



CRANE

Use cases for CRANE

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Document Summary

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1 Use cases for CRANE

1.1 Use case COPD

1.1.1 Initial input

Chronic obstructive pulmonary disease (COPD) is a chronic inflammatory lung disease that obstructs airflow from the lungs. Symptoms include breathing difficulty, cough, mucus (sputum) production, and wheezing. It's typically caused by long-term exposure to irritating gases or particulate matter, most often from cigarette smoke. People with COPD are at increased risk of developing heart disease, lung cancer and a variety of other conditions.

Existing data on COPD prevalence are in general insufficient and irregularly distributed; in many regions of Europe there is a striking scarcity or even an absolute lack of epidemiological information about this important health issue. Despite this, recent estimations suggest a prevalence of 7,7% in Europe, which means around 60 million people.

COPD has no cure, but the disease's evolution can be controlled with medication, adapted exercise, oxygen therapies, and giving up smoking. Self-management is key; drug adherence and lifestyle changes can reduce and even avoid exacerbations and hospital admissions.

In terms of self-management and virtual care intervention from telehealth:

- The Telecare North COPD study (a large, randomised control study) finds that there is not a measurable better clinical outcome for most of COPD patients. QoL effects is however not perceived lower¹. Only for a concrete subgroup (Gold standard 3 patient subgroup) benefits are clear.
- There are now algorithms for COPD self-management that can alert in advance of exacerbation attacks.

1.1.2 Patient persona

Carmen is 66 years old, lives in the city of Cáceres, in Extremadura, and is married to Alberto (68) and has three children, María (35), Ana (32) and Alfonso (28). Carmen was diagnosed with the condition at the age of 52, working in the banking sector, reaching towards the end of her career in the position of deputy director of a bank branch. The diagnosis ended her professional life. Now she lives on a disability pension.

COPD Debut

Carmen was a heavy smoker and not very active physically. In her mid-forties, Carmen started to develop morning coughs that became deeper from year to year. She also became increasingly tired when she had to go shopping or climb stairs. As a result of tiredness, she reduced her mobility gradually. Thus, her physical condition worsened, and so did her social life. As a result of confinement at home and reduced social contacts with family and friends, Carmen became depressive.

Finally, Carmen had to be interned in emergencies due to a heavy respiratory crisis. In the hospital, the pneumology team diagnosed her with COPD, a condition Carmen and her family had never heard of. Carmen and her family never suspected she could have a pulmonary disease. They thought that she suffered from normal smoker's cough. They also confused her symptoms with those of a heavy flu.

¹ Lilholt PH, Witt Udsen F, Ehlers L, et al. Telehealthcare for patients suffering from chronic obstructive pulmonary disease: effects on health-related quality of life: results from the Danish 'TeleCare North' cluster-randomised trial. *BMJ Open* 2017;7:e014587. doi:10.1136/bmjopen-2016-014587

Therapy

The pneumologist ordered regular respiratory medication in form of inhalators. The lungs were in such bad condition that Carmen was prescribed home oxygen therapy. The doctor also strongly recommended quitting smoking. The diagnosis at first did not mean much to Carmen, because COPD was not a concept used in her nor her family's life. It took some time for them to realise that Carmen would be dependent on oxygen for the rest of her life, that her mobility would be seriously limited, that she would never work again, and that she might end up needing a wheelchair if her prognosis did not improve.

Living with COPD

Shortly after diagnosis, Carmen's light depression worsened considerably because everything that was meaningful to her had fallen apart. Her role in the family changed from a central one as mother to a dependent one.

Slowly, as the medication and oxygen started to show their effect, Carmen regained mobility and with it, her family and social life. She did not recover her central role in the family, but as she is not so dependent any longer, she is able to find meaning in her new roles and this has a positive effect on her mental health.

Yet, the most difficult change for Carmen was giving up smoking. She followed a program run by Primary Care which helped her quit, but she sometimes still feels the temptation to start smoking again.

Living with COPD requires compliance with medication and oxygen therapy, exercise, and mobility, and caring about mental health. Compliance with medication is not always easy. Inhalators, for instance, are rationally understood to be medication, but in daily life they are not perceived as such because they are not pills; doses are therefore easier to forget. There is also such a thing as "false adherence", where patients reduce medication doses partially or totally when they feel better.

Public Healthcare systems frequently lacks sufficient resources for pulmonary rehabilitation of patients. The diversity of inhalators also makes more complex to train patients in its proper use, training is often insufficient, and the follow-up lack skills maintenance.

1.1.3 Data sources and management

Carmen's pneumologist has often prescribed medication training with a nurse. The pneumologist also orders regular spirometry tests as well as other tests of the lung-heart system. Although in Cáceres there are not enough public health psychologists and psychiatrists to support COPD patients with depression, regular scales are filled in by Carmen.

Whenever she buys her medication, Carmen uses her healthcare system ID card at the local pharmacy. Thanks to medication and oxygen, her condition has improved, although from time to time she suffers from exacerbations (that will increase in the future). Each time she suffers an exacerbation that requires hospitalisation her functional capacity declines and can't be recovered.

On the other hand, the company providing home respiratory care (HRC) monitors oxygen consumption and adherence patterns of the oxygen machine. The company has also developed HRC PROM and PREM scales that Carmen regularly fills in.

Therefore, health data sources that are available to Carmen are:

- Medical records with data on: disease evolution, medical tests, spirometry tests, exacerbations, psychology and quality of life scales, medication prescription, number of hospitalisations.

- Data from the HRC (home respiratory therapies) provider: oxygen consumption and adherence patterns, PROM and PREM
- Healthcare system ID card: medication purchase (consumption patterns).
- Smart watch registering heart rate, blood oxygen, physical activity.

1.1.4 Self-management: monitoring, prevention, and prediction

Actors – Who are the users, roles etc.

The actors of CRANE for COPD are the following

Actor	Role
COPD patient	Main user
COPD patient relative and/or caregiver	Secondary user
Nursing assistant	The nurse should be the professional who knows the needs related to the disease, who provides knowledge and skills to maintain health (Care plan) and who can verify that out-of-range telemetry data corresponds to disease decompensation.
Pneumologist	Regular patient follow up.
Health coach	Online service for keeping and motivating lifestyle changes, healthy habits, and therapeutic adherence.

Table 1 CRANE actors for COPD

Description

Carmen's pneumologist thinks Carmen would improve if she could monitor her health, because it would mean becoming aware of her adherence levels, her physical resistance, as well as her physical and emotional wellbeing. For this reason, he talks to Carmen about CRANE, a technological solution that can help her in self-managing her condition.

The pneumologist prescribes Carmen the CRANE service, because she fulfils the established preconditions:

- COPD patient (Gold standard 3 patient subgroup)
- Not dependent

Carmen's pneumologist has enrolled Carmen in their CRANE COPD self-management service as she is the perfect match for the programme. The goal is to improve and monitor her health and to make her aware of her adherence levels, her physical resilience, as well as her physical and emotional wellbeing. The hospital and the telehealth provider log Carmen in the CRANE *MyHealthWallet* service. Carmen gets *MyHealthWallet* on her mobile and receives some training from CRANE service providers; the app allows her to take control of her public and private data and decide who to share access with.

Carmen is shown a very simple and informative video to explain how her data is kept secure and private. She decides to activate the *MyHealthWallet* data sharing access initially only for monitored data and her EHR. To her surprise, she has a lot of useful data in the app and has requests for use of it

not only from her telehealth provider, but also from research teams, analyst firms, and from the pharmaceutical that produces her medicine.

Carmen is informed that her data will be encrypted (using methods similar to those in cryptocurrencies) and anonymised so that it is not possible to relate it to her identity. She is informed that she is always in control of her consent to access. She doesn't know anything about these cryptocurrencies, but she has heard about them and she is convinced that her data must be safe.

Carmen also downloads the CRANE COPD app, a self-management service connected to *MyHealthWallet*. The *CRANE COPD app* collects data from a smart watch that regularly measures Carmen's heart rate, oxygen in blood, sleeping patterns, and activity; from a smart spirometer; and from the HRC (home respiratory therapies) provider data, that measures oxygen consumption and adherence patterns, and PROMs and PREMs – then sends the specified data to her medical records.

When Carmen started suffering from COPD, she often panicked; she thought she was about suffer an exacerbation attack, she can notice it some few hours or days in advance, and she contacted her primary care center, it usually takes hours or days. This happened several times before she became a user of CRANE. But since using CRANE, she finds that her *CRANE COPD app* is able to anticipate when a crisis is about to happen and sends a notification to her nurse in primary care and to her pneumologist so they may intervene to prevent it. In the case of a crisis, she can always dial the emergency regional healthcare number. A health coach can access her updated data from the CRANE app and attend to her needs, and in case there is risk of a derivation an emergency protocol will be activated.

Carmen's trust in CRANE has been cementing rapidly and she has significantly increased her adherence to the service, and consequently to the treatment.

The *CRANE COPD app* application includes an AI feature that helps Carmen and her care team get early warnings of upcoming exacerbation attacks, based on her previous data and also on the anonymised data of thousands of other patients similar to Carmen.

Carmen and the nurse regularly discuss her data. They have agreed to improve the functionality of her *CRANE COPD app* by activating the virtual coaching to support adherence to treatment including medication, oxygen, and physical activity. Carmen allowed the CRANE app to access all data collected by her smartwatch and spirometer and agreed to answer some questions about her mood. The app recommends Carmen gamification and motivation techniques to help her in her adherence to exercise routines. It also warns Carmen whenever she is unconsciously reducing medication. The app keeps her up to date on daily and weekly health status reports, on the achievement of her goals, and sometimes requests some feedback to collect Patient Reported Outcome Measures (PROMs).

The virtual coach uses Carmen's data enabled via the *MyHealthWallet* to personalise the support. Her *CRANE COPD App* informs Carmen on how the condition evolves and advises her when to send a notification to the nurse requesting a professional follow-up. The information sent to the healthcare service by the *CRANE COPD App* has been decided between Carmen and her primary care nurse.

1.1.5 [Digital and Health literacy](#)

The use of *MyHealthWallet* is really simple but giving informed consent for sharing data requires some training in building awareness and trust. *MyHealthWallet* includes an interactive tutorial for this purpose.

CRANE COPD App also offers health educational content and games to engage Carmen in better known her condition.

1.1.6 What to do with the data

Carmen has accepted to share her anonymized adherence patterns to a pharma company that is working on a trial for a new therapy. Also, her data feeds the new national epidemiological study on COPD.

1.2 Use case cardiovascular disease

1.2.1 Initial input

Cardiovascular disease (CVD) is a general term for conditions affecting the heart or blood vessels. They include coronary heart disease, cerebrovascular disease, peripheral arterial disease or deep vein thrombosis and pulmonary embolism.

Heart attacks and strokes are usually acute events of the condition and are mainly caused by a blockage that prevents blood from flowing to the heart or brain. It's usually associated with a build-up of fatty deposits inside the arteries (atherosclerosis) and an increased risk of blood clots. It can also be associated with damage to arteries in organs such as the brain, heart, kidneys, and eyes. CVD is one of the main causes of death and disability, but it can often largely be prevented by leading a healthy lifestyle.

CVD rehabilitation includes exercise and education. It often involves exercise training, emotional support, and education about lifestyle changes to reduce the risk of heart disease, such as eating a heart-healthy diet, maintaining a healthy weight, and quitting smoking.

1.2.2 Patient persona

Jan lives in Arendal in Agder (Norway), the district's capital of 44.000 inhabitants. He is 56 years old and has worked in the local battery industry all his life. He is divorced since 2012 from her wife Ingeborg, with whom he had a son (23) and a daughter (18). Jan has never been physically very active and has never paid attention to nutrition patterns. His diet is rich in meat and fat. As many men in his age, he started smoking in adolescence. Social drinking in company of his friends was the norm on the weekends and often during the week.

CVD Debut

One day, while having a drink with friends, Jan suffered a heart attack. He was driven to the local hospital, where the emergency unit saved his life. For Jan and his family, the event was a complete shock. Prior to the attack, Jan had been reluctant to follow his doctor's advice on taking exercise, watching his diet, and giving up smoking, because he believed nothing serious could really happen to him. The shock has caused Jan to become afraid and enter a slight depression. Rehabilitation is difficult for him because implementing lifestyle changes after so many years is hard. He is conscious that he has to change, but he does not know exactly how.

Local physicians often use punitive discourses or employ a language that is difficult to follow by Jan. He understands the words, but not what they mean specifically for him in everyday life.

Therapy

After surgery and post-surgery, Jan has been prescribed blood pressure medication. Reductions in blood pressure mean reductions in risk; most people with high blood pressure require more than one drug to achieve adequate reduction in blood pressure. Jan was also prescribed statins to lower LDL cholesterol levels and anticoagulants to prevent blood clots, although adherence to medication is often poor and Jan is no exception.

In the hospital Jan was given a rehabilitation plan, as well as guidelines for a healthy lifestyle to follow for the rest of his life. Physical exercise will be supervised and monitored by the cardiologist. For the coming 8 to 12 weeks, Jan will be monitored by primary care. Jan receive some nutritional education and some psychological support, although insufficient. It would also be helpful for him to get to know other patients in his situation to help him overcome the shock and start a pathway of recovery.

Living with CVD

After the shock, Jan is trying to readjust his life. This is difficult since he feels alone trying to master the challenge. Unlike diabetes or COPD patients, CVD patients do not have a patient association in the area. Jan experiences emotional distress or behavioral disturbance. Depression and anxiety are especially common and have not been diagnosed, but Jan shows signs of suffering from them.

Jan gets used to cardiac rehabilitation and includes it in his daily routines. Step by step, he seems to change habits. Adopting an exercise routine was easiest for him. The doctor suggested starting with longer walks (around two hours daily) and later include cycling. The district is plain with no hills, so Jan has managed so far to include bicycle trips in his routine. As exercise started to make Jan feel better, he dared with changes in nutrition. His daughter was very helpful to batch-cook with him during the weekends using a healthier style. Jan enjoys the time with her daughter, and this is a major driver for change. Giving up smoking turns to be the most difficult challenge, despite the fear of a new attack.

1.2.3 Data sources and management

The more Jan becomes involved in exercise and healthy cooking the more he likes the apps on the phone his children show him. For Christmas his son gave Jan a smartwatch as a present. The device monitors data on lifestyle. Other sources of data collection are:

- Medical records gathering regular medical tests: electrocardiogram, holter, physical resistance, etc.
- Regular blood pressure measurements that can be recorded in health apps.
- PROMs and PREMs regularly completed by Jan on an app.
- Online shopping food delivery records.
- Smart watch and smart bike collecting data on physical activity.

Actors

The actors of CRANE for CVD are the following

Actor	Role
CVD patient	Main user
CVD patients relative and/or caregiver	Secondary user
Primary care nurse	Derivation in case of complications. Phone assistance in emergency cases or when values out of range.
CARDIOLOGIST	Regular patients follow up.
Health coach	Online service for motivating and sustaining lifestyle changes, healthy habits, and therapeutic adherence.

Table 2 CRANE actors for CVD

Description

After CRANE was presented by the Agder Fylke in the area of Arendal, both the cardiology departments and primary care centres started working with it.

During one routine check-up with his cardiologist, Jan was introduced to CRANE. Jan asked the doctor to postpone the meeting so that he could come back with his son; Jan felt that his son would help him understand the technology better.

The cardiologist prescribed Jan the CRANE service kit because Jan fulfils the established preconditions:

CVD patient

Not dependent

The kit includes *MyHealthWallet app*, *CRANE CVD app*, a smart watch measuring heart rhythms, blood pressure, activity, and sleep patterns.

The service starts with the prescription, which opens the administrative process by the healthcare authorities to register Jan in CRANE and give him access to the service and his data.

Once the administrative part is completed, two weeks later, the cardiologist, Jan and his son meet to define the kind of data that they will allow access in monitoring Jan's evolution through *MyHealthWallet*. They agreed that physical activity, sleep, and nutrition were important, in addition to heart rhythm and blood pressure. The billing from the food delivery shop adds relevant information about Jan's nutrition habits. Jan also discusses with his family and the rest of his care team what other information to share access to.

Jan also downloads a *CRANE CVD app* on his phone. The app includes a virtual coach that uses Jan's data to personalise support. It helps Jan define his goals for physical activity and to follow them using gamification and motivation techniques. The system is also connected to the local gym, where smart machines register Jan's daily exercise routines. Data from his smart bike and smart watch also flow into the system to register bicycle exercise and running.

The *CRANE CVD app* also monitors Jan's adherence to medication using medication purchasing patterns. AI algorithms can make predictions and give advice on behavior by combing all these data, as well as by combing patient reported outcome measures (PROMs) and patient reported experience measures (PREMs).

CRANE CVD service is a great support in self-management, and includes very useful information for both the cardiologist and the primary care centre assigned to Jan.

Finding motivation for lifestyle changes after a cardiac event is difficult. Evidence shows that sharing activities with peers is key for changing habits and maintaining the changes. For this reason, the *CRANE CVD app* connects virtual patient communities, including people in the area, that can jointly participate in activities coordinated by the municipal social services, like cycling, healthy cooking, etc., according to Jan's prescription records.

In case of a negative evolution, Jan can always dial the hotline of the healthcare emergencies. A nursing assistant will attend his needs and in case of risk of a derivation, an emergency protocol will be activated, also providing updated information from the *CRANE CVD app*.

Selected information from *MyHealthWallet* is registered in the EHR of Jan and if the prediction algorithms of *CRANE CVD app* detect that the evolution is not positive and that there is a high risk of exacerbations, the nursing assistant receives a notification and so do Jan and his son.

1.2.4 Digital and Health literacy

The use of CRANE is made very simple and information about the status of the patient is communicated clearly. However, Jan and his son still need some basic medical education to better understand the instructions and the coherence of the treatment.

1.2.5 What to do with the data

Jan is unwilling to participate in remote clinical trials, but his doctor persuaded him to allow his data to be included in a clinical trial on stents outcomes.

1.3 Use case diabetes

1.3.1 Initial input

Diabetes is a chronic disease that occurs either when the pancreas does not produce enough insulin or when the body cannot effectively use the insulin it produces. Insulin is a hormone that regulates blood sugar. Hyperglycaemia, or raised blood sugar, is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body's systems, especially the nerves and blood vessels.

Diabetes 1

Type 1 diabetes (previously known as insulin-dependent, juvenile or childhood-onset) is characterized by deficient insulin production and requires daily administration of insulin. Neither its cause nor the means to prevent it are known. Symptoms include excessive excretion of urine (polyuria), thirst (polydipsia), constant hunger, weight loss, vision changes, and fatigue. These symptoms may occur suddenly.

Diabetes 2

Diabetes Mellitus type 2 (DM2) results from the body's ineffective use of insulin. More than 95% of people with diabetes have type 2 diabetes. This type of diabetes is largely the result of excess body weight and physical inactivity. Symptoms may be similar to those of type 1 diabetes but are often less marked. As a result, the disease may be diagnosed several years after onset, after complications have already arisen. Until recently, this type of diabetes was seen only in adults, but it is now also occurring increasingly frequently in children.

1.3.2 Patient persona

Mark is a 48-year-old diabetes type 2 patient. He has a small company of home renovations that is active in the Kommun of Norsjö and the area of Malá, Västerbotten region. He is married to 47-year-old Freja and has two children (15 and 13). Mark is heavily overweight and insulin dependent. Before his diagnosis, he had inadequate nutrition habits, consuming home delivered fast food daily. He ate more quantities of sweet and carbohydrates than average. He consumed bread daily, as well as often rice and pasta. He might have enjoyed daily a sweet dessert and consumed soft drinks and beer also daily.

DM 2 Debut

Mark showed no particular signs of DM2. The condition was diagnosed in his 30s during routine testing. He didn't think he was so overweight so as to have diabetes. At first, Mark struggled to keep his glucose levels steady. He was having a lot of 'low-sugar incidents,' in which he got grumpy and woozy and hot. He has managed to reduce the frequency of these incidents since he got on the right medication, and switched to a lower-carb diet, although he feels insecure because his glucose levels eventually destabilise. He misses things like beer and potatoes. Mark has increased his sports routines, something that was helpful.

Therapy

As a chronic disease, DM2 is not a condition that can be cured, but it can be controlled. As his blood glucose levels were detected at an early stage, Mark was able to control his blood glucose levels

without medication by adopting a balanced diet and regular exercise. Mark had to check his blood glucose levels daily at the same time, in order to detect elevated blood glucose levels. But after some years he started to need insulin.

Living with DM2

Living with diabetes is difficult for Mark. He has so many factors to consider that he feels that it can be stressful figuring out what's best. Mark needs monitoring for early detection of complications, which may result in improved patient outcomes. He had to learn all about DM2. Training by nurses was very useful and the local patient association also helped him gain knowledge and skills on managing diabetes, achieving blood glucose control and reduce the risk of developing DM2 related complications.

Mark tries to control his diet, but he is not always compliant. Sometimes he is with friends and drinks alcohol, sometimes he cannot resist in social environments to eat sugar rich hydrocarbons. Occasional transgressions are an issue he thinks he controls with the aid of the glucometer, but the fact is that he has had several complications due to it.

Because he is trying to jog regularly, Mark has started to use a smart watch. He also controls nutrition patterns with a specific app for DM2, that includes advice in case of transgression, but he is not always sincere to the app.

1.3.3 Data sources and management

For CRANE the data sources for DM self-management are:

- Physical activity from Smart watch
- CRANE DM2 app
- Glucometer
- Electronic medical records
- CGM if T1D or T2D if insulin dependent
- Weight scale
- Blood pressure
- Nutrition habits
- Purchases from the supermarket.

Actors – Who are the users, roles etc.

The actors of CRANE for CVD are the following

Actor	Role
DM patient	Main user
Nursing assistant	Derivation in case of complications. Phone assistance in emergency case or values out of range.
Endocrinologist	Regular patient follow up
Health coach	Online service for keeping and motivating lifestyle changes, healthy habits, and therapeutic adherence.

Table 3 CRANE CVD actors

Description

In a routine control the nurse informs Mark about CRANE DM2. He shows interests and in a further appointment with the endocrinologist, Mark gets CRANE DM2 prescribed, because he fulfils the established preconditions:

DM2 patient insulin dependent

Autonomous

The service starts with the prescription, which opens the administrative process by the healthcare authorities to register Mark in CRANE DM2 and give him access to the service and to his data.

Once the administrative part is completed, the endocrinology nurse and Mark agree on including data on nutrition and physical activity in CRANE. *CRANE DM2 App* can combine these data with the EMR and make forecasts on Mark's evolution and prevent adverse events. CRANE DM2 also informs Mark about the meaning of the values measured and receives precise recommendations to follow, also if he must make an appointment with the nurse, the doctor, or call the health coach service. Mark received frequent and interesting information on critical points about adhering to a healthy lifestyle and suggestions for activities relevant to his data. All is integrated in the *CRANE DM2 App*.

Initially, Mark used *MyHealthWallet* to decide which data he wants to share access to, as well as the information he wants to share with his family and with the healthcare services. *MyHealthWallet* manages access to Mark's private and public data, such as food intake or exercise by *CRANE DM2 App* algorithms. Mark is informed that his data will be anonymised and encrypted so that it won't be possible for no one to know what his data are; he is told he is always in control of his consent, and he is shown some videos that explain how this works.

Mark regularly talks to his wife and children about his disease evolution. The use of simple dashboards by CRANE makes understanding easy. In case of worsening, they an alarm too.

Mark also gets a virtual coach included in his *CRANE DM2 App*. The virtual coach uses his data to personalise support. It helps him define his goals for physical activity and to follow them, using gamification and motivation techniques. It also warns him if he is unconsciously reducing medication. Diabetes patients usually are socially active. CRANE takes advantage of this fact to create virtual patient communities and allowing them to work closely with municipal social services to promote physical activity and healthy habits.

A particular aspect in the case of DM2 are transgressions in nutrition. The virtual health coach can inform, based on data, what actions to take in case of non-compliance with diet (occasional eating of carbohydrates or drinking of alcohol).

Selected information from *MyHealthWallet* is registered in the EHR of Mark and if the prediction algorithms of *CRANE DM2 App* detect that the evolution is not positive and if there is a high risk of adverse events, the nursing assistant receives a notification and so does Mark.

The CRANE system is connected to the supermarket in Norsjö. As a registered customer, a record of all his purchases is kept. The system can monitor and analyse the nutritional values of the nutrition patterns Mark is following. CRANE DM2 app is also connected to Mark's bike to track his exercise and determine adherence to prescribed routines.

Mark and his doctor benefit from the empowerment process through the medical education and the timely advice that Mark is receiving from his CRANE DM2 app, as now they can make shared decisions on therapeutical alternatives.

1.3.4 Digital and Health literacy

The use of CRANE is made very simple and information about the status of the patient is communicated clearly. However, Mark still needs some basic medical education to better understand instructions and the implications of the treatment.

1.3.5 What to do with the data

Mark is member of a patient association. Using *MyHealthWallet*, he gives the association access to his data for studies and remote trials. He also grants access to his doctor to use the data in the studies Mark participates in.



CRANE

Comprehensive treatment of chronic patients in rural areas

