

GEMELLI RWE GENERATOR
FOR DIGITAL CARE PROGRAMMES
IN RADIOTHERAPY



GemelliGenerator
Clinical research beyond tomorrow

Vincenzo VALENTINI

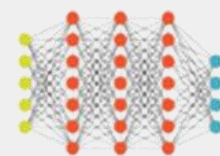
AGENDA

1. Generator Architecture
2. Rectal Avatar
3. PCS in RTO
4. Art4ART

DATA PRODUCTS / DIGITAL SOLUTIONS
FOR RESEARCH & INDUSTRY



REPORTS



MODELS



SYNTHETIC DATA

INTEGRATED DATA MODELS
GROUPED BY DISEASE AREAS



SARS COV-19 DATAMART



BREAST CANCER DATAMART



RECTUM CANCER DATAMART



HEART FAILURE DATAMART



STROKE DATAMART

SPECIALIZED AI ENGINES (SEARCH BOTS) THAT AUTOMATICALLY CRAWL INTO THE DIFFERENT DOMAINS OF DATA MART



DIAGNOSIS BOT



COMORBIDITIES BOT



DRUG THERAPY BOT



RADIOLOGY BOT

NATURAL LANGUAGE UNDERSTANDING ON FREE TEXT MEDICAL REPORTS + RULE ENGINES CO-DESIGNED WITH CLINICAL TEAM

SEARCH ENGINES

DATA COLLECTION TOOLS

ENCRYPTION AND ANONYMIZATION

DATA QUALITY TOOLS

NATURAL LANGUAGE PROCESSING

OTHER RESEARCH REPOSITORIES



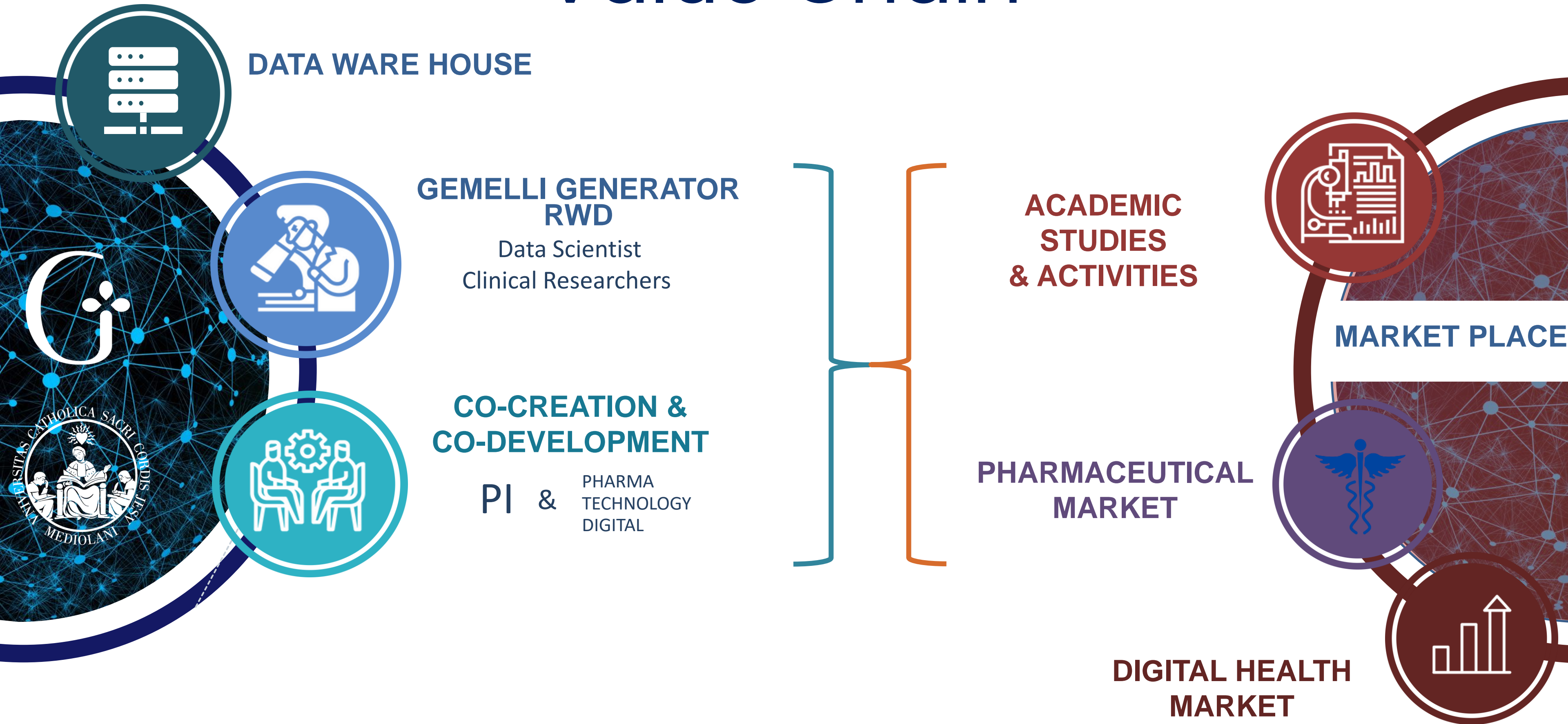
GEMELLI IT SYSTEMS
DATA WAREHOUSE
(Main e-Health Records;
Department Systems; Imaging)



REAL WORLD DATA FROM OUTPATIENTS MONITORING AND CONTINUOUS CARE (Remote Data Capturing, Wearable, Patient Support App)



Value Chain



DATA WARE HOUSE

**GEMELLI GENERATOR
RWD**

Data Scientist
Clinical Researchers

**CO-CREATION &
CO-DEVELOPMENT**

PI & PHARMA
TECHNOLOGY
DIGITAL

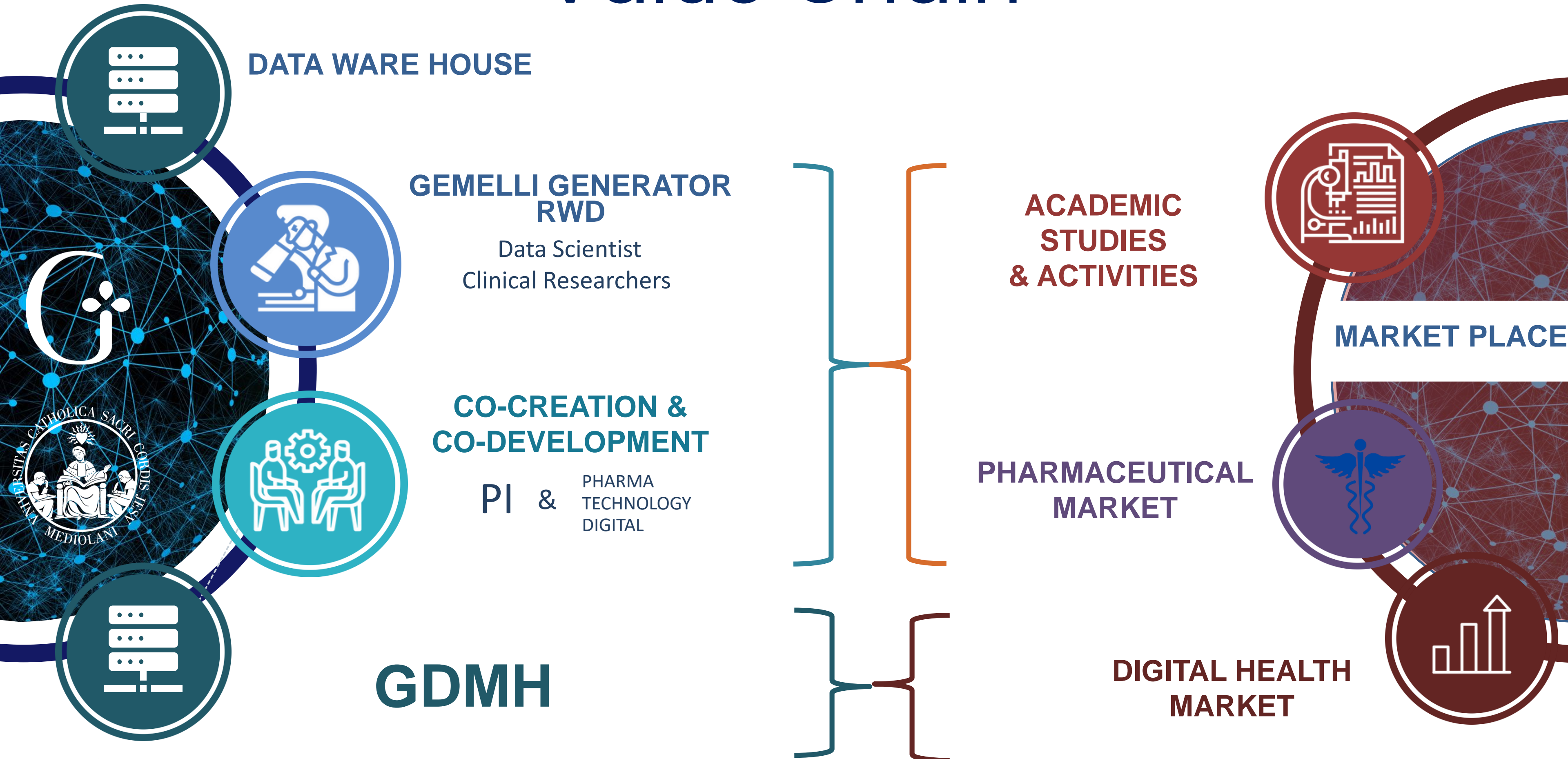
**ACADEMIC
STUDIES
& ACTIVITIES**

MARKET PLACE

**PHARMACEUTICAL
MARKET**

**DIGITAL HEALTH
MARKET**

Value Chain



DATA WARE HOUSE

**GEMELLI GENERATOR
RWD**

Data Scientist
Clinical Researchers

**CO-CREATION &
CO-DEVELOPMENT**

PI & PHARMA
TECHNOLOGY
DIGITAL

GDMH

**ACADEMIC
STUDIES
& ACTIVITIES**

**PHARMACEUTICAL
MARKET**

**DIGITAL HEALTH
MARKET**

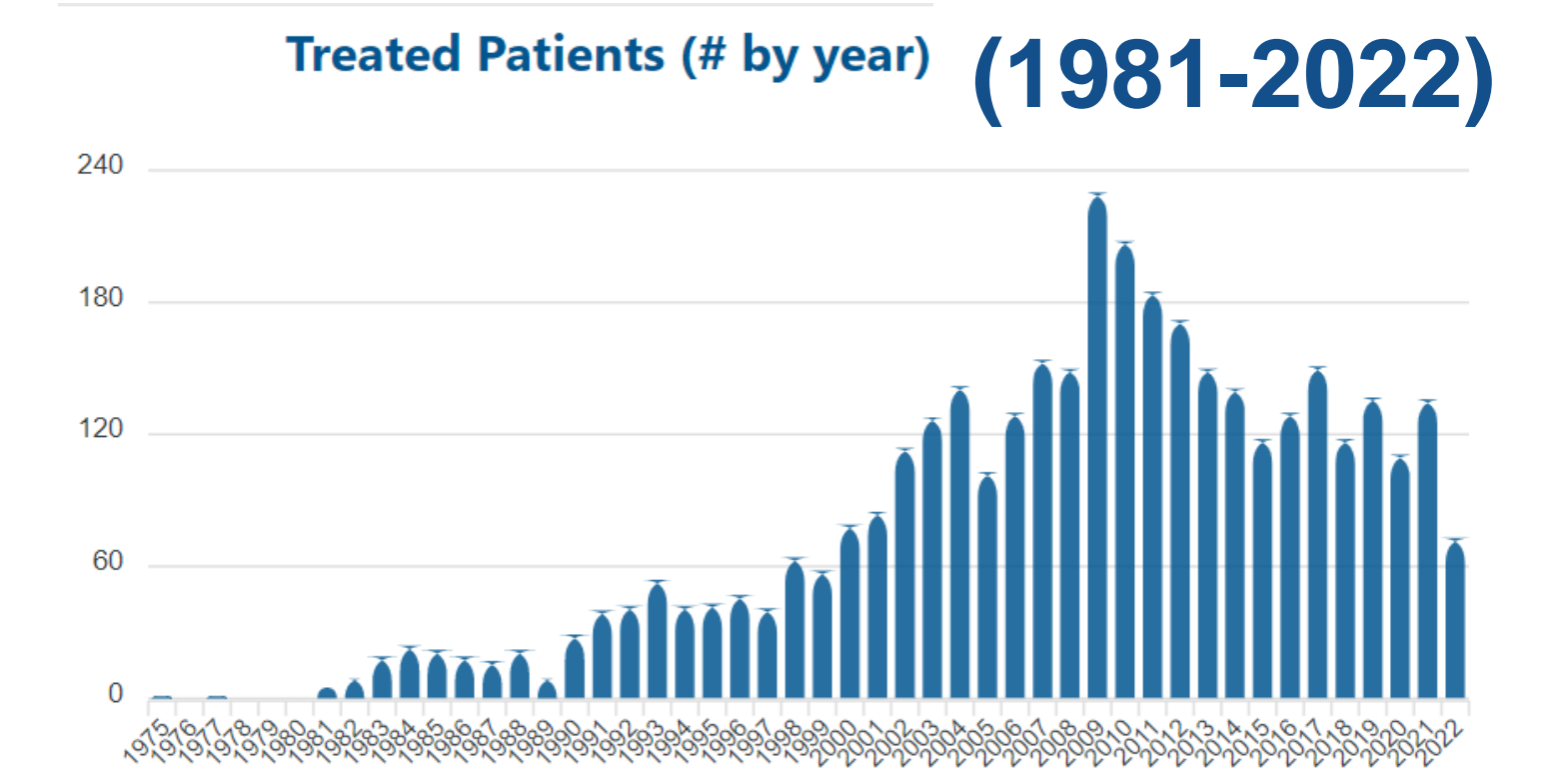
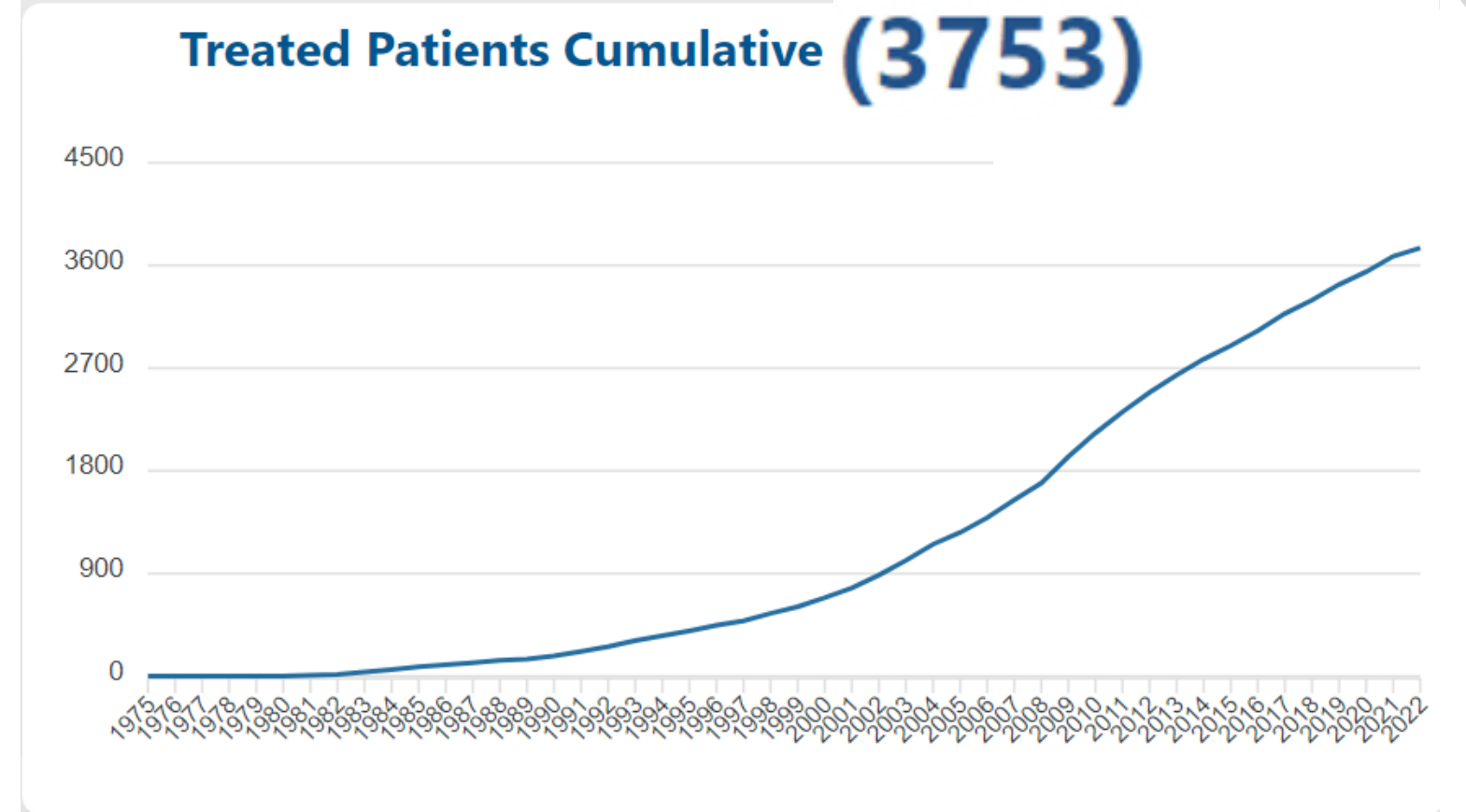
MARKET PLACE



RECTAL AVATAR

Gemelli Generator - RWD

Rectal Cancer Data Mart

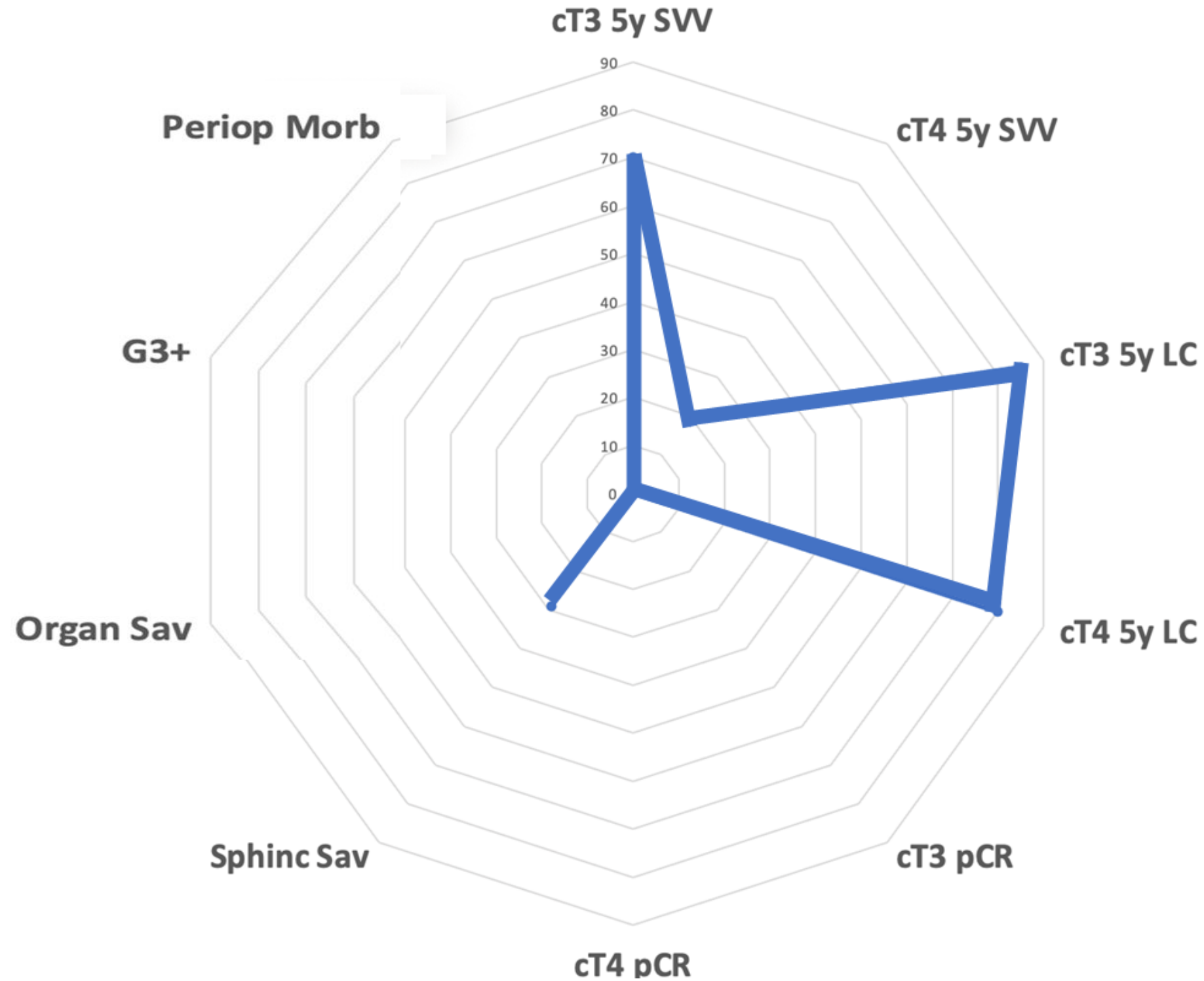


> 60 treatment schedules

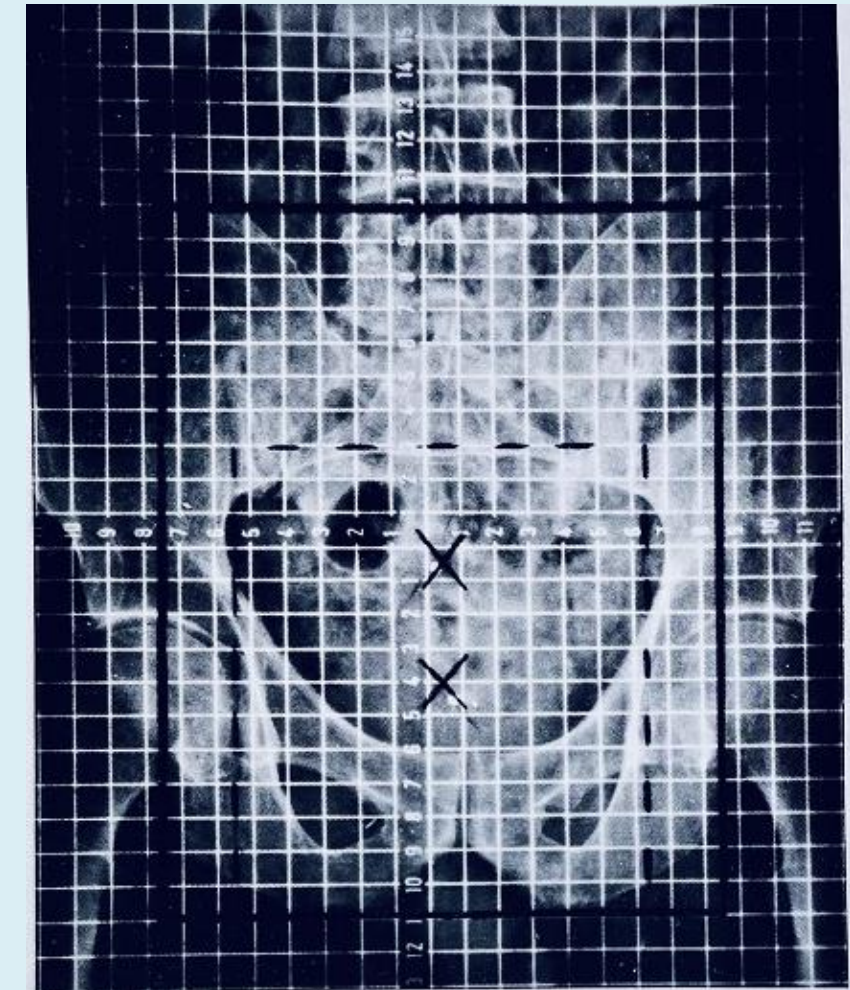
Rectal Cancer Data Mart

Outcome Rectal Cancer 1980-2022

— years '80 — years '90 — years '00 — years >'10



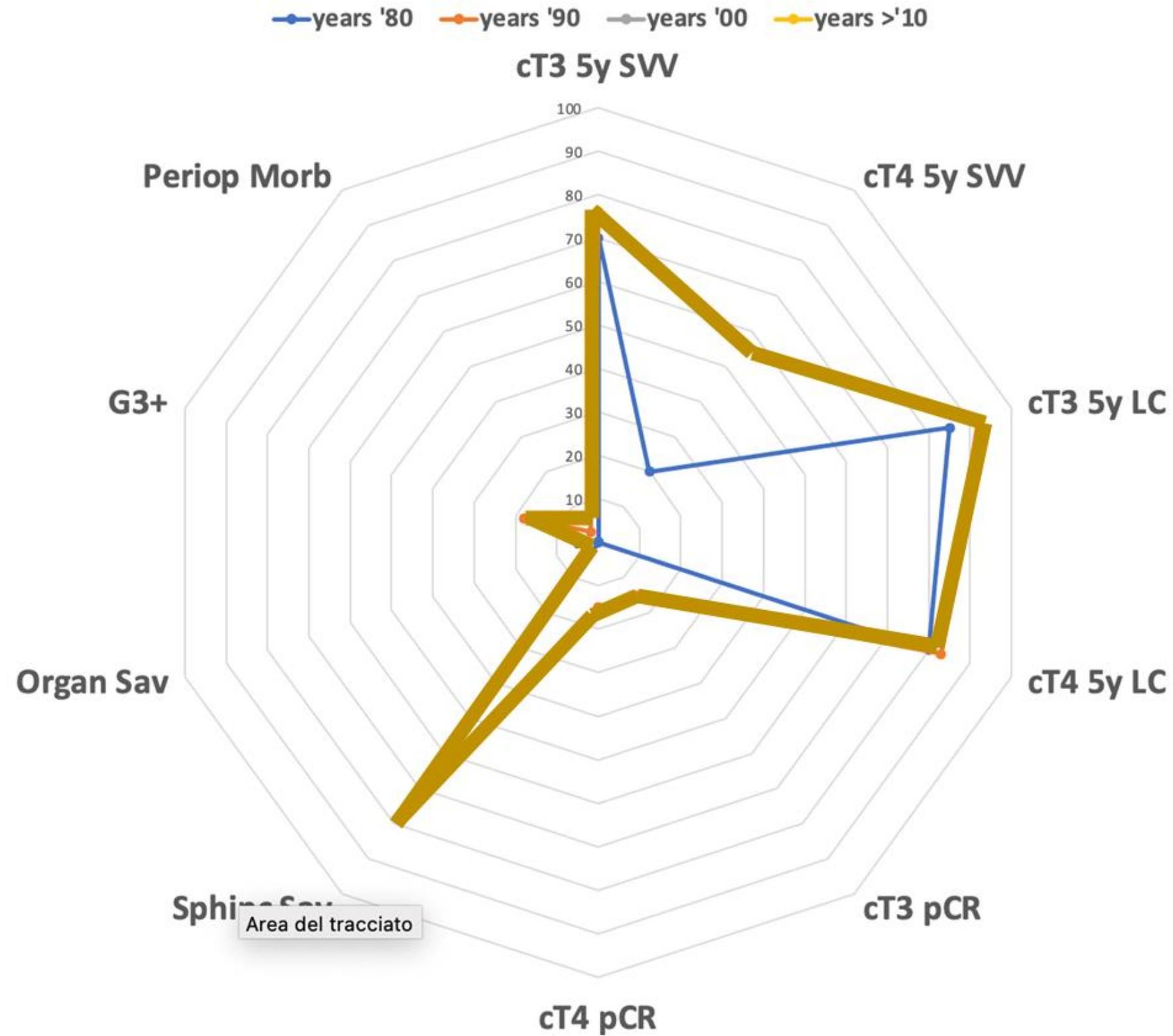
'80
PIONEERING



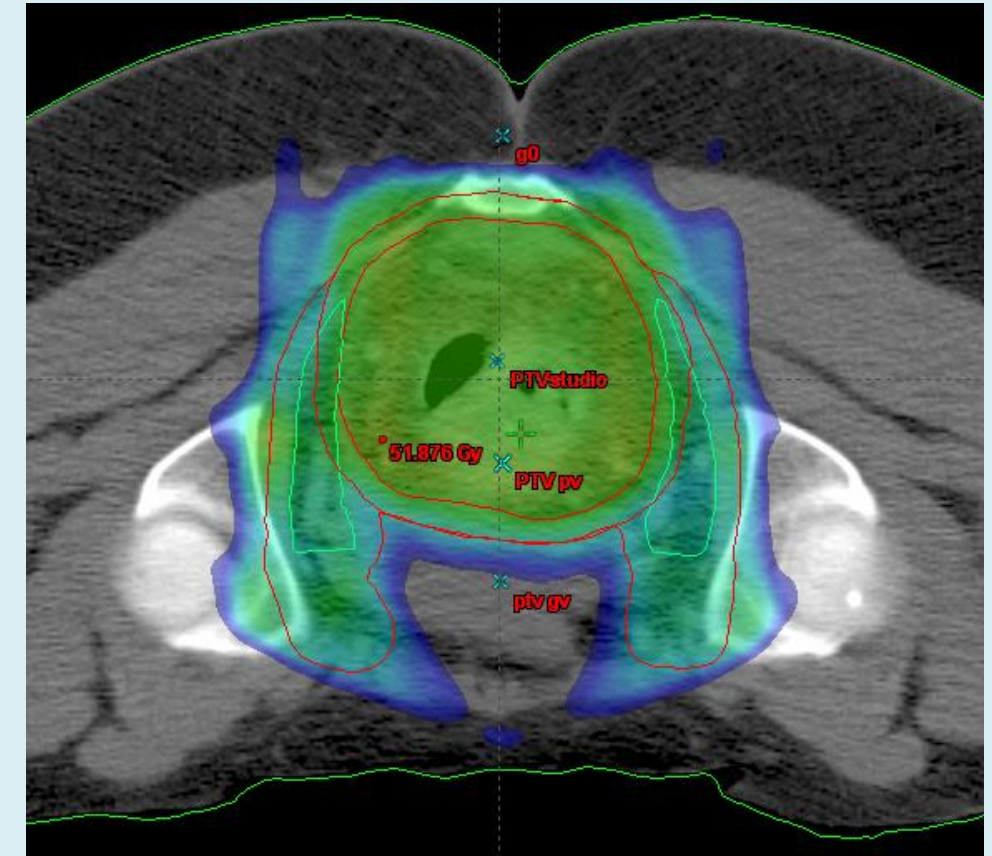
Patients: 156

Rectal Cancer Data Mart

Outcome Rectal Cancer 1980-2022



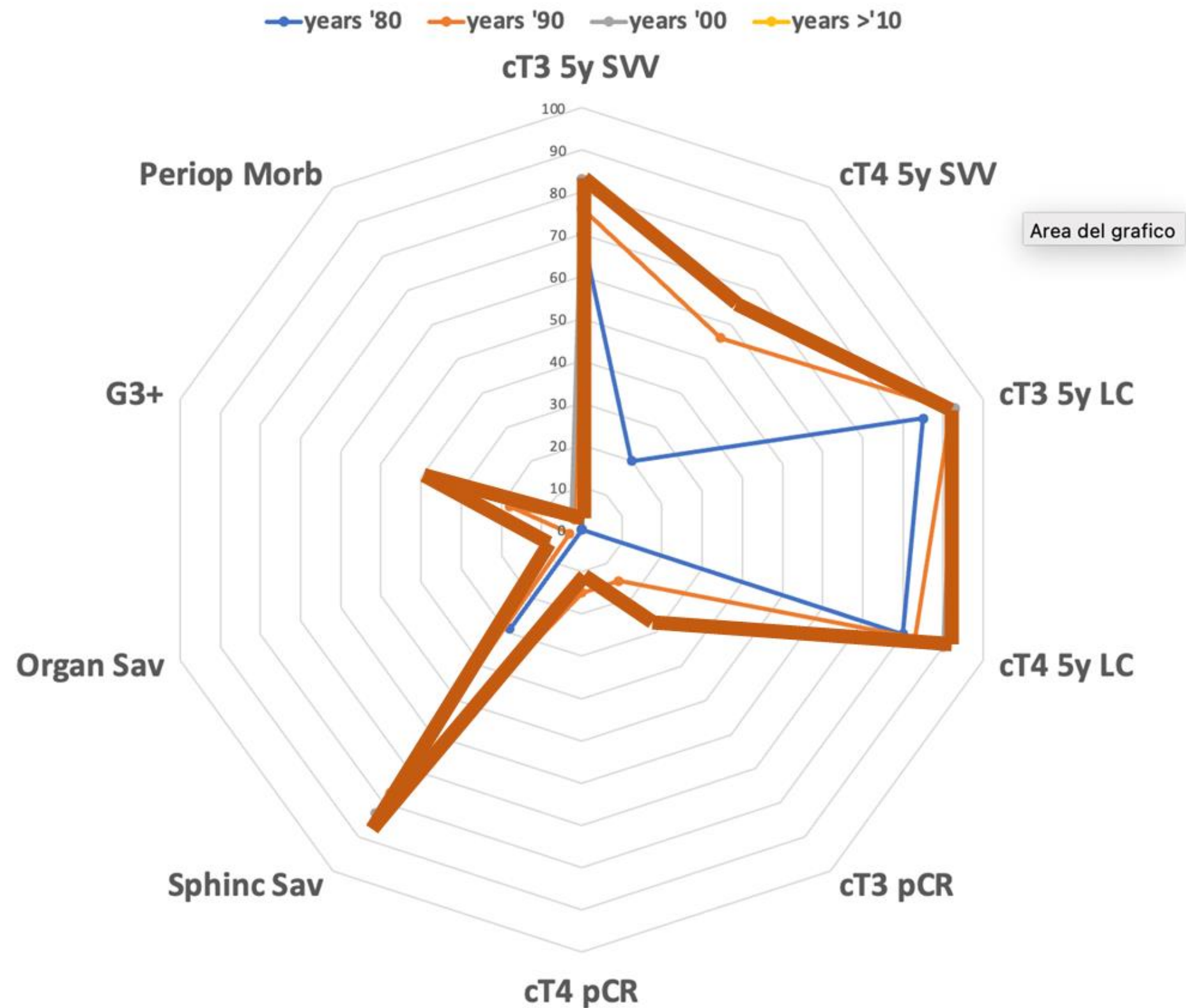
'90 *OPTIMIZATION*



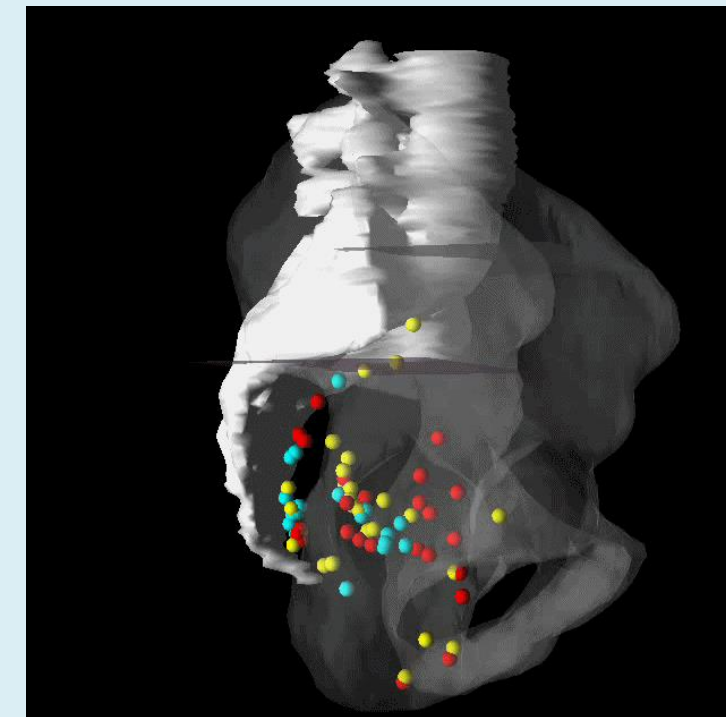
Patients: 427

Rectal Cancer Data Mart

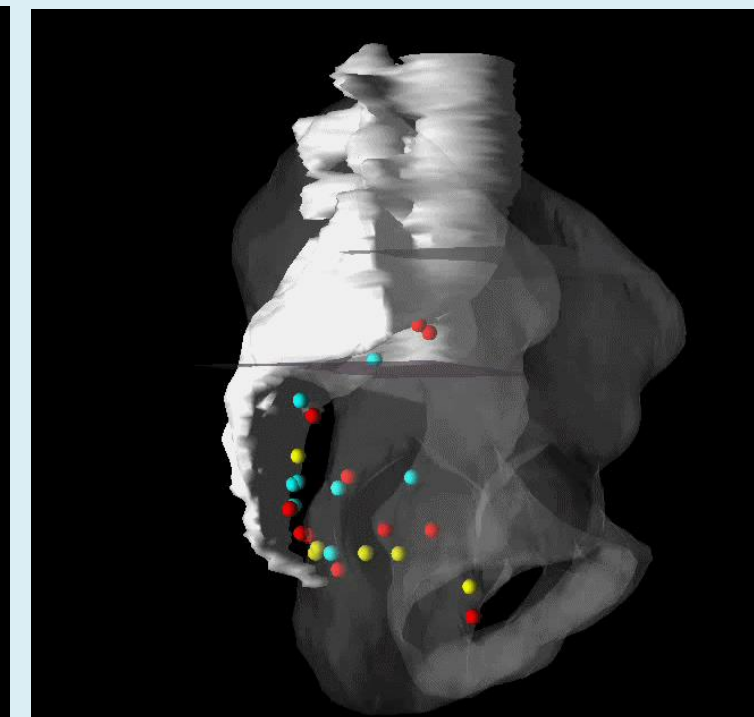
Outcome Rectal Cancer 1980-2022



'00 *CHALLENGES*



TME

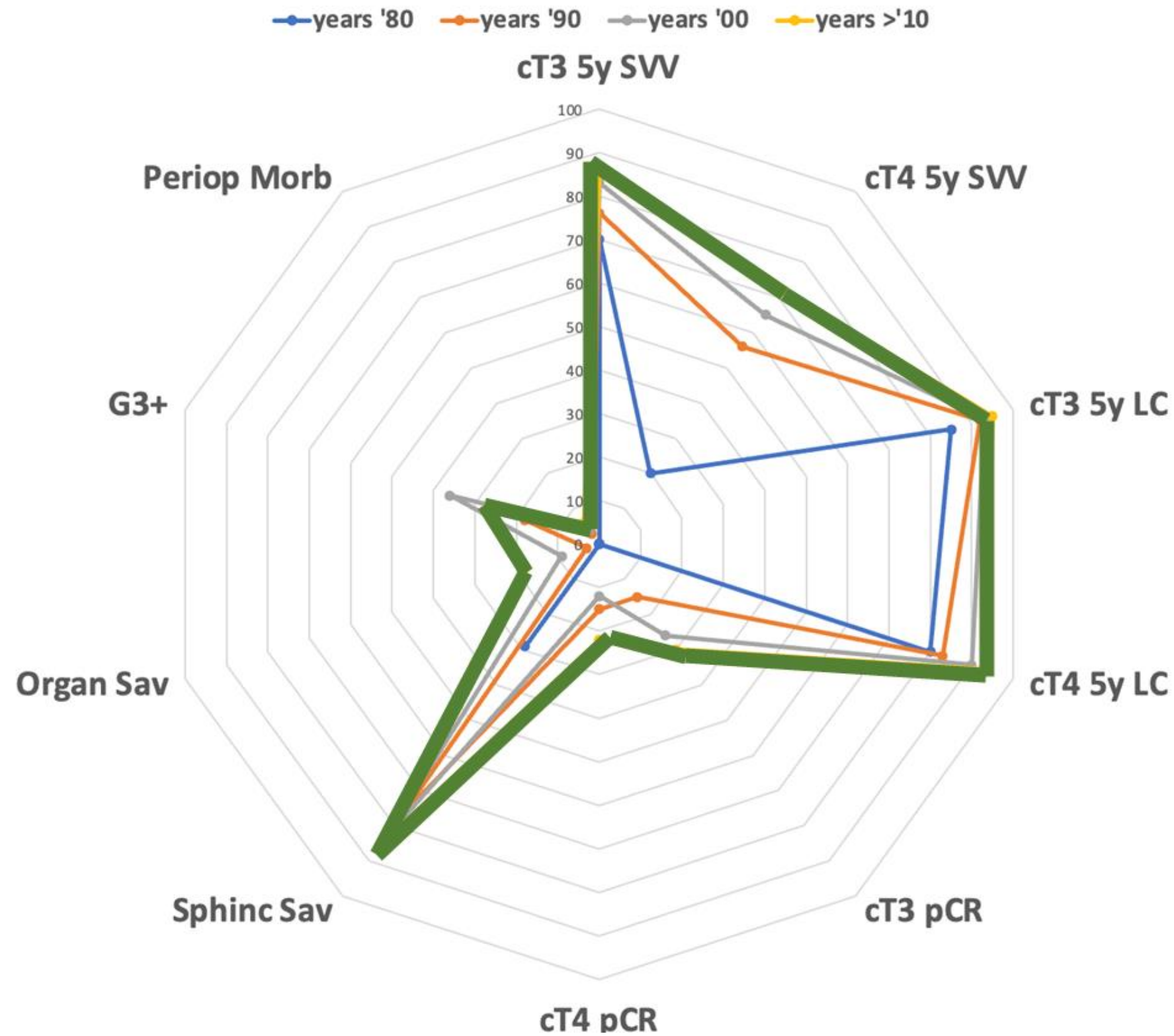


RT + TME

Patients: 1168

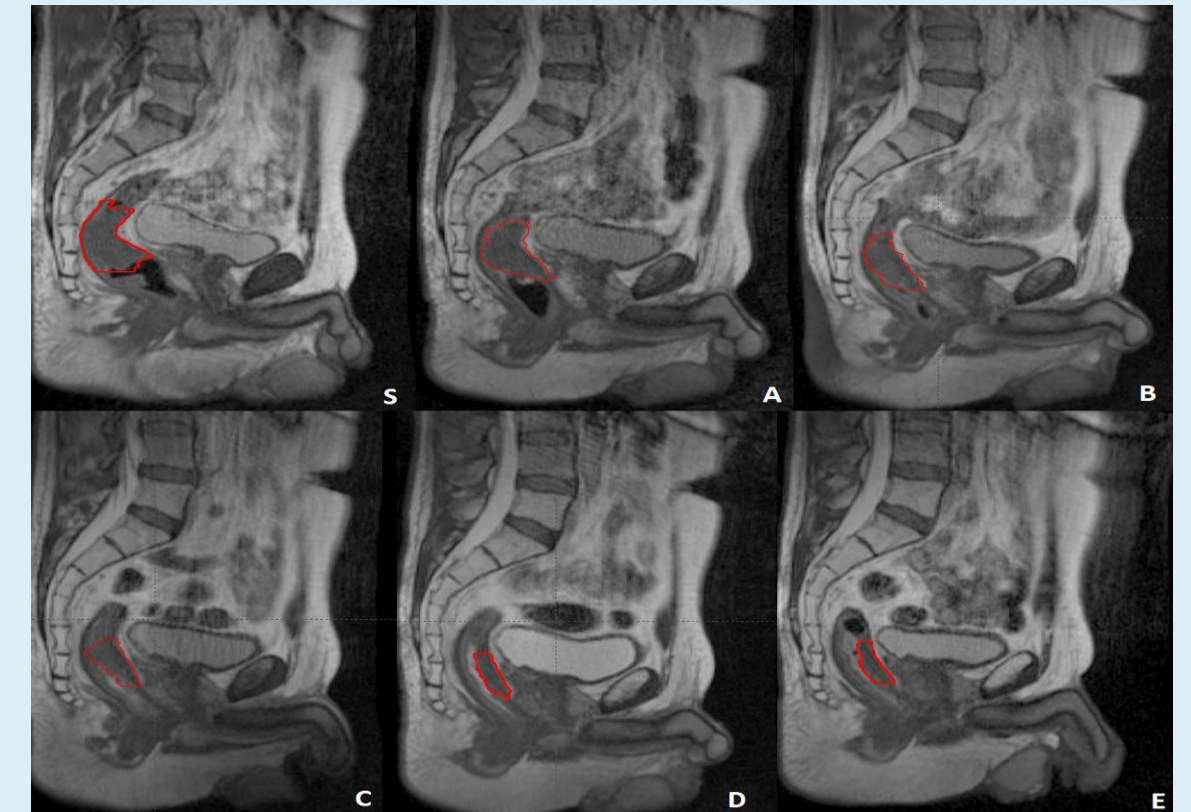
Rectal Cancer Data Mart

Outcome Rectal Cancer 1980-2022



>10

PERSONALIZATION



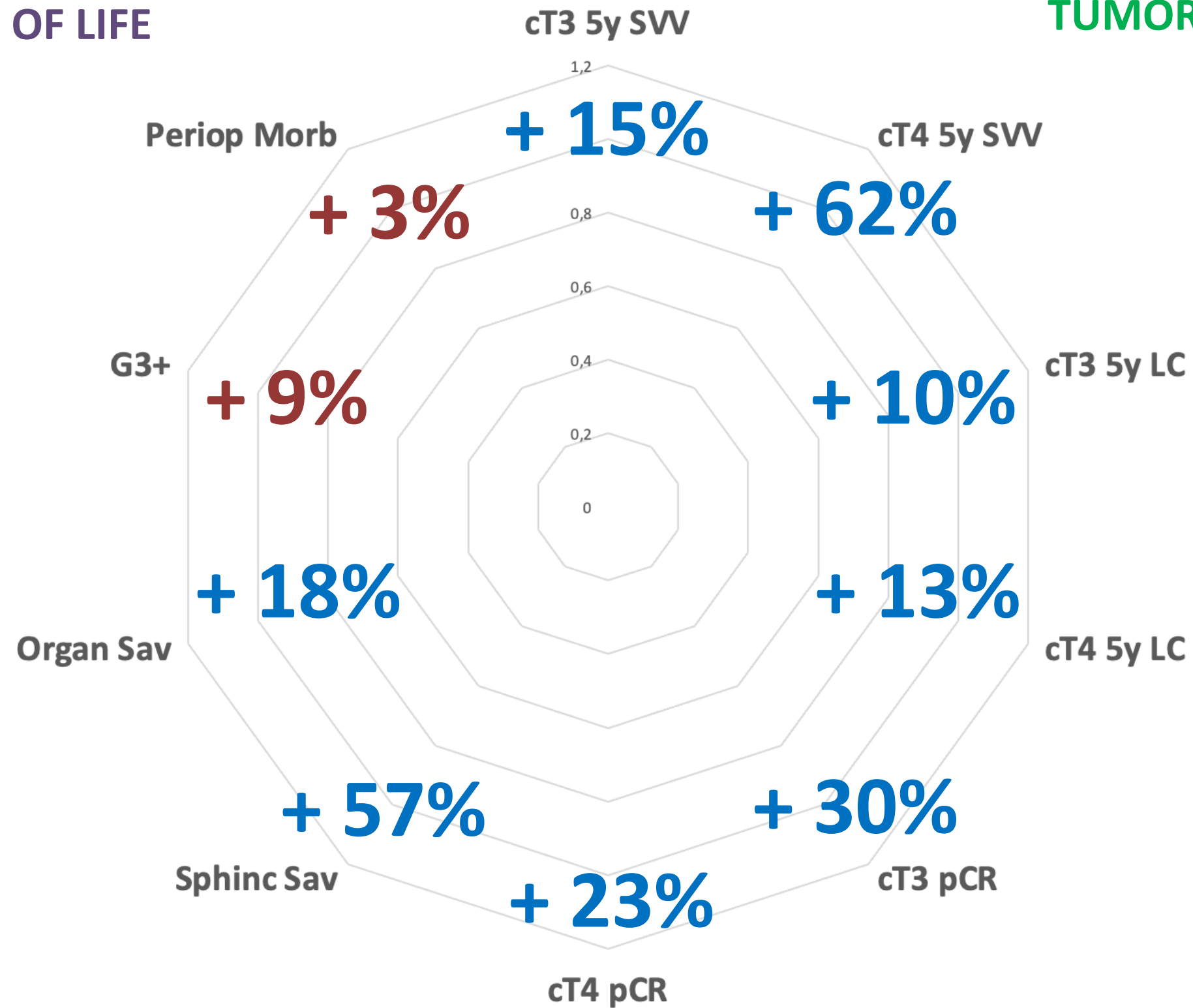
Patients: 1395

Patient Engagement

Outcome Rectal Cancer 1980-2022

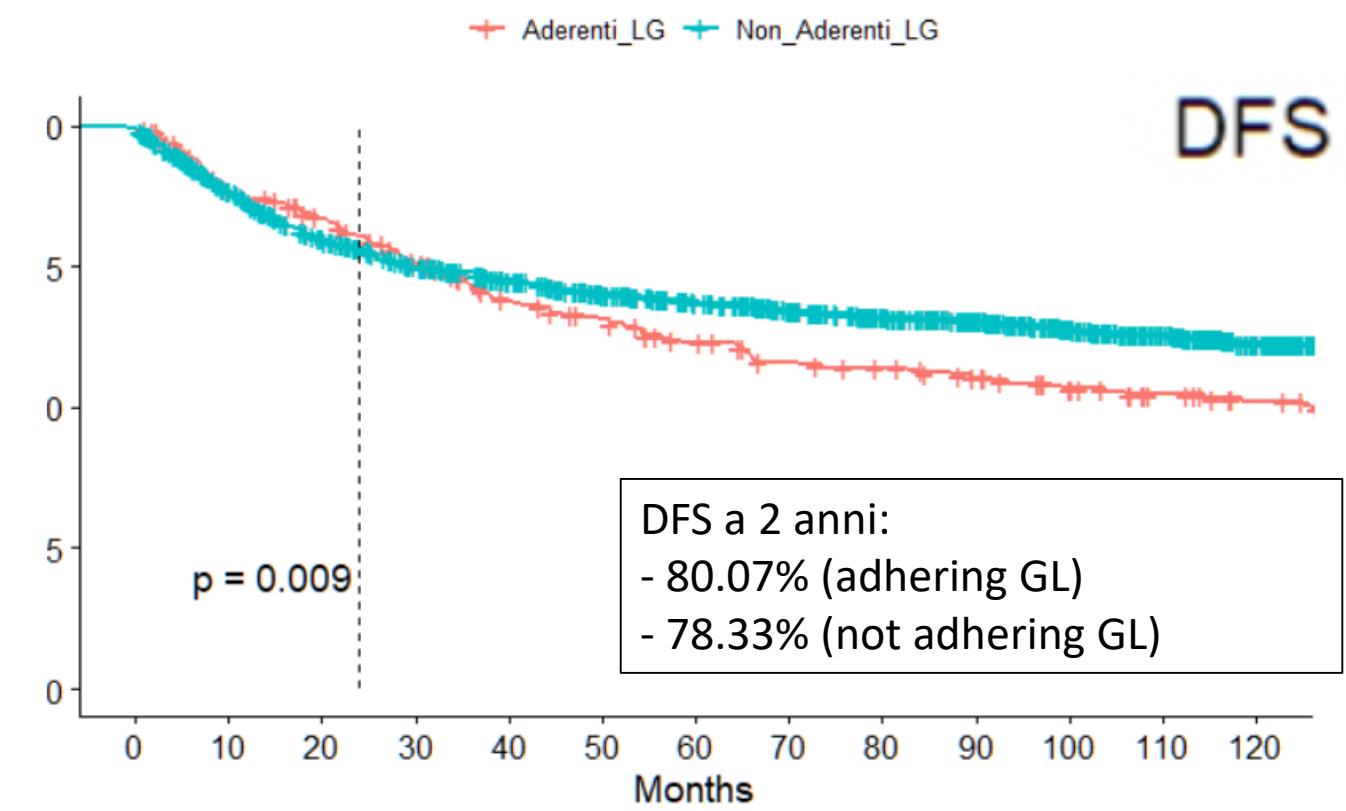
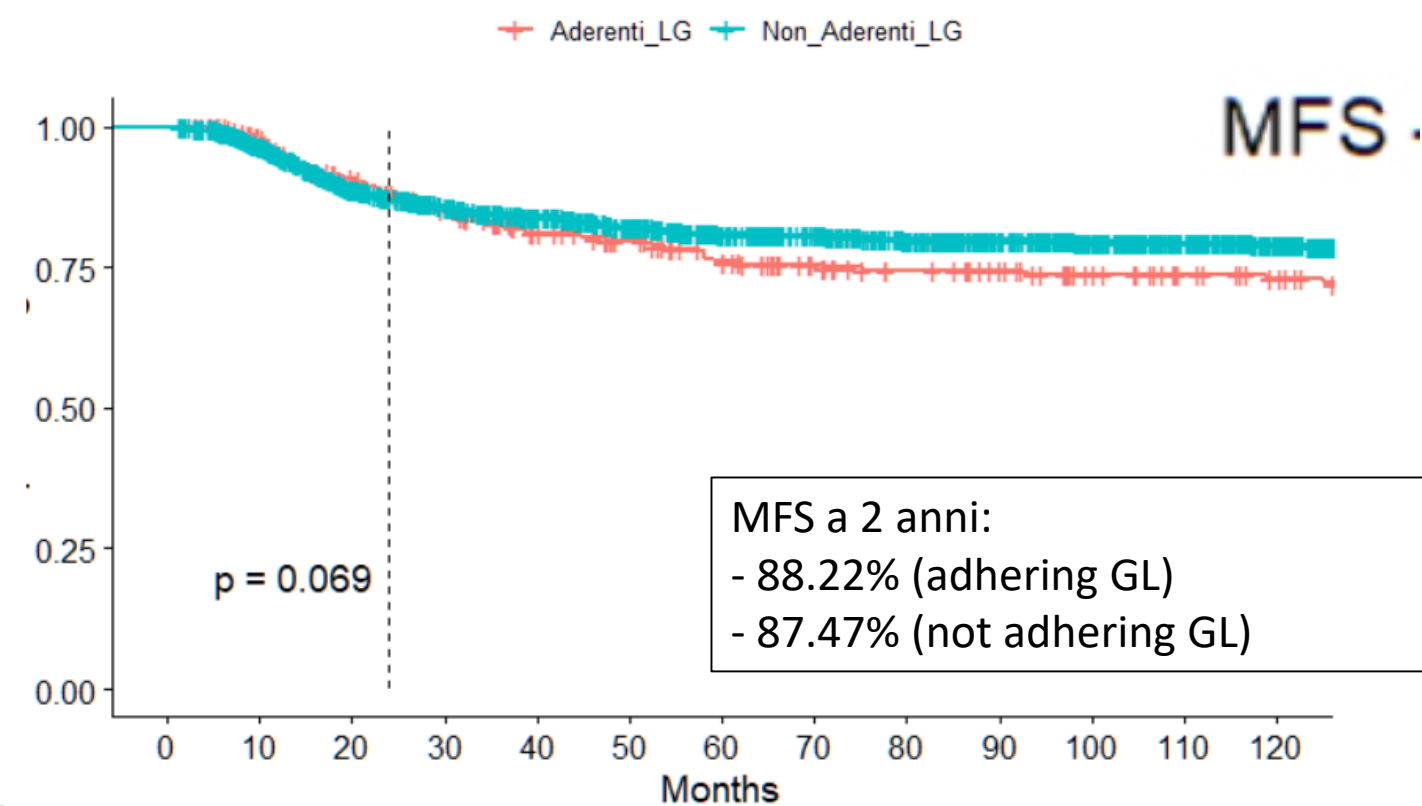
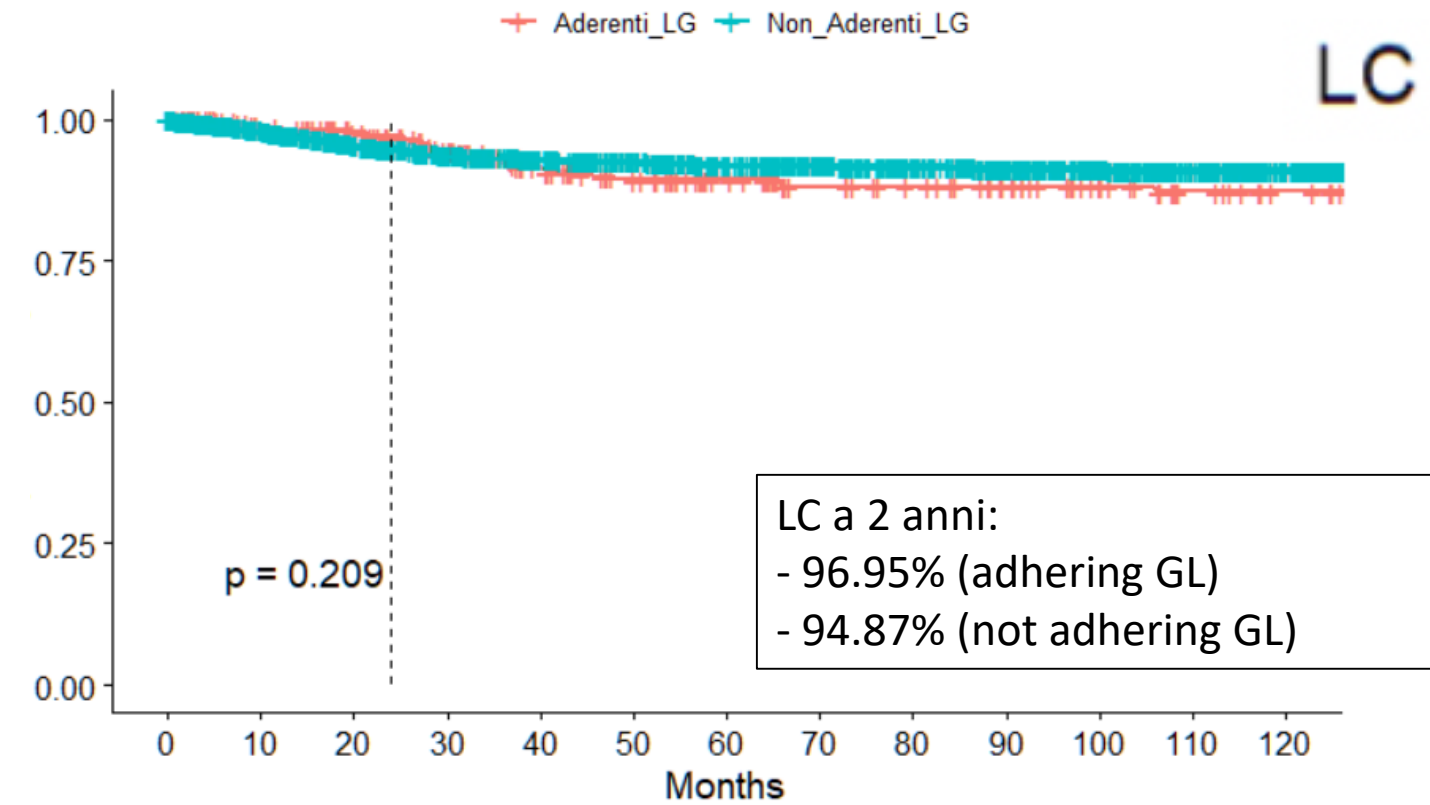
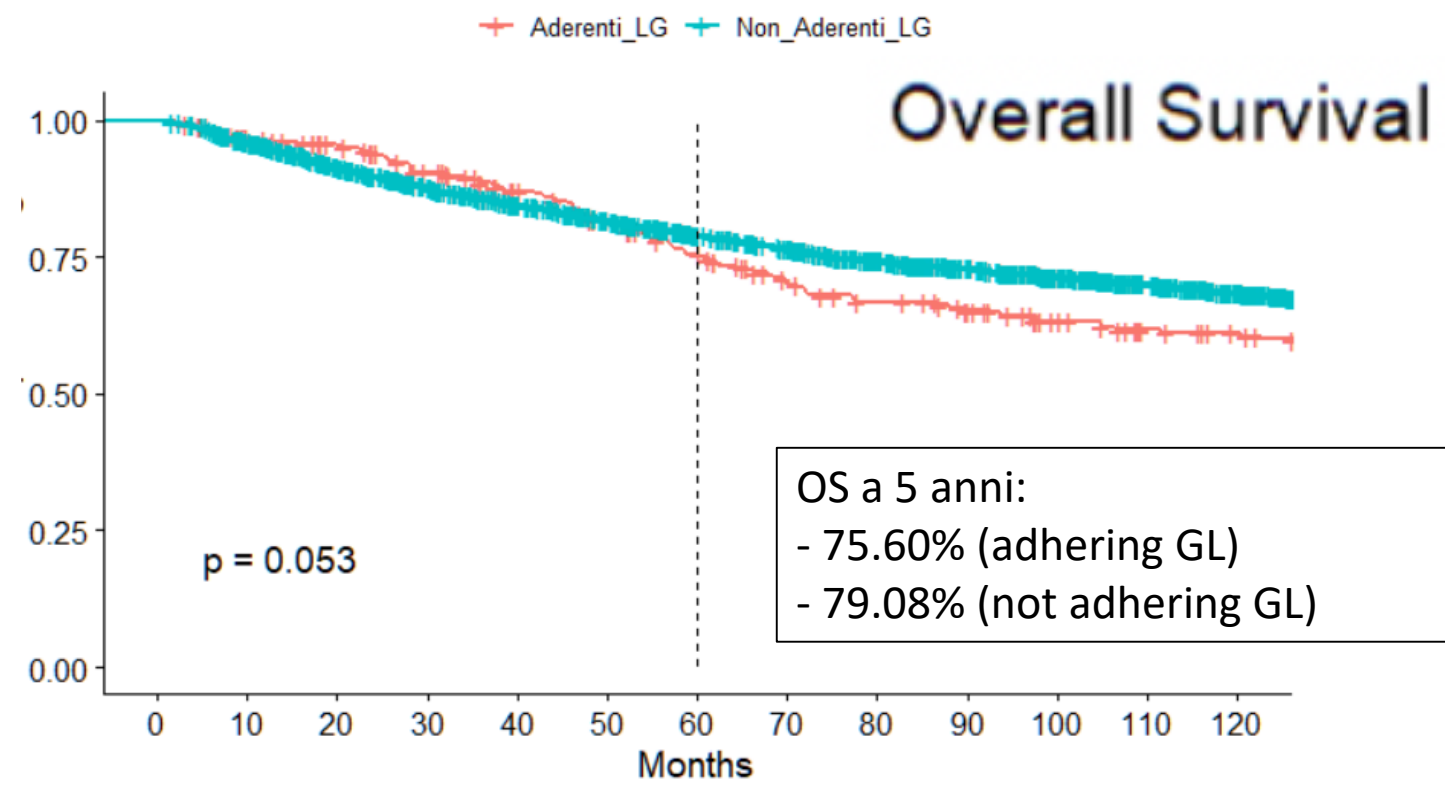
QUALITY OF LIFE

TUMOR CURE



Patient Engagement

Research vs Guidelines



3.146
pts

DIGITAL AVATAR - SURGICAL COMPLICATIONS

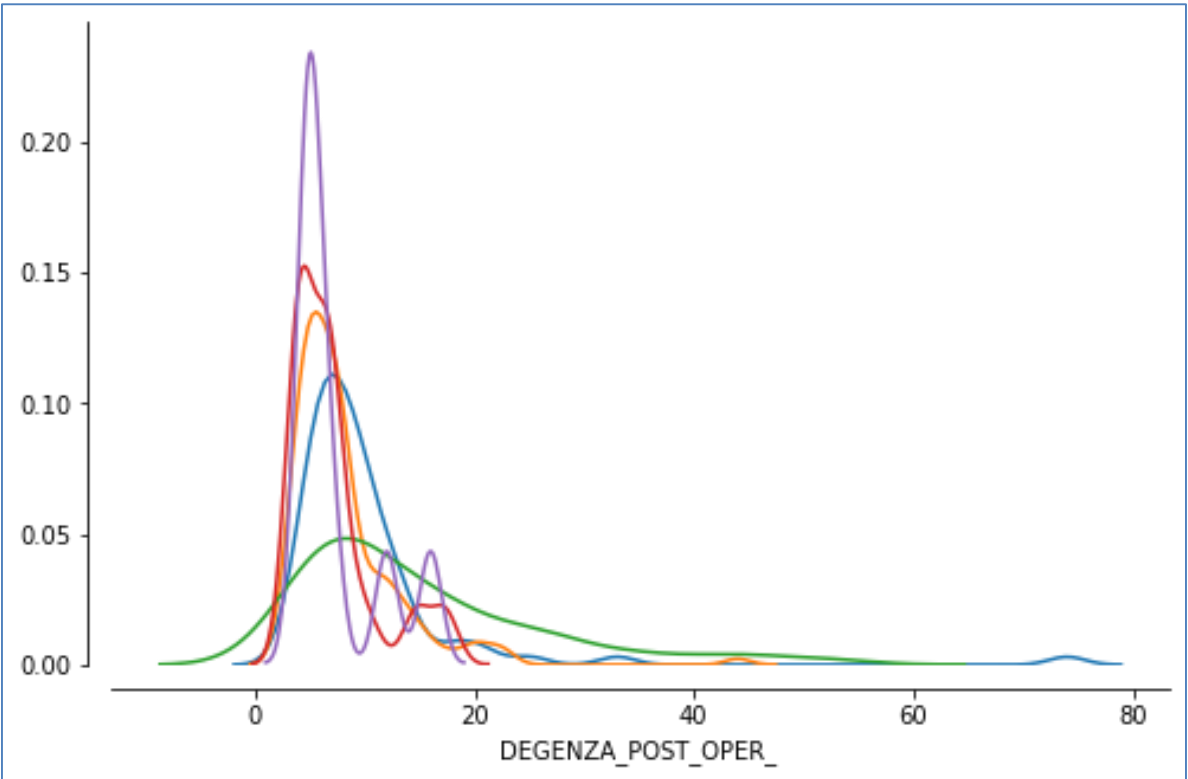
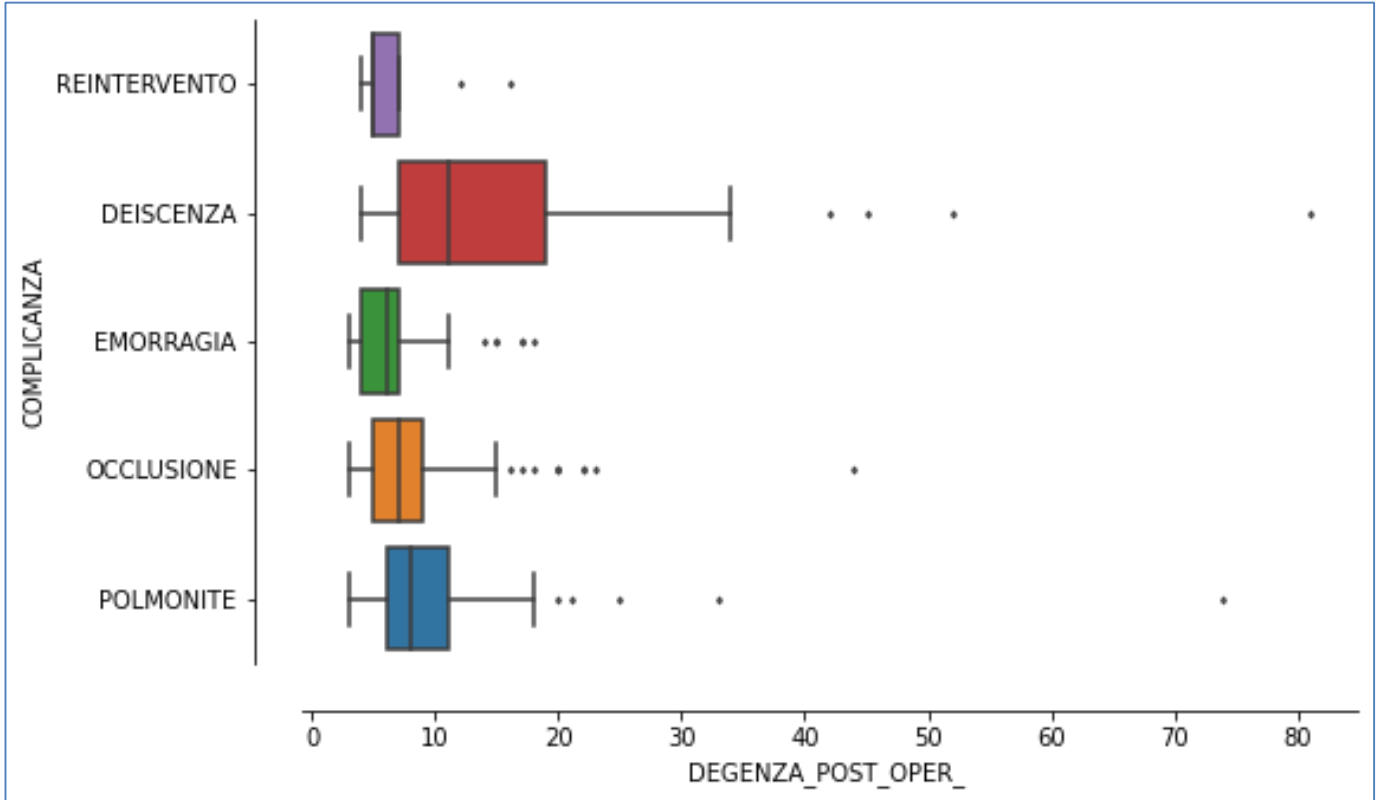


	Variabile ▲	Valore
^	con_post30_Ematocrito	33.6
Anamnesi	con_post30_Emoglobina	11.4
Chimica	con_post30_Globuli_Bianchi	9.77
Chirurgia	con_post30_Globuli_Rossi	4.11
Ematologia	con_post30_Linfociti	1.19
Emogas	con_post30_Linfociti_perc	12.2
Emogas	con_post30_MCH	27.7
Microbiologia	con_post30_MCHC	33.9
Dati Oncologici	con_post30_MCV	81.7
Parametri-Valori	con_post30_MPV	11.6
▼	con_pre90_Ematocrito	41.5
	con_pre90_Emoglobina	13.4
	con_pre90_Globuli_Bianchi	3.83

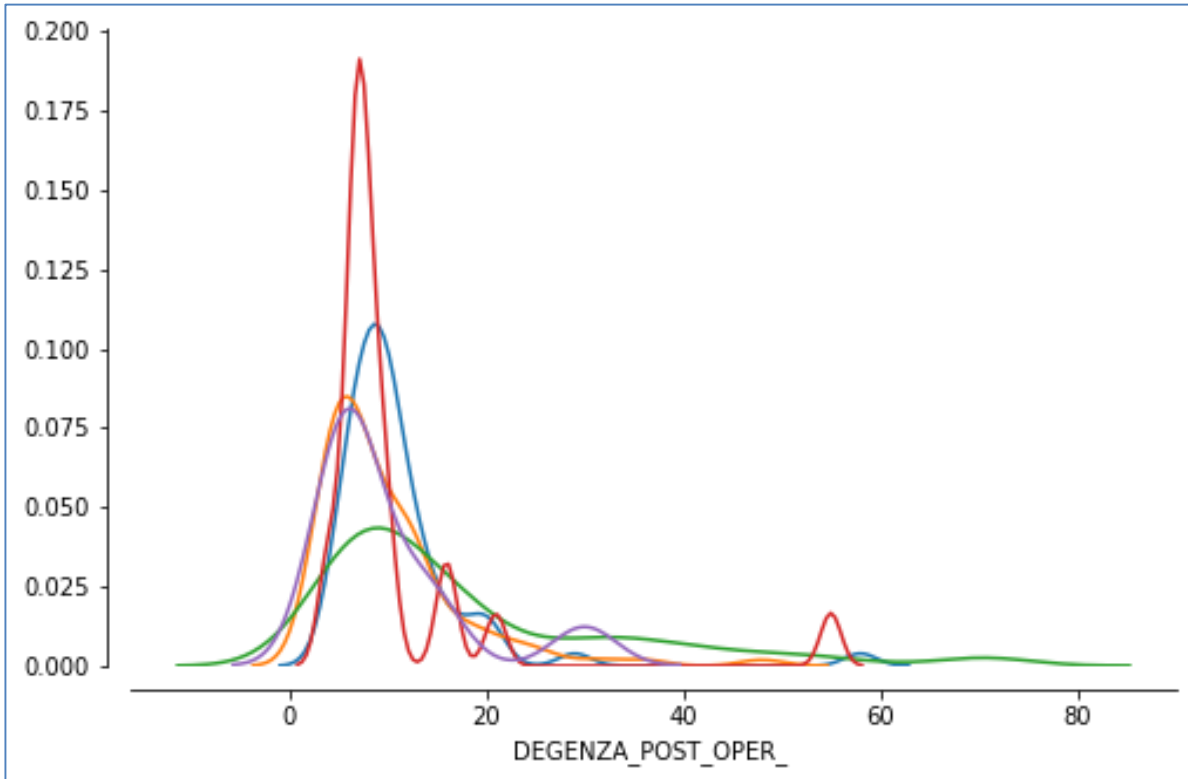
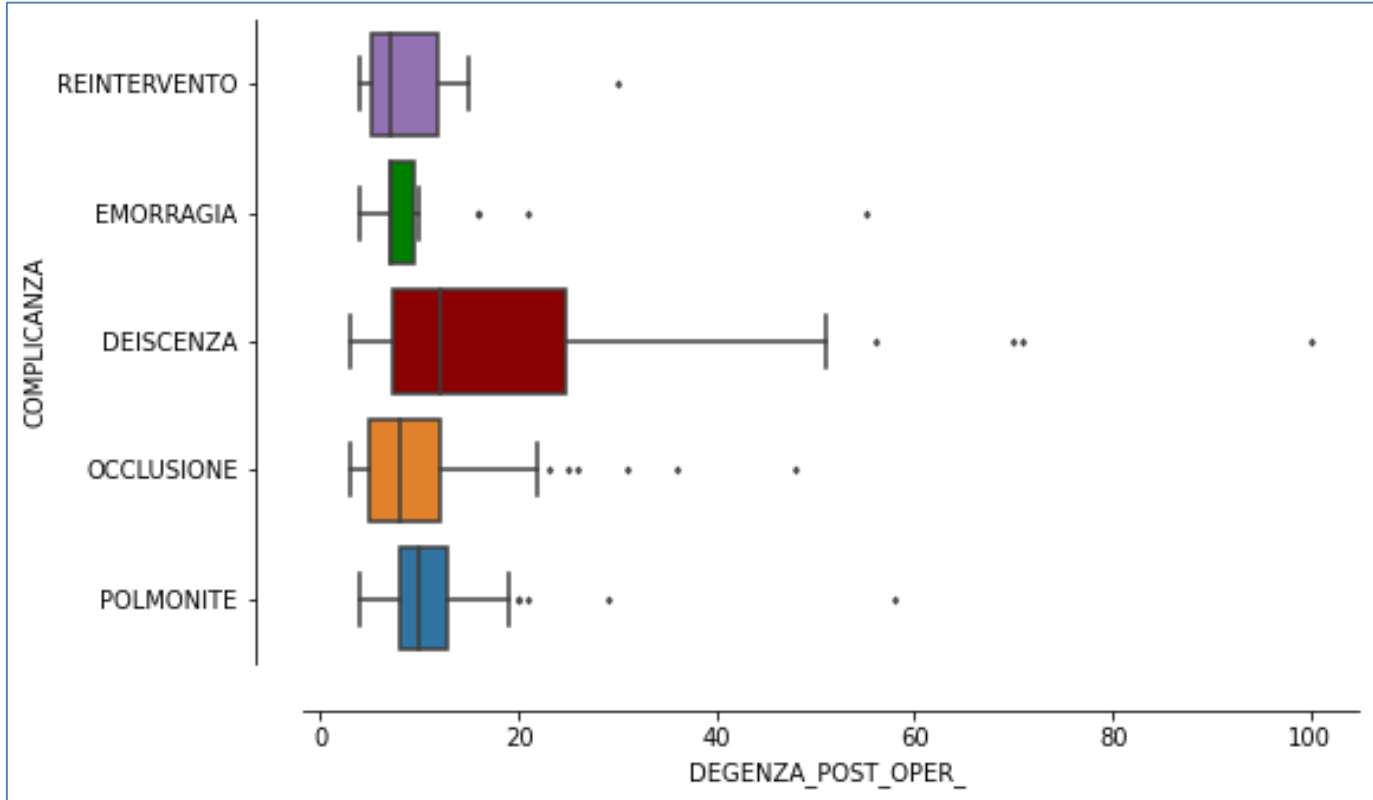


DIGITAL AVATAR – IN-PATIENT DAYS SURGICAL COMPLICATIONS

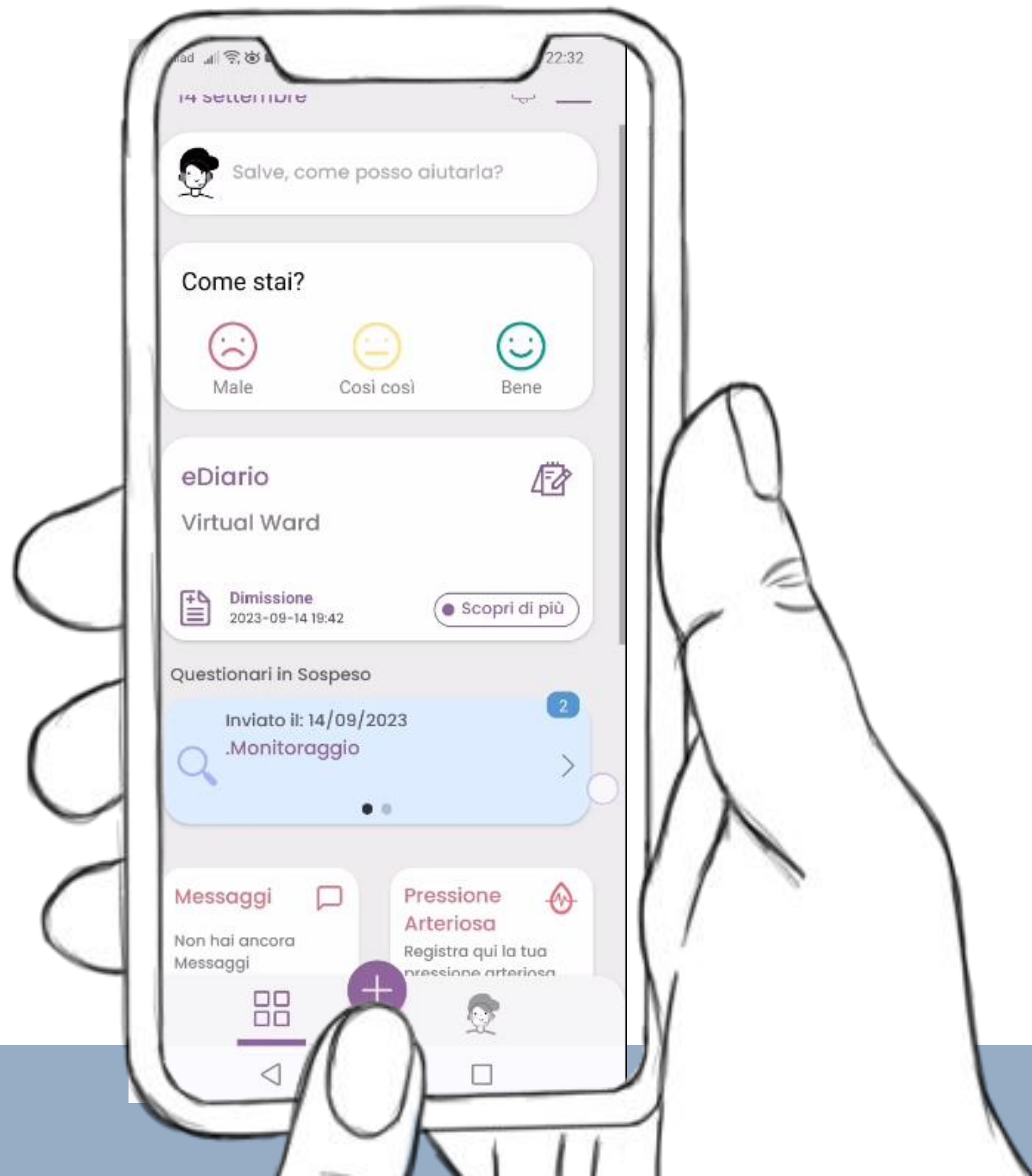
COLON



RETTO



PCS in RTO



SYMPTOMS' COLLECTION

MESSAGES

REPORT SHARING

VIRTUAL ASSISTENT

VITAL PARAMETERS

PATIENT ACTIVITIES



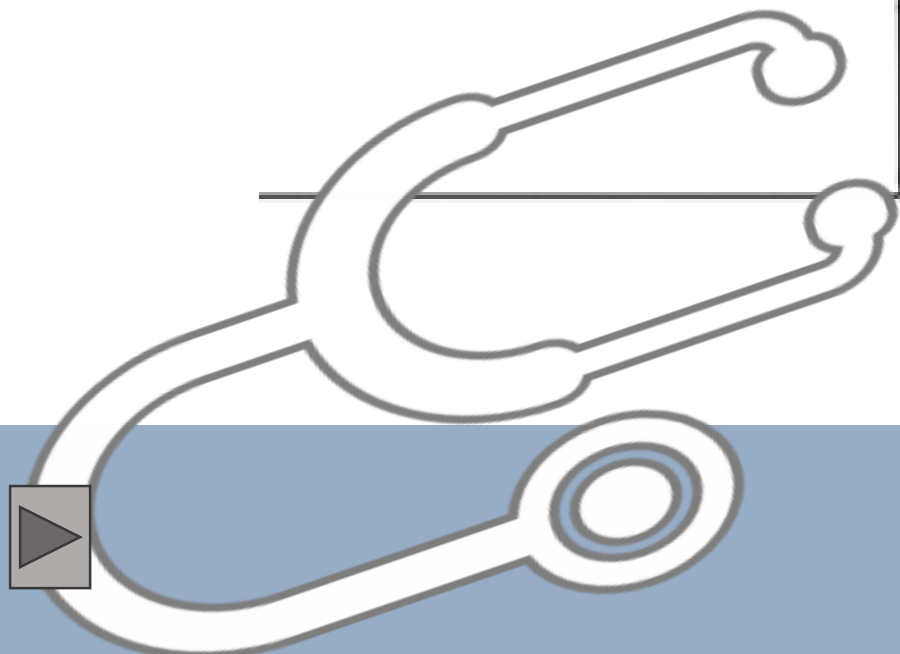
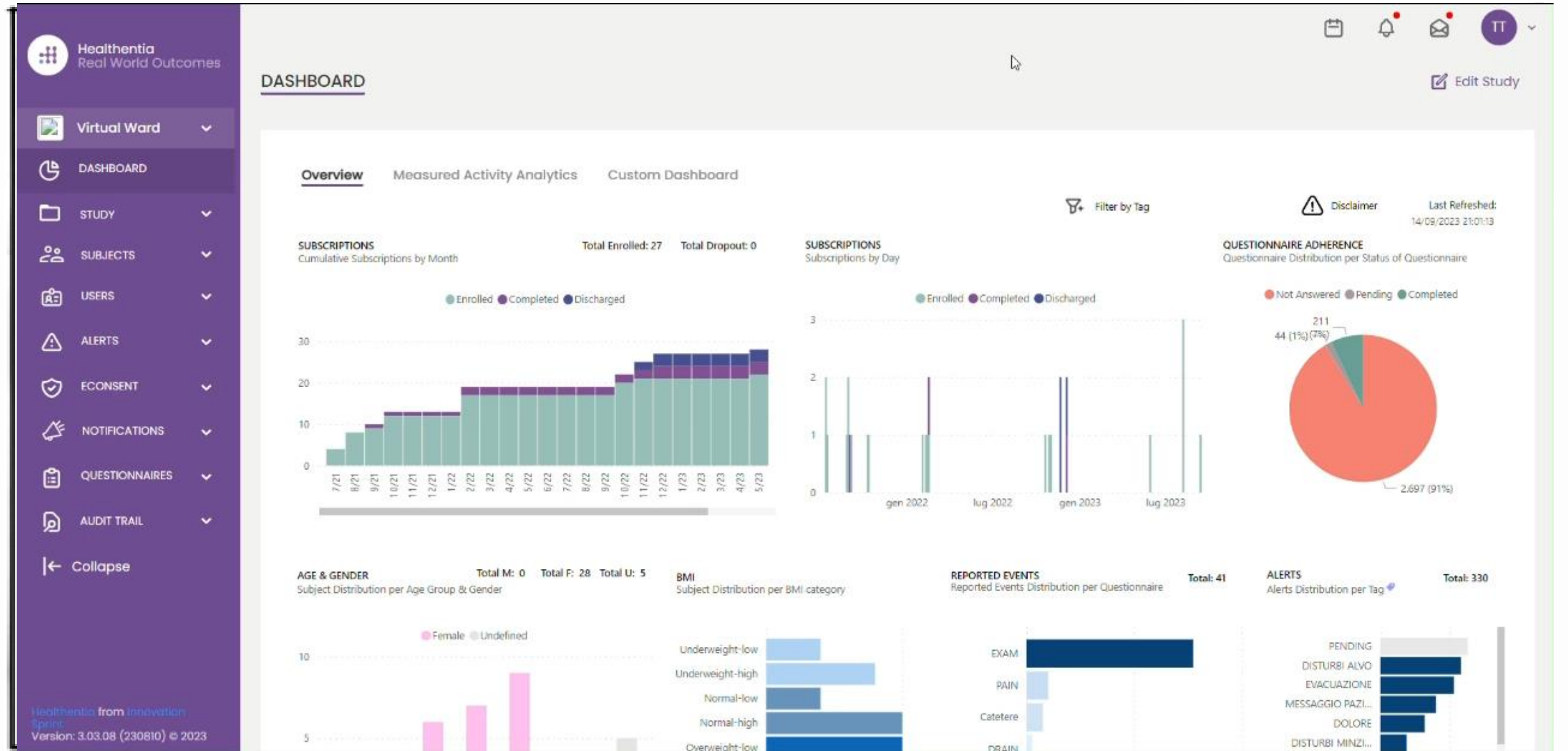
REAL-WORLD DATA

ALERT

CLINICAL DATA

MESSAGES

REPORT TRACKING





KIT (Keep In Touch)

A mobile application

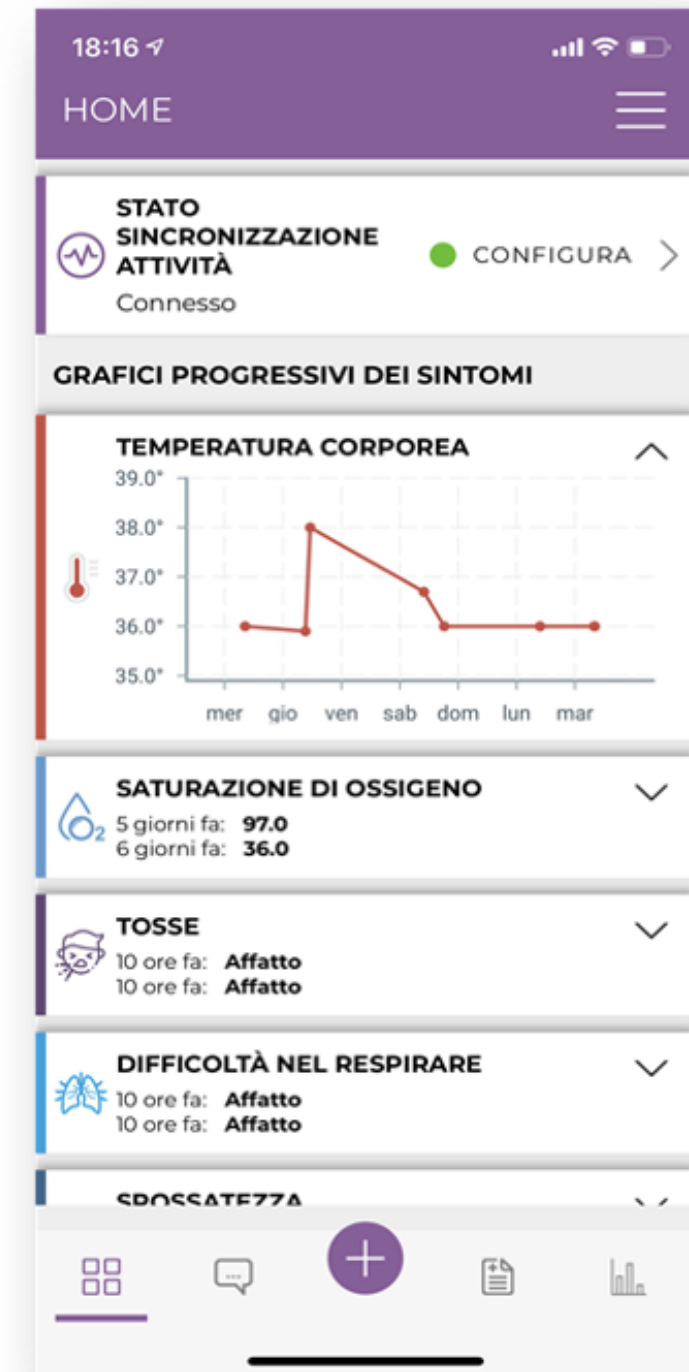
to monitor Symptoms and outcomes for
cancer **patients during and after treatment**

- Monitoring AI driven
- Tutoring AI driven
- Chat-BOT AI based



APPS AND WEB-BASED TOOLS IN THE ONCOLOGICAL PATIENT MANAGEMENT

1. Administer editable questionnaires
2. Symptoms recording and storage



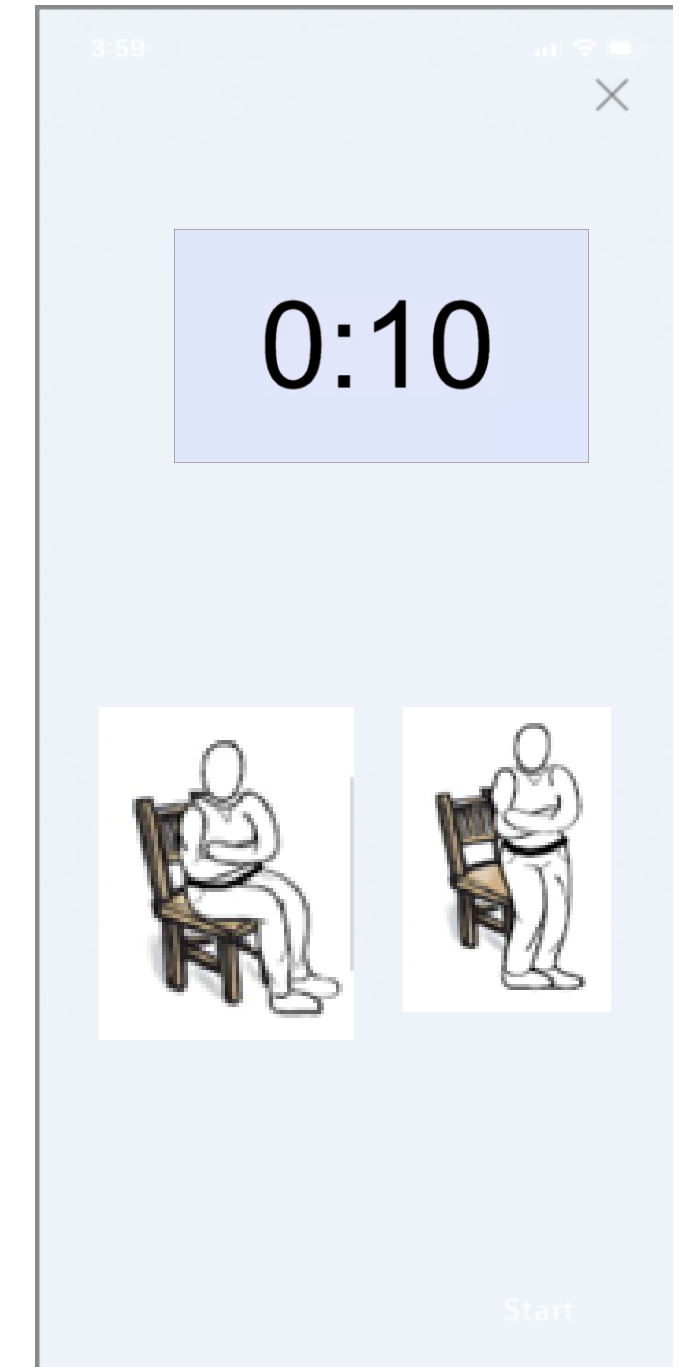
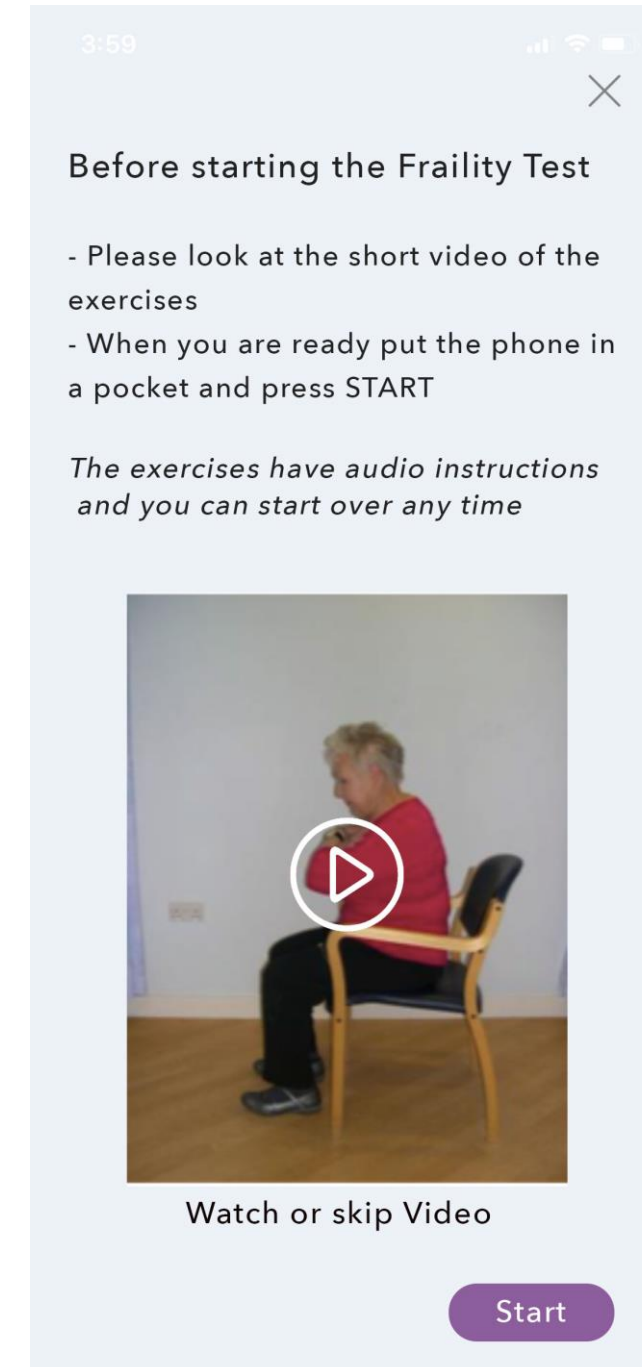
APPS AND WEB-BASED TOOLS IN THE ONCOLOGICAL PATIENT MANAGEMENT

1. Administer editable questionnaires
2. Symptoms recording and storage
3. IOT connection



APPS AND WEB-BASED TOOLS IN THE ONCOLOGICAL PATIENT MANAGEMENT

1. Administer editable questionnaires
2. Symptoms recording and storage
3. IOT connection
4. Frailty test



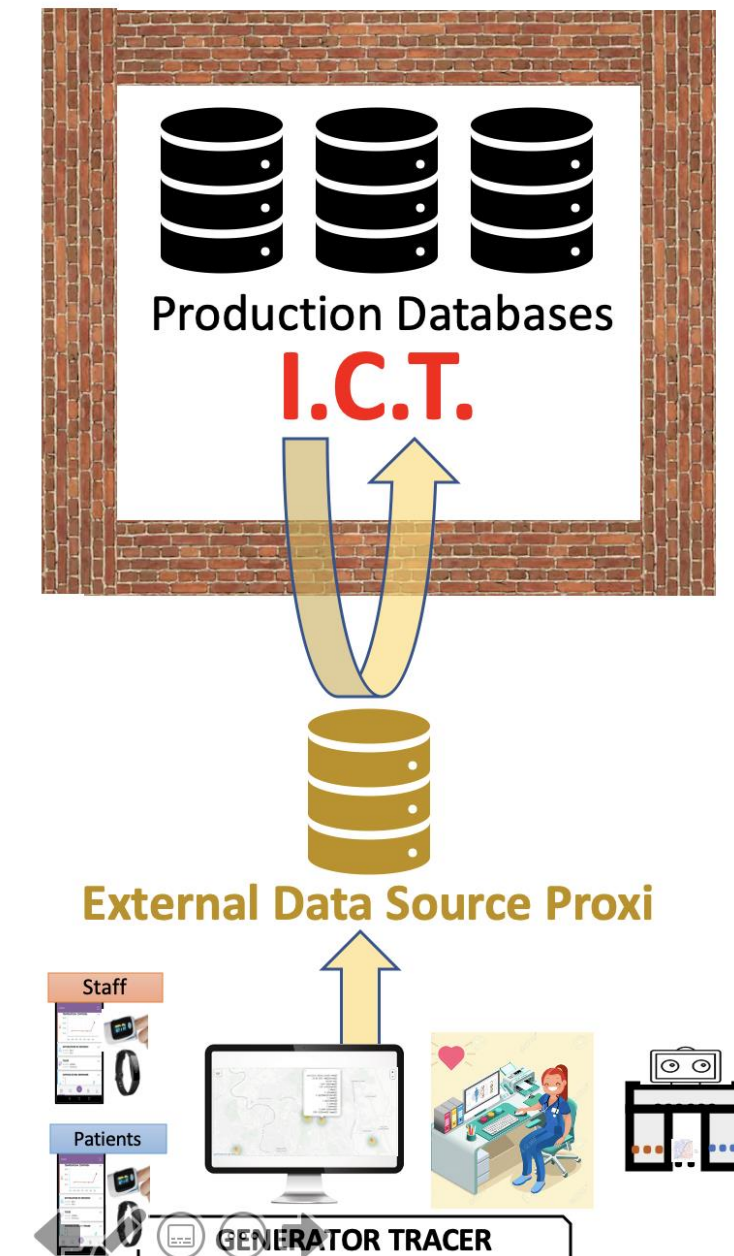
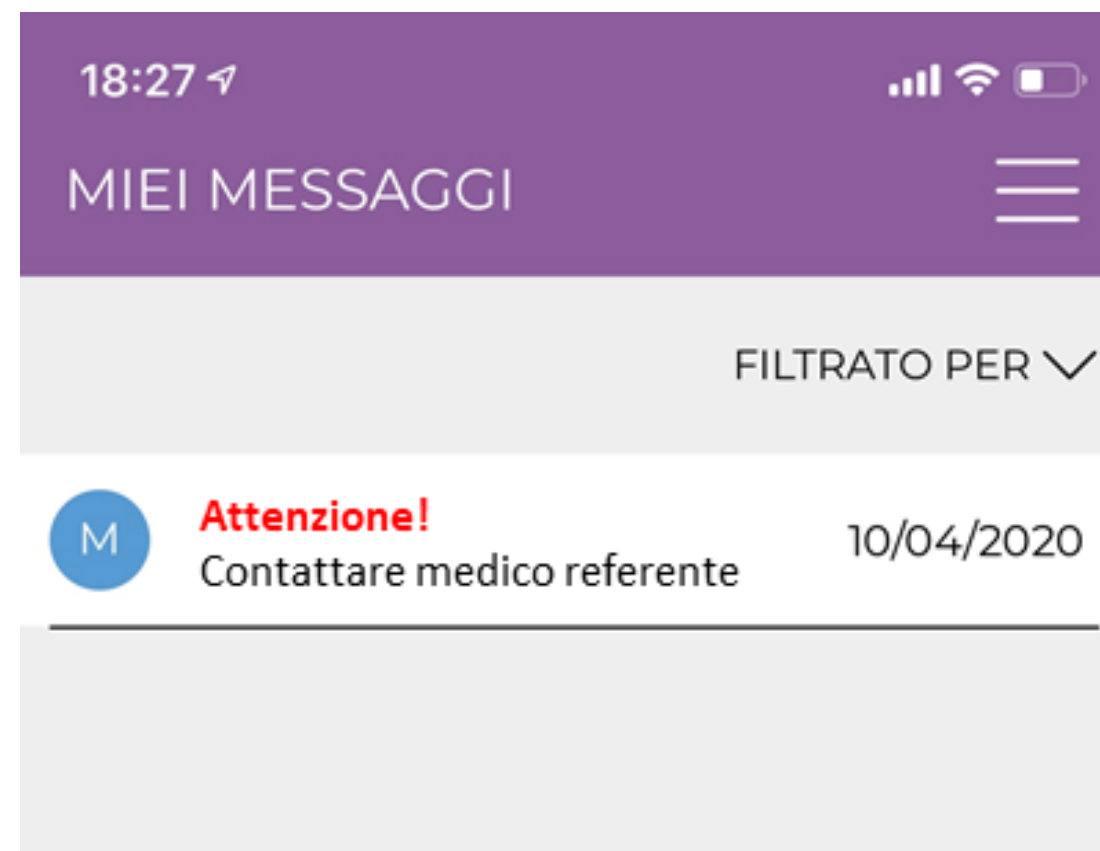
APPS AND WEB-BASED TOOLS IN THE ONCOLOGICAL PATIENT MANAGEMENT

1. Administer editable questionnaires
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4. Frailty test
5. Photo and document acquisition



APPS AND WEB-BASED TOOLS IN THE ONCOLOGICAL PATIENT MANAGEMENT

1. Administer editable questionnaires
2. Symptoms recording and storage
3. IOT connection
4. Frailty test
5. Photo and document acquisition
6. Tutor e Surveillance



APPS AND WEB-BASED TOOLS IN THE ONCOLOGICAL PATIENT MANAGEMENT

1. Administer editable questionnaires
2. Symptoms recording and storage
3. IOT connection
4. Frailty test
5. Photo and document acquisition
6. Tutor e Surveillance
7. GDPR conformity

Progetto: GENERATOR Tracer

Gemelli
Fondazione Policlinico Universitario Agostino Gemelli IRCCS
Università Cattolica del Sacro Cuore

CONSENSO AL TRATTAMENTO DEI DATI PERSONALI

Il sottoscritto _____, nato a _____,
il _____, essendo stato informato su:

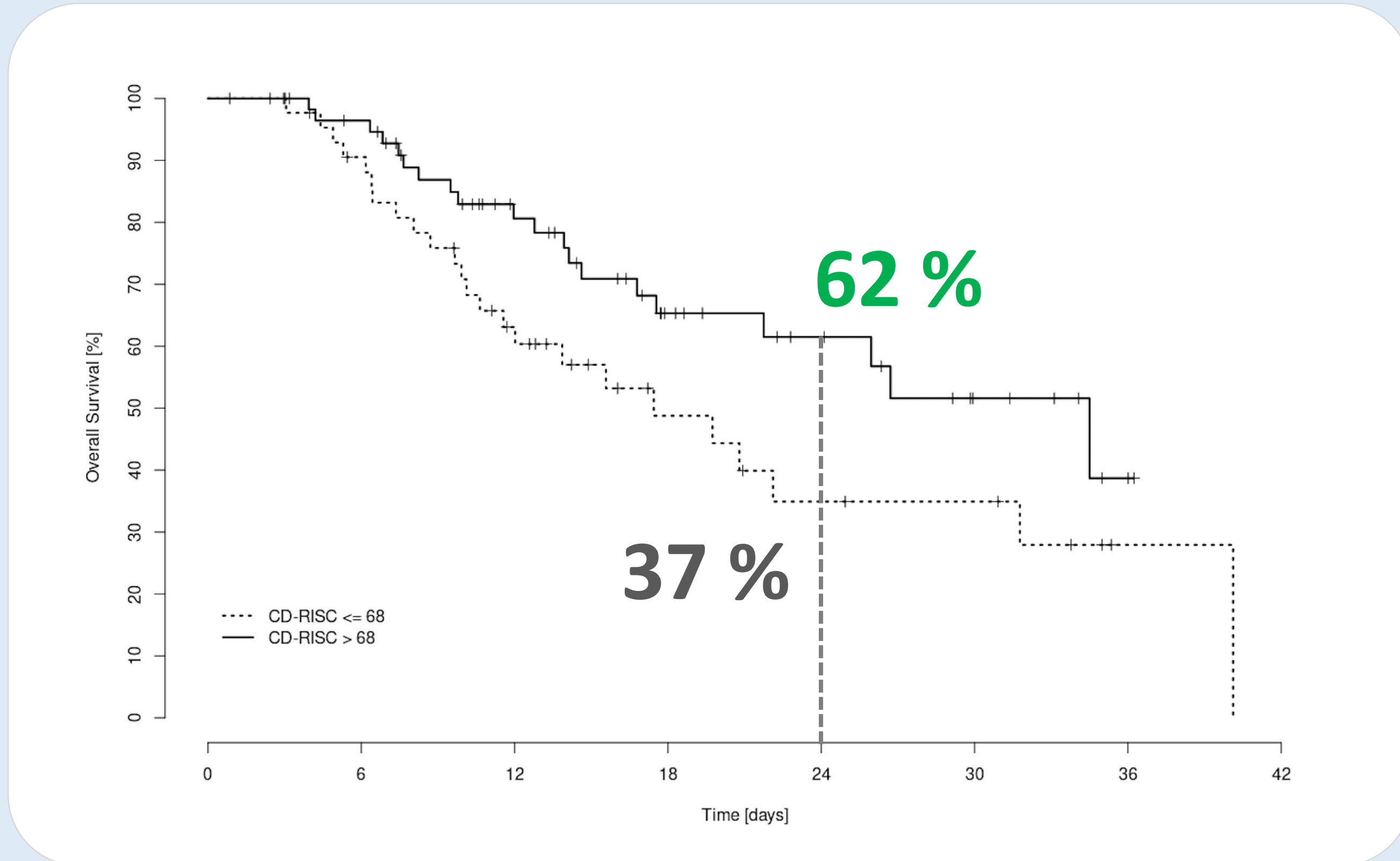
- l'identità del Titolare Responsabile della protezione dei dati e dei soggetti o delle categorie di soggetti ai quali i dati personali possono essere comunicati o che possono venirne a conoscenza in qualità di incaricati;
- la misura e le modalità con le quali il trattamento avviene;
- le finalità del trattamento cui sono destinati i dati personali connesse con le attività di prevenzione, diagnosi e ricerca svolte a tutela della mia salute;
- il diritto di accesso ai dati personali, la facoltà di chiederne l'aggiornamento, la rettifica, l'integrazione e la cancellazione nonché di opporsi all'invio di comunicazioni commerciali;
- il diritto alla revoca del consenso.

Così come indicato nell'informativa sottoscritta ai sensi dell'art. 13 del Regolamento UE 2016/679 con la sottoscrizione ACCONSENTE ai sensi e per gli effetti degli artt. 7 e ss. del Regolamento UE 2016/679, al trattamento dei dati personali e sensibili, esclusivamente ai fini di ricerca secondo le modalità e nei limiti di cui all'informativa allegata. Letto, confermato e sottoscritto

Luogo e data _____ Firma _____

Art4ART

Spirituality and Resilience in Glioblastoma



Humanistic Guided Oncology

Two dimension of the human should be identified:

Actionable Values (emotion, culture, spirituality..)

Given World (science, deterministic rules, adaptation ..)

SCIENCE enables you to live and interact with the world



... a good practice



... a good practice





... buone pratiche

The screenshot shows the Art4Art website interface. At the top left is the 'Art4ART' logo. A search bar with the placeholder text 'Search...' and a magnifying glass icon is positioned to the right of the logo. In the top right corner, there are navigation icons (home, back, forward) and a user profile icon labeled 'L. Biagiotti' with a UK flag.

The main content area is a grid of colored buttons. The columns are labeled with categories: Music, Poetry & Literature, Cinema, Nature, Painting, Monuments & Sculptures, Photography, and Professions. The rows are labeled with sub-topics: Friendship, Love, Attention, Courage, Self-care, Enthusiasm, Passion, and Spirituality. Each cell in the grid is a solid-colored button corresponding to the intersection of a category and a sub-topic.

	Music	Poetry & Literature	Cinema	Nature	Painting	Monuments & Sculptures	Photography	Professions
Friendship								
Love								
Attention								
Courage								
Self-care								
Enthusiasm								
Passion								
Spirituality								



... a good practice



Medley di Arie d'Opera - Fessure di Luce

Tratto dal concerto "Fessure di Luce" di Cristiana Pegoraro per il Gemelli ART

Artista: Cristiana Pegoraro

Video



Sinfonia di Praga - Sinfonia n. 38

Cianchettini & Sperati, Londra 1800

Autore: Wolfgang Amadeus Mozart

Audio



Senza Fine - Passione

dall'Album "Passione" - 2013

Artista: Andrea Bocelli

Audio

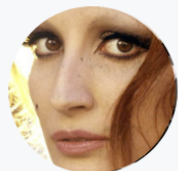


Benedetta Passione - Live in Paris

Tratto dall'Album Resta in Ascolto - 2004

Artista: Laura Pausini

Video



Amaro è 'o bene - "Una voce una città"

Dall'Album "Una voce una città" - 1980

Artista: Mina

Audio



Passione - Orchestra del Teatro Comunale di Bologna

Album - 1985

Autore: Luciano Pavarotti

Video

... buone pratiche



COMPASSION

SEMANTIC PROFILATION

ARTIFICIAL INTELLIGENCE

JUKEBOX

IOT

DATA M A R T

InterSystems
TRAKCARE™

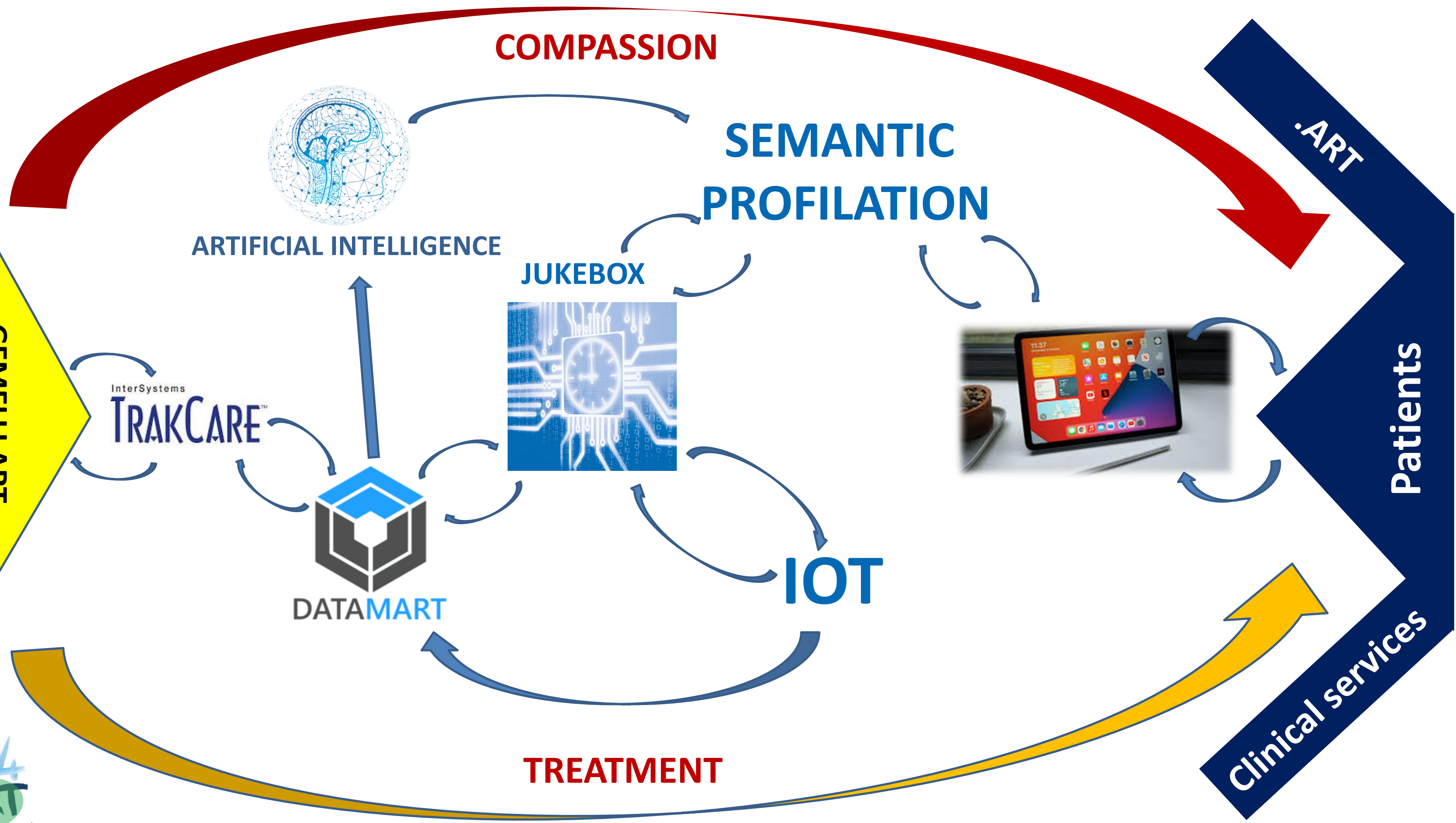
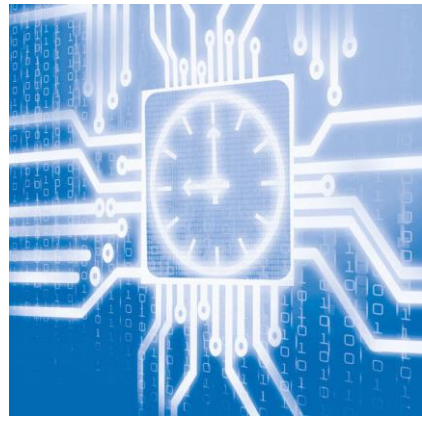
GEMELLI ART

.ART

Patients

Clinical services

TREATMENT



Art Prescription



World Health Organization Europe

HEALTH EVIDENCE NETWORK SYNTHESIS REPORT

What is the evidence on the role of the arts in improving health and well-being?
A scoping review

Daisy Fancourt | Saoirse Finn

ARTS AND HEALTH THE W.H.O. REPORT

*What is the evidence on the role of the arts in improving health and well-being?
WHO (2019)*

Systematic content for prevention and promotion and management

Prevention and promotion	Management and treatment
<ul style="list-style-type: none"> Social determinants of health <ul style="list-style-type: none"> Social cohesion Social inequalities Child development <ul style="list-style-type: none"> Mother-infant bonding Speech and language Educational attainment Improving understanding of health <ul style="list-style-type: none"> Medical skills Well-being Prevention of ill health <ul style="list-style-type: none"> Well-being Mental health Trauma Cognitive decline Frailty Premature mortality Health-promoting behaviours <ul style="list-style-type: none"> Healthy living Engagement with health care Communication Related stigma Engagement with health care Research groups 	<ul style="list-style-type: none"> Mental illness <ul style="list-style-type: none"> Perinatal mental illness Mild-moderate mental illness Severe mental illness Trauma and abuse Acute conditions <ul style="list-style-type: none"> Premature infants Inpatient care Surgery and invasive procedures Intensive care Neurodevelopmental & neurological disorders <ul style="list-style-type: none"> Autism Cerebral palsy Stroke Other acquired brain injuries Degenerative neurological disorders Dementia Noncommunicable diseases <ul style="list-style-type: none"> Cancer Lung disease Diabetes CVD End-of-life care <ul style="list-style-type: none"> Palliative care Bereavement

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3. PSS in RTO
4. Art4ART