

# Initial Lessons From Implementing a Telecolposcopy Program on a High Risk Population in California

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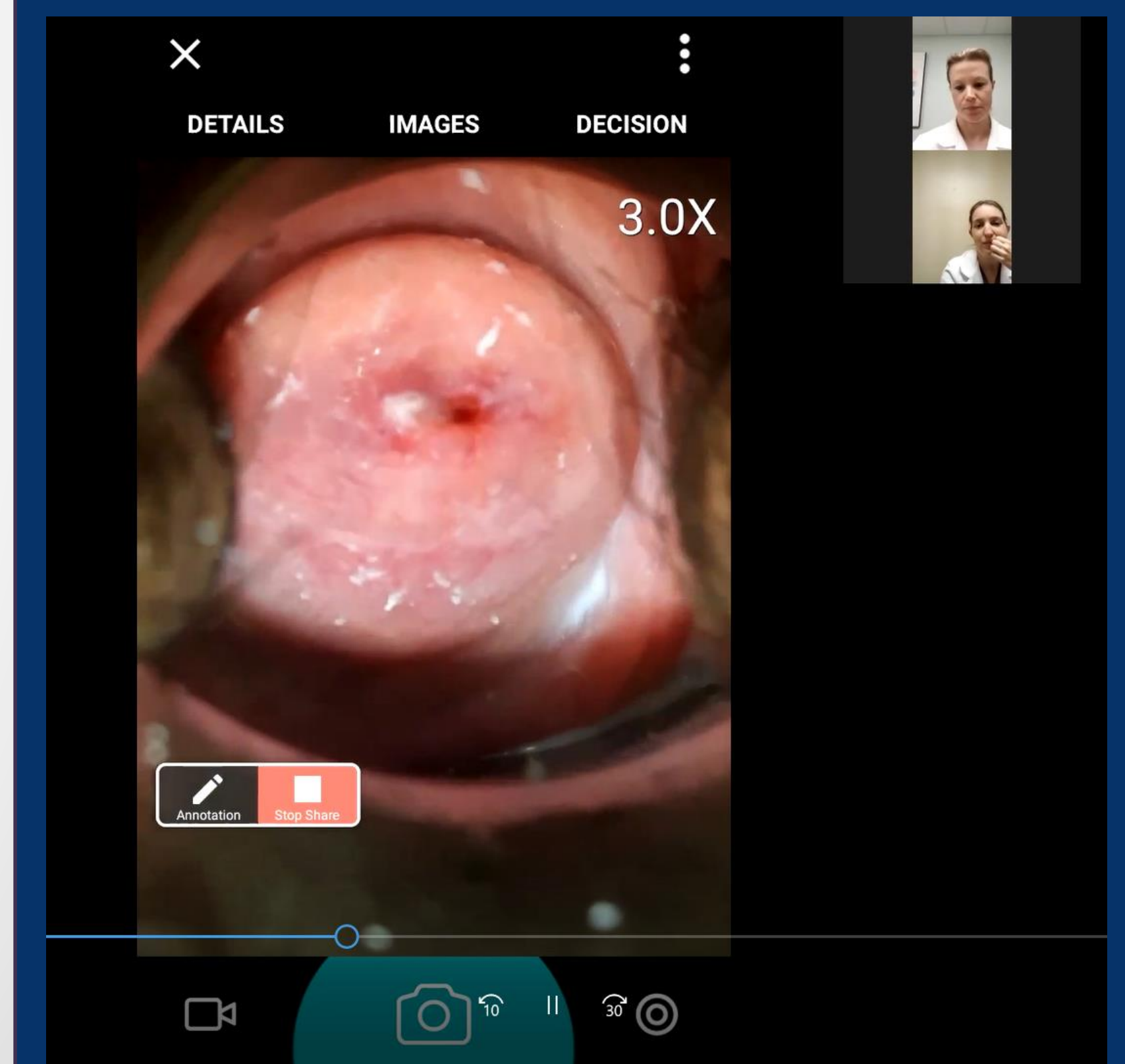
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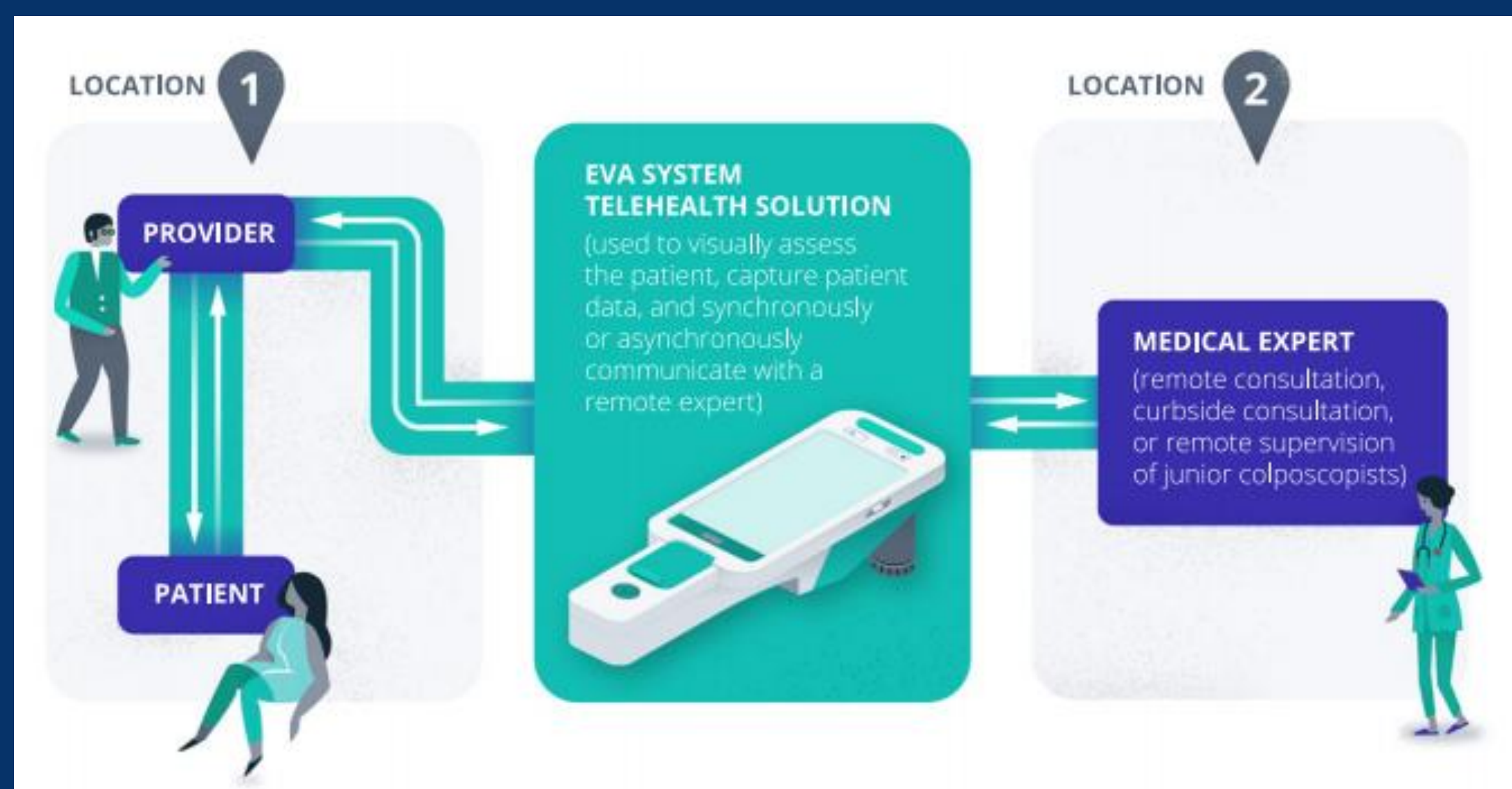
## Abstract

**Objective:** To assess the feasibility of a live, telecolposcopy system in clinics serving high-risk populations. Of interest is to understand the feasibility of an integrated telecolposcopy solution from the perspectives of patient and provider acceptance in comparison to in-person oversight of an exam. **Methods:** A custom feature was built into MobileODT's EVA System, a smartphone-based colposcope, utilizing a video-conferencing application. Through screen sharing, the provider at the point of care showed the expert a live video feed of the colposcopy exam, and the expert then recommended sites to biopsy. Following the procedure, a satisfaction survey is given to all remote experts, point of care providers, and patients. All twelve subjects who underwent telecolposcopy filled out a survey. As a control group, N=10 patients undergoing traditional colposcopy were also given surveys. **Results:** Initial findings showed that experts were able to assist the junior providers in colposcopy procedures. Patients reacted positively to the live expert supervision. **Conclusions:** Preliminary results suggest that live telecolposcopy is feasible on a mobile, connected colposcope.

## Telecolposcopy Demonstration



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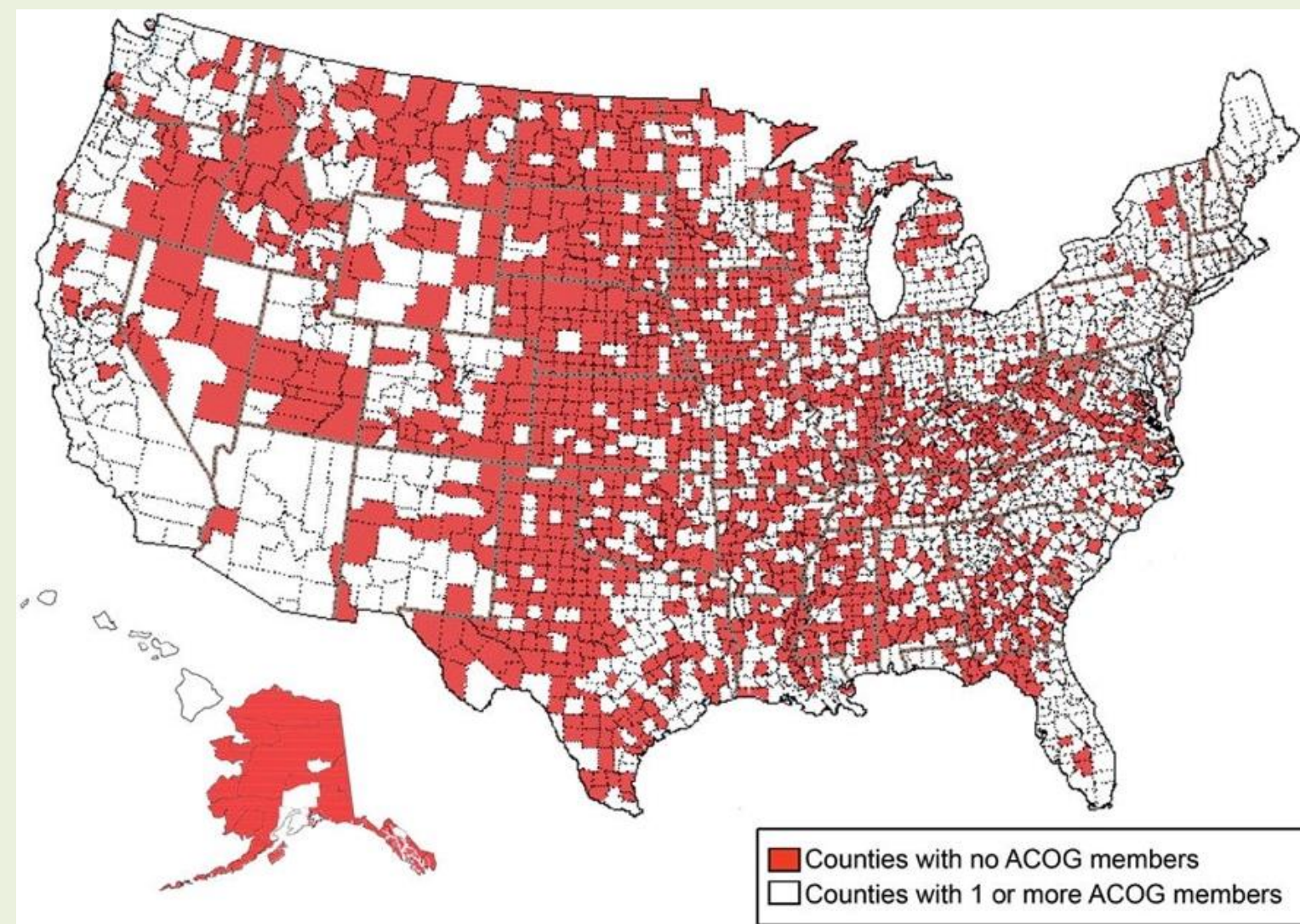
## Results

- The solution overcame challenges in video/image quality and audio quality. The expert was able to converse in real time, and provide guidance for the PoC provider to act upon.
- PoC providers found the telecolposcopy feature helpful.
- Overall, patients were more satisfied with telecolposcopy than traditional colposcopy
- All 4 patients who had both a telecolposcopy or a traditional colposcopy said they would prefer telecolposcopy to reduce distance and time traveled
- More patients need to be recruited because the sample size was small.



# Introduction

**Objective:** Assess the feasibility of an integrated telecolposcopy solution from the perspectives of patient and provider acceptance



Rayburn et. al. "Distribution of American Congress of Obstetricians and Gynecologists Fellows and Junior Fellows in Practice in the United States" OBSTETRICS & GYNECOLOGY, VOL. 119, NO. 5, MAY 2012

According to the ASCCP Steering Committee, the current opportunistic approach to cervical cancer screening in the U.S. fails to reach sub-populations of women where rates of incidence and mortality are similar to rates in low and middle income countries at a rate much higher than the general US population.<sup>1</sup> Reasons are complex and the challenge extends to women in low-resource, medically underserved regions, and therefore invasive cervical cancer in the US today is strongly linked to socioeconomic, geographic and racial disparities<sup>1</sup> where health access has traditionally been a challenge.

The challenge includes a shortage of colposcopy providers in the US to reach rural women where only 50% of US counties have a colposcopist (Fig. 1) and those without access to specialists in urban centers without colposcopy services where loss to follow-up from initial screening is high.<sup>2</sup> For the many patients who live in counties without a colposcopist, transportation to the clinic is a real barrier to seeking care.<sup>3</sup>

50% of cervical cancers in US are in unscreened women. Another 10% are in underscreened women<sup>4-6</sup>. **Reaching this unscreened population is critical to impact mortality.**

Telemedicine can potentially solve this, by extending colposcopy services to sites lacking expertise and equipment. The remote expert can assist to better identify sites to biopsy. Video and audio communication is key.<sup>7-9</sup> **To date, no conclusive study has shown that a telecolposcopy technology is a means to improve patient care.**



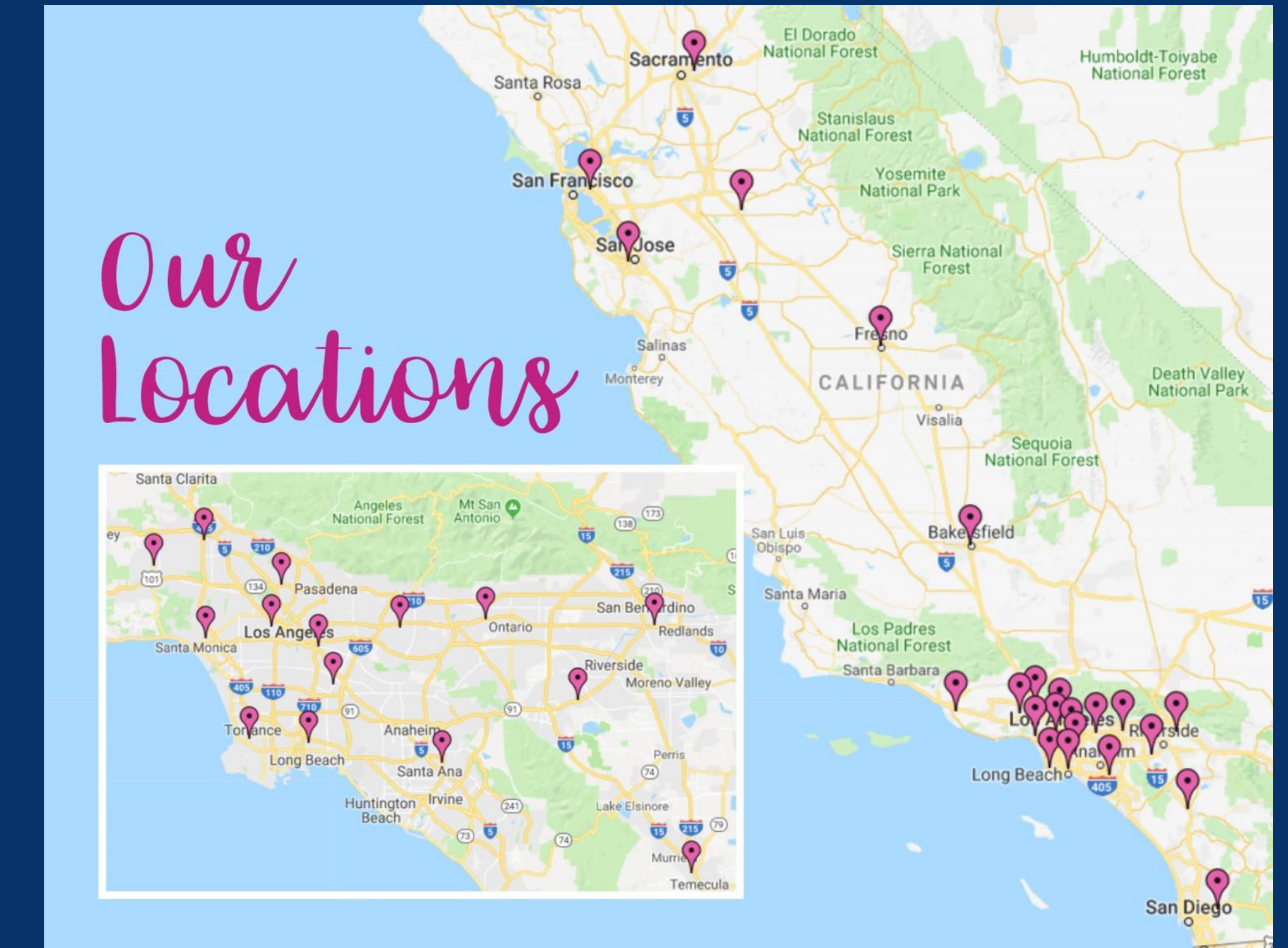
## Clinical network

Family Planning Associates (FPA Women's Health) is a nationally recognized & accredited family planning provider that offers patients safe & convenient access to quality care in a mix of urban and rural settings. The network has been accredited by AAAHC since 1996.

FPA Women's Health works primarily with underserved populations including:

- Low income patients
- Inner-city and rural populations
- Undocumented immigrants

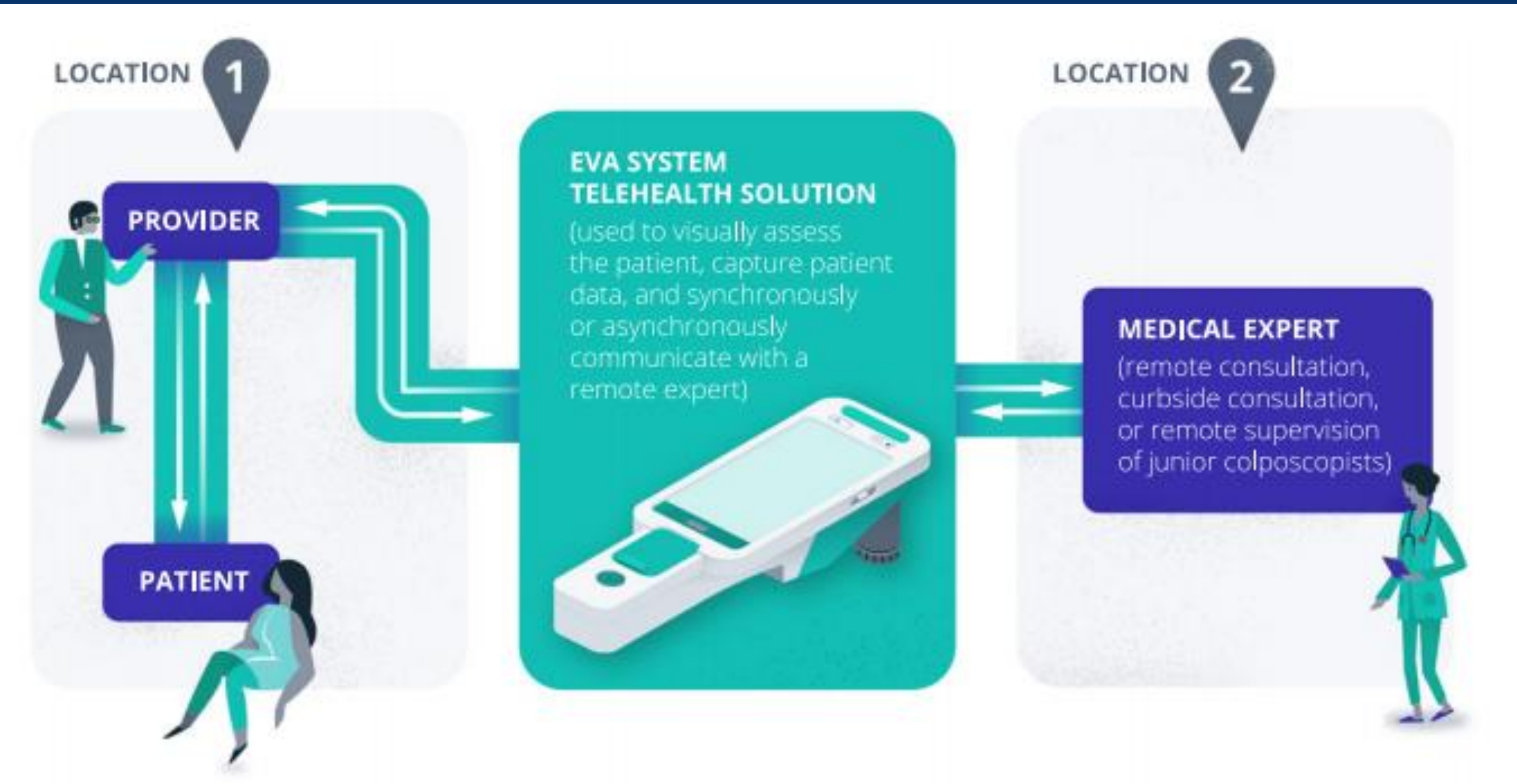
However, today, a colposcopist is not available at many sites due to the relatively low number of patients with abnormal screening tests. However, lack of colposcopists prevent them from expanding colposcopy services despite patient need and addressing loss to follow-up from longer travel time and distance to another center.



It is also unknown how well patients that live in remote areas and benefit from telecolposcopy actually accept the procedure. Few studies assessed their feelings about a remote expert during the exam. This study sought to explore this angle as well, as it hasn't been discussed much in the literature.



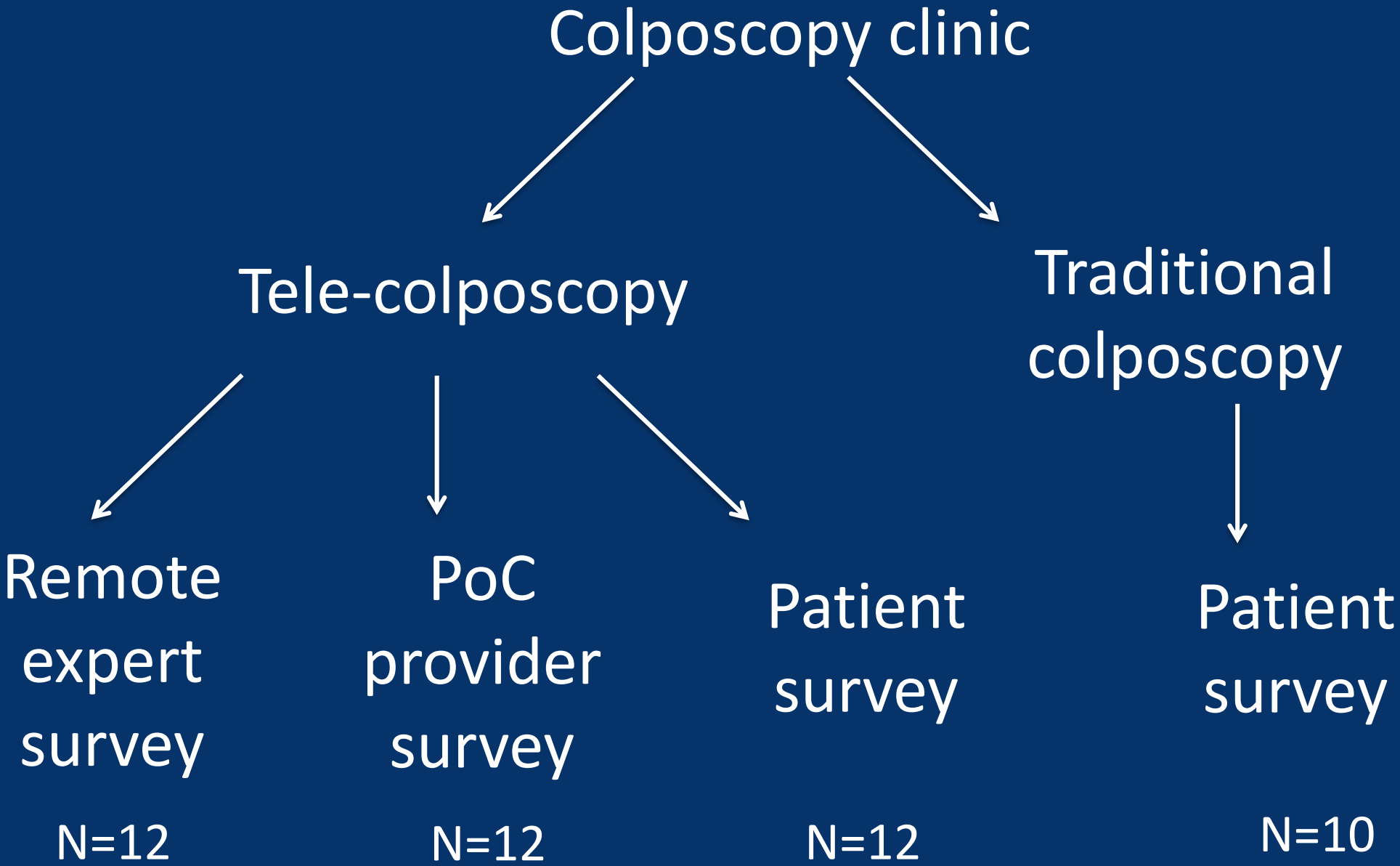
# Materials and Methods



Telecolposcopy is enabled by the EVA System – a cloud-connected mobile colposcope built around a smartphone platform.

The mobile phone runs 2 mobile applications, one application to operate the EVA System, and a second application to enable videoconferencing.

Experts are contacted by text message, from which they can connect to the session from their phone, a tablet, or PC.



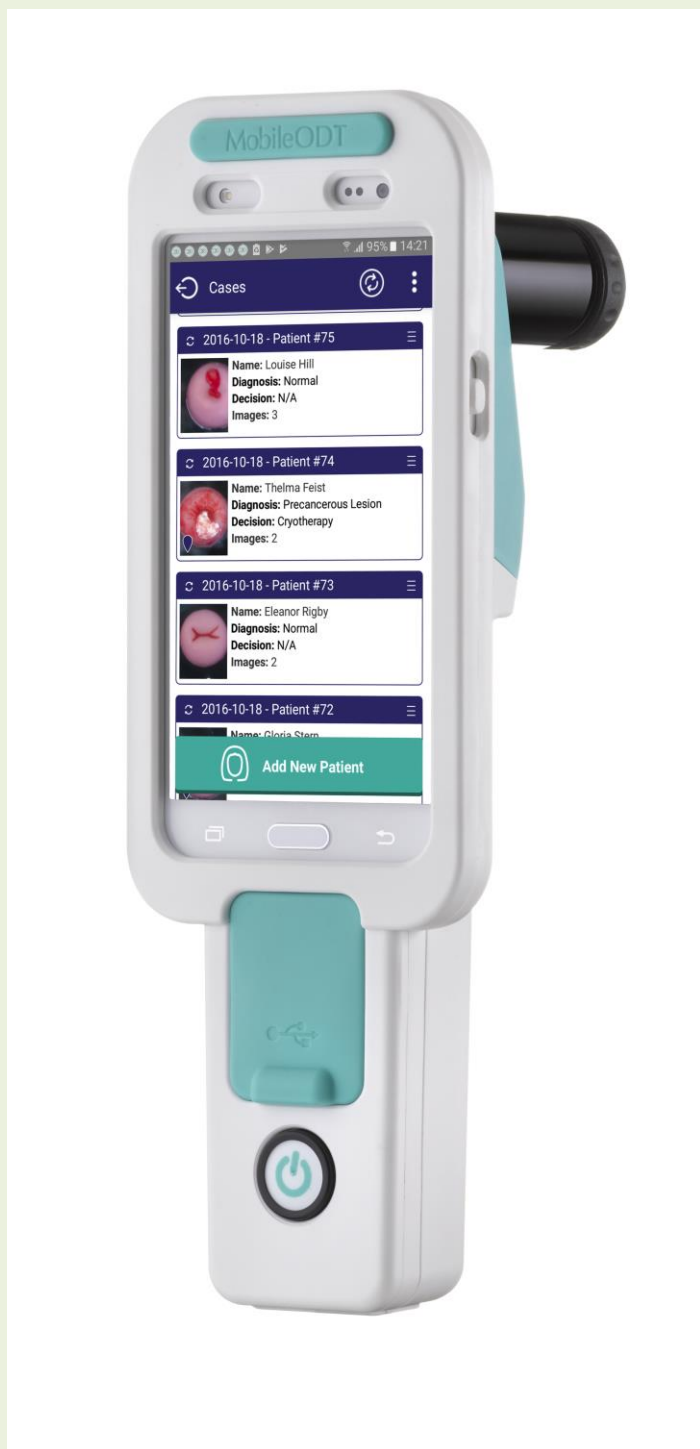
Following the procedure, online surveys containing 10-15 questions were administered to remote experts, PoC providers, and patients.

- Comparisons were made between 2 groups:
- Remote experts vs. PoC providers.
  - Traditional colposcopy patients vs. tele-colposcopy patients

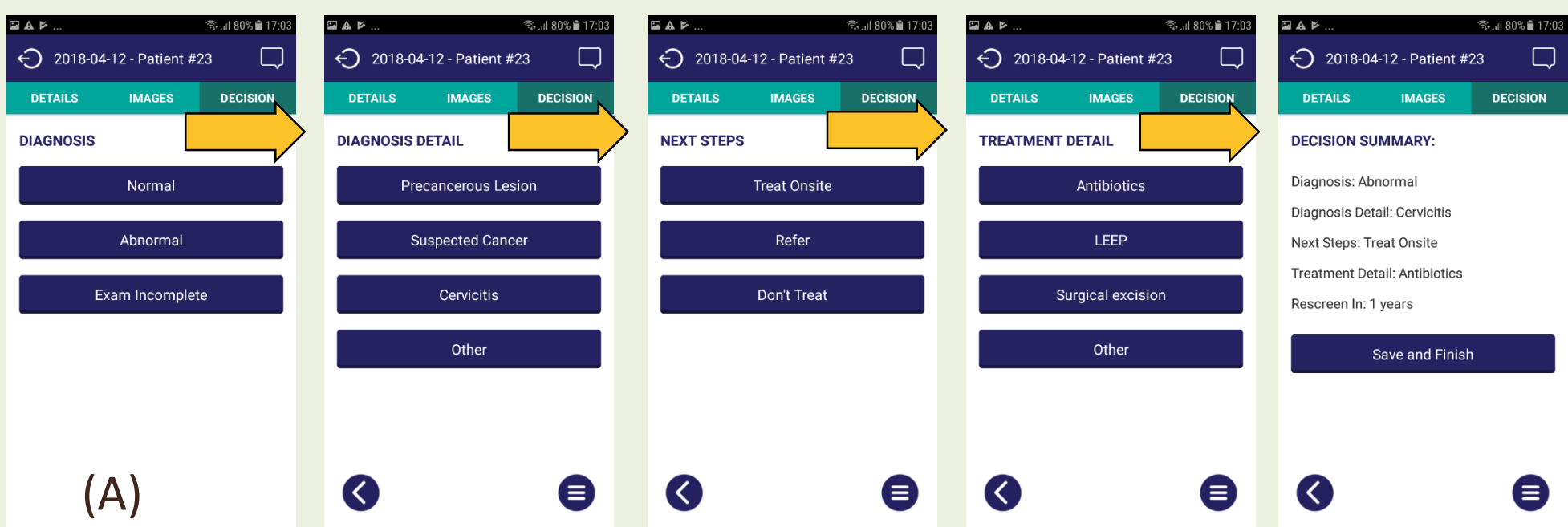
Surveys were documented and analyzed using Google Forms.

Surveys were also available in Spanish for non-native English speakers.

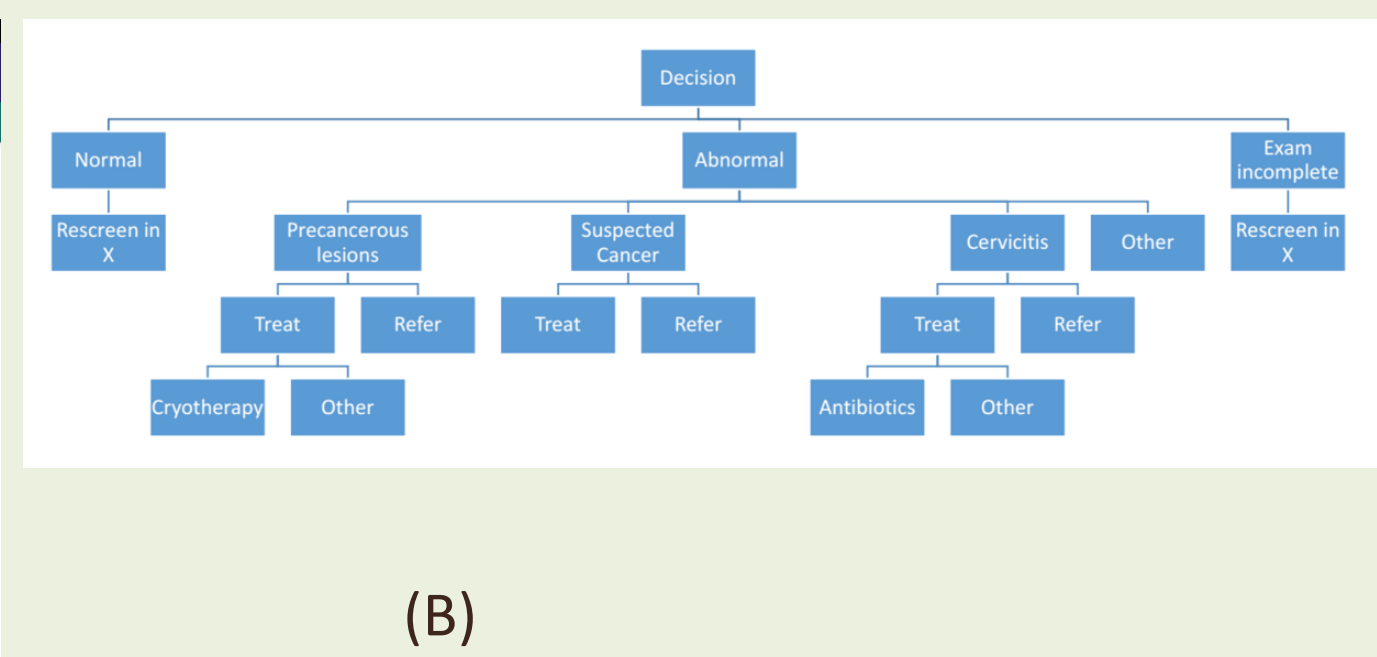
The study protocol was approved by the Institutional Review Board at Western IRB, protocol no. 20190097.



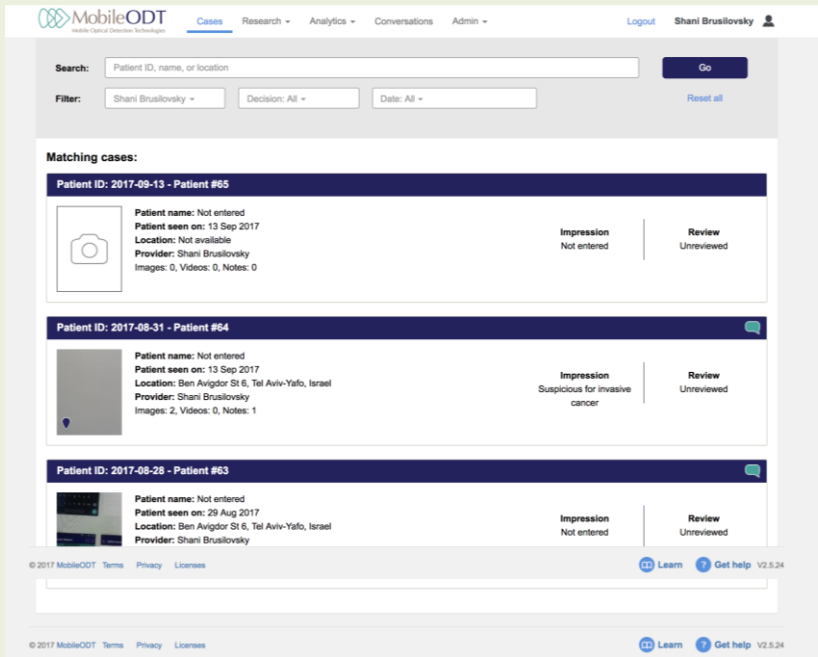
The EVA System is functionally equivalent to a video colposcope.



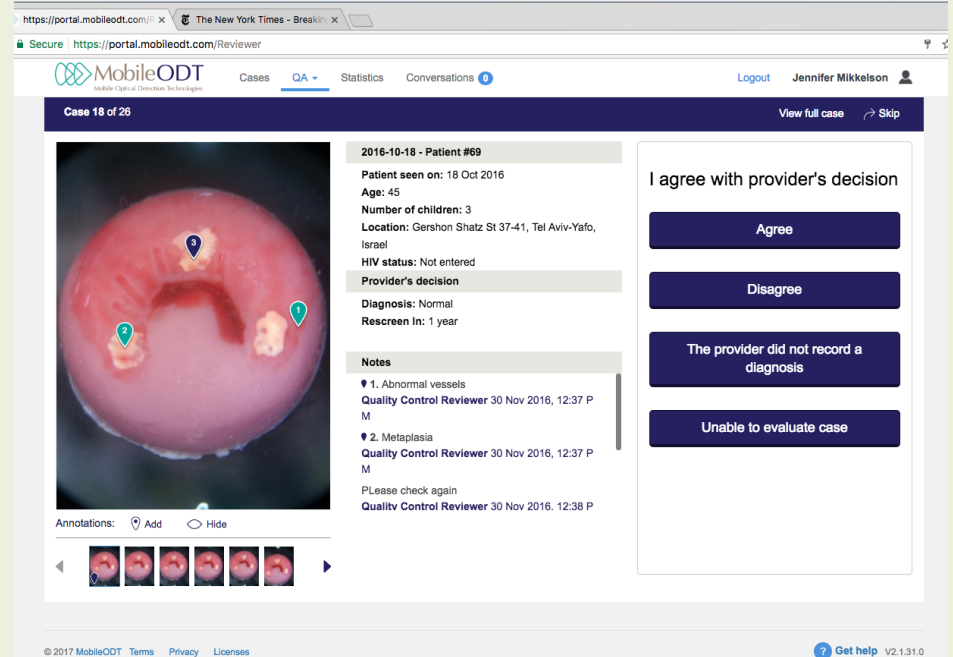
The EVA System app includes a Decision Support Job Aid for guiding clinical workflow and documenting results. (A) Screenshots of the key steps. (B) Full decision tree backbone.



All images and annotations are stored on a HIPAA-compliant image portal.

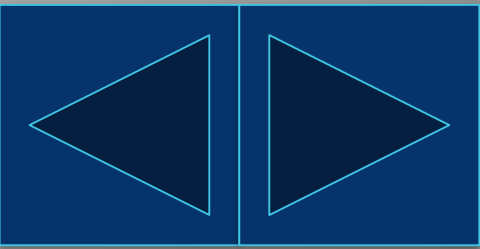


Offline quality assurance features provide decision support to providers.





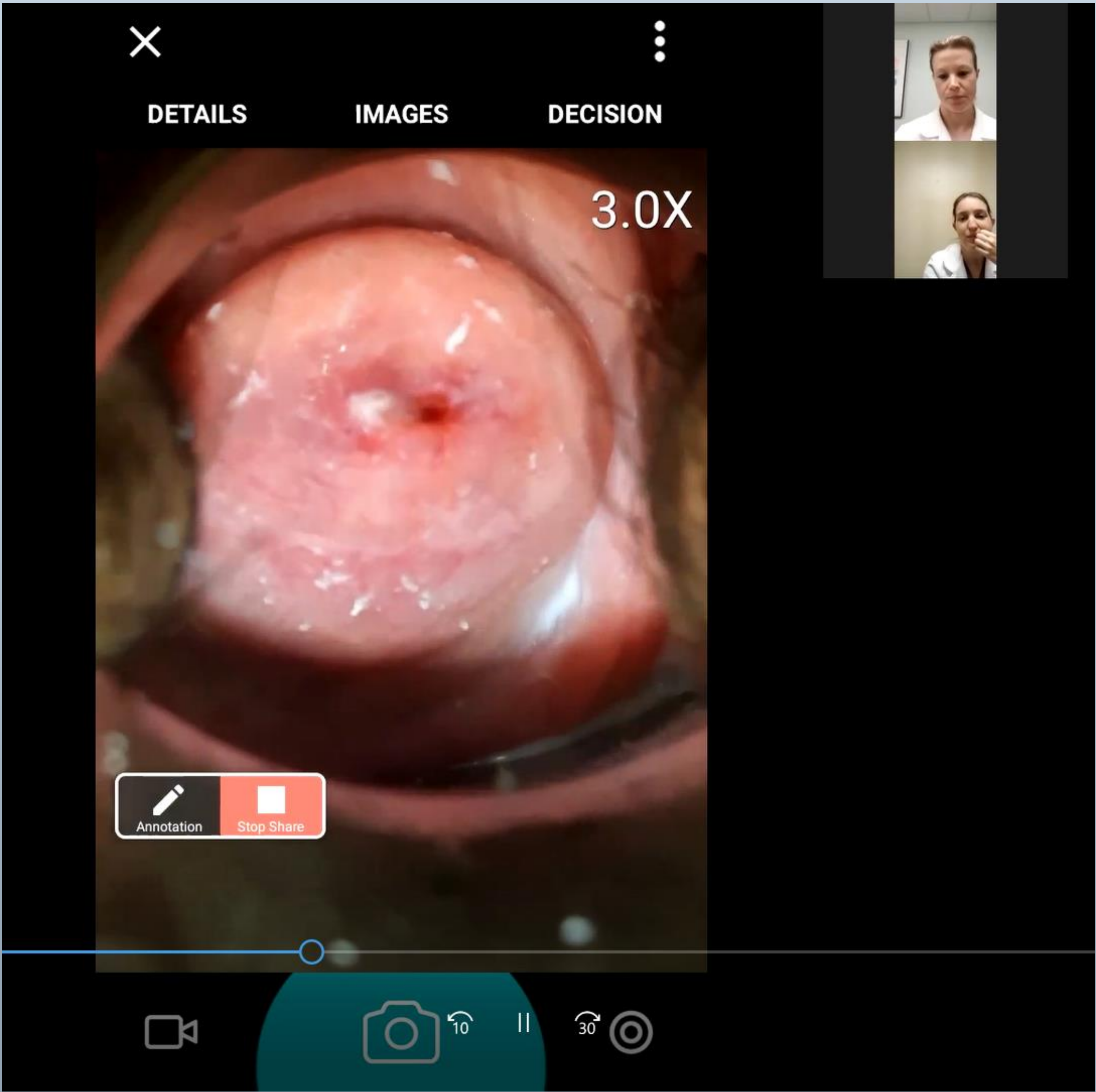
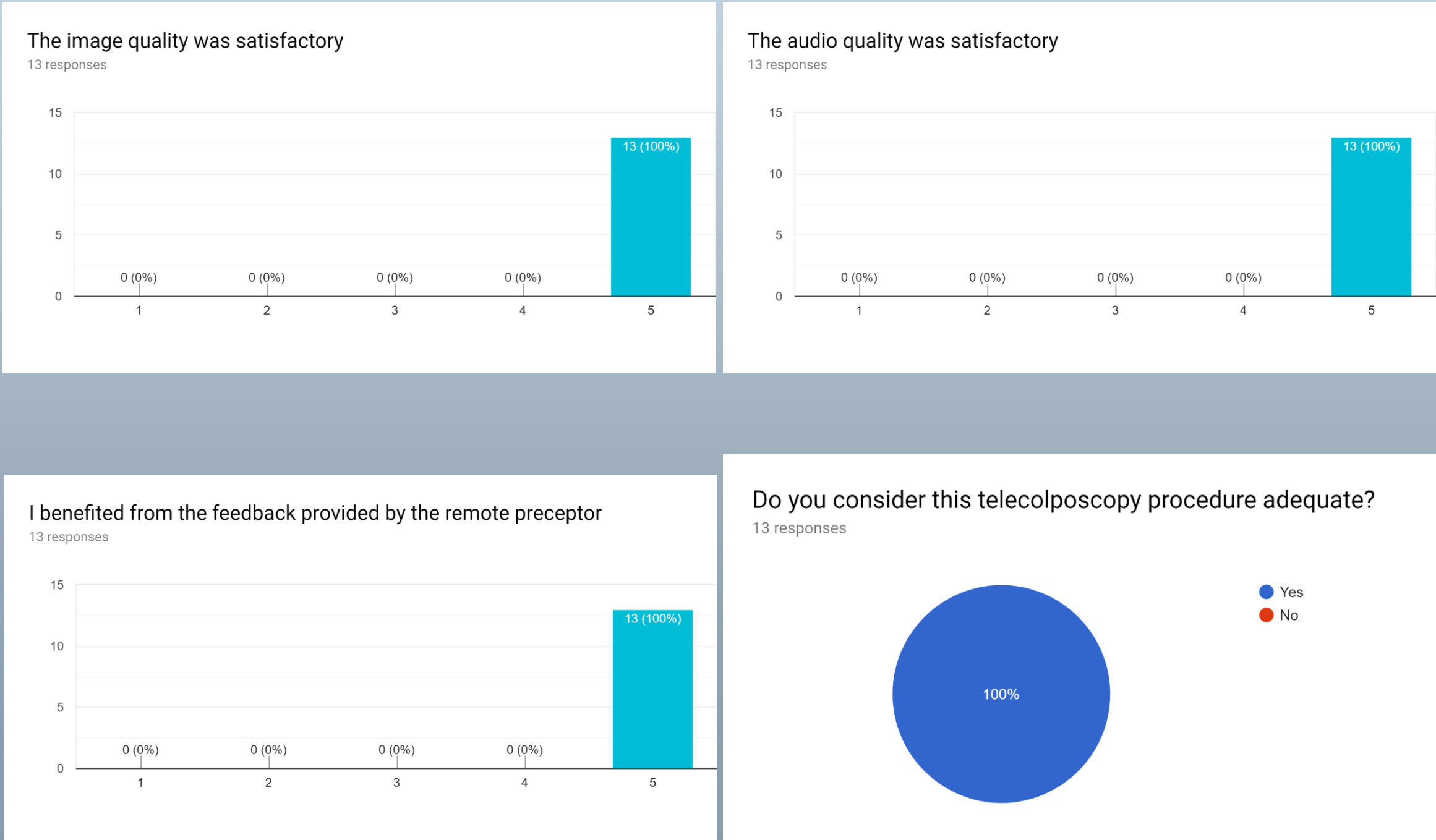
# Results



## Expert opinion



## Point of Care provider



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Survey results suggest this implementation of telecolposcopy overcame technical challenges of poor image and audio quality that made previous attempts at telecolposcopy unfeasible.

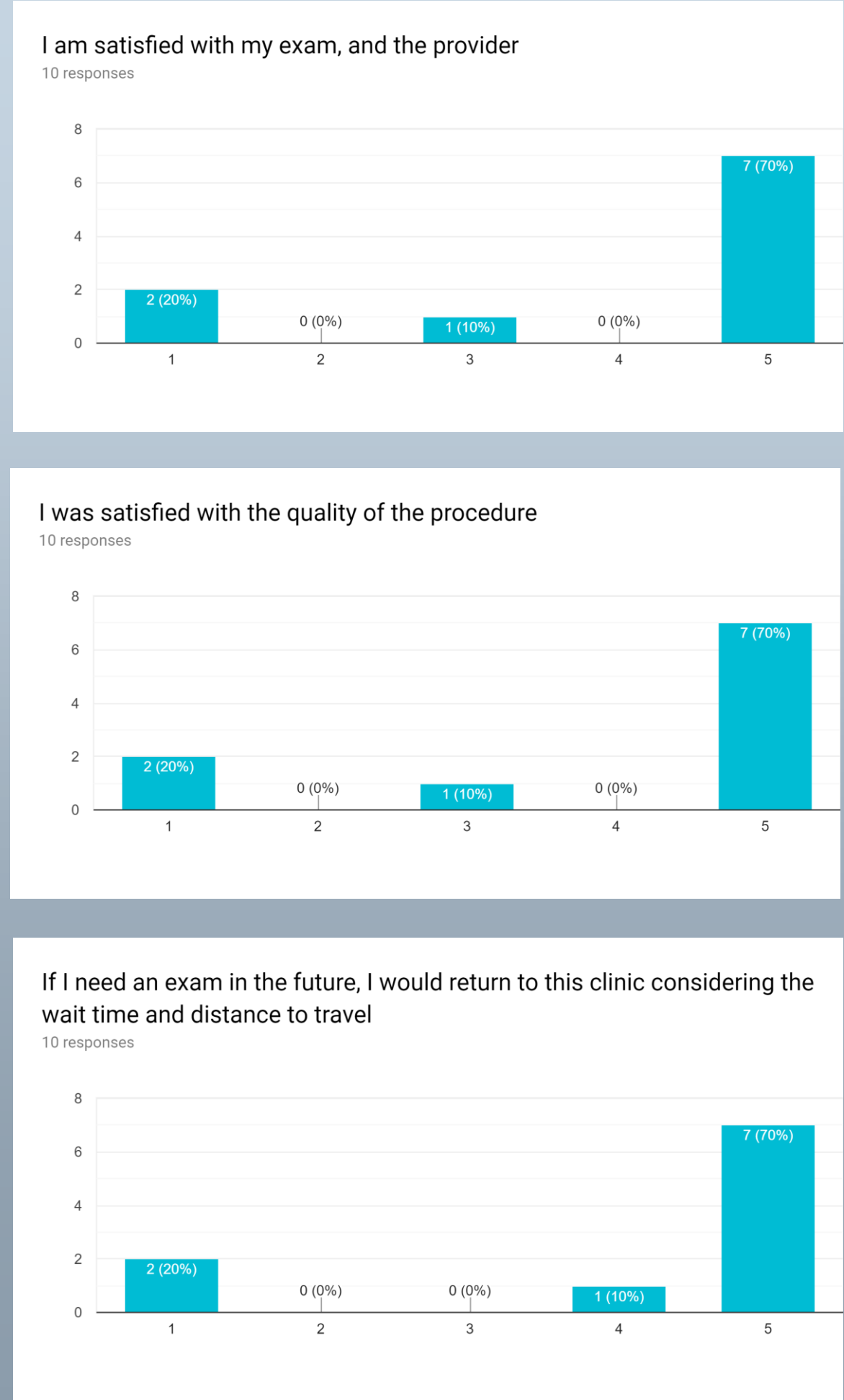
In all cases, the experts were able to determine if and where to biopsy, and whether or not to take an ECC. The were then able to clearly communicate that to the PoC provider.

Experts were able to converse with the provider in real time, and provide guidance for the PoC provider to act upon.

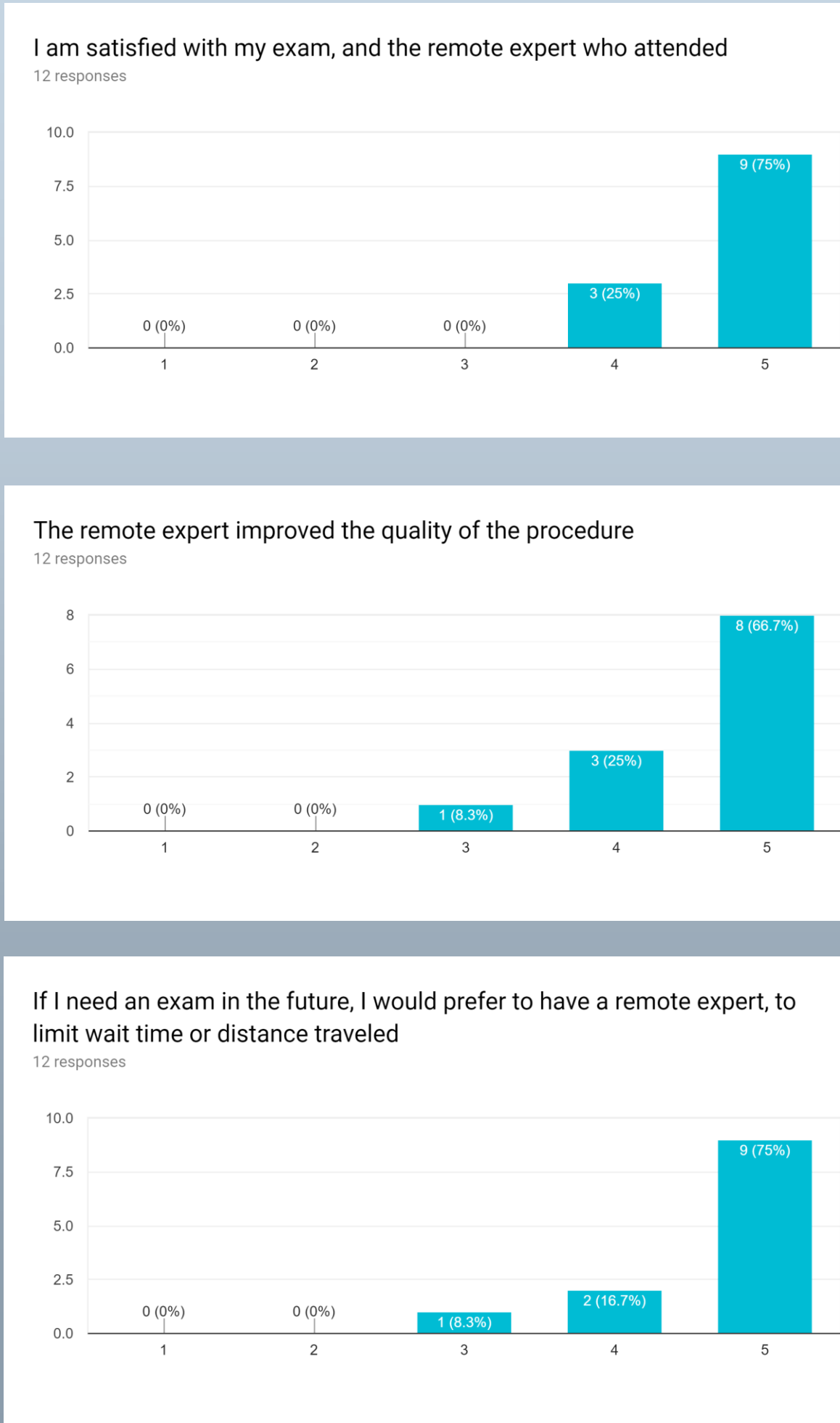


# Results and Discussion

## Traditional colposcopy



## Tele-colposcopy

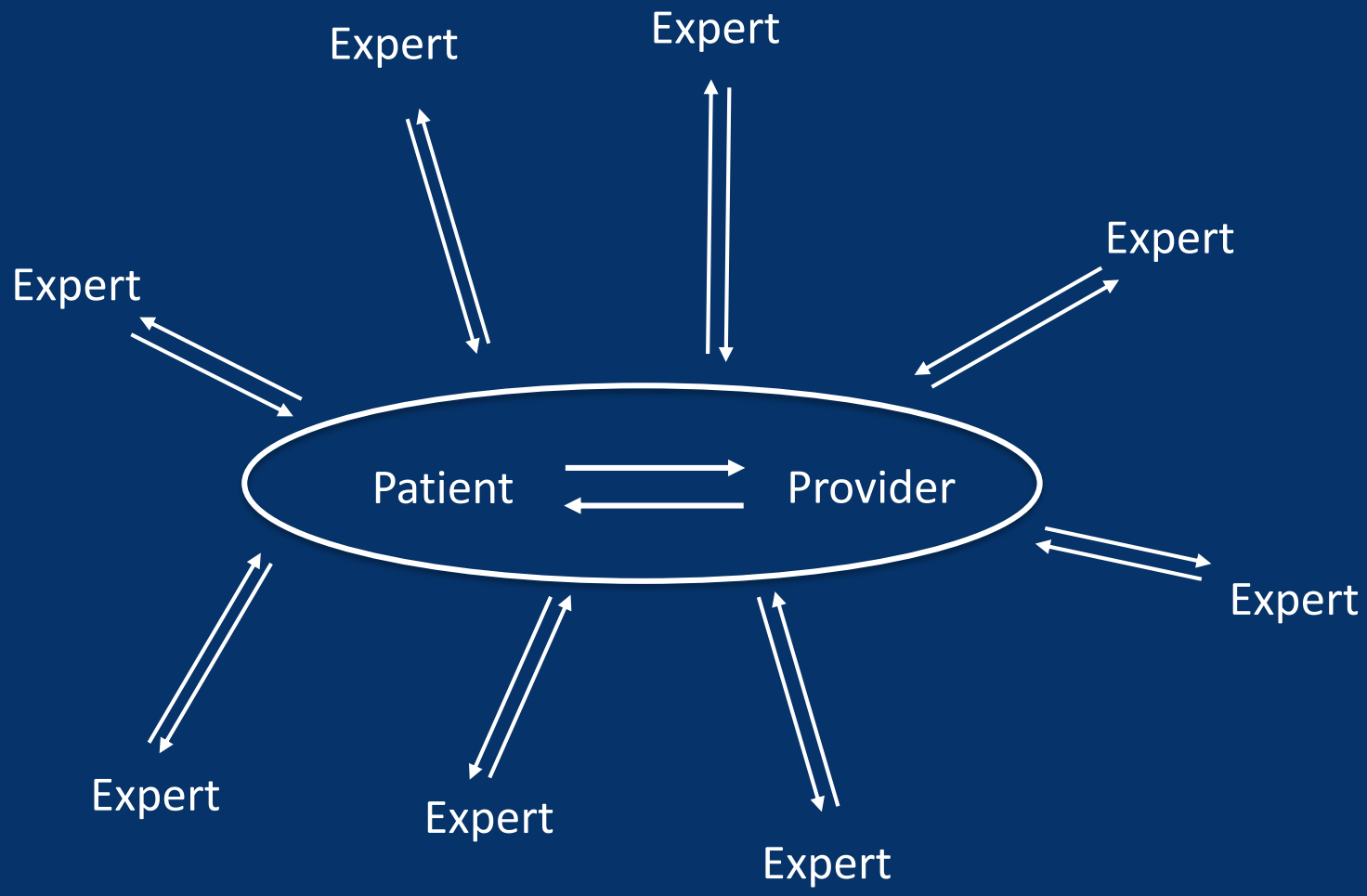


## Implications

Integration of telecolposcopy services into the colposcope makes it scalable, requiring nothing more than an internet connection.

Multiple experts can be consulted with in parallel, giving the provider.

Such a telecolposcopy implementation makes it an ideal solution for LMICs, where there are not enough providers skilled in colposcopy.



## Limitation of study

1. Too small of sample size, study is still ongoing
2. Positive bias in survey results – too many results are 5/5
3. Intra-operator bias – participants gave either high or low scores across

## Conclusion

Our preliminary results suggest that this implementation of tele-colposcopy addressed the technical challenges in previous attempts of telecolposcopy.

Patient acceptability of telecolposcopy was comparable to traditional colposcopy.

The integration of tele-colposcopy on EVA makes it a scalable solution for LMICs to address the shortage of providers.

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