



Spyro Team



Improve the life of all people involved in the world of asthma

Challenge





26 patients

School of asthma

FederAsma

6 doctors

**12 researchers and
experts**

2 pharmacists



“It feels like drowning”

3-4 attacks per year



BIOLOGICAL DRUGS



**1-2 per
month**

ANTI-INFLAMMATORY DRUGS



**Every
day**

BRONCHODILATORS

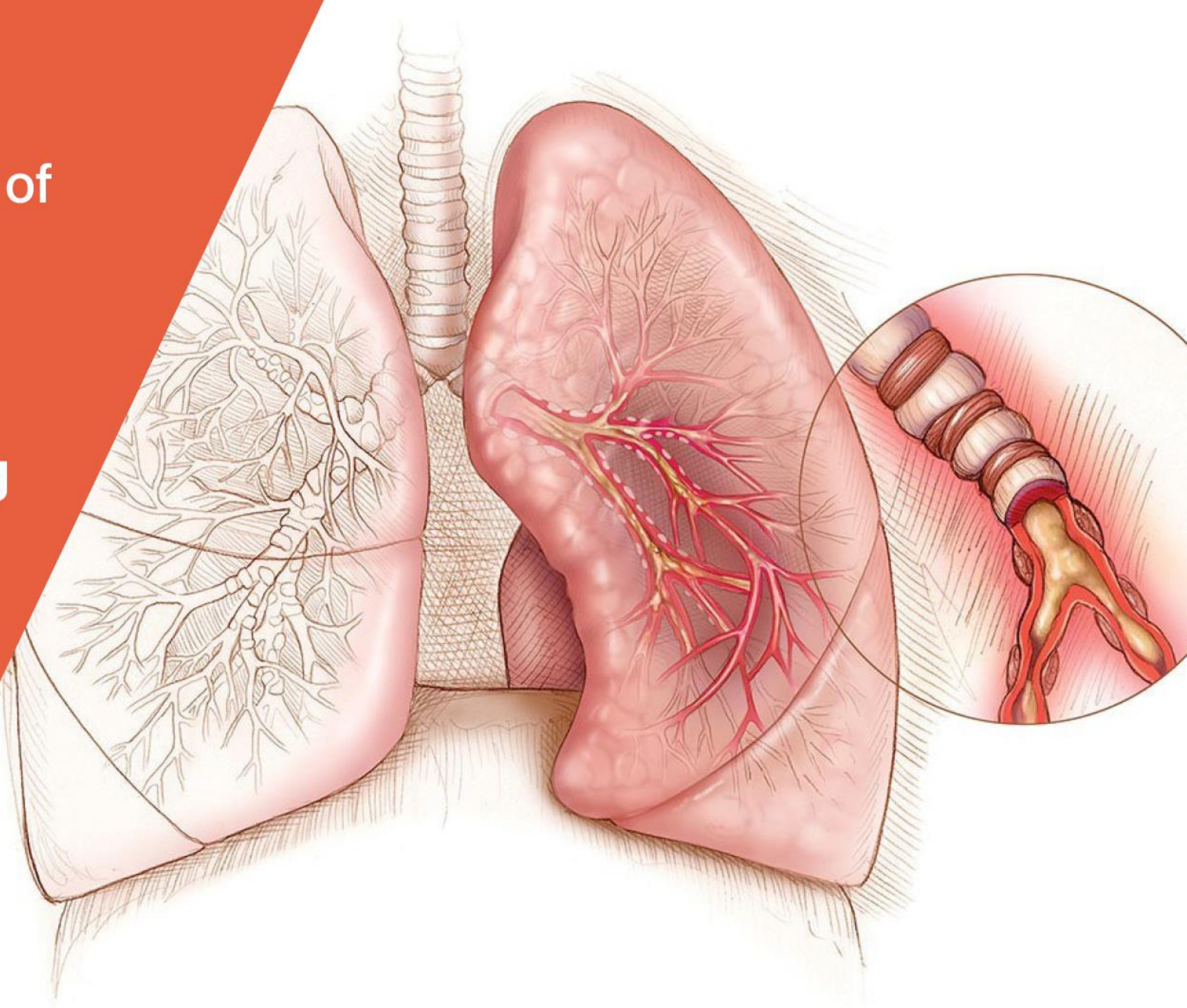


**When
necessary**

“I am the worst patient in the world!”

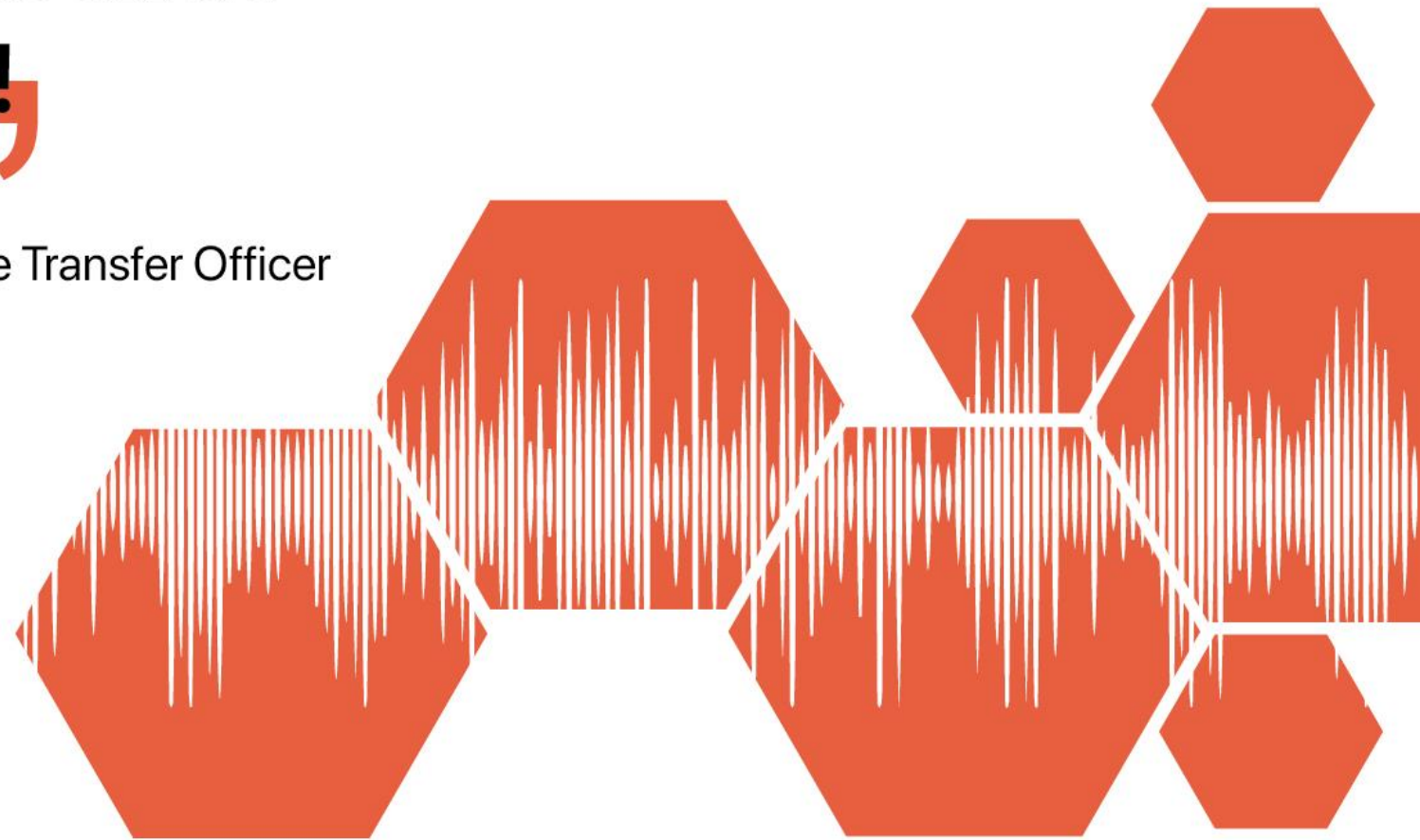
During an **attack** the
airways are at the peak of
their constriction

This causes **wheezing**
and coughing



**“Change your medical
point of view, look at
physics!”**

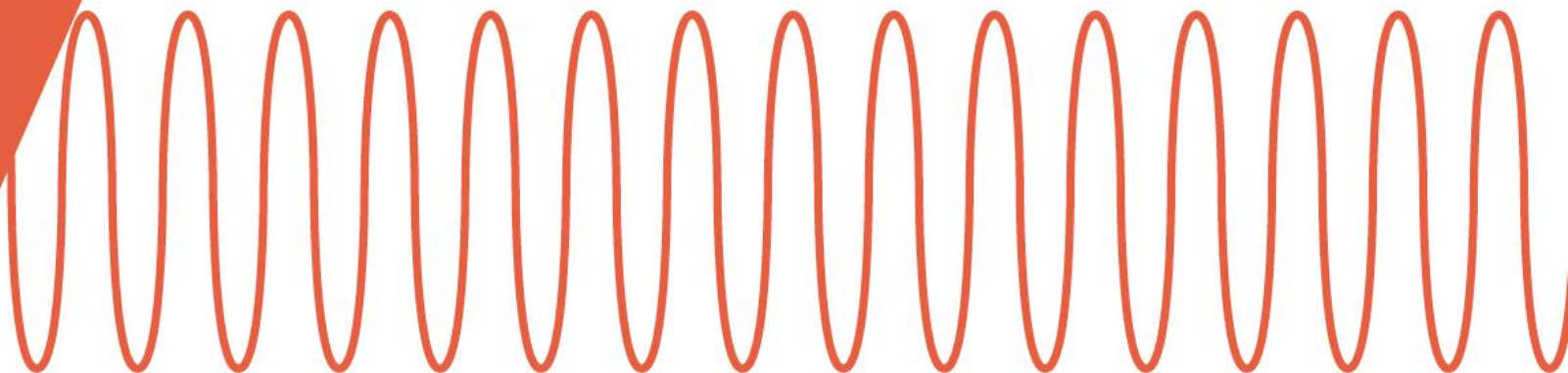
CERN Knowledge Transfer Officer



D ↑ **f** ↓

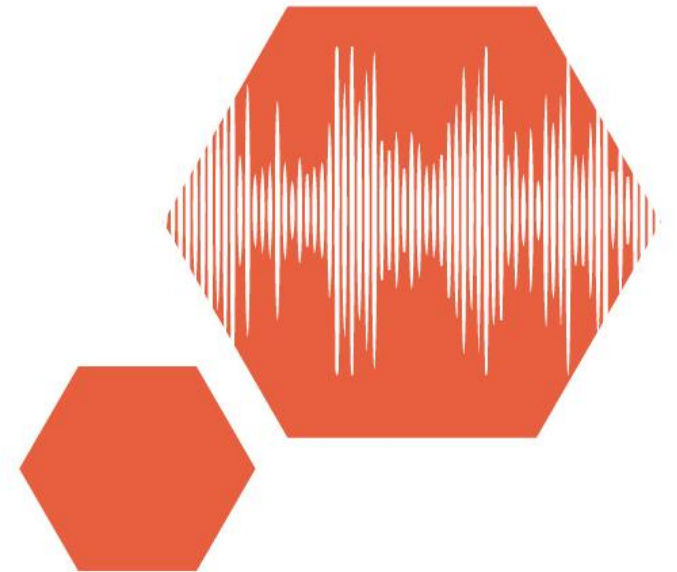


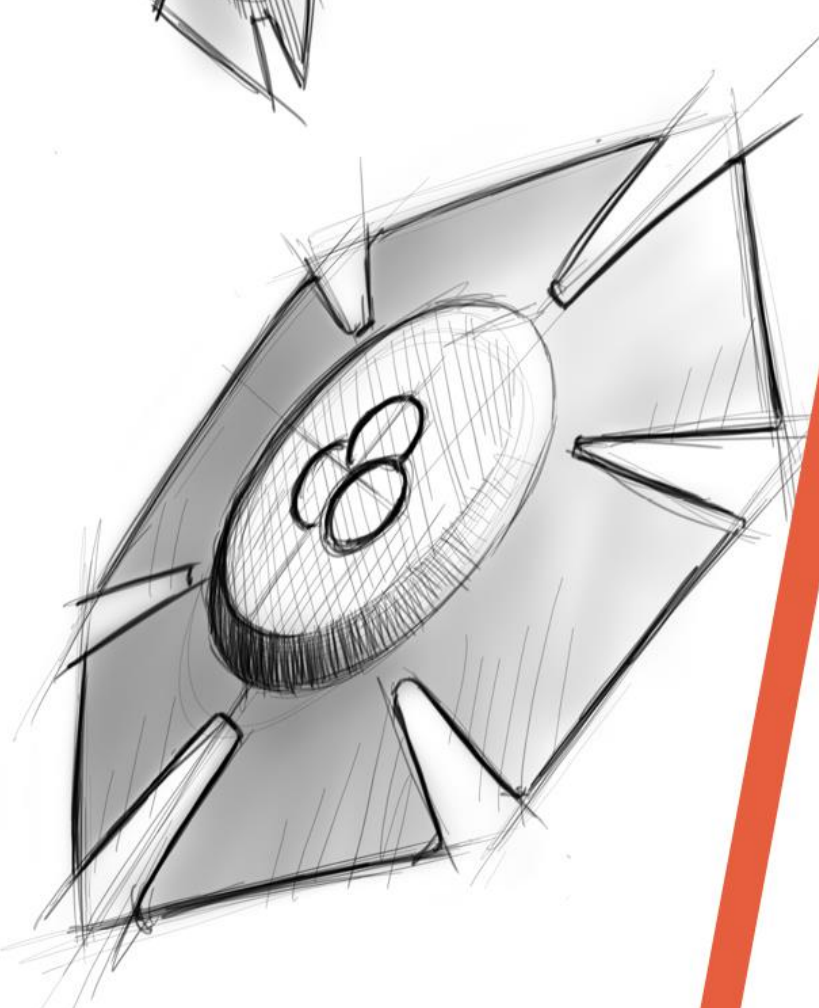
D ↓ **f** ↑



WHAT IF

**we measure
this variation to
understand the
patient's health?**





YOUR CONDITION

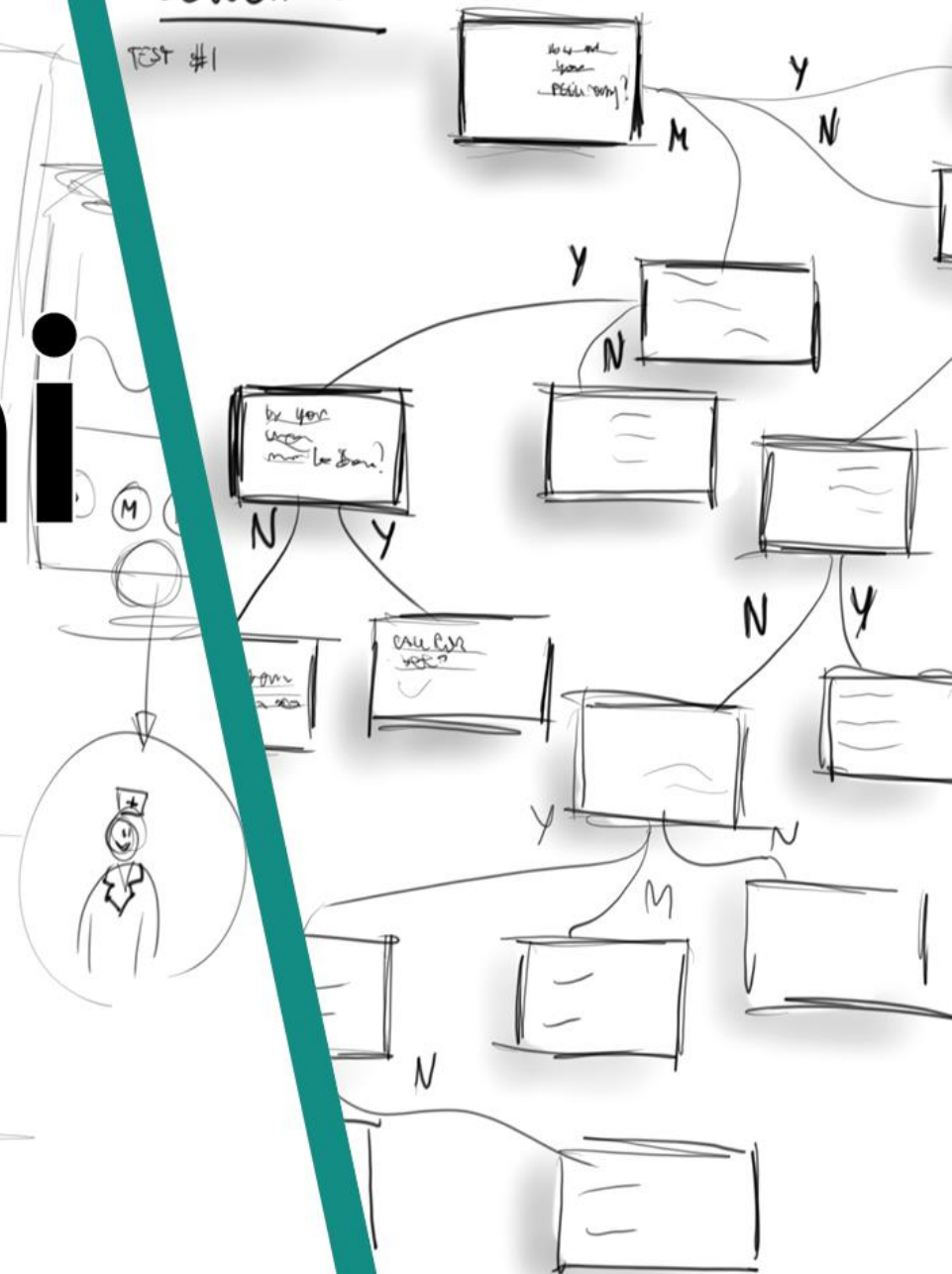


kyphi

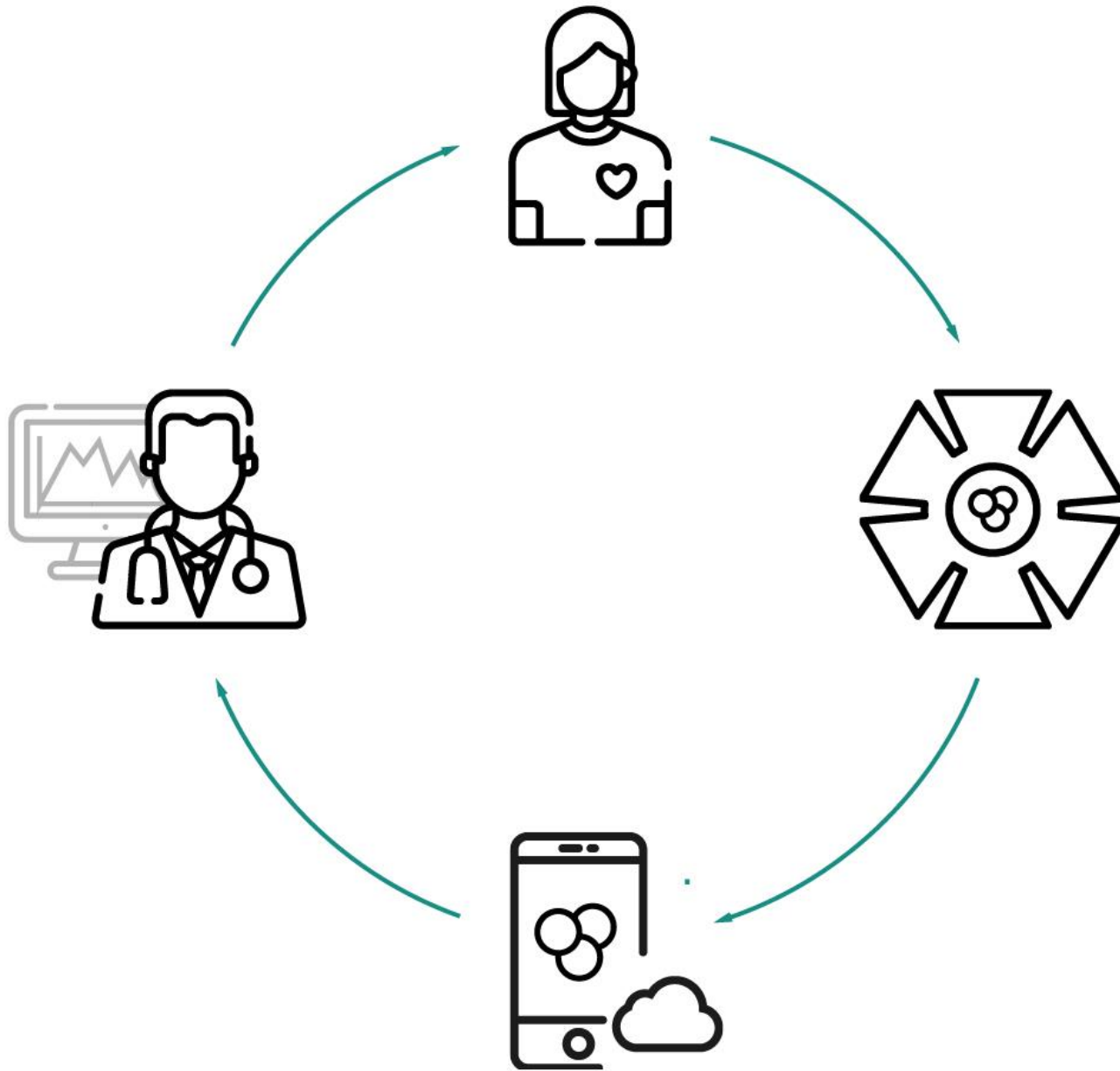
CHATBOT FLOWCHART

TEST #1

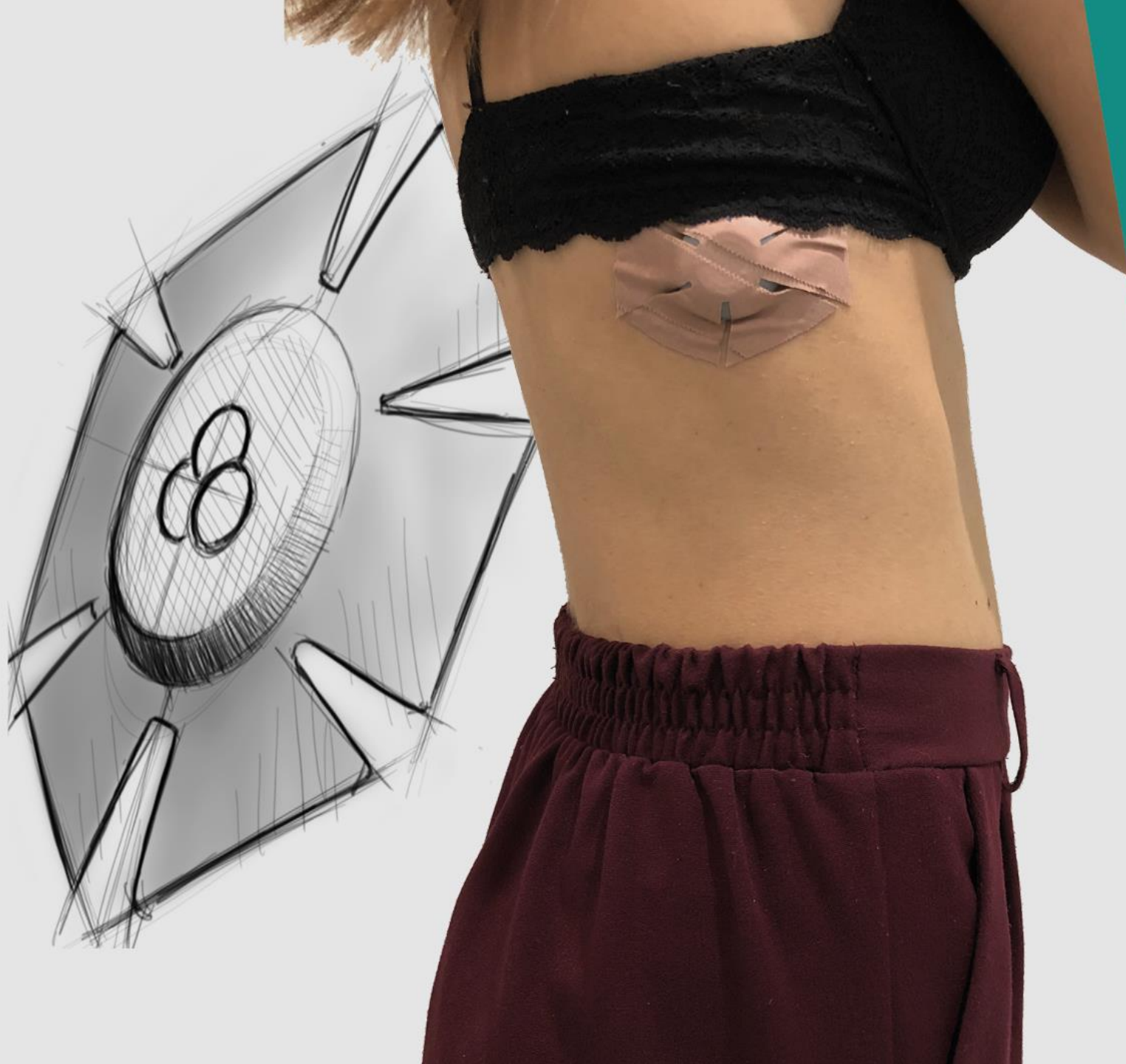
START



Kyphi system



Kyphi DOT





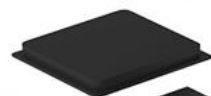
Shell



Bluetooth LE Module
MEMS Microphone



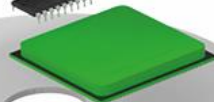
Battery



Memory MMC



2 MEMS Microphone



System on chip



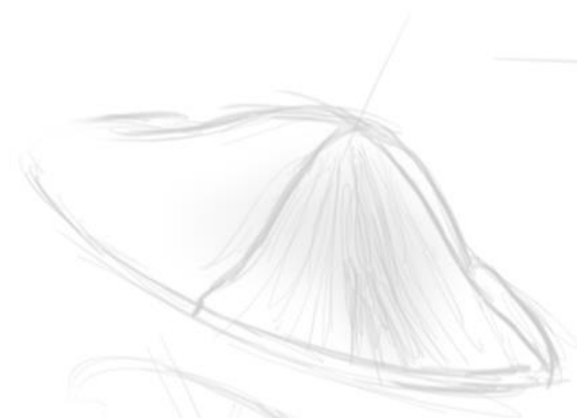
Insulating section



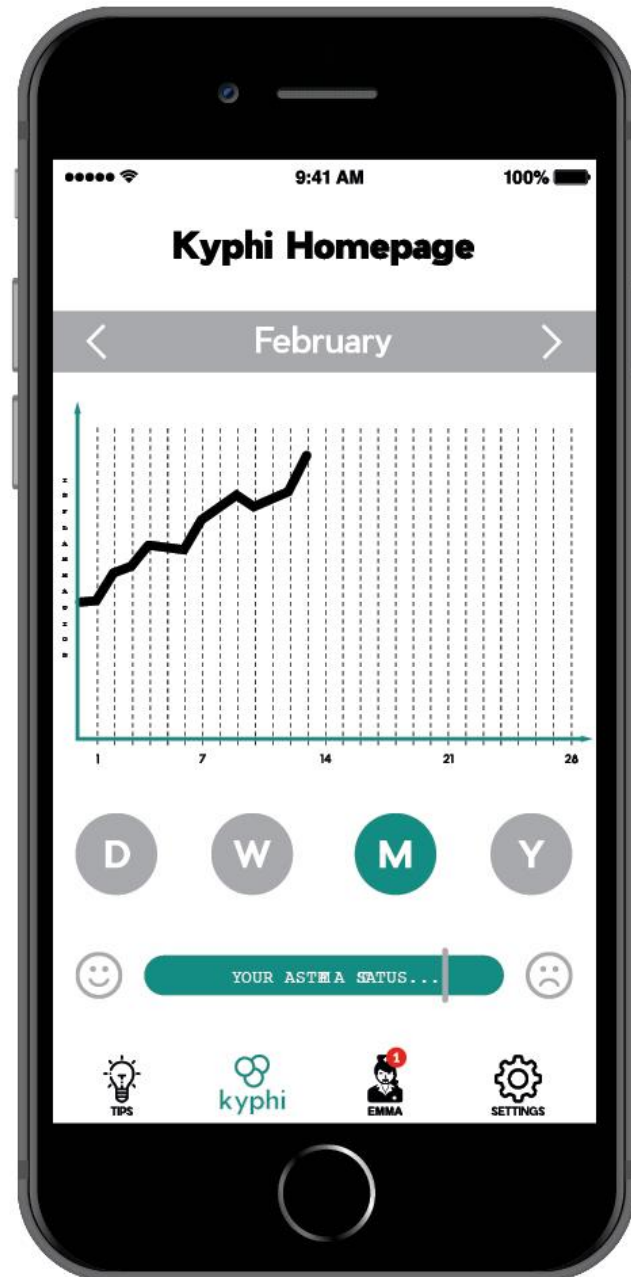
Acoustic Chamber



Glass Fiber Membrane



Kyphi APP



Emma



Hey Lorenzo, I saw that you've been getting worse during the last days :(Have you taken the medications?!

Emma, Hi!
Yes, I followed my therapy regularly



Oh, that may mean that the treatment is not working properly.
I think this is something to care about.
Do you want me to book an appointment with Dr. Kelso for you?



Doctor view



**“I know many of
my patients lie”**

Kyphi system

Monitor conditions

Prevent crisis

Improving
communication



DOCTOR

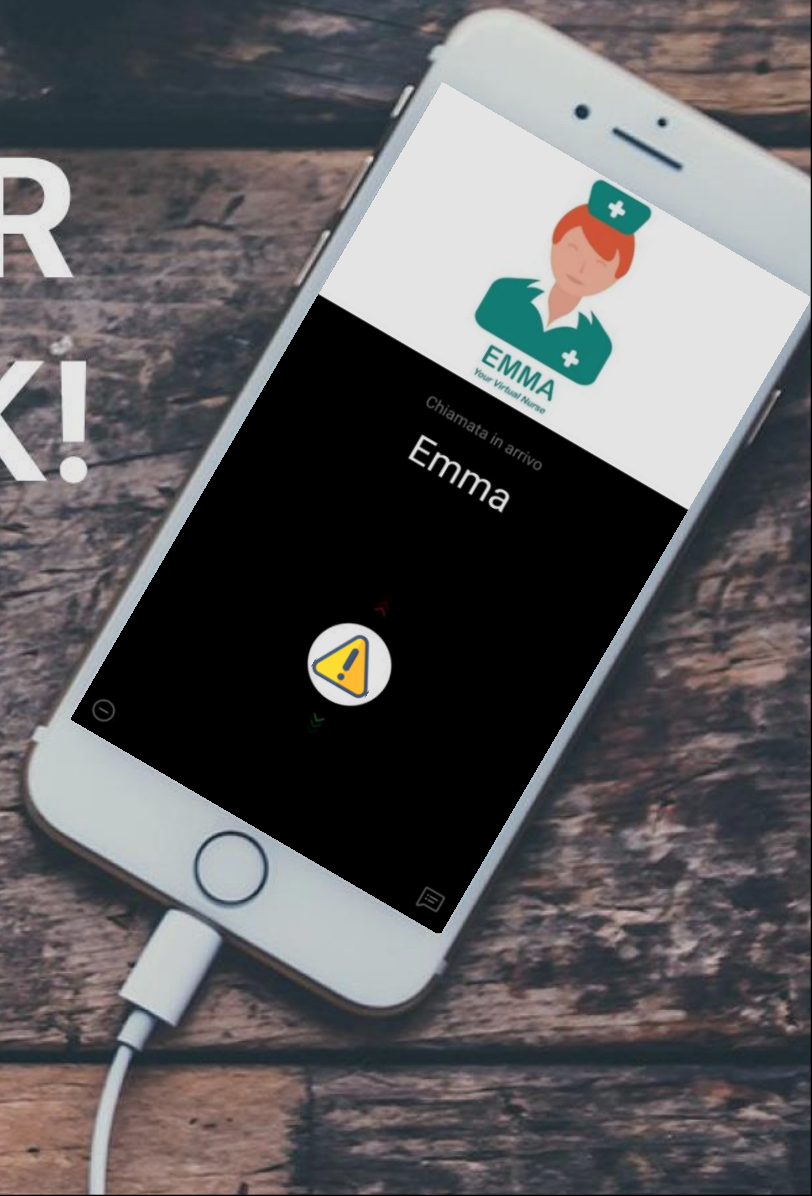
Decision making supported by data
Reduced work stress

HEALTH CARE SYSTEM

Less hospitalization



**GET YOUR
LIFE BACK!**



***“I have no way to
contact my doctor,
I need this.”***

***“I will wear all day
long if can predict
my attacks!”***

***“I could finally see
my asthma, not
only perceive it!”***

***“Having information
and feedbacks will
be precious”***

***“Do you really think
you can do that?
This is amazing!”***

“Any minute before an attack is helpful!”

Next steps

- **electronics and algorithms**
- **legal consultancy**
- **clinical test**

WHAT

else we can
get from sounds?



THANK YOU!



Università
degli Studi
di Ferrara



UNIMORE
UNIVERSITÀ DEGLI STUDI DI
MODENA E REGGIO EMILIA



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA



ALMACUBE
EMPOWERING INNOVATORS
Alma Mater Studiorum - Università di Bologna

