

Success rate of image quality and diabetic retinopathy algorithm using VISUSCOUT[®] 100 camera images in a vision screening setting

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PURPOSE

Diabetic Retinopathy (DR) affects one-third of adults with diabetes over the age of 40 according to a CDC survey. Early detection of DR is vital; however, access to care in remote areas of the world may be difficult.

VISUSCOUT[®] 100 (ZEISS, Jena, Germany) is a handheld fundus camera used to capture images of the retina that may be uploaded to the VISUHEALTH platform which allows providers to access retinal images.

The purpose of this study is to evaluate the success rate of an image quality and Auto-DR algorithm within the VISUHEALTH platform on images acquired at a vision screening event.

METHODS

- Central images were acquired on 89 patients using the VISUSCOUT 100 at a vision screening event.
- Images for each patient were imported into the VISUHEALTH platform where an algorithm (AUTO-DR) determined the image quality and diabetic retinopathy status of the patient.
- An optometrist retrospectively evaluated the images and determined the success rate of the algorithm implemented within VISUHEALTH.



RESULTS

- 89 patients (Mean Age: 53 years, Standard deviation: 14) were screened with the VISUSCOUT 100. Figure 1 is an example of the images acquired.
- 20 of 89 patients were diabetics, and of those 17 were over the age of 40.
- The AUTO-DR algorithm identified 4 patients with ungradable images and 10 patients with DR.
- An optometrist evaluated the images and determined that there were 14 patients with ungradable images, and 5 patients who had DR.
- All of the patients with DR were diabetics over the age of 40.
- Of the gradable images, **the sensitivity of the diabetic retinopathy algorithm was 100% and the specificity was 94%**. The image quality algorithm sensitivity was 97% and specificity was 86%.

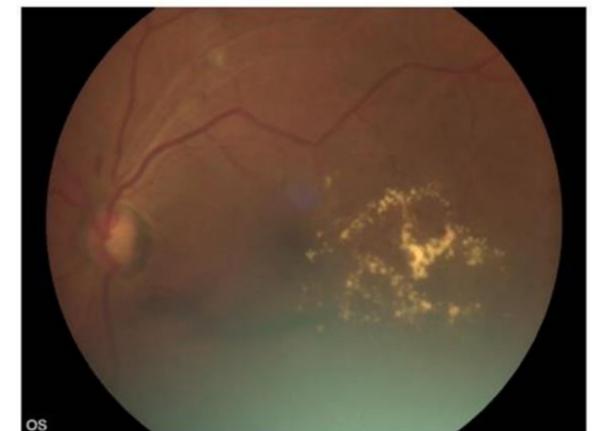


Figure 1. Fundus photos acquired with the VISUSCOUT[®] 100.

CONCLUSION

The vision screening had 29% of DR in diabetics over age 40, in agreement with the CDC survey.

The VISUSCOUT 100 is a camera that can be incorporated in the vision screening setting, however it is advised that an optometrist or ophthalmologist review images flagged as having diabetic retinopathy to prevent false positives.

Images may be considered ungradable in the event of a cataract or pupils under 2mm, therefore a referral is advised to properly evaluate the patient.