

# Feasibility of Mixed-Reality Telecollaboration to Enhance Neurological Examinations and Clinical Collaboration.

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## DESCRIPTION OF INTERVENTION

Access to speciality care in rural settings, especially for acute stroke, is hindered by communication barriers between frontline clinicians and remote neurologists during telestroke consults<sup>[1][2]</sup>. This study, performed in a community medical center, examines the feasibility of using smart glasses with augmented reality to enhance real-time communication, collaboration, and guidance during neurological examinations.

## MEASURES OF SUCCESS



### Rural Community Hospital



### HIPAA Compliant



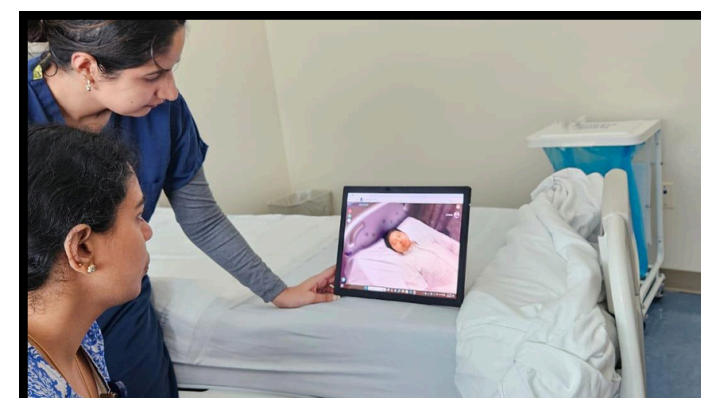
#### TRAINING

Providers were trained on using the hardware and software



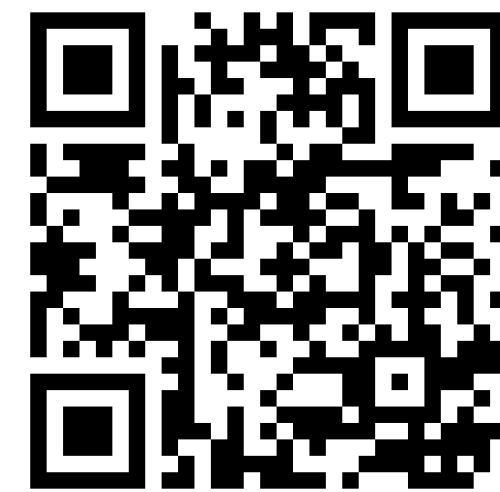
#### EXAMINATION

Detailed neurological exam was performed with and without smart glasses



#### ASSESSMENT

Feasibility was determined based on qualitative data collected from providers



## FINDINGS TO DATE

Based on the interviews, providers recommended the OpticSurg's smart glasses enabled Augmented Reality enhanced HIPAA compliant Telecollaboration technology for its ease of setup and potential in clinical practice and education, while emphasizing the need for further optimization and training.

Providers noted the following advantages:

- **Hands-free functionality:**
  - ability to perform examinations without holding a device
- **Improved communication:**
  - real-time collaboration and guidance from remote consultants
  - better visualization of findings especially during exams requiring use of both hands and direct first-person view

Providers noted the following challenges:

- limited third-person perspectives
- variable optimizing camera positioning (smart glasses fitting various faces/head)
- inability of remote provider to observe bedside providers demonstrate techniques due to first person view.

Suggestions for practical incorporation of glasses for Telestroke consults:

- Combining smart glasses with existing tools such as iPads to allow for multiple view points

## LESSONS FOR DISSEMINATION

- The qualitative data collected from this feasibility study showed that there was potential to incorporate smart glasses in order to streamline Telestroke workflows.
- This feasibility study has helped us understand the current limitations that need to be addressed to ensure effective implementation, for example, fostering user familiarity to ensure adoption.
- Through this study we were also able to collect suggestions to improve application of the smart glasses which can be incorporated into future studies
- These findings can be used to guide healthcare organizations aiming to integrate similar technologies for improving access to timely specialty care in underserved settings.
- An example, that since this initial study, additional feasibility study of remote training for endotracheal intubation in the context of a patient with altered mental status in the setting of stroke was explored through simulations.
- The intensivist who participated as the remote provider commented on the technology similarly as allowing for better communication and information flow with real time responses and evaluations. In general, more interactive and better information flow than regular telemedicine evaluations.

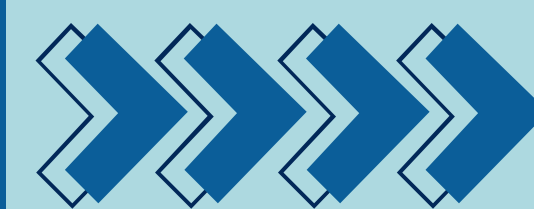
## REFERENCES

1. Busti C, Gamboni A, Calabrò G, et al. Telestroke: Barriers to the Transition. *Front Neurol.* 2021;12:689191. Published 2021 Sep 14
2. Hammond G, Luke AA, Elson L, Towfighi A, Joynt Maddox KE. Urban-Rural Inequities in Acute Stroke Care and In-Hospital Mortality. *Stroke.* 2020;51(7):2131-2138.

### Step 1:

10-minute training session for providers on:

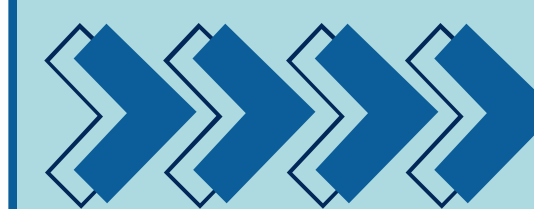
- Smart glasses operation and software
- Tablet/computer/mobile software



### Step 2:

Simulated Neurological Exam was performed and participants alternated roles):

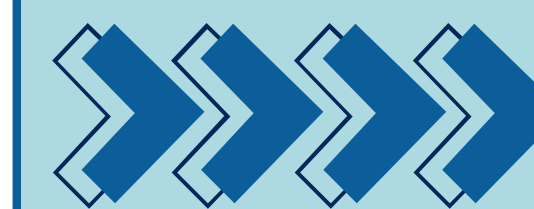
- Patient, bedside examiner, remote provider (virtual interaction)



### Step 3:

Comparison with Alternative Methods:

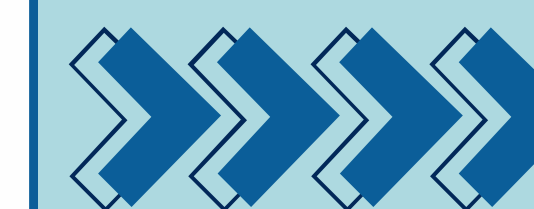
- Audio-only communication via mobile devices
- Audiovisual communication via mobile devices



### Step 4:

Post-Session Interview:

- Data was collected qualitative data on user experience, comparing examination with and without smart glasses.



### Step 5:

Feasibility Assessment based on provider feedback on:

- Training
- Usability
- Advantages/Disadvantages
- Likelihood of recommendation