide  $3.5 \pm 0.5$  cm. diameter view of cervix.

**R.2.** Withstand loading forces up to 15 N.



## SOLUTION



- Slide **yellow** attachment up to raise height of blades
- Slide **green** handle down to expand 3 blades
- Smoother locking mechanisms (nut and bolt)
- Single-use & affordable to **save physician's time and money**

## IMPACT

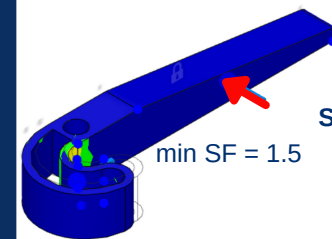
- This device will allow more women to have access to cervical screening
- **Improve cervical screening in multiparous and obese patients**

## TESTING

- R.2. Test: Force Testing via Computer Simulation**
- Performed on each component of device
  - Example right wall shown below

**Material: ABS Plastic**  
**Force Applied: 20 N**

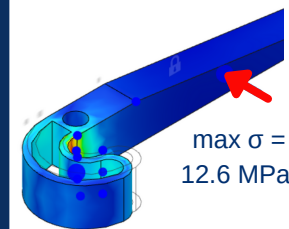
**Safety Factor Test**  
Success Criteria: Factor  $> 1$



✓ **Pass**

**Stress Test**

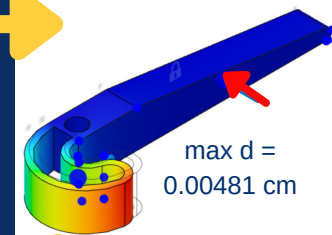
Success Criteria:  $\sigma < 20$  MPa



✓ **Pass**

**Displacement Test**

Success Criteria:  $d < 1$  cm



✓ **Pass**

## FUTURE

- Injection molding using ABS plastic