

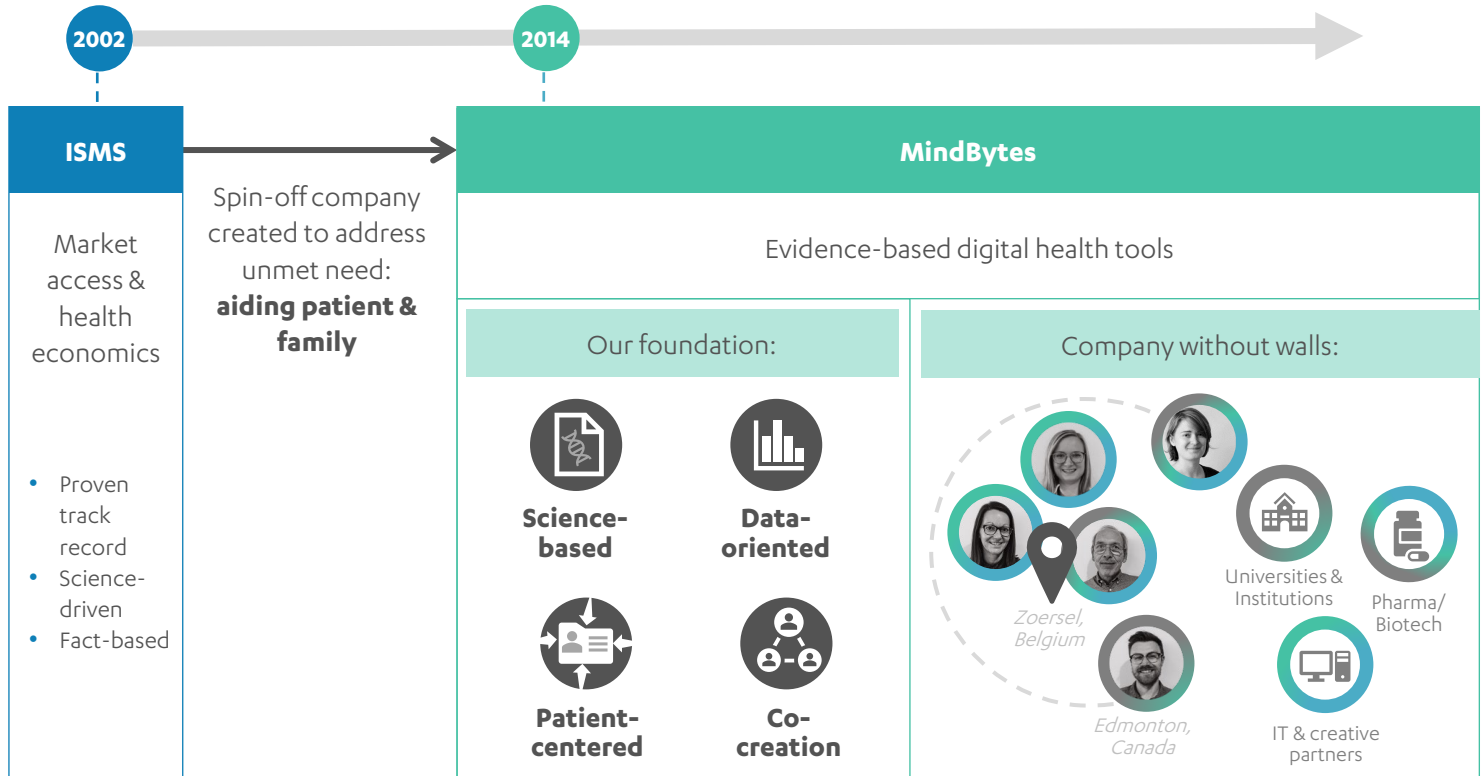


MINDBYTES

Evidence-based digital tools for health.
Understand. Empower. Improve.

MindBytes: our foundations

MINDBYTES: SCIENCE, DATA, PATIENTS & CO-CREATION



OUR MISSION IS TO REALIZE A BETTER LIFE FOR PATIENTS

MINDBYTES can help your team conceptualize, design and build theory-driven, evidence-based digital tools for health (*e.g. serious games, apps, interactive modules,...*). We also share our expertise on communication, dashboards, clinical validation, market research and revenue models.



MINDBYTES DIGITAL TOOLS: IMPROVING HEALTH



MindBytes develops tools for patients, healthcare professionals and caregivers that improve their lives through understanding and sustainable behavior changes.



ENHANCE DECISION-MAKING BY EMPOWERING PATIENTS

- Understand patient needs and preferences
- Improve doctor-patient communication
- **Increase** treatment satisfaction and **adherence**



IMPROVE DOCTOR'S DIAGNOSIS CAPABILITIES

- Improve **disease awareness**
- Increase confidence in correct treatment and/or referral
- Ultimately leading to better QoL for patients and caregivers



EMPOWER PATIENTS AND CAREGIVERS TO COPE WITH DISEASE

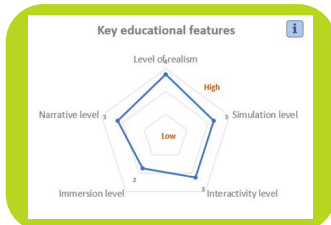
- Practice coping behaviors
- Learn to handle disease challenges
- **Improve QoL** for patients and caregivers
- Enhance therapy adherence

Why digital health tools & serious gaming?

WE ARE NOT GAME MAKERS, WE ARE PROBLEM SOLVERS

Educational digital tools

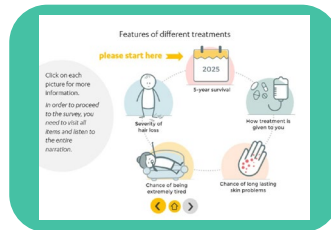
Enhance trial outcomes



**Patient
centric drug
development**

Diagnostic digital tool

Improve decision-making



**Better HCP & shared
decision making**

Therapeutic digital tools

Change behavior to improve compliance & coping



**Enhanced
clinical
outcomes**

MINDBYTES CREATES A SAFE VIRTUAL WORLD

MINDBYTES specializes in the development of digital tools that change behavior via a virtual world. In this world, patients must make decisions in real-life scenarios. What they learn in this **safe virtual environment**, can positively impact decision-making & therapeutic outcomes in the real world.



Reducing pre-operative anxiety



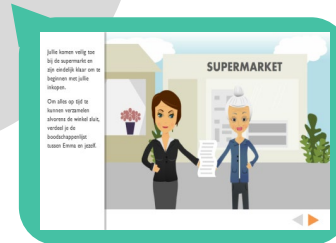
CliniPup®

Improving compliance to antihormonal therapy



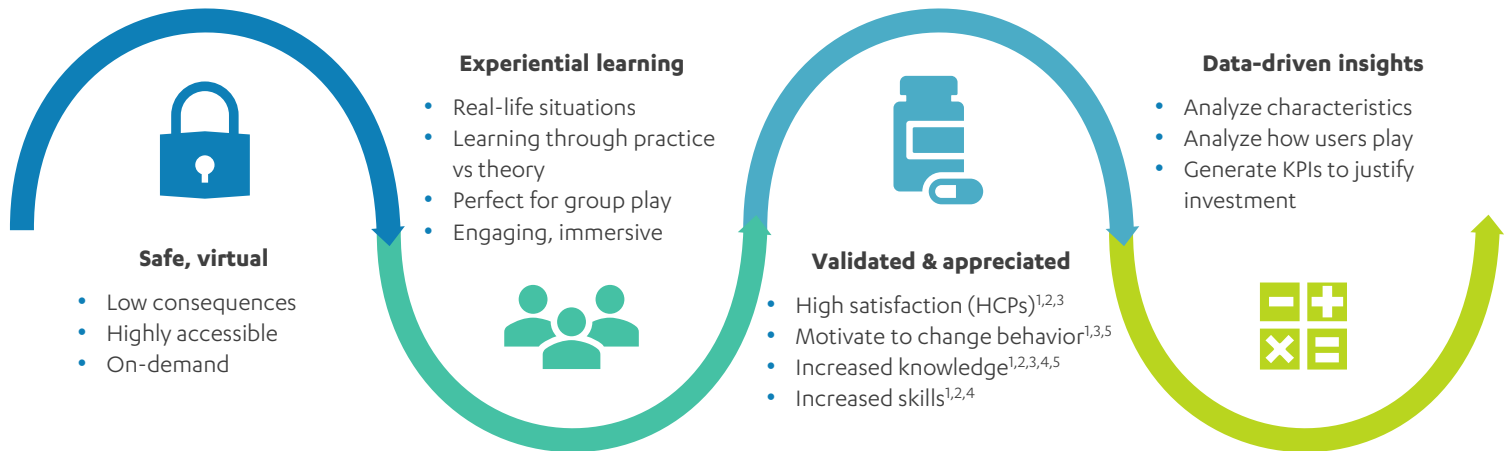
Breast cancer

Learning to cope with dementia



*SERES™
Dementia*

WHY SERIOUS GAMING FOR HCPS AND PATIENTS?



Serious gaming can change behavior through an engaging, immersive, and safe digital experience.

ENHANCE YOUR INTERVENTION AT 3 KEY STAGES

Our digital tools can enhance your product at **3 key stages of its timeline**



Drug development

- Capture preference data
- Ensure meeting HTA & regulatory requirements



Prescription

- Facilitate shared decision-making
- Improve treatment satisfaction

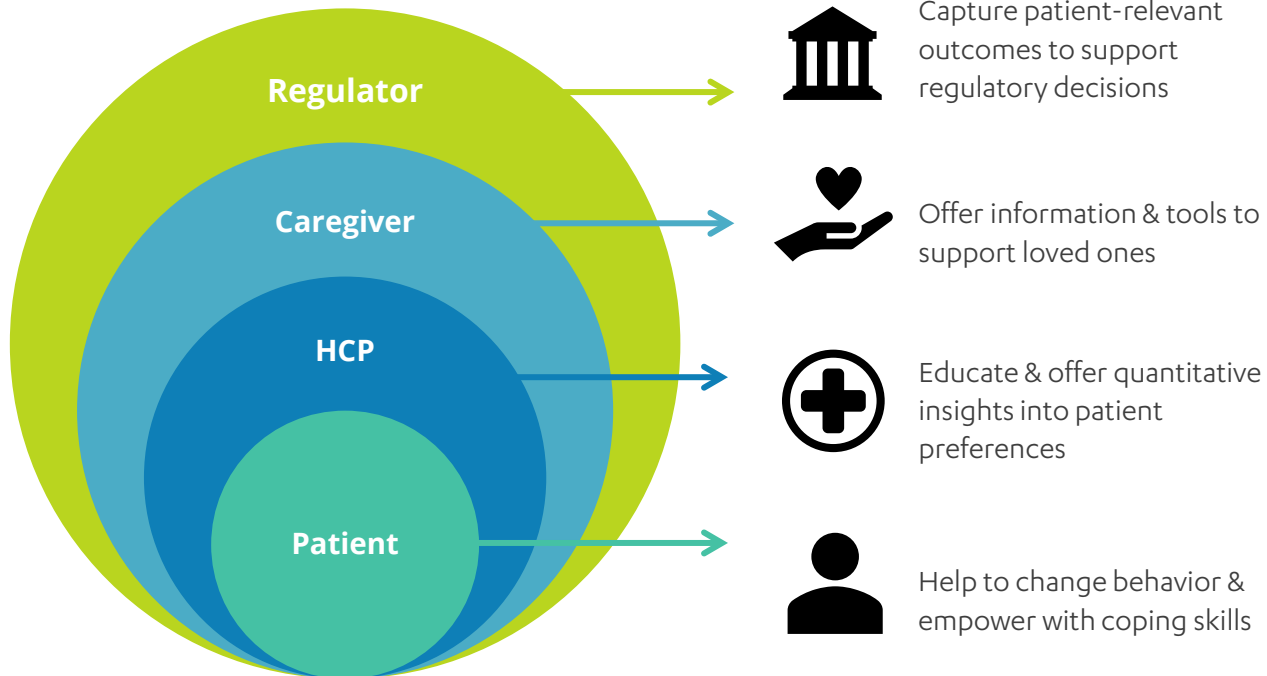


Treatment

- Improve PROMs
- Improve psychosocial outcomes
- Improve adherence

OUR TOOLS CAN SUPPORT ALL KEY STAKEHOLDERS

We create digital tools that **support patients, healthcare professionals, caregivers, and regulatory/policymakers.**

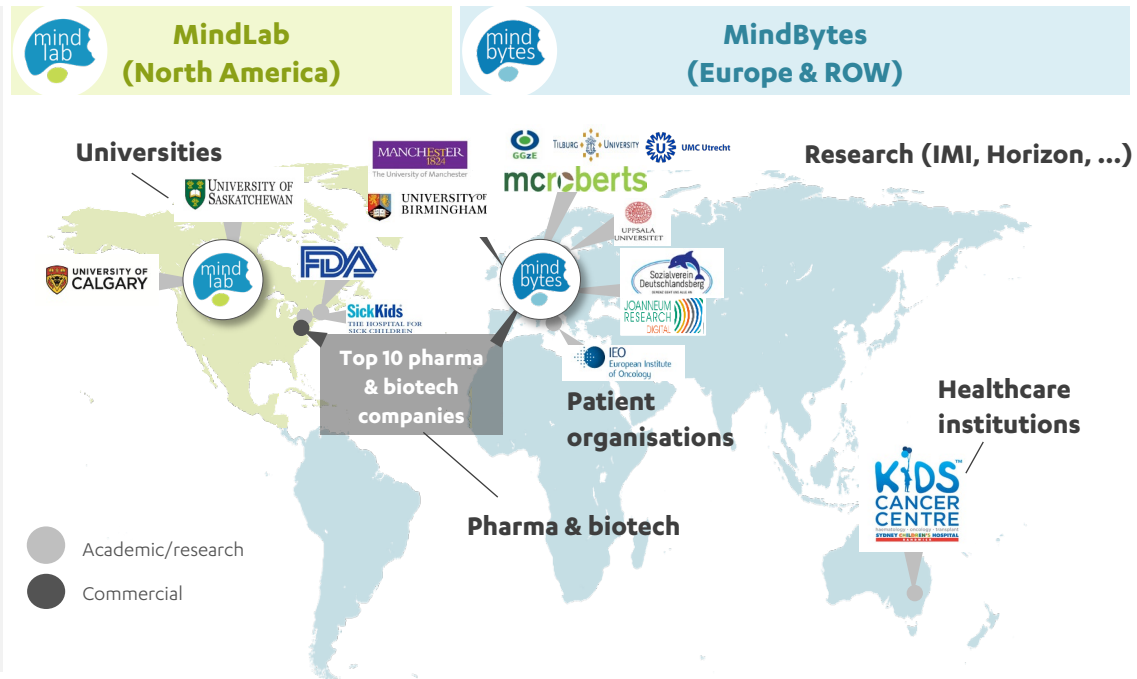


PROVEN TRACK RECORD IN DIGITAL HEALTH TOOL DEVELOPMENT

MINDBYTES believes in the power of collaborative partnerships. In this fast-developing field, it is important to stay abreast of the latest scientific innovations and technological advances.

We therefore:

- actively participate in international research projects (*IMI-PREFER*, *Horizon2020*, *iMinds*, *IWT*, *VLAIO*) together with leading industry partners
- continuously engage with partners from academia, the pharmaceutical industry, hospitals, patient organisations, care organisations and government.



Where does MindBytes make a difference?

WHERE WE MAKE A DIFFERENCE

Many digital health tools fail, despite major investments in development and commercialisation. Most lack a scientific basis and have not been clinically validated before entering the market. **To help you succeed**, we developed **SERES™**, a scientifically-validated methodology to create theory-driven evidence-based tools for health, and we **co-create** with experts in the field, our strong multi-disciplinary team and various partners.



1

Validated scientific framework

2

Strong multi-disciplinary team

3

Collaboration & partnerships

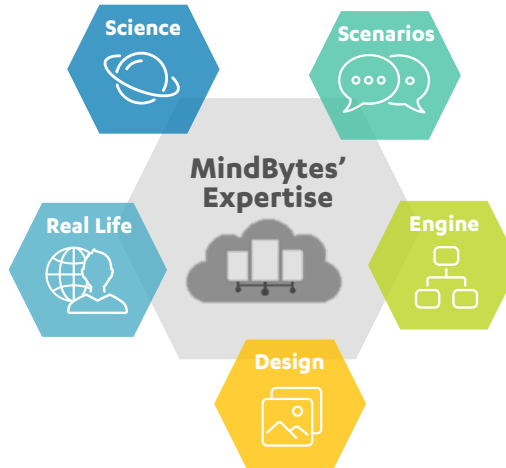
HOW WE WORK

STRONG SCIENTIFIC FOUNDATIONS

- Explore the latest scientific findings.
- Identify relevant stakeholders
- Define psychosocial, cognitive & relational parameters
- Link theses to clinical outcomes
- Identify how a digital tool needs to impact the above

CONNECTED WITH REAL LIFE

- Connect with physicians, patients, caregivers & experts
- We perform a “time & motion” exercise to understand the user’s reality
- We conduct advisory boards & clinical trials to validate.



REALISTIC AND COMPELLING STORIES

- Narratives that reflect user reality •
- Use motivational components •
- Create captivating storyline •
- Use emotive elements •

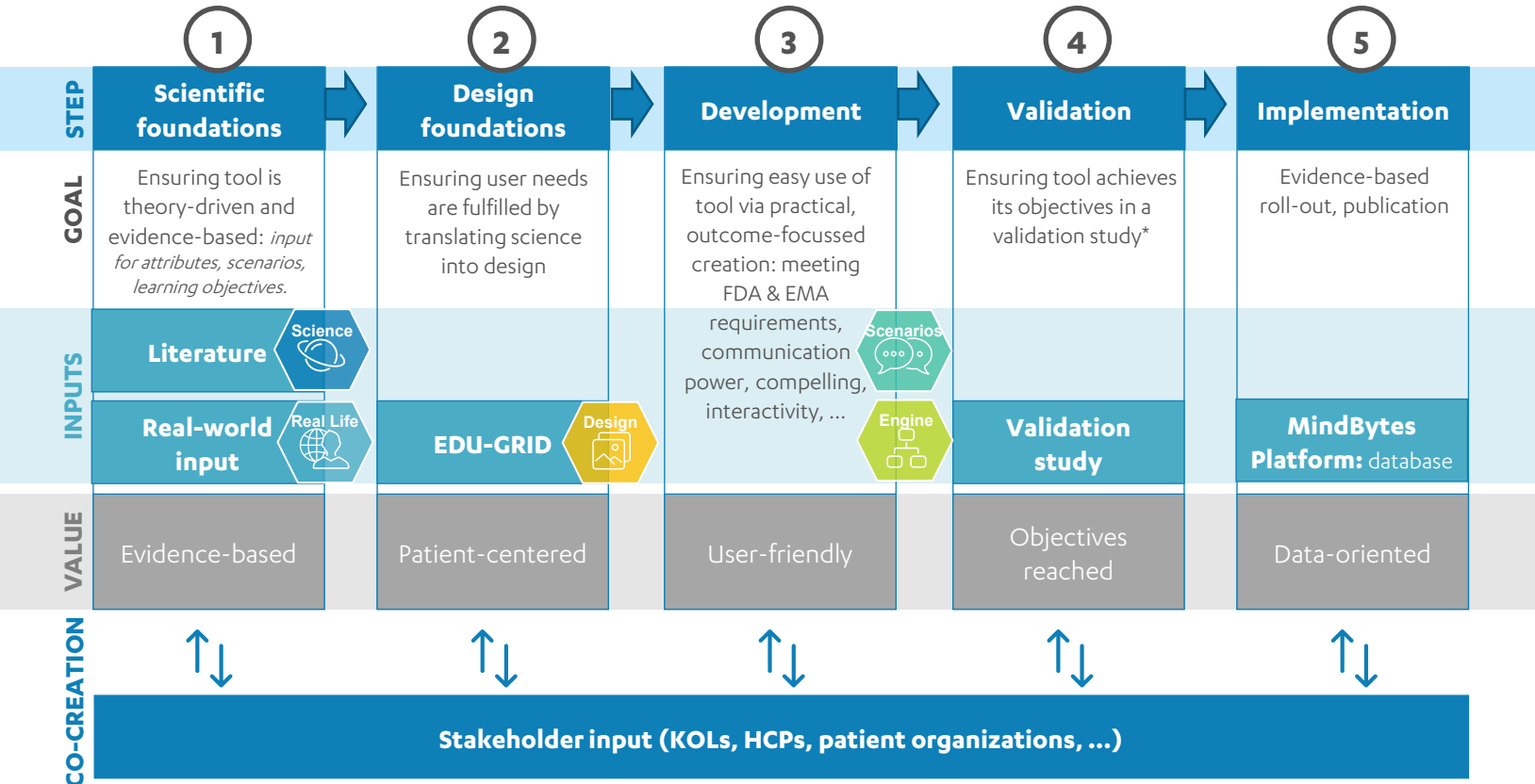
INTERACTING WITH THE PLAYER (AI)

- Branching storyline •
- Interactive scoring •
- Measure performance •
- Capture key data •
- Analysis to guide research •

ENGAGING DESIGN

- State-of-the art UX & Information design •
- Stimulates users to identify with narrative •
- Fosters intuitive understanding of complex information •

THE 5 STEPS OF SERES™



EMA: European Medicines Agency; FDA: Food and Drug Administration; KOL: Key Opinion Leader; HCP: Healthcare Professional; RCT: Randomized Controlled Trial

*Dependent on project scope & budget – could be RCT, user survey, focus group testing, ...

Verschueren S, Buffel C, Vander Stichele G, Developing Theory-Driven, Evidence-based Games for Health: Framework based on research community insights. JSG, 2019.

MEETING END USER NEEDS WITH EDU-GRID

Digital tools should be **systematically developed** to ensure that they **meet end user needs**:

Hence, they can be developed using our **systematic & evidence-based approach (EDU-GRID)**

Step 1: Identify educational needs

- *Study population*
- *Disease & treatment context*
- *Choice tasks*

Step 2: Select and adapt educational features

- *Realism*
- *Simulation*
- *Interactivity*
- *Immersion*
- *Narration*
- *Structure*

Step 3: Choose appropriate content formats

- *Multimedia*
- *Language*
- *Images*



This **maximizes** your likelihood to



Meet regulatory & payer requirements

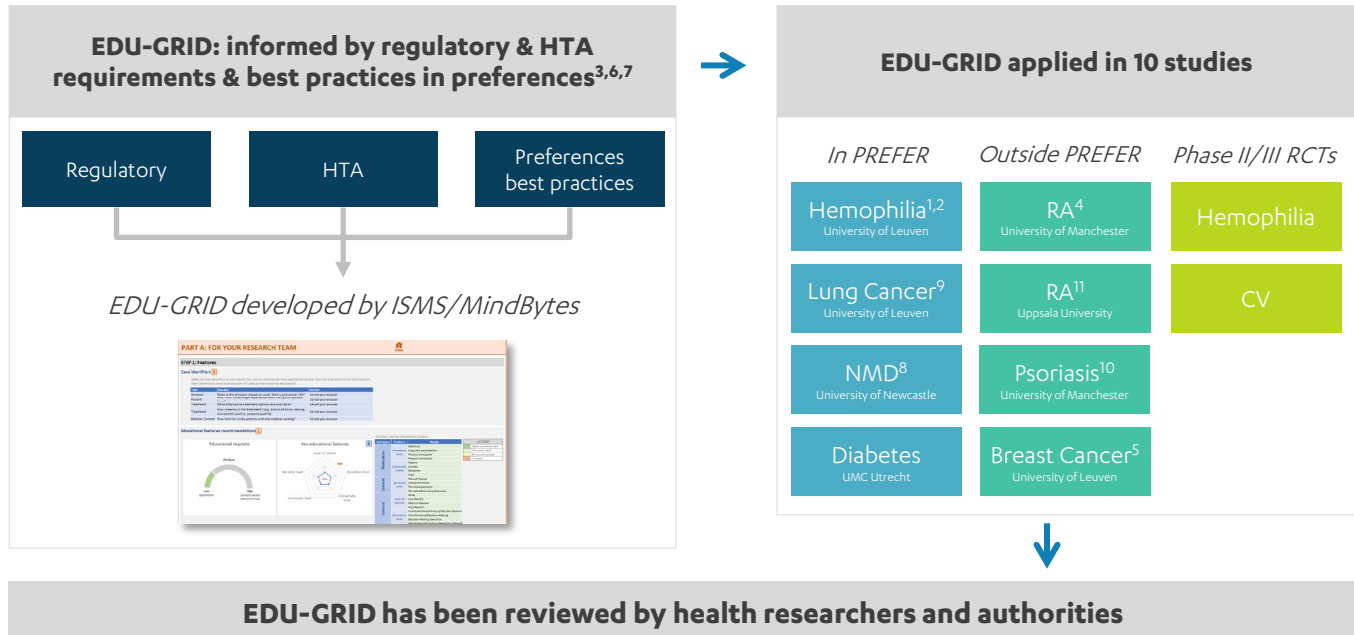


Achieve (educational) objectives



Maximize return on investment (ROI)

EDU-GRID IS VALIDATED & ENDORSED



Discussed with FDA



Recommended by PREFER

1. Van Overbeeke, 2021; 2. van Overbeeke, 2021; 3. FDA, 2016; 4. Vass, 2019; 5. Ver Donck, 2020; 6. Louviere, 2006; 7. Bridges, 2011 8. Jimenez-Moreno, 2020; 9. Monzani, 2021; 10. Dala, 2021; 11. Bywall, 2021

MOP*: supporting publication through data collection

User-friendly, secure, online platform to SHARE, ACCESS and EVALUATE your communication, education, and training content



Features

- Online platform (HTML5, CSS3, Bootstrap)
- Data generation (Javascript)
- Underlying database (MySQL)
- Secure user and admin log-in
- Single login via MyNexuzHealth (proof-of-concept at UZ Leuven)
- Score generation (Javascript)
- GDPR-compliant



Benefits

- 24/7 access
- All content collected in single online location
- User-friendly & secure
- Real-life tracking and reporting of data over time, allowing publication
- Supporting reimbursement

DATA COLLECTION TO INFORM DECISIONS (EXAMPLE)



Uptake



Satisfaction



In game success
(score)



Perceived
knowledge gain



All data points filterable by:

- Country/region
- Type of physician
- Physician experience level



Accessing
supportive features



User-driven
sharing

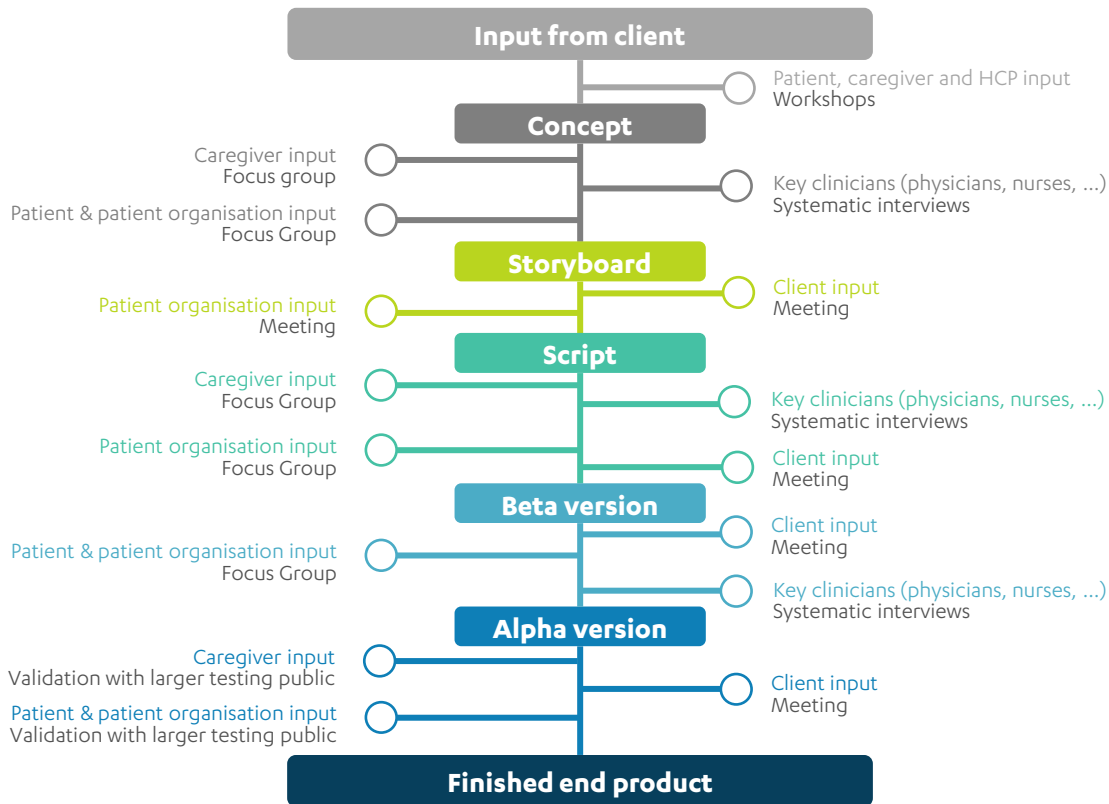
A STRONG MULTIDISCIPLINARY TEAM

Much like developing medications, developing digital tools requires a strong multi-disciplinary team. To achieve this, we leverage the expertise of science PhDs and MScs on board, designers, copywriters, technical software developers, education experts, behavior change experts, marketers, etc.

	Science	Real Life	Scenarios	Engine	Design
 Geert Vander Stichele MSc PharmD & Economics	X	X	X	X	
 Connor Buffel MSc Biomedical Technology	X		X	X	
 Sarah Verschueren PhD Science	X		X		X
 Michelle Luypaert MSc in Biomedical Sciences	X		X	X	X

Co-creation with partners to leverage the full potential of the tool

CO-CREATION PROCESS (EXAMPLE)



Co-creation partners



Advocacy organizations



Client



Key clinicians
(physicians, nurses, ...)



Caregivers



Patients

Validation and endorsement

OUR KEY DIGITAL HEALTH ACHIEVEMENTS

8



8 **Top 10 Biopharma** clients

56



Published **evidence-based methodology**, SERES™, cited **56 times** since 2019

10+



Partners from **10+ countries**

3



Validation of patient-facing tool via **3 RCTs**

29



29 publications since 2015*

2022



Design framework, EDU-GRID, recommended by IMI PREFER & **endorsed by EMA** in 2022

We are world leaders in the development of evidence-based digital health tools.

**Manuscripts, posters, theses*

PROVEN TO BE EFFECTIVE

We have already successfully used our **SERES™ methodology** to develop and **clinically validate** digital tools, such as **CliniPup®** a serious game to reduce pediatric perioperative anxiety and pain.

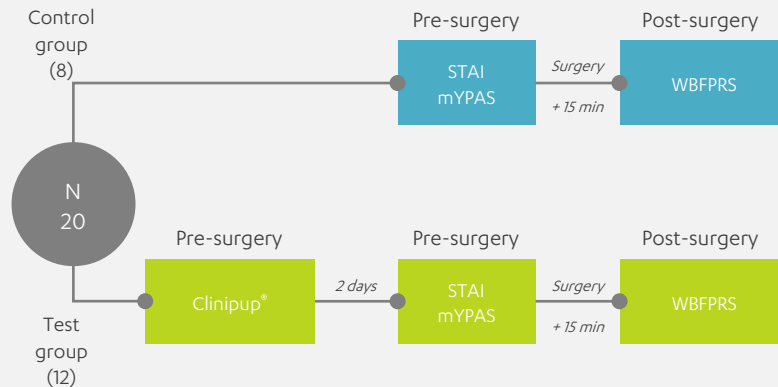
Background

- Children exhibit high levels of anxiety in preoperative setting
- Pre-operative anxiety and post-operative pain in children is poorly addressed
- Serious games offers unique potential to address this

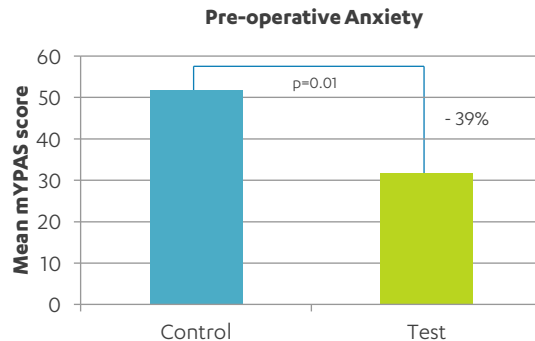
Objectives

- Evaluate CliniPup® effect on clinical outcomes (pre-operative anxiety & post-operative pain) in children aged 6-10
- Collect User Experience data

Study Design



Outcomes of the pilot trial were encouraging and gave clear guidance on where to focus development efforts to refine and improve CliniPup®. The upgraded version was validated in a second clinical trial in 2020.



- Children who played CliniPup® demonstrated a 39% reduction in preoperative anxiety compared to controls ($p=0.01$)
- Parents of children who played CliniPup® demonstrated a 17% reduction in anxiety prior to surgery (non-statistically significant) compared to controls
- No difference in postoperative pain score between test and control group
- CliniPup® received NPS of 67 from parents

Verschueren S, van Aalst J, Bangels A-M, Toelen J, Allegaert K, Buffel C, Vander Stichele G. Development of CliniPup®, a serious game aimed at reducing pediatric perioperative anxiety & pain in children: mixed methods study. *JSG*, 2019.

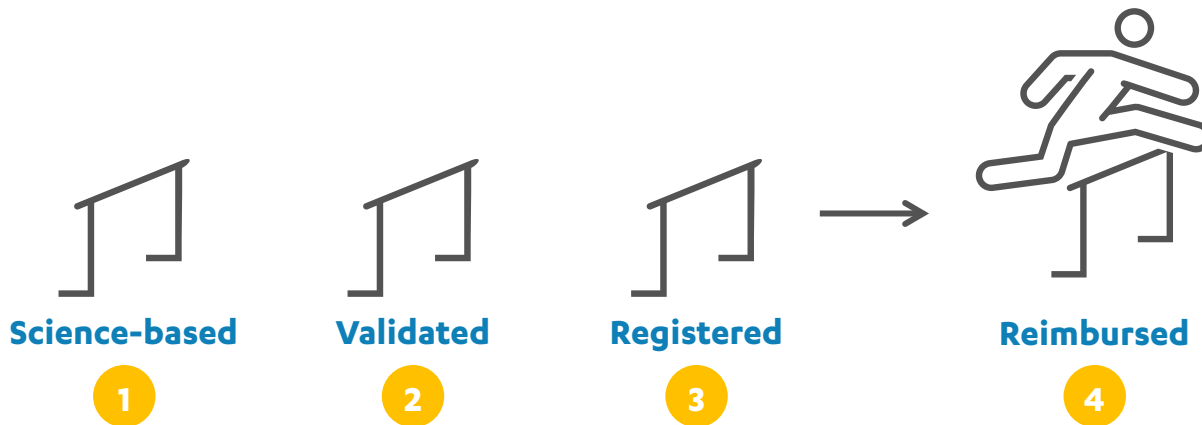
Buffel C, van Aalst J, Bangels A, Toelen J, Allegaert K, Verschueren S, Vander Stichele G. A web-based serious game for health to reduce perioperative anxiety and pain in children (CliniPup®): pilot randomized controlled trial. *JSG*, 2019.



REIMBURSEMENT OF MOBILE HEALTH APPS

Digital health tools can be reimbursed, just like medicines.

We have thoroughly reviewed **reimbursement criteria in 3 key European countries** (Belgium¹, The Netherlands², Germany³). This way we stay ahead of the regulatory & payer requirements and ensure our digital tools are meeting the most important criteria.



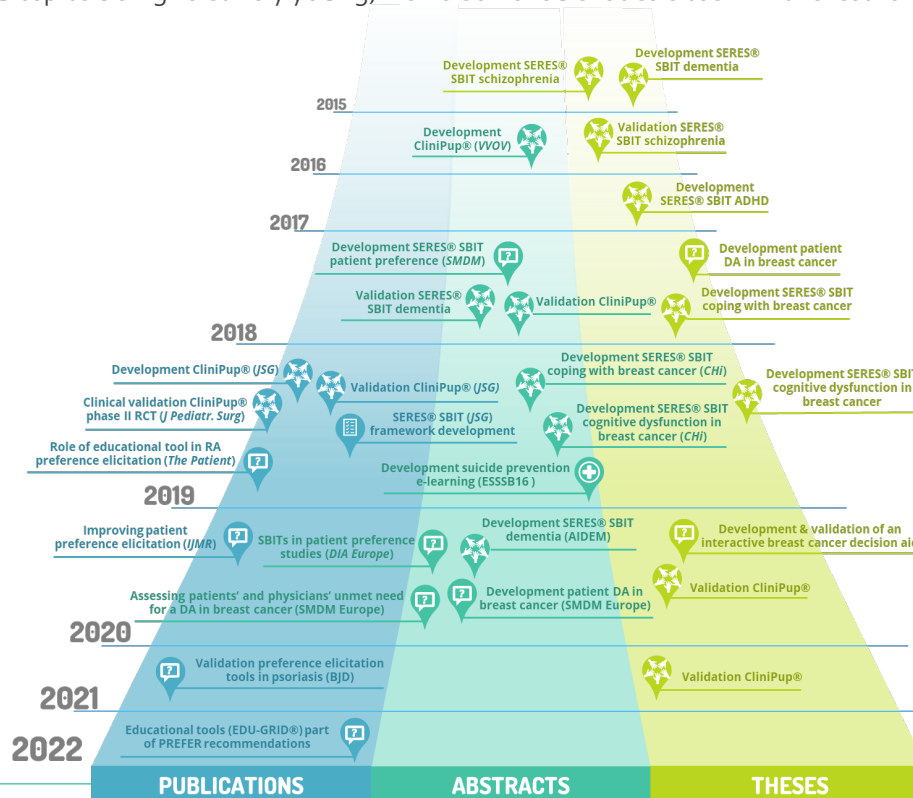
1. www.mhealthbelgium.be

2. <https://www.rijksoverheid.nl/onderwerpen/e-health/documenten/rapporten/2018/06/15/wegwijzer-bekostiging-e-health>

3. [Digitale_Versorgung_Gesetz_-_RefEntwurf.pdf](#) & [Digitale-Versorgung-Gesetz_DVG_Kabinett.pdf](#)

STRONG TRACK-RECORD SINCE 2014

Despite being relatively young, we've achieved a lot as a team in the last few years.



SBIT = scenario-based interactive tool, PROMs = patient-reported outcome measures, RA = rheumatoid arthritis

MindBytes expertise



Caregiver and patient empowerment



Patient preference



HCP diagnose and treatment behavior



Method development

Access our publications



Our portfolio

OUR PORTFOLIO

Enhance therapeutic outcomes

CLINIPUP®

Pediatric Peri-Operative Pain



A serious game developed as adjunct therapy to existing pharmacological interventions, to reduce peri-operative pain and anxiety in children undergoing ambulant surgery.

UZ Leuven, UZ Gent

CO'MOON

Breast Cancer



Online tool to improve the quality of life of women with breast cancer taking adjuvant endocrine therapy. The focus lies on self-management and communication and is linked to MyNexuzHealth.

UZ Leuven

TREATMENT DELAY

Cardiovascular



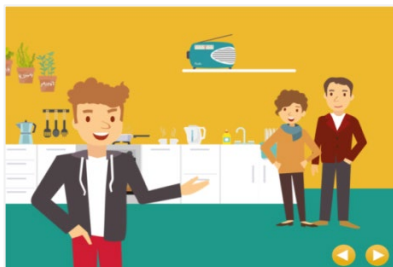
Patient education tool aimed at reducing treatment delay in myocardial infarction, by changing help-seeking behaviors of patients upon early signs of a second myocardial attack.

Pharmaceutical Company

Enhance therapeutic outcomes

SELF-CARE

Diabetes Management Teenager

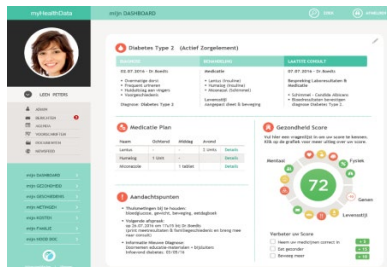


Interactive serious game for teenagers with diabetes. Provides a safe, virtual environment to practice making healthy decisions in the complex context of their day-to-day adolescent social reality.

Patient Organisation

MY HEALTH DATA

Electronic Medical Record



Mixed-Media Proof-of-Concept of an eMD. Developed to illustrate possible use case scenarios based on user research and driver-barrier analysis for uptake and promotion by GPs.

CM, HealthConnect, iMinds

INFORMED CONSENT

CRO



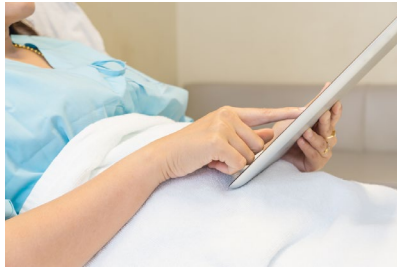
Digital educational tools (incl. risk-benefit) to improve electronic informed consent for clinical trial participation (both a recruitment stage and during the clinical trial), especially for trials with children.

Uppsala University

Understanding patient needs

PATIENT DECISION AID

Rheumatology | Breast Cancer



Provides patients with a safe virtual environment to explore various treatment options and the impact of certain benefits & risks on their daily life. Helps patients make more informed treatment decisions.

University Uppsala, KU Leuven

PREFER

Patient Preference Elicitation

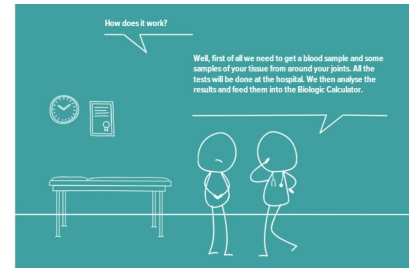


Using scenario-based interactive tools in conjunction with Discrete-Choice methods for elicitation & evaluation of patient preferences at various stages of the development lifecycle of therapeutic treatments.

IMI funded project

DCE TOOL COMPONENT

Rheumatoid Arthritis



An interactive scenario-based tool developed as a component of a discrete choice experiment (DCE) to help patients construct preferences regarding treatment and capturing these preferences.

Manchester University

Changing behavior: professionals

REPORTS & BROCHURES

Informing experts in many indications



Scientific writing & design for several reports & printed brochures to inform healthcare professionals on new drugs on the market and inform global nutritional experts on updates in the nutritional field.

Pharmaceutical and Nutritional Companies

VIDEO INTERVIEWS

Lung Cancer | Nutritional



Strengthening the faith and trust of physicians in the potential of the product by Expert-led case videos. Improving knowledge through sharing best practices.

Pharmaceutical Company

AWARENESS & DIAGNOSING

Rare diseases



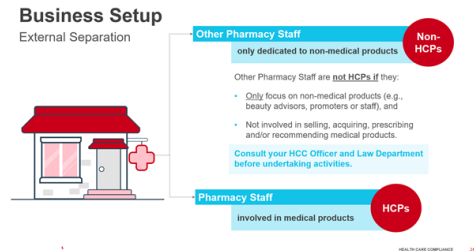
Theory-driven and evidence-based serious game, offering a safe and interactive virtual setting, where clinicians can engage in on-demand, experiential learning to diagnose rare hematological diseases quicker.

Pharmaceutical Company

Changing behavior: professionals

INTERACTIVE TRAINING DECK

Healthcare Compliance (HCC)



Engaging HCC training deck, ensuring optimal use of trainee's time. Aimed at raising understanding, giving skills, and experience to empower the staff in their work.

Pharmaceutical Company

COMPLIANCE GAME

Healthcare Compliance

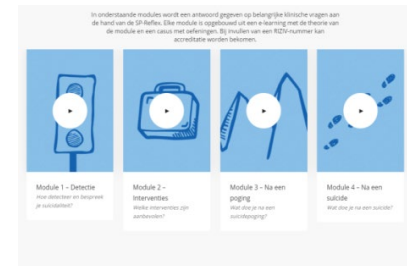


Serious game for experiential training on decision-making in the grey zones of healthcare compliance. Brings staff from various departments together in an engaging, interactive workshop based on group-play.

IFPMA

SP-REFLEX

Suicide Prevention



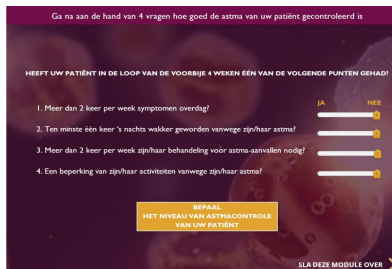
Platform with evidence-based recommendations to healthcare professionals on the detection of early warning signs and the treatment of suicidal behaviors.

VLESP

Changing behavior: professionals

HCP DECISION TOOL

Respiratory

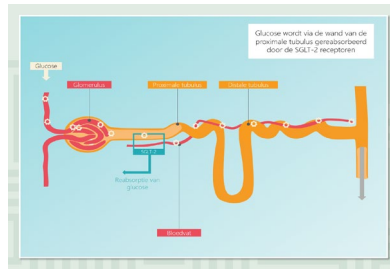


Interactive, informative treatment decision aid to support health care professionals in their decision-making when describing treatments to patients suffering from respiratory conditions.

Pharmaceutical Company

DIABETES LABYRINTH

Medical Education HCPs



Digital tool to educate doctors on new diabetes treatment paradigms. Interactively played in group sessions at conferences. Q&A battleship format fosters engagement & discussion between participants.

Pharmaceutical Company

PUBLICATION EXPLAINER

Medical Education Rheumatologists



Sharing updates in the field of rheumatology via an animated publication explainer video, based on 2 publications about recent therapeutic results for treatment of ankylosing spondylitis.

Pharmaceutical Company

Changing behavior: professionals

BEHAVIOR CHANGE

Justice



Interactive, scenario-based digital tool to educate prison officers on recognizing the signs and symbols of radicalization and taking appropriate responses towards prisoners upon detection.

FOD Justitie

HOSPITAL MANAGEMENT

Management Training

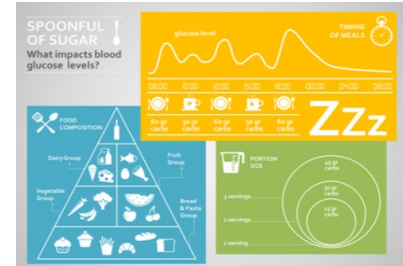


Serious game for experiential training on decision-making in hospital management. Brings staff from various departments together in an engaging, interactive workshop based on group-play.

Hospital Client

INFOGRAPHICS

Health Knowledge



Visualisation of complex information through interactive infographics. Relay messages more effectively for intuitive understanding. Allows users to explore various aspects of the information (sliders, pop-ups)

Pharmaceutical Company

Changing behavior: family caregivers

PLAYTIME

Dementia, Diagnostics



Daily training for dementia patients with sensors that enable diagnostics, and give recommendations for more personalized and better suited exercises for improved training.

AAL Program EU

CAREGIVER BURDEN

Schizophrenia | Dementia



Scenario-based interactive tools to reduce the burden of care of family members of patients with schizophrenia/ dementia. Also aims to improve psychosocial aspects and patient health outcomes.

Alzheimer Liga

YOUR PROJECT

What will you create?



Did you spot an unmet need in your organisation or of your customers?
Have a vague idea for a tool?

Let's start a conversation and explore where we can take it!

MORE PROJECTS

Visit our website www.mindbytes.be to read more details on our portfolio projects.

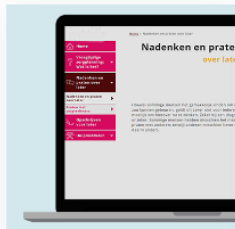
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Search Gallery Item...



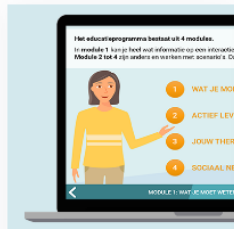
RAISING RARE DISEASE AWARENESS

Learn ER physicians to diagnose rare hematological diseases quicker.



ADVANCED CARE PLANNING IN DEMENTIA

Aid people with dementia and their family in making decision for future care.



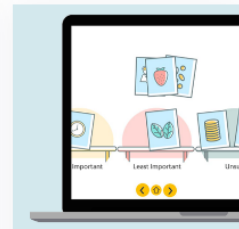
BREAST CANCER PROMS TOOL

Improve the quality of life of women with breast cancer taking adjuvant endocrine therapy.



BREAST CANCER TREATMENT DECISION AID (PACEMA)

Help breast cancer patients decide which of the various available treatment options, to follow.



PREFER (IMI)

Elicit patient preferences on benefits/risks of medicines.

Want to know more?

CONTACT US



**Don't hesitate to contact us
if you want to know more!**



MindBytes BVBA
Rodendijk 60Y
2980 Zoersel, Belgium



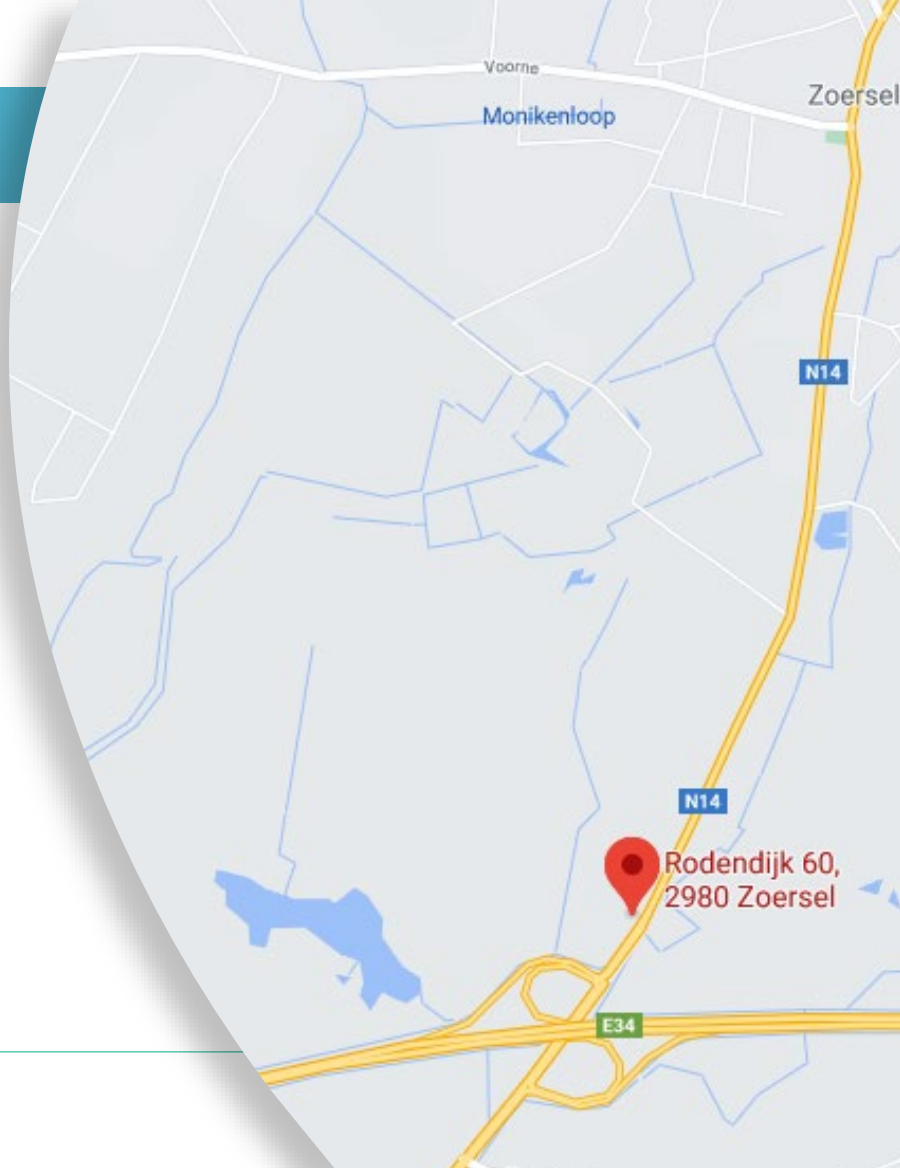
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