Therapy Autocuidados
Tele medicine is already possible

ARB Systems
Proyectos Electrónicos SL

Diagnostic tests transmission →

Medical response in real time ←

Doctor-patient videoconference ←→

Confort
Atención
Bienestar
Seguridad
Responsabilidad

Tele consultation
Tele diagnosis
Tele monitoring (remote vigilance)
Home follow-up (chronic, postoperative, dependent, ...)
Rehabilitation programs
Video assistance to old age, (mental exercises, etc. ...)
...

Our goal is to lead the change that leads to the optimization of health resources, from management and technological excellence.

Therapy Autocuidados
Our Technology

- Therapy Self-care is a device designed for the Tele monitoring of patients, (evaluation, monitoring and diagnosis), from your own home or from your nearest pharmacy office and prepared for the realization of 9 diagnostic tests, all of them **NOT INVASIVE**

- **The equipment measures the 5 parameters considered as vital signs:** oxygen saturation, blood pressure, heart rate, respiratory rate and temperature.

- Each and every one of the tests can be performed directly by the patient, without the help of anyone.

- Through the video system that the device incorporates, **patients receive early warnings regarding** their health status, so that they can take measures at home to improve it, instead of waiting for their condition to worsen and having to be hospitalized.

- The device not only provides the results of each of the diagnostic tests to the patient, but also transmits these data, in real time, to the healthcare system, to your doctor, ...

- Therapy Self-care is designed for the early detection of the symptoms of diseases, such as asthma, COPD, hearing loss (optional), glycemia, heart disease, etc., as well as in the fight against smoking, with the introduction of Cooximeter in the equipment.

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Life in health as an objective, self-care as a means

Self-care, an essential element for life in Health

According to the estimates of the National Institute of Statistics, in the coming decades, life expectancy at age 65 will be between 25 and 27 years for women and between 20 and 21 years for men and at 80 years of age, it will be between 12 and 13 years for women and between 9 and 10 for men.

With what is expected, that in the year 2050, more than 30% of the population will be over 65 years of age, being the group of people 70 - 74 years of age the most numerous.

It is estimated that chronic diseases will be the main cause of disability in 2020 and that by 2030 the current incidence will double.

One of the immediate consequences of this effect is the rapid increase in patients with multiple chronic diseases. **People with multiple chronic diseases represent more than 50% of the population with chronic diseases**. The costs for the health system of patients with more than one chronic disease **can be multiplied by six** compared to those who do not have any or only have one.

If this problem is not adequately addressed, not only it will consume most of the resources of the health systems, but it may even question the sustainability of our current health system.

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Analysis devices

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Welcome to a new era in the care of health and quality of life especially of our elders

PATENTED SYSTEM

COMBI PREVENTION

DESKTOP EQUIPMENT

- Videoconference (doctor-patient)

- RFID (Automatic identification of the patient by proximity)

- Tensiometer (with calibration autocheck)

- Pulse Oximeter (Pulse and Oxygen Saturation)

- BMI (Optional + weight)

- Digital thermometer

- Cardio Therapy (Cardiovascular Control):
    - Heart rate and average heart period
    - Heart rate variability
    - Stress of the heart, effort / relaxation balance
    - Risk of arrhythmia and fibrillation

- Cooximetry (Carbon Monoxide Level)

- Spirometry (disposable nozzle and turbine)

- Detection of:

    - Asthma

    - COPD

    - Estimation of lung age
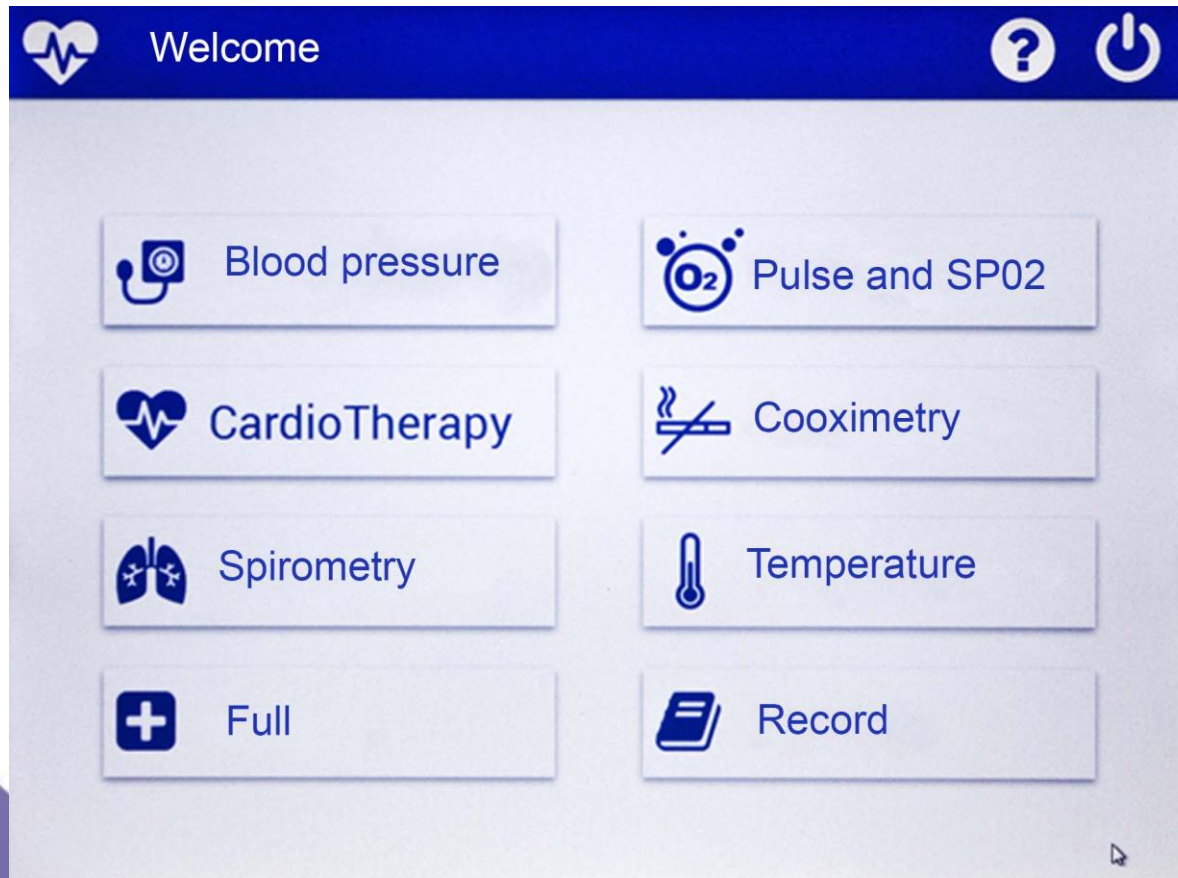
Start screen / treatment selection

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RFID **(Automatic Radio Frequency Patient Identification System)**

RFID-TAG keyring

RFID card reader

RFID bracelet

Therapy Autocuidados
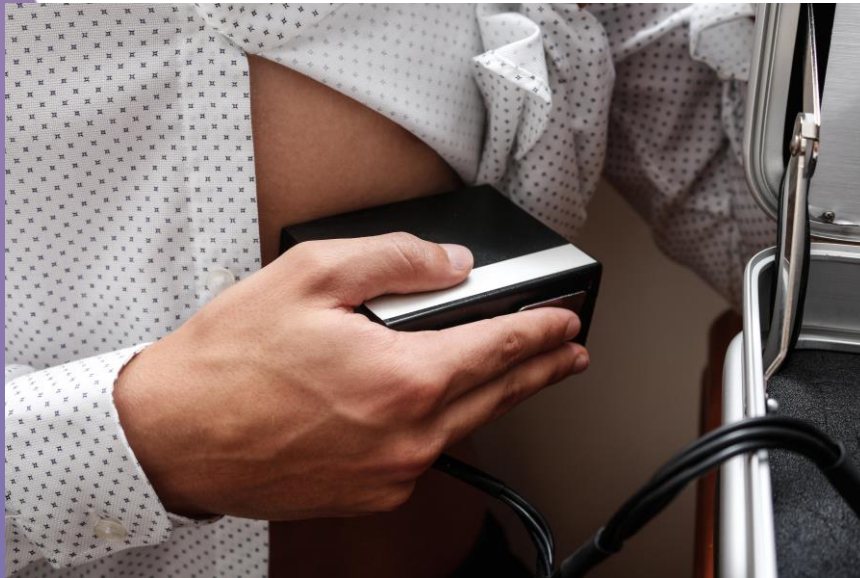## *Our Technology*

4 Electrodes
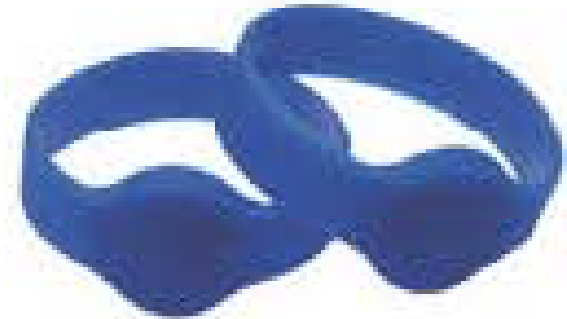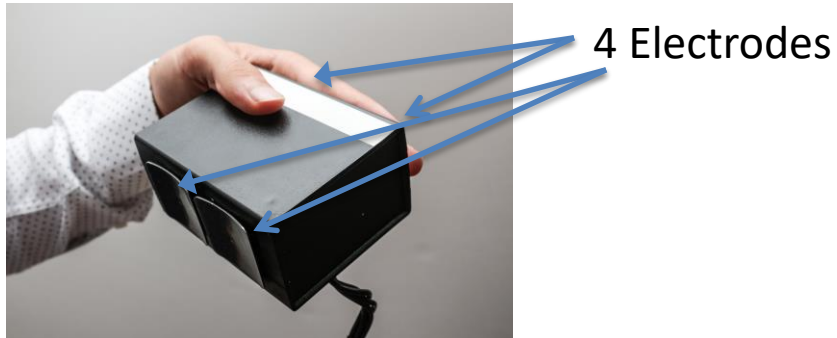
Cardio Therapy (Automatic diagnostic System)

The most advanced device of its kind

Developed entirely by ARB Systems

The automatic diagnostic system of **Cardio Therapy, in just two minutes**, is able to detect reliably, if the person suffers from any cardiac abnormality, arrhythmia, fibrillation, etc ...

And in the case of being a healthy person, determines the risk that the person may develop a cardiac abnormality, as well as the ability to remain healthy and relaxed after a stressful situation.

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Cardio Therapy (Automatic diagnostic System)

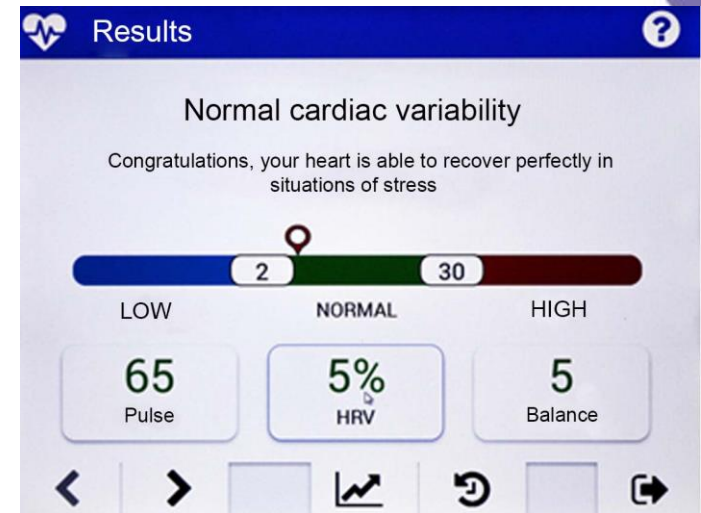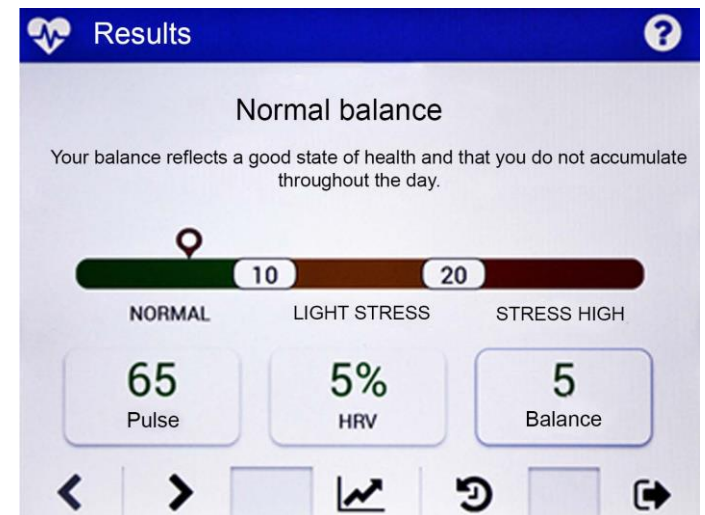| Values provided by Cardio Therapy	
Heart rate	High rhythms represent less ability to cope with stress. Abnormally low rhythms may indicate abnormalities in the heart.
HRV (Heart Rate Variability)	**The HRV provides an indicator of the aging of the very important organ systems.** **And it is a stress indicator and the body's ability to recover after stressful situations.**
Balance	It is based on the LF / HF (Low Frequency / High Frequency) ratio, the **low frequency, represents the sympathetic system, (the one that prepares us for action), while the High frequency, represents the Parasympathetic system, (It is the responsible of the regulation of internal organs).**
Arrhythmia risk	Indicates if the person suffers or is at risk of suffering from some type of arrhythmia and the seriousness of it.
Risk of fibrillation	Indicates if the person suffers or is at risk of suffering from some type of fibrillation.

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Cardio Therapy (Automatic diagnostic System)

Record

Average Heart Pulse

It is not a worrisome situation, but we recommend that you do physical activity to ensure an optimal state of health.

50 — 70 — 100

LOW — NORMAL — MEDIUM — HIGH

72 Pulse | 4% HRV | 4 Balance

Analysis of the heart rate, depending on the age establishes some criteria or others to determine the state.

Results

Normal cardiac variability

Congratulations, your heart is able to recover perfectly in situations of stress

2 — 30

LOW — NORMAL — HIGH

65 Pulse | 5% HRV | 5 Balance

HRV analysis

Results

Normal balance

Your balance reflects a good state of health and that you do not accumulate throughout the day.

10 — 20

NORMAL — LIGHT STRESS — STRESS HIGH

65 Pulse | 5% HRV | 5 Balance

Balance analysis
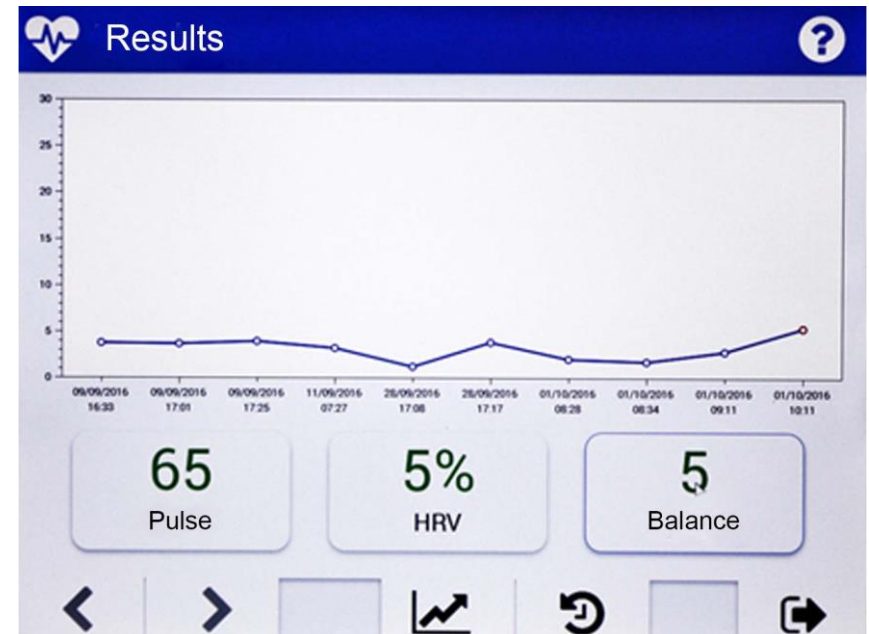
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Cardio Therapy (Automatic diagnostic System)

Electrocardiogram, graphic representation in real time of the entire test, to be analyzed at any time by the cardiologist ...

Graphic representation of the historical record of the different tests carried out. The equipment stores the results of all the tests carried out, both of Cardio Therapy and of the other devices.

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Cardio Therapy (Automatic diagnostic System)

CARDIAC RISK DETECTION

HRV (heart rate variability) provides an indicator of the aging of very important organ systems.

As the age increases, our body's ability to regulate processes declines and the HRV decreases. When it is the natural end of our lives, the HRV also falls to the minimum; for this reason, the HRV measurement allows us to draw conclusions regarding the biological age of our body.

Chronic stress reduces HRV, this is an indication of a deficiency in the resistance of the Cardiorespiratory System. This can lead to very dangerous cardiovascular diseases.

People who have a low HRV have a higher risk of cardiovascular problems and the probability of having a heart attack or sudden death from heart problems increases.

Cardio Therapy (Automatic diagnostic System)

DIAGNOSTIC SYSTEM

The diagnostic system consists of two phases.

- The analysis phase, in which the detected PQRST points are analyzed to obtain information about the patient's signal.

- The diagnostic phase, in which the system uses the information obtained in the previous phase to obtain the five parameters mentioned above.
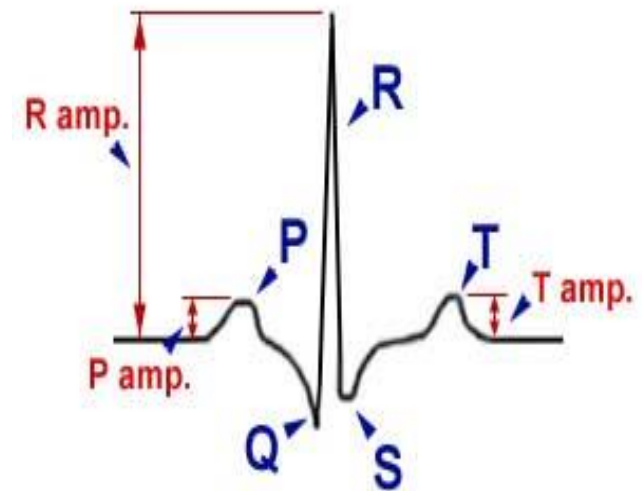
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Cardio Therapy (Automatic diagnostic System)

ANALYSIS PHASE

- In this phase, biometric data are obtained that are useful to perform the necessary diagnostics to detect cardiac anomalies.

- Cardio Therapy analyzes the signal to detect **the QRS points, as well as the inflection point and the duration of the P and T waves.**

- After this first analysis, the system obtains the following data:

  - **Duration of RR intervals**
  - **Duration of PP intervals**
  - **Duration of TT intervals**
  - **Duration of PR intervals**
  - **Duration of corrected QT intervals (QTc)**
  - **Duration of QRS complexes**
  - **Amplitude of QRS complexes**
  - **Percentage of P waves not present**
  - **Inverted QRS complexes**
  - **Premature QRS complexes**

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Our Technology

Obtaining the Pulse, HRV and balance.

Cardio Therapy (Automatic diagnostic System)

To show the HRV, we take as a measure **the coefficient of variation.**

The equilibrium data is based on **the LF / HF ratio**, which we obtain by performing a frequency spectral analysis on **the variation of the RR intervals.**

This data is weighted according to the heart rate to better reflect the relationship between the sympathetic system and the parasympathetic system.

In this LF / HF (Low Frequency / High Frequency) ratio, **the low frequency represents the sympathetic system, (the one that prepares us for action), while the high frequency represents the system for the sympathetic , (Is responsible for the regulation of internal organs).**

Cardio Therapy (Automatic diagnostic System)

Obtaining the risk of arrhythmia 1

To determine the risk of arrhythmia, anomalies are detected in the data obtained in the first phase.

The anomalies analyzed and detected are the following:

- Heart rate too low or too high
- P waves absent mostly
- P-wave desynchronization with QRS complexes
- QRS interval too large
- PR interval too large or too small
- Interval QTc too large or QTc too small
- Premature QTc complexes, which also have a different amplitude, or are inverted compared to the rest
- Ratio of inverted QRS complexes
- Present fibrillation

The arrhythmia risk indicator is calculated based on the quantity and severity of the anomalies detected.

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Obtaining the risk of arrhythmia 2

Cardio Therapy (Automatic diagnostic System)

Cardio Therapy is able to alert users in case they suffer from any of these heart conditions:

- Accelerated idioventricular rhythm
- Accelerated junctional rhythm
- Auricular and Ventricular Flutter
- Atrial and Ventricular Fibrillation
- First, second and third degree cardiac blocks
- Dilated cardiomyopathy
- Pericardial effusion
- Functional and ventricular escape rhythms
- Fusion beats
- Left branch block
- Right branch block
- Pre-excitation syndromes (Wolff-Parkinson-White syndrome)
- Myocarditis
- Premature complexes (ventricular, atrial and junctional)
- Short QT syndrome
- All types of tachycardia
- All types of bradycardia

Obtaining the arrhythmia risk 3   **Cardio Therapy** (**Automatic diagnostic System)**

The risk of arrhythmia alert will also be high and will be detected by the equipment, in some cases of diseases not directly related to the heart, but which influence it, as well as the presence of certain substances in the body.

Some of the cases in which this occurs are:
- High intercranial pressure
- Hypercalcemia
- Hyperkalaemia
- Hypocalcemia
- Hypokalaemia
- Hypomagnesemia
- Hypothermia
- Among other

The program is able to detect pacemakers that are not working correctly.

Obtaining the risk of fibrillation

Cardio Therapy **(Automatic diagnostic System)**

Since fibrillation is a special case of arrhythmia, which should be treated urgently, and whose analysis is rather peculiar, a specific risk marker has been established for these cases.

This indicator, in addition to using some of the anomalies studied in the arrhythmia risk indicator, also uses a specific metric calculated on **the variability of RR intervals.**
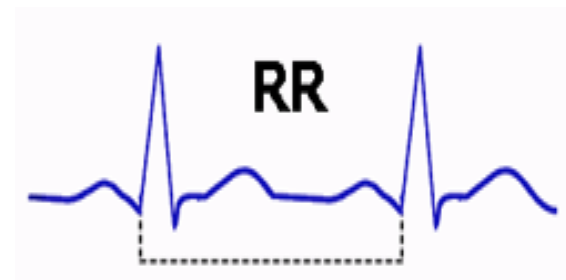
Therapy Autocuidados
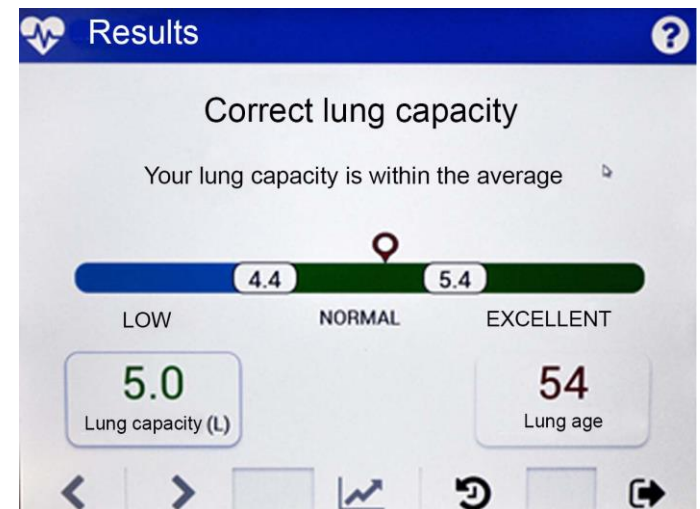## Our Technology

Spirometry

Spirometry, with disposable turbine and nozzle: (maximum precision and hygiene). The equipment incorporates a powerful software for the advanced interpretation of the spirometry test, **which allows detection in the early stages of diseases such as:**

Asthma: A highly frequent disease, which varies a lot from one country to another and affects around 3 to 7% of the adult population, being more frequent in children ages. **Being one of the most important chronic diseases.**

COPD: (chronic obstructive pulmonary disease), this disease has a prevalence among the world population that is between 5 and 10% and the tendency is to increase. It is a preventable and treatable disease in a significant percentage of cases, if it is diagnosed in time.

Estimation of lung age. The powerful software developed is able to determine the level of pulmonary deterioration of the patient represented by the "Lung age" data.

Disposable turbine and nozzle

Results

Correct lung capacity

Your lung capacity is within the average

4.4 — 5.4

LOW   NORMAL   EXCELLENT

5.0
Lung capacity (L)

54
Lung age

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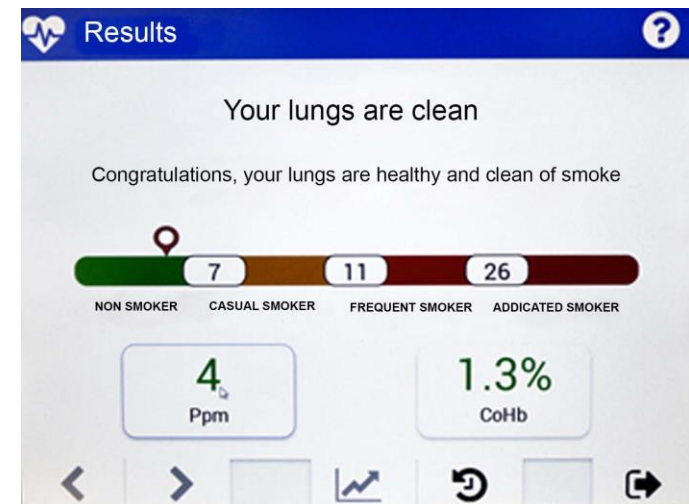## *Our Technology*

Cooximetry

Developed entirely by ARB Systems

Cooximetry: An element of inestimable value for the fight against smoking, (it helps very effectively smokers to quit), with the detection of the level of **carbon monoxide.**

The equipment provides the novelty of adjusting and adapting the level of precision, automatically, depending on the age of the patient (adult or adolescent), providing real-time readings of:

Levels of carboxyhemoglobin (COHb),
Levels of CO (carbon monoxide in ppm)

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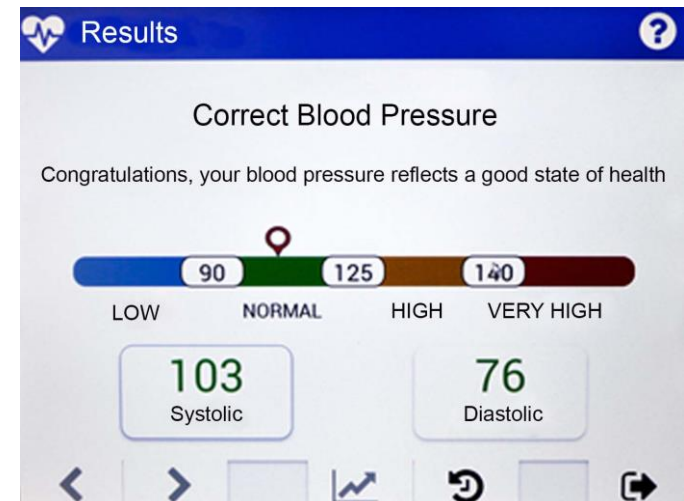## *Our Technology*

Digital tensiometer

Developed entirely by ARB Systems

Developed and controlled by a powerful intelligent and extremely precise algorithm, which incorporates on the one hand a sophisticated filtering system for the different signals received and which, among other improvements, adjusts the inflation according to the characteristics of the patient.

The only one in the market with Auto-check calibration, which avoids problems of reading errors, when the equipment is out of the calibration ranges, either by use or by a possible de-calibration and offers optimal levels of precision.

Results

Correct Blood Pressure

Congratulations, your blood pressure reflects a good state of health

| 90 | 125 | 140 |

LOW   NORMAL   HIGH   VERY HIGH

103
Systolic

76
Diastolic

Therapy Autocuidados
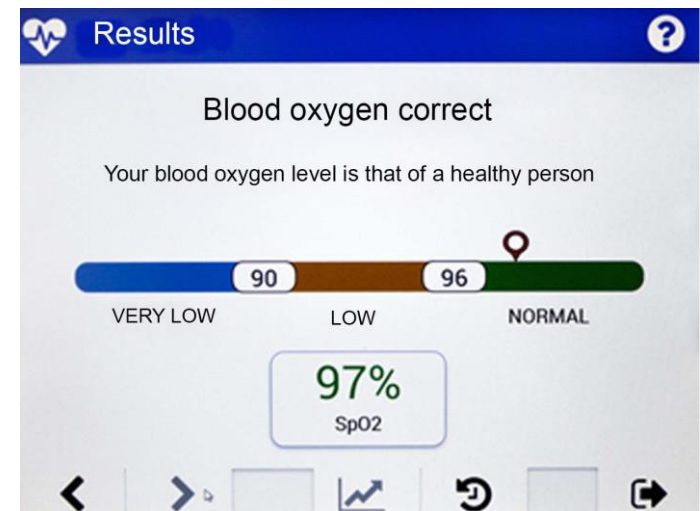## *Our Technology*

Pulsioximetro

The device emits light with two wavelengths of 660 Nano-meter (nm), (red) and 940 nm (infrared) which are respectively characteristic of oxyhemoglobin and reduced hemoglobin.

By comparing the light absorbed during the pulsatile wave with respect to basal absorption, the percentage of oxyhemoglobin is calculated ...

An ergonomic clip allows you not to lose your position and guarantee the quality of the reading.

It provides the data of:

- SPO2 Blood oxygen saturation
- Heart rate
- Pulse curve.

Results

Blood oxygen correct

Your blood oxygen level is that of a healthy person

90	96
VERY LOW	LOW	NORMAL

97%
SpO2

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Our Technology

Infrared digital thermometer

The device makes the measurement of the light energy that is in the infrared **(IR)** band, with a detector that converts it into an electrical signal.

The equipment measures the temperature of a portion of the tissue surface, from the emission of light of the black body type that it produces.

This method allows to measure the temperature remotely and without contact, with great precision.
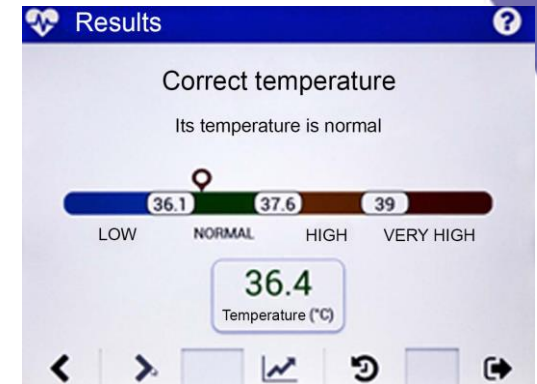
Therapy Autocuidados
Our Technology

Other elements and possibilities that the equipment incorporates

- Video, (doctor - patient Video conference)
  - Tele consultation
  - Tele diagnosis
  - Tele monitoring
  - Telerehabilitation programs
  - Tele assistance to the elderly and dependents
    - Tele mental health Treatments
    - Psychological Support
    - Motivation about healthy lifestyle habits
  - Sending early alerts to patients
  - …
- Transmission of diagnostic tests.
- Emergency button for elderly
- Wifi connection, GSM, 4G, ...
- Touch screen, Audio, external printer connection, USB ports, ...

Therapy Autocuidados is based on an **open system,** capable of incorporating new applications, to cover diagnostic and / or management needs that may occur now or in the future.

Therapy Autocuidados
Equipment presentations

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Equipment for installation in homes

COMBI PREVENTION

Equipment for installation in pharmacies, gyms, shopping centers, airports, etc.

Portable equipment for assistance in work centers, occupational prevention, etc. ...

ARB Systems Proyectos Electrónicos SL Facilities

Some of the products developed by ARB Systems
for medical /hospital sector like:
Laboratorios Cair, Galmaz Biotech, Combat ltd, Biosurgical, Celsius medical, Haake Alemania, ...

Normotermia products line, for heating blood, fluids…

Chemo-Hyperthermia Treatment Equipment for the treatment of Bladder cancer, Ovarian cancer, Colorectal cancer, Gastric cancer, ...

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