DR Detection App: User Guide

This device is designed to find early signs of diabetic eye disease so patients can get timely treatment and avoid vision loss.

No Internet Required

The system does not require an internet connection. All processing happens on the device, so screenings work anywhere, including clinics, villages, and home visits.

Screening Accuracy

The AI is highly reliable at deciding whether the eye is likely healthy or requires medical attention. It correctly identifies disease in more than 99% of tested screening cases.

While the system indicates whether problems exist, its estimate of how severe the condition may be is not always accurate. Severity ratings are only preliminary guidance for doctors.

Screening Action Matrix

	App Says: "Go Home"	App Says: "Go to Hospital"
Healthy (No DR)	99% Correctly Cleared	1% False Alarm
Sick (Has DR)	3% Missed Diagnosis	97% Correctly Referred

Patient Condition — Action Recommendation

How to explain to patients

- A result of "High Risk" means the device sees clear signs that need medical review
- A severity label (mild/moderate/severe) should not be treated as a medical diagnosis

The purpose of screening is early referral, not final confirmation. When results show risk but symptoms feel mild, the safest choice is still to see a doctor soon.

What the AI Looks For

The device analyzes the eye image and looks for visible warning signs, such as:
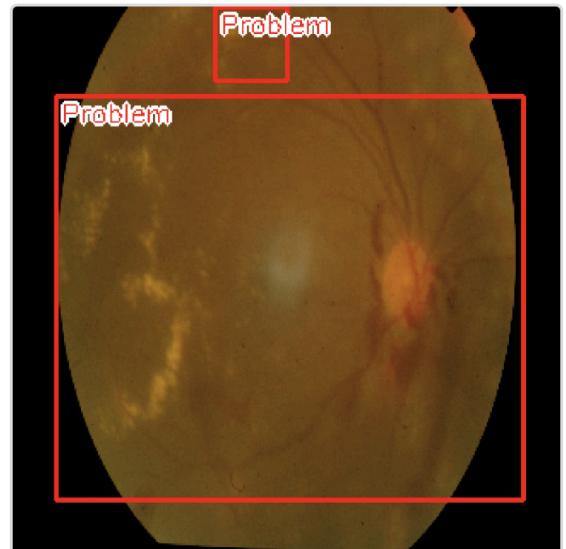
- Small blood spots (micro-bleeds)
- Swollen or twisted vessels
- Areas with unusual brightness or darkness

Healthy Retina Reference

Your Screening Scan (AI Analysis)

"**Healthy Retina**" - Clear vessels, no spots. Good vision with normal blood flow.
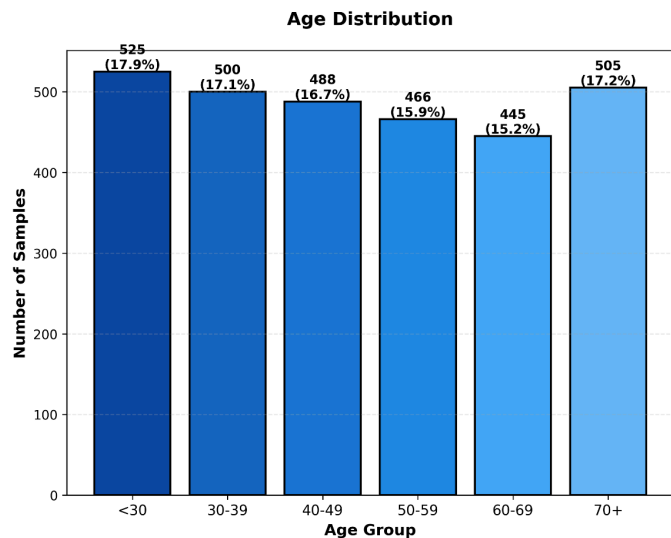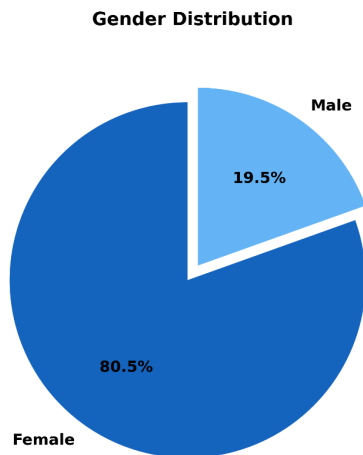
"**Your Screening Scan**" - The highlighted areas show potential micro-aneurysms (bleeding spots). These are early warning signs of damage.
Some bleeding and vessel damage detected. You should see a doctor.

The visual overlay shows why the device triggered a risk alert.
 You may say to the patient: "These problem areas show where the system noticed signs that should be checked by an eye specialist."This helps the patient understand the recommendation and encourages follow-up action.

Who the AI was trained on

Gender Distribution

Male 19.5%

Female 80.5%

Age Distribution

<30	525 (17.9%)
30-39	500 (17.1%)
40-49	488 (16.7%)
50-59	466 (15.9%)
60-69	445 (15.2%)
70+	505 (17.2%)

(Y-axis: Number of Samples; X-axis: Age Group)

The training data used for the AI model is well-distributed across all adult age groups, ensuring coverage for the high-risk demographic. However, the dataset is significantly imbalanced on gender, which requires cautious interpretation when screening male patients.

When to Retake or Refer Directly

The system needs a clear view of the retina to work properly.

It may struggle when:

- The phone moves
- The lens is dirty
- Lighting is poor
- The patient has cataracts that block the view

If the device reports "Low Image Quality":

- Clean lens and adjust lighting
- Ask patient to hold steady and try again
- If still unclear, recommend medical examination immediately (Do not rely on the AI result)

Protocol for Patients with Cataracts

Before relying on the AI result, look at the patient's pupil. If the patient has severe cataracts (the pupil looks cloudy or white), the device cannot give an accurate reading.

What To Do (Action):

- Ignore any result the app gives (even if it says "Clear").
- Mark the patient as "Inconclusive / Cataract" in your log.

- Refer the patient directly to the eye doctor for a physical exam.

How to Explain to Patients (Communication Guide)

Use these simple scripts to answer common patient questions and build trust before screening.

1. Addressing Fear of Pain (Safety)

Patients ask: *"Will this hurt? Is it a laser?"*

What to say:
"Don't worry, it is just like taking a normal family photo. It uses a regular camera flash, not a laser. It is completely painless and nothing will touch your eye."

2. Addressing Privacy Concerns (Data Protection)

Patients ask: *"Where does my photo go? Will everyone see it?"*

What to say:
"Your images and results stay safe on this device. They are not sent to the internet or the cloud unless you specifically choose to share them with a doctor for further help."