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#### Title

Portable Fetal pH Analyzer: pHetal Meter

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#### Authors

Tea, Sydney  
Cohen, Ryan  
Gopal, Juhi  
et al.

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# Portable Fetal pH Analyzer: *pHetal Meter*

Sydney Tea, Juhi Gopal, Tina Karimi, Ryan Cohen, Syed Hassan  
Christine King, PhD, Department of Biomedical Engineering

Dinh Vu, MD, MBA, Department of Obstetrics and Gynecology, Saddleback Medical Center  
Department of Biomedical Engineering and Material Science Engineering, University of California, Irvine

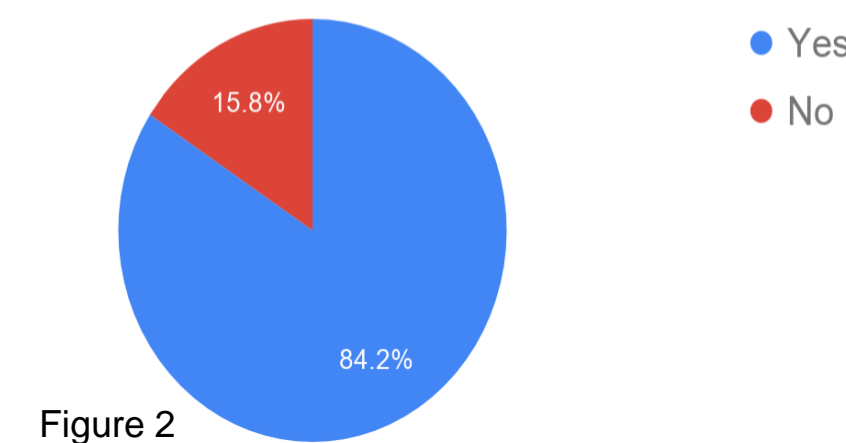
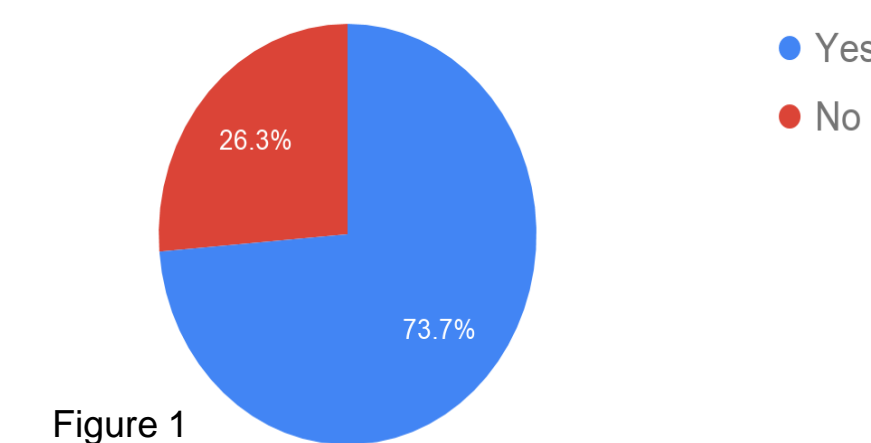


## Introduction

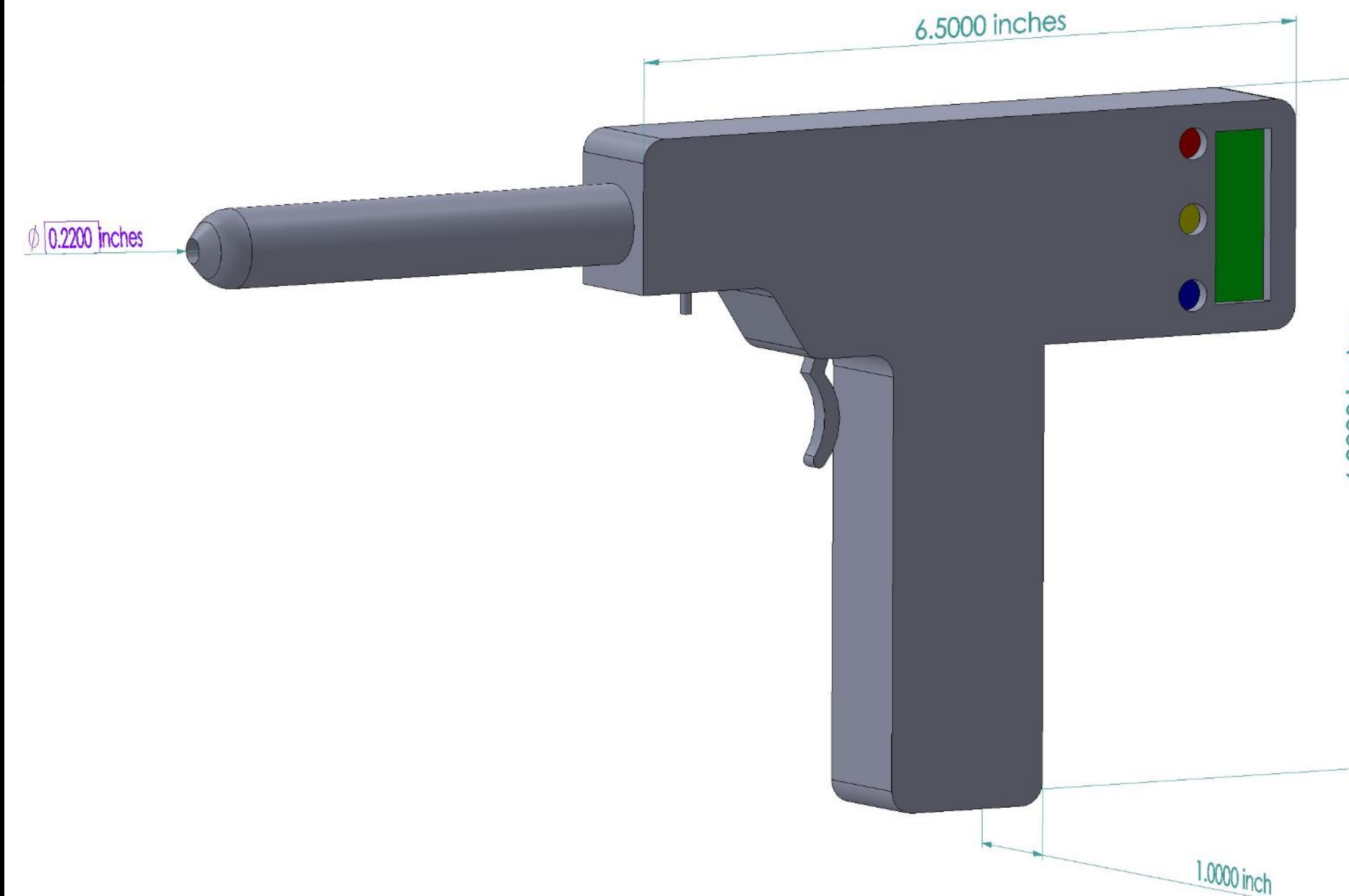
- **Current technology to monitor fetuses during labor are inadequate and difficult to interpret**
- Fetal Heart Rate (FHR) Tracing is used to determine whether a fetus is in distress based solely on ECG readings
- No objective data to inform the obstetrician if the fetus is in an unhealthy or fatal state
- Insufficient data leads to emergency intervention with Cesarean sections (C-Sections)
- **The most accurate way to determine the health of a fetus is to measure the pH value of the fetus's blood**

Percentage of obstetricians and nurses that believe accurately determining the health of the fetus during labor is a common problem.

Percentage of obstetricians and nurses that believe that a device that acquires the pH level of the fetus would be beneficial to the healthcare industry.



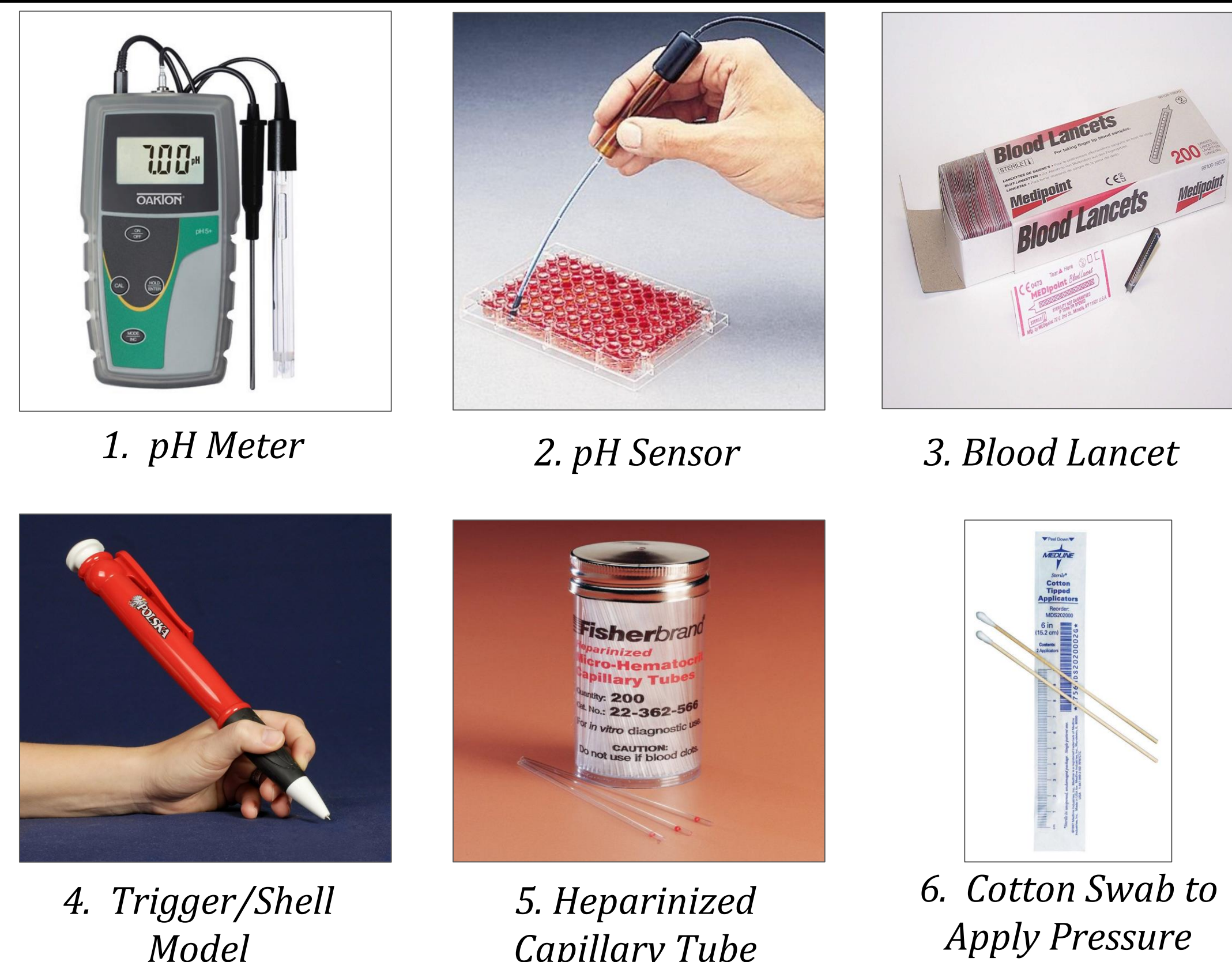
Figures 1 and 2 show that there is an apparent need in the healthcare industry for a device that accurately, rapidly, and safely acquires the pH value of the fetus's blood during labor.



## Device Validation/Verification

Design	Validation
Fast Acquisition	Results displayed within 5 minutes
High Accuracy	Results discriminate within $\pm 0.01$ pH levels
Minimally Invasive	Test on orange rind with force meter to ensure max penetration of 2 mm
Blood Sample Size	Test $50 \pm 20 \mu\text{L}$ to verify threshold of necessary blood volume
User-Centered	One trigger mechanism

## Project Design

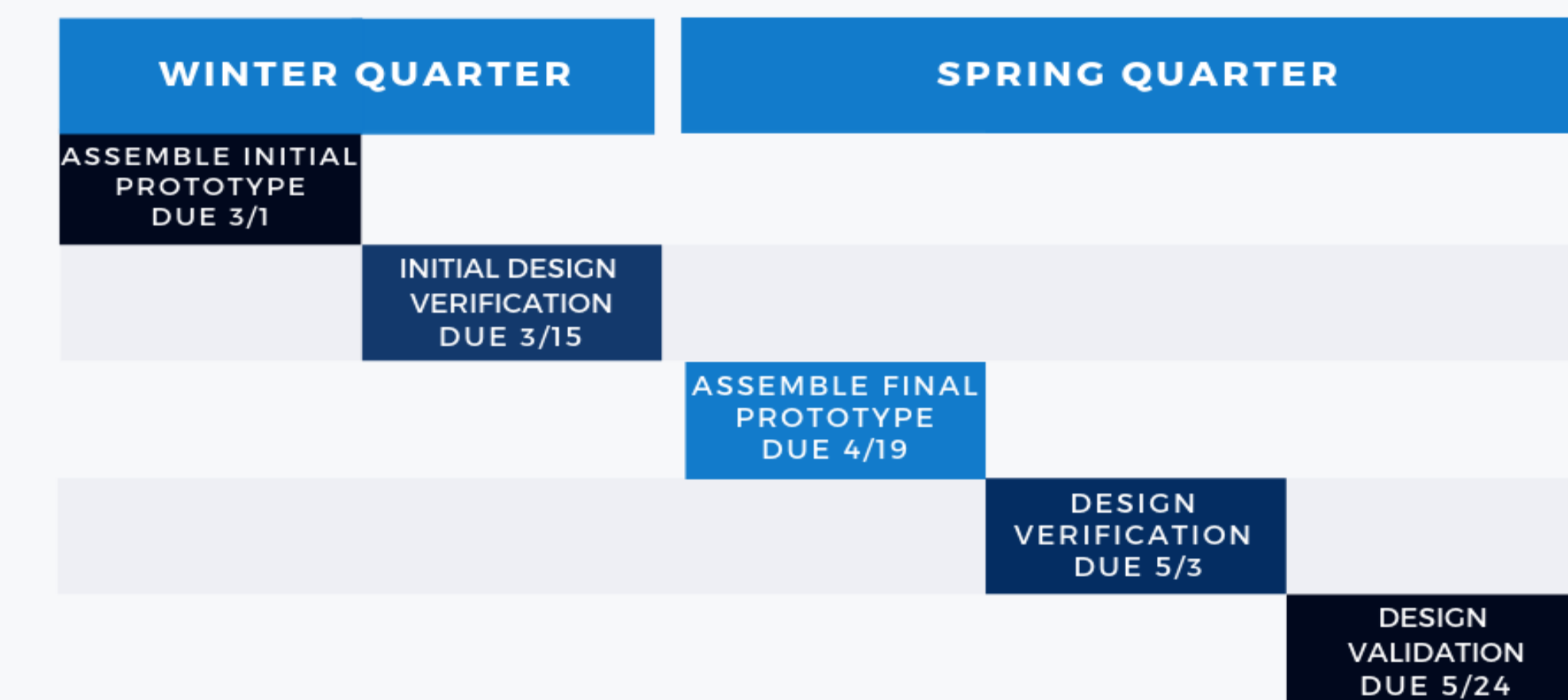


## Project Goals

- **Reduce the number of unnecessary, emergency Cesarean sections**
- Detect fetal blood pH value
- Rapid results within 5 minutes of blood acquisition
- Eliminate the subjectivity of measuring fetal distress during labor with a less invasive procedure
- Device is nurse-operable

## FUTURE MILESTONES

pHetal Meter



Sydney Tea - Biomedical Engineering; *Project Engineer/Program Manager* [teas@uci.edu](mailto:teas@uci.edu)  
Juhi Gopal - Biomedical Engineering; *Quality Engineer* [gopalj@uci.edu](mailto:gopalj@uci.edu)  
Tina Karimi - Biomedical Engineering; *Manufacturing Engineer* [tkarim1@uci.edu](mailto:tkarim1@uci.edu)  
Ryan Cohen - Biomedical Engineering; *Design Engineer* [cohenrm@uci.edu](mailto:cohenrm@uci.edu)  
Syed Hassan - Material Science Engineer; *Design Engineer* [smhassa1@uci.edu](mailto:smhassa1@uci.edu)

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