



Retina Read Risk to the test : a solution for a better screening of a diabetes-related eye disease

The Retina Read Risk consortium has been working for a year on the design of a screening solution for diabetic retinopathy, an eye disease due to diabetes. Building on its progress, the consortium is finalizing its prototype and preparing to launch a full-scale test in Spain this year.



A reminder on diabetic retinopathy

The number of people affected by diabetes is estimated to be 537 million worldwide or more than one in ten adults by 2021. In Europe, this represents 61 million peopleⁱ.

It is estimated that nearly one million people suffer from visual impairment or blindness due to diabetic retinopathy in the European region, according to the World Health Organisation (WHO)ⁱⁱ. In Spain, according to local experts, the incidence of this pathology is on the riseⁱⁱⁱ.

Diabetic retinopathy is an eye disease resulting from the onset of diabetes. It is caused by an excessive sugar concentration in the blood circulating in small blood vessels in the retina. This disrupts their function and can lead to tissue swelling (edema), retinal detachment, impact the function of optic nerves and even cause blindness if left untreated.

The real risk is that the disease is silent. It progresses without causing any apparent discomfort until very late in its development. For these reasons, diabetes management programs automatically include annual or biennial screening through the performance of a funduscopy (to examine the fundus of the eye) by an ophthalmologist, an orthoptist, or another qualified professional.

The right preventive actions

The best way to prevent diabetic retinopathy in the general population is to take preventive measures against type 2 diabetes, by adopting a healthy life and avoiding excess body weight.

For the diabetic population, the main risks come from the persistence or regular occurrence of excessive blood sugar levels (hyperglycemia). One of the main protective factors is therefore blood sugar control, which implies regular monitoring of blood sugar levels and blood pressure, as indicated by the endocrinologist or the physician treating the patient.



Certain behaviors and lifestyles also protect against diabetic retinopathy, such as quitting smoking, reducing alcohol consumption, practicing regular physical activity, and protecting the eyes from exposure to UV light.

The reality of screening

In France, approximately one-third of patients have not undergone a funduscopy over the period specified by the public health authority^{iv}. This stable trend since 2019 reflects difficulties in carrying out the screening, despite large efforts from the government in prevention actions at the end of the 2010s. In Spain, the situation is even worse as only 33% of patients undergo screening for diabetic retinopathy.

A qualitative study^v indicated that there is a real difficulty for doctors to make their patients aware of the challenges of screening, as professionals qualified to carry out a funduscopy lack time and availability.

Furthermore, the distribution of ophthalmologists is indeed not homogenous and concentrated in major cities. In France, the wait time for scheduling a follow-up appointment is doubled in small cities compared to the Paris agglomeration. In Spain, the average wait time for an ophthalmologist appointment is 74 days^{vi} but there are huge variations according to region, from a 60-day wait time in the surroundings of Madrid^{vii} to 140 days in the Canary Islands^{viii}.

Retina Read Risk

The aim of this solution is to provide a portable and easy-to-use tool to medical staff who carry out scheduled monitoring of diabetics. The tool consists of (i) a device, containing a lens, which is placed on a smartphone camera, to capture the fundus images, (ii) a questionnaire filled with patient information and (iii) an application with an AI (artificial intelligence) for analysis. The application gives a recommendation to the medical professional, which will help them evaluate the patient's risk of developing the disease. This solution should improve support for people at risk in the care pathway, and reduce the pressure on the care system for the screening of this disease.

The consortium gathered around Retina Read Risk has finalized the technological choices during the first half of 2022, leading to the production of the first prototype of the solution at the beginning of summer.

Initial tests carried out during 2022 with Catalan doctors have made the solution more reliable, with to the prospect of launching a first clinical trial in Spain in the third quarter of 2022.

Retina Read Risk has already allowed for more than 485 screenings in Spain. It has detected retinopathy in 28 at-risk patients and addressed 57 patients for funduscopy. The clinical study will continue in 2023, but a medico-economic study already shows a lot of benefits to the use of retina-read-risk for cost-saving in health prevention.

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Commenté [SLS1]: Can we add the picture from the market analysis deliverable?



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The IISPV is a biomedical research institute placed in the province of Tarragona (Catalonia, Spain) that combines clinical and basic research in order to accelerate the translation of knowledge to the benefit of patients. Founded in 2005, the institute integrates the Hospital Universitari de Tarragona Joan XIII, the Hospital de Tortosa Verge de la Cinta, the Hospital Universitari Sant Joan de

Reus, the Hospital Universitari Institut Pere Mata and the Universitat Rovira i Virgili, in order to bring together and manage biomedical research and innovation in the territory. The IISPV aims to be a national and international reference centre in biomedical research and translation, at the service of the population, linking the health centres to the community.

For more information visit: <https://www.iispv.cat/en/>

About the Institut Català de la Salut (ICS)



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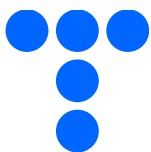
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The Catalan Institute of Health (ICS) is the largest public health services company of Catalonia

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For more information visit: <http://ics.gencat.cat/es/inici/index.html>

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GENESIS Biomed expertise domains are biopharmaceutical, biotechnological, medical devices, in vitro diagnostic, nutraceutical and cosmetic. With more than 20 years of expertise in the healthcare sector, GENESIS Biomed is born in May 2017, and it is located in the Barcelona Science Park and Madrid center.

For more information visit: <https://genesis-biomed.com/>

About E-senior



E-Seniors is a french non-profit association, founded in 2004 by Monique EPSTEIN. E-Seniors aims at fighting against e-exclusion by providing access to and training in ICT to seniors and/or disabled people. Its main objectives are bridging and shrinking the digital gap between generations, caring for elders by fighting against senior isolation, and opening new horizons for efficient use of free time. Besides teaching "basic computer skills", E-Seniors has opened more thematically oriented workshops for "advanced" students, dealing with, for example, digital images and sounds, interactive messaging and chat, "writing memories", and meetings dealing with the fight against e-exclusion. Through its work for elderly people and with them, the association tries as well to enhance awareness of the importance of ICT solutions in everyday life.

For more information visit: https://www.e-seniors.asso.fr/en_main.htm



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For more information visit: <https://www.fondationdelavenir.org/>

About EIT Health



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EIT Health is a network of best-in-class health innovators with approximately 150 partners and is supported by the European Institute of Innovation and Technology (EIT), a body of the European Union. We collaborate across borders to deliver new solutions that can enable European citizens to live longer, healthier lives.

As Europeans tackle the challenge of increasing chronic diseases and multi-morbidity, and seek to realise the opportunities that technology offers to move beyond conventional approaches to treatment, prevention and healthy lifestyles, we need thought leaders, innovators and efficient ways to bring innovative healthcare solutions to market. EIT Health addresses these needs. We connect all relevant healthcare players across European borders – making sure to include all sides of the “knowledge triangle”, so that innovation can happen at the intersection of research, education and business for the benefit of citizens.

EIT Health: Together for healthy lives in Europe.

For more information visit: www.eithealth.eu.

ⁱ International Diabetes Federation Diabetes Atlas 10th edition, 2021 : [link](#)

ⁱⁱ Flaxman et al. Global causes of blindness and distance vision impairment 1990–2020: a systematic review and meta-analysis, 2017 The Lancet, Volume 5, Issue 12, December 2017, Pages e1221-e1234

ⁱⁱⁱ Romero-Aroca P, Navarro-Gil R, Valls-Mateu A, et al, Differences in incidence of diabetic retinopathy between type 1 and 2 diabetes mellitus: a nine-year follow-up study British Journal of Ophthalmology 2017;101:1346-1351

^{iv} Caisse Nationale d'Assurance Maladie(cnam), La Rémunération sur objectifs de santé publique (Rosp) en 2021, Avril 2022 – [link](#)

^v Watson, M.J.G., McCluskey, P.J., Grigg, J.R. et al. Barriers and facilitators to diabetic retinopathy screening within Australian primary care. BMC Fam Pract 22, 239 (2021). <https://doi.org/10.1186/s12875-021-01586-7>



^{vi} Listas de espera en la Sanidad pública, EpData, últimos datos oficiales, Datos actualizados el 25 de noviembre de 2022, [link](#)

^{vii} La demora media para acudir a una consulta externa se sitúa en 60 días, El Adelantado de Segovia, 18 abril, 2022, [link](#)

^{viii} El 90% de los canarios espera más de dos meses para ser derivado a un especialista, Verónica Pavés, El dià, 27-05-20 | 23:22, [link](#)