Increasing Access to Eye Care through Community-Based Telemedicine

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Problem

Moderate to severe visual impairment (MSVI) and blindness is highly prevalent with 338 million cases across the worldwide and 90% of these conditions are found in low- and middle-income countries. In India alone, 161 million patients suffer from MSVI. However, 80% of MSVI and blindness is preventable.

Patient Care Pathway

Current Pathway

Outreach methods to integrate patients into the current care pathway are resource-intensive. Visilant deskills and decentralizes screening by providing diagnostic access at the community level.

Need Statement

High-volume eye care systems need a method to increase access to timely care in order to reduce preventable visual impairment and blindness.

Solution

Visilant enables a new model of care through telemedicine.

Visilant is an integrated, end-to-end eye screening, referral, and patient management system.

The system for community screening consists of a low bandwidth mobile app for data collection/transfer, clinician web portal, standardized image capture, and algorithm for real time triage.

Business Model

Software-as-a-service

Annual subscription fee tiered by hospital size.

Referral Fee per Patient

Capture profit gained from each patient referred by platform 62-3/patient referred (~5% of treatment profit).

Visilant Generation 2

Gen. 2 consists of new features to enhance diagnosability of screening images.

Improved Focus

Optimized lens and phone imaging settings improve image focus to expand optical clarity to include all of the sclera, cornea, and lens of the eye.

Pupil Centration

Added hardware feature provides external viewing target to center the pupil for imaging.

Consistent Lighting

Optimized cuff seals against the inner orbital cavity to block out external lighting and provide a consistent imaging environment.

Methods

Comparative study

Compared the image focus, pupil centration and reduction in external light penetration of the Visilant Gen. 1 to Gen. 2

Results

<table>
<thead>
<tr>
<th>Image Focus</th>
<th>Pupil Centration</th>
<th>External Light Penetration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gen. 1</td>
<td>No feature to center pupil during imaging</td>
<td>External lighting creates optical artifact while imaging</td>
</tr>
<tr>
<td>Gen. 2</td>
<td>Consistent pupillary centration during imaging</td>
<td>Reduced light penetration creates consistent imaging environment</td>
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Conclusion & Next steps

Visilant’s end-to-end diagnostic system, facilitates the collection of accurate, high quality, diagnostic level patient information and anterior segment images. The comparative study showed that

1. Optimization of lens focal length and depth of field improved image diagnosability
2. Addition of the external target yielded consistently centered images
3. Inner orbit cuff improved consistency of lighting

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