

# Increasing access to eye care services using the Peek Community Eye Health System

## SUMMARY

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Research shows that using the Peek Community Eye Health System (Peek CEH - a smartphone-based eye screening and referral system) almost tripled the number of people with eye problems attending primary care and increased appropriate uptake of hospital services, compared to the standard approach. The findings come from a peer-reviewed study carried out in Kenya, published in *The Lancet Digital Health* journal.

The results demonstrate the potential of using Peek CEH to improve access to care, target limited eye health resources, and manage more patients effectively at the primary level so that hospitals can focus on more complex cases.



Smartphones have the potential to greatly increase access to eye health care in remote and rural areas where specialist resources are scarce. Photo: Rolex/Joan Bardeletti

## STUDY

*Effectiveness of an mHealth system on access to eye health services in Kenya: a cluster randomised controlled trial. The Lancet Digital Health. July 2021.*

### Features of the Peek Community Eye Health System include:

- A smartphone app that supports data capture for eye health screening and referral pathways to treatment (Peek Capture)
- A scientifically validated smartphone-based vision screening test (Peek Acuity)
- Personalised SMS reminders to patients requiring follow-up appointments (triage and hospital)
- Real-time reporting to follow the patient journey and monitor service delivery

For this trial, the system also included a scientifically validated decision-guiding app which enables non-specialist community volunteers to identify and refer patients to eye services almost as accurately as an experienced professional.

## Study method

A randomised controlled trial involving 128,000 people in Trans Nzoia County, Kenya. 36 community unit clusters (defined as a health centre and its catchment population) were randomly allocated into two groups. The intervention group received Peek CEH, including door-to-door screening in participants' homes by community volunteers, while the control group received the standard approach of care (periodic health-centre based outreach clinics).

Both groups received community sensitisation. The triage clinic took place four weeks afterwards. During triage, participants in both groups were assessed and treated, and were referred on to Kitale Eye Unit (hospital) if they required further treatment.

### Limitations

An error during the trial meant SMS reminders for hospital appointments were sent to some of the control group clusters. This was taken into account through further data analysis.

There was low overall screening coverage, suggesting future programmes should consider other approaches to screening including repeated visits to households to ensure participants are home.



## Key findings

### Increased access to care

The average attendance rate at triage assessment (primary care) by participants with eye problems was much greater in the group where Peek CEH was used (1429 per 10000 participants in the intervention group, compared with 522 per 10000 in the control group). The average hospital attendance rate for those with eye problems was also greater (82 per 10000 in the intervention group compared with 33 per 10000 in the control group).

### More appropriate use of limited services

Overall, most patients (76%) were managed at the primary level. When compared with data obtained in earlier years, the number of patients attending hospital remained at a similar level during the trial, but there was a major improvement in how appropriately hospital eye services were being used. A much lower proportion of people attended hospital for eye problems that could have been treated at the primary level (17.1 % during the trial v 61% previously observed) while the proportion being treated for more serious conditions such as cataract rose from 8% to 62.9%.

### More equitable access to care

There was an increase in uptake of services across all ages and more so in women than men, indicating the potential of the technology to support sex and age equity in eye health (previous studies found that secondary services were less utilised by young people and women).

### Improved efficiency of human resources

The study confirmed that non-specialist community volunteers can play a key role in eye health programmes by accurately identifying and referring people to care using Peek CEH, freeing up capacity among specialist services.

**“Our findings show the great potential of using this technology to maximise limited health resources.”**

Dr Hillary Rono, study leader author

## In context

In many countries in sub-Saharan Africa, eye care provision is insufficient to meet the minimum requirements set out by the World Health Organization's World Report on Vision. This leads to many people becoming visually impaired or at risk of becoming blind from treatable or preventable eye conditions. In Kenya, there is around one ophthalmologist per million people (compared to 34 in Canada and 46 in the UK).

Key barriers to care include a lack of access to and awareness of eye services. Specialist eye health resources are often concentrated in urban areas, meaning they are even harder to access for rural populations. mHealth tools can help increase health service capacity by enabling non-specialist workers to carry out key tasks.

## Next steps

Peek CEH and the corresponding Peek School Eye Health system are currently in use by Peek's partners in community and school eye health programmes in multiple countries across Africa and Asia. These study findings provide evidence to support further uptake of this technology to increase coverage of eye services and connect more people to care at the most appropriate point in the health system.

A new [Wellcome-funded research collaboration](#), including Peek Vision and the International Centre for Eye Health, will now build on the study results to enable users to test multiple improvements to their current screening and referral programmes at the same time. By running several tests in rapid sequence or in parallel, the results could mean that successful, evidence-based changes to the health service can be implemented immediately. If successful, the study could have far-reaching consequences, not only in eye care, but for the improvement of any complex health system.

**The trial was funded by The Queen Elizabeth Diamond Jubilee Trust.**

## Collaborators

The study was carried out by a team of researchers from the [International Centre for Eye Health](#) (ICEH) at [London School of Hygiene & Tropical Medicine](#), Kitale County Hospital, the [University of Nairobi](#) and [Peek Vision](#),

Lead author Dr Hillary Rono is an Ophthalmologist at Kitale Eye Hospital, Kenya. He is also a researcher at ICEH and researcher and adviser at Peek Vision.

## ABOUT PEEK

Peek Vision is an organisation based in Botswana, Kenya and the UK. We power eye health organisations with smartphone technology and public health tools to improve how they deliver care. The result is better eye health for the millions of people worldwide who need it.



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