

Diabetic Retinopathy Screening
using
Medios Offline AI
&
Remidio Non Mydriatic
Fundus on Phone (FOP)

ABOUT REMIDIO

Remidio is an innovative **ISO13485** certified medical device company that seeks to create **Healthcare Access** by combining **Simplicity** of Product Design with sustainable business model **innovations**. Remidio brings to market the world's only Artificial Intelligence enabled, smart medical devices. Remidio uses principles of **Design Thinking** and involves key stakeholders during the product development process – clinicians, patients and health workers, with a view to designing product solutions that are simple to use, clinically relevant, reliable and scalable. Remidio's CE marked and FDA 510k approved imaging devices have helped screen more than **1.5 million patients in 15 countries** globally, as a result of increased access provided by the ease of use, affordability and high quality of Remidio's patented products.



3 granted patents
4 in prosecution



1000+ devices
installed



1.5 million
patients impacted



15 countries



80% CAGR

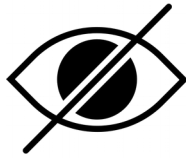


ISO13485 QMS
CE, 510K, HSA, TGA

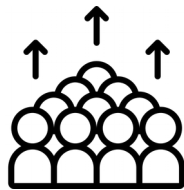
Diabetic Retinopathy (DR) screening is a public health challenge



1 in 3 diabetics have DR



1 million blind due to DR



400+ million diabetics worldwide to be screened

DR needs to be picked up before the patient notices symptoms



Retina with clear DR, yet patient has normal vision



Complete and permanent vision loss

Large scale DR screening programs have a real impact

The NHS screening program in England:

2.14 million screened

Outcome: diabetic retinopathy/maculopathy is no longer the leading cause of certifiable blindness in the working age group.

Initiatives in Singapore and Australia:

The screenshot shows a news article from ABC NEWS, dated Sept 2017. The main headline is "Diabetic retinopathy testing to move from specialists to GPs after successful Perth trial" by Sarah Cahill. A sub-headline reads "Your diabetic patients: look them in the eyes. Which ones will lose their sight?". The article discusses the benefits of early detection and the success of a trial in Perth. It lists several key points: free eye examinations for 10% of diabetic patients, bringing retinal screening into primary care, and the potential for significant cost savings. A section titled "What about reimbursement for services?" lists CPT codes for retinal photography and telemedicine consultations. A quote from a patient states, "I'm so glad we got our eyes checked. I was worried about losing my sight, but everything is fine. The program is a real success."

Between 2015 and 2050, the proportion of the world's population over 60 years will nearly double from 12% to 22%, to nearly 2 Billion (WHO, 2017)

COST EFFECTIVENESS ESTIMATES: SIDRP VERSUS FAMILY PHYSICIANS

Cost-effectiveness of a National Telemedicine Diabetic Retinopathy Screening Program in Singapore

Hui V. Nguyen, PhD,¹ Guan Xue Wei Tan, MMSc(Ophth), FAMS,² Robin Jennifer Tapp, PhD,^{1,3} Shanta Misra, MS,⁴ Daniel Shee Wei Tang, MD, PhD,⁵ Hui Tze Wong, FRC(SG)(Ophth), MMSc(Ophth),⁶ Colin S. Tan, FRC(SG)(Ophth), MMSc(Ophth),⁷ Anupama Lankar, FRC(SG)(Ophth), FAMS(Ophth),⁸ E. Sheng Tai, FRCP, PhD,⁹ Ngap Chuan Tam, MMSc(FM), MCh,¹⁰ Eric A. Finkelstein, PhD, MHA,¹¹ Tim Yu Wong, MMSc(Ophth), PhD,¹² ¹ Louise L. Lamoureux, MS, PhD¹³

Results indicated that SIDRP generates a cost savings of \$173 per patient (\$144 from the health system perspective) relative to the FP model while generating equal QALYs.

Extrapolating these results to the current volume of Singaporeans with diabetes represents a significant cost savings of approximately S\$30 million over a patient's lifetime.

Diabetic retinopathy testing to move from specialists to GPs after successful Perth trial

By Sarah Cahill
Updated 12 Sept 2017, 3:15pm

Your diabetic patients: look them in the eyes. Which ones will lose their sight?

Although diabetic retinopathy is well documented as the leading cause of blindness in working-age adults in America, 80% of those cases are avoidable. Still, half of diabetic patients fail to have their recommended retinal exams.

Screening for diabetic retinopathy in the primary care setting is the most accurate and cost-effective option. You can increase patient compliance and enhance communication and patient education. You identify potential retinopathy cases earlier. If you screen regularly and your referrals to eye care specialists will be more appropriate and efficient. You can end the vicious cycle of failure to comply followed by loss of vision and loss of life in the healthcare system.

- Free your ophthalmologists to focus on the 10% of diabetic patients who really need them.
- You can bring retinal screening into your primary care clinic with a dedicated space as small as 3 x 4 feet electrical outlets and broadband internet.
- In two years you can triple patient compliance while you cut your retinal screening costs by 70%.

What about reimbursement for services?

EyePACS clients have found five different CPT codes suitable for billing:

- CPT 92296 - global fee for retinal photography with interpretation
- CPT 92298-TC - technical component
- CPT 92298-26 - professional component
- CPT 92427M - supplementary consultation for billing a telemedicine consult
- CPT 92227 - remote imaging for detection of retinal disease

EyePACS clients have found five different CPT codes suitable for billing:

- CPT 92296 - global fee for retinal photography with interpretation
- CPT 92298-TC - technical component
- CPT 92298-26 - professional component
- CPT 92427M - supplementary consultation for billing a telemedicine consult
- CPT 92227 - remote imaging for detection of retinal disease

Our smart, portable retinal camera: A paradigm shift in DR screening

Remidio Fundus-on-Phone:



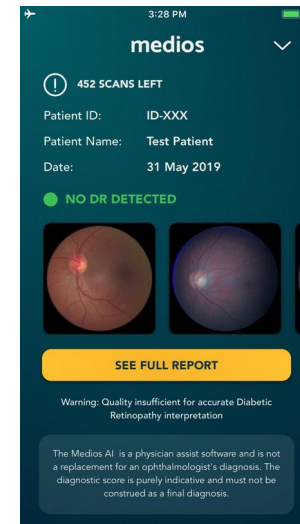
Smartphone based

Non-mydriatic

Clinically validated against
high-end retinal cameras

CE marked, FDA 510k approved

Medios AI automated DR screening:



Integrated with the Fundus-on-Phone

Runs offline in seconds

Clinically validated accuracy
above FDA mandated endpoints

CE marked for detection of RDR

Our portable, affordable retinal camera is on-par with high-end models

Remidio FOP vs Topcon TRC 50 Dx vs clinical exam:

Remidio FOP & Topcon TRC 50Dx vs. Clinical examination			
	Sensitivity	Specificity	Correctly classified
Remidio	95%	92%	95%
Topcon	96%	89%	94%

“Sensitivity and Specificity of Smartphone-Based Retinal Imaging for Diabetic Retinopathy: A Comparative Study”

in

Ophthalmology
Retina

Remidio FOP vs Zeiss FF450:

Remidio FOP vs Zeiss FF450		
Grade	Sensitivity	Specificity
Any DR	93%	98%
DME	90%	98%
PDR	89%	96%
STDR	87%	95%
RDR	88%	95%

“Validation of smartphone based retinal photography for diabetic retinopathy screening”

in

 PLOS ONE

The Remidio Fundus-on-Phone's impact has already been proven



Handheld or stabilized configurations

Meets ISO10940, ISO15004-1/2, IEC60606-1/2, IEC62133, IEC62304, HIPAA and HLA7 standards, DICOM compatible

4 years of quick, affordable and accurate screening:

30 million eyes screened

180,000+ suspected Diabetic Retinopathy cases detected

90,000+ suspected Diabetic Macular Edema cases detected

30,000+ suspected Glaucoma cases detected

75,000+ suspected Cataract cases detected

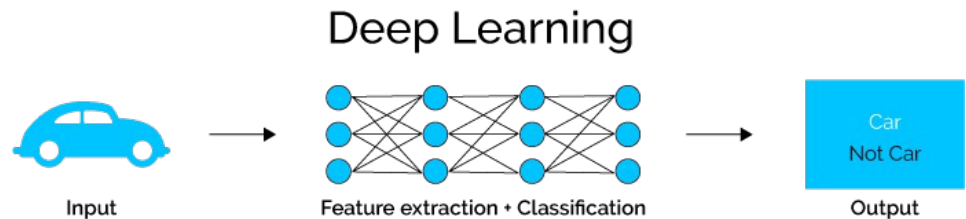
Artificial Intelligence (AI) shifts DR screening to primary care centers

Artificial Intelligence:

... machine mimics "cognitive" functions that humans associate with other human minds, such as "learning" and "problem solving"

State-of-the-art AI detects DR lesions with accuracies comparable to ophthalmologists

Based on deep learning, a technology that learns patterns in large datasets



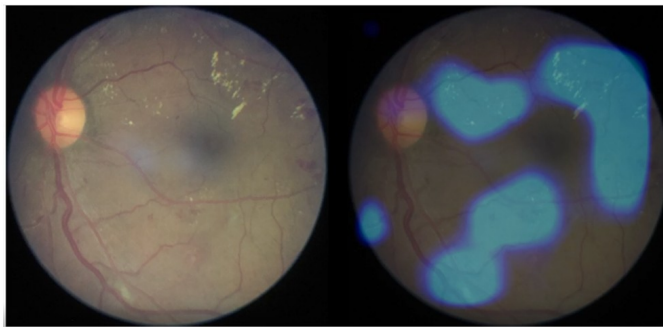
Triaging can now happen at any primary care center without involving ophthalmologists

Medios AI: automated screening of referable DR on the Remidio FOP

The Medios AI detects referable DR

Outputs:

- indication for referral to an ophthalmologist
- visualization of the detected lesions



Example of lesion detection on a patient with proliferative DR and CSME

5 seconds per image

No internet connection required

Deployed on the camera smartphone

**Works with non-mydriatic images
(no pupil dilation required)**

Inbuilt offline image quality check

**Coming soon:
DME, AMD and glaucoma detection**

Our performance has been validated by several prospective clinical studies

297 patients, Tertiary Care Centre,
33% with retinopathy



	Referable DR	Any DR
Sensitivity	98.8%	86.8%
Specificity	86.73%	95.5%

Presented at ATTD 2019, Berlin
Submitted to Nature Eye

230 patients, Opportunistic Screening
12% with retinopathy



	Referable DR	Any DR
Sensitivity	100%	85.2%
Specificity	88.4%	92%

Presented at RSSDI, India
Submitted to JAMA

We conducted a large scale clinical trial with 900 patients

900 patients

Tertiary Care Centre
(Diacon Hospital, Bangalore, India)

252 or 28% with retinopathy



Accepted for presentation at
ADA 2019, San Francisco

	Referable DR	Any DR
Sensitivity	93.0%	83.3%
Specificity	92.5%	95.5%

Our results are well above the US-FDA Mandated minimum for RDR Specificity (82.5%) & Sensitivity (85%)

Comparison with main competitors:

Referable DR	Medios AI	Eyenuk	IDx
Sensitivity	93.0%	91.3%	87%
Specificity	92.5%	91.1%	90%

We create new opportunities for various stakeholders in the care continuum

General Physician & Diabetologist

Ability to expand practice and include eye screening as part of Diabetes Management

Pharmaceutical Industry

Access upto 50% more demand for treatment of DR complications

Diabetic Patient

Accessible, convenient and affordable screening for early detection of retinopathy

Governement led screening programs

Reduce implementation cost of large scale DR screening programs by as much as 5x

Eye specialists / ophtalmologists

Free up time for tertiary / critical care, rather than preventable conditions



Address: No, 1-51-2/12, II Floor, Vacuum Techniques Compound,
1st Cross Road, Peenya Industrial Area, Phase-I, Bengaluru,
Karnataka 560058

India: +91 7676759999
US: + 1 812 360 9016
contactus@remidio.com