

# Eye health evidence gap map usability testing: findings from a desk-based research project October 2017

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# Introduction

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## Visual impairment

Visual impairment is a global health problem, with an estimated 233 million people affected, including 39 million who are blind. [1,2] Around 65% of blindness and 76% of moderate and severe visual impairments (MSVIs) can be avoided through timely access to prevention or treatment, but access to such interventions in many low and middle income countries (LMICs) continues to be limited. [1,2] Cataract is responsible for 33% of blindness and 18% of MSVIs globally, and a lack of access to good quality eye health services is a key determinant of avoidable vision loss due to cataract, diabetic retinopathy and glaucoma. [3] Studies among people with unoperated cataracts in sub-Saharan Africa and Asia have highlighted constraints affecting both supply of (eg number of qualified health workers) and demand for services (eg access to services). [4,5]

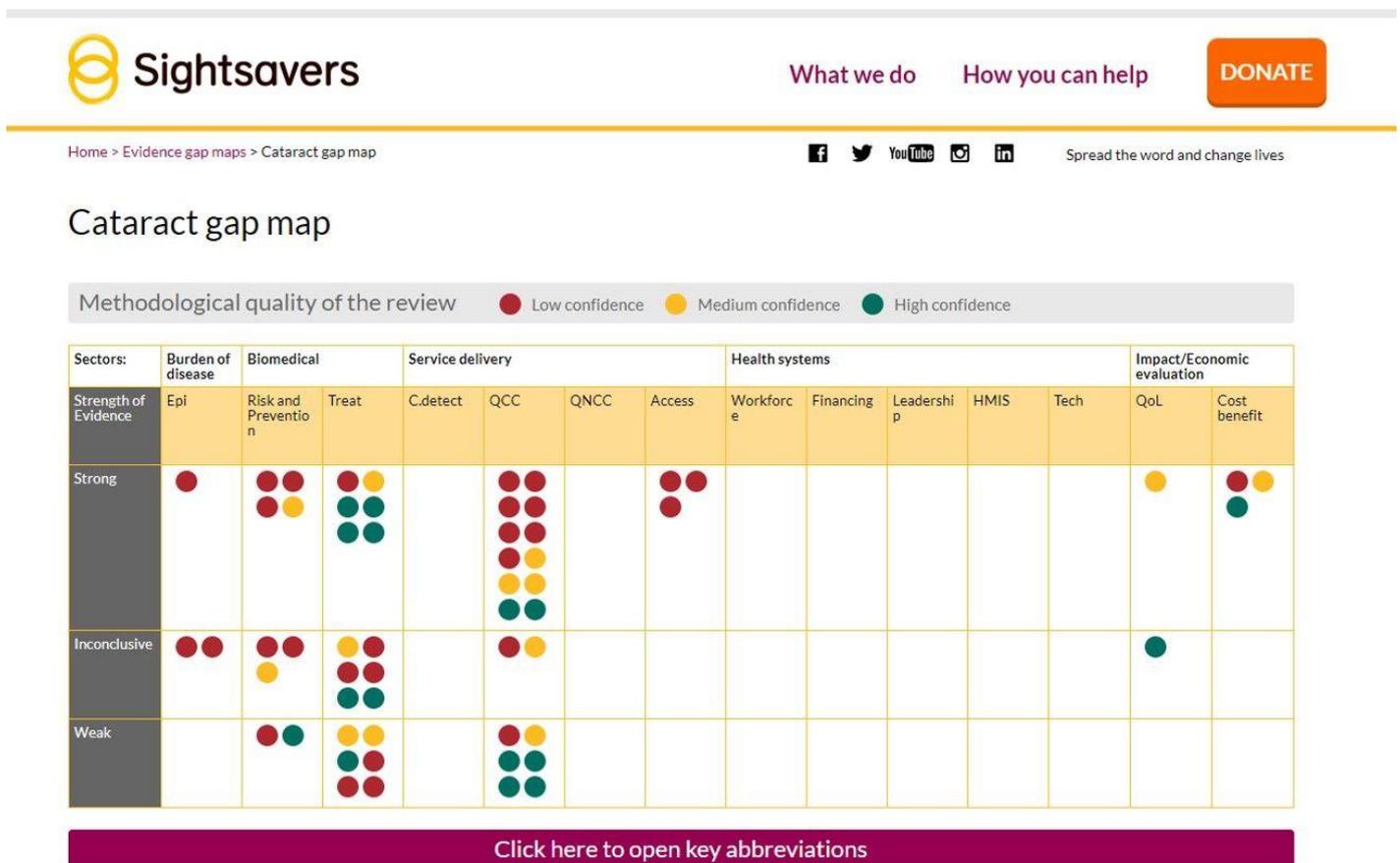
Rigorous and relevant research evidence is essential for planning cost-effective and scalable approaches to deal with avoidable visual impairment in resource-constrained environments. However, evidence on interventions that could be used to improve eye health in LMICs is relatively scarce, and there is no single repository where all relevant research may be found in a user-friendly format. This means that many policymakers and clinicians often plan their interventions without the benefit of the most up-to-date knowledge, and patients/participants may not be receiving the best possible care available. [6] Providing interventions without acknowledging the best available evidence of what works and what doesn't, risks wasting opportunities and potentially doing harm. [7] In addition, without a comprehensive overview of existing evidence, current research efforts may not be focusing on the most pressing priorities or areas with the most obvious evidence gaps. To address this need, Sightsavers developed evidence gap maps (EGMs) for eye health.

## Evidence gap maps

EGMs are a visual tool for presenting the state of evidence in particular thematic areas relevant to international development, with the aim of providing easy access to the best available evidence and highlighting gaps in knowledge. The approach was developed by the International Initiative for Impact Evaluation (3ie) and has been applied to a number of development areas including water, sanitation and hygiene; education; and social inclusion. [8,9] Fundamentally, the maps are matrices with interventions plotted against outcomes. The evidence populating an EGM can be drawn from any source, but many existing EGMs synthesise evidence from systematic and literature reviews. All evidence is assessed on its relevance to LMICs, and the quality of the review is appraised using a standardised quality appraisal tool. [6,7] All sources of evidence meeting predefined inclusion criteria are plotted in the map cells corresponding to specific interventions. The cells are linked to summary pages and show methodological quality of the review using a traffic light system. A glance at the map clearly shows where the evidence lies and where little evidence or poor quality evidence exists.

Sightsavers' EGMs, developed in collaboration with the Cochrane Eyes and Vision group, clearly indicate the strength of evidence available (strong evidence, weak evidence or mixed) and the thematic areas assessed in the reviews (figure 1). This structure for the EGMs clearly displays evidence on medical-related thematic areas. The organisation of the thematic areas reported in the selected reviews was determined by a consultation between the authors of the paper and two ophthalmologists with substantial experience in eye health research in LMICs. Each review meeting the inclusion criteria was placed in the cells corresponding to the relevant thematic area along the x-axis, and the strength of evidence reported in the conclusions along the y-axis. Visually, each review is represented by a single bubble, which links to the review summary page. To enable users to visually identify the quality of each review, a traffic light system was used. Green, orange and red bubbles represent high, medium and low levels of confidence in review conclusions, respectively. Information on the methods used to develop the gap maps is available elsewhere. [6] To date, four EGMs for eye health are available for cataract, refractive error, diabetic retinopathy and glaucoma (<https://www.sightsavers.org/gap-maps/>). The trachoma gap map is currently in progress.

**Figure 1: Cataract evidence gap map**



The main target audience of the EGMs include policymakers and decision-makers, clinicians, researchers and programme staff. The aim is to provide them with the most up-to-date evidence to inform programme investments and best practice, and identify where there is an urgent need for more research.

Demand for rigorous evidence on what works, for whom and in what context has increased in recent years. In addition, demand for rigorous evidence from governments in LMICs and implementing agencies has led to a greater investment in the production of EGMs. For example, the international thinktank IRC funded a water, sanitation and hygiene evidence gap map (<https://www.ircwash.org/resources/water-sanitation-and-hygiene-evidence-gap-map>), and 3ie also unveiled a USAID-funded EGM detailing what evidence exists on global productivity safety net programmes and where more evaluations are needed. [10]

Despite the need and demand for EGMs, there is little evidence to indicate how people use and interact with them. User testing of the existing Sightsavers EGM approach was used to determine i) 'how are the EGMs being used?' and ii) 'is this EGM tool useful?'

## User testing

User testing evaluates – in this case – the EGMs, by testing with representative users. Participants were asked to complete tasks while a user research specialist observed the interaction of the participant with the EGMs. The goal of this exercise was to identify any difficulties in usability, collect qualitative data related to the interaction of the participant and the EGMs, discover common behaviours, motivations and pain points, and determine the participant's satisfaction with the product.

User testing was identified as the most suitable approach for this study as it allowed the research, design and development teams to identify existing issues with the EGMs and rectify them for improved usability. This exercise was also beneficial as it enabled the user researcher to evaluate:

- whether participants were able to complete specified tasks successfully.
- the length of time taken to complete specified tasks
- how satisfied participants were with the product.
- any changes required to improve the product.

Existing research states that five participants should uncover 85% of a website's usability issues, meaning there was no need to include a large number of participants. [12]

This exercise was led by a senior UX consultant, who drafted the plan, reviewed the tasks developed by the team to be assigned to participants, and liaised with the participants during the user testing. [13]

By using this approach, we could observe the usability of Sightsavers' EGMs. The results of the study will determine whether the gap maps have met their original objectives (to provide easy

access to the best available evidence and highlight knowledge gaps). The information and data gathered from this assessment will also help us to determine if there is a need to improve any aspect of the gap maps platform, including presentation of the content and features, or if there is a need to change and improve current strategies used to promote the EGMs (eg distribution of USBs at conferences, presenting at conferences, blogs/tweets).

This research will contribute towards the lack of global evidence on EGMs and this may not only inform Sightsavers' EGMs, but also potentially guide other organisations on the production of EGM-based design and interface issues identified by users. Methods used to conduct this research may be used to inform future user testing on EGMs.

## Objectives

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The study aimed to determine if EGMs:

- clearly display the methodological quality and strength of evidence of studies included.
- clearly highlights gaps in knowledge/research.
- are useful/user-friendly for their intended target audience.

To meet these objectives, a qualitative approach was used.

## Research questions

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The study aimed to answer the following research questions.

- How easy is it to understand where the strength of evidence and methodological quality of the review lie?
- How easy is it to identify gaps in research?
- Can users operate and access the tool with ease?
- What are the users' experiences of the usefulness of the EGM tool?

## Methods

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The study was led by the research and communication teams at Sightsavers. A senior user research consultant was hired specifically for this study.

One of the first steps involved developing a plan for the test. The aim of the plan was to document what we were going to do, how the test was going to be conducted, what metrics were going to be captured, the number of participants to be tested and what scenarios were going to be used.

## Participants

A total of 10 participants were contacted to take part in this study. We aimed to include a minimum of seven and maximum of 10 participants. This was to ensure that we included a representative number of participants from each field including academic researchers, clinicians, programme managers and policymakers. This would also account for any drop-outs.

Participants were contacted via email by a member of the research team, asking them to take part in the study. At this point, each participant was asked to take part in desk-based research, and no further details were provided, to avoid response bias.

## Information sheet and consent form

Prior to user testing, each participant who agreed to participate in the study was sent an information sheet and a consent form by a member of the communications team. The information sheet included details on the purpose of the study, why the participant was approached and what the exercise would entail (please refer to appendix 1 for more details). If the participant was happy to take part after reviewing the information sheet, the participant was asked to give their consent.

Participants were given the option to send a signed consent form via email or provide their consent verbally which would be recorded before starting the user testing tasks.

## User testing

User testing was conducted remotely with all participants as most were located in another country or unable to participate face-to-face.

Participants were invited to use GoToMeeting software. This allowed them to share their screens with the UX specialist and Sightsavers teams. Where possible it also enabled access to webcams for a clear view of each participant.

Instructions for each task were given by the UX consultant. The participant was asked to carry out the tasks and speak aloud to explain the actions they were taking. All user testing activities were recorded for review and analysis by the UX consultant. While the participant was completing the tasks, a member of the research or communications team noted down observations. These observations were later collated with the consultant's findings for analysis.

## Questionnaire

At the end of the user testing tasks, each participant was asked to fill out an electronic questionnaire for further feedback not captured by the user testing, to collect the participants' demographic data and job type and to support the report presentation. The participant was also

asked if expectations had been met by the tool if they had previous knowledge of it, and whether they would recommend the tool to others.

## Accessibility

User testing was also complemented by testing of the platform's accessibility. This was performed by an inclusion coordinator who used a computer programme, JAWS, which allows blind and visually impaired users to read the screen.

## Data analysis

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To synthesise findings, recordings and written notes were reviewed independently by the research and communication teams at Sightsavers and the UX specialist. Each recording was analysed and key observations noted. Observations included identifying any usability issues and any barriers to completing tasks.

The UX specialist used the observations to identify trends and patterns in user behaviour and summarised findings in a presentation, along with recommendations to address any problems identified.

The online survey was analysed to provide additional insight into the EGM audience, to determine if participants were broadly satisfied with the product and if they would recommend it to colleagues and peers. The survey allowed us to ask participants for ideas on how we could improve the EGMs. The accessibility feedback was also taken into consideration. These suggestions were incorporated into the recommendations section of the presentation.

## Results and Recommendations

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### Participants

A total of 10 participants were included in this study. Participants consisted of six clinicians, one policymaker, two academic researchers and one programme manager. Nine participants took part in the user testing and eight completed the electronic questionnaire. One participant did not take part in the user testing due to poor internet connection, and two participants did not complete the questionnaire due to unknown reasons. Follow-up emails to these participants were unsuccessful. Apart from two participants, all other participants were based outside the United Kingdom (table 1).

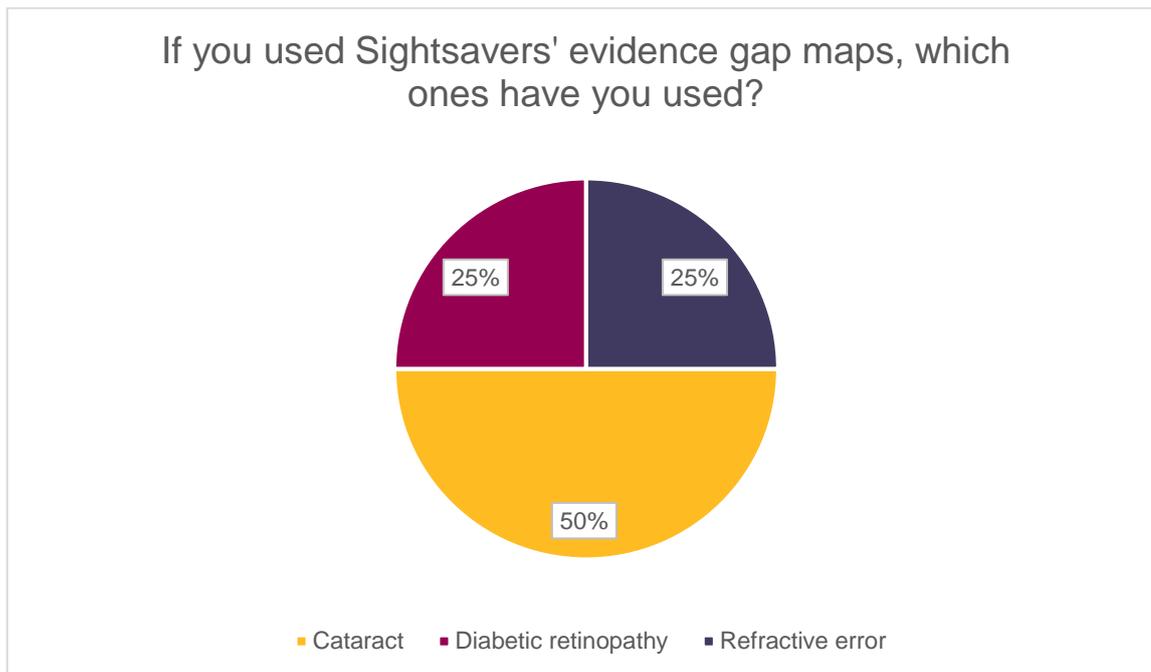
**Table 1: characteristics of included participants**

Participant number	Role	Used gap maps before?	Gender	Location	User testing method	Questionnaire
1	Clinician	Yes	Male	Ethiopia	Remote	Completed
2	Clinician	No	Female	USA	Remote	Completed
3	Clinician	-	Male	Tanzania	Not conducted	Not completed
4	Clinician	Yes	Female	Australia	Remote	Completed
5	Clinician	No	Male	UK	Remote	Completed
6	Clinician	Yes	Male	India	Remote	Completed
7	Policy maker	No	Male	UK	Remote	Completed
8	Academic researcher	Yes	Female	Australia	Remote	Completed
9	Academic researcher	Yes	Female	India	Remote	Completed
10	Programme manager	-	Male	Cameroon	Remote	Not completed

Based on responses to the electronic questionnaire, five of the eight participants (62.5%) had used EGMs before and three (37.5%) had not. Three participants (37.5%) were in the age range 35-44 and two participants (25.0%) were in the age range 55-64. One participant (12.5%) was in the age range 45-54, and one was in the age range 25-34 years. One participant (12.5%) preferred not to reveal their age range.

Three participants mentioned using the Sightsavers EGMs and one participant noted using both the Sightsavers and 3ie EGMs in the past. The cataract gap map was reported to be commonly used among participants (figure 2). 40% of the participants were aware of the existence of Sightsavers' gap maps through word of mouth and another 40% came across them on Sightsavers' website. 20% of the participants who were aware of the EGMs were given USB sticks with a gap map URL on them.

**Figure 2: Sightsavers EGMs used by participants**



100% of participants would recommend Sightsavers gap maps to colleagues/peers, preferably via email.

## User testing

Overall there were no major usability problems with the EGMs. Participants who were unfamiliar with the EGMs were quickly able to understand and gain value from them. However, some issues were identified with the gap map platform.

### 1. Navigation

It was observed that participants kept losing their information trail from the cursor moving around the screen. This indicated that they struggled to understand how to access the gap map information. This was mainly due to confusion in relation to strength of evidence values (strong, inconclusive and weak) and methodological quality (high, medium, low).

To address this issue, the UX specialist recommended bringing the strength of evidence and methodological quality of the review into the pop-up box when the user hovers over the coloured bubbles. This would remove the need for reference table headers when considering the validity of the systematic review. The UX specialist also suggested that by adding the publication date of the systematic review, the information literacy would be increased, which would easily help the user to identify the relevance of the study. In addition, by adding a verb so that the link 'view research

paper' was clearly identifiable, the user would recognise its purpose and know what to expect (figure 3).

Another feature that may be useful for users when exploring the relevance of systematic reviews is the addition of icons indicating newly-added studies into the gap map platform (figure 4).

**Figure 3: Redesign pop-up box**

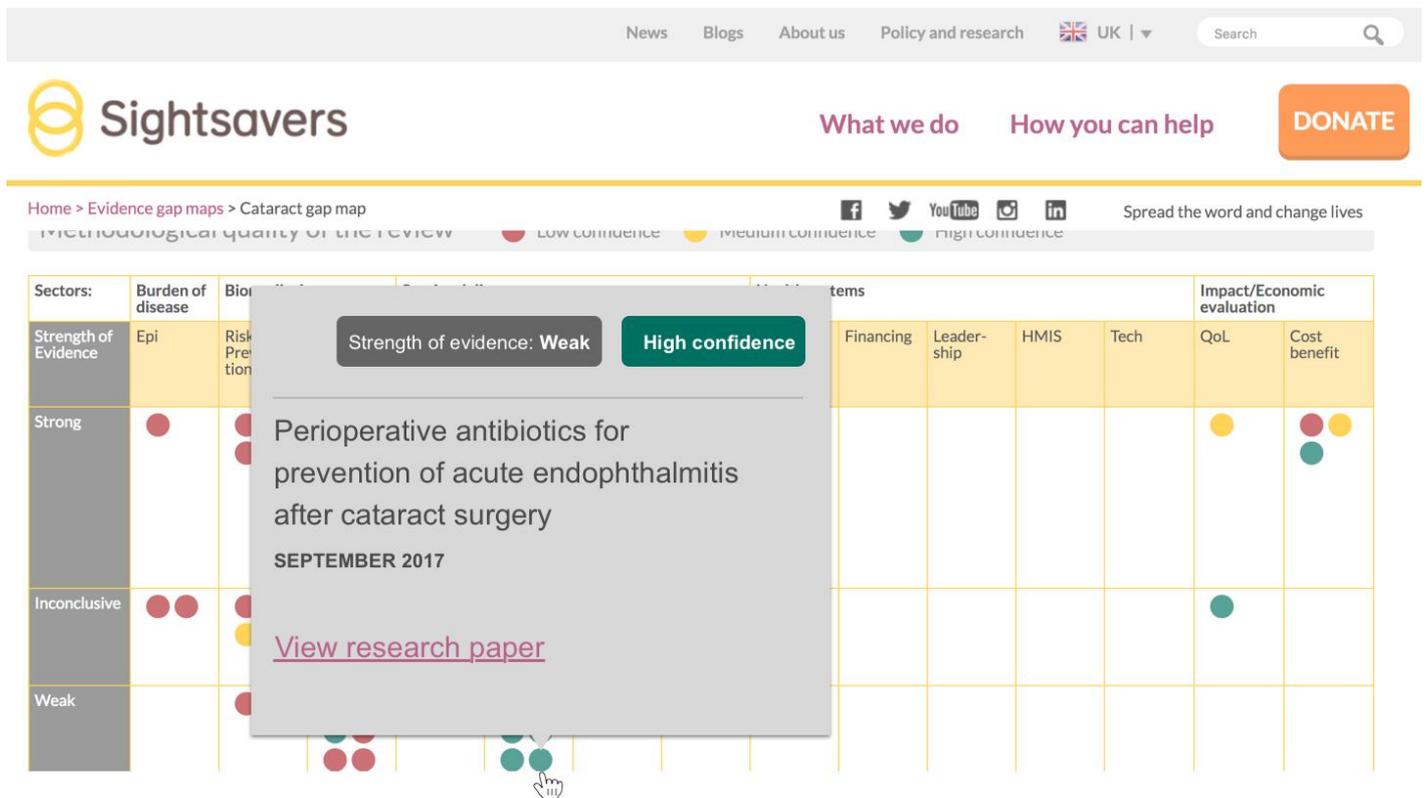
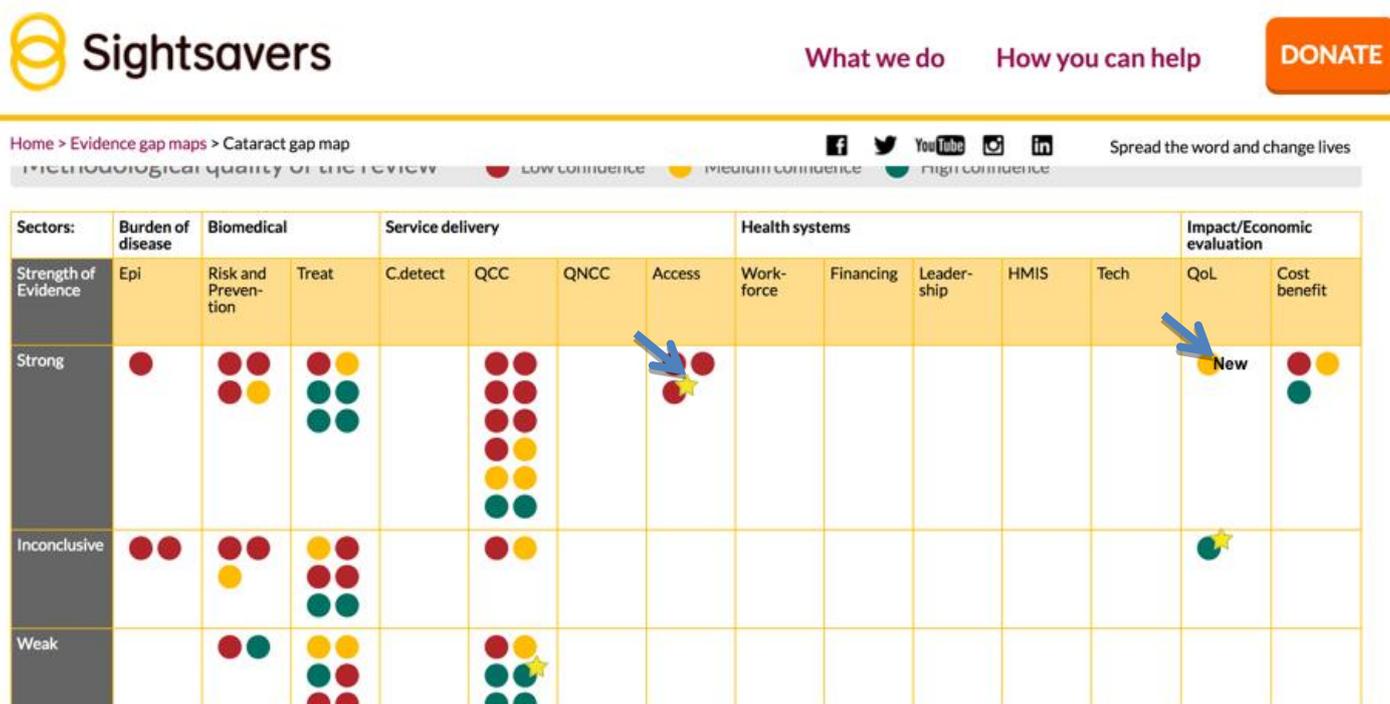


Figure 4: Icons showing newly added studies

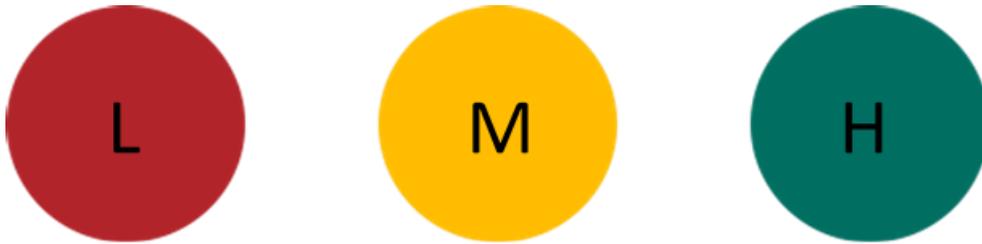


To further address the issue of users' unfamiliarity/navigational confidence while exploring the gap maps, the addition of filters (eg to sort studies by most recent, or by country) was suggested by the UX specialist.

## 2. Reliance on colour to show methodological quality

To enable users to visually identify the quality of each review, a traffic light system is used in EGMs. Green, orange and red bubbles represent high, medium and low levels of confidence in review conclusions, respectively. The UX specialist identified that colourblind users could struggle to identify the difference between high, low or medium confidence studies based on the traffic light coloured system. This could be easily addressed by adding letters (L for low, M for medium and H for high) for each quality type, removing the reliance on colour alone to convey the message (figure 5). This would clearly display the confidence level of reviews and would not only benefit people who are colour blind but also all other users.

**Figure 5: Addition of letters (L, M and H) to enhance methodological quality of the reviews**



### 3. Website header

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During the user testing it was observed that the Sightsavers header encroached on the EGMs, reducing their ease of use. The sticky header made it harder to reference the top rows of the gap maps while participants scrolled up and down to check information. This meant that the participants could not read the methodological quality legend, and the top label row of the gap map platform. It was recommended that the width of this header should be reduced and a non-sticky header used.

### 4. Abbreviations

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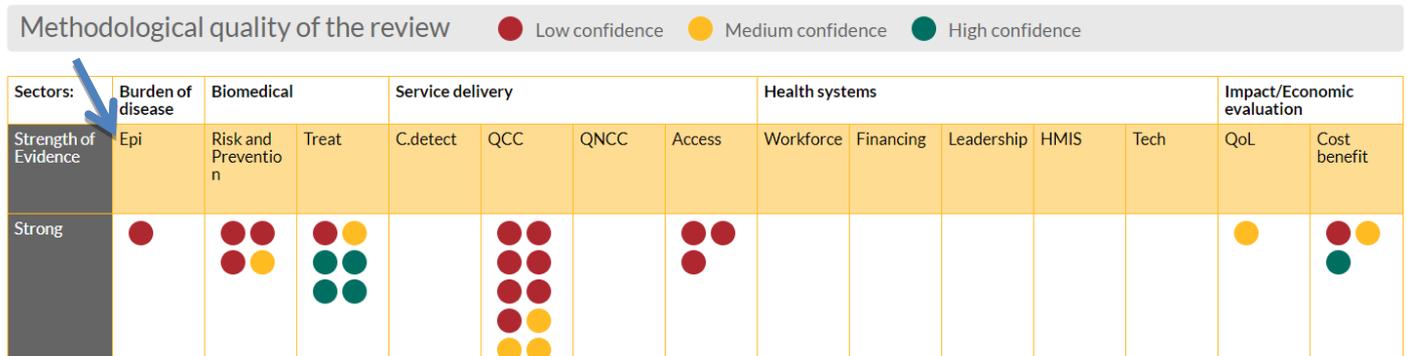
In order to create user-friendly and easy to read EGMs, interventions were shortened due to limited space (figure 6). For instance, the abbreviation 'epi' was used to substitute 'epidemiology', QCC was used for 'quality of clinical care' and so on. In response to task 4 (Can you find a weak Quality of Clinical Care cataracts study and review the original source paper?), it was observed that some participants struggled to identify a study which fell under quality of clinical care category due to the use of abbreviations. There was a key at the bottom of the gap map platform, but apart from one person, the participants did not notice it.

It was also observed that researchers were familiar with the abbreviations used; therefore they did not have to refer to the key and did not struggle to complete task 4.

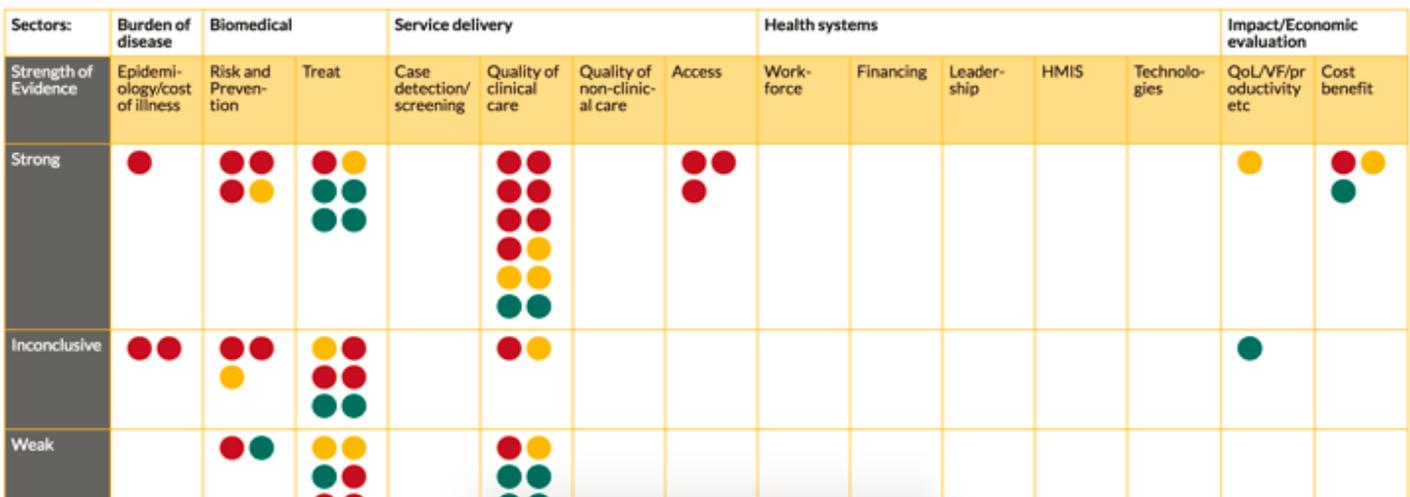
To improve user experience for all users there is a need to remove the abbreviations and use the full header title (figure 7).

**Figure 6: Abbreviations used on the current cataract gap map**

Cataract gap map



**Figure 7: Expanded acronyms**

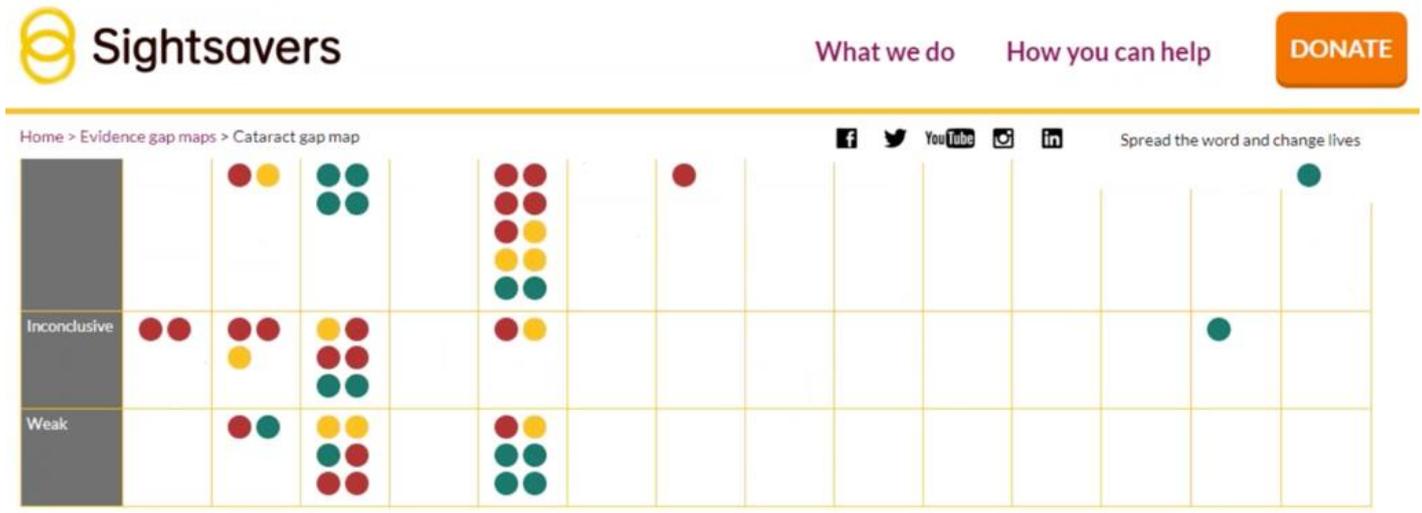


## 5. Missing calls to action

One of the aims of the gap maps is to highlight gaps in research and inform research priorities. In response to task five of the user testing (What general conclusions can you make in regards to the gaps in cataracts evidence?), participants appropriately highlighted gaps in the EGMs (eg in health systems inside the cataract gap map). However, some participants highlighted the need to include other studies in the EGMs apart from the systematic reviews – for example randomised controlled trials (RCTs) – especially where there are gaps in research. It should be noted that the aim of the EGMs is to include the best available evidence including systematic and impact evaluations which may synthesise evidence from RCTs.

Based on the participants' feedback, the UX specialist suggested the need to give users the opportunity to update Sightsavers of any missing systematic reviews in the gap map to ensure they are up-to-date (figure 8).

**Figure 8: “Tell us about the review you’ve seen”**



## Are we missing a Systematic Review?

Help us keep this gap map up to date by telling us about it.

[Tell us about the review you've seen](#)

A total of 52 reviews presenting evidence relevant to low- and middle- income countries were included in the cataract gap map. Most of these were in English, three were in Chinese, two were in German and two were in Spanish. Most reviews (20) addressed quality of clinical care, followed by surgical methods for cataract (18). Of the remainder, nine looked at risk factors/prevention, five were economic evaluations, and three each addressed the burden of the disease and the accessibility of cataract services.

In response to their research questions, 30 reviews provided strong evidence, 14 reviews showed weak or no evidence; and in 14 reviews the results were inconclusive.

The reviews were assessed for quality: 14 reviews were of high methodological quality; 12 were medium quality; and 26 reviews were graded as low quality. For explanation of the strength of evidence and methodological grading please visit the guide and overview page.

## 6. Source link to original paper

In response to task four of the user testing (Can you find a weak Quality of Clinical Care cataract study and review the original source paper?), participants had to identify and click on the 'Source' button once they had accessed a systematic review summary (figure 9). During this exercise, it was observed that participants constantly missed the publication source link. One participant mentioned searching for the original source through their preferred academic service using authors' names.

To address this issue, the UX specialist suggested enhancing the 'Source' button to increase visibility (figure 10).

Figure 9: Source button currently on the EGMs

Home > Evidence gap maps > Cataract gap map > Medical prophylaxis and treatment of cystoid macular oedema after cataract surgery: The results of a meta-analysis

after cataract surgery: The results of a meta-analysis

Methodological quality of the review: Medium confidence

Author: Rossetti L, Chaudhuri J, Dickersin K.

Region: Not specified

Sector: Age-related cataract

Sub-sector: Clinical outcomes, complications

Equity focus: None specified

Review type: Effectiveness review

Quantitative synthesis method: Meta-analysis

Qualitative synthesis methods: Not applicable

Background

Cystoid macular oedema (CME) remains a troublesome problem after cataract surgery and

Publication Details

Ross L, Chaudhuri J, Dickersin K. Medical Prophylaxis and Treatment of Cystoid Macular Edema after Cataract Surgery. The Results of a Meta-analysis. Ophthalmology. 1998;105(3):397-405.

Source

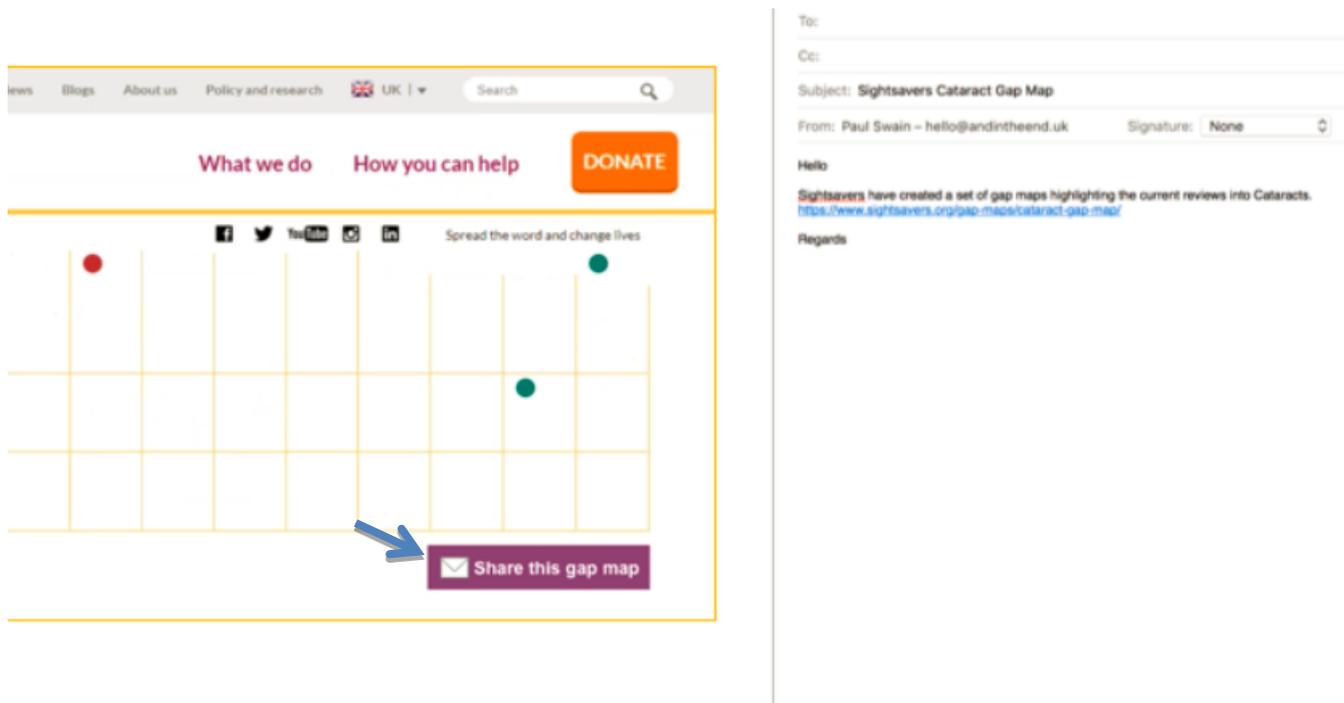
Figure 10: Source button to increase visibility

The screenshot shows the Sightsavers website interface. At the top left is the Sightsavers logo. To the right are navigation links: 'What we do', 'How you can help', and a prominent orange 'DONATE' button. Below the navigation is a social media bar with icons for Facebook, Twitter, YouTube, Instagram, and LinkedIn, followed by the text 'Spread the word and change lives'. The main content area on the left lists metadata for a publication: Author (Hahn U, Krummenauer F, Neuhann I.), Region (United Kingdom (UK), Sweden, Germany), Sector (Cataract surgery), Sub-sector (Outcome indicators, benchmarks, refractive accuracy, visual rehabilitation), Equity focus (None specified), Review type (Review of descriptive cataract audits), Quantitative synthesis method (Thematic analysis), and Qualitative synthesis methods (Not applicable). Below this is a 'Background' section with the start of a paragraph: 'A systematic literature review on success rates of cataract surgery should provide a reference for eye care providers. The problem is the lack of universal cataract audit template. Limitations...'. On the right side, there is a 'Publication Details' box containing the full citation: 'Hahn U, Krummenauer F, Neuhann I. Result-related success rates of cataract operations. Results of a systematic literature review. Ophthalmologie. 2012 Jun;109(6):575-82.' At the bottom of this box is a purple button labeled 'View source paper', which is pointed to by a blue arrow.

## 7. Communications

One of the most important ways of promoting the EGMs is via social sharing. As previously mentioned, the majority of participants reported that their most likely approach for sharing the EGMs with colleagues was via email when asked ‘How would you share the evidence gap maps?’ Given that the majority of users would be using their work computers (and predominantly using their work email), the UX specialist suggested the addition of a ‘share this gap map’ link which would allow the user to share the EGM via email (figure 11). The user would only need to complete the recipients’ details once the link was open.

**Figure 11: Addition of 'share this gap map' link**



## 7.1 Promoting the EGMs

As well as 'share' functions on the gap maps themselves, it was agreed that more effort needed to be put into promoting the EGMs. A communications plan should be created with the aim of increasing the number of people using the EGMs. This should include tactics including: presentation of the EGMs at relevant events; distribution of handouts and USBs at events and conferences; placement of blogs about the maps in relevant media; promotional posts on social media when a new map is launched; and an email to staff and contacts when a new map is launched.

## 8. EGM landing page redesign

At present, the EGM landing page includes an introduction to EGMs in general, a link to each specific EGM and links to information on 'How to use evidence gap maps' and 'How evidence gap maps were developed' (figure 12).

Figure 12: EGM current landing page

The screenshot shows the Sightsavers website's landing page for Evidence Gap Maps (EGMs). The page features a navigation bar with links for News, Blogs, About us, and Policy and research, along with a search bar and a UK flag. The Sightsavers logo is prominently displayed on the left, and a 'DONATE' button is on the right. Below the navigation, there are social media icons for Facebook, Twitter, YouTube, Instagram, and LinkedIn, and the tagline 'Spread the word and change lives'. The main heading is 'Evidence gap maps', followed by a detailed paragraph explaining what EGMs are and their purpose. Below this, there are links to specific EGMs (Cataract, Diabetic retinopathy, and Refractive error) and information on how to use and develop them. A section titled 'In collaboration with' features the Cochrane Eyes and Vision logo. The footer contains a grid of links for 'What we do', 'How you can help', 'About us', and 'For organisations', alongside a video player for 'An introduction to Sightsavers' with 'DONATE' and 'CAMPAIGN' buttons.

News Blogs About us Policy and research UK | Search

**Sightsavers** What we do How you can help **DONATE**

Home > Evidence gap maps f t YouTube i in Spread the word and change lives

## Evidence gap maps

Evidence gap maps (EGMs) are a visual tool for presenting the state of evidence relevant to international development in particular thematic areas. EGMs summarise, appraise, and present evidence from systematic or literature reviews. The aim is to make the available evidence accessible in a user-friendly format and to highlight gaps for future research. For each review the maps display its summary, the strength of evidence and the methodological quality of the review.

Sightsavers is developing a number of EGMs on the topics relevant to visual impairment. To access specific thematic gap maps click on the links below.

[Cataract gap map](#)  
[Diabetic retinopathy gap map](#)  
[Refractive error gap map](#)

[How to use evidence gap maps](#)  
[How evidence gap maps are developed](#)

In collaboration with



**What we do**  
Sight  
Change  
Equality  
Stories  
Where we work

**How you can help**  
Donate  
Become a major donor  
Campaign with us  
A Million Miracles  
Fundraise with us  
Give in your will

**About us**  
Media centre  
Governance  
Contact us  
Jobs  
Document library

**For organisations**  
Companies  
Trusts and foundations  
Community groups  
Working with partners

### An introduction to Sightsavers



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## 8.1 Addition of educational content

During the user testing exercise, it was observed that apart from one person, the participants did not access the link to information on 'How to use evidence gap maps' on the EGM landing page before executing a task. Going through this information would have helped participants to understand the meaning of 'strength of evidence' and 'methodological quality of a review', and complete the tasks successfully. Although Sightsavers should still present explanatory information, text may not be most effective approach. Suggestions made by the UX specialist include transforming the text information about 'How to use evidence gap maps' into an educational video (with a transcript for accessibility). These types of videos persuade the user how good a particular service/product is, and would help users who experience challenges when interacting with the EGMs.

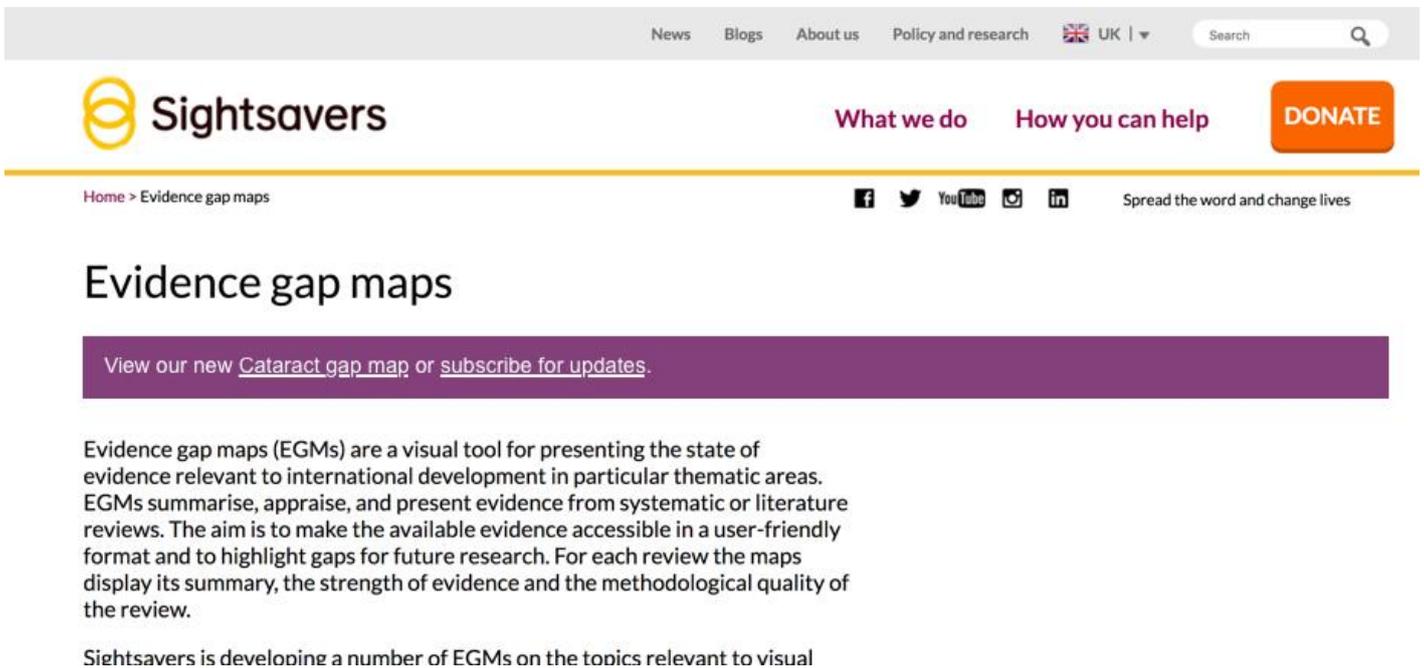
The UX specialist recommended the need of moving the EGM links above the introduction of EGMs. All participants skipped the introductory text on EGMs in favour of diving into the EGMs.

## 8.2 Update notifications

During the user testing exercise, participants mentioned that it would be useful to be alerted to updates on the gap maps without having to access the gap maps, with one saying, "It would be informative to know when the updates were done as there is no date on it at present."

To keep users updated on newly-added systematic reviews into the gap maps and on new gap maps, the UX specialist suggested the addition of a subscription button on the EGM landing page (figure 13).

Figure 13: Addition of update buttons into the EGMs landing page



## 8.3 Frequently asked questions

As EGMs can be quite complex for new users, the UX specialist suggested the addition of frequently asked questions (FAQ) on the landing page to highlight common questions, and important information. This could help the EGM learning curve. Examples of FAQs include:

What is the difference between low confidence and high confidence systematic reviews?

What is the difference between weak and strong 'strength of evidence'?

## 8.4 Testimonials

Product landing pages tend to use consumer reviews as persuasion content. The UX specialist noted that Sightsavers could use this technique and include quotes or examples from colleagues to show the value of the EGMs.

## Accessibility

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Testing of the platform's accessibility indicated that the EGMs are not user-friendly for people requiring computer programmes to access them. There is no logical order when the screen reader is used; it loses context and detail relating to the EGMs and the traffic light system buttons lose their meaning. When the option to highlight further information about the systematic reviews is used, the 'hover over' option does not read the information included in the text box. Certain links, including those to social media accounts and those embedded into the text, were not functioning when used with JAWS.

## Discussion

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This report describes experiences and recommendations based on the user testing conducted for Sightsavers' EGMs. The aim of this study was to determine whether the EGMs are user-friendly in terms of providing easy access to the best available evidence and highlighting gaps in research. Findings from this study will inform and guide the EGM production team at Sightsavers on changes required to make the EGMs user-friendly in terms of design and interface. The process of the study gave us insights and observations that are unique – this is the first EGM usability testing conducted and led by an international NGO with contributions from 3ie. .

A glance at the EGMs clearly shows where evidence lies, where little evidence or poor quality evidence exists, and the strength of evidence of each systematic review. Findings from the user testing revealed that participants could easily identify areas where there is a lack of evidence and identify methodologically weak/inconclusive and strong studies. However, it was also observed that participants were not able to understand the concept of strength of evidence, which led to confusion between methodological quality of the review and strength of evidence during the user testing tasks. For example, one participant thought that a weak study was represented by a red bubble. Information on how to use the gap maps and how the gap maps were developed is available on the gap maps landing page, which includes information on strength of evidence and methodological quality of the reviews. Unfortunately, only one participant used these links for further information.

All participants easily identified gaps in knowledge and understood the need to fill in these gaps. A couple of participants recommended including primary studies (eg RCTs) but these are included in the systematic reviews and impact evaluations which make up the EGMs. The need for further good quality studies was not mentioned.

It was also interesting to observe that researchers or participants who had a research background easily navigated the gap map platform, including those who were not aware of the EGMs. They understood the meaning of abbreviations, found the maps inclusive and interacted easily with the EGM platform. Participants who did not have a background in research struggled to make sense of abbreviations, and seemed lost while navigating the EGMs. The UX specialist suggested further investigation of usability issues with clinicians to reveal additional audience-specific behaviours.

When participants were asked to complete task one (You are interested in finding out where there are gaps in cataract research. Where would you go to find this information?), all participants, including Sightsavers staff, reported using Google to find this information, despite being aware of the existence of the cataract gap map.

Some of the participants highlighted the need to better publicise the EGMs. As well as adding social sharing functionality to the EGMs, promotion of the maps could be achieved via the following tactics:

- Securing speaking slots about the EGMs at relevant conferences and events
- Distributing EGM handouts and USBs at conferences and events.
- Placing of blogs about the EGMs in relevant research, development and eye health press
- Using social media posts to share any updates in the maps, and the addition of new maps
- Drafting and pitching press releases to relevant press to announce the addition of new maps
- Emailing staff, partners and other contacts whenever a new map is launched
- Better signposting to the EGMs on Sightsavers' website

The effectiveness of the communications tactics can be measured by ensuring correct tracking is in place for URLs that are used on social media, on physical items and in the press. We can track how many people have viewed the EGMs as a result of each communications tactic. We can also see how long they have spent viewing the EGMs, what country they are based in and whether they return to the EGMs at a later stage.

Efforts to improve accessibility and maintain context for people using computer programmes to access the EGMs must be addressed when redesigning the EGMs, to ensure inclusion for all people who might access the platform.

Overall, participants mentioned the use of systematic reviews and meta-analysis to inform their work. This shows that EGMs could be a useful tool for our target audience to ensure that they are up-to-date with the best available evidence.

Overall, positive feedback was given by participants in relation to the EGM platform, with one commenting, *"I think you have done a nice job in presenting a huge amount of information on the map, and the summaries I have used are well done in terms of accessible language."*

## Study limitations

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This study has several limitations. Three of the nine participants who took part in the user testing were Sightsavers staff and were therefore aware of the EGMs, which may have biased their responses. Participants were sent the consent form and information sheet the day before user testing began, which included study details; this may have also biased their response. The user testing was conducted remotely, which didn't allow the observers and user tester to make conclusions based on body language. Conclusions were made based on screen recordings and how participants moved the mouse within the EGMs. It was observed that participants may have

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felt under pressure to execute the tasks effectively in a timely manner due to the nature of this exercise. This may have led to participants being afraid of doing or giving the wrong response, or rushing through the tasks as they knew they were being observed.

The sample was purposely selected for this study for reasons mentioned previously. Therefore, findings from this study may not be generalised. In addition, this study included a larger number of clinicians compared to academic researchers/policymakers etc.

## Conclusion

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User testing allows us to increase user satisfaction by measuring behaviour and not preference. The user testing provided insights on changes necessary to make the EGMs more user-friendly to a range of users. Overall, no major usability problems were identified during the user testing, although accessibility issues were present for those requiring a computer programme to access the EGMs. Participants who were unfamiliar with the EGMs were able to quickly understand them, and gain value.

## Acknowledgements

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We would like to show our appreciation to all participants who took the time to contribute to this study.

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# Appendix 1

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## Information sheet

### **What is the purpose of this study?**

This study forms part of an ongoing project that aims to improve the use and availability of high quality research (systematic reviews) through evidence gap maps inform decision-makers and policymakers, and those implementing projects in low and middle income countries.

You are being invited to take part in this study. The specific objective of this study is to identify common behavioural patterns around the gap maps' usability so we can identify improvements to the interface and navigation. User testing is used here to answer our objectives. This approach will allow us to better understand how users interact with the gap maps, whether they can easily find what they need and whether they face any obstacles or limitations. The interview will focus on your views and experiences of using the EGMs so we can identify improvements to the gap maps' interface and how we promote them.

### **Why have I been approached for an interview?**

We want to interview a number of key stakeholders, such as policymakers, clinicians, academic researchers and programme managers who may potentially benefit from using gap maps as part of their work (eg. to inform future research).

### **Why have I been given an information sheet and consent form?**

Before you agree to be interviewed, it is important that you understand why the research is being done and what it will involve. Please feel free to ask anything that is not clear or if you would like more information. If you would like to discuss the project in more detail please contact the principal investigator via phone or email (Phone: +44(0)1444 446645; email: [bvirendrakumar@sightsavers.org](mailto:bvirendrakumar@sightsavers.org)). Your information is very important to the study and anything you tell us will be anonymised.

### **Do I have to take part?**

It is entirely up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and asked to sign a consent form, a copy of which you will also keep. If you decide to take part you are still free to withdraw at any time and without giving a reason. You can also decide not to answer any specific questions you do not wish to answer, without giving a reason. If you later wish to withdraw from the study, let us know and your data (such as any recording, notes or transcript of the interview) will be deleted.

## **What do I have to do?**

During the process you will be given a number of online tasks to complete. While you are carrying out these tasks you will be asked to vocally describe each action that you undertake. This information and how you navigate through these tasks will be captured using both video recording software and noted. Please conduct the tasks in as naturally a manner as you can so that we can capture accurately how you would interact with the EGMs.

## **Who can I contact for more information?**

If you would like to discuss the project in more detail please contact the principal investigator via phone or email (Phone: +44(0)14444 46645; email: [bvirendrakumar@sightsavers.org](mailto:bvirendrakumar@sightsavers.org)).

Thank you very much for your help!

# Consent form

Full title of project: Evidence Gap Map Usability Testing

Name of principal investigator: Bhavisha Virendrakumar

**Please  
initial  
box**

1. I confirm that I have read and understood the participant information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered fully.	
2. I understand that my participation is voluntary and I am free to withdraw at any time, without giving any reason.	
3. I agree to take part in the above study.	

\_\_\_\_\_  
Name of participant  
*(printed)*

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Name of person taking  
consent

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

*One copy for participant; One copy for principal investigator*

We work with partners in  
low and middle income countries  
to eliminate avoidable blindness  
and promote equal opportunities  
for people with disabilities

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