



Cyfrowe zdrowie - nowy obszar biznesowy - Czy wykorzystujemy nowe szanse?

Forum eZdrowia 2018

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Cases

- Hybrid Cardiac Rehabilitation
- Post cardiac-surgery monitoring in Monzino, Italy
- Non-invasive monitoring in early detection of silent atrial fibrillation
- Hybrid COPD rehabilitation
- Health City
- Cystic Fibrosis – monitoring
- Telepharmacy
- Telecare



CARDIOVASCULAR DISEASE

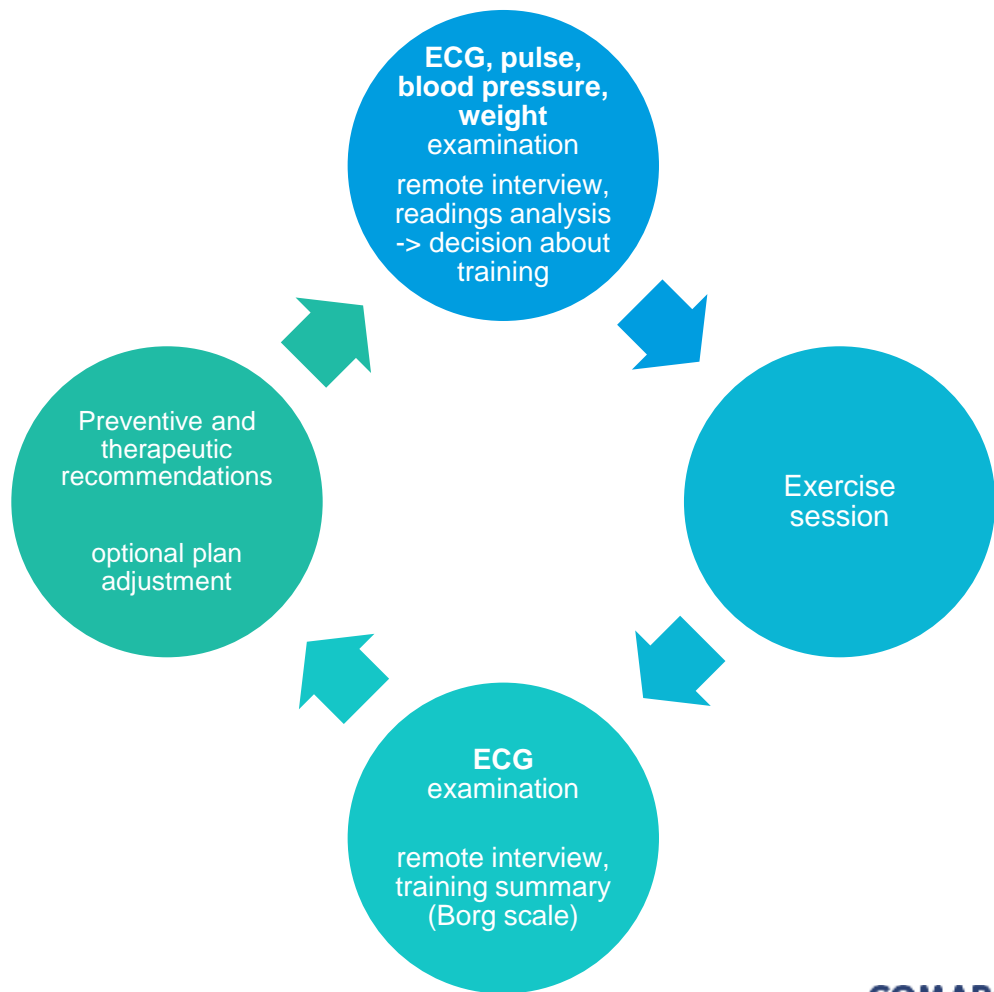
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Polish case: Hybrid Cardiac Rehabilitation

Medical protocol established (and proven to be safe and cost-effective) during a clinical trial



Faster return to work (not only Healthcare system is beneficiary)



Post cardiac-surgery monitoring

- **Centro Cardiologico Monzino** - one of the leading cardiac hospitals in Italy
- e-Care platform, our Holter software and PMAs
- Patients after heart-valve replacement, by-pass and ascending aorta replacement
- Protocol:
 - Long term ECG examination (7-14 days),
 - Home ECG tele-monitoring (for 3 months)



Cardiological Center in Bayern – cross-border patient monitoring

- Private cardiology clinic with affluent patients from Russia, Iraq, Saudi Arabia
- Goal
 - „lead-generation” through portal and video consultations
 - patient engagement
 - appropriate preparation before surgery / on-site visit
 - qualification & training
 - remote-monitoring + remote video consultations
- Monthly margin per patient: 50 euro
- Number of patients: 1000
- Yearly margin: **600.000 euro**



STROKE & ATRIAL FIBRILLATION

Stroke

- A stroke occurs when the blood supply to part of your brain is interrupted or reduced. Within minutes, brain cells begin to die.
- **1/3 of all strokes are caused by Atrial Fibrillation** and these have worse outcomes than in patients without AF - higher mortality, severity, recurrence, functional impairment)
- Atrial Fibrillation can be asymptomatic (silent) and paroxysmal
- So far effective detection of AF has required:
 - Implantable Loop Recorders (costly and invasive) or
 - 24h holter ECG repeated for several days (ie. 30)
 - skin irritation caused by patches,
 - massive amount of ECG to be analyzed by specialists (costs)

Clinical Trial: Non-invasive monitoring in early detection of silent AF

- **Scope:** 3000 patients, 65+ (randomly selected across Poland)
- **Partners:** Comarch Healthcare, KardioMed Silesia, Universities (Uniwersytet Jagielloński Collegium Medicum, Pomorski Uniwersytet Medyczny w Szczecinie, Warszawski Uniwersytet Medyczny, Gdański Uniwersytet Medyczny), Institute of Medical Technology and Equipment
- Honorary Patronage of the Ministry of Health
- Funding: National Center for Research & Development

Our technology solves these issues



Textile electrodes



Comfortable,
biocompatible vest

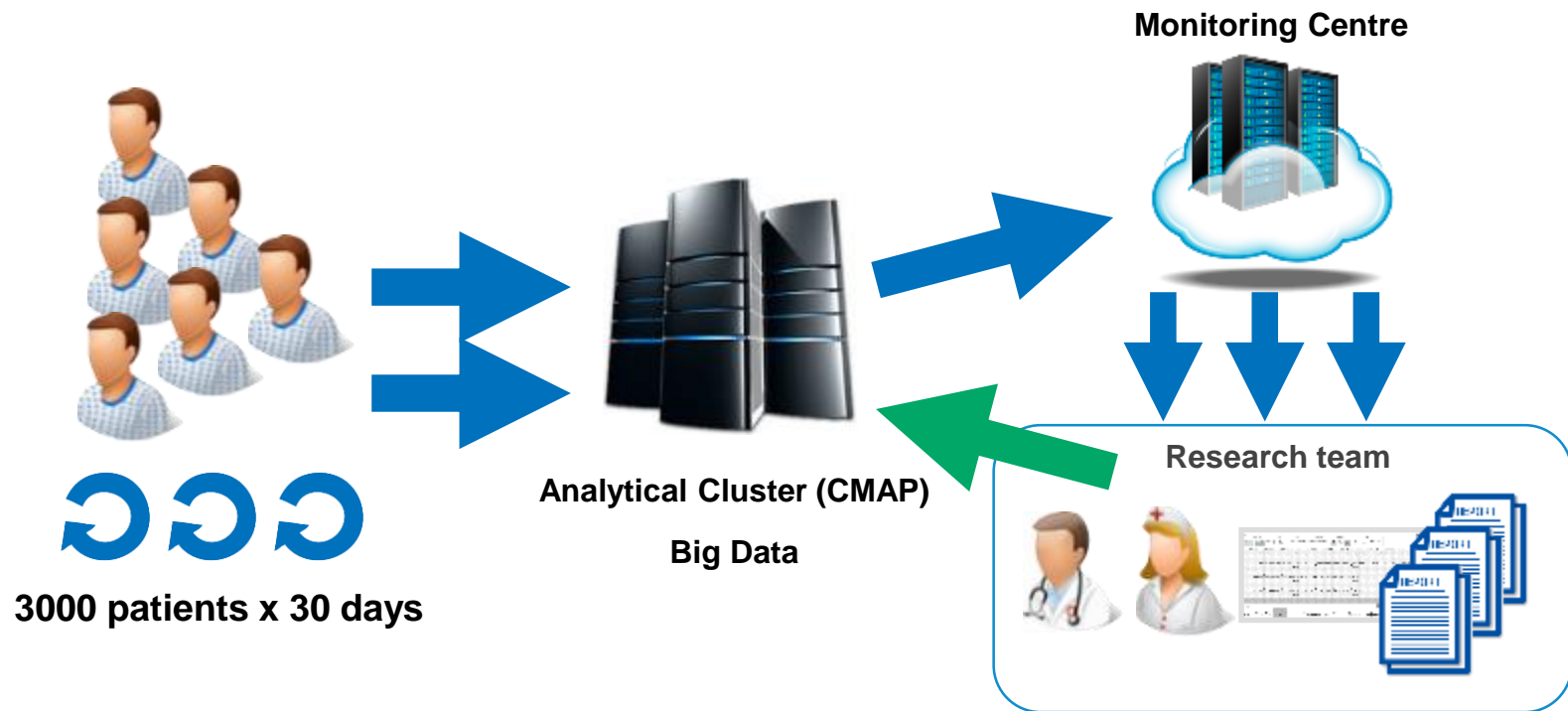


Recorder &
dock station



CMAP &
e-Care

Clinical Trial, 3000 patients, over 2 mln hours of ECG signal



ECG Viewer powered by CMAP



01-1-2018

Assign to

Show report

PATIENT DATA

Identifier:
01-1-2018

Gender:
Male

Age:
28 yrs

MEASUREMENTS

Measurement number:
3

Duration:
21 hrs 5 min

Real duration:
21 hrs 4 min

Measurement start:
01/09/2018 10:18 AM

Measurement end:
01/09/2018 7:23 AM

Ampl: $\pm t_2$

Ampl: $\pm t_2$

Offset: $\pm t_2$

Offset: $\pm t_2$

Offset diff: $\pm t_2$

Offset diff: $\pm t_2$

AF

AF



AF

X

12:02:24 PM duration: 6 min

1:20:06 PM duration: 11 min

dispatcher dispatcher
AF confirmed - 03/27/2018 - 11:26 AM

AF

X

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CLINICAL TRIAL: HYBRID COPD REHABILITATION

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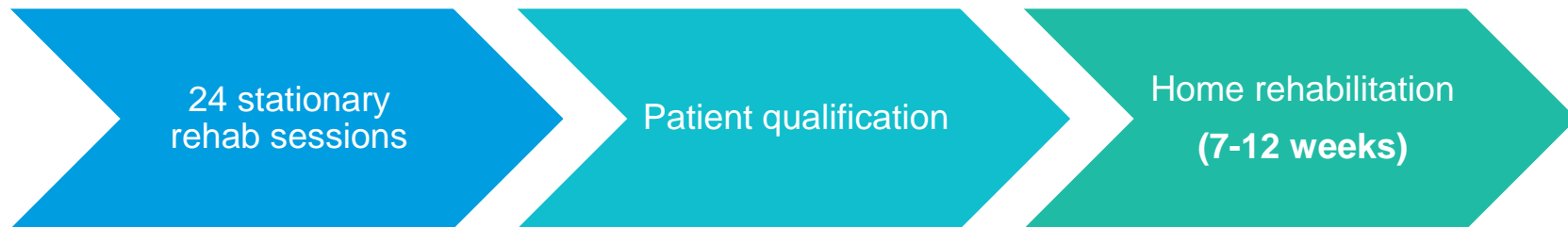
Clinical Trial: Hybrid COPD Rehabilitation

Partners: Comarch Healthcare, Gdanski Uniwersytet Medyczny, Klinika Rehabilitacji GUMED, Zakład Fizjologii Człowieka

Goals:

- Delivery of medical protocols dedicated for COPD rehabilitation leveraging telemedicine solutions
- Patient monitoring
- Clinical effectiveness analysis
- HTA analysis
- Application to Ministry of Health and The Agency for Health Technology Assessment and Tariff System

Clinical Trial: Hybrid COPD Rehabilitation



Patient qualification: based on interview, COPD Assessment Test and examinations - RTG, spirometer, ECG, weight, height, BMI, pulse oximeter, morphology, biochemical labs, exertion test

Home rehabilitation:

- cycle of sessions with physiotherapist (1-to-many - physiotherapist can see all patients, patients don't see each other)
- motor rehabilitation, physical training, breath exercises
- adjustments based on individual readings
- automated reminders



MEDICAIR APPROACH



Generic Public Tender



- Provide telemonitoring service as a plus to oxygen home supply
- Pulmonary ventilator monitoring at patient's home – Innovative service provided by MedicAir (differentiate the product/service)



Our Italian Partner - MedicAir



STEP 1

STEP 2

STEP 3

STEP 4

STEP 5



PARTNERS

MedicAir and Medicare

TECHNOLOGY IMPLEMENTATION

Pulmonary ventilator
monitoring

PILOT PROJECT

workflow and
monitoring protocol

TELEMEDICINE GUIDELINE

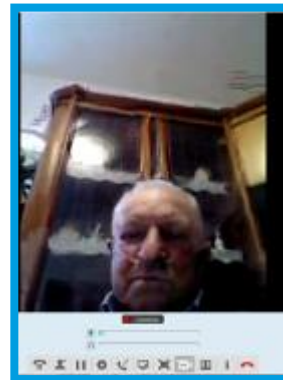
Compliance with
Italian legislation

PUBLIC SERVICES

- Telemonitoring dedicated tender
- Improvement in specific tender (oxy)
- Patient specific prescription
- No profit organization (patients' association)

Results

Project ongoing in collaboration with 16 HOSPITALS



More than 20000 events managed by the monitoring center



Monitoring of patients with Cystic fibrosis

- Cystic fibrosis
 - a genetic disorder that affects mostly the lungs
 - no known cure, lung infections are treated with antibiotics
 - adult patients require frequent clinical checks
 - lung transplantation may be an option if lung function continues to worsen
- Process
 - Remote measurement of lung performance - holter, pulse oximeter, spirometer, questionnaires - to collect as much clinical data as possible and verify the reduction of clinical checks
 - Pre-transplantation monitoring (additional pulmonary ventilator monitoring) – day-by-day vitals collection – reduced organ rejections
 - Post-transplantation monitoring



HEALTH CITY – ZABRZE

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Project Scope

- **Population** – group of 100 people (65+)
- **Focus on 4 groups:** cardio, diabetes, pulmonary, stroke
- **Phase 1 - basic examination** – weight, blood pressure, glucose levels, ECG, basic interview – recognized diseases and medications
- **Phase 2 - examination using remote monitoring** – based on patient qualification, led in accordance to appropriate medical protocol
- **After 18 months** – assessment

Diabetic patients' group

- Glucose for the first month daily, and then 3x per week (Monday, Wednesday and Friday)
- ECG from lead and HR twice per week (Tuesday and Friday)
- Reminder about tests and medication (every patient)
- At the end of the pilot program: basic tests and satisfaction survey

Group of people with respiratory system diseases

- Pulse oximetry every day
- Spirometry in the 1st, 3rd and 6th month
- ECG from lead twice per month
- Reminder about tests and medication (every patient)
- At the end of the pilot program: basic tests and satisfaction survey

Cardiovascular diseases

- Once per week: 300 from lead for 30 seconds, Event ECG available all the time (in case of symptoms of arrhythmia), TG, weight (every patient)
- Reminder about tests and medication (every patient)
- At the end of the pilot program: basic tests and satisfaction survey

Depending on the recognized disease:

- HIV A 3-37
 - ECG1: every 3 days
 - Pulse oximetry: once per month
 - Holter: 24h in the 1st, 3rd and 6th month
- Atrial fibrillation:
 - HR: once per month
 - Holter: 24h in the 1st, 3rd and 6th month
- Severe arrhythmia or palpitation without diagnosis:
 - Holter: 24h in the 1st, 3rd and 6th month
- Syncope:
 - Holter: 24h in the 1st, 3rd and 6th month (every patient)
- Hypertension:
 - HR twice a day for the first two weeks, then – depending on regularly (min. twice a week)

Group of people after stroke

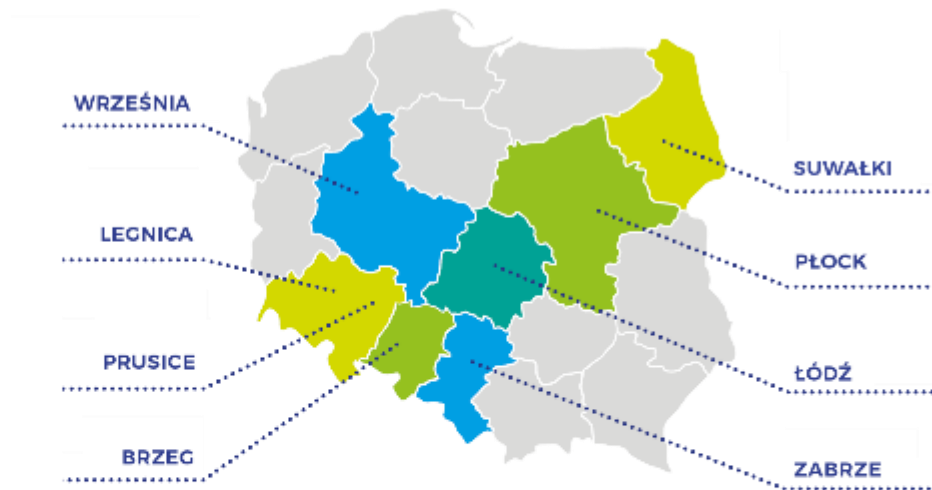
- every second day (Monday, Wednesday, Friday)
- ECG from lead 3Ds
- Holter 7d in the 1st, 3rd and 6th month (alternatively - 30d CardioVest in first month + ECG from lead starting in 2nd month, Holter ECG in 3rd and 6th month)
- Twice a week (Tuesday, Thursday) - RR
- Reminder about tests and medication (every patient)
- At the end of the pilot program: basic tests and satisfaction survey



Insights

- Description of the disease, its pathogenesis and complications
- Statistical incidence rate
- Predicted incidence rate for the city
- Distribution of treatment costs at various stages (eg. GP, Emergency, Hospital)
- Simulated costs of treatment without and with remote monitoring
- Recommendations

VARIOUS CITIES ACROSS POLAND & GERMANY





TELEPHARMACY

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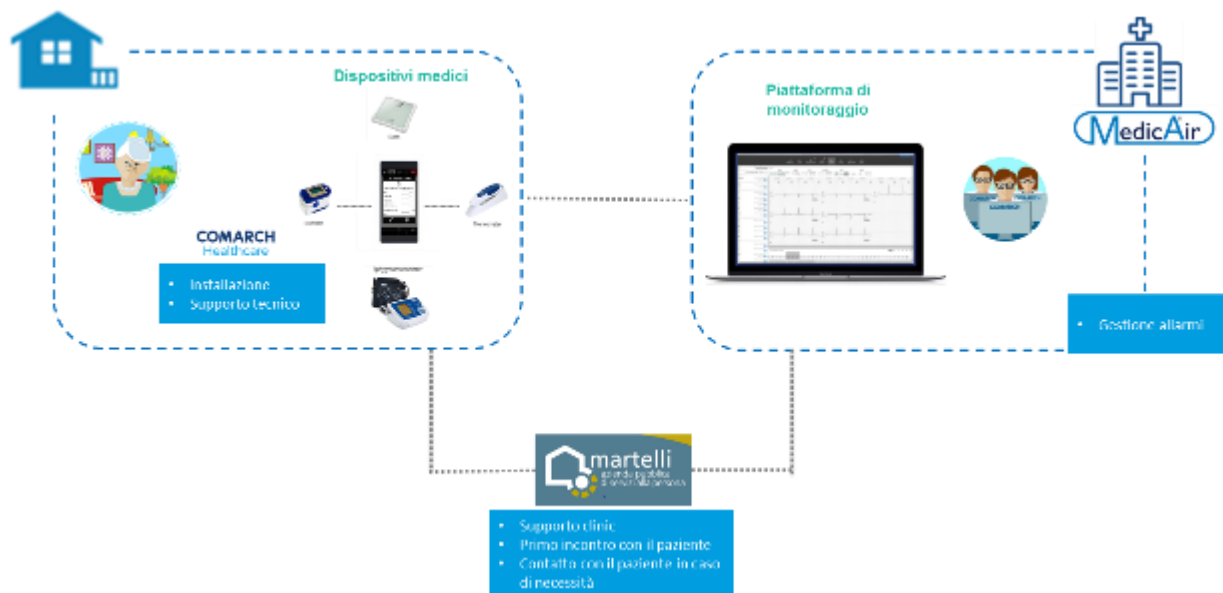
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Types of appointments

- **Televisists** (video-call only)
 - nutritionist
 - dermatology
- **Specialized televisit** (video-call + examinations)
 - Cardiac
 - Pneumology
 - Wound therapy
- **Examination only**
- **Second Opinion**

Remote care during pre-admission period to a Nurse House

- The customer is an innovative and technology oriented nurse house



Remote care during pre-admission period to a Nurse House

- In Italy patients have to wait for admission, they usually apply to several nurse houses
- Goals
 - to engage patients
 - figure out how much patients are willing to pay
- Most RSAs are partially public and partially private - they can provide additional as a paid service

Online Urgent and Emergency services in UK

- The UK's Urgent and Emergency healthcare services are in a period of transition
 - the average wait time to see a GP through appointment is 13 days
 - increased by 3 days since 2015 and is forecast to increase annually by 30%
- **Short term goals**
 - provide urgent healthcare appointments that are convenient and accessible to all patient groups - video consultations with clinicians who specialize in acute and urgent care
 - enhance patient education and empower people to manage their healthcare needs
- **Long term goals**
 - to work with the NHS and supply telemedicine solutions specifically for Care Homes and other supported residences
 - to expand the original business model and incorporate other niches of the private healthcare market such as corporate healthcare, travel and holiday care and student health.

RSA Santa Colomba – Remote Specialist at Nurse House

- Most Nursing Houses don't have their own doctors in Italy – patients are under treatment of their own GPs
- In Lombardia region Emergency Medical Guard (Emergence Guardia Medica) can be called if GP is not available and case doesn't qualify for hospitalization
- RSA overused this and this option has been banned since last summer
- RSA requires a physician but it's not cost-effective to have him on-board
- **Goals:**
 - provide remote specialist available for a video-consultation
 - automated data acquisition at bed using SMA – vitals, drug therapy, questionnaires directly saved in EHR, access to data granted for remote specialist

SUMMARY