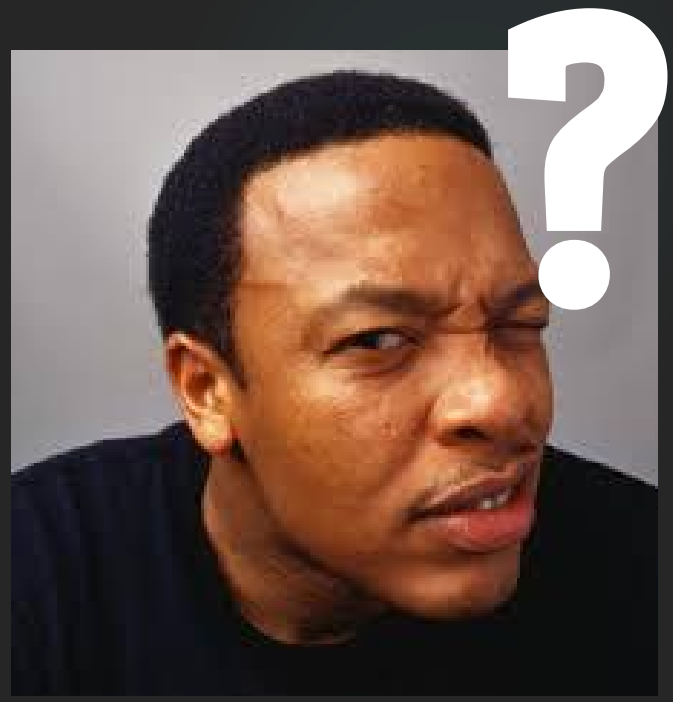
Dr.DRE

Diabetic

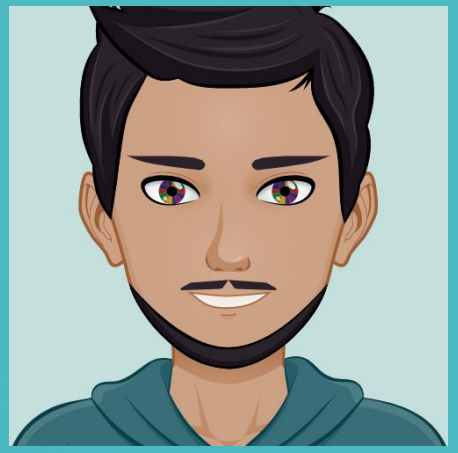
Retinopathy

Epidemiology

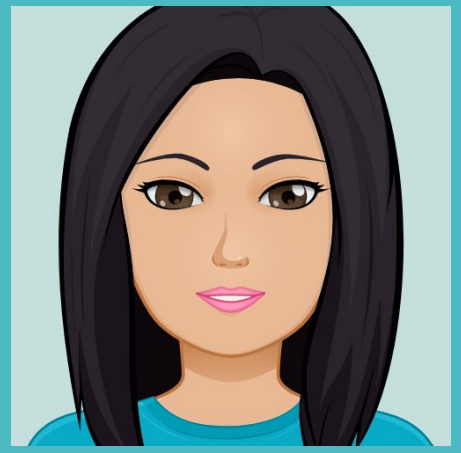


Dr. DRE

TEAM



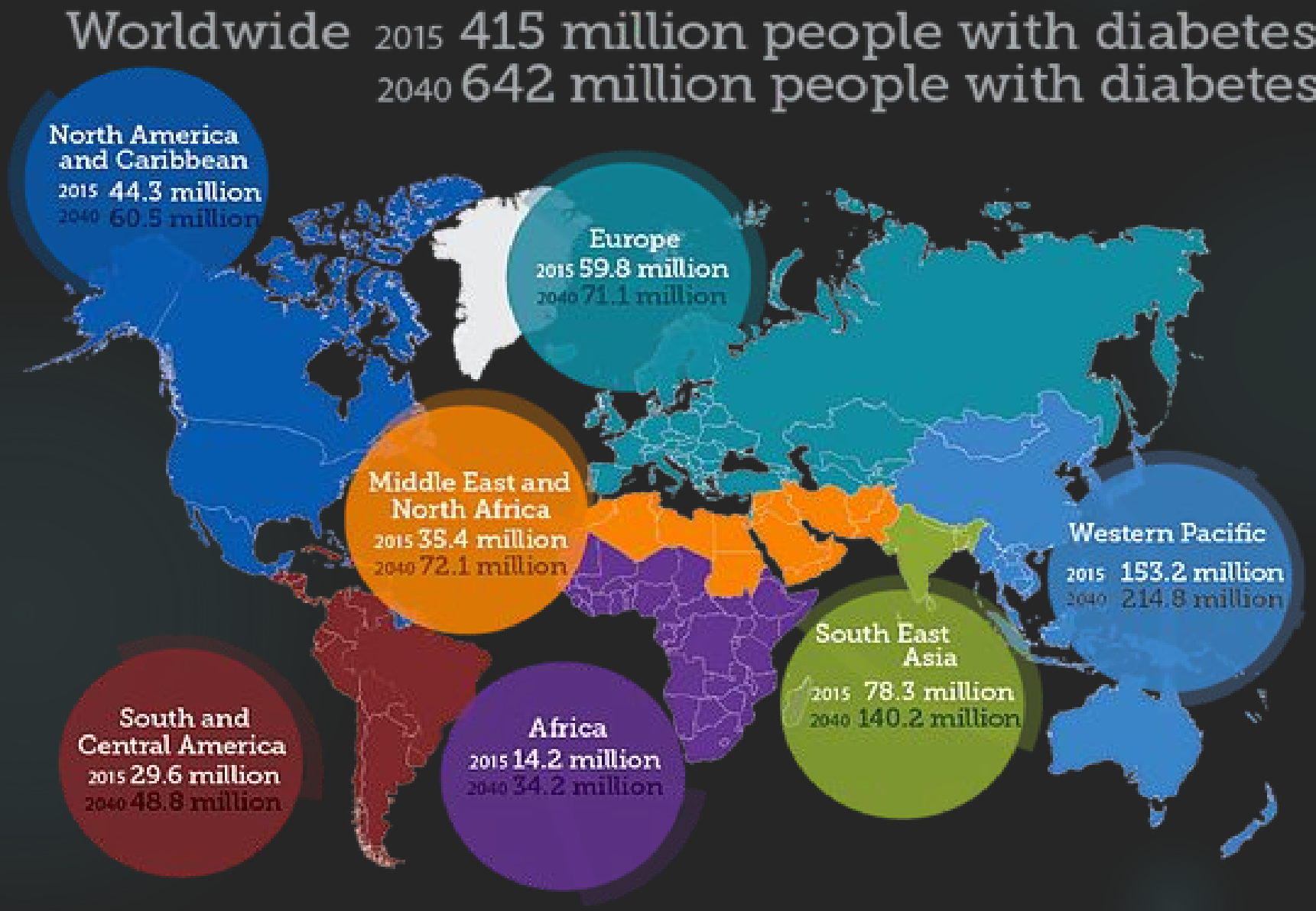
APURV



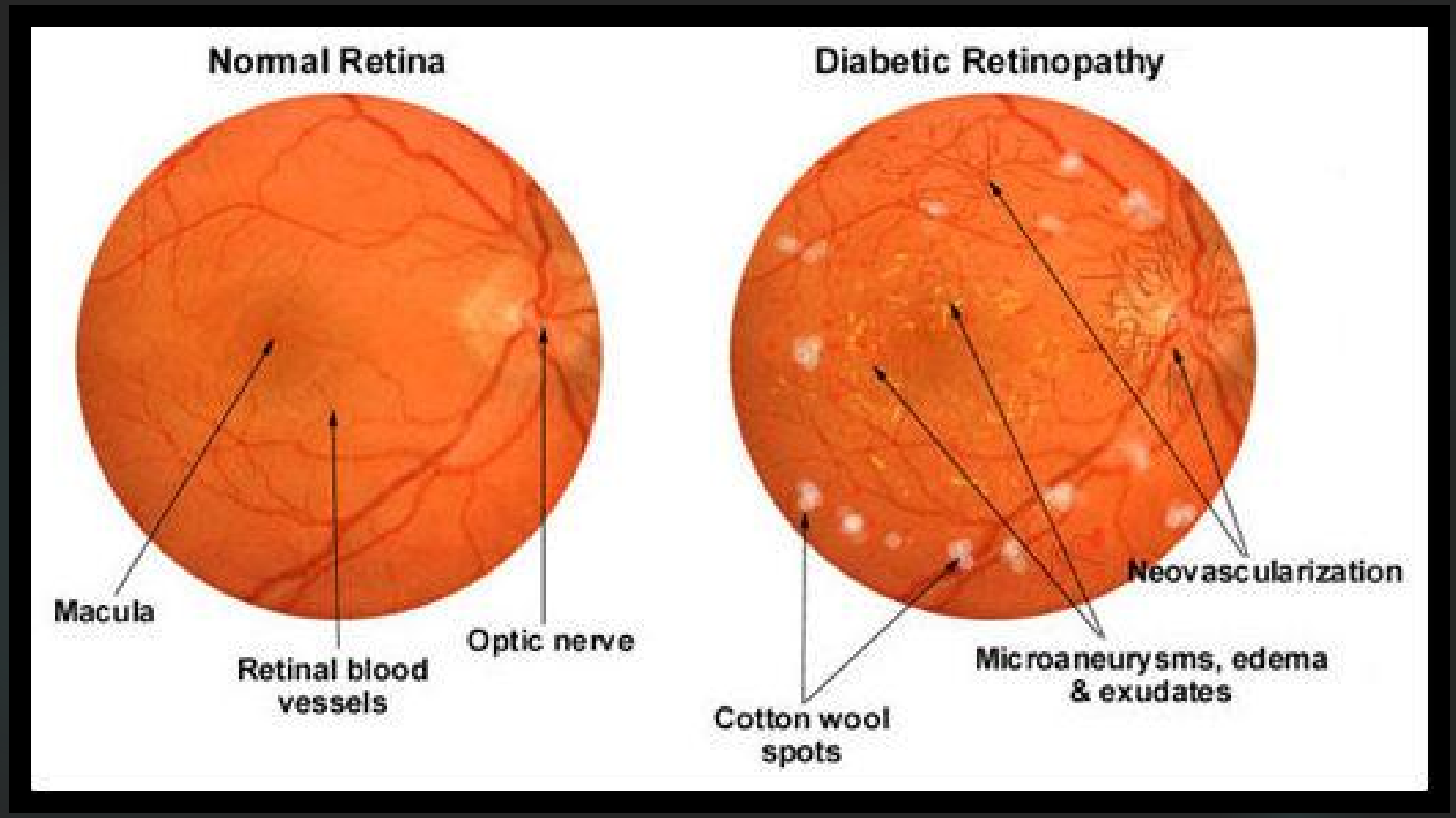
ASHLESHA

ATIF

Diabetic Retinopathy: Fastest growing cause for blindness



SO WHAT IS DIABETIC RETINOPATHY?

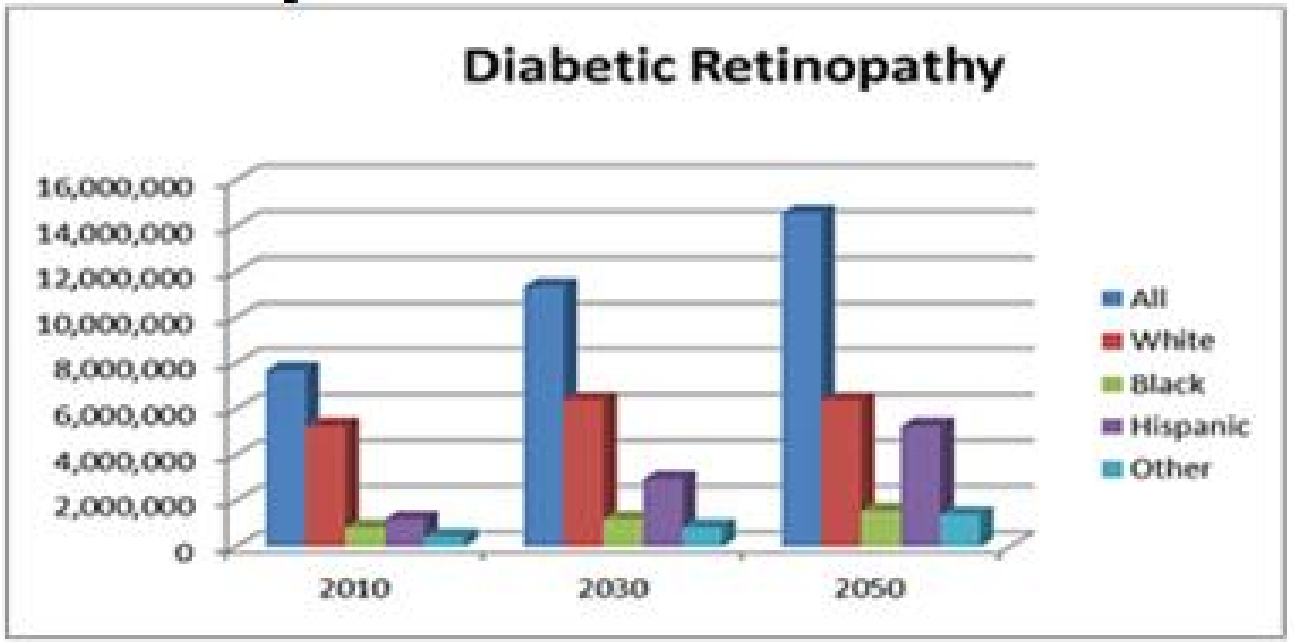


SOME STATS

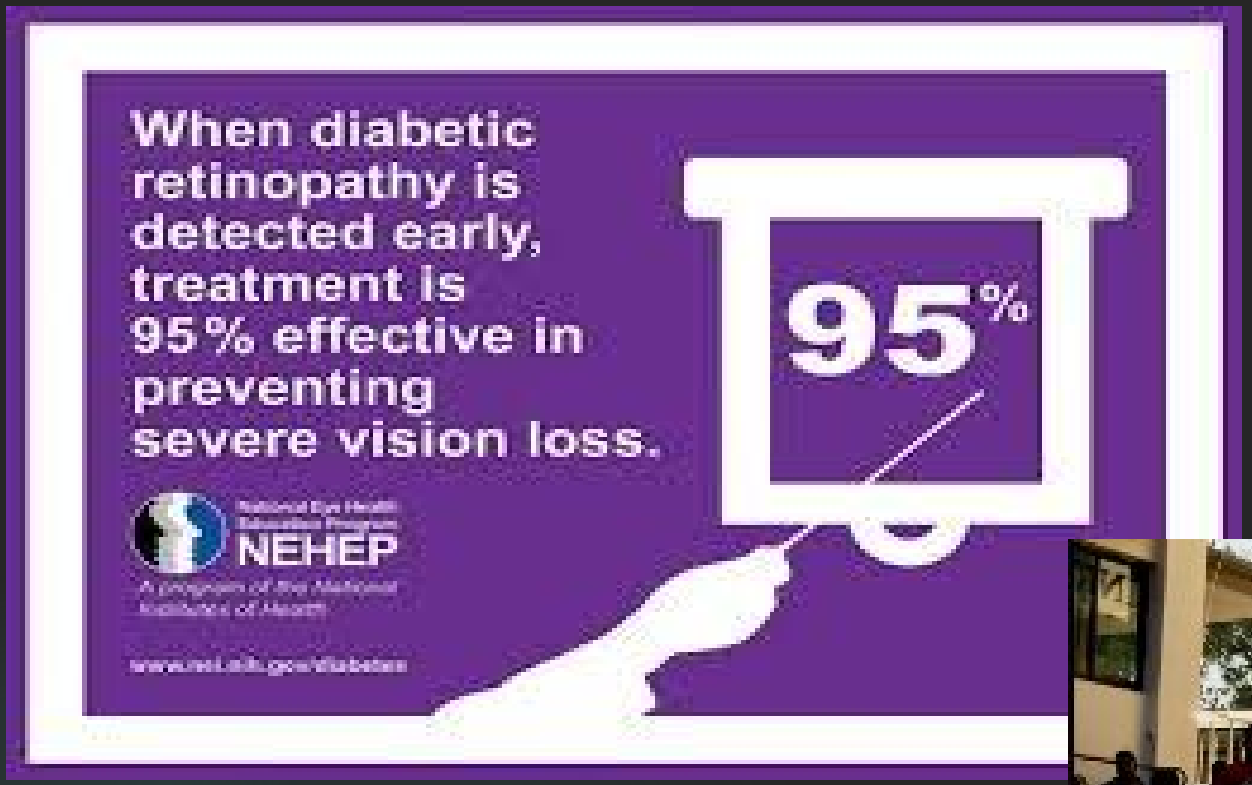
- Diabetic retinopathy (DR) is a leading cause of vision-loss globally.
- Of an estimated 285 million people with diabetes mellitus worldwide, approximately one third have signs of DR and of these, a further one third of DR is vision-threatening DR.
- As it is a leading disease in the west, there needs to be an easy solution and way to identify the disease.

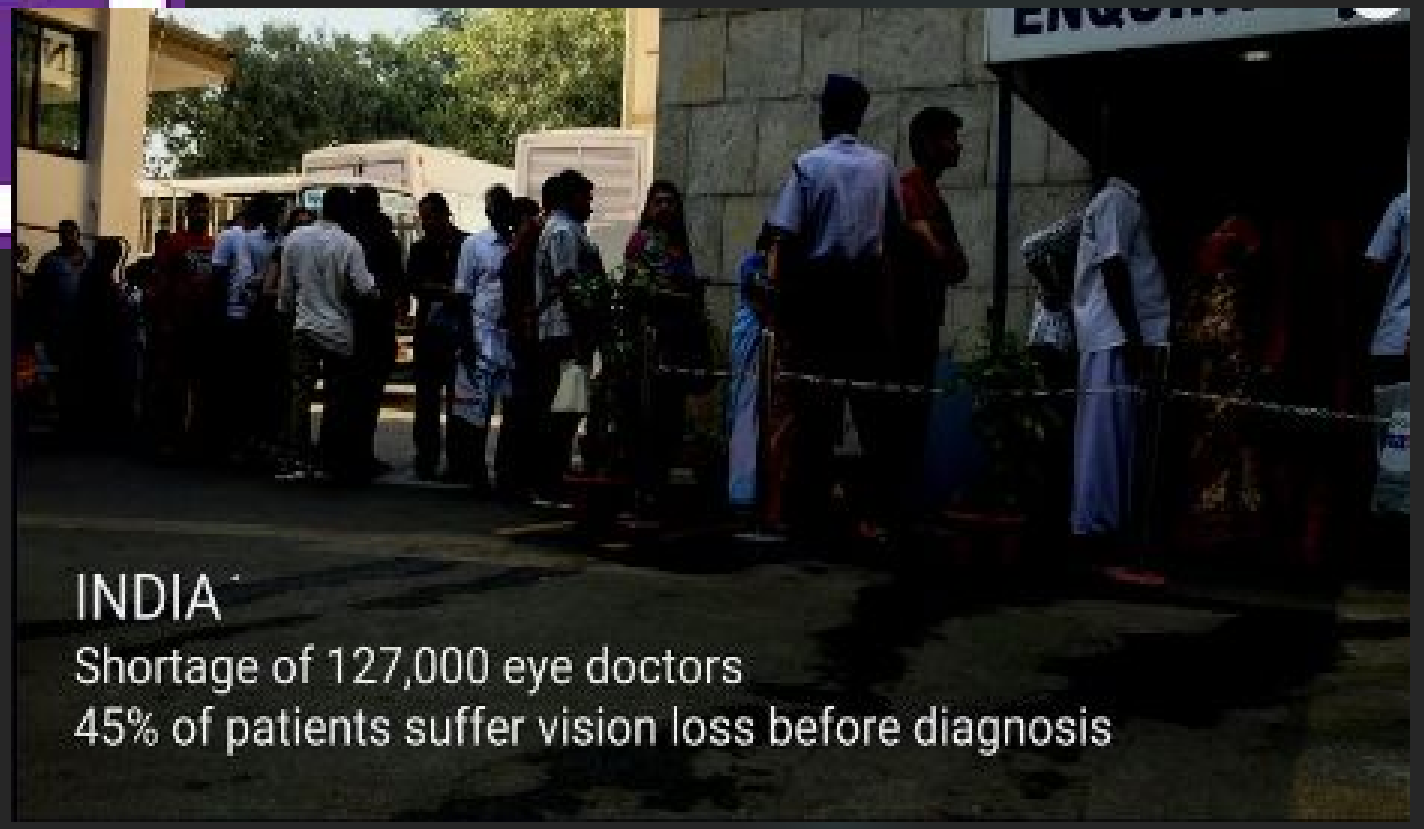
The overall national rate is 5.4% for the U.S. population age 40 and older, indicating that nearly 7.7 million older Americans have diabetic retinopathy.

Projected Increase of Diabetic Retinopathy in the United States, by Ethnicity



Source: Vision Problems in the United States, 2012


When diabetic retinopathy is detected early, treatment is 95% effective in preventing severe vision loss.
95%
NEHEP
A program of the National Institutes of Health
www.nei.nih.gov/diabetes


INDIA
Shortage of 127,000 eye doctors
45% of patients suffer vision loss before diagnosis

PROBLEM STATEMENT

- Researchers have acknowledged that 95% of diabetic patients could be saved from this disease through an early diagnosis.
- Manual inspection of fundus image to check development of features is a very time-consuming and tedious work.
- Patients need to have regular appointments with doctor.

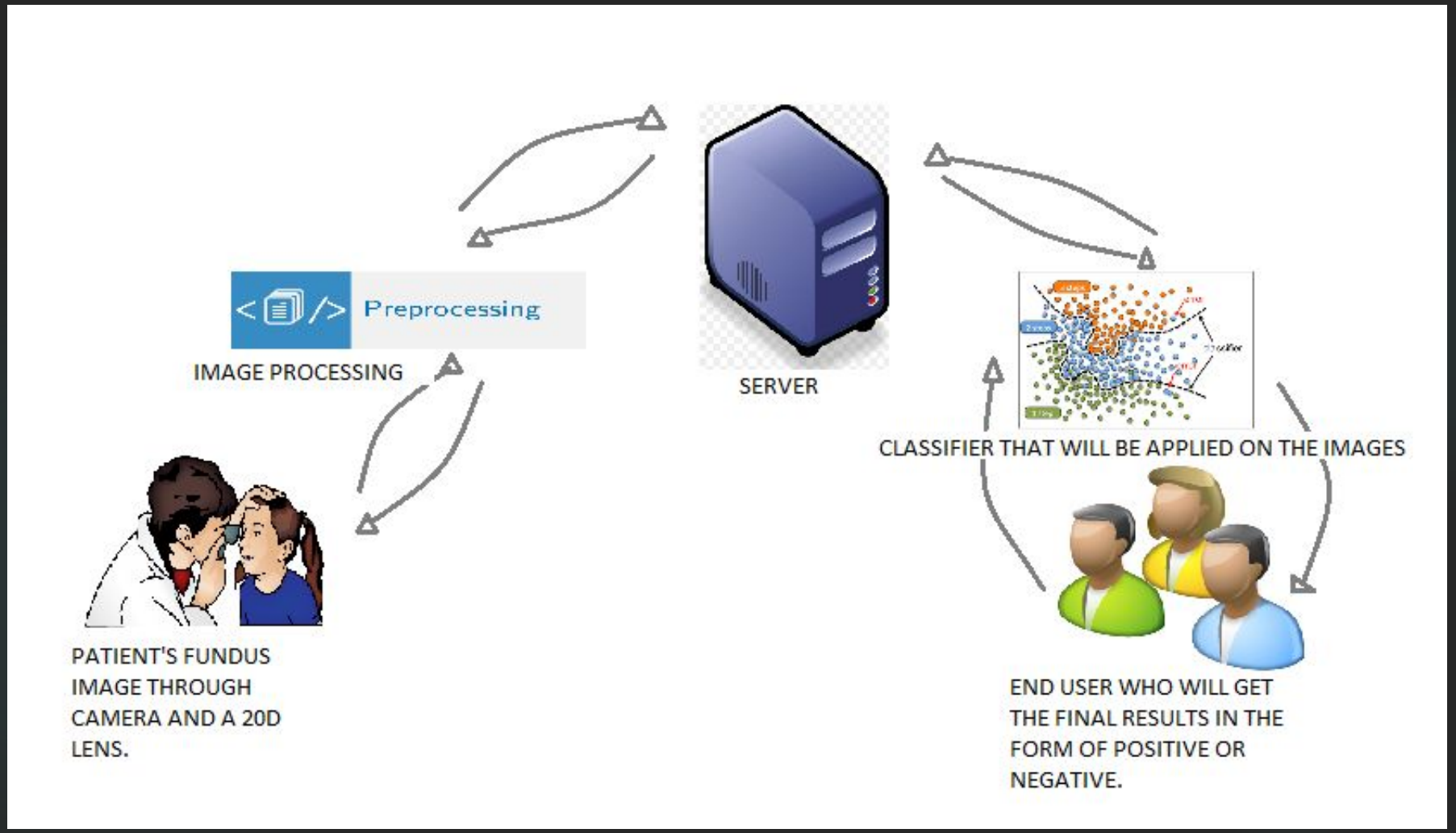
Q. So can this time be shortened?

APPROACH TO THE PROBLEM

★ We apply Deep Learning Algorithms to train a model which classifies the fundus image of the eye to be infected or healthy.

★ If the user is found positive, the application might proceed with suggesting the user with some possible steps to cure the disease.

PROCESS FLOW



HOW ACTUALLY ARE WE DOING IT?

- COLLECTING DATASET
- PRE-PROCESSING DATASET
- DATASET AUGMENTATION
- TRAINING CNN ARCHITECTURE MODEL
- TESTING THE MODEL
- LAUNCHING THE MODEL TO PRODUCTION

MODULES

- Home: It lets the user to see all the functionalities the application provides.
- Image upload: This screen will ask the user to take a picture of the patient's fundus by enabling the camera of the phone.
- Result: This screen will display the result of the test conducted.
- Doctors' list: This screen will give a list of the doctors that could help the patient with the treatment of the disease.
- Individual doctor: When a particular doctor is selected, all the information including the location of the clinic and time and contact number will be provided.

REFERENCES

I. "Kaggle Diabetic Retinopathy Detection competition report", Ben Graham, August 6, 2015.

II. Kaggle.com for the dataset of Diabetic Retinopathy.

III. "Severity Classification of Fundus Images for Diabetic Retinopathy", Jason Su, Stanford University.

IV. Diagnosing diabetic retinopathy with deep learning, Robert Bogucki, September 3, 2015.


THANK YOU GUYS
FOR PAYING ATTENTION