

RISK

medical solutions



Nýsköpunarmiðstöð
Íslands



Technology
Development Fund

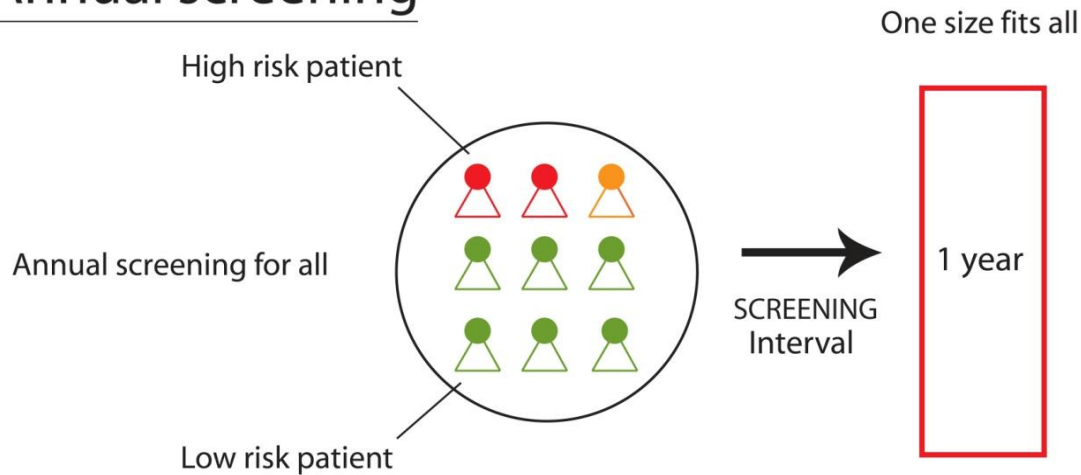


Einstaklingsbundin áhættugreining

Individualized allocation of healthcare resources

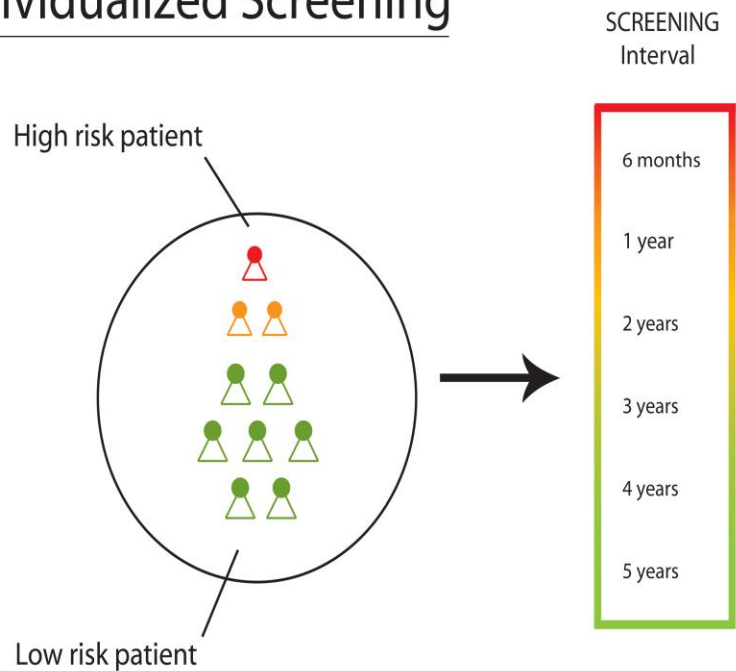
- Markmið : hámarka nýtingu á heilbrigðisþjónustu og auka gæði
- Notum IT / faraldsfræði og birtar greinar til að einangra áhættuþætti
- Útkoma gefur einstaklingsbundinn prófíl sem segir fyrir um
 - Áhættu einstaklings á þróun sjúkdóms
 - Ráðlagða skimunartíðni
- Takmarkanir á núverandi meðferðartíðni – miðar meðferð við einstaklinga í hárrí áhættu

Annual screening



Fixed screening interval
Variable risk for individuals

Individualized Screening



Variable screening interval
Standardized risk for individuals

Stjórn



Prof. Einar Stefánsson MD, PhD
Chairman & founder



Arna Guðmundsdóttir, MD
Boardmember & co-founder



Prof. Jóhann Malmquist, PhD
Boardmember



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Starfsmenn



Ólafur Pálsson, MSc
Managing Director



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Thor Aspelund MS, PhD
VP of Product Development
Statistics



Ólöf Þórisdóttir, MSc
Statistics & Mathematics



Stefán Einarsson, BSc
Programming & development



Helgi Már Sigurðsson, BSc
Programming & development



Þróun á algorithmma

Sykursýkisaugnsjúkdómar (DR)

- Sykursýki er vaxandi vandamál, 290 milljónir í dag
- DR er næst algengasta orsök blindu í heiminum
- Tíð eftirlitstíðni (DR einu sinni á ári eða oftar)
- Mikill kostnaður

Áhrifavaldar sem við litum til

- Klínísk ákvarðanataka (stöðluð við eitt ár)
- Regluverk (WHO)
- Skilvirkni og svigrúm til hagræðingar
- Öryggi sjúklinga og útkomunýting



Áhættuþættir

Risk Calculator

Please enter your clinical data below. Leave boxes empty if values are unknown. No data will be recorded.

Clinical data sheet

Name / ID (*optional)

Gender

☒ Male ☐ Female

Type of diabetes

☐ Type 1 ☒ Type 2

Do you have diabetic retinopathy?

☒ Yes ☐ No

Stage of diabetic retinopathy:

- ☐ nonproliferative retinopathy
- ☐ diabetic macular edema
- ☐ pre-proliferative retinopathy
- ☐ proliferative retinopathy
- ☐ laser treatment

Duration of diabetes

 years

HbA1c

 %

Average whole blood glucose

 ☒ mmol/L ☐ mg/dl

Systolic blood pressure

 mmHg

Diastolic blood pressure

 mmHg

Submit



Risk Calculator

Risk of developing sight-threatening retinopathy by months after screening



Based on your clinical data, we evaluate that you are in **low risk** of developing sight-threatening retinopathy.

Your calculated risk of developing sight-threatening retinopathy is **1.2%** every year.

Recommended screening interval: **33** months

Name / ID (*optional)

Gender

☒ Male ☐ Female

Type of diabetes

☐ Type 1 ☒ Type 2

Do you have diabetic retinopathy?

☐ Yes ☒ No

Duration of diabetes

years

HbA1c

%

Average whole blood glucose

☒ mmol/L ☐ mg/dl

Systolic blood pressure

mmHg

Diastolic blood pressure

mmHg

Submit



Validering

Árósar Háskólasjúkrahús - Danmörk

- 5200 einstaklingar
- Gögn 1990 - 2010

Útkoma

- Meðalskimanatiðni = 27 mánuðir
- Fækkun skimana 59% , ROC 83%,
- Risk margin 3%
- Sami fjöldi sem greinist með sight threatening retinopathy



Vörur

- **Áhættureiknir í formi algorithma**
 - **algorithmi sem við aðlögum að EMR/CDSS kerfum sem eru þegar til staðar – útkoma breytileg eftir verkefnum**
- **Rafrænt sjúkraskrárkerfi (EMR)**
 - **Dönsk fyrirmynd, notuð í 10 ár af augnlæknum**
- **Farsímalausn (RISK-DRC)**
 - **Þróuð fyrir einstaklinga með sykursýki**



Patient

Screening List

**Further Evaluation
or Treatment**

About Us



www.risk.is

New Patient

Export Data

Ophthalmic
Data

Fundus Images

Evaluation / Treatment

A- A+

Patient Information

ID

Family Name

Given Name

Gender ☒ Male ☐ Female

Address

City

Zip Code

Country

Phone

Email

Onset of DM

Type of DM ☐ Type 1 ☒ Type 2

Diabetic Retinopathy
Previously known ☐ Yes ☒ No

Comments

Best Corrected Visual Acuity

Right Eye

Left Eye

Visit Date

New
Date

Delete
Date

Clinical Risk Factors

HbA1c

Average Whole
Blood Glucose ☒ mM ☐ mg/100ml

Systolic BP

Diastolic BP

Diabetic Retinopathy ☐ Yes ☒ No

Recommended Screening Interval

Months

Book Next Visit

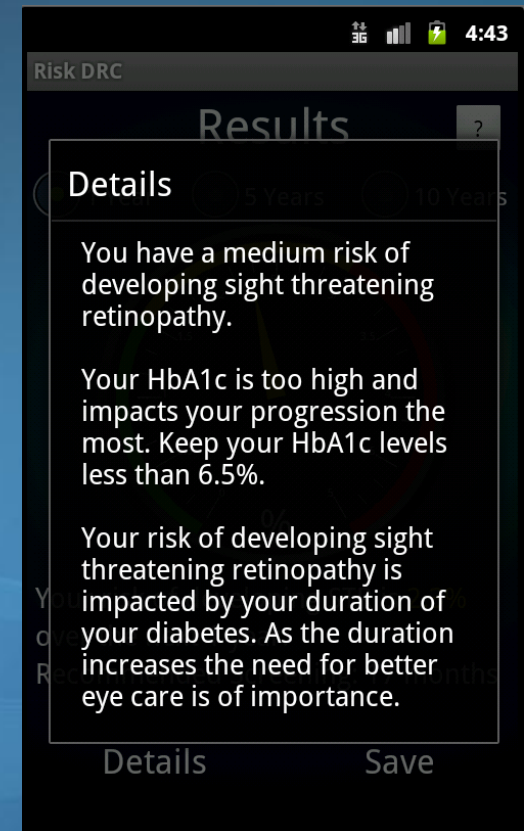
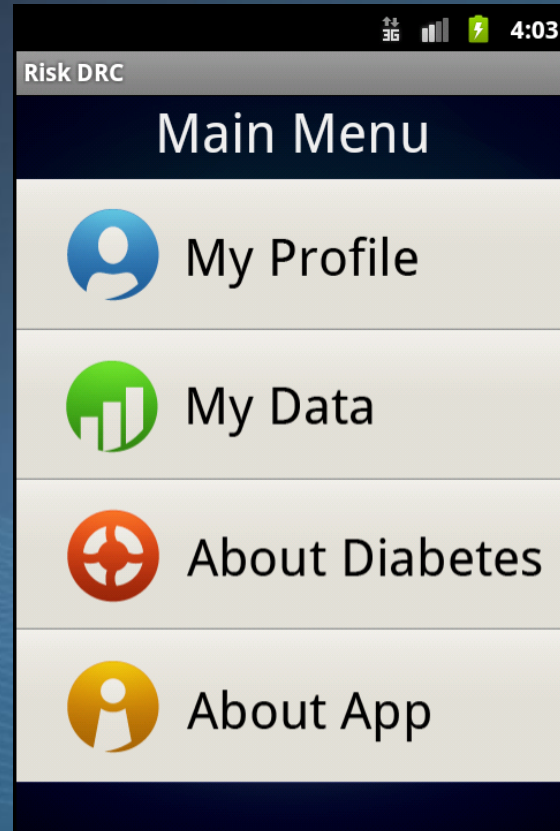
Confirm Date ☐

SAVE

CLOSE



Farsímalausn





Markaðssetning og notkun

Ísland

- **Klasasamstarf v. háprýstings-algorithmma**
- **Innleiðing á sykursýkisbúnaði í Sögu**

Erlend samstarfsverkefni

- **England – Health Intelligence & Moorfields EYE Hospital**
- **Suður Afríka – landsbundin innleiðing á skimunarkerfi**
- **Bandaríkin – sjónfræðingar & VA**
- **Vision2020 – Holland, Þýskaland**
- **Kína & Saudi Arabía**
- **Valideringar í Hollandi á 50 þús. & Englandi á 90 þús. einstaklingum**

[+ add new Event](#)

20 Dec 2011 [View summary](#)
Adnexal

  1 Jan 2000
  1 Jan 2000

17 Jan 2012 [View summary](#)
Medical Retinal

  1 Jan 2000

Create



Examination

History

-- History -- -- Severity -- -- Onset -- -- Eye -- -- Duration --

Visual Acuity

Initial Corrected
Not recorded Unaided Not recorded Pinhole

Initial Corrected
Not recorded Unaided Not recorded Pinhole

Adnexal Comorbidity

-- Add --

-- Add --

Intraocular Pressure

Goldmann NR NR Goldmann

Diabetic Retinopathy Risk Assessment

Type of diabetes:

☐ Type 1 ☐ Type 2

HbA1c:

%

Do you have diabetic retinopathy?

☐ Yes ☐ No

Average whole blood glucose:

mM

Duration of diabetes:

years

Systolic blood pressure:

mmHg

Recommended screening interval is X months

[Calculate](#)

Investigation

-- ToDo --

Conclusion

-- ToDo --

[Diabetic Retinopathy Risk Assessment](#)

Optional Elements

Refraction
Cataract Assessment
Diabetic Retinopathy Risk Assessment
Posterior Segment

[Add all](#) ☒ [Remove all](#)

[Save](#)

[Cancel](#)



healthintelligence

A Leading Provider of Diabetic Retinopathy Screening

Learn more



Risk Stratification and Case Finding for Healthcare Interventions

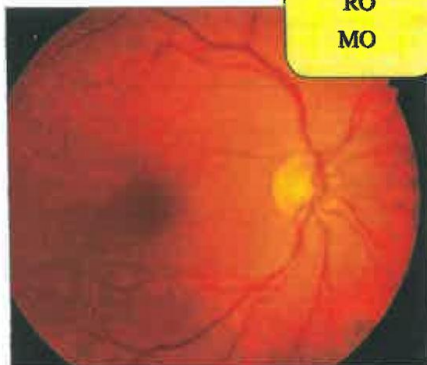
Learn more



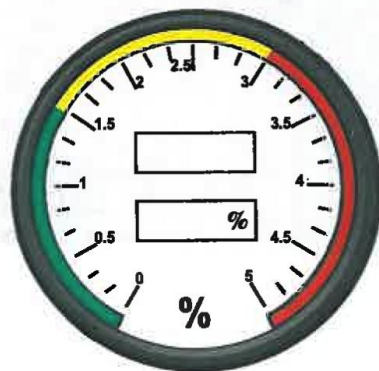


No BDR:
R 0; M 0

Example
of
RO
MO



SYSTEMIC RISK: YOUR SCORE



Control your Risk Factors

- **Diet**
- **Stop Smoking**
- **Control Blood Sugar**
- **Reduce Alcohol**
- **Exercise**
- **Blood Pressure 140/80**

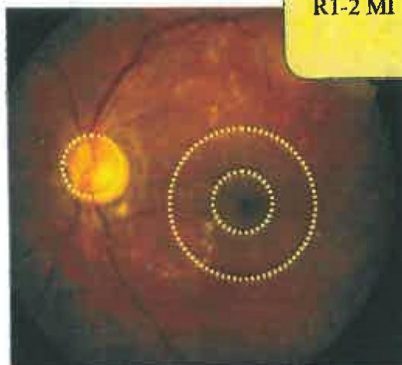
Random < 8 mmol/L

HbA1c < 6 %

www.risk.is

Observable BDR
R 1-2; M1

Example
of
R1-2 MI



SCOTTISH RETINOPATHY

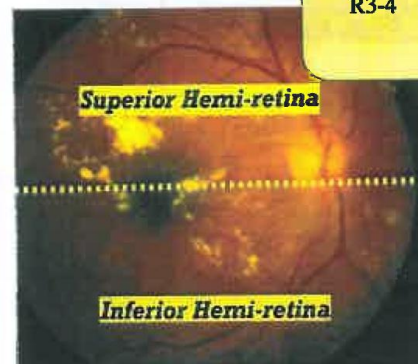
Scottish Retinopathy Grading System and Recommendations

R = Retinopathy M = Maculopathy

Maculopathy grading Refer for poor vision or M2		
MO	None	Re-screen 1 year
M1	Lesions within 2dd >1dd fovea	Re-screen 6 months or refer Ophthal
M2	Lesions within 1dd 1dd fovea	Refer Ophthal

Referable BDR
R 3-4; M2

Example
of
R3-4



Superior Hemi-retina

Inferior Hemi-retina

Retinopathy Grading		
RO	No Lesions	Re-Screen 1 Year
R1	Blot Haemorrhage Microaneurism, Cotton wool spots	Re-screen 1 year
R2	> 4 blot haemorrhage in one hemi-retina	Re-screen 1 year
R3	> 4 blot haemorrhage in both hemi-retinas Venous beading IRMA	Refer Ophthal
R4	New Vessels	Refer Ophthal



Grade Right	Grade Left	Recommendation	Risk Score%
R ₃ M ₂	R ₃ M ₂	URGENT REFERRAL FOR LASER	99.9% HIGH 6 MONTHS
R ₃ M ₁	R ₁ M ₀	REFER TO OPHTHALMOLOGIST IN 3 MONTHS	100% HIGH RISK 6MONTHS
R ₃ M ₀	R ₃ M ₀	REFER TO OPHTHALMOLOGIST IN 6 MONTHS	51.7% HIGH RISK 6 MONTHS
R ₁ M ₁	R ₃ M ₂	IMMEDIATE OPHTHAL REFERRAL	27.9% HIGH RISK 6 MONTHS
R ₀ M ₀	R ₀ M ₀	REVIEW FOR SCREENING IN 12 MONTHS	7.9% HIGH RISK 6 MONTHS
R ₀ M ₀	R ₀ M ₀	REVIEW FOR SCREENING IN 12 MONTHS. REFER FOR VISUAL ACURITY	4.9% HIGH 8 MONTHS
R ₁ M ₀	R ₃ M ₂	URGENT REFERRAL TO OPHTHALMOLOGIST	4.2% HIGH RISK 9 MONTHS
R ₀ M ₀	R ₀ M ₀	Ha3g VIEW, CATARACT	1.2% LAW RISK 31 MONTHS
R ₃ M ₂	R ₄ M ₂	IMMEDIATE REFERRAL FOR FOCAL AND PRP LASER	
R ₀ M ₀	R ₀ M ₀	REVIEW IN 1 YEAR	14.9% HIGH RISK 6 MONTHS
R ₁ M ₀	R ₁ M ₀	REVIEW IN 1 YEAR, REFER FOR REFRACTION	2.4% MEDIUM RISK 27 MONTHS
	M ₂	URGENT REFERRAL FOR PRP + FOCAL LASER, PPV R	40.2% HIGH RISK 6 MONTHS
R ₃ M ₀	R ₃ M ₀	REFER TO OPHTHALMOLOGIST WITHIN 3 MONTHS	1.0% LOW RISK 12 MONTHS
BLIND	R ₁ M ₀	REVIEW FOR SCREENING IN 12 MONTHS	1.4% LOW RISK 26 MONTHS
		URGENT LASER REVIEWED	72.6% HIGH RISK 6 MONTHS
R ₁ M ₀	R ₀ M ₀	REVIEW FOR SCREENING IN 12 MONTHS, REFER FOR CATARACT ASSESSMENT	43.6% HIGH RISK 6 MONTHS
R ₁ M ₀	R ₁ M ₀	(R) CATARACT REVIEW IN 1 YEAR	17.1% HIGH RISK 6 MONTHS
R ₄ M ₂	R ₄ M ₂	URGENT OPHTHAL REFERRAL	17.1% HIGH RISK 6 MONTHS
R ₃ M ₂	R ₃ M ₀	URGENT OPHTHAL REFERRAL	50.9% HIGH RISK 6 MONTHS
R ₀ M ₀	BLIND	REFER TO OPHTHALMOLOGIST IN 12 MONTHS	0.5% LOW RISK 60 MONTHS
R ₀ M ₀	R ₀ M ₀	RE-SCREEN IN 1 YEAR, REFER FOR (R) CATARACT	5.6% HIGH RISK 7 MONTHS
R ₀ M ₀	R ₀ M ₀	REFER TO OPHTHALMOLOGIST IN 6 MONTHS	4.6% HIGH RISK 8 MONTHS
		WILL BE PLACED BY EC IN 6 MONTHS	12.7% HIGH RISK 6 MONTHS
R ₀ M ₀	R ₀ M ₀	RE-SCREEN IN 1 YEAR, REFER FOR CATARACTS	0.5% LOW RISK 60 MONTHS
R ₀ M ₀	R ₃ M ₀	REFER WITHIN 3 MONTHS	37.7% HIGH RISK 6 MONTHS
R ₀ M ₀	R ₁ M ₁	REFER TO OPHTHALMOLOGIST IN 6 MONTHS	42.4 HIGH RISK 6 MONTHS
R ₃ M ₁	R ₃ M ₂	URGENT REFERRAL	4.1% HIGH RISK 12 MONTHS
M ₀	M ₀	REFERRAL FOR MAULAR/OCT	0.1% LOW RISK 60 MONTHS
M ₀	M ₀	REVIEW IN 6 MONTHS	15.7% HIGH RISK 6 MONTHS
M ₀	M ₀	REVIEW IN 1 YEAR	1.5% LOW RISK 26 MONTHS
		REFER FOR CATARACT	3.7% HIGH RISK 10 MONTHS
R ₃ M ₀	R ₃ M ₀	REFER WITHIN 3 MONTHS	42.7% LIGHT RISK
R ₀ M ₀	R ₀ M ₀	REFER IN 1 YEAR	2.0% MWDIUM RISK 19 MONTHS
M ₂	M ₁	MEDIA OPARTTY, REFER TO OPHTHALMOLOGIST	1.7% MEDIUM RISK 12 MONTHS
M ₁	M ₀	REVIEW IN 6 MONTHS	1.6% MEDIUM RISK 12 MONTHS
R ₀ M ₂	R ₀ M ₀	URGENT REFERRAL, (R) FOCAL LASER	7.6% HIGH RISK 12 MONTHS

About the Calculator

The risk calculator determines a patient's annualized risk of developing sight threatening retinopathy. The solution shows an individualized risk assessment based the patient's clinical profile. The mathematical algorithm uses established risk factors known to affect the progression of diabetic retinopathy, such as duration of diabetes, gender, blood glucose levels and HbA1c.



Clinical Benefits

The risk calculator is a decision support tool for doctors and patients that provides educational material related to diabetes and diabetic retinopathy. The calculator gives the doctor and patient a personalized risk profile allowing users an opportunity to see how that risk changes with different variable inputs like glycemic and hypertensive control. The program is ideal for Doctors of Optometry to use when educating patients about the disease and overall lifestyle.

[Try out the calculator](#)

Contact Us

Phone: 00 354 8617310

Address: Lækjargata 12,

101 Reykjavik, Iceland

Email: info@risk.is

Risk Calculator

Clinical Data

Risk of developing sight-threatening retinopathy by months after screening



Results

Details

Based on your clinical data, we evaluate that you are in **low risk** of developing sight-threatening retinopathy.

Your calculated risk of developing sight-threatening retinopathy is **1.0%** every year.

Name / ID (*optional)

Gender

☒ Male ☐ Female

Type of diabetes

☐ Type 1 ☒ Type 2

Do you have diabetic retinopathy?

☐ Yes ☒ No

Duration of diabetes

years

Default value given.

HbA1c

%

Default value given.

Average whole blood glucose

☒ mmol/L ☐ mg/dl

Systolic blood pressure

mmHg

Default value given.

Diastolic blood pressure

mmHg

Default value given.

[HOME](#)[RISK CALCULATOR](#)[PATIENT EDUCATION](#)[RESOURCES FOR OPTOMETRISTS](#)[Expand All](#) | [Collapse All](#)[General](#)[What is diabetic retinopathy?](#)[What causes diabetic retinopathy?](#)[Types of Diabetes](#)[Complications of Diabetes](#)[Management of Diabetes](#)[Stages of Diabetic Retinopathy](#)[Guidelines](#)

[Expand All](#) | [Collapse All](#)

Doctor of Optometry Diabetes Resource Page

Risk Medical Solutions has developed a risk calculator for sight-threatening diabetic retinopathy (STR), including proliferative diabetic retinopathy (PDR) and clinically significant diabetic macular edema (CSME). The output gives an individualized risk analysis for each patient based on well-established risk factors for STR, including diabetes sub-type, gender, glycosylated hemoglobin (HbA1c), blood pressure, disease duration and presence and severity of any non-proliferative disease (NPDR). The algorithm has been clinically validated in a large Danish diabetes cohort.

Both patients and providers can use the risk calculator. It works well as a guiding tool for patients with diabetes because it shows how each modifiable risk factor (HbA1c and blood pressure) impacts the risk of retinopathy progression, and is well-suited as an educational tool for in-office consultation. Doctors of Optometry can also use the risk calculator as a decision support tool for frequency of eye examinations and communication with other members of the healthcare team.

Below are some additional tools and links to assist eye care providers in delivering high quality, individualized care to their patients with diabetes based on the best available scientific evidence.

[International Grading Scale for Diabetic Retinopathy*](#)[International Grading Scale for Diabetic Macular Edema*](#)[Definition of CSME per ETDRS Report #18 \(Arch Ophthalmol 113:1144, 1995\)](#)[Some Key Diabetic Retinopathy Facts](#)[Web Resources for Diabetes Education, News, Information and Research](#)[Algorithm for management of DR](#)



VISION 2020

THE RIGHT TO SIGHT



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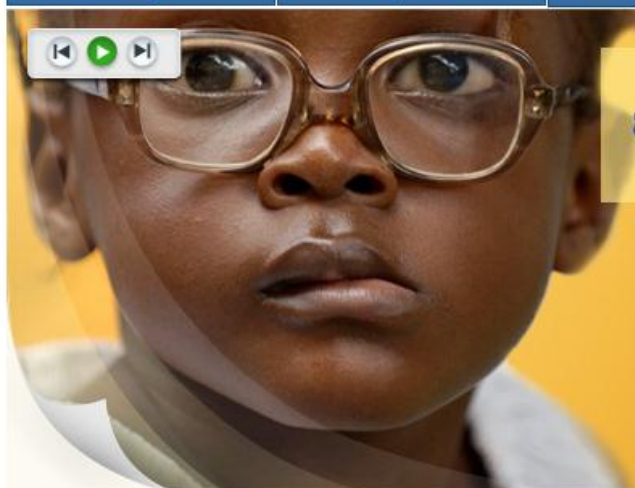
Français

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Русский

汉语

العربية



80% of visual impairment is avoidable

VISION 2020
THE RIGHT TO SIGHT

9th General Assembly



IAPB Ninth General Assembly (9GA), Hyderabad, India, 2012

World Sight Day 2012



World Sight Day, 11 October 2012

IAPB Standard List



NEW, interactive, online IAPB Standard List



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Annual report

About EMGO+

We are EMGO

Welcome to the EMGO Institute for Health and Care Research. The EMGO Institute for Health and Care Research (EMGO⁺) is one of the interfaculty research institutes of the VU Medical Center and the VU University of Amsterdam....

[more about EMGO](#) →



November 27th - **Call for proposals
NWO Graduate Programme (Deadline
February 6, 2013)** →

November 27th - **Samenwerking
Elsevier en het Nederlandse Fulbright
Center om Jonge Wetenschappers te
ondersteunen** →



Takk fyrir

Ólafur Pálsson

Risk Medical Solutions

Olipals@risk.is

+354 8617310

Screening time in months by type of diabetes, HbA1c, systolic blood pressure, DR and gender

