The Hospital of the Future

Miguel Pera
CMO and Chair of Surgery

Hospital del Mar

Parc de Salut MAR Barcelona

MWC Barcelona

4YFN | Connecting Startups

ECHAlliance
The Global Connector
European Connected Health Alliance

Context of the strategic framework

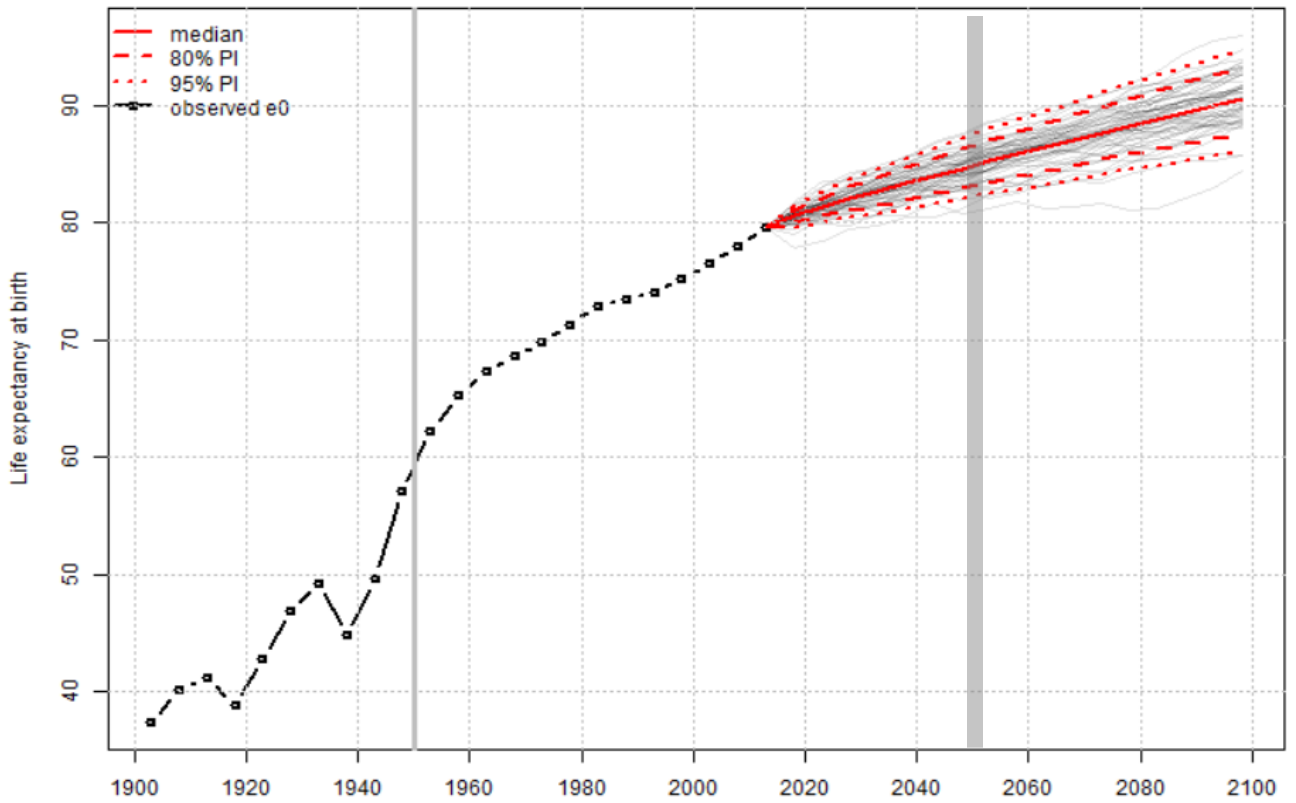
1. A very changing environment (due to COVID-19 and beyond)

COVID-19

- Contraction of global GDP comparable to the end of the second world war.
- Economic recovery in progress, but slow and not expected to reach similar levels within after 2024.
- Increased resources and spending on health services and open questions about the post-pandemic phase.
- Acceleration of other social transformations.

(… and beyond)

(1) Demographic ageing and corresponding changes in the epidemiological pattern



Life expectancy by 2050 is projected
90 years for women and 85 years for men
By 2050, the population aged over 65 will go from 20 to 35% and that of more than 80 years from 6 to 12%.

(2) The ecological transition to collectively address climate change

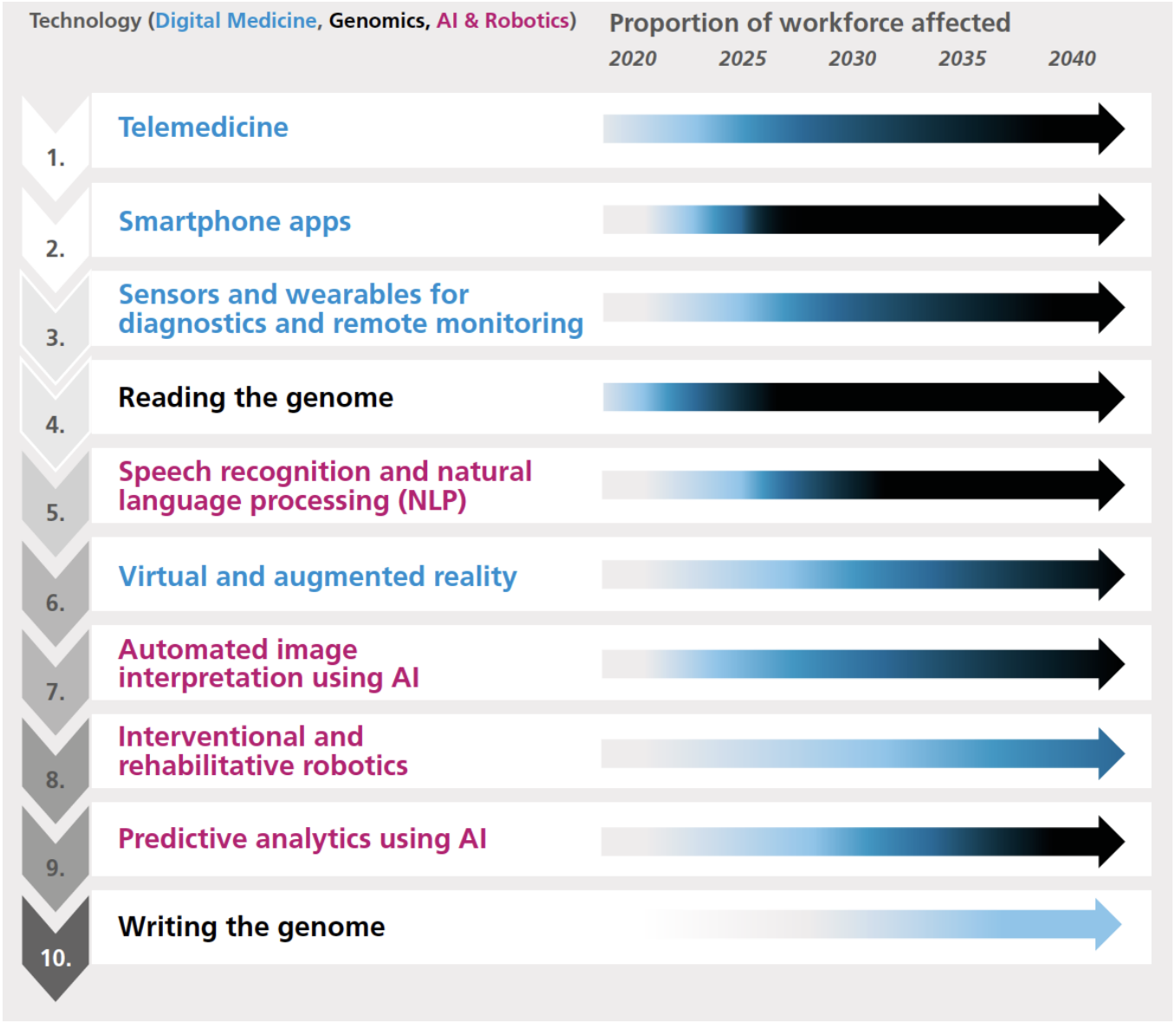
(3) The social clamour for equal rights of people and respect for diversity

(4) The impact of technological and digital change on the way we live and work

Technological and digital change

- **Decentralization of care from the hospital to the community** and home through patient communication and tele-monitoring systems (home hospitalization and virtual hospital)
- Concentration of hospital activity in the care of **acute processes and highly complex interventions**
- **Centralization of information and advanced exploitation of data collected** from multiple sources that support healthcare and operational command centers ("digital command" centers)
- Creation of **intelligent spaces** in the hospital to improve the stay and hospital visits through robotics and augmented and virtual reality
- Generation of **new care models** that combine the massive use of data and digital health technologies with clinical and healthcare knowledge.

Top 10 of digital health technologies and projected impact on the NHS workforce by 2025 and 2030



NHS

The Topol Review

Preparing the healthcare workforce to deliver the digital future

An independent report on behalf of the Secretary of State for Health and Social Care
February 2019

THE NHS CONSTITUTION
the NHS belongs to us all

(5) Raising awareness about healthcare quality and empowering patients

and now... we build the future: The strategic plan. Horizon 2030

Where we come from?

Hospital del Mar-Parc de Salut Mar

We are a **Integrated Organization of Healthcare Services**

Extensive portfolio of services acute, transicional, social and mental care

Prominent role in **promoting entrepreneurial business policies** in the health sector

HEALTHCARE INSTITUTIONS
Hospital del Mar 1
Hospital de l'Esperança 2
Centre Fòrum 3
Centre Dr. Emili Mira 4
CUAP Peracamps 5

HOSPITAL DEL MAR CAMPUS 6
Degree in Medicine
Degree in Biology
Degree in Physiotherapy
University School of Nursing
Bonanova FP Institute
MIR, IIR, PIIR, FIR Teaching

INVESTIGATION
Hospital del Mar Institute
for Medical Reserch (IMIM) 7

More than 4.000 professionals, 2.690 students, 748 articles published with impact factor

4.232
professionals

1.140
beds (461 acute patients)

346M€ / 4,18M€
spending / investments

41.793
discharge

17.682
surgical intervention

142.646
emergencies attended

155.072
first visits

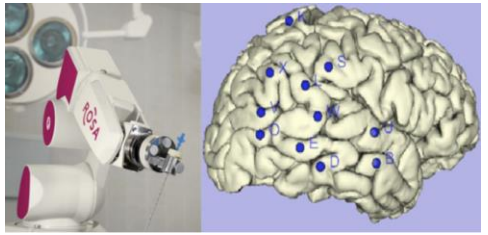
509.840
subsequent visits

6,35
average stay

- Transforming care delivery
- Patient experience
- Data
- Architecture

Transforming care delivery

- Robotic Hospital High complex interventions



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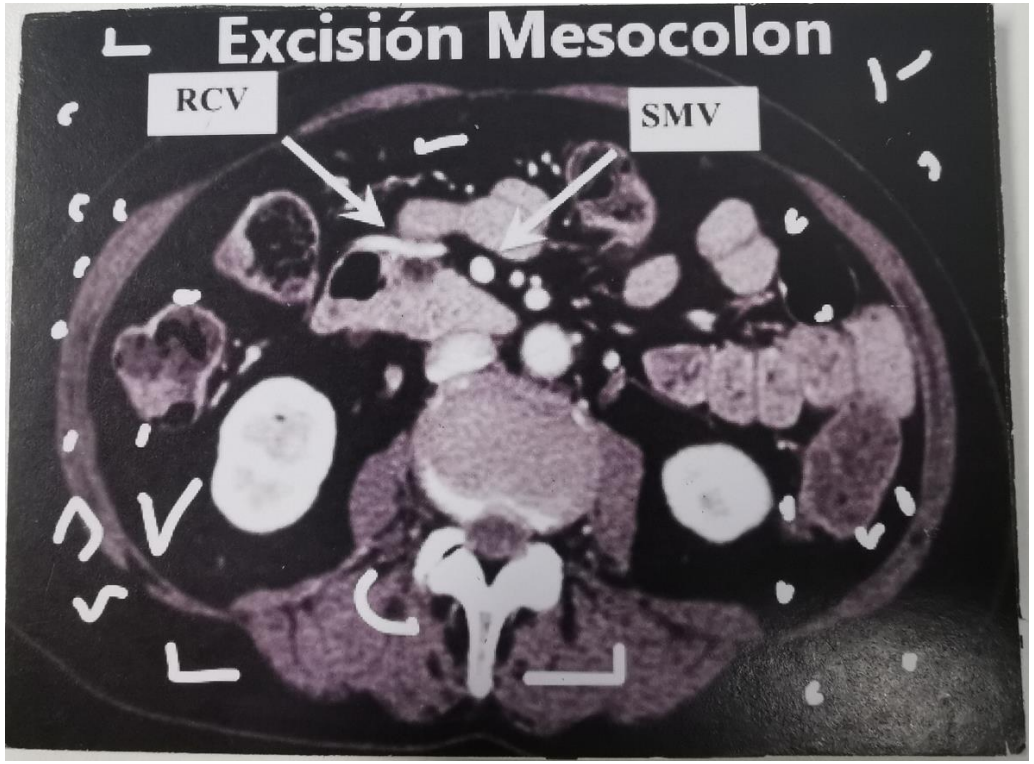
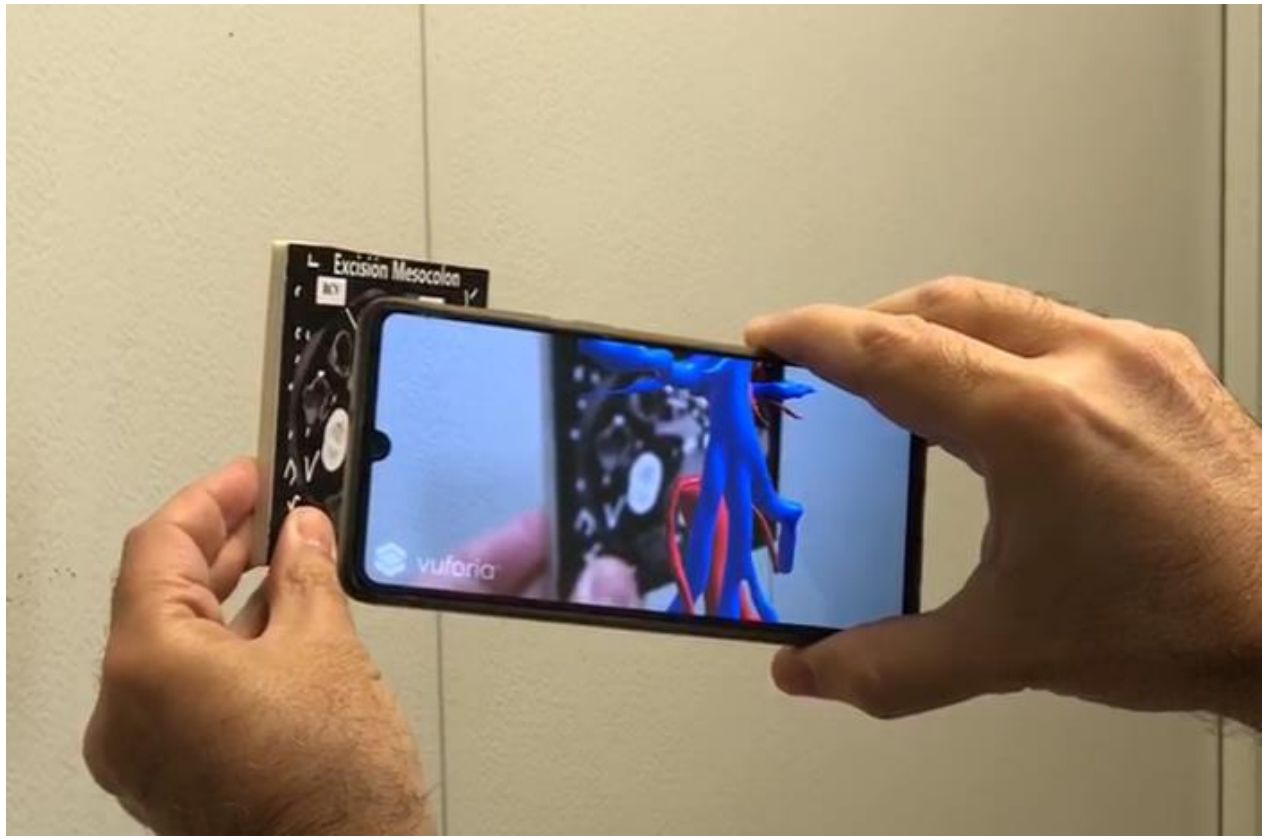
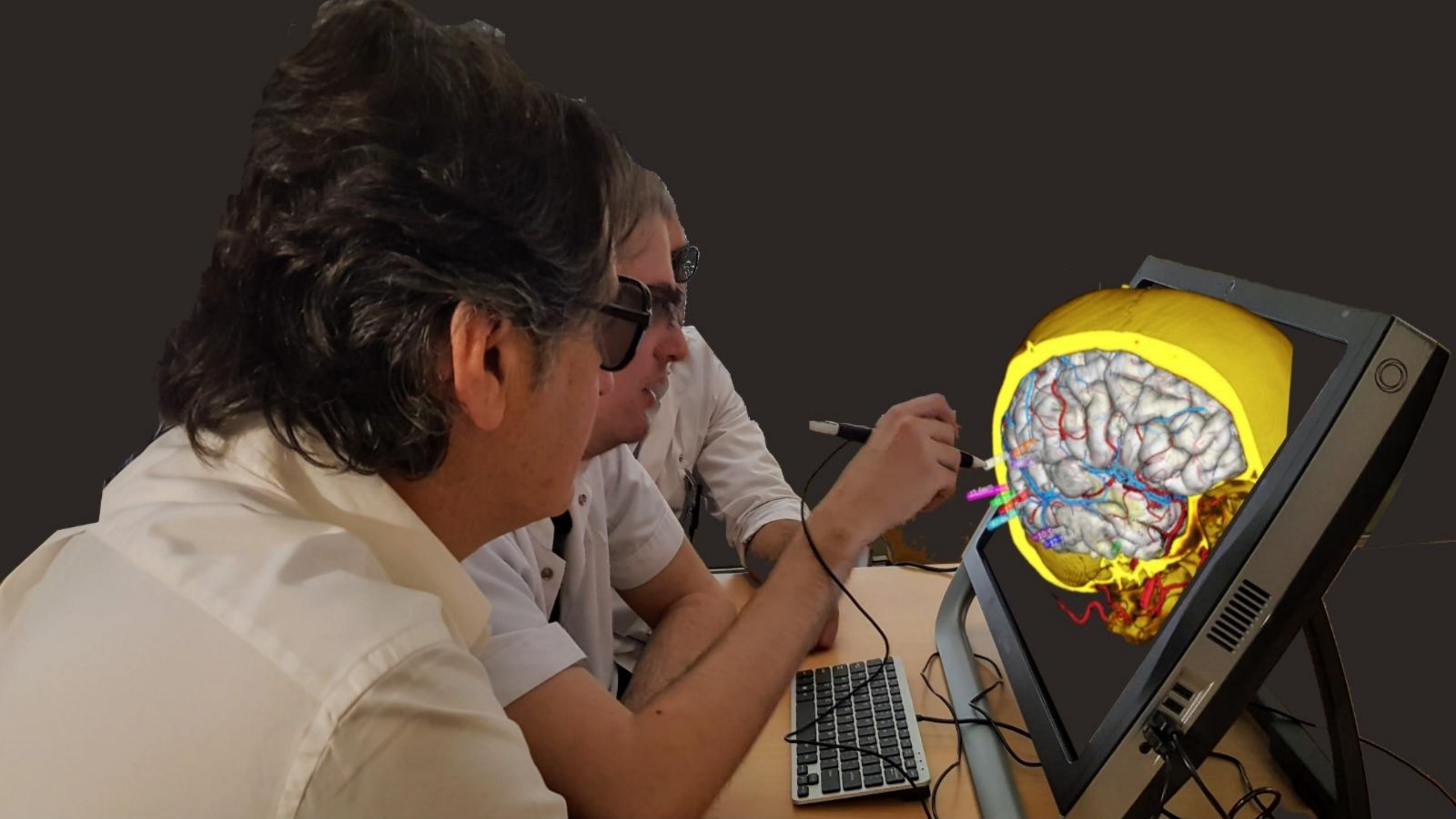
Transforming care delivery

- Augmented Reality

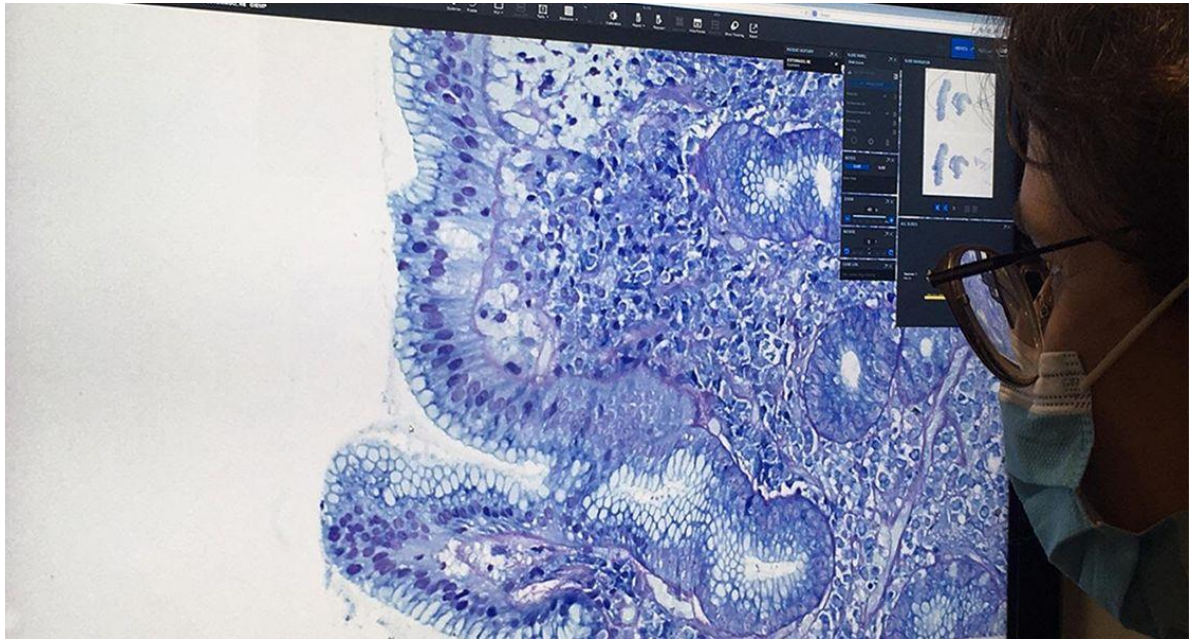


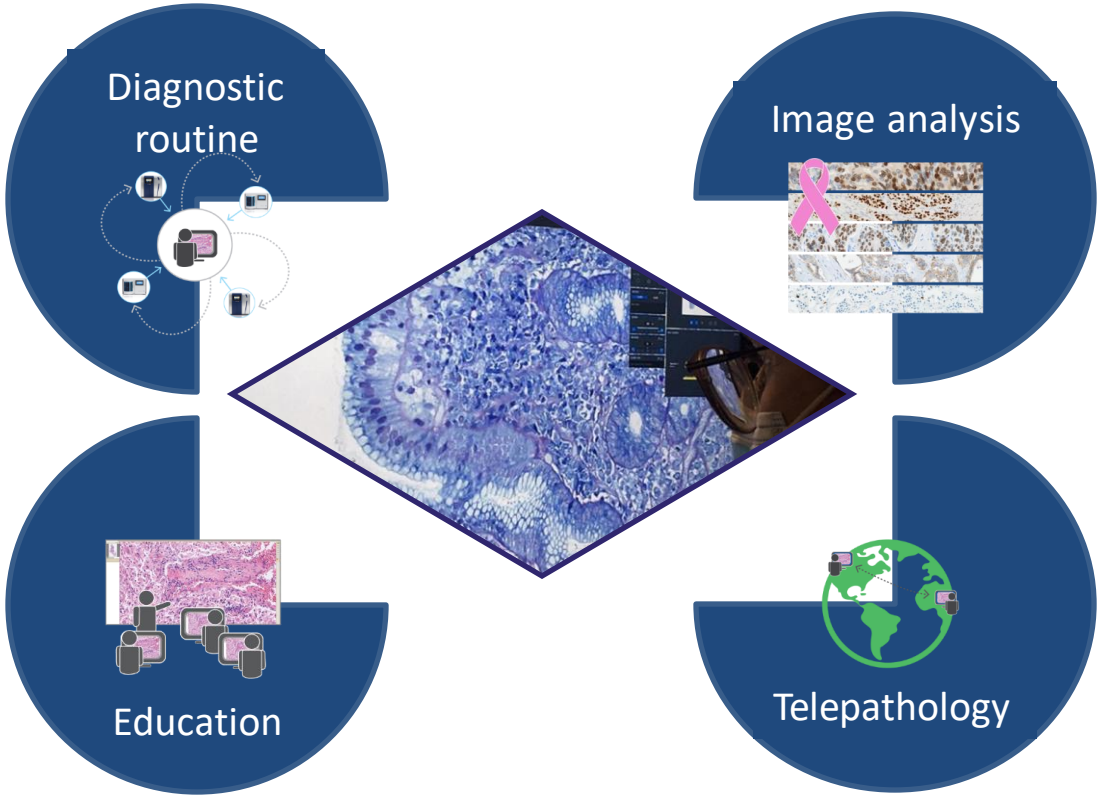




Transforming care delivery

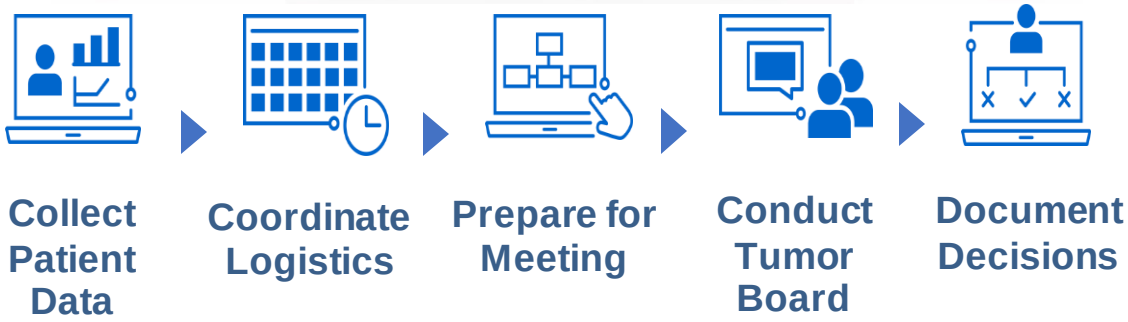
Digital Pathology





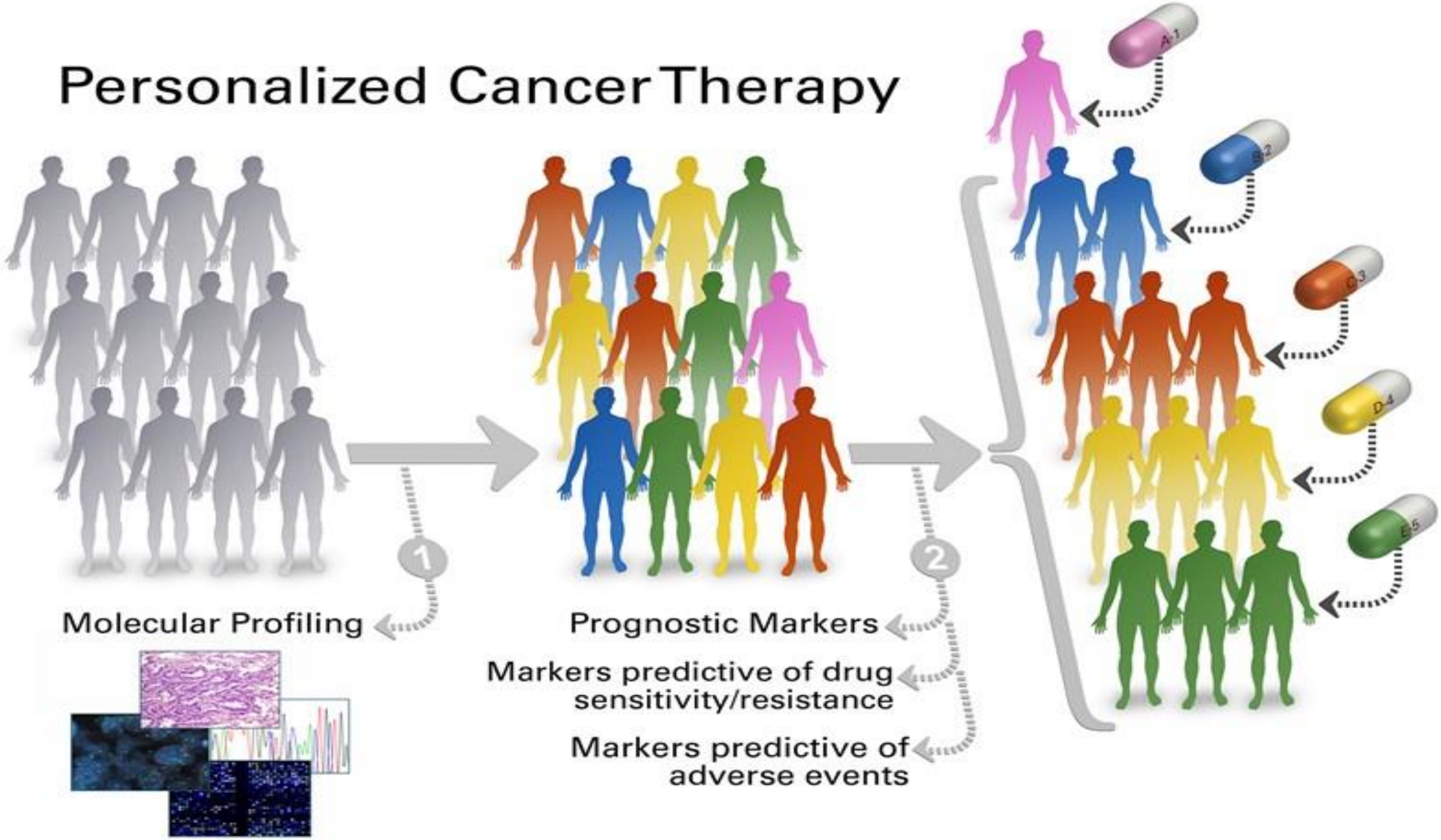
Transforming care delivery

- NAVIFY "Tumor board" at Hospital del Mar

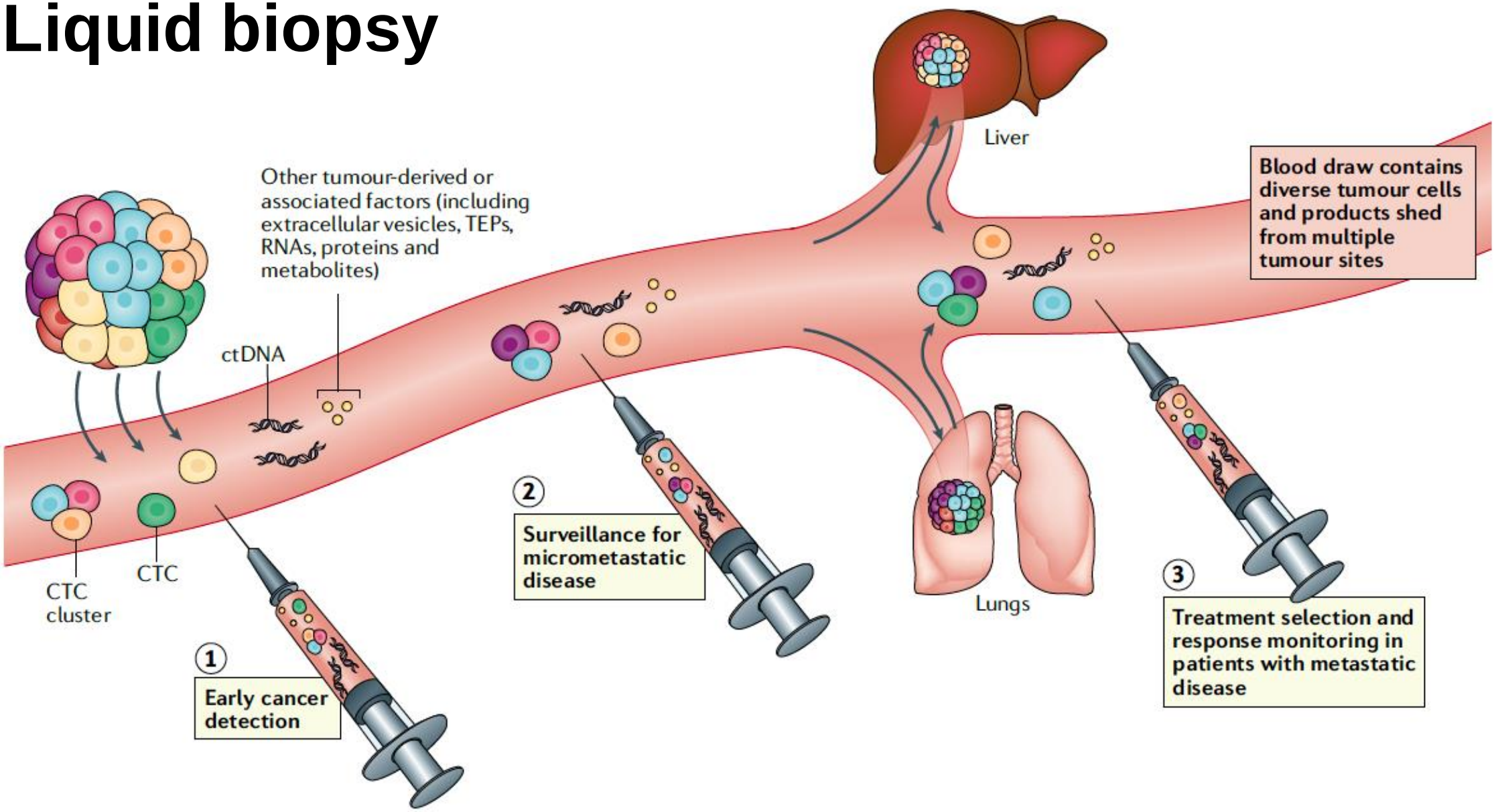


PERSONALIZED HEALTHCARE

Personalized Cancer Therapy



Liquid biopsy



Ignatiadis *et al*, Nat Rev Clin Oncol 2021

Transforming care delivery

Hospital del Mar at Home

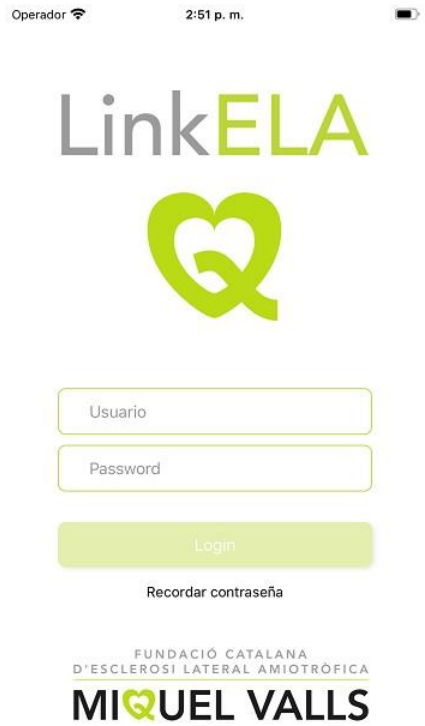
El Hospital del Mar lleva la inmunoterapia al domicilio de los pacientes con cáncer de pulmón

MARI LATORRE NOTICIA 25.02.2022 - 12:06H

- Los primeros pacientes empezaron a recibir el tratamiento en casa hace unas semanas.
- Se calcula que cerca de 20 pacientes podrán beneficiarse de este tipo de atención sanitaria en el primer año.
- Se quiere ofrecer la mejor calidad asistencial posible y las mayores comodidades dentro del proceso oncológico.

Transforming care delivery

- Hospital del Mar at Home



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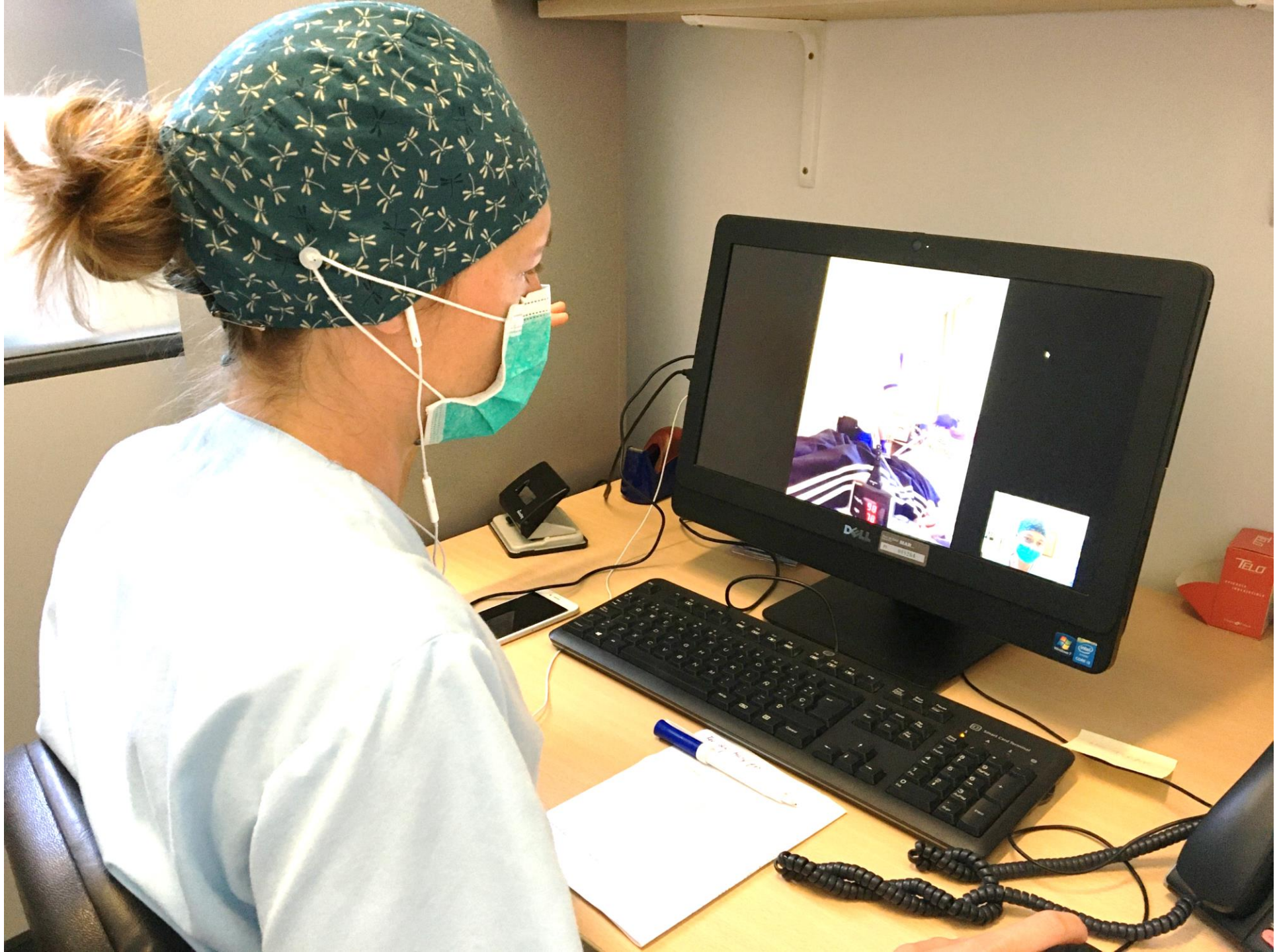


Patient Experience

Experience in technology assessment

- **Easy and accessible**
- **Empathetic and adapted to the patient**
- **Conscious and committed**
- **Protocolized and formatted**
- **Updated**
- **Safe and secure**

Cocreation

Patient Experience

- Virtual Reality

Data

- Transformation and improvement of organizational processes
- Provide professionals with information systems and suport to clinical decision making to improve the quality of care and make it more efficient
- Empowering patients and their families to be more autonomous in making decisions that affect their own health

SUPPLY DRIVERS

Internal Medical and Patient data
- EHR
- Medical devices
- IoT
- Imaging
- Lab
- genomics

IoT

Mobile/mHealth

Support outpatient program

Retail Pharmacies

From different suppliers

INTEROPERABILITY

DATAWAREHOUSE

DATALAKE

INTEROPERABILITY

DEMAND DRIVERS (SERVICES)

MANAGEMENT

CLINICAL MANGEMENT

RESEARCH

CDSS

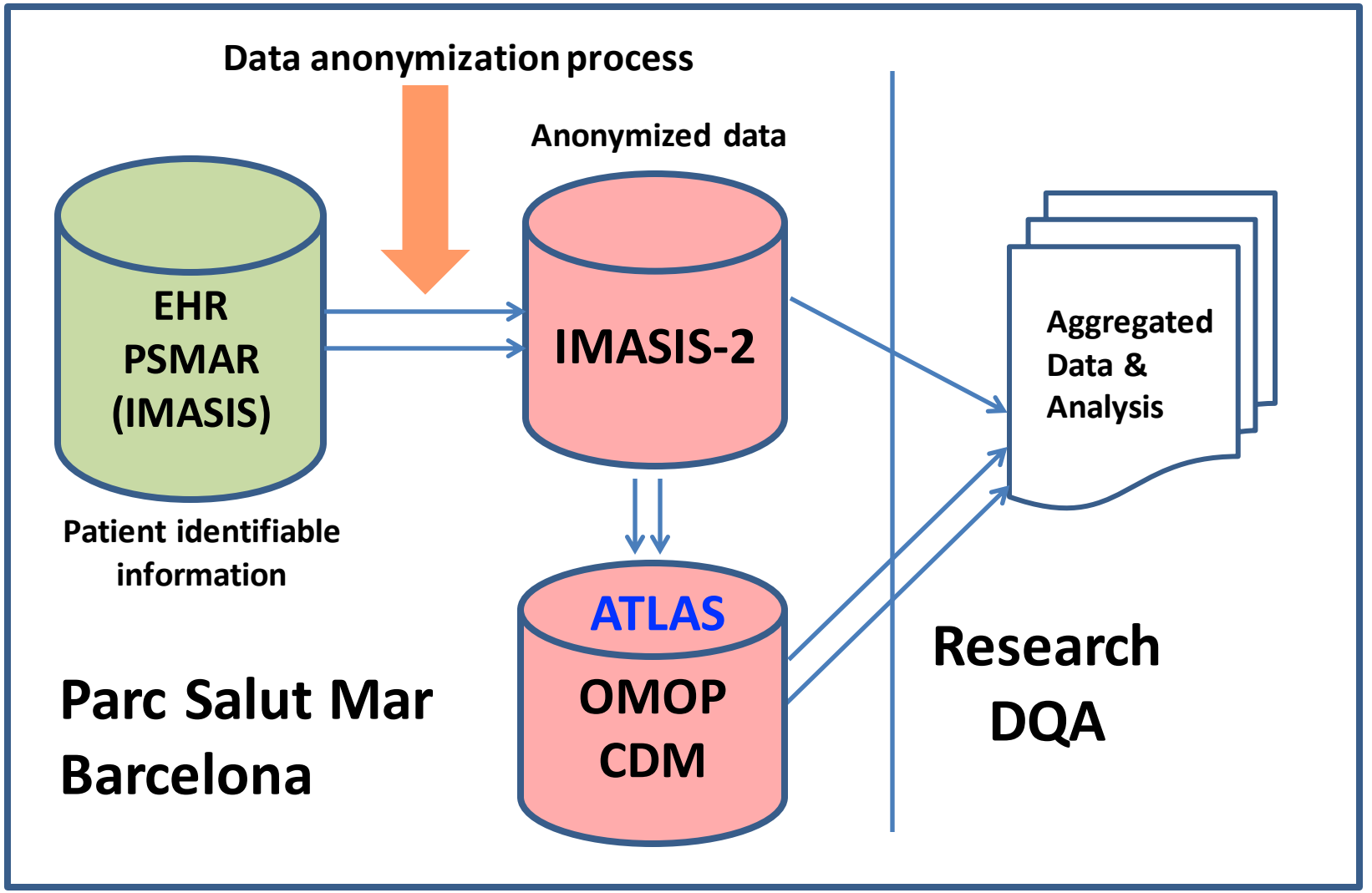
INNOVATION

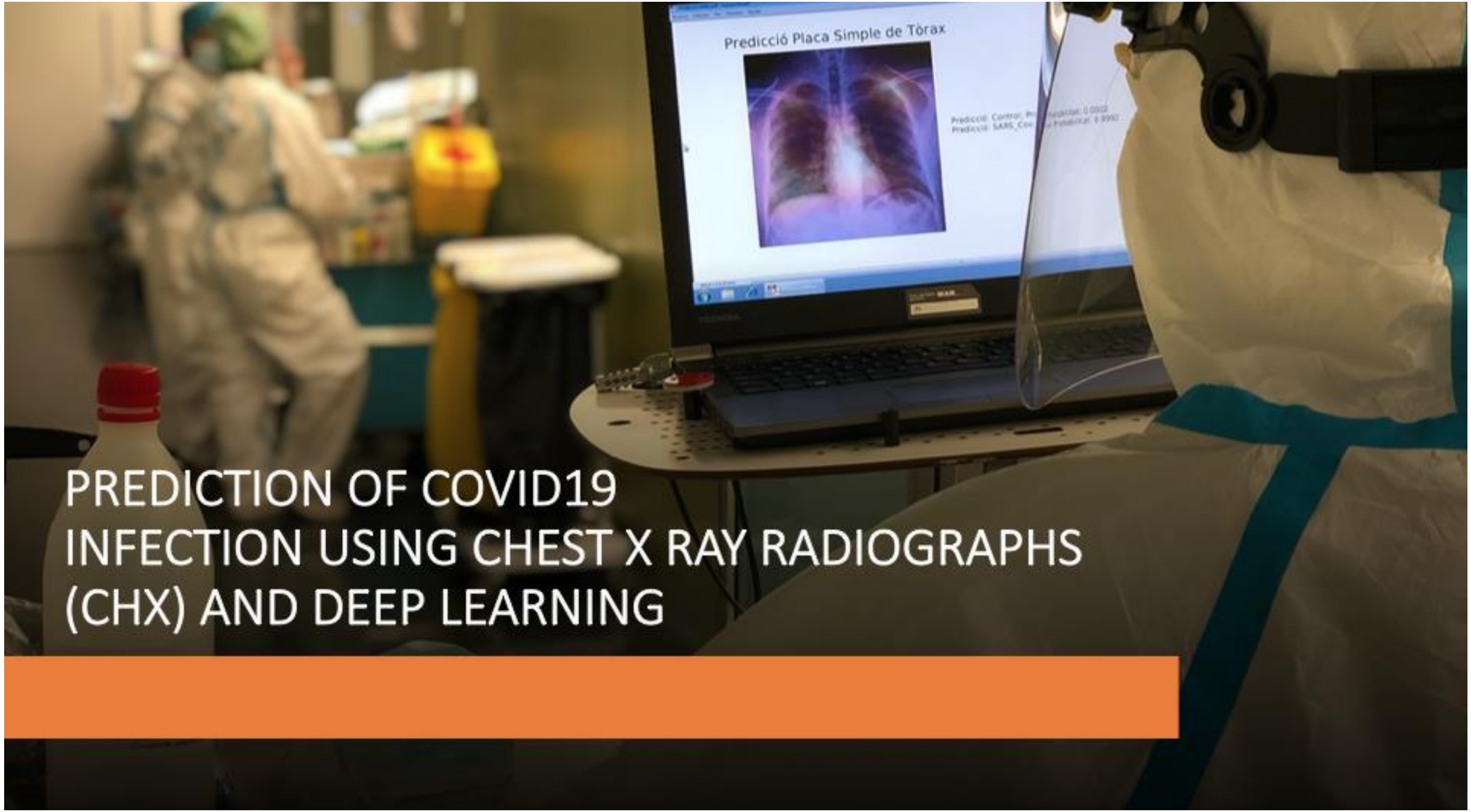
AI

ACCOUNTABILITY

Data health care ecosystem

IDIGITAL TWIN-MASIS and IMASIS-2





PREDICTION OF COVID19 INFECTION USING CHEST X RAY RADIOGRAPHS (CHX) AND DEEP LEARNING

Census
Med 221
Surg 204
Neuro 80
Cmc 76
Peds 161
Psych 72
GYN 11
Rehab 14
JOHNS HOPKINS
UNIVERSITY & MEDICINE

Architecture

Hospital Project 2030 Next Generation EU goals

The overall goal is the hospital's expansion so
that allow personalized and sustainable attention.
To achieve this, we establish the following objectives:

Sustainable, connected, Smart and resilient building **construction.**

Infrastructures and equipment that respond to the changing situation in a personalized and efficient way.

Digitalization of care processes using data for personalized attention in real time.