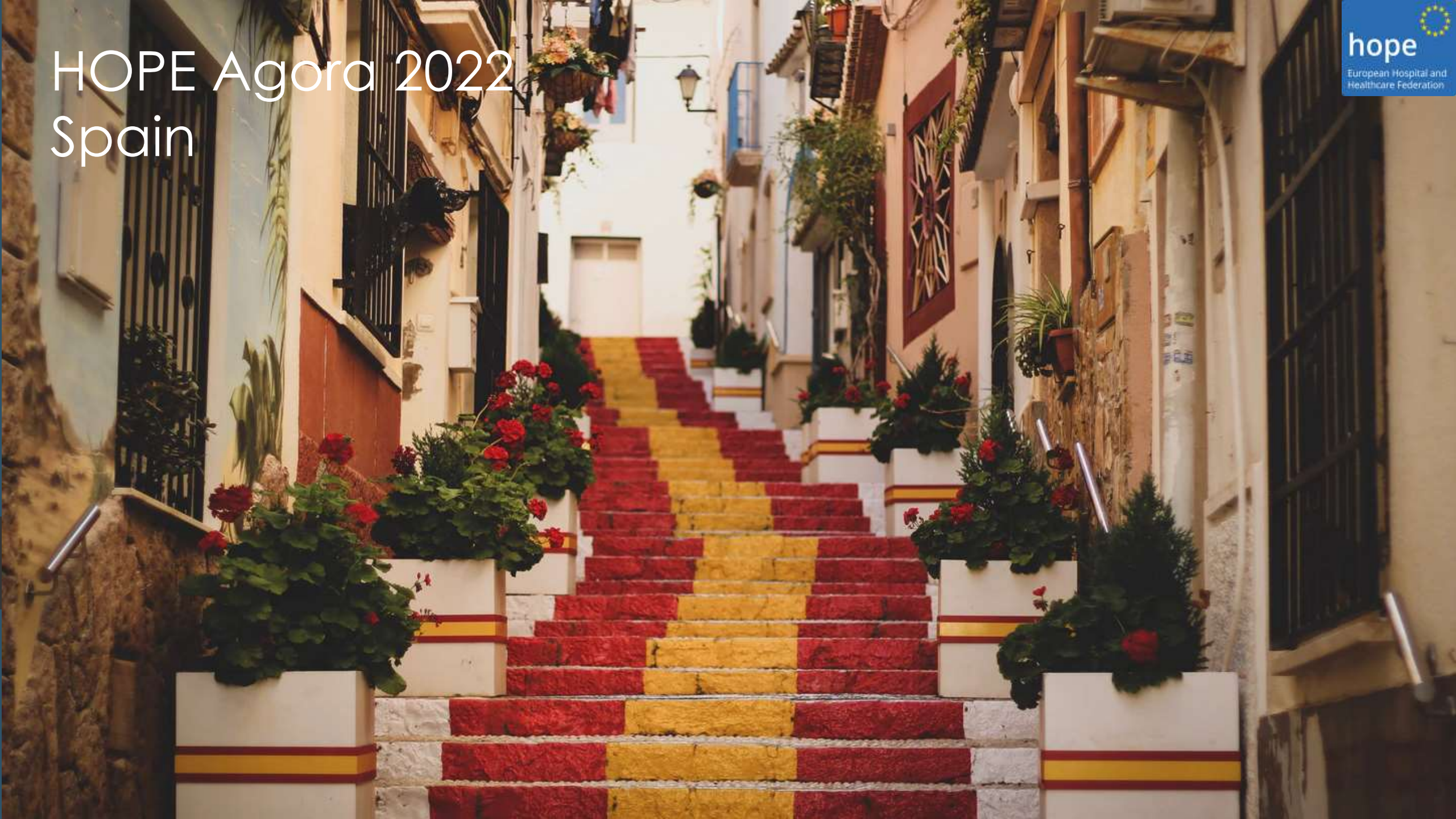


# HOPE Agora 2022 Spain





GOBIERNO  
DE ESPAÑA

MINISTERIO  
DE SANIDAD

# 6 regions of Spain



## Hosts

1. VITORIA (País Vasco)
2. LUGO (Galicia)
3. BARCELONA (Cataluña)
4. MADRID (C. Madrid)
5. SEVILLA (Andalucía)
6. BILBAO (País Vasco)
7. PALMA DE MALLORCA (I. Baleares)



# 7 participants from 5 European countries

City	Host	Coordinators	Participant 1	Participant 2
Vitoria	Integrated Health Organization Araba -OSI Araba	Nerea Gutierrez	Lilia Abreu	<b>Stephen Melluish (Project # 2)</b>
Lugo	Healthcare Area of Lugo, A Mariña and Morforte de Lemos	Juan Pérez	Lilia Abreu	Stephen Melluish
Barcelona	Clinic Barcelona	Estrella Fernández/ Maria Asenjo	<b>Hans-J Bartz (Project # 1)</b>	Julia Reynolds
Fuenlabrada (Madrid)	Hospital Universitario de Fuenlabrada	Maria Mercedes Ortiz	Hans-J Bartz	Julia Reynolds
Bormujos (Sevilla)	Hospital San Juan de Dios de Aljarafe	Jose Luis Garcia	Sergio Cinocca	<b>Jörg Leifeld (Project # 3)</b>
Bilbao	Osakidetza (Integrated Health Organization system Bilbao-Basurto)	M <sup>a</sup> Mar Martinez	Sergio Cinocca	Jörg Leifeld
Palma de Mallorca	Hospitals Son Espases and Son Llatzer	M <sup>a</sup> Teresa Pou / Ana M <sup>a</sup> Pérez/ Mariló Sánchez	Iben Lundaguer	

# Project # 1



# Overview of the CORTEX

- ▶ Strategic project for the digital evolution of the organization
- ▶ Based on the intelligent management of the information generated by the hospital, by the patients, families and their environment
- ▶ Serves to generate knowledge to have predictive and proactive care models



# Evidence for CORTEX

- Good evidence to show a family of measures can help make improvements to healthcare
- Multiple data sources working together can help focus insightful clinical decision making
- Organisation of data effectively helps reduce response times and improve patient outcomes

➤ [Big Data](#). 2016 Jun;4(2):129-35. doi: 10.1089/big.2015.0059.

## Improving the Efficiency and Ease of Healthcare Analysis Through Use of Data Visualization Dashboards

Jennifer G Stadler<sup>1</sup>, Kipp Donlon<sup>1</sup>, Jordan D Siewert<sup>1</sup>, Tessa Franken<sup>1</sup>, Nathaniel E Lewis<sup>1</sup>

## Using data for improvement

*BMJ* 2019 ; 364 doi: <https://doi.org/10.1136/bmj.i189> (Published 15 February 2019)

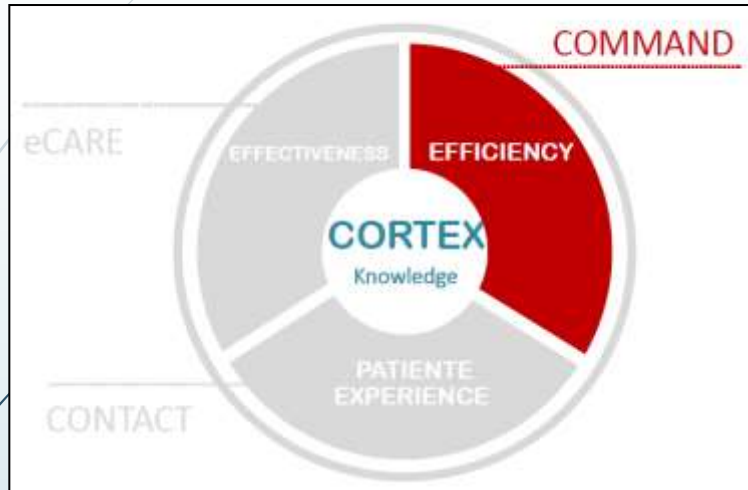
Cite this as: *BMJ* 2019;364:i189

## Data-driven clinical decision processes: it's time

[Enrico Capobianco](#) 

*Journal of Translational Medicine* 17, Article number: 44 (2019) | [Cite this article](#)

# What data does the CORTEX use?



**Command:** Central nucleus of analysis, scores, performance indicators etc.

**Contact:** Proactive personal care via Intelligent planning

**eCare:** New models of non-face-to-face care



# Outcomes & Impacts CORTEX

The central monitoring of patients combined with a contact and innovation centre helped to reduce length of stay and costs in a Spanish children hospital

**14% reduction** in avg. ICU Length of Stay (LOS)

**4.6 → 4.0 days**

**30% reduction** in avg. total hospital LOS

**12 → 8.4 days**

**21% reduction** in hospital operative costs

**11,700 → 9,300 €/patient**

Internal data SJD, 2021



# Project # 2



**Osakidetza**

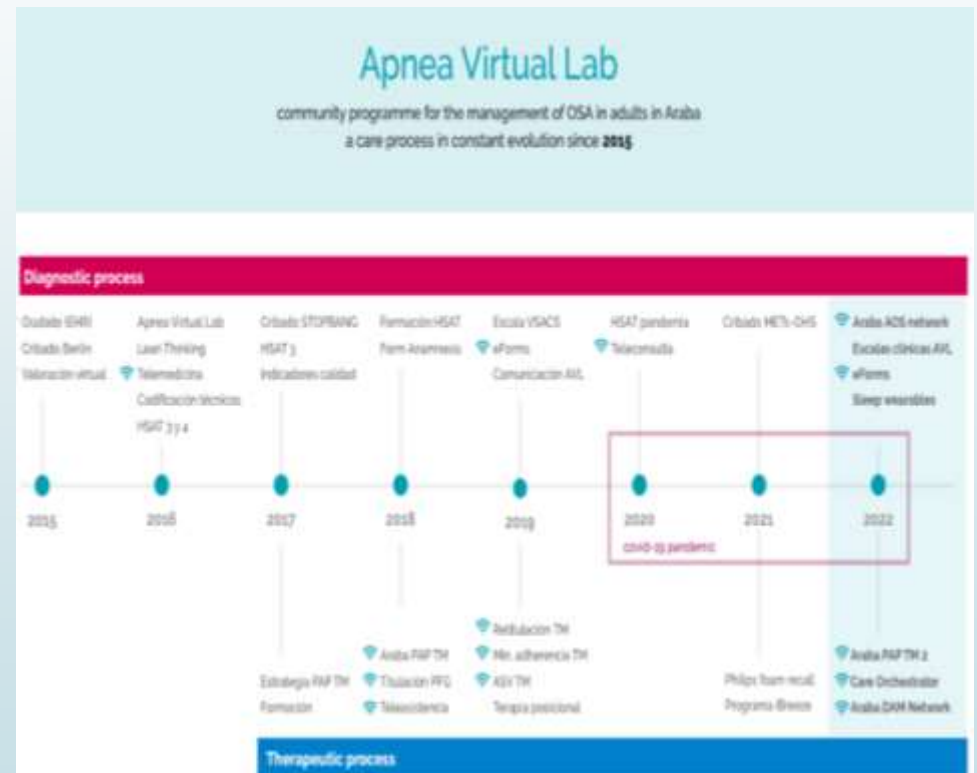
ARABA ERAKUNDE SANITARIO INTEGRATUA  
ORGANIZACIÓN SANITARIA INTEGRADA ARABA



**Apnea Virtual Lab**  
Unidad Funcional del Sueño  
OSI Araba

# Apnea Virtual Sleep Lab

- Telemedicine
- Aim to reduce sleep apnea which is a life-threatening chronic disease
- Present in 12% of adults
- Undetected 80% of the time
- Estimated economic cost of +140 million Euros (Vitoria, Pais Vasco)



# What data does Apnea Virtual Sleep Lab use?

- ▶ Real time patient data
- ▶ Telemonitoring
- ▶ Improvement data



# Evidence for Apnea Virtual Sleep Lab

- ▶ Patient evidence of impact of wearable technologies.
- ▶ Impact of real time decision making on treatment course.
- ▶ Economic evidence of cost reduction.

The infographic for the Apnea Virtual Lab is titled "Apnea Virtual Lab" with the subtitle "registration and real world data analytics as a test bench". It features six panels illustrating the lab's impact:

- Impact of new technologies on epidemiological and economic aspects:** Shows a person using a wearable device on their chest.
- real-time decision making:** Shows a person looking at a large data visualization screen.
- development of proofs of concept to establish new strategies:** Shows a person at a desk with a laptop and a smartphone.
- patient-centered sleep care learning from PRO/PRE information:** Shows a doctor talking to a patient.
- integration of AI to identify phenotypes and develop gH medicine:** Shows a stylized brain with circuitry and data waves.
- contribution to the sustainability of the health system:** Shows a hand holding a money bag.

**American Journal of Respiratory and Critical Care Medicine**  
Home > American Journal of Respiratory and Critical Care Medicine > List of Issues > Volume 196, Issue 5  
**Primary Care Physicians Can Comprehensively Manage Patients with Sleep Apnea. A Noninferiority Randomized Controlled Trial**  
M. Angeles Sánchez-Quiroga <sup>1,2</sup>, Jaime Corral <sup>3,5</sup>, Francisco J. Gómez-de-Terreros <sup>1,2</sup>, Carmen Carrasco-Bernal <sup>6</sup>, M. Isabel Asensio-Cruz <sup>7</sup>, Marta Cabello <sup>8</sup>, M. Angeles Martínez-Martínez <sup>9</sup>, Carlos J. Egea <sup>1</sup>, Estrella Ordax <sup>1</sup>, Ferrán Barba <sup>1,5</sup>, Javier Barca <sup>1</sup>, and Susan Gil <sup>10</sup>

**EUROPEAN RESPIRATORY journal**  
An Official Journal of the European Society for Respiratory and Critical Care Medicine  
Home | Current Issue | ERS Daily View | Past Issues | Author Services | Alerts | Podcasts | Subscriptions  
**Automated analysis for the diagnosis of sleep apnoeas in patients with suspected disease. Validity of a new respiratory polygraphy system**  
Miguel Ángel Sánchez-Quiroga, Jaime Corral, Francisco J. Gómez-de-Terreros, Carmen Carrasco-Bernal, M. Isabel Asensio-Cruz, Marta Cabello, M. Angeles Martínez-Martínez, Carlos J. Egea, Estrella Ordax, Ferrán Barba, Javier Barca, and Susan Gil

# Outcomes & Impacts Apnea Virtual Sleep Lab

- ▶ Economic - 5,5 million € saving / 3.762 € per patient
- ▶ Adherence - 6.2 hours average. 93% - 4 hours, 56% - 6 hours
- ▶ Patient care - scalable digital solution

The screenshot displays the 'Apnea Virtual Lab' website. At the top, it identifies the program as a 'community programme for the management of OSA in adults in Araba' with the goal of 'proposing new improvement solutions in 2022'. Below this, three main features are highlighted: 'new partners', 'more telemedicine', and 'simplified diagnosis'. Each feature is accompanied by a representative image: a dental office for partners, a laptop and smartphone for telemedicine, and a person wearing a sleep wearable for diagnosis. A statistics box on the left lists '115 pharmacy offices', '145 dental practices', and '31 dietitians'. The bottom of the page features the 'Araba AOS Network' logo.

Apnea Virtual Lab  
community programme for the management of OSA in adults in Araba  
proposing new improvement solutions in 2022

new partners    more telemedicine    simplified diagnosis

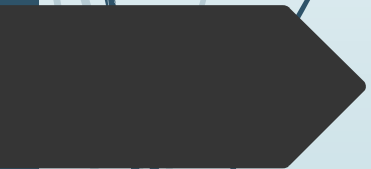
115 pharmacy offices  
145 dental practices  
31 dietitians

eForms    sleep wearables

Araba AOS Network

# Project # 3

**JUNTA DE ANDALUCIA**





# Eye examination by smartphone

- ▶ Patients with eye problems may attend the ER, often no ophthalmologist on duty
- ▶ How can we collaborate with an ophthalmologist?
- ▶ How can we examine eyes in a reproducible and safe way?
- ▶ **Solution:** Develop 2 devices to take pictures and send them to a remote on call ophthalmologist



► **Retinal Detachment**

83,000 cases/year in Europe, 30% delay for ophthalmology examinations

► **Age-related Macular Degeneration**

Main cause of blindness in > 50 years

45% delay examination by Ophthalmologist

► **Diabetic Retinopathy**

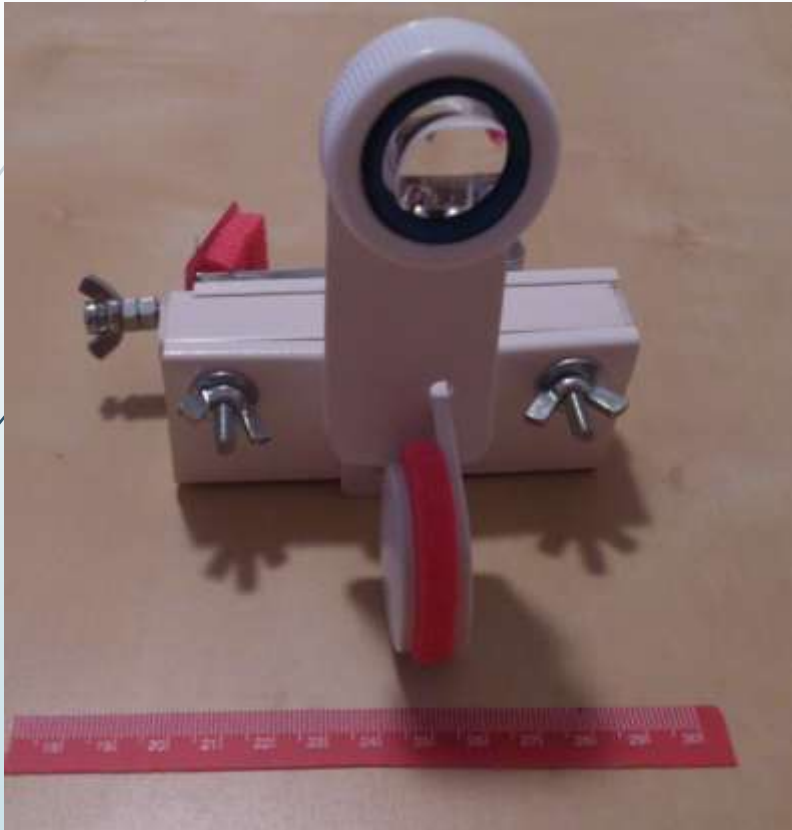
360 million cases worldwide, 50% with Retinopathy.

70% without annual screening,

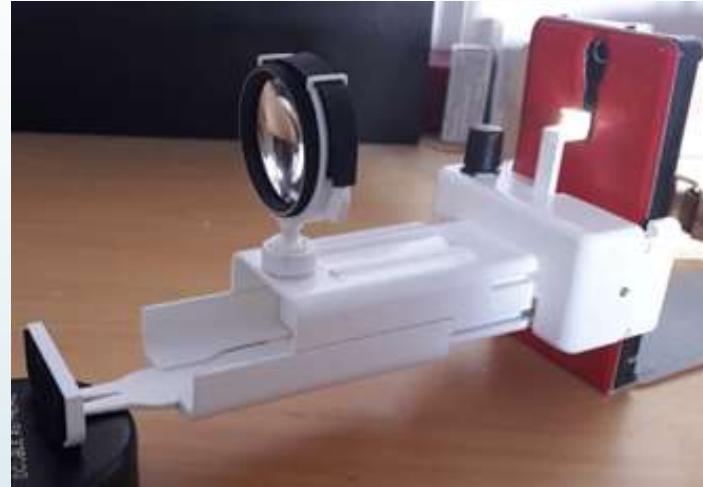
30% without any exploration



# Development of two devices for any smartphone (national and international patents)



**First device:** Lente de Volk with smartphone to examine foreground of the eye

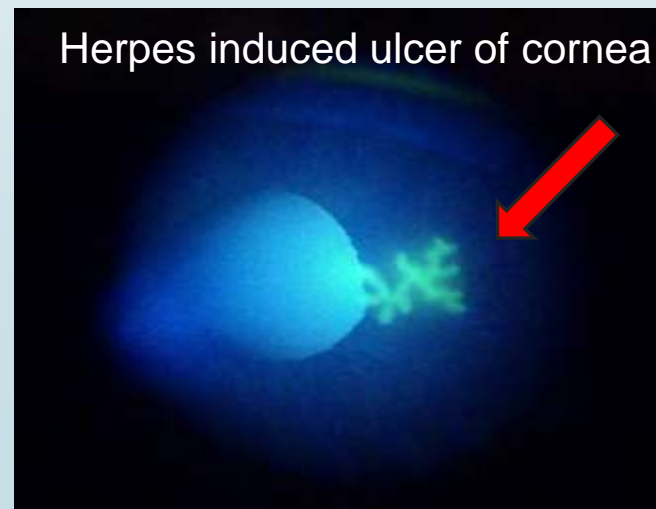
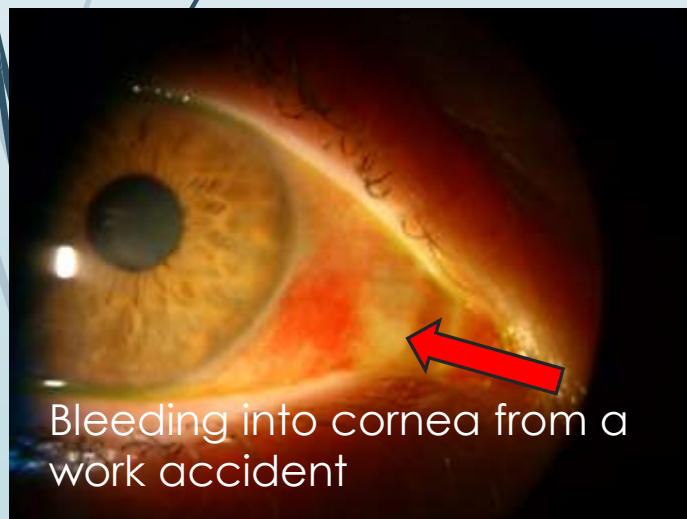
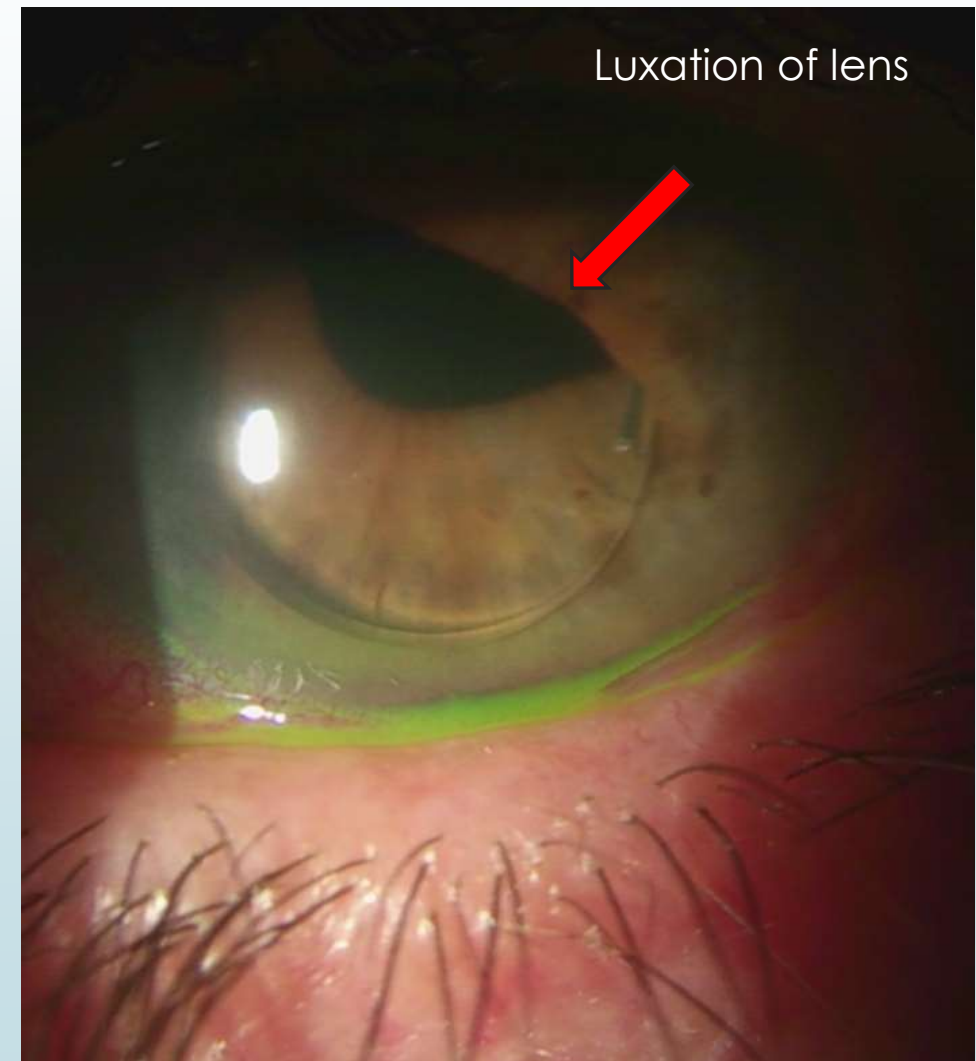
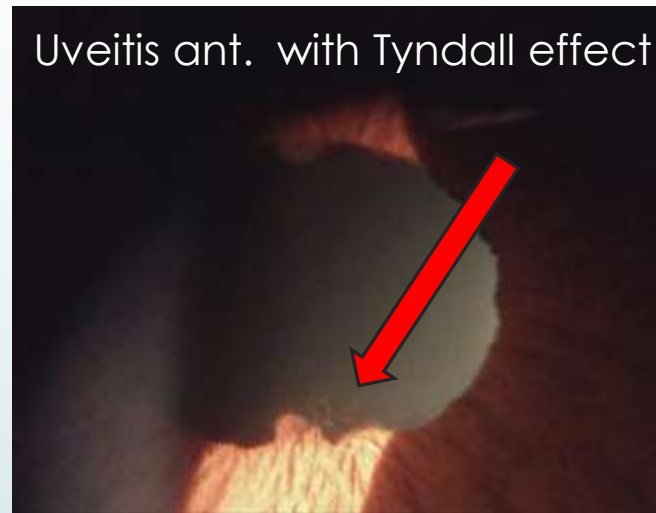
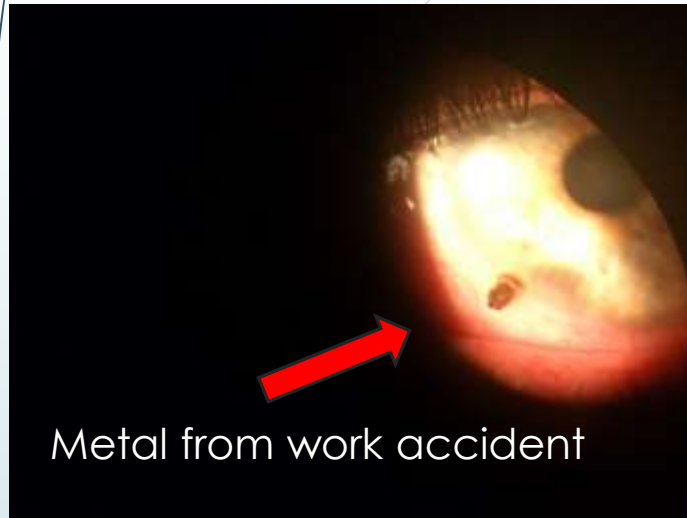


**Second device:** Open Retinoscopy with smartphone to examine background of the eye



RETINOSCOPIO ABIERTO Es una herramienta exploratoria esencial para evaluar la retina

# First device: Exams and pictures with smartphone to examine foreground of the eye



# Second device: Open Retinoscopy with smartphone to examine background of the eye



Wider field of vision  
and secure pictures



A dark grey arrow points to the right from the left edge of the slide. Below it, several thin, curved lines in shades of blue and grey sweep across the left side of the slide.

# Advantages

- ▶ Reproducible and safe as telemedicine
- ▶ Follow-up exams in local health service possible
- ▶ Secure messenger service connected to the health care systems to protect patients data
- ▶ Use worldwide
- ▶ **Outlook:** Developing artificial intelligence for diagnosis with saved pictures



Thank you very much for your attention!