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[HOW TECHNOLOGY CAN BE SUPPORTIVE AND MOTIVATING FOR PATIENTS WITH CHRONIC HEART FAILURE]

A study on the needs and wishes of CHF patients, to see how eHealth technologies can aid them in their self-management. A new eHealth platform called 'mijn Health e-Portal' was used as a case to discuss the elements of online care.

Abstract

Background: eHealth is an important factor in the self-management of chronically ill patients. Even though there are many existing theories on how to persuade users into using eHealth technologies, adherence is not always optimal. This study aims to find factors that influence chronic heart failure (CHF) patients in their self-management, and see how eHealth can be deployed to be more supportive and help motivate chronically ill patients in their self-management. This study made use of a case example called 'mijn Health e-Portal', or mijnHEP for short. By discussing the mijnHEP it was determined how the elements of eHealth were experienced amongst patients. In addition possible opportunities for improvement of this platform were uncovered.

Methods: This study used qualitative structured interviews (n=10) which consisted of 2 parts. In the first part patients were asked about their experiences in living with their illnesses. In the second part patients were ask to orientate themselves on the mijnHEP platform and describe their experiences with eHealth interventions like the case example. This way, data was gathered to identify bottlenecks in chronic self-care management and uncover what role eHealth can fulfill in this aspect.

Results: The interviews provided two kinds of results, those specific to the mijnHEP platform and those related towards self-management and eHealth in general. The results specific to the mijnHEP platform were formulated into 47 requirements. Six bottlenecks in the self-management of CHF patients were identified: dealing with mental stress, lack of introduction into cardiac rehabilitation programs, lack of acknowledgement, trust in technologies, coordination between healthcare providers, and the level of control of their own rehabilitation. The patients also described the participation of their health care providers in eHealth interventions as an important factor to their adherence.

Conclusion: eHealth interventions have the potential to be of added value in the self-management of chronically ill patients. To keep up adherence levels in eHealth interventions, it seems these kinds of technologies benefit from a multidisciplinary implementation. In addition, there should be attention towards the involvement of social circles of CHF patients, in order to create awareness of the illnesses. Furthermore, the goals and functions of eHealth platforms should be clear, to increase ease of use. The introduction users get to these platforms seems to be another vital aspect in the success of eHealth platforms. A key principle in resolving these kinds of bottlenecks is a personalized approach in addressing the needs and wishes elicited from all of the stakeholders involved.

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Introduction

Self-management in chronic heart failure

Chronic heart failure or congestive heart failure (CHF) is a condition in which the heart is unable to maintain a normal cardiac output. It cannot pump enough blood to meet the body's demand (1). CHF is a chronic disease that has a big influence on the daily lives of patients. Symptoms include shortness of breath, swelling of the legs, and feeling tired (2). To deal with the illness, patients have to change their lifestyle. This means that in order to improve health related outcomes for patients with CHF, self-management is essential (3).

Bodenheimer et al. described the term self-management as teaching patients problem solving skills, solving patient identified problems, and goal setting / reaching (4). In health care the term self-care is also often used (5). Riegel et al. stated that self-care focuses on activities that are necessary to be physiologically stable (self-care maintenance), the ability to anticipate to symptoms when they occur (self-care management), and the process of measuring (changes in) symptoms (self-care monitoring) (6, 7). This shows that the terms self-care and self-measurement can be very intertwined. In this paper they will be used interchangeably and will both refer to the three main elements Riegel described: self-monitoring self-management, and self-maintenance. Other elements that can also be associated with self-care include: educating oneself on health promoting behaviors, measuring health values, and collaborative relationships with healthcare providers (8, 9).

Since the main aspect of dealing with CHF is a change in lifestyle, it is important for patients to take actions in self-managing their disease. Organizations like the British Heart Foundation (BHF) or the American Heart Association (AHA) support CHF patients in developing self-management skills, by explaining what they should do in order to live with their illness. They described underlying key elements of self-management in CHF such as: Keeping track of medications, keeping records of the experiences with heart failure, keeping track of health measurements such as blood tests, daily weight, and fluid intake. These elements allow patients to obtain insight in the development of their illness and the progress of their rehabilitation. This increases the competence of patients in recognizing symptoms, allowing them to be more aware and take action accordingly (10, 11). The concepts of self-care maintenance as described by Riegel relate to what the BHF and AHA described. Furthermore they advised patients to check for changes in the symptoms, relating to self-care monitoring. Lastly they advised elements that could be classified as self-care management, such as educating oneself, keeping in contact with the health care team, setting realistic short term goals as to the changes the patient wishes to make, and getting social support which can be achieved via loved ones or support groups.

Advices like these are mainly focused on people who report greater levels of improvement and emotional wellbeing. For patients who deal with advanced heart failure self-care decisions become

more complex (11). The focus then shifts more from self-care to shared decision-making, where the patient, together with his family and his physician, builds his own care plan in which the attention shifts to what treatment options are preferred by patients. Creating such a health care plan is an individualistic process (11, 12)

The role of technology in self-management

Technology offers opportunities in aiding self-care management skills. Specifically, eHealth technologies are used to help self-management in chronically ill patients. A paper by van Gemert - Pijnen et al. described eHealth as the use of technologies to improve health well-being and healthcare (13). The common goal of e-Health is for patients to actively play a part in their wellbeing (14). There are many aspects to eHealth, such as monitoring and improving health, facilitating communication between patients and healthcare professionals, or delivering information to the user. Telemonitoring devices make it easier for patients to measure health values on a daily basis, decreasing the frequency and duration of hospitalizations (15). Systematic education can improve patients knowledge, reducing health risks (16). Furthermore, the ability to communicate with a health care provider on distance eliminates barriers that would otherwise inhibit the patient in getting help (17).

Studies show that people are willing to accept technology, as long as they have access to, and training in the use of these technologies (18, 19). eHealth can be a positive influence on the development of self-management skills among CHF patients. Via eHealth these forms of self-management can improve health outcomes and reduce costs for groups of patients with a variety of chronic conditions (4).

While eHealth offers potential advantages, systematic reviews concerning eHealth usage amongst CHF patients do not universally support this conclusion (20-24). This is partly due to the fact that most of the current CHF eHealth interventions focus mainly on the monitoring aspect, and not the management, maintenance, social, or educational aspects of the illness (19). Physical symptoms, such as shortness of breath and tiredness can also have an influence on the functional capabilities of CHF patients. This reduces the effectiveness of self-care management in general, since these patients often experience greater difficulty in performing self-maintenance (19). Another barrier in the effectiveness of eHealth in CHF patients is the age and technology skills of the target group, as CHF tends to be an illness that occurs more in elderly people (1, 25). Even though the computer usage of elderly is increasing, there are still many who are not too familiar with technology (26).

Adherence to technology

Despite some of the difficulties with eHealth, there is still potential in the usage of eHealth for chronically ill patients. An important factor in the success of eHealth is the adherence of these patients to the technologies. Adherence is a term that is related to measures such as usage of technology, engagement, intended use, or non-usage attrition (27). Although there are many defining aspects of the

term adherence, there is not one clearly defined definition for this concept. A systematic review on adherence in e-therapies from Donkin et al. described adherence as: "The degree to which the user followed the program as it was designed" (28). While Kelders et al. defined adherence as: "The extent to which individuals should experience the content to derive maximum benefit from the intervention, as defined or implied by its creators" (29). The concept of adherence differs per individual, since technologies are often created for large target groups, consisting of individuals with their own goals and desired outcomes (28, 30).

Even though studies show the health related benefits of eHealth, adherence to these technologies is not always as high as expected (31). This is partly due to the fact that stakeholders are insufficiently involved in the development process of new technologies. That results in the intended use of the technology oftentimes being unclear. It is preferable to involve users in the development process of these technologies (32-34). Yet many researchers still tend to rather rapidly develop technologies, with only end results in consideration. The creation of these new technologies is more likely to benefit in a multidisciplinary environment (13).

The CeHRes roadmap

In order to develop technologies that create adherence to technologies, it is of added value to include all possible stakeholders that are involved with the technology from the beginning. Once every stakeholder is identified, it is essential to find out what their needs and wishes are. This way a technology can be created that fits everybody's frame of reference. There are certain steps to do this as efficient as possible and to clarify each step, a tool has been created. This tool is called the CeHRes roadmap. It can be used to help plan, coordinate and execute the participatory development process of eHealth (35).

The roadmap consists of 5 phases, the contextual inquiry, value specification, Design phase, operationalization and the summative evaluation. These can be seen in figure 1.

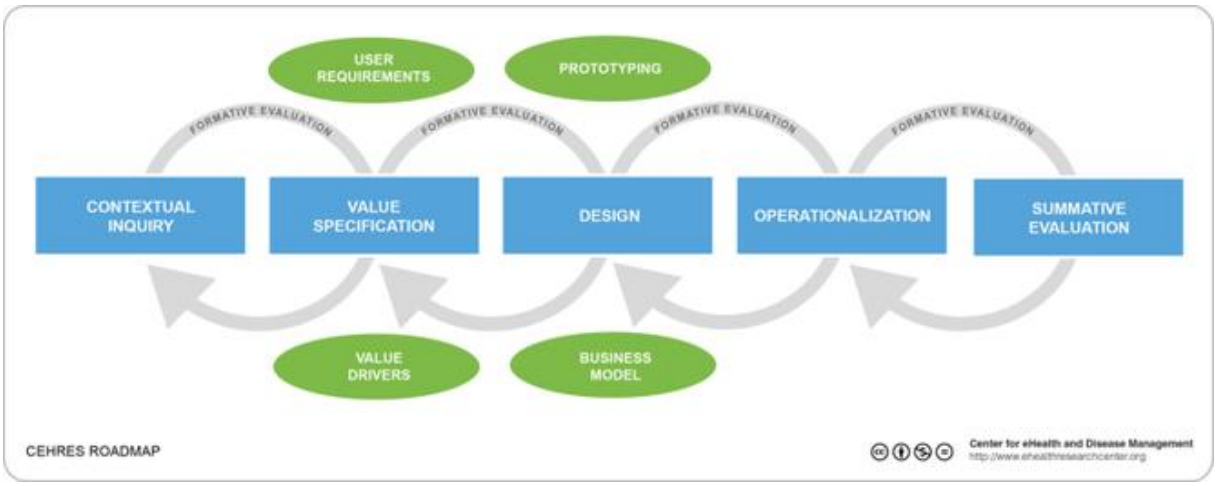

Figure 1, the CeHRes Roadmap (35)

First the situation of every stakeholder involved with the problem that the technology should solve has to be inquired. In the contextual inquiry all of the prospective stakeholders are identified. They are asked for their wishes and needs in concerning their context of the problem, and it is determined how eventual technologies should benefit them. Afterwards it must be determined what the added value of the technology should be, according to the stakeholders. These values will eventually be translated into requirements. Based on these requirements certain prototypes will be designed. These prototypes are developed and evaluated through constant iteration between the design team and the actual prospective users. When a new technology has been created there needs to be a plan for implementation. Marketing plans are set in motion and operationalized, to get the technology in use. Lastly the technology will be evaluated on its effects on for instance the patients, financial benefits, or the general public health (35).

This entire process asks for a holistic approach, with the constant possibility for feedback on previous steps, and iteration throughout the entire development process. It is an open circle, which should not only be followed from beginning to end. It is certainly possible, or sometimes even preferable, that problems which occur during later phases need to be fixed by looking back at earlier phases. This way the roadmap can account for shortcomings or changes in the wishes and needs of the stakeholders, providing an optimal fit between the technology and the user.

Needs & persuasiveness

The main issues with living with CHF lie with awareness, contact with professionals and lifestyle changes (10, 11). In order for a technology to help with this, it is important to look at what the needs and wishes of CHF patients are. A study by Boyd et al. showed that CHF patients felt unsupported by services and had little understanding of their diagnosis, treatment aims, or prognosis and concluded that patients could benefit from specific care models, with professional and social support (36). Harding et al. studied the communication and information needs of CHF patients and also found that CHF patients lacked understanding of CHF, especially in regards to the symptoms. This lack of understanding contributed to the patients' anxiety, and lead to self blame, anger, and shame. According to the cardiac staff it was one of the reasons for lack of adherence to therapy (37). A study by Nahm et al. prioritized the need for information of CHF patients and showed that they want to have information on up-to-date research findings, medication, and laboratory tests rather than general information about CHF (19). All of these studies focused mainly on elderly CHF patients.

Once the needs and values of the patients are clear, they can be translated into requirements. These requirements describe what an eHealth system should function, in order to fit the intended use of all the stakeholders (38).

These requirements could contain opportunities for including persuasive elements. Making eHealth systems more persuasive can stimulate the adherence of users (13). There have been many studies on how persuasion can be applied to technology (39-41). The term persuasion is very broad

and can therefore be operationalized into different fields of research (42). Some studies look at the psychology of how and why people are persuaded to act in certain ways, while some studies focus more on the aspects of technology-mediated persuasion. Three examples in these fields of research are studies by BJ Fogg, Oinass Kukkonen, and Nielsen(40, 41, 43). Their theories on persuasion will be discussed in the theoretical framework of this paper. The eventual goal of these persuasive techniques is to induce a change in the behavior of patients.

To adequately support CHF patients, it is of importance to find out what they want and how they can be helped, so that new eHealth technologies can be as user friendly, personalized and effective as possible. When eHealth interventions fit the context of the user, adherence will be higher, and the technology can increase the quality of life of the patients (35).

In this study will make use of a case example, in order to see what the needs of CHF patients are related to online eHealth interventions. The aim is to see how eHealth can be used to help them in the self-management of their illness. The first three steps of the CeHRes roadmap will be re-examined in order to find what persuasive techniques could be beneficial in order to keep patients adherent to eHealth interventions. This leads to the following research question:
How can technology be supportive and motivating for people suffering from Chronic Heart Failure (CHF)?

To accurately answer this question 3 sub questions have been made which will each be answered separately, leading to a satisfying conclusion for the main question.

- *What are the experiences of CHF patients in dealing with the self-management aspects of their illness?*
- *How are the elements of current e-health interventions to support self-management in CHF patients experienced, based on the mijnHEP platform?*
- *How can persuasive elements be implemented in eHealh platforms meant for stimulating self-management in patients with chronic illnesses, such as the mijnHEP platform?*

Theoretical framework

The theoretical framework of this paper will provide insight in 3 different theories of persuasiveness and behavior change. These 3 theories will be Fogg's Behavior Model, Kukkonen's Persuasive System Design, and Nielsen's Heuristics. Afterwards it will be explained what the roles of these theories are in this research.

Fogg's Behavior Model

BJ Fogg is a behavior scientist, who is the founder of the study of 'captology'. Captology is the study of how computers can persuade people (44). In his research Fogg showed that computers can have a big role as persuasive social actors and that people can be influenced by technology almost the same way they can be influenced by humans (45). He created a model called the Fogg Behavior Model (FBM), which explains the drivers of human behavior trough three factors(40):

- Motivation
- Ability
- Triggers

Fogg argues that for a target behavior to happen, a person must have sufficient motivation, sufficient ability, and an effective trigger. These must all be simultaneously present. When a task is easy to do, but the user lacks motivation, it will not be done. The same goes the other way around, but even if a task is easy and the user is motivated to do it, without a trigger it will not be done. Each of these principal elements consists of subcomponents. The FBM outlines core motivators (motivation), simplicity factors (ability), and three types of prompts (triggers).

For the elements of motivation there are 3 core motivators, who each encompass two sides of the same spectrum.

- Pleasure/pain; these motivators are the most rely on one of the most basic human response. Results of these motivators are often immediate, people are responding to what's happening in the moment. Although these motivators are powerful and direct, especially pain is not an optimal motivator (trough more or less obvious reasons). But when researching motivators, it cannot be ignored.
- Hope/fear; this dimension is characterized by anticipation of an outcome. Hope and fear are also strong motivators, but can be considered more ethically and empowering compared to pleasure/pain.
- Social acceptance/rejection; again this dimension focuses on one of the basic human needs, to fit in a social group. This is what makes it a strong motivator. Facebook, among others, is one of the social media that showed how big technologies can get, ones they attend to our desire to socially accepted.

To define simplicity there are 6 subcomponents that facilitate the ability to undergo behavior change.

- Time; target behavior must not require too much time, otherwise it is not simple enough to do.

- Money; For people with limited financial resources, target behavior that costs too much is not simple, and will often not be done.
- Physical effort; behaviors that require (too much) physical effort are not simple, and will thus influence the targeted behavior
- Brain cycles; target behavior must not require too much thinking. Preferably it consists of the same patterns so that the user does not have to constantly learn new stuff.
- Social deviance; target behavior should not deviate from the social norm. chances are it will be less likely the behavior will be reached if the user has to act outside the expected norm.
- Non-routine; this subcomponent is relatively similar to the brain cycles, the target behavior should not deviate from the patterns the user usually has.

Lastly there are three types of prompts that can facilitate a trigger

- Spark as trigger; a spark is a trigger that motivates behavior, it immediately persuades the user to undergo a certain behavior change. This trigger is appropriate for people who lack motivation
- Facilitator as trigger; a facilitator makes behavior easier, and is appropriate for people with low ability.
- Signal as trigger; a signal indicates or reminds the user to perform behavior, it works best when the user is motivated and able to perform a target behavior.

Persuasive System Design

Another researcher in the field of persuasion is called Harri Oinas-Kukkonen. He made a model called Persuasive System Design (PSD model)(41). This model is explains the key components that a technology must feature in order to reach its goals. Oinas-Kukkonen's model provides a more systematic analysis and design methods for developing persuasive software, rather than focusing on the prediction of user acceptance. This way the model expands on FBM, by creating empirical and conceptual functionalities that technologies should feature in order to be persuasive.

The PSD model is based on three phases in persuasive systems development. First it is important to understand the key elements behind persuasive systems. Oinas-Kukkonen defined seven postulates that define the role of technology in persuasion:

1. **Information is never neutral**; Technology is always present and influencing people's behavior. This is an ongoing process rather than a single act.
2. **People like their views about the world to be organized and consist;** if system support the making of commitment, users are more likely to be persuaded. People like their view of the world to be organized. If there are inconsistencies in people's views, they tend to motivate the person to take action to change them.

3. **Direct and indirect routes are key persuasion strategies;** When people are motivated to perform a target behavior they are keener to persuasion in a direct way. If motivation lacks, there can be more subtle an indirect routes to persuasion.
4. **Persuasion is often incremental;** it is more effective to persuade users through incremental suggestions, rather than a onetime suggestion.
5. **Persuasion through persuasive systems should always be open;** information behind systems should always be available. This prevents bias, and increases users trust.
6. **Persuasion should aim at unobtrusiveness;** persuasive techniques should not disturb the user in their daily lives. The system should look for opportune moments to persuade.
7. **Persuasive systems should aim at being both useful and easy to use;** A general postulate that entails the core foundations of persuasive systems. If the technology is not easy to use, it will have a hard time persuading users.

The second phase focuses on what happens in the information processing event, namely understanding the roles of persuader, persuadee, message, channel and the larger context. To find ideal opportunities for persuasion it is important to analyze the intent of the persuasion, understanding of the persuasion event, and to recognize the patterns in use (46).

The third phase shows the design of system features. The design principles shown in this phase are based on Fogg's behavior model, yet they elaborate how they can be transformed into software requirements and even implemented as actual system features. These principles are put into four categories, called:

- Primary task support;
- Dialogue support;
- System credibility support;
- Social support;

Primary task support is based on the basic elements the users have to carry out in order to make use of a technology. The second system feature is that of the dialogue support. This category focuses on the computer-human dialogue and provides ways for the system to give feedback to the users.

The third system features focuses on how the system can be made credible, so that is has authority over users and will be accepted more easily. The fourth and last system feature centers on the human need for social interaction Table 1 shows the four categories by presenting them with the related design principles. Each principle is provided with an explanation and an example.

Table 1, The PSD principles

Primary task support:		
PSD principle	**Explanation**	**Example**
Reduction	The system should reduce complex behavior into simple tasks, the effort of the user should be reduced	An application for healthy eating should provide lists with healthy food
Tunneling	The system should guide the user through the functions, while providing opportunities to persuade along the way	Smoking cessation websites should come with information on how to quit smoking after users indicate to be addicted
Tailoring	The system should be tailored to the needs and interests of the users	There should be different options on a platform when the user indicates he is either experienced or inexperienced
Personalization	The system should provide personalized content for its user	The user should have the option to prioritize information that is most relevant to him
Self-monitoring	The system should provide means for the user to keep track of his own status	Step counters and heart rate monitors
Simulation	The system should provide ways to link cause to effect	Pictures of before and after weight loss
Rehearsal	The system should provide means for rehearsing a targeted behavior, to change the attitude of the user	Flight simulations help pilots practice for the real world situation
Dialogue support:		
PSD principle	**Explanation**	**Example**
Praise	The user should be praised for good work on the system	Motivating text messages when goals are achieved
Rewards	Virtual or real world rewards should be given to the users when targeted behavior is reached	Virtual points that can be accumulated through actively using the system
Reminders	The system should remind the user to actually make use of it	Automatic text messages when a new option has opened for the user
Similarity	The system should provide ways to make itself recognizable to the user	The usage of slang in applications for younger adults
Liking	The system should have a look that appeals to the user	Colorful design for applications used by a younger target group
Social role	The system should adopt a social role in the user's life	An option for communication between the user and a specialist
System credibility support:		
PSD principle	**Explanation**	**Example**
Trustworthiness	The system should look and feel like it can be trusted	Information on a site should not be biased
Expertise	The system should show that it is knowledgeable and competent	Applications should be updated regularly
Surface credibility	The first look at the system should indicate that it is credible	Applications should not be overloaded with adds
Real-world feel	The system should give information about the people behind the content	Coaching modules can have a video to show who is behind the modules
Authority	The system should refer to people of authority	Websites can show that they are supported by authoritarian figures
Third-party endorsement	The system should provide legit sources	Logos of health care organizations on eHealth platforms
Verifiability	The system should provide means to verify sources of the information	Claims are supported by links to other websites
Social support:		
PSD principle	**Explanation**	**Example**
Social learning	The system should provide means to learn from the experience of other users	Shared fitness journals
Social comparison	The system should provide means to see the progress of other users	Sharing of information on physical health in smoking cessation applications
Normative influence	The system should provide means for peer pressure	Systems that show what the norm of most users is, so other users know what goals to set
Social facilitation	The system should provide ways to show that others are doing the same target behavior as the user	Students in an online learning environment can see how many other students are doing the same
Cooperation	The system should leverage the natural drive for humans to cooperate	Data of CHF patients is gathered on a platform so that it can be analyzed on a group level
Competition	The system should provide ways for the users to compete with each other	The user with the most steps a week gets a prize
Recognition	The system should provide ways for recognition for users who reach targeted behavior	Publicly acknowledging a stopper of the month on a smoking cessation application

Nielsen's Heuristics

The third theory that will be discussed is that of the Heuristic evaluation. Heuristic evaluation is done by looking at the interface of a technology and trying to assess whether the interface satisfies certain persuasive principles. Ideally this is done according to certain rules, such as listed guidelines (47). There are multiple of these guidelines, like the one created by Smith and Mosier, who created just under 1000 Heuristics (or rules) to follow (48). However a more structured approach in these heuristics was created by Molich and Nielsen, who categorized the heuristics in 10 basic usability principles. These 10 heuristics are presented in table 2 on page 11, an explanation and an example will be given to elaborate each heuristic (43).

Role of the theories

The three theories discussed in this framework will mainly be used to help answer the third sub question. In that question it will be discussed what elements of the theories fit in with eHealth interventions, in order to find strategies to persuade users to be more adherent to the technology. The values and needs of the users have been extracted in this research, and transcribed into requirements. The persuasive techniques in these theories will be examined to see which techniques can heed the values and needs of the users. How this is exactly done will be further explained in the methods section.

Table 2, Nielsen's heuristics

Heuristic	Explanation	Example
Visibility of system status	The system should keep the user informed about what is going on. The system should show its current status	Questionnaires that to show how far you are during the completion of the survey, applications that send notifications when new e-Mails arrive, the amount of steps shown on a step counter etcetera
Match between system and real world	The system should use concepts familiar with the user, thus making information seem natural and logical	An example of this is the avoidance of jargon
User control and freedom	The user should be free to navigate easily around the system	When a user clicks on a function that he did not intend to use, there should be an easy exit, without having to go through extended dialogue
Consistency and standards	It is preferable if the system uses the same layout and structure throughout its features	Important buttons like the 'homepage' function should always remain in the same spot
Error prevention	Creators of a system should try to avoid error-prone situations, or at least include prevention messages	One of the most common example of this is the "do you really want to log out?" pop-up that occurs once someone clicks on 'exit'
Recognition rather than recall	The system should minimize the user's memory load. This means the user should not have to remember how things work if the system can help facilitate this. It is easier to recognize things than to recall them (think of questions like "is Donald Duck's shirt blue?" vs. "What color is Donald Duck's shirt?").	Making information and interface functions visible and easily accessible. Google for instance does this by suggesting what you are looking for when you type in the search bar
Flexibility and efficiency of use	The system should have functions that are unseen, but help experienced users navigate faster through the system than novice users	The 'ctrl + c ctrl + v' shortcut instead of having to click the left mouse and select 'copy', then click left mouse again and select 'paste'.
Aesthetics and minimalistic design	The system should not have irrelevant information. Everything that is too much is unattractive	Images can help the design of an interface, overloading a page with images however can clutter the interface
Help users recognize, diagnose, and recover from errors	The system should have plain and simple error messages when the user does something wrong	Error messages should contain what the user did wrong, how it could have happened and, most important, how it can be solved
Help and documentation	The system should always have a form of help ready for the user, when he is not able to fulfill a task	This can be done via an (online) helpdesk, or for instance a video showing what the appropriate actions are to fulfill the task

Methods

In the methods section it will be explained how this study was set up. The following 5 paragraphs will be discussed: 'case example', 'design', 'participants', 'data collection', and 'data analysis'

Case example

This paper uses a case example to take a look at what CHF patients want and how they think eHealth technologies can be used to help them in their daily lives with their illness. The eHealth intervention that will be discussed is called mijn Health e-Portal or mijnHEP.

MijnHEP is an online eHealth platform created by a company called Vital10 (49). The goal of the platform is to help people with chronic illnesses in their daily lives with their disease, where the focus has shifted from blaming to rewarding (50). The concept of the mijnHEP is to award points to the patients who show they are active on the platform. These so called 'vitaliteitspunten' or 'v-points' for short, can be used to get discount on services and goods, such as regular products, medical devices, or even gift vouchers at restaurants or hotels. The v-points can be accumulated by being active on the platform. A few examples of this are entering health related values (such as glucose levels, weight or blood pressure), participating in e-coaching modules, or connecting fitbits to the account in order to count steps. Furthermore the platform offers many more features to help patients with their illness, such as insight in their medical dossier and easy contact with health care providers trough a chat (50).

The mijnHEP platform is on the verge of being implemented in health care. This means it is in its latest phases according to the CeHRes roadmap. However as stated earlier, the roadmap allows for constant feedback ant iteration. This means that by guiding the prospective users through the platform, new insights can be found and formative feedback can be used to personalize the platform so that is better fits the daily life of the users, and therefore stimulate adherence.

Design

This study consisted of a qualitative research in which structured interviews were used. The interviews were structured in two parts. The first part contained open questions, based on the experiences of patients in living with their heart disease. This was done to get a look at how patients deal with their illness and to identify possible shortcomings in the care they receive. The first interview took around half an hour. The second part consisted of a design based qualitative research, centered on the case example that was used in this study. Patients were questioned on their opinion of the eHealth elements the platform had to offer. This was done to get an idea of how the users experience the elements of eHealth, and to see where possible opportunities for improving such technologies lie, in order to keep patient more adherent. The second part also took about 30 minutes.

Ethical approval of this research was obtained by the university's ethical committee. Participants received information about the goal of the research. Informed consents were signed by the

participants, which informed them about the confidentiality and anonymity of their results and that they had the right to withdraw at any moment.

Participants

A total of 10 interviews were conducted in this research. Due to the difficulty of finding willing patients, several connections were made to contact as many CHF patients as possible. The eventual patients that that took part in the research were:

- 2 CHF patients from the Medical Spectrum Twente in Enschede;
- 2 CHF patients from the Polifysiek department of the Hogeschool in Amsterdam;
- 5 CHF patients form the Community Health Centre Vital10 in Amsterdam;
- 1 CHF patient in his hometown in Twente;

Interviews were conducted between the 14th of June and the 6th of August 2018.
The only inclusion criteria used for the interviews was that the patients had to suffer some from some sort of chronic illness. Ideally this had to be some kind of heart related disease, but due to the shortage of respondents other chronic illnesses were also included. The self-indicated illnesses of the patients included: Congenital heart defect (1 patient), heart noise resulting in a prolapsed heart valve (1 patient), atrial fibrillation (1 patient), myocardial infarction resulting in atrial fibrillation (1 patient), atrial fibrillation plus high blood pressure (1 patient), myocardial infarction (2 patients), arteriosclerosis plus stenosis (1 patient), cerebral infarction (1 patient), and transient ischemic attack (TIA) (1 patient). There were no further inclusion criteria. This was done to get a larger variety in the sample size. Patients of all ages, backgrounds, or years of experience with their illness, were included in the interviews.

Data collection

The interviews used in this study consisted of two parts. The first interview was a semi structured interview used to get insight in the lives of the CHF patients. The questions in this interview were based on six themes: Background information, experiences with their illness, adjustments in life, support, self-management, and drivers. The specific questions were formulated in an interview script. This script can be seen in appendix 1 (in Dutch). Some questions were rewritten between interviews, to fit the context of the interviewee.

The second part of the interview resembled a think aloud usability test. However, the protocol that was used did not strictly follow that of a think aloud. There was more room for interaction between the interviewer and interviewee. This was done to encourage exploration, and engage in more open discussion. To discuss the options of eHealth, the case example of mijnHEP was used. The fact that the findings of the study had to be generalized for all eHealth interventions and were not specific to mijnHEP was another reason to not use a strict think aloud protocol.

A test account in mijnHEP was prepared, so that it included all the elements of eHealth that needed to be discussed with the users. Voice recording and Open Broadcaster Software (OBS) were activated, to record the actions and statements of the patients. Patients were asked to perform the following six actions on the platform:

- Starting conversations in the chat function;
- Entering health measurement values;
- Navigating the advices page;
- Navigating the dossier page;
- Navigating the web shop;
- Participating in an eCoach module;

During each action the patients were asked questions about their experiences, what was difficult or easy, or their general view of the elements the platform had to offer. After the actions were completed, some general questions regarding eHealth and the mijnHEP platform were asked. For the specific actions and questions, check appendix 1.

Data analysis

When the last interviews were done, the audio recordings and OBS data were transcribed. After this, the transcripts were coded in order to analyze the data. Since this was a qualitative study, the transcripts needed to be systematically analyzed. This was done using chapter 11 of the *Qualitative research practice* by Ritchie and Lewis, on reporting and presenting qualitative data (51) and the *requirement elicitation method* of van Velzen et al (38).

Code schemes

Four different code schemes were created which contributed to answering each of the sub questions. These four code schemes can be seen in table 3. The four schemes are based on the structure of the interviews. This way each of the aspects that could answer the research questions could be examined.

- The first code scheme centered on the **personal experiences** of the patients. This scheme focused mainly on the first part of the interviews and was the primary source for answering sub question 1 and 3.
- The second code scheme centered on the **elements of eHealth.** This scheme focused mainly on the second part of the interviews and was the primary source for answering sub question 2 and 3.
- The third code scheme centered on **persuasive elements.** This code scheme contained everything that was said during the entire interviews in relation to persuasive or motivating aspects. This code scheme, together with the previous two, was the primary source for answering sub question 3.

- The fourth code scheme was called **other** and consisted of all the quotes that could be of importance, but did not qualify under any of the other schemes. This code scheme was used for answering all of the sub questions.

Initial codes were created for each of the code schemes. For the first scheme this was based on the six themes the questions in the first part of the interview were based upon, these six themes can be seen in the data collections paragraph or in table 3. The second code scheme was put together in a similar manner. The initial codes were based on the actions that were performed during the second part of the interview. The sole change to this was that 'navigating the web shop' was left out. The web shop function was discussed with the users but could not be fundamentally analysed on whether underlying techniques could be used to make it more persuasive, since the inclusion of the reward system is a persuasive technique in and of itself. Remarks on the web shop function were limited to whether users were motivated by this reward system or not. This meant that quotes regarding the web shop were instead coded under the third scheme. An additional code was made called 'general view' that included anything useful that was being said about the platform or eHealth in general, that did not fit any of the other codes. The initial codes for the third scheme were based on motivational or demotivational aspects of the eHealth platform. The initial codes for the fourth scheme were divided into 'treatment method' and 'rehabilitation'. Whilst the codes of the first 3 schemes were based on the structure of the research questions (and hence the structure of the interviews), the code scheme of 'other' was the only scheme that got its initial codes after analysing the data. Since this scheme consisted of remaining quotes that could be important to answer the questions, but did not fit any of the other code schemes. The remaining quotes in this scheme could best be categorised under the codes 'treatment method' or 'rehabilitation' Table 3 shows the four code scheme with their initial codes.

Table 3, The four code schemes

The four code schemes:			
1. Personal experiences	**2. Elements of eHealth**	**3. Persuasive elements**	**4. Other**
	Initial codes:		
Background information	Communication	Motivational	Treatment method
Experiences with their illness	Dossier	Demotivational	Rehabilitation
Adjustments in life	Health values		
Support	Online advice		
Self management	Coaching modules		
Drivers	General view		

Three transcribed interviews were coded using these schemes. The coding was done in Atlas.ti version 8. After this, the initial codes were further categorized into subcategories. The structure of the code schemes was then discussed with an independent analyst. After consensus was reached the other transcripts were also coded. Once all transcripts were coded, 10 % of the quotes were checked by the independent analyst for inter-rater reliability, to see whether the coding results would be the same when assessed by a different analyst, using the same code schemes, under the same circumstances.
This led to some final discussion and revisions of the code schemes. The end results of the code schemes that were used in this research can be seen in appendix 2. Appendix 2 includes the initial codes, the sub-codes and a description of what each code exactly entails, provided by an example quote.

With the code schemes complete the data was checked one last time and transported to excel. The excel file consisted of 4 tabs, in accordance with the 4 code schemes. Each tab contained the quotes that were coded under one of its codes. A single quote could have been assigned two or three codes. Each of the 4 tabs contributed to answering the sub questions.

Requirement specification

To elicit requirements from the coded data, a *requirement elicitation method* was used (38). Each quote was examined to determine the values and attributes. This was then re-evaluated during a brainstorm session including multiple researchers. This research group consisted of individuals involved in the development and implementation of the mijnHEP. During the brainstorm session the needs, wishes, and values of the patients and the health care providers concerning mijnHEP were discussed. This provided an initial list of values which were used for this research. Some values were added after the brainstorm session.

Once every quote was linked to one or more attributes and values, it was determined what the requirements associated with the values should be. Requirements could not be assigned to every quote. Each coded quote was of importance in this research, but not all did well to translate into requirements. For instance, quotes like: *'I am the kind of person who cannot sit still. If there is nothing to do, I'll search for work around the house. Sweeping, raking, as long as I'm active'* were coded, under the codes of personal experience in this example, since they did provide insight in the characteristics of the participants. However, quotes like these did not provide information that would lead to concrete requirements that could improve the mijnHEP. Each quote was examined to see if it could be conveyed into requirements. The ones that could were mainly used to answer the third sub question, the ones that could not were mainly used to answer the first and second sub questions.

Each tab had a function in answering the research questions. To answer the first question on how the aspects of self-management were experienced amongst CHF patients, the main source was the tab with the 'personal experiences'. The second question was answered using a similar fashion. This time the

main source was the tab 'elements of eHealth'. For both questions the other 3 tabs were also checked. The main source of data were however the tabs as mentioned.

The third question was answered using the requirements. All 4 tabs were used, but most quotes that lead to requirements were found on the 'elements of eHealth', and 'persuasive elements' tab. These tabs were mostly linked to eHealth and could therefore be translated into requirements. For instance, the quotes under the code 'background information' on the 'personal information' tab did often not translate well into requirements.

The requirements were used to indicate what is needed in eHealth interventions to fulfill the needs of the users. Some requirements were relatively self-explanatory, while others needed further elaboration. The elaboration was given using the persuasive techniques as described in the theoretical framework.

Results

In the results section the three sub questions will be answered, in order to give a conclusion for the main research question.

Demographics

Table 4 shows the demographic characteristics of the 10 participants in this study. Keep in mind that the demographics are own indications of the participants, for instance the 'Skills with technology' were not based on actual reference scales such as a Likert scale. Instead the participants were asked how they would describe their experience with technology.

Table 4, demographics of the participants

Respondent #	Gender	Age	Skills with technology	Illness	Experience with illness
1	Female	79	Bad	TIA	2 days
2	Female	72	Bad	Cerebral infarction	2 days
3	Female	DNS*	Good	Atrial fibrillation plus high blood pressure	2 years
4	Female	64	Good	Myocardial infarction	20 years
5	Male	62	Good	Myocardial infarction resulting in atrial fibrillation	20 years
6	Male	64	Ok	Arteriosclerosis plus stenosis	2.5 years
7	Female	35	Good	Heart noise resulting in prolapsed heart valve	Entire lifetime
8	Female	71	Ok	Artial fibrillation	Entire lifetime
9	Female	DNS*	Ok	Myocardial infarction	DNS*
10	Female	36	Good	Congenital heart defect	Entire lifetime

*Did not state

Results sub question 1

To get an idea of how eHealth interventions could support the self-management of CHF patients, insight in their experiences on their current health care management was needed. The interviews provided results to answer the following sub question:
'*What are the experiences of CHF patients in dealing with the self-management aspects of their illness?'*

The general consensus was that the current care delivered by nurses and caretakers was good. The patients were content with the amount of contact and the manner of contact they had with caretakers. There were however some critical points that were mentioned in the interviews. These results will focus on the most important themes amongst the patients. These themes are based on the coding schemes, which contained statements that were either shared amongst multiple patients, or statements that patients where very persistent towards. Note that there is no ranking in the themes mentioned below. If necessary the themes will be elaborated with quotes[1]. Above each quote the respondent number is stated, to provide some perspective to the quotes.

Mental stress

The most common reoccurring difficulty in self-management was mentally coping with the illness. While all the interviewees agreed that CHF has a big impact on the physical aspects of life, such as lower fitness levels, they stated that most people do not understand the emotional toll CHF has on the lives of patients. Patients lose confidence in their body and are afraid more often. Irregularities in heart beat or slight pains in the chest have a big influence on the mental state of mind.

Besides this constant fear for the physical status of their body, which in itself is mentally hard, the physical limitations also play a deeper role in the mental stress. One patient mentioned that he had immense difficulties with finding work after undergoing surgery. This in turn led to more worries about the financial and social situation, which in turn led to even more stress. The vicious circle of fear and stress leading to more even more stress was described by multiple patients. An example quote of this was:

Quote 1:
Respondent 7
"My heart rate was somewhat elevated and I worried about that. My cardiologist explained to me that that was the last thing I should do, because that makes it kind of ironic, 'you worry because of your elevated heart rate and therefore your heart rate increases even more'. funny right? Kind of makes the circle round."

[1] These quotes are translated from Dutch to English

Introduction to rehabilitation programs

Another reoccurring theme among the patients was the perceived lack of guidance after the surgery. While most patients indicated they were content with the way they received rehabilitation care, there were multiple patients who said that after surgery they were not immediately introduced to cardiac rehabilitation programs by their physician, something which they would have wanted to happen. One person indicated it was due to heart related complications, while 2 others stated that they were simply not introduced to such a program by their physicians. All of the patients that were introduced to cardiac rehabilitation experienced it positively and those that did not participate in cardiac rehabilitation indicated it would have been beneficial for them. Two of their quotes that support this are:

Quote 2:

Respondent 3

"It would have been ideal if this [rehabilitation at Vital10] was offered immediately to me. Now it was only offered because I kept coming back with complaints. It should be advised during the first consult after the surgery, or at the first checkup at the physician."

Quote 3:

Respondent 8

"I: And what would your ideal rehabilitation have been?

R: If they would have directly said 'go to this place [Vital10]. Organizations like the 'Hartstichting' should have a link to places like this."

Professional and social acknowledgement

Another bottleneck mentioned was the lack of support in some cases. This was not present in all patients, but 3 patients indicated that their social circle, like for instance friends and coworkers, somewhat underestimated the severity of the illness. This is shown in the following quote:

Quote 4:

Respondent 6

"R: Even the cardiologists and the physicians during the rehabilitation, everybody is like 'Hey, you just need to recover' and to me that's just... Everybody I know that went through something like I did, all of them had a hard time dealing with it. Anxiety, fear of relapse, fear of dying. And I see it in friends who say 'there's not much going on' while I keep thinking 'if nothing would have been detected, I could have died'. The fact that you could die from this has a big influence on people I believe, and I think that that is sometimes... ***I: underestimated?*** *R; Yeah, completely underestimated, by everyone.*

As quote 4 shows, patient do not only feel that their social circle shows lack of understanding, sometimes they also do not feel heard by cardiologists and physicians. Patients who were relatively young stated that they were unsettled by the fact that friends, family, or even cardiologists and physicians reacted surprised to see CHF patients at such a young age. Again this shows a lack of acknowledgement among social and professional circles.

Quote 5:

Respondent 7

"R: Well for me... I was relatively young, so I got a lot of comments like 'Wow you're young, what are you doing at the cardiac department?" Well... young or old, what I have is something a boy of 10 could also have. Young or not, we associate heart diseases often with elderly people. Silted up veins, heart attacks, or cardiac arrhythmia, but I had none of those. I have something structural, ever since I was born (...) ***I: And is that also one of the things you had difficulties with?*** *R: Yeah, especially because I'm young, and I was even younger then. Even my nurses were surprised I was so young, which only confused me. They should know that I have something a teenager could also have.*

Trust in own body compared to technology

Patients with more years of experience with their CHF indicated that they are aware of their own body and of technologies that can help them in their self-management. It was however mentioned that sometimes they experienced some difficulties. For instance, when measurements show that there are no irregularities in the heart rate, while the patients clearly feel there is something wrong. This raised questions in patients such as; 'To what extent can patients trust technologies, and when should they listen to their own body?' 'How much can they ask from their body?' It was indicated that the patients had difficulties in finding balance in their daily lives, since they have to make decisions on how to spend their energy.

Quote 6:

Respondent 10

"R: Life has its ups and downs, in the moments I feel a bit better I can do more. In the moments I feel less good I notice I try to work harder, just so others won't notice. I still have a job and I come to realize I have to agree to myself 'I am sick, I can't work any harder'. You just cannot always keep up with the tempo of society (...) I: ***So you try to find a good balance in that?*** *R: Yeah, and that can be difficult. When you're sick you're more vulnerable, but you have to be strict, and sometimes just say 'no I cannot make that appointment today.'*

Coordination between healthcare providers

Another bottleneck that was mentioned more than once was that the alignment between health care providers was sometimes perceived as not being optimal. This can cause limitations in the rehabilitation for patients. When communication and collaboration between different health care providers is not optimal patients can become agitated with the care they receive. Poor intramural communication was also given as a possible reason why no cardiac rehabilitation program was offered to some of the patients as described above.

Quote 7:

Respondent 6

"But I think part of the reason is because every caretaker only does one aspect of the total picture. Like one person does the operation, one person does the rehabilitation, the other gives aftercare and so on. Everybody does one part, the total picture is not... well they cannot see the whole picture. (...) I think that should be improved."

Control

The last bottleneck had to do with the level of control people had in their own rehabilitation. This was experienced differently among patients and was therefore not always described as a bottleneck. In general most of the patients stated they wanted some level of participation in their self-management. For some this meant they wanted to be on the same level of decision-making as the cardiologists, while others just wanted to self-measure blood pressure when they perceived it necessary. Nevertheless, being in control of the own rehabilitation process was a theme that was often brought up.

Quote 8:

Respondent 10

"I like that kind of interaction, I'm not the type of patient that accepts the mentality of 'I am the doctor and you have to do what we tell you.' No, it's my life. I do come to the doctors for help if I feel like I need them to stay alive, but only in such a way that it feels right for me."

These themes were all described either on multiple occasions, or by more than one interviewee. Besides these common themes there were some matters that were discussed only once:

- One patient indicated she would have liked to receive more information about what was going to happen to her during the operation and what she could expect after the operation.

- One patient indicated she did not have enough information on the symptoms of heart attacks amongst women. This can however be interpreted as more of a failure in preventive care than in self-management
- One patient indicated she had difficulties in asking for help within her social circle. She could however not describe why and said it was part of her character.

Results sub question 2

The second sub question was: *"How are the elements of eHealth experienced by CHF patients?"* To answer this question the mijnHEP platform created by vital10 was used as a case example. Its features were discussed with the CHF patients and they were asked what their general opinion on these features was. This section will give a summary of the points discussed during each feature. Each feature will be divided in two parts. First the general opinion of the CHF patients will be explained and in the second part it will be described how this relates to the mijnHEP platform. When necessary the points discussed will be elaborated with quotes. These quotes will again be stated with the respondent number to provide some perspective to them.

Online communication

In general patients were content with the amount of contact they had with their health care provider. It was stated that communication via technology is preferable for initiating a conversation, but to discuss serious health related problems face to face contact is still the preferred way. A conversation is often started in an approachable manner, like a call, a mail or Whats App. During this first interaction the problem is often described and appointments for consults can be made. Another positive aspect of online communication is the fact that for instance a chat can save time during consults, since patients can ask small questions ahead of the visit. These are often questions that are not that urgent, but do however take up time during a consult. It also creates a certain feeling of safety, since online communication is ubiquitous and therefore patients do not have to wait with questions. All in all most patients were positive towards online communication but stated it will mainly be an addition to regular face to face communication.

Quote 9:
Respondent 5
"Well... most questions are not that urgent (...) If something really serious is going on, you immediately contact your general practitioner or you call the cardiology department. But such a chat can definitely solve some practical questions. These kinds of questions will no longer take up time during a consult, and that is something that I find very convenient. I can think of a few things I would rather arrange via such a chat than during a consult."

The online communication in the mijnHEP platform works via a chat. In this chat there are rooms where multiple people can enter, or the patient can enter in a 1-on-1 conversation with his health care provider, who has 24 hours to respond to the questions of the patient.

In general there was a lot of confusion among the patients about how the chat function really worked. Patients did not know some of the basic functions like whom they were speaking to, how they could make contact with the person they wanted to speak with, how you could create a group and who would be part of those groups. This showed that the main problem is not in the functional usability of the chat function, but more in the general purpose of the chat and the initiation of conversations. Another point that was mentioned was the importance of personal contact. Patients expected that the group chat would always be open and mainly for minor issues. It was expected that one click on the name of the caretaker would open a personal chat, where more important, private matters can be discussed. Furthermore it is important that the caretaker takes time for answering questions, and of course privacy security is crucial. Lastly some general recommendations were mentioned, such as a picture and some background information of the caretaker when clicking on his/her name. This creates a more personal atmosphere in the chat and could be useful information when patients are talking to a caretaker they do not know. The second recommendation was a search function, in which patients could find other patients or caretakers. A search function could also be created for looking into earlier conversations. Quote 10 and 11 show the confusion amongst the patients.

Quote 10:

Respondent 7

"R: But [name of general practitioner] can invite me for a conversation? ***I: Yes.*** *R: So I have to ask [name of general practitioner] in a group chat that I have something personal and if she wants to speak to me in private? And only then we are able to speak privately?"*

Quote 11:

Respondent 4

"R: But... what are they about? I see 2 rooms... which... What do they talk about? ***I: Is that the first thought that enters your mind?*** *R: Is there one about diet? Or one about cardio?* ***I: Well for example-*** *R: oh maybe I see it. Are both chats about the same topic? Or what are the possibilities?"*

Online dossier

In general the patients showed a positive attitude towards the possibility of having insight in their own dossier. This enthusiasm was not sheared among all of the patients, but it was stated that it would not hurt to have insight in their test results, even though not everyone would look at them. A prerequisite for the usage of an online dossier was the involvement of the physician, since the patients stated they did not want the information to be incomplete, meaning that all of the outcomes of physical examinations should be entered in the dossier.

Quote 12:

Respondent 5

"If you can realize to get the actual medical situation in chart this is only convenient. I can imagine that there are people who get lost in all their medication. (...) When you have all of it in one clear overview it becomes very handy. When you can get the physicians and cardiologists and GP's to work with this it would be a great solution."

The layout of the dossier function in the mijnHEP was considered to be alright, there were two points of criticism though. The first was the usage of jargon, which was difficult to understand. A possible solution for this problem was an information button after each difficult term. Users could click on (or hover over) it with their mouse and then open a small information cloud with a short and simple explanation of the term.

The other point was the need for standard values. How this should be implemented was described in many different ways which will not all be discussed here. The underlying value of the standard values was for the patients to quickly see whether their values differentiate from the mean. This could eradicate doubt if the values are alright, and could enable the patients to take action if they differ from the norm. Quote 13 shows one solution to the second point.

Quote 13:

Respondent 10

"R: Maybe you can add links. ***I: Links to?*** *R: Well with the normal values. When you click on them and you see the normal value, or the target value."*

Advice and feedback

A very important point in the usage of eHealth as indicated by the patients was the involvement of the health care providers. One patient said that he already uses multiple apps for improving his health, but indicated that a true innovating element would be the inclusion of the health care provider. The possibility to get feedback on their results is a reassuring factor for the users, even just the thought that a professional is watching your health values and can intervene when things are not going well was described as pleasant. The patients were also positive towards a form of online advice, where information conveyed in face to face consults could be written down. It was stated that consults can be emotionally difficult sometimes and that there is a lot of information transferred. That means patients cannot always remember everything that is told. Therefore they were positive towards a platform as an extra form of support. Patients were however concerned about the extra work this will be for caretakers. They suspected that caretakers will not always make use of such a function and some patients even indicated that they were willing to enter summaries of consults themselves.

Quote 14:

Respondent 6

"I: When you go to a consult you get a lot of information, information which can be written down on a note, but it can also be entered in an online platform (...) *R: Oh that's very good. That's something I experience as a shortcoming. Oftentimes your mind is completely somewhere else, or you are confused. I see that in myself and also in others. In such a state you are not able to process and remember everything yourself."*

As for the advice feature in the mijnHEP portal, there were not many remarks. The general consensus was that the layout of the page was fine. There was some debate over how the advices should be scaled, for instance according to physician, according to importance, or according to type of advice. There was however not one definitive preferred answer among the patients. The 'information & brochures' page was also considered pleasant, as it provided a lot of information under one roof. This could help patients as they indicated that they sometimes have to do a lengthy search on the internet.

Self-measurements

The entering of health related values is a frequent activity amongst the CHF patients and there were some who already use applications for this. For some patients self-measurements were not necessary and they said it would feel like 'homework'. They stated that they would not do it unless it was advised by a physician. Once they have such an initial stimulant, self-measurements often become routine. However, the patients agreed that they will probably not self-measure every day. The opportunity to have insight in the (changes in) health values gave the patients the feeling they were more in control of their illness.

The self-measurement page in the mijnHEP portal was met with different opinions. Most of the patients indicated they found the page confusing and had difficulties with entering their health values, while others said that everything was clear. The addition of the mijnHEP feature was that most other applications do not have a graph showing the development of the health values. This, together with the fact the health values can also be seen by the physicians, were distinctive factors according to the patients. It made them feel more secure when they now their physician is also keeping track of their health measurements. The fact that you can describe how you feel after each measurement was also experienced as desirable.

As for the improvements the self-measurement page could undergo it was stated that the ideal situation would be for the page to connect with certain blood pressure / blood sugar measurement devices. The values would then automatically be inserted instead of doing this manually. When that is not feasible the suggestion was to do have the actions step by step, with big letters, in the middle of the screen.

Quote 15:

Respondent 5

"I: A general question, what do you think of such a page where you can enter health values? Can you see yourself doing it? *R: If there will be a link to the health care provider I think so. In that case I even find it very useful. If that is not the case, I see it merely as something extra to my participation in the other accounts I have at menzis."*

Quote 16:

Respondent 10

"Yeah, like I said, I accidentally entered two systolic values, maybe it should be step by step. And after that you get to see the normal values."

eCoach modules

The patients were relatively likeminded in their opinion of online coaching modules. The number one advantage these modules have is that they can be done in the patient's own time and require no travel time. However, there was some division about if, and to what extent, they would make use of such modules. An important factor for the usage was the nature of the modules. It was indicated that patients were less likely to make use of broad modules than when the modules were to be made specifically to fit their problems. What would also help the usage would be to have reminders. These reminders should preferably be in an amicable message and not involve any coercion.

Quote 17:

Respondent 5

"I: What is your opinion of such an eCoach module? *R: Well I know them from the menzis app, and I answer all the questions, I take all the advice. So with this application that will probably not differ.* ***I: Do you think eCoaches have an added value?*** *R: Sometimes. Oftentimes there are messages that you hear over and over (...) such an eCoach does not know your knowledge situation. Therefore it is often just a standard story. Once in a while there are some things that are new to me.* ***I: Would you partake in such an eCoach module then, if your physician says it could be beneficial for you?*** *R: Well... everything that is in collaboration with my cardiologist, and when he says it is good for me, I would do, regardless."*

As for the mijnHEP platform, patients stated that the modules should be on the dashboard page (as they are), because it is important to have them in view immediately. Furthermore the patients were very content with the video showing which physician is behind the module, since it gives a personal touch to the modules and therefore increases personalization.

General findings

What most patients agreed about was that eHealth technology could help them take control in their life. It was described as being a guideline, which could create awareness and structure in coping with their illness.

When presented with the choice of a laptop or a smartphone, most patients preferred to have the mijnHEP platform on a laptop or pc, since it provides a bigger screen compared to that of a smartphone. The best solution however would be to have the platform available on both interfaces, since patients also indicated they value the mobility that zmartphones offer.

Another important aspect that the patients associated with eHealth was the group element. Working in groups increases the motivation of patients to be active in their lifestyle. They were content with the way mijnHEP provides the group elements, such as in the chat.

The ubiquitous nature of eHealth was described as being both a positive and a negative element. The fact that you can access technology everywhere can be convenient, but it also draws attention to the fact that people are ill. They are constantly reminded of their illness and that can overwhelm the life of patients.

Lastly some general concerns of the patients had to do with online privacy and the introduction of the platform. Introduction should be gradual, and only to those who indicate they are willing to make use of the mijnHEP. It would also be useful to have a help function, either on paper or through video.

Results sub question 3

The third and final sub question revolves around how persuasive techniques can be used to support eHealth interventions. The sub question was: *"How can persuasive elements be implemented in eHealh platforms, such as the mijnHEP platform?"*

To answer this sub question all of the relevant quotes were generated into attributes, values, and subsequently into requirements. All of these requirements were documented and elaborated using a documentation template, based upon the Volere template (38, 52). These templates can be seen in appendix 3[2]. Most requirements are of such a nature that the short explanation provided in the templates is sufficient to get a clear understanding of what they entail. Yet some requirements require further elaboration. These requirements are further explained using the persuasive techniques as described in the theoretical framework. In the tables below it will be explained why the requirements were chosen to be elaborated, or why they were not[3].

- Table 5 shows the requirements that could not be fulfilled using persuasive strategies. They are mainly non-functional or organizational requirements that focus on management issues. Therefore they do not directly refer to the mijnHEP platform, and can thus not be solved using the persuasive techniques as described in the contextual inquiry. Other requirements that fall in this category are those who are to general to be elaborated.
- Table 6 shows the requirements that are of a dichotomous nature. In this case the dichotomous nature means that the requirements are relatively concrete usability problems which can either be added or which will either not be added. They do not require a more in depth analysis since the system either does or does not fulfill the requirements.
- Table 7 shows the requirements that the system already fulfills. As mentioned in the introduction and methods, this research re-examined the first 3 steps of the CeHReS roadmap. The mijnHEP platform is already in the 5th step of the roadmap; operationalization. The platform was used to discuss the user's experiences. This meant that some requirements were formulated even though they were already sufficiently fulfilled by the platform according to the users.
- Table 8 shows the requirements that will be further elaborated using persuasive strategies.

[2] The requirement templates are in Dutch

[3] If any of the requirements that are not further elaborated remain unclear, check out appendix 3 for more detail on those requirements.

Each of the requirements has been given an ID relating to their position in appendix 3, where requirements 1 through 47 can be found. Please note that the ID numbers hold no ranking, the order in which they occur in the appendix originates from the order in which the data was processed.

The tables below first show the ID number, to indicate the requirement. Next the description of the requirement is given. Additionally the underlying values of the patients, which formed the basis in formulating the requirements, are indicated. Lastly tables 5, 6 and 7 will provide a short explanation on why the requirements were categorized in their respective tables, as these are the requirements that will not be further elaborated. Since the requirements in table 8 will be elaborated they will provide no such explanation.

The grouping of the requirements in their respective categories has been discussed between researchers who were involved in the development and implementation of the mijnHEP. In qualitative research the categorizing of data is not always mutually exclusive and therefore it was sometimes open for discussion on which requirements needed further elaboration or which did not (51). The categorization in the tables below has been finalized after consensus was reached.

Table 5, Requirements that cannot be fulfilled using persuasive strategies

Req. ID	Requirement description	Underlying patient values	Short explanation
1	The system must actually be used by the health care providers	• Need for feedback from the health care provider, • Feeling heard by the health care provider • Creating a feeling of safety • Need for easy and approachable contact,	Usage of the healthcare providers cannot be altered by adding persuasive techniques in the mijnHEP platform (persuasive techniques on the health care providers end of the system could be beneficial, this is however input for further research.)
5	The system enables feedback given by health care providers	• Need for feedback from the health care provider • Feeling heard by the health care provider • Creating a feeling of safety • Need for confirmation	This relies on the usage of the health care providers. Again, something which cannot be influenced by adding persuasive technologies to the mijnHEP.
17	The system must contain ALL health related information of the user	• overview plus integration of information • feeling heard by the health care provider	This requirement depends on the intensity of usage of the health care providers. They should import all of the available information of the patients. This cannot be influenced with persuasive techniques in the mijnHEP platform.
18	The system must give the user control of their own care process	• Patients desire autonomy in their rehabilitation • Need for a guideline in dealing with their illness • Desire for knowledge of the treatment methods • Feeling heard by the health care provider • Need for approachable contact • Trust in own knowledge	This is a broader, more general, functional requirement which cannot be directly translated via persuasive techniques. Since it is not a functional requirement, it will not be further elaborated.
29	The system could mainly focus on presents that promote healthy behavior.	• Patients need a driving force	This is more of a recommendation than a requirement. It will therefore not be elaborated
31	The system could arrange for either health related or platform related meetings	• Need for contact with fellow sufferers	This is a requirement on a organizational level. Using persuasive strategies on the mijnHEP will not aid this requirement.
38	The system should not involve additional tasks	• Reduction of effort on the platform	This cannot be fulfilled using persuasive strategies.
39	The system must be implemented in a multidisciplinary manner	• Need for integral care • Feeling heard by the health care provider • Creating a feeling of safety • Patients want to be guided through the process	This relies on management issues. How and where the system will be implemented cannot be translated in persuasive techniques.
40	The system must act as addition to traditional care, not as a replacement	• Fear of losing personal contact with the health care provider	This is a broader, more general, functional requirement which cannot be directly translated via persuasive techniques. Since it is not a functional requirement, it will not be further elaborated

Req. ID	Requirement description	Underlying value	Short explanation
41	The system must support the lifestyle changes users have to make	• Need for a guideline in dealing with their illness • Need for physical activity, staying healthy	This is a broader, more general, functional requirement which cannot be directly translated via persuasive techniques. Since it is not a functional requirement, it will not be further elaborated
43	The system must be easy to use	• Reduction of effort on the platform • Need for clarity on the functions of the platform	This is an overarching requirement that forms the basis of the mijnHEP platform. This requirement cannot simply be fulfilled. When considering other more specific requirements, this requirement will also be attended to. The fact that this requirement on its own cannot be fulfilled means that it will not be further elaborated.
44	The system must be user friendly	• Reduction of effort on the platform • Need for clarity on the functions of the platform	This is an overarching requirement that forms the basis of the mijnHEP platform. This requirement cannot simply be fulfilled. When considering other more specific requirements, this requirement will also be attended to. The fact that this requirement on its own cannot be fulfilled means that it will not be further elaborated.
45	The system must give the user trust in their own body	• Feeling heard by the health care provider • Creating a feeling of safety • Need for acknowledgement, understanding • Need for physical activity, getting healthy • Trust in own knowledge • Need for confirmation	This is an overarching requirement that forms the basis of the mijnHEP platform. This requirement cannot simply be fulfilled, only if the more specific requirements mentioned above all function well. The fact that this requirement on its own cannot be fulfilled means that it will not be further elaborated.
47	The system needs to create awareness amongst users and their environment	• Need for acknowledgement, understanding • Need for support from social circle • Creating a feeling of safety	This requirement cannot be fulfilled by adding persuasive techniques to the platform, it has more influence on implementation. Campaigns and the like could be used to increase awareness. Since it is not a functional requirement it will not be further elaborated.

Table 6, Requirements of a dichotomous nature

Req. ID	Requirement description	Underlying patient values	Short explanation
2	The system should have the option for users to enter information themselves	• Need for a guideline in dealing with their illness • Feeling heard by the health care provider • Overview plus integration of information • Need for feedback from the health care provider	Users want to be able to enter information themselves, developers of the platform can decide on which pages this is possible or necessary.
4	The system has to regularly update the information of the users	• Overview plus integration of information	This is more dependent on the developers of the platform than on persuasive techniques.
8	The system must either contain or link important information	• Overview plus integration of information • Reduction of effort on the platform • The patients want to be structured through the rehabilitation • Patients desire autonomy in their rehabilitation	A small usability issue, which can relatively easy be fulfilled.
9	The system must be able to integrate information from other systems	• Overview plus integration of information • Feeling heard by the health care provider • Creating a feeling of safety	The system either does or does not achieve this.
11	The system must contain mean values	• Need for confirmation • Overview plus integration of information	A small usability issue, which can relatively easy be fulfilled.
12	The system must work on multiple interfaces	• Need for mobility of the platform	The system either does or does not achieve this
19	The users should be able to indicate which information should be on the front page	• Overview plus integration of information	The system allows the users to chose which indicators they want to see on the health measurements page, the same should be able for the dashboard page
21	The system should be able to synchronize with other apps or measurement instruments	• Reduction of effort on the platform	The system either does or does not achieve this
25	The system should provide explanation on difficult jargon	• Overview plus integration of information	A small usability issue, which can relatively easy be fulfilled
34	It should be possible to print documents straight from the platform	• Overview plus integration of information	The system either does or does not achieve this
35	In case of alarming health values, the system should alert the health care provider	• Need for feedback from the health care provider	The system either does or does not achieve this
46	The system could be accesible for people close to the user	• Need for acknowledgement, understanding • Need for support from the social circle	The system either does or does not allow for this

Table 7, Requirements that the system already fulfills

Req. ID	Requirement description	Underlying patient values	Short explanation
3	The system must provide insight in the advices given by the health care providers	• Creating a feeling of safety • Overview plus integration of information	This is already possible in the 'advices' page
6	The platform has to give feedback to the users	• Patients desire autonomy in their rehabilitation • Need for feedback from the health care provider • Need for confirmation	The platform does already make use of automatic feedback. The users indicated that there was not much wrong with the way this was done.
10	The system must provide insight in the dossier of patients	• Overview plus integration of information • Patients desire autonomy in their rehabilitation • Creating a feeling of safety	This is possible in the 'dossier' page
16	The system must protect personal, privacy sensitive information	• Security of personal information • Desire for knowledge of the treatment methods	Security is already a priority in the mijnHEP.
23	The system must guarantee transparency of communication	• Creating a feeling of safety • Need for personal information • Fear of losing personal contact with the health care provider	This is shown in the 'correspondence' page
28	The system must make use of a reward system	• Patients need a driving force • Need for physical activity, getting healthy	The mijnHEP makes use of a reward system
30	The system could provide (positive) feedback	• Patients need a driving force • Need for confirmation	The users indicated they were already content with how the system provides feedback.
32	It should be possible to enter own health values in the platform	• Overview plus integration of information • Patients desire autonomy in their rehabilitation	This is possible on the 'health measurements' page
33	The system should represent the health values in a visual manner	• Need for a guideline in dealing with their illness • Overview plus integration of information	The system represents the health values via a graph, This give an quick and easy overview of the development over time
37	It should be possible to note remarks when entering health values	• Preferences of the user need to be central	It is possible to note remarks when entering health measurements

Table 8, Requirements that will be further elaborated

Req. ID	Requirement description	Underlying patient values
7	The system should have all the information mapped out, under one roof	• Overview plus integration of information • The patients want to be structured through the rehabilitation • Reduction of effort on the platform • Need for a guideline in dealing with their illness • Creating a feeling of safety
13	The system must facilitate approachable contact with health care providers	• Need for easy and approachable contact • Creating a feeling of safety • Need for feedback from the health care provider • Patients desire autonomy in their rehabilitation • Fear of losing personal contact with the health care provider
14	The system must facilitate approachable contact with fellow sufferers	• Need for easy and approachable contact • Need for contact with fellow sufferers • Need for clarity on the functions of the platform • Need for support from the social circle
15	It must be clear how the users have to handle the different functions on the platform	• Need for clarity on the functions of the platform • The patients want to be structured through the rehabilitation • Overview plus integration of information • Reduction of effort on the platform
20	users must be able to work with the system in their own pace	• Creating a feeling of safety • Patients desire autonomy in their rehabilitation • Need for personal information
22	The user must be introduced to the platform in a good and gradual manner	• Need for a good introduction to the platform • The patients want to be structured through the rehabilitation • Need for clarity on the functions of the platform
24	The goal of the platform and its functions should be clear	• Need for clarity on the functions of the platform • Need for knowledge about the goal of the platform and its functions
26	The system should provide personal and relevant options	• Need for personal information • Creating a feeling of safety • Need for clarity on the functions of the platform
27	The system could have reminders that should not have a compelling tone.	• Patients need a driving force • Need for feedback from the health care providers
36	The system must convey information in both a textual and (audio) visual manner	• Need for personal information • Overview plus integration of information
42	The system must guide the user through its functions	• Need for clarity on the functions of the platform • Reduction of information on the platform • Overview plus integration of information • Need for a guideline in dealing with their illness

Requirement elaboration

As stated, the requirements in table 8 will be elaborated using persuasive techniques. These requirements were chosen in order to clarify them and provide examples of how the theories described in the theoretical framework can heed (some of) the patient values that are the underlying causes for these requirements. There are many theories that could perhaps further elaborate on some requirements, like for instance the diffusion of innovation theory by E.M. Rogers (53), however in this research only the theories of Fogg, Kukkonen, and Nielsen will be used. Why these theories were chosen will be stated under the 'Implications for further research' header, in the discussion section.

The order in which the requirements will be elaborated will not correspond with the order in table 8. First the requirements that comprise some of the bigger overarching problems with the platform will be elaborated. Afterwards the more specific ones will be elaborated. Screenshots of what the mijnHEP exactly looked like during the gathering of the information can be seen in appendix 4.

Clarity on the goals of the functions on the platform

Req. ID 24: The goal of the platform and its functions should be clear

First, users have to be able to understand how the functions of the platform work, and especially why they should be used. However, users indicated that it was unclear why, when, or to what extent certain functions should be used. Furthermore there were questions about the goal of the platform, or the concept that the platform is based upon. This showed itself in questions like:

- *"How is this project financed?"*
- *"What about measuring cholesterol levels, I can't do that at home?"*
- *"Which health care providers work with this platform?*

These questions show a lack in the knowledge patients have of some of the fundamental aspects of the platform. This lack of knowledge converted into a lack of usage, as the patients indicated they found the platform less appealing when they did not understand the key concepts behind the idea. This lack of knowledge resembles a shortcoming in the system credibility support, and therefore does not abide to the 5th postulate of the PSD model: "Information behind a system should always be available, as this increase the users' trust in the system."

To fill the knowledge gap it would be helpful to provide ways to inform the user not only on how to use the functions (such as a helpdesk centre could do), but also on the underlying concepts of the platform, the ideology of the mijnHEP-system, or the creators of the mijnHEP themselves.

In this case, vital10 already uses a website which explains their company, and the project of mijnHEP. Users should be made aware this information is available and where they can find it. Table 9 shows which persuasive techniques can attend to the underlying value, provided with some examples.

Table 9, Persuasive techniques heeding requirement 24

Underlying value:	Persuasive technique that attends to the value:	Examples:
Need for clarity on the functions of the platform	PSD principle of system credibility support PSD's fifth postulate: Persuasion through persuasive system should always be open	Being open about the fundamental issues and underlying goals of eHealth interventions increases the users trust and interest in these platforms.
Need for knowledge about the goal of the platform and its functions	PSD principle of system credibility support PSD's fifth postulate: Persuasion through persuasive system should always be open	When the goal of a certain function is clear, users will understand why they have to make use of it. For instance, not stating why somebody should measure blood pressure will most likely result in the user not measuring their blood pressure.

Introduction to the functions

Req. ID 15: It must be clear how the users have to handle the different functions on the platform
Req. ID 22: The user must be introduced to the platform in a good and gradual manner

In the previous requirement it was indicated that the goal of the functions was not always clear. However another important aspect that is not always clear to the users is how they should use the functions of the platform. This is often due to poor introduction to the platform. Some ideas to properly introduce users to the platforms, and thus increasing the clarity on the functions, will be further elaborated.

- One on one introduction

The patients stated that a one on one introduction would be the most efficient in helping them understand the features of the platform. A one on one introduction means that a person with knowledge about the platform introduces the users to it. This way the user can immediately ask questions when things are unclear. Downsides to this approach are the resources such as time and money. The people who are most likely fit to introduce the patients to the mijnHEP will be the patient's health care providers. These are often busy and having them introduce the patients to the platform will also cost money.

- An introduction video

Another option is an introduction video which guides the user through the main functions. Such a video could pop up in the middle of the screen, the first time a new user logs in to the platform. The video should not be mandatory, since that discourage patients to use the platform. Forcing patients to watch such a video contradicts Nielsen's heuristic of user control and freedom. However it should be strongly advised to watch the video.

The content of the video can be in the form of a screen capture of the basic functions that can be done on the platform. Meanwhile a voiceover can explain what is happening on the screen, what the functions do, and why they should be used. Not every individual option of the platform has to be explained in depth, since that would make the video to long. Ideally the core functions of the 'dashboard', the 'health values', the 'advices', the 'information', the 'dossier', and the chat function will be explained. All in all this should not take up more than 2 to 4 minutes, to keep the video short and interesting. The video should be accessible on the platform, so that users can re-watch it at any time. Lastly the video should refer to the help center, so patients know where to look if they have further questions.

- Online interactive course

An online interactive course could be constructed to let patients practice the functions of the platform. This should be a follow up to some initial form of introduction, such as one on one or video introduction, since it would be hard for patients to practice with a platform they know nothing about. Just giving an online course could give patients the feeling of being thrown into the deep.

Such an online interactive course could contain tasks the patient has to carry out, such as entering a blood pressure value, seeking contact with a fellow sufferer, searching information on heart failure, etcetera. While the patient navigates trough the platform the course can give information on the functions when patients click on them. This way the patients are provided with feedback. If possible, elements of gamefication or persuasion, such as gathering v-points for completing the course, could be implemented. This will make the course more appealing for users.

- Other options

Other techniques to help users understand the functions of the platform lie more in the persuasive techniques than in the introduction. While a good introduction is the basic for the uptake of the platform, other persuasive techniques can include:

- An 'i' information button as shown in figure 2. The information button in mijnHEP is only present on the 'health values' page. It serves as extra information on health measurements such as blood pressure, cholesterol, weight and so on. This extra information helps patients understand what they should measure, how they should measure it, and why they should measure it. Comments on the information button were that it was not easy to detect on first notice. This could be helped by changing the color of the button, since light blue on dark blue is not very distinctive. Making information and interface functions visible and easily accessible will help users to recognize what they should do. This is compliant to Nielsen's heuristic of recognition rather than recall.

Figure 2, The information button

- An online helpdesk. MijnHEP already makes use of this. However, this was introduced when the research was ongoing. Therefore only the last 2 respondents were asked about their opinion of the helpdesk. Both indicated the layout and information of the helpdesk looked good. A helpdesk is in line with Nielsen's heuristic of help and documentation.
- A short explanation of the function when hovering over it with the mouse. When the user moves the mouse over certain functions and leaves it standing still on that function, a small notification with the meaning of that function could appear. The mijnHEP does this in some cases. Figure 3 shows an example of this, when hovering over the magnifying glass in the search bar used in the chat. The information states 'open search for other users'. Functions like this are based on the same

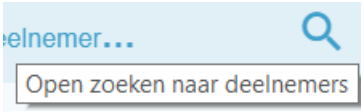

Figure 3, Pop-up that appears when hovering over the search function

heuristic of recognition rather than recall as described in the section on the the information button.

- The chat function. If working properly, the chat function can be effective in helping users to understand the functions of the platform, since this allows users to simply ask questions to fellow sufferers. This way the health care providers will not have to help the users with explaining functions of the platform. This is compliant with the PSD principle of social support.

Table 10 shows which persuasive techniques can attend to the underlying value, provided with some examples.

Table 10, Persuasive techniques heeding requirement 15 & 22

Underlying value:	**Persuasive technique that attends to the value:**	**Examples:**
Need for clarity on the functions of the platform	Nielsen's heuristic of user control and freedom Nielsen's heuristic of recognition rather than recall. Nielsen's heuristic of help and documentation. PSD principle of social support.	In order to for users to understand the functions of an eHealth platform, the design can be based on that of other, well known applications. Other functions to help the user with the functions could be help desks, information buttons, or even a chat function in which questions can be asked.
Patients want to be structured through the rehabilitation	PSD principle of social support. Nielsen's heuristic of help an documentation	Allowing for contact with social circles or fellow sufferers can help patients in their rehabilitation.
Overview plus integration of information	Nielsen's heuristic of user control and freedom. Nielsen's heuristic of recognition rather than recall. Nielsen's heuristic of help and documentation. PSD principle of social support.	When eHealth platforms resemble applications that the users is familiar with, he or she does not have to put as much effort into using the platform.
Reduction of effort on the platform	Nielsen's heuristic of user control and freedom Nielsen's heuristic of recognition rather than recall. Nielsen's heuristic of help and documentation.	When eHealth platforms resemble applications that the users is familiar with, he or she does not have to put as much effort into using the platform.

Communication

Req. ID 13: The system must facilitate approachable contact with health care providers.

Req. ID 14: The system must facilitate approachable contact with fellow suffers.

The 13th and 14th requirement both centered on the platform facilitating contact. The platform does this via a chat function. The comments regarding contact with health care providers or fellow sufferers therefore all referred to the chat and will thus be elaborated as one. The main issue with the chat was that it was very unclear how the chat should be used. Some of this is already described in sub question 2. The two main issues mentioned with the chat will be described below and examined by using persuasive techniques to come up with possible solutions.

- The chat is unclear

This relates to the clarity on the functions as described in the section above. Here a few concrete examples of this will be shown, provided with possible solutions.

Most patients were unable to recognize the blue vertical beam, as being the chat function. Furthermore they did not instinctively guess that the double '<<', circled red in figure 4, meant that the chat would open up to the full size of the page. Explaining what these kinds of functions do be solved in the various ways shown previously. In the case of the '<<' button, a short explanation when hovering over the button with the mouse, seems adequate to inform the users. To further prevent issues like this, the introduction patients get should instruct them on where the main functions of the platform (and in this case the chat) are, and what they entail. This does not have to be an in depth analysis of every detail, but merely an introduction so patients know what these functions do, and why they should make use of these functions. According to the FBM this is an example of the simplicity factor of 'brain cycles', as the patients targeted behavior does not require too much thinking. What will also help the users in learning the functions within the chat is to base much of the layout on already existing chat function, like for instance Whats App. This way, users are more likely to recognize the features within the chat. This corresponds with the heuristic of recognition rather than recall.

Figure 4, The chat function

- It is unclear to whom the patients are talking to, or how they can initiate a conversation

Once it is clear how the chat works, questions remain on who the person is talking to, or how conversations are initiated. Patients indicated that they would prefer to talk to their own health care provider. In order for this to be successful the particular health care provider of the patient must be making use of the platform (a requirement that has also been described in req. ID 1). Assuming all relevant health care providers make use of the platform, the patient must be able to find theirs. The existing search function, circled yellow in figure 4, does not fulfill this task, since users cannot search for other patients or health care providers. Conversations or group chats can only be initiated by the health care providers. Patients should be able to search for the people they want to speak to and thus having the freedom to initiate conversations on their own terms. This is partially in line with Nielsen's heuristic of user control and freedom. Users should be free to navigate through the system, without being limited by it. By freeing users to speak with fellow sufferers the chat can also give in to the human need for social support.

The patients indicated they were aware that it cannot always be possible to start a conversation with any given health care provider at any time. To avoid confusion on the rules of the chat, the 'welcome note', outlined green in figure 4, should contain more information. Textbox 1 shows what the current information conveys, translated to English. Information that can be added includes things like: how to initiate conversations with a specific health care provider, how to begin a chat with fellow sufferers, or how to enter fellow sufferers in a group chat. The addition of information like this will help users understand how the chat works and can prevent errors. This is in line with Nielsen's heuristic of error prevention. At the moment it is only possible for the health care provider to form group chats. However this is preferably something that the user should decide, since they are the ones who know who they want to talk to. This can add to the PSD principles of personalization and tailoring. Table 11 shows which persuasive techniques can attend to the underlying value, provided with some examples.

> Messages in the chat box will be dealt with as soon as possible. We strive to answer your message within one workday. If there is any urgency in your message please contact your health care provider directly via telephone.

Textbox 1, the informational message in the chat function.

Table 11, Persuasive techniques heeding requirements 13 & 14

Underlying value:	**Persuasive technique that attends to the value:**	**Examples:**
Need for easy and approachable contact	Nielsen's heuristic of user freedom and control PSD principle of personalization PSD principle of tailoring PSD principle for social support	Leaving users free to choose whom they want to speak to increases the chance of them making use of the chat.
Need for feedback from the health care provider	Nielsen's heuristic of user freedom and control PSD principle of personalization PSD principle of tailoring PSD principle of social support	Users should have the freedom to choose whom they can talk to in regards to conversations with health care professionals.
Need for contact with fellow sufferers	Nielsen's heuristic of user freedom and control PSD principle of personalization PSD principle of tailoring PSD principle of social support	Users should have the freedom to choose whom they can talk to in regards to recreational conversations with fellow sufferers.
Creating feelings of safety	PSD principle of personalization PSD principles of social support	The mere knowledge that easy contact with health care professionals is available increases the feelings of safety of the users.
Need for clarity on the functions of the platform	Fogg's simplicity factor of brain cycles Nielsen's heuristic of error prevention Nielsen's heuristic of recognition rather than recall	In order to for users to understand the functions of an eHealth platform, the design can be based on that of other, well known applications.

User's pace

Req. ID 20: The users must be able to work with the system in their own pace.

Patients expressed positive feelings towards the idea of the platform giving them control over health related matters which they can consult on later notice. The fact that test results, advices, or health measurements can be processed in their own time, and that contact will be more easily available, gave the users more feelings of safety. Furthermore patients stated that they like the freedom of doing health measurements or eCoaching modules when they feel like it. The chance to do this when it suits them gave them the feeling they have more autonomy over their rehabilitation. Lastly users stated they would like to be able to set goals that they feel fit them best. When the treatment therapy is more or less determined for them by health care professionals, without them being able to have a say in it, patients can feel detached from their treatment.

These feelings of user freedom and unobtrusiveness are described in the sixth postulate behind persuasive systems by the PSD model. It states that a system should avoid disturbing users while they perform their primary task. This means that the system should look for opportune moments to persuade the user to undertake action. In this case the users indicate these opportunities lie mostly in the freedom to let them choose when they want to make use of the mijnHEP. They indicated they did not want to be pushed into making use of it every day. This need for freedom is embedded into the foundations psychological research, and shows itself in the theories of Fogg, PSD, and Nielsen's heuristics.

Fogg's simplicity factors of saved time and saved effort describe how patients have more ability to undergo the target behavior once the behavior fits their time frame. The PSD postulate of unobtrusiveness describes that patients are more likely to undergo target behavior if the system allows them their opportune moments and Nielsen's heuristic of user control and freedom allows for users to do actions on the platform as they like and not be forced to undergo certain actions. Table 12 shows which persuasive techniques can attend to the underlying value, provided with some examples.

Table 12, Persuasive techniques heeding requirement 20

Underlying value:	Persuasive technique that attends to the value:	Examples:
Creating a feeling of safety	PSD's sixth postulate: Persuasive systems should aim at unobtrusiveness. Fogg's simplicity factor of saved time Nielsen's heuristic of user control and freedom	Patients get feelings of safety knowing that information about their body or their rehabilitation is always available. Having the option to check this at any time sets them at ease.
Patients desire autonomy in their rehabilitation	PSD's sixth postulate: Persuasive systems should aim at unobtrusiveness. Fogg's simplicity factor of saved time Nielsen's heuristic of user control and freedom	Having the option to do coaching modules in their own time will give users the feeling that they are in control. This will increase the chances of these modules actually being done.
Need for personal information	PSD's sixth postulate: Persuasive systems should aim at unobtrusiveness. PSD principle of personalization	If the information or coaching modules are not relevant for the user, they will most likely not be used.

Personalized options

Req. ID 26: The system should provide personal and relevant options

Some benefits of personalization have been discussed earlier. The system does allow for personalization in some cases. For instance the health measurement page has the option to add and remove indicator that are relevant to the user, like waist circumference, personal goals, glucose, blood pressure etcetera. The option of choosing what information the users get to see helps the personalization of the platform. Meanwhile it also contributes to the PSD principles of reduction and tunneling, since the platform will not show unnecessary information and lead the user through the functions. By allowing users to choose what self-measurements they want to perform, the principle of self-monitoring is also facilitated.

The platform allows for personalization on the health measurements page, however it does not do so on every page. For instance, users would like the option to choose which information they get to see at the 'homepage' or in this case the dashboard function (a requirement that has also been described in req. ID 19). This can be easily achieved via the same way the platform functions on the health measurements page. Figure 5 shows how a simple checkbox can tailor the platform to the needs of the users.

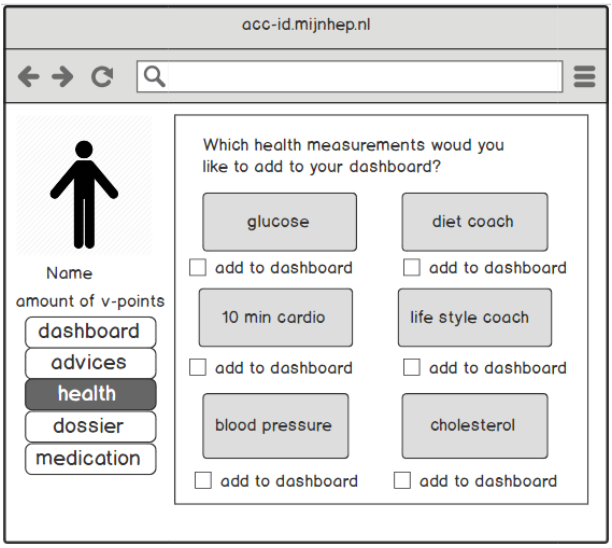

Figure5, Example of personalization of the dashboard

Other implications on the relevance of the options mijnHEP offers are in the eCoach modules. Patients stated that they like the fact that the eCoach modules are not mandatory. One patient stated that he was asked to participate in eCoaching modules from other eHealth platforms. Those modules often told information he already knew. Therefore he was positive towards the fact that users can indicate what modules would fit them, and furthermore, that they have the choice whether or not they want to participate when eCoaching modules are suggested by their health care providers. This contributes to

Nielsen's heuristics of match between the system and real world, and user control and freedom. Lastly it was stated that the video showing the Health care professional behind the eCoaching modules was experienced as pleasant, since it lets the user familiarize with the creator of the module. This way the user does not have to interact solely with the platform. This increased the user's feelings of safety. Table 13 shows which persuasive techniques can attend to the underlying value, provided with some examples.

Table 13, Persuasive techniques heeding to requirement 26

Underlying value:	**Persuasive technique that attends to the value:**	**Example:**
Need for personal information	PSD principle of personalization PSD principle of tailoring PSD principle of reduction PSD principle of tunneling PSD principle of self-monitoring	Letting the user free to choose what actions he or she can do on the platform makes it more clear and increases the users willingness to participate
Creating a feeling of safety	PSD principle of personalization	Letting users see who is behind interventions increases the personal feeling of the intervention and will increase the chances of target behavior being achieved.
Need for clarity on the functions of the platform	Nielsen's heuristic of user control and freedom Nielsen's heuristic of match between the system and real world.	Information that is not relevant to the user makes it feel unnecessary and will decrease the users interest.

Guidance through the functions

Req. ID 42: The system must guide the user through its functions

Besides the goals and functions not always being clear, patients indicated it was also not always clear how the functions of the platform could be used so that the user can navigate easily and freely. This disrupts the user's natural flow of thought and requires more effort for the users to perform the target behavior. This can be described as a lack of Fogg's simplicity factors of brain cycles and non-routine. To attend to these problems the PSD principle of primary task support shows persuasive techniques that can help to guide the user naturally through its functions. In the case of the mijnHEP, the health measurements page was often mentioned as being unclear. Patients stated that once for instance 'blood pressure' was selected it was not immediately clear how to proceed. The page shows a large overview of the graph, and a side menu which states 'new measurement', outlined red in figure 6. In this side menu the date and time are given, and patients can enter their first measurement, systolic, diastolic and heart rate. Afterwards they can enter their second measurement, again systolic, diastolic, and heart rate. What this exactly looks like is shown in figure 6.

The overview of the graph was of no complaints. However, the 'new measurement' could be clearer. Using techniques like tunneling the user can be guided into where he or she should start. The side menu could show a clearly visible button that conveys a short but easy to understand statement like 'start your measurement here'. Once clicked a window will open with only the possibility of entering the systolic measurement of the first measurement, only when this is entered a button will appear which allows the user to continue. There must always be the option to go back, if a user clicked on the 'start measuring' by accident. This is described by Nielsen's heuristic of 'user control and freedom'. Only once the systolic measurement has been entered and the continue button has been clicked, the next window appears, which asks for the user to enter the diastolic value. This can be repeated for the second measurement. Once everything is completed the users get shown the graph again. Figure 7 shows what it could eventually look like. These techniques reduce the amount of options the user has when entering health values. This prevents the user from making errors, and tunnels him / her through the function. Table 14 shows which persuasive techniques can attend to the underlying value, provided with some examples.

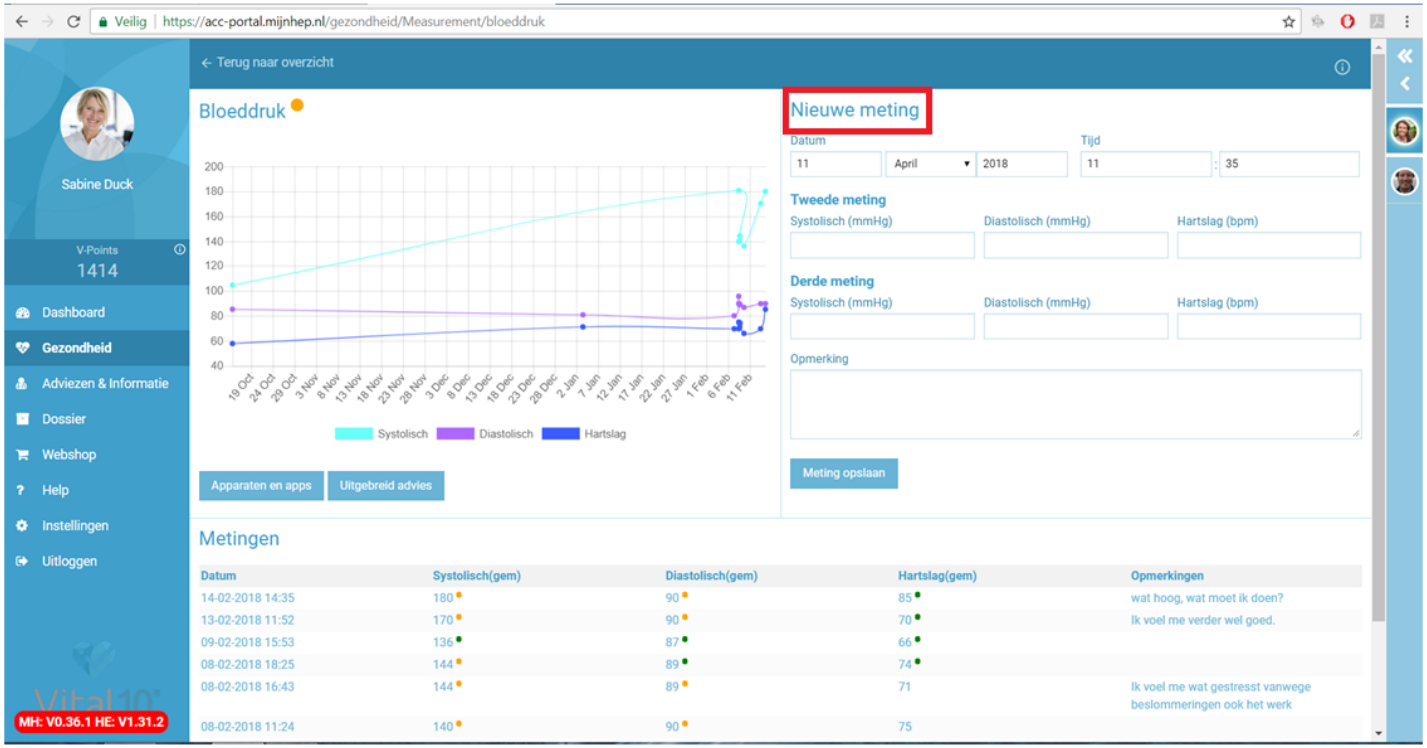

Figure 2, The 'current' blood pressure page

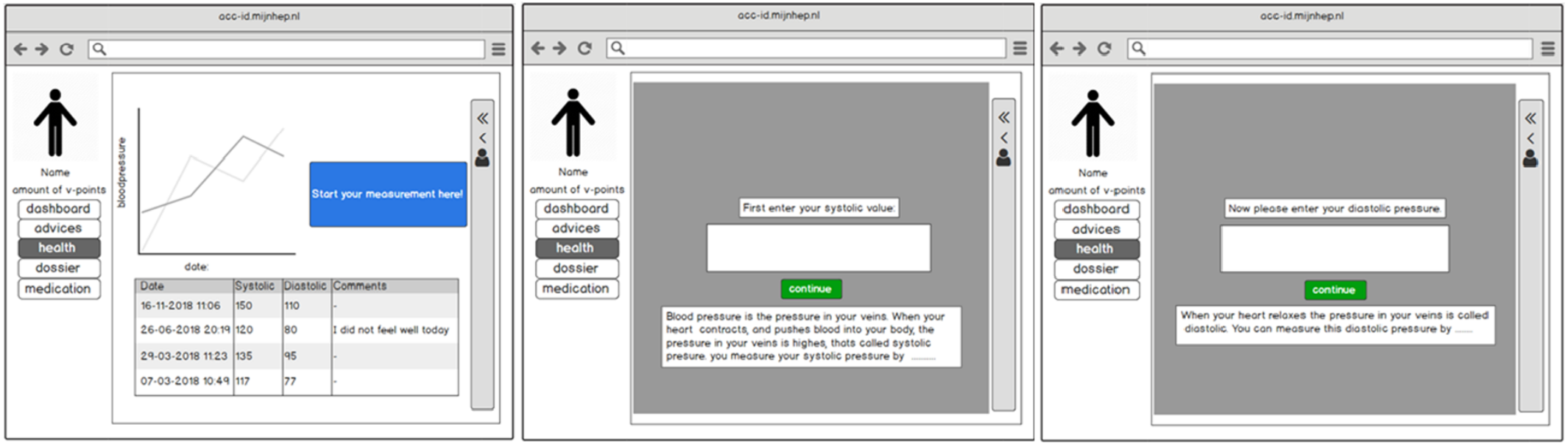

Figure 1, Example of tunneling in the health measurement function

Table14, persuasive techniques heeding to requirement 42

Underlying value:	**Persuasive technique that attends to the value:**	**Examples**
Need for clarity on the functions of the platform	Fogg's simplicity factor of brain cycles Fogg's simplicity factor of non-routine PSD principle of reduction PSD principle of tunneling Nielsen's heuristic of error prevention	Some options in an eHealth platform could be step by step with no room for anything but the targeted behavior. This makes it clear for the users what to do and does not provide an overload of information.
Reduction of information on the platform	PSD principle of reduction	Only showing what is necessary makes options more clear for users
Overview plus integration of information	PSD principle of reduction PSD principle of tunneling Nielsen's' heuristic of user control and freedom	By clearly showing for instance a graph at the end of a measurement the user gets to see the results of he has achieved
Need for a guideline in dealing with their disease	PSD principles of primary task support	Having a clear structure in an eHealth platform will result in more patients using it, which will result in them feeling more guided in their illness

Ordering of information

Req. ID 7: The system should have all the information mapped out, under one roof.

The users of the mijnHEP were content with how the platform offered information on many health related issues. The added value of this platform according to the users was that the 'information' tab already filtered the available literature and neatly presented it. This meant that users did not have to go search for information themselves, all the information was available under one roof, it gave easy access to good information, and since the users knew this was information added by health care professionals they were more assured of the reliability of the information.

These benefits correspond with Fogg's behavior model. The fact that users saved time and effort by not having to search for information themselves is what the FBM described as the simplicity factor. Users will be motivated by the pleasure of not having to invest additional time or effort in their search. Therefore the 'information' tab acts as a facilitator for people with low ability or low motivation to go search for information on their own.

Having all the information under one roof also correlates to Kukkonens persuasive system design principles of reduction and tunneling, while the reliability of the sources in the 'information' tab can be attributed to principles such as trustworthiness, expertise and authority. Table 15 shows which persuasive techniques can attend to the underlying value, provided with some examples.

Table 15, Persuasive techniques heeding requirement 7

Underlying value:	**Persuasive technique that attends to the value:**	**Examples:**
Overview plus integration of information	Fogg's simplicity factors of saved time and effort	Having pre-selected brochures and links saves the user time and effort, because it presents the information more directly and clearly.
The patients want to be structured through the rehabilitation	PSD principle of tunneling	By guiding the user to the right information they are more likely to find what they are looking for.
Reduction of effort on the platform	PSD principle of reduction Fogg's simplicity factors of saved time and effort	When users do not have to search for information themselves, they reduce the time and effort they have to put into their action. Therefore they are more likely to perform the target behavior.
Need for a guideline in dealing with their illness	PSD principle of tunneling	By guiding the user to the right information they are more likely to find what they are looking for
Creating a feeling of safety	PSD principle of trustworthiness PSD principle of expertise PSD principle of authority	If the user knows the information in an eHealth platform has been checked by health care professionals they are more likely to trust the information.

Reminders

Req. ID 27: The system could have reminders that should not have a compelling tone.

Even though patients indicated they wanted the freedom to choose to use the platform in their own pace, it was stated that they did not protest if the platform would send them reminders occasionally. The patients stated that they knew that it would be likely they would not make use of the platform every day, and that therefore they could benefit from some driving force. A personal notification from a health care provider would be the most persuasive in this case. However, the patients were aware that this would be time consuming for the health care provider, and therefore not always achievable. Therefore patients did not object to the idea of automatic reminders. There were some suggestions as to how this would ideally fit the users, but in general this is something personal for each individual. What most patients agreed upon was that reminders should not pressurize patients, or convey a coercive message.

What the exact message of such reminders should be is up for debate. Further research in what patients exactly see as motivational messages could be conducted. Furthermore there was some division amongst the patients as to how and how often they would like to be reminded by the system. The platform could include a 'notification bell' where users can click in order to receive reminders. This notification bell could also specify how often and in what way users would like to be notified. Figure 8 shows what this could look like. Keep in mind that these are mere examples and that the realization of such a function can be further determined.

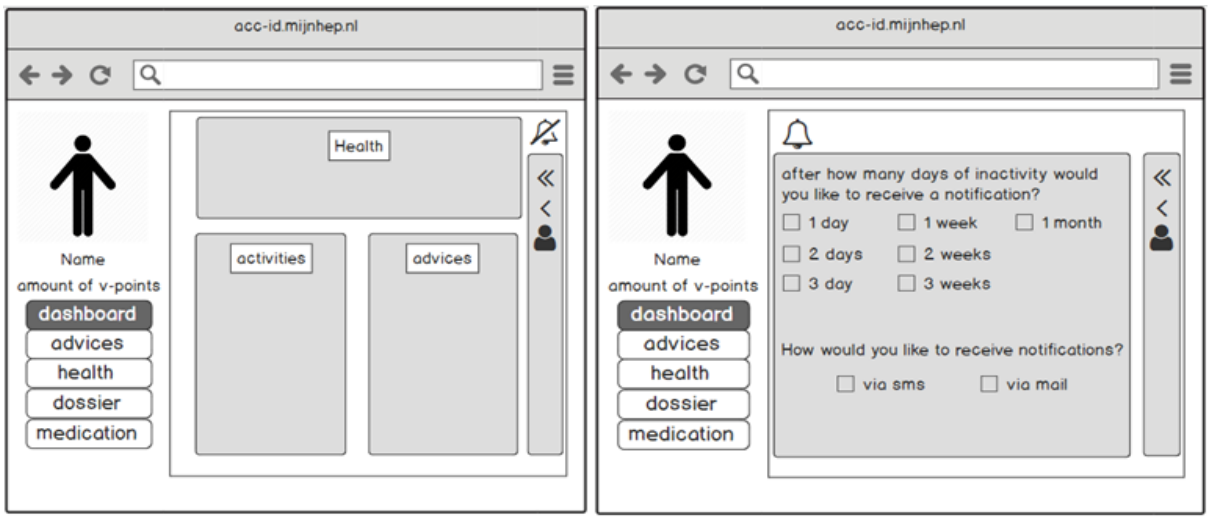

Figure 8, Example of a personalized notification system

Reminders in the form of notification have been extensively described by both the FBM and the PSD model. FBM stated that when users get an automatic notification that reminds them to use the platform it can be described as a signal, since the user is both motivated and able to perform the target behavior. If however he or she needs to be motivated by for instance the health care provider the notification would function as a spark, since there is a lack of motivation. The PSD model focuses the dialogue support on computer - human dialogue, and provides persuasive techniques such as praise, rewards, reminders, similarity, and liking, to persuade the user into achieving targeted behavior. Table 16 shows which persuasive techniques can attend to the underlying value, provided with some examples.

Table 16, Persuasive techniques heeding to requirement 27

Underlying value:	**Persuasive technique that attends to the value:**	**Examples:**
Patients need a driving force	PSD principle of personalization PSD principle of dialogue support Fogg's prompt of a signal as a trigger	Letting users choose options on how and whether or not they want to be reminded increases a personalized feel. Reminders that fit the user are much more likely to have effect.
Need for feedback from the health care provider	PSD principle of personalization Fogg's prompt of a spark as a trigger	If reminders originate from health care providers themselves they are even more likely to have effect, since this brings a human factor into the driving force.

Textual and visual information

Req. ID 36: The system must convey information in both a textual and (audio) visual manner.
To clearly present all the data that the platform can contain, the users indicated the visual aids given by the platform were beneficial. Examples of this were the color indications when entering health values (green, yellow red) or the graph on that same page, in which the users can see their progress in a quick overview. It was stated that visual aids like these can help patients to process large amounts of data in a quick manner, which in turn increased users' positive feelings of the platform. This can be attributed to FBM's simplicity factors of saved time and effort.

The added value of video material was also mentioned amongst patients. When discussing the eCoaching modules users were content with the introduction video of the creators of these modules. Knowing the face behind the platform gave users more feelings of safety and personalization. This fits in with PSD's principles of surface credibility and social support. Users even discussed the possibilities of video chat with (their) health care providers, as that would increase their likeliness of use of the platform. However, they did show awareness that this would be time-consuming for the health care providers, and therefore possibly out of limits.

A further recommendation was to make use of explanatory video to convey information. Patients had earlier, pleasant, experiences with videos like these and preferred them over the process of reading long texts of information. Again this can be explained by Fogg's behavior change theory. Table 17 shows which persuasive techniques can attend to the underlying value, provided with some examples.

Table 17, persuasive techniques heeding to requirement 36

Underlying value:	**Persuasive technique that attends to the value:**	**Examples:**
Need for personal information	PSD principle of personalization PSD principles op surface credibility PSD principles of credibility support	Seeing faces of the creators behind an eHealth intervention or parts of the intervention gives a personal feeling to the platforms.
Overview plus integration of information	Fogg's simplicity factors of saved time and effort	Most users prefer watching informational videos instead of reading text.

Discussion

In this section the sub questions will be answered shortly, after which a conclusion for the main research question will be given. Afterwards it will be discussed what the distinctive findings were and how these findings relate to the known literature. Then the specific findings regarding mijnHEP will be discussed with what is known. After that the generalizability of the results will be discussed. Lastly some implications for further research, the overall strengths and weaknesses, and a final conclusion of this research will be provided.

Answering the research questions

The main question in this research was: *"How can technology be supportive and motivating for people suffering from Chronic Heart Failure (CHF)?"* This question will be answered by providing conclusions for the 3 sub questions. In this section the goal is to take a step back and conclude what the meaning of the results entail for eHealth in general.

The first sub question was: *'How are the self-management aspects of CHF experienced amongst the patients?'* This question was not directly related to the case example of mijnHEP, as it centered on the experiences of the patients regarding self-management as a whole.

The care patients received after hospitalization events was considered to be fine. During later phases in rehabilitation patients did encounter difficulties. These difficulties could mainly be categorized as being organizational or mental. Physical limitations were present, but did not form significant bottlenecks in the self-management of the patients. As for the organizational difficulties, some patients indicated they were not introduced to cardiac rehabilitation programs in time, or at all. Something they indicated they would have liked to see happening. A possible reason for this inadequacy was stated as poor interdisciplinary communication between health care providers. Fragmented care gave the patients the feeling they were not the central focus in their own rehabilitation. Mental difficulties related to patients coping with their illness, but also the reactions of their environment were difficult to deal with. Since CHF can have a big impact on the physical condition of patients, it also affects their social and work life. Patients did not always get the understanding from their social circle that they felt they needed.

eHealth can support these bottlenecks by introducing patients to platforms that are implemented in a multidisciplinary matter. If all health care providers concerning the patient work in the same platform, information can be shared more easily, and communication between the health care providers could improve. As for addressing mental issues, the fact that eHealth enables patients to be more in charge of their rehabilitation improves their feelings of freedom and autonomy. Meanwhile the fact that they know a health care professional is keeping an eye out in case patients show lesser improvements, gives the patients more feelings of security.

The second sub question was answered with the use of the mijnHEP. Five aspects of eHealth were discussed to answer the following research question: *'How are the elements of current eHealth interventions experienced, based on the mijnHEP platform?'* The results of this question will be summarized using bullet points for all 5 aspects.

Online Communication

- The knowledge that communication is possible at all times enables feelings of security amongst the patients.
- Online communication allows for asking small questions, which in turn leads to more time during a face to face consult for discussing more important matter.
- Online communication will always be an addition to face to face communication, but will never replace it.

Online dossier

- Showing the medical dossier of patients only works when health care providers include all the information about the patient. Otherwise the patients feel it shows a lack of involvement on the health care providers' part.

Advice and Feedback

- The opportunity for constant feedback and iteration with the health care provider is new to the patients. It is described as having the possibility of being a big persuader in the usage of eHealth.

Self-measurements

- Patients are willing and able to perform self-measurements, but could benefit from a motivational factor for them to keep on performing self-measurements. This could be in the form of personal reminders, insight in their own health values, or getting rewarded for doing measurements.

eCoaching modules

- eCoaching modules should not be mandatory.
- Ideally there should be multiple module options, so users can choose the ones most applicable to them.

The third and last sub question was generated results in the form of requirements. To answer the question *"How can persuasive elements be implemented in eHealth platforms, such as the mijnHEP platform?"* the persuasive theories of Fogg, Kukkonen and Nielsen were used to elaborate on some of the requirements.

The results show that requirements could be specified using elements from all 3 theories. However, in this research the theories of Nielsen and Kukkonen offered more concrete principles to

use in defining the requirements. This could be due to the fact that these theories expand on Fogg's behavior change theory, which is therefore on a higher abstraction level when it comes to generating design principles (40). During this research the conceptual functionalities of the PSD model proved useful for creating design options in order to address shortcomings experienced by the users. Design principles like Tunneling, Reduction, Tailoring, and Personalization were often used as possible tools for alterations to the design of mijnHEP. Furthermore, the 5th and 6th PSD postulates could almost literally be translated into requirements, showing the similarity between the findings in this research and the PSD theory (41). Lastly, Nielsen's heuristics were also valuable throughout the research. The list of heuristics could often be used to resolve smaller usability problems (43). It provided certain regularities that gave specific examples of how usability problems could be averted.

When designing eHealth platforms the design principles of the PSD model can be a useful tool to include persuasive techniques into the requirements (41). Meanwhile the FBM focuses more on behavior change and can thus be wider interpreted (40). This makes it harder to adapt specific techniques from this theory into design features. While the PSD model provides specific techniques to persuade users, the heuristics checklist provides examples to see whether these techniques work, and how they could be improved (43).

The role of technology in CHF

In short a summarization will be given to answer the main question: *"How can technology be supportive and motivating for people suffering from Chronic Heart Failure (CHF)?"*

The chronically ill patients indicated they experience difficulties with mental wellbeing due to lack of understanding and acknowledgement from social circles. eHealth interventions should address this. The amount of contact with health care providers, and the way contact is made are no bottlenecks. However there seems to be discrepancies in the involvement of health care providers concerning the patients care. The different disciplines do not always communicate clearly amongst each other, which hinders patients in for instance the introduction to rehabilitation programs. If eHealth wants to tackle this problem a multidisciplinary implementation seems necessary.

Most patients show knowledge about, and interest in the different functions eHealth has to offer. These patients are both able and willing to work with a platform like the case example of mijnHEP. However, in order for eHealth to succeed the goals and functions on the platform should be clear. Sometimes patients were not aware of how or why they should use certain functions. For instance the chat of the mijnHEP function was unclear to the users. Besides the fact that they did not know what actions to take in order to initiate conversations, the users also had differences in their motivation to use the chat. Some patients indicated they would only use a chat for small questions to their health care providers while others would mostly use it for casual chats with fellow sufferers. This shows that even in one feature the intended use can differ amongst users. To keep up the adherence of

users, it is important to identify the intended use of all patients. By allowing features to be multifunctional, and clearly stating how and why these features can be used, adherence amongst users can rise.

Introduction to the platforms is also of importance. Patients should have the chance to learn how to navigate the platform and how to use the functions. Those who show absolutely no interest in participating in new interventions should not be pushed to make use of them. It would be wiser to focus the attention on patients that show interest in technology and are willing to make use of it.

As for the persuasive techniques that can be used to keep patients adherent, the design principles of the PSD model seem to offer great techniques for developers to visualize into a design. Designs like these benefit from iterative process in which the users and all possible stakeholders are involved. Once all the needs and wishes of all stakeholders are evaluated and translated into requirements, the designs based on these requirements benefit from constant feedback of these same stakeholders. Again persuasive theories like the PSD model and Nielsen's heuristics are of importance in this constant loop of feedback.

Distinctive findings

Patients in this research stated that they would benefit from the group aspects mijnHEP offers, This is in line with studies by Trento et al (54). and Anderson et al (55). A systematic review of van Dam et al. elaborated on these studies by looking at the effects of focusing treatments on patient behavior instead of focusing on health care provider behavior. They showed that the latter proves less effective in turns of efficacy, efficiency and self-care outcomes for patients. The systematic review looked at treatment methods like assistant-guided patient preparation for doctor visits, empowered group education, group consultations, or telephone management, all of which are patient focused (54-58). These were compared along with methods like the training of GP's and nurses in a more patient-centered consulting style (59-61), and training GP's in negotiating realistic individual goal setting with their patients (62), all of which were focused on the health care providers. It showed that there are more gains when patient participation is enhanced compared to focusing on improving health care provider participation. This shows the overall potential of eHealth platforms like mijnHEP. The elements reviewed in the paper by van Dam et al. are partially elements of mijnHEP, like for instance the group education. By focusing on the elements that improve patient participation, mijnHEP, or eHealth interventions in general, could increase self-care outcomes.

Another finding in this research was that patients indicated that a new and innovating feature of the mijnHEP platform was the interaction it provides with the health care provider. The opportunity for easy contact was not entirely new to them, however it was stated that if the health care provider would actively participate in providing feedback or answering questions that would be a motivating factor for them in the usage of the platform.

The process of providing feedback is not new in chronic care and there have been multiple researches that studied the effect of different kinds of feedback. It is difficult to determine the exact health related benefits, but studies show that personalization of feedback often leads to behavior change (63-65). This can be attributed to the fact that feedback which is individualized for one patient commands greater attention, is processed more intensively, contains less irrelevant information, and is appreciated better (63). This shows the possible benefits in personalized feedback, compared to unspecific general feedback. The mijnHEP aims to personalize feedback in its 'advice and feedback' page. The literature shows that mijnHEP stands to benefit from focusing on a personal approach.

A third finding that piques the interest is that almost all patients indicated they were not persuaded into using mijnHEP via the financial rewards. Even though some patients said it could be a nice bonus, it was stated that the main motivator would be an intrinsic need to improve their health and not for financial benefits. The influence of financial rewards to achieve target behavior in patients has been researched over time. Financial influence on behavior can show in different ways. This can be direct, for instance in the added taxes on alcohol or cigarettes (which do yield effect) (66-68). But it can also be indirect via financial incentive interventions (69-73). Some examples of these interventions that have been researched are: Providing grocery vouchers in turn for providing smoke-free breath checks (69), Families receiving additional social security benefits if they vaccinate their children (73), Obese adults earning monthly cash rewards for receiving weight loss-goals (70), clients receiving vouchers for achieving therapeutic goals (71), and smokers who have to set up a deposit contract alongside making a cash deposit they will lose when the contract is failed (72). The underlying concepts of these interventions are relatively comparable to the mijnHEP, in which v-point generated by performing healthy behavior can be turned in for discount on services and goods. As for the examples mentioned, all of them showed better results in the treatment groups compared to the control groups who received regular forms of treatment without financial benefits. This evidence showed that people can indeed be persuaded by monetary incentives. The fact that patients do not indicate this is most likely attributable to social desirability bias, as patients that are interviewed have the tendency answer questions in a manner that is viewed favorably by others (74).

Patients also indicated a lack of communication amongst health care providers as a possible reason for not being introduced to cardiac rehabilitation (CR) programs. Van Engelen-Verheul et al. researched the uptake of CR and its determinants (75). They found that indeed only a minority of patients eligible for rehabilitation actually receive it (only 11.7%). However, they described the factors associated with lower CR uptake to be: Female gender, older age, type of diagnosis (I.E. lower uptake after elective PCI as compared to acute PCI), diagnosis (I.E. lower uptake in patients with unstable Angina Pectoris as compared to myocardial infarction), long traveling distances to the nearest health care providers, and lastly comorbidity. Van Engelen-Verheul et al. proposed explanations for 2 of the determinants

for lower uptake in CR. The low participation of women could be due to lower referral rates by physicians, and less support from both healthcare personnel and spouses to participate in cardiac rehabilitation (76). Older age could be explained by lower physician referral due to lower expected benefit from cardiac rehabilitation programs (77). This means that improving CR uptake could benefit from increasing physician awareness of the benefits of CR in these subgroups (75).

Another study by Harding et al. on the communication and information needs of CHF patients showed that there is indeed a mismatch in the communication between the different disciplines in the patient's rehabilitation (37). Harding et al. showed the gap in information provision towards CHF patients. Their research recommended, among other, for "referral criteria and care pathways for CHF patients, to clarify staff roles and facilitate communication and information giving as disease progresses"(37), as cardiologists are not always certain when to refer patients and stated they would benefit from strict protocols. This shows that there can be gaps in the communication amongst health care providers. Although literature does not directly show that this is a determinant for the uptake of cardiac rehabilitation. It is possible that the study of van Engelen-Verheul et al. did not focus on this determinant and that it was therefore not included in their research. Whether bad internal health care provider communication leads to exclusion from cardiac rehabilitation, could be eligible for further research.

Earlier research on mijnHEP

Besides the relation of the general findings in regards to the literature, there have also been studies specific to the mijnHEP platform. Here it will be shown how results of earlier research compare to the results in this research.

A survey among 25 visitors of vital10 showed that only 10 respondents (38.5%) was willing to participate in a digital eHealth platform. The most important features were mentioned to be 'insight in health measurement values' and 'personal advice', the chat function with health care providers came in second. Another outstanding result was that almost two-thirds of the respondents indicated not to be motivated by the reward system (78). These findings correspond with what could be concluded in this study. However, due to the small sample size of the survey the results are less representative. Yet, the similarities in the findings of both the quantitative study and this qualitative research increase the credibility of the results.

A study researching whether a program called Vital10 Fit@home could be implemented successfully tested the patients willingness to make use of eCoaching modules, such as the one created by vital10 (79). The study researched whether patients were pro-active or passive in their self-management, and how this affected their willingness towards the eCoaching modules. The study showed that pro-active patients are more likely to participate in these modules. One particular conclusion resembles a finding in this research, as elderly patients indicated to enjoy the personal contact and the interaction with the therapists and the other patients. This was a limiting factor in the

usage of eCoaching modules, as its purpose is to be done individually. However, this desire for group-interactions was also mentioned in this research, and showed to be proven by other literature as well. Therefore this seems a factor that cannot be overlooked, especially in elderly patients.

Lastly, a thesis on the development of a self-management portal within cardiac rehabilitation researched the needs & preferences of cardiac patients, related to intention to use (80). This thesis used an earlier version of the mijnHEP as a case. The design of the thesis was similar, as a think aloud was used, coupled with a questionnaire. The thesis showed similarities in their results compared to this research. The think aloud produced remarks about how the system was more logical to use, how the information was not always clearly presented, and how the platform was not personal enough. This resembles the remarks in the in this research. Even the questionnaire showed results that corresponded, like the need for a personalized portal, communication, and collaboration functionalities. Again the reward system was less favored amongst the users. Concluding, this thesis had a very similar design and almost similar results, showing the intra-validity of the results.

Generalizability

Some results in this study were specific towards the mijnHEP, but most findings could be generalized for eHealth in general. The sample size in this study was a limiting factor to the generalizablitiy, since it consisted of only 10 interviews. However, since patients from all ages, computer knowledge, and experiences with their illness were included, there was a wider variety in the sample size. Therefore this study contains multiple viewpoints and could elaborate the topics from different angles. In this study, the wide variety in the research population increased the generalizability.

The research questions in this study were founded on the case example of mijnHEP. The inclusion of this case could have been a limiting factor to the generalizability in this study. Therefore it was tried to generalize the results for eHealth interventions as a whole. By using the case example 5 aspects of eHealth were examined (online communication, online dossier, advice and feedback, self-measurements, and online coaching). This jeopardizes the generalizability since it could be that other aspects of eHealth were overlooked, as the users were not stimulated to think outside the functions mijnHEP had to offer. Some of the requirements that were elicitated were very specific towards mijnHEP, for instance: "the system must contain mean values". To try to generalize the results for eHealth as a whole the focus was not only on these small usability issues. Questions in the interviews did not only reflect on mijnHEP, but also the patients' experiences with their illness and other eHealth interventions. This resulted in broader requirements, like: "the system must guide the user through its functions". Furthermore, by elaborating the requirements with the persuasive theories it was tried to show examples of how both the specific and less specific requirements could be more generalizable towards other eHealth interventions.

Implications for future research

The results this study shows in the forms of the requirements concerning the mijnHEP are intended in and advisory manner. It can be considered whether or not they would be beneficial for the platform, but by no means are they a sure way to insure an improvement in adherence amongst the patients. This can be attributed to a lot of factors such as the relatively small sample size, or the fact that this study focused mainly on patients with chronic heart failure. Even though many aspects of self-management are similar in chronic patients (10, 11), it could be wise for vital10 to test their platform using multiple patients with different kinds of chronic diseases.

The sample size in this research was divers. Patients had different ages, computer skills, and years of experience with their illness. However, there were only 2 patients who were just getting acquainted with their illness. Both of these patients were also the only two who indicated that their computer skills were bad. The input from these 2 patients was used, but due to its nature could not be used as extensively as input from other participants. This meant that the results were mostly generated from people with relatively high computer skills and longer years of experience with their illness. It would be interesting to get more insight in the patients that have lower computer skills, and less experience (and thus probably less knowledge) of their illness. Future research could focus more on these kinds of patients.

As stated earlier, this research made use of 3persuasive theories, while there are potentially more theories that could (better) explain some techniques for motivating users. These theories were chosen because during research of the literature they showed the most potential in finding good persuasive techniques that could be used for the mijnHEP. During the interviews it became clear that there are more factors that can influence adherence. Factors that do not only include persuasive system designing, but which transcend into other disciplines, like for instance implementation (shown in requirement ID 22), or even marketing (shown in requirement ID 47). When attending to these other factors new theories come to light which can benefit the adherence of patients to eHealth platforms. Future research can focus on different perspectives to see how other theories can be of added value in the creation of eHealth interventions.

As for how the results of this study can influence further research, mijnHEP is further in the development now compared to when this research started. This means that certain features have already been adapted. It can be optional for vital10 to further research the platform in a more quantitative study. Further think aloud usability testing could be done, in which a stricter protocol is followed. This could for instance measure how much time, or how many clicks users take for certain tasks. Since the platform is nowadays on the verge of widespread implementation other possibilities for quantitative research also emerge. For instance the uptake of the platform can be measured in perhaps 6 months or 1 year. Patients can be questioned about why they stopped using the mijnHEP and what would help them keep adherent in the future. These are merely examples, but what is central

in further research is that the experiences and advice of the users is central. The iterative process of constant feedback is important to keep the platform in line with the (changing) wishes of its users.

A lot of research concerning eHealth has already been done. As was suggested earlier, the intramural communication of health care providers and how it effects patients could be a topic for further research. This could provide insight in how eHealth can bridge gaps between health care providers (37, 58).

Strengths and weaknesses

The method of processing qualitative data, like the coding, labeling, and generating requirements, benefits from discussion amongst multiple researchers. It is difficult to order raw qualitative data, since one quotation can be interpreted differently by others. In qualitative research one finding does not exclude the other, and multiple values can be addressed to 1 quotation. By discussing results with others consensus can be reached on what the true values of the data are. This study was mostly done by one researcher, with some moments of feedback or discussion moments with other researchers. Future research could benefit from a multi-personal approach.

The usage of a case example was also an important factor in this research. The study was mainly centered on this platform. Some results were specific to this platform, for instance some of the requirements, while other results were applicable to eHealth as a whole. Using the mijnHEP could have limited the patients in their thought process, since they were limited within the interface of mijnHEP. However, since the goal of this research was to search how technology can be persuasive and supportive for people with CHF, a case example was needed. To discuss experiences, needs, and wishes of patients in regards to eHealth, the patients had to have an idea of what the possibilities of said eHealth interventions are.

The results generated eventually yielded somewhat satisfying results regarding the mijnHEP, since concrete improvements could be suggested. The results specific to the mijnHEP did correspond with earlier research. The fact that studies that used a similar design generated comparable results is a strength in this research. When broadening the results towards eHealth in general it became more difficult to apply specific 'tips & tricks' in order to make eHealth more persuasive. Some general findings could be concluded which did corresponded with the literature, adding to the strength of this research. Table 18 shows a summation of the strengths and weaknesses.

Table18, Strengths and weaknesses of this research

Strengths
• Qualitative research allowed for in depth questioning about the needs, wishes and experiences of the patients • The results were both specific for the mijnHEP, meaning they could improve the platform, as well as generalizable to other eHealth interventions. • Most of the results corresponded with other literature, or studies concerning the mijnHEP platform.
Weaknesses
• Using the mijnHEP as a case example could have limited the patients' freedom to 'think outside the box'. • The results were somewhat general, and did not provide appealing new insights. • The processing of qualitative data benefits from thorough iterative discussion between multiple researchers. This study was mostly done by one researcher, limiting the sometimes necessary feedback for reaching consensus.

Conclusion

Overall the results in this study show that eHealth interventions have the potential to be supportive and motivational in the self-management of chronically ill patients. Factors that can influence the adherence to these technologies can be both on a usability level an on a higher implementation level. The results in this research lead to requirements regarding organizational issues, as well as more concrete usability requirements. The shortcomings patients experience in their self-management show that eHealth could benefit from a multidisciplinary implementation. Another often mentioned bottleneck in self-management was the lack of acknowledgement patients experience. This indicates that eHealth could benefit patients if the intervention involves their social circles, in order to create more awareness of their illnesses. What also seems important for adherence levels is the introduction users get to new kinds of eHealth. During a good introduction, issues such as explaining what the goal and added benefits of new interventions are can be addressed. During the introduction there is also room to clarify how all of the functions of the intervention work, increasing the system's ease of use.

There is not one definite answer as to how each of these bottlenecks should be addressed. A key principle in the success or failure of eHealth interventions seems to be a personal approach. Some patients might benefit from more guidance in their rehabilitation, while others would indicate they desire more autonomy. Meanwhile the focus for health care providers might be in improving communication issues. In order for eHealth to succeed, it is important to listen to all of the stakeholders involved in the creation of these new kinds of interventions. By identifying all of the underlying values, there is more opportunity to detect possible bottlenecks and implement persuasive techniques to heed to the wishes and needs of every stakeholder involved.

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Appendix 1; The interview script

Draaiboek interview en gebruikerstest:

Datum: 28 juni 2018

Locatie: Vital10 Amsterdam

Geschatte duur: 45-60 minuten

Inleiding:

Tijd	Handelingen	Doel
2 minuten	Kennis maken	Prettige sfeer creëren, smalltalk *-hoe gaat het met u-* *-opmerking over de omgeving-* *-praten over het weer-* *-kinderen kleinkinderen-* *-Hobby's huisdieren-* -locatie / activiteiten bij vital10 / programma dat ze volgen
2 minuten	introductie	Wie ik ben, wat ik doe enzovoorts, geeft een persoonlijke touch *- Heel fijn dat u mee wilt doen aan dit onderzoek. Mijn naam is Rik Groeneveld, masterstudent aan de Universiteit Twente. En ik ben bezig met mijn afstudeeronderzoek.* *Als het goed is heeft u een brochure gekregen met wat informatie over wat het doel is van dit onderzoek, wat het allemaal inhoudt en waarom we uw hulp hierbij nodig hebben. Ik zal het nogmaals kort voor u toelichten:* *-We doen onderzoek naar hoe patiënten die hun leefstijl moeten aanpassen daar zo goed mogelijk in ondersteund kunnen worden. In het bijzonder bestuderen we de mogelijkheden van technologie daarin. Hiervoor is het belangrijk dat we goed inzicht krijgen in hoe het is om te leven met hartfalen, coronaire vasculaire aandoeningen of als mensen een beroerte hebben gehad. We passen deze inzichten toe op een website die bedoeld is om mensen met hartfalen te helpen. Om ervoor te zorgen dat dit platform zo goed mogelijk aansluit bij de leefstijl en wensen van deze mensen heb ik uw hulp nodig. We willen het platform namelijk zo veel mogelijk baseren op wat u en andere patiënten mij vertellen.* **Let op: vermijd alle vaktaal en moeilijke termen! Jip en Janneke taal is wenselijk.**

Tijd	Handelingen	Doel
5 minuten	Uitleggen wat we gaan doen	Duidelijkheid verschaffen voor de deelnemer. *-Daarom wil ik u graag een aantal vragen stellen om te weten te komen hoe het met u gaat, wat er allemaal veranderd is in uw leven sinds u met uw aandoening leeft, en hoe u dit allemaal ervaren heeft. Waar bent u positief over, en waar bent u minder positief over. Hoe u de ondersteuning in uw proces vond, etcetera. Het gaat hierbij dus vooral om wat u ervaren heeft rondom uw aandoening en dat houd dus in dat er geen* ***goede of foute*** *antwoorden zijn.* *-Daarna kijken we samen naar de website die bedoeld is om mensen met uw aandoening te ondersteunen. We zullen samen de website doorlopen en ik zal u vragen wat dingen uit te proberen en uw mening te geven. Hierbij kunt u het wederom niet* ***goed of fout*** *doen, het gaat er puur om hoe u het ervaart.* *Op deze manier gaan we samen met u de uiteindelijke gebruikers van het platform betrekken bij de ontwikkeling van dit platform. Is dit allemaal duidelijk voor u, of heeft u hier nog vragen over?*
2 minuten	Tekenen van informed consent	Als alles duidelijk is vragen of ze de informed consent willen onderteken, **Let op, probeer de term informed consent te vermijden, dit is onnodige vaktaal.** *-Ik wil u graag vertellen dat alles wat hier vandaag gezegd en gedaan wordt vertrouwelijk behandeld zal worden. Ik zal de gegevens zo behandelen dat deze niet naar u herleidbaar zijn. Ook wil ik u vragen of ik vanaf nu het gesprek mag opnemen, zodat ik de informatie die u noemt later nog kan uitwerken, nogmaals ik zal hier vertrouwelijk mee omgaan. Als onderzoekers zijn wij wettelijk verplicht om uw handtekening te vragen, zodat u kunt aangeven dat u alles begrepen hebt en vrijwillig deelneemt. Als u dat zou willen doen door dit formulier te ondertekenen? Neemt u de tijd om dit even rustig door te lezen. Hieronder kunt u uw e-mail adres zetten als u op de hoogte wilt blijven van dit onderzoek, dit is echter niet verplicht.* *Dan ga ik vanaf nu ons gesprek opnemen.* **Ondertekening informed consent - Aanzetten van de recorder**
Totaal: +- 10 minuten		

Interview:

Dan wil ik nu graag beginnen met het interview.

Allereerst wil ik u een aantal vragen stellen over uzelf en over uw ervaring met uw aandoening, als laatste wil ik nog een aantal vragen stellen over uw computergebruik. Nogmaals, ***u kunt geen goede of foute antwoorden geven****, het gaat over uw ervaringen. Het kan voorkomen dat ik u af en toe onderbreek, maar dat is niet omdat ik u in de rede wil vallen. Ik heb ongeveer een half uur voor het interview en er is veel dat ik te weten wil komen, dus ik probeer zo veel mogelijk vragen te stellen.*

Tijd	Vraag	Afremmende of Motiverende zinnen	Doel
+- 2 minuten	Kunt u mij kort iets vertellen over uzelf? (leeftijd, geslacht, gehuwd/woonsituatie, kinderen?	(A) Sorry dat ik u in de rede val, maar zoals ik al zei is er nog veel dat ik u wil vragen, daarom ga ik graag door met de volgende vraag (M) kunt u mij bijvoorbeeld ook nog wat over uw ziekte vertellen?	Achtergrondinformatie over de patiënt vergaren, dit kan van invloed zijn op de antwoorden bij verdere vragen. Breekt ook lekker het ijs / draagt bij aan een goede interviewsfeer.
+- 2 minuut	U bent hier met uw revalidatie proces bezig, kunt u kort vertellen wat u precies gehad heeft?	(A) u heeft dus al behoorlijk wat meegemaakt, dat brengt mij gelijk bij mijn volgende vraag. (M) en hoe was dat voor u?	Informatie over de aandoening
+- 2 minuten	En kunt u vertellen hoe het voor u is om nu te leven met uw aandoening? -waar heeft u het moeilijk mee? - Waren er ook veranderingen in uw leven waar u helemaal niet lastig mee had, wat u wél makkelijk af gaat? -zijn er dingen hetzelfde gebleven?	(A) Kunt u eens in 5 regels samenvatten waar u het meest moeite mee had? (M) Kunt u mij daar iets meer over vertellen.	Geeft weer hoe de patiënt denkt dat zijn leven veranderd.
+- 2 minuten	Heeft u grote aanpassingen moeten maken in uw dagelijkse leven? -adviezen? - lukt het u ook om dat te doen? -waar heeft u het meeste/minste moeite mee gehad?	(A) Ik merk dat u het lastig heeft met de gevolgen, zou u mij nog eens kort kunnen vertellen wat er anders is geworden in uw leven? (M) stilte laten vallen; vraag herhalen	Geeft inzage in het dagelijkse leven van de patiënt

Tijd	Vraag	Afremmende of motiverende zinnen	Doel
+- 2minuten	Houdt u ook zelf uw gezondheidswaardes zoals bloeddruk, gewicht of bloedsuiker bij? -krijgt u daar hulp bij? Eventuele tools? -Lukt het u ook altijd om dat te doen?	(A) dank u wel, ik geloof dat ik een beeld heb gekregen. (M) en hoe vaak doet u dat?	Geeft inzage in het zelfmanagement van de patiënt.
+- 2 minuten	Wat vindt u van de manier waarop u ondersteund bent in uw herstelproces -door de deskundigen (artsen verpleegkundigen) -door bekenden (familie of vrienden)	(A) met het oog op de tijd wil ik graag de volgende vraag stellen (M) en waarom waren zij daar zo belangrijk (of juist matig) in de steun die u nodig had?	Inzage in leefstijlondersteuning.
+- 4 minuten	Kunt u vertellen wie er voor u het belangrijkste is geweest in uw herstelproces, -ontbraken er nog mensen tijdens uw herstelproces?	(A) Oke, dank u voor uw uitleg, dan ga ik naar de volgende vraag (M) en waarom waren zij zo belangrijk?	Inzage in leefstijlondersteuning.
+- 2 minuten	Hoe heeft u het gehele proces tot nu toe ervaren? -wat viel mee? -wat viel tegen?	(A) Kunt u nog kort samenvatten wat u het lastigst vond en wat u het makkelijkst vond? (M) En wat als we het hebben over het leven met hartfalen? Wat vond u dan moeilijk en makkelijk?	Lijkt op de eerder vraag over het leven met de aandoening, maar is een mooie optie voor de geïnterviewde om nog eens concluderend de kernpunten van het herstelproces op te sommen.
+- 2 minuten	Bent u tevreden op de manier hoe het contact met uw zorgverlener loopt? -heeft u liever face-to-face contact -heeft u liever contact op afstand?	(A) Oke dank u wel voor uw antwoord, met het oog op de tijd ga ik door naar de volgende vraag (M) waarom?. (stilte laten vallen)	Overgang maken naar communicatie met zorgverleners.
+- 2 minuten	Wondervraag: Wat motiveert u nou om actief met uw gezondheid bezig te zijn? Om u goed te blijven inzetten voor uw revalidatie? -wat heeft u daarvoor nodig?	(A) Dan wil ik graag als afronding van het interview nog even kort wat vragen over uw computergebruik. (M) U kunt hierbij van alles noemen, het gaat hierbij om de dingen waardoor u positief blijft.	Proberen de 'drivers' van gedrag te vinden.

Tijd	Vraag	Afremmende of motiverende zinnen	Doel
+- 1 minuut	*En dan nu nog even kort over uw computer gebruik* Heeft u een smartphone/tablet/computer?	-	Geeft weer in welke mate de patiënten over de benodigde hard-ware beschikken
+- 2 minuten	Hoe zou u uw ervaring met computers omschrijven? -als in: bent u goed met computers?	(A) Dan wil ik nu nog graag even de laatste vraag stellen (M) Waar gebruikt u uw computers zoal voor?	Geeft het ervaringsniveau weer van de patiënt.
+- 4 minuten	Welke van de bovengenoemde technologieën zou u het liefst gebruiken / gebruikt u, om gezondheidszaken rondom uw aandoening te regelen, en op welke manier?	(A) Met het oog op de tijd wil ik graag het interview afronden, bedankt voor alle inzichten die u mij gegeven heeft. Dan wil ik nu graag verder gaan met het 2e gedeelte van dit onderzoek. Daarvoor pak ik even mijn laptop erbij.	Geeft weer hoe de patiënten tegenover eHealth staan
Totaal: +-30 minuten			

[Samenvattend, is er voldoende informatie uit de volgende onderwerpen naar voren gekomen tijdens het interview?]

Onderwerp:	Mogelijke variatierichtingen
Communicatie:	Behoefte/ frequentie / initiatief / wijze (vorm)
Motivatie voor gedragsverandering, leefstijlaanpassing:	Intrinsiek / extrinsiek / welke drivers?
Zelfzorg	Proactief / zelfstandig versus begeleid / gestimuleerd / zelf-monitoring + zelfmanagement (wel/niet in staat)

gebruikerstest:

Tijd	Taak	Doel
+-5 minuten	Uitleggen hoe de test werkt, wat het doel is. Alles klaarzetten.	Duidelijk maken voor de deelnemer wat hij moet doen, nogmaals gerust stellen dat hij geen foute dingen kan doen. *-Dan gaan we nu beginnen met het 2e gedeelte daarvoor pak ik de laptop er even bij.* **Laptop openen.** *Ik zal u zo de website laten zien die bedoeld is om mensen met in uw situatie te ondersteunen. Het is de bedoeling dat deze website wordt gebruikt om bijvoorbeeld contact met de zorgverlener te hebben, waardes zoals bloeddruk en gewicht door te voeren, meer te leren over uw gezondheid, etcetera. Dit zijn enkele van de functies die kunnen met deze website. Een van de achterliggende gedachtes is dat u door zo goed met uw gezondheid bezig te zijn via de website, punten kunt sparen, die u op z'n beurt weer in kunt leveren voor korting op goederen of uitjes.* *Ik wil graag samen met u de website doorlopen en om uw mening en ervaringen vragen. Ik zal u dan vragen om een aantal onderdelen uit te proberen en dan te vertellen wat er in u omgaat, wat u er van vindt enzovoorts. U kunt hierbij wederom* ***niets fout doen.*** *Ik wil gewoon graag zien wat uw gedachtegang is. Naderhand wil ik u nog een aantal vragen stellen over deze website.* *Dit platform is nog in de ontwikkelingsfase, dus het kan zijn dat sommige dingen niet helemaal werken zoals ze horen te werken. Deze schoonheidsfoutjes moeten we vandaag even over het hoofd zien, het gaat namelijk om het grotere plaatje. Dat houdt in dat we graag uw mening en uw ideeën willen gebruiken om dit platform zo goed mogelijk af te maken.* *Is het voor u voldoende duidelijk wat de bedoeling is, of wilt u nog verdere uitleg.* *Mag ik u eerst vragen of u al enigszins bekend bent met zo'n dergelijke website?* *-(bij ja) heeft u al verwachtingen bij de website?* *-(bij nee) dan zal ik u helpen waar nodig* **OBS aanzetten** **Let op, geen moeilijke termen gebruiken, ondersteunen waar nodig**

Tijd	Taak	Vragen
-	Extra hulpzinnen om mensen pratende te houden	- Kunt u uitleggen waarom u dit doet? - Kunt u aangeven hoe u hierover denkt? -Wat vindt u van deze mogelijkheid? -Vindt u dit een goede optie? -Kunt u blijven vertellen wat u doet en denkt?
+- 1 minuut	Helpen met inloggen en vragen naar eerste indruk	-zorgt voor een rustig begin, geeft eerste indruk weer, en geeft gelijk de mogelijkheid om vragen te tackelen als die er zijn. Geeft ook de indruk van het dashboard *-Wat is uw eerste indruk van wat u ziet?*
+- 4 minuten	Handeling 1	dit is de chat functie van het platform. De bedoeling hiervan is om binnen 24 uur contact te kunnen hebben met je zorgverlener. Kunt u uzelf hier een beetje op oriënteren en zeggen wat u van dit onderdeel vind? **Vragen die tijdens de handeling gesteld worden:** *-zou u het prettig vinden om vragen op deze manier te stellen?* *-vindt u dit handig?* *-ziet u uzelf hier veel gebruik van maken?* *-Denkt u dat de communicatie ook op een andere manier (zou moeten kunnen) kan dan met de chat?* *-Op welke manier zou u contact willen hebben? (face to face, telefonisch?* *-Vindt u deze chat overzichtelijk?*
+- 4 minuten	Handeling 2	Dit tabblad heet gezondheid, hier kunt u gezondheidswaardes doorgeven, zoals uw bloeddruk, suikerspiegel enzovoorts. Kunt u hier eens op een aantal functies klikken en kijken of het u bijvoorbeeld lukt om zelf wat metingen door te geven? **Vragen die tijdens de handeling gesteld worden:** *-vindt u het prettig om zulke gegevens op deze manier door te geven?* *-vond u dit makkelijk om te doen?* *-vindt u dit overzichtelijk?* *-ziet u uzelf (elke dag) deze metingen bijhouden en invullen op zo'n website?*

Tijd	Taak	Vragen
+- 4 minuten	Handeling 3	Op deze pagina kunt u persoonlijke adviezen van zorgverleners, en kunt u ook verdere informatie vinden. U mag hier wel even rustig op rondkijken en zeggen wat u er van vindt. **Vragen die tijdens de handeling gesteld worden:** *-heeft u hier behoefte aan?* *-wat is uw mening over de extra informatie onder het kopje 'informatie en brochures'.* *-Wat zou u doen als u zou willen reageren op een van de adviezen?* *-zou dit de huidige manier van communicatie die u met uw zorgverleners heeft kunnen vervangen of ziet u dit meer als aanvulling?*
+- 4 minuten	Handeling 4	Dit tabblad heet dossier, hier kunt u informatie vinden over uw medische dossier, dat houdt in dat u de uitslagen van onderzoeken terug kunt zien, of een overzicht van uw medicatie. **Vragen die tijdens de handeling gesteld worden:** *-U ziet hier veel termen, wat vindt u hier van?* *-is dit iets wat u graag ziet op zo'n website. (waarom)* *-zou u hier veel naar terugkijken. (waarom)* *-vindt u het overzichtelijk (hoe zou het evt. anders kunnen)*
+- 4 minuten	Handeling 5	Dit is de webshop, een van de onderdelen van dit project is namelijk het verzamelen van online punten (v-points) wanneer u bepaalde activiteiten onderneemt, zoals het invullen van invullen van uw gewicht zojuist. (net zoals bij de Albert Heijn) die kunt u uiteindelijk inleveren voor korting op uitjes, of goederen. Wilt u hier eens op rondkijken en zeggen wat u hiervan vindt. **Vragen die tijdens de handeling gesteld worden:** *-Wat vindt u van een dergelijk systeem om punten te sparen?* *-Zou dit u kunnen motiveren om gezonder te leven?*
+- 4 minuten	Handeling 6	Dit platform maakt ook gebruik van een coach die u op afstand bij het werken aan gezondheidsdoelen helpt, bijvoorbeeld meer bewegen, afvallen, of uw conditie verbeteren. Deze coach kan u dan ondersteunen met oefeningen of advies geven naar aanleiding van de waardes die u heeft ingevuld. Op deze site heet zo'n coach een eCoach, zou u hier eens op willen klikken? **Vragen die tijdens de handeling gesteld worden:** *-Wat vindt u van deze optie?* *-ziet u uzelf gebruik maken van zo'n eCoach*
+- 8 minuten	Bespreking resultaten, afnemen vragen	Afronding van de gebruikerstest, vragen naar de algemene ervaringen *-Dat was de laatste handeling die ik u wou vragen om uit te voeren. Dan heb ik nu nog een aantal algemene vragen voor u over dit platform.* **Vragenlijst erbij pakken houd de tijd in de gaten!**
Totale duur: +-38 minuten		

Algemene vragen:

Als u denkt aan dat wat voor u de ideale situatie zou zijn, nadat u uit het ZKH gaat, hoe ziet dat er dan uit, wat heeft u daarvoor nodig?

Hoe past zo'n website zoals we net hebben bekeken daarin? Wat wel, wat niet?

Met welke dingen zou deze website u kunnen ondersteunen in uw dagelijks leven of bij het omgaan met uw ziekte?

Wat is voor u een belangrijke reden zo'n website te willen gebruiken?

Wat is voor u een belangrijke reden zo'n website niet te willen gebruiken?

Welke onderdelen spreken u met name aan?

Zijn er onderdelen/mogelijkheden die u niet zag, maar die voor u wel heel belangrijk zijn?

Zou een dergelijke website u kunnen motiveren gezonder te leven? Wat heeft u daarvoor nodig?

Welk gevoel krijgt u als u zoiets zou mogen gaan gebruiken?

Wat betekent dit voor u, als we zoiets voor U zouden inrichten. Wat zou het dan doen/zijn?

Afsluiting:

Tijd	Handelingen	Doel
+- 2 minuten	Dankwoordje	De patiënt met een goed gevoel laten vertrekken, en er zeker van zijn dat alles goed opgeslagen is. *- Mag ik u van harte danken voor uw deelname aan dit onderzoek. Uw deelname helpt ons bij het evalueren en verbeteren van het mijnHEP. Zodoende hopen we het platform goed af te stemmen op wat u en andere patiënten nuttig en prettig vinden en in de toekomst zo veel mogelijk mensen met hartaandoeningen te kunnen helpen in de ondersteuning die zij nodig hebben.*
-	Checken of alles goed is ingevuld en of alles goed is opgeslagen	-
+- 2 minuten	Cadeaubon uitgeven en laten tekenen voor ontvangst	-
+- 2 minuten	Eventueel visitekaartje uitdelen en afronden	*- Mocht u later nog vragen hebben of meer informatie willen dan kunt u met de onderzoekers, die in de informatiebrief die u gekregen heeft vermeld staan, contact op nemen.* *-Mag ik u nogmaals hartelijk danken dat u ons heeft willen helpen. U heeft veel informatie gegeven die ons zeker zal helpen om verder te komen met ons onderzoek.* *-evt. nog een beetje smalltalk probeer het semi-informeel te houden*

Lijst van benodigdheden:

Opname apparatuur:
- OBS
- recorder

Algemene benodigdheden:
- pen & papier
- informed consent
- cadeaubon

Informed Consent Formulier

In te vullen door de deelnemer

Ik verklaar op een voor mij duidelijke wijze te zijn ingelicht over de aard, methode, doel en belasting van het onderzoek. Ik weet dat de gegevens en resultaten van het onderzoek alleen anoniem en vertrouwelijk aan derden bekend gemaakt zullen worden. Mijn vragen zijn naar tevredenheid beantwoord. Ik had genoeg tijd om te beslissen of ik meedoe.

Ik stem geheel vrijwillig in met deelname aan dit onderzoek. Ik weet dat ik op elk moment zonder opgaaf van redenen mijn deelname aan dit onderzoek kan beëindigen.

Ik weet dat sommige mensen mijn gegevens kunnen zien. Die mensen staan vermeld in de informatiebrief.

Ik geef toestemming om mijn gegevens te gebruiken, voor de doelen die in de informatiebrief staan.

Ik geef toestemming om mijn onderzoeksgegevens 10 jaar na afloop van dit onderzoek te bewaren.

Ik ga er ***wel / niet*** (doorstrepen wat niet van toepassing is) mee akkoord dat de onderzoekers in de toekomst eventueel contact met mij opnemen over de voortzetting van dit onderzoek. Ik wil ***wel / niet*** (doorstrepen wat niet van toepassing is) geïnformeerd worden over de uitkomsten van dit onderzoek.

Naam deelnemer: ……..

Datum: …… Handtekening deelnemer: ……..

In te vullen door de uitvoerende onderzoeker

Ik heb een mondelinge en schriftelijke toelichting gegeven op het onderzoek. Ik zal resterende vragen over het onderzoek naar vermogen beantwoorden. De deelnemer zal van een eventuele voortijdige beëindiging van deelname aan dit onderzoek geen nadelige gevolgen ondervinden. Als er tijdens het onderzoek informatie bekend wordt die de toestemming van de deelnemer zou kunnen beïnvloeden, dan breng ik hem/haar daarvan tijdig op de hoogte.

Naam onderzoeker: ……..

Datum: …… Handtekening onderzoeker: ……

Mocht u verdere informatie willen over dit onderzoek, of van de voortgang van het BENEFIT platform, dan kunt u hier uw e-mail adres achter laten:

……

Appendix 2; The code schemes

Personal experiences

Codes	Description	Example quote.
		Background information
-Personal characteristics	Anything the interviewee states that characterizes him/her.	*"Ik ben 30 jaar verpleegkundige geweest, voornamelijk in de nachtdienst"*
-Medical background	Any descriptions or statements given about the illness of the interviewee	*"2009 heb ik een hartinfarct gehad en daarnaast zijn de ritmestoornissen eigenlijk verergerd."*
- View of life	Any emotional or mental aspects the interviewee describe about their life.	*"Maar voor de rest heb ik een goed leven. Ik heb een lieve vriendin. Ik houd van cultuur, dus ik doe leuke dingen. Ik heb heel veel wijn thuis"*
- Computer related	Any statements the interviewee makes about his/her knowledge or usage of computers / tablet / smartphones.	***Mijn volgende vraag is dan, ik weet niet of je dat al doet, maar stel dat je dit soort apparaten nog meer kunt gebruiken om je gezondheid te peilen, wat heb je dan het liefste, een laptop, of een appje op je telefoon?*** *Ja ik vind het idee van een website waar je dus informatie kunt zoeken vind ik heel goed. Een forum, waar je ook met andere hartpatiënten, of diabetici whatever, met elkaar kunnen discussiëren, kunnen praten, dat vind ik heel tof. Ervaringen kunnen delen. Maar ook bijvoorbeeld waar je met een dokter kunt praten van 'he beste dokter, ik ondervind dit, moet ik me daar zorgen over maken?' en dat die dokter dan via een e-mail of inderdaad een chatfunctie binnen 24 uur antwoord geeft.*
		Experiences with their illness
- Mental	Anything the interviewee describes about living with their disease on a mental level	*"Ik was heel druk. Deed ook vrijwilligerswerk naast mijn werk. En dan heb je ook nog een sociaal leven. Nu is mijn wereld heel klein geworden. Ben gisteren bijvoorbeeld voor het eerst naar het centrum van de stad gefietst, vanaf zuid. Dat is dan echt een mijlpaal. Dan merk ik dat ik bij drukke kruispunten afstap. Want de eerste keer dat ik mezelf * **echt waar?** Ja. **Haha ja Amsterdam he.** Maarja vroeger was ik ook tegen het verkeer in, door rood etcetera. Daar moet ik nu allemaal niet meer aan denken. Dat is echt een hele grote verandering."*

Codes	Description	Example quote
- Monetary	Anything the interviewee describes about living with their disease that is either work related, or related to any other financial or economic factors.	*"Maar op kantoor heb ik daar geen probleem mee, want je zit gewoon rustig op je stoel achter de computer. Dat is niet echt inspannend."*
- Social	Anything the interviewee describes about living with their disease that relates to their social circle.	***Bijvoorbeeld over zelfzorg, als in de omgang in het herstelproces, doe je dat het liefste zelf, of word je daar het liefste in begeleid?*** *Is dat mijn ervaring geweest, of wat ik zou willen?* ***Wat je zou willen, of misschien wel beide****.* *Nou ik denk dat ik, omdat ik jong ben, dat ik het prima vond om ook zelf gewoon dingen te doen. Ik was na 8 dagen thuis, mijn moeder bleef nog wel bij me, want er werd gezegd 'ze heeft nog wel iemand nodig om boodschappen te doen.'*
- Physical	Anything the interviewee describes about living with their disease that concerns bodily functions.	*"ik bijvoorbeeld in de tuin werkte dan kon ik na een uur best zo op de bank gaan liggen om een uur te slapen, omdat het gewoon heel vermoeiend was."*
		Adjustments in life
- Physical	Anything the interviewee states that changed in their life since the diagnosis of the illness on a physical level	*"Ik probeerde gezonder te eten... maarja nog gezonder dat kan haast niet. Ik probeerde meer te bewegen, nou nog meer bewegen dan toen dat kan ook niet."*
- Mental	Anything the interviewee states that changed in their life since the diagnosis of the illness on a mental level	*"Ik probeer minder stress te hebben, maar dat is makkelijker gezegd dan gedaan."*
- Monetary	Anything the interviewee states that changed in their life since the diagnosis of their illness that is related to their financial situation	*"Ik denk dat de voornaamste klachten komen uit het feit dat ik stress heb. Ik heb sinds 2010 weinig opdrachten als ZZP'er en heb dus geen inkomen. Dat is erg lastig want als ZZP'er heb je nergens recht op. Dus ik moet nog 2 jaar en dan krijg ik AOW en dan krijg ik eindelijk inkomen. Dat is wel prettig, dus daar kijk ik naar uit. Ik ben er sinds 2 weken gestopt met het zoeken naar werk. Ik ben erachter gekomen dat dat toch erg lastig is en dat dat toch ook de grootste oorzaak is, denk ik, van dat hele gebeuren"*

Codes	Description	Example quote
- Social	Anything the interviewee states that chanced in their life since the diagnosis of their illness that involves their social circle	*"ik kwam iemand tegen met wie de stressmanagement heb gezeten en we hebben nu mailadressen uitgewisseld, zo van laten we eens afspreken. Want dat merk ik nu dat ik heel waardevol vindt, contact met andere mensen die hetzelfde gehad hebben, of nog niet gehad hebben. Er blijken ook mensen hier te zijn die nog geen hartinfarct hebben gehad."*
-Advice	Anything the interviewee states that has been recommended to him by a legitimate authorized figure, or by someone of their social circle	*"Gewicht doe ik niet zo heel vaak, hoewel het advies voor mij is om 5 kilo af te vallen, wat wel moeilijk is."*
		Support
-Social	Any statement that indicates how the interviewee has been assisted in his/her life since the diagnosis of the illness by his/her close circle.	*"Ja op het werk is er heel goed op gereageerd, totaal geen druk op gelegd, langzaam opgebouwd alles en ook geen frustraties als het na een paar maand toch weer mis ging. Ik vond dat zelf natuurlijk wel heel vervelend, maar ik heb nooit signalen van mijn werkgever gehad dat ze dat vervelend vonden. Daar is mij geen druk op gelegd in elk geval. Nou ja en thuis en in de buurt of in je vriendenkring, geen enkel probleem, prima."*
- Professional	Any statement that indicates how the interviewee has been assisted in his/her life since the diagnosis of the illness by the health care providers.	*"En voor de rest ben ik eigenlijk op het gebied van verzorging en begeleiding op de afdeling cardiologie dat is echt perfect."*
- Communication	Anything the interviewee states about the current form of communication with the health care providers, like why and how it is used.	*"In noodgevallen? Een aantal keren telefonisch en dan wordt je opgeroepen. Ook een aantal keren via de huisarts die legt ook weer heel snel contact met de dienstdoende cardioloog. Dat is dan niet altijd je eigen cardioloog, maar die zorgen er dan zeg maar wel voor dat je altijd meteen in het centrum van de cardiologie komt met je klachten. En daar ben ik eigenlijk best wel heel tevreden over."*
		Self-management
- Self-measurements	Any statements the interviewee makes about self-measurements he/she has to do or does in regards to their illness	*"de bloeddruk die kun je wel, dat is mij niet opgedragen, maar die kun je wel zelf bij houden. Ik heb wel zo'n apparaat en dat doe ik ook wel af en toe. Je bent ook alert op je hartslag natuurlijk. Dat is ook wel logisch. Eens in de zoveel tijd worden de cholesterolwaardes gemeten, maar dat is al zo sinds dat ik dat hartinfarct gehad heb."*

Code	Description	Example quote
- Medication	Any statements the interviewee makes about medication he/she has to take in regards to their illness	*"Er waren nooit tekenen geweest. Toen ben ik direct geholpen, dezelfde dag, s'avonds in het ziekenhuis hebben ze gekeken, zagen ze dat de kransslagader voor 99% dicht zat. Ik wist wel dat ik een * had. En toen * gekregen, en sindsdien zit ik aan de medicatie."*
- Symptoms	Any statement the interviewee makes about how he/she checks for, or expresses symptoms related to their illness	Ja dat was het wel, dat was het wel. "*En omdat de symptomen heel anders zijn denk ik dat het goed is dat daar op een of andere manier een soort, want er zijn hier ook mensen die nog geen hartinfarct gehad hebben, dat daar meer bekendheid over is. Dat vond ik echt een zeg maar foutje van hier. Zo van he dit is onvolledig.* ***Dus onvoldoende nog toegespitst op de symptomen bij vrouwen, bij het verloop?*** *Ja dat dat anders is."*
- Goals	Any statement the interviewee makes about goals they have to improve their life with their illness	*"Ik heb al zo veel geworsteld met diëten en zelfs voor de diabetes. Het is nooit gelukt om daar 3 maaltijden per dag van te maken. Ik ben nu net weer bij de internist en bij de diabeteszorg. Die vind ik heel goed overigens. Daar had ik net een nieuwe diëtiste en die probeerde mij niet met 3 maaltijden per dag te laten eten en geen tussendoortjes,maar in hele kleine doelen."*
-Education	Any statement the interviewee makes about how he/she educates him/herself or is educated by someone about their illness.	*"Als er dan nog dingen onduidelijk zijn, dan pak ik die computer daar en dan zoek ik ze liever zelf op."*
		Drivers
- Intrinsic	Anything the interviewee states that drives him/her to work on bettering their conditions around their disease that comes from within themselves.	*"Voor mij, ik wil me gewoon goed voelen in mijn eigen lichaam. Ik wil me thuis en comfortabel voelen in mijn eigen lichaam."*
- Extrinsic	Any external factor the interviewee indicates that drives him/her to work on bettering their conditions around their disease.	***"Dat komt dus veelal vanuit jou zelf hoor ik nu, heb je ook wel eens dat er externe factoren nodig zijn, dat je even gepusht moet worden?*** *De weegschaal haha."*

Elements of e-Health		
Code	**Description**	**Example quote**
		Communication
- Willingness	Any statements that indicates whether or not the interviewee is open to the idea of using online chat functions.	***"Je kunt ook een chat hebben met 5 personen, waarbij-*** *de uitwisseling ook heel belangrijk is.* ***Ja dat zou ook kunnen. Hoe ziet u dat?*** *Op zich denk ik dat dat positief is, aan de andere kant denk ik, als ik niet weet waar deze 5 deelnemers over aan het chatten zijn, zal ik het niet zo heel makkelijk aanklikken en zeggen van 'ik heb een vraag daar en daar over.' 'komt dat uit?' of 'ik ga even meedoen'."*
- General view	Any other opinion of the interviewee on online chat functions.	***"Is er verder nog iets dat u kwijt wil over deze chat functie?*** *Nee maar wat ik zei, een zoekfunctie dat je binnen zo'n chat kan zoeken."*
- ease of use	Anything the interviewee states about his experiences with either the mijnHEP chat function, or any other online communication method in general.	***"Het is een beetje net hetzelfde idee zou je kunnen zeggen als facebook chat, maar deze worden dan door de zorgverlener met u gestart, dus-*** *maar... waar gaan ze dan over? Ik zie 2 kamers, welke... waar gaat het dan over?* ***Dat is dus het eerste wat u denkt?*** *Is er eentje over dieet? Is er een over beweging?* ***Nou bijvoorbeeld.*** *Ja ik zie het, bij deze... dat via deze chat dus. Maar dat is dus allebei, er waren 2 chat's open over hetzelfde onderwerp?"*
- Purpose	Any statements concerning the purpose of online communication.	***Ja die chat kan dus zo gebruikt worden, maar het kan ook in een wat recreatieve setting, dat je gewoon met elkaar kunt chatten. Ik weet niet of u daar behoefte aan heeft?*** *Nou je hebt patiëntenplatforms ook van de hartstichting natuurlijk. Maar dit is handig voor vraag en antwoord. En als iemand anders op jou vraag inspeelt dan vind ik dat ook best.*
		Dossier
- Likelihood of use	Anything the interviewee states that indicates how likely he/she is to look at his/her online medical dossier.	**"*Wat vindt u daarvan?*** *Ja dat lijkt me heel goed.* ***Is dat iets dat u?*** *daar zou ik dan wel in kijken."*
- Understanding	Anything the interviewee states about whether or not he/she understands what is standing in his/her files, and how this affects him/her.	***"Bijvoorbeeld een x-ecg of een 6 mwt. Dat zijn natuurlijk nogal wat moeilijke termen. Denkt u dat u hier naar terug zou kijken?*** *Oh hier wel ja, hier ben ik natuurlijk heel erg benieuwd naar. Daar probeer ik wat meer van te snappen.* ***Ja want dat is misschien lastig te snappen met zoveel terminologie, maar dat schrikt u niet af?*** *nee daar heb je toch internet voor, kun je even googlen."*

Code	Description	Example quote
- Need	Anything the interviewee states on his/her need for insight in their online health dossier	***Allerlei onderzoeken, zou het prettig zijn voor u om dat ook op een later moment nog eens terug te kunnen zien.*** *Jawel.* ***Ja, of heeft u daar geen behoefte aan, dat kan natuurlijk ook.*** *Ja dat ligt eraan.* ***En waaraan?*** *Nee ze hebben mij hier door de scan gedaan, toen lag ik op de spoedeisende hulp. Daar moest ik kijken wat het was. En later kreeg ik het bericht dat het een herseninfarct was.* ***Ja, en is dat iets waarvan u zegt, kijk dat is iets wat u gewoon goed heeft onthouden, maar voor de rest alles wat er hier met u onderzocht is en gedaan is, onthoudt u dat allemaal, of is het fijn als...*** *jawel, dat onthoud ik allemaal wel****. Daar heeft u geen ondersteuning of dergelijks bij nodig?*** *Nee nee, dat onthoud ik allemaal wel. Want ik kreeg die echo hier aan die kant*. En toen zeg ik tegen die dokter en zuster, ik zeg 'ik ben heel bang'. Ik zeg 'ik wil wel graag de uitslag weten'.*
- Other	Anything other the interviewee states that is related to online health dossiers	***Heeft u daarom zo iets van dit zou ik graag terug willen zien?*** *Dit is voor mij niet heel relevant. Behalve als er een verandering is. Kijk als dossier is het goed. En als je zelf een dossier hebt, mijn ervaring is dat het bij de huisarts niet altijd in het dossier komt. Ik had een keer een grote operatie en toen kwam de huisarts bij mij op bezoek, nou dat heeft nooit in mijn dossier gestaan. Die man is bij mij op bezoek geweest en dat heeft er nooit in gestaan****. Nee dat is wel bijzonder inderdaad.*** *Nee ik snap het wel, want ze hebben het hartstikke druk, dus dat ze dat niet meteen thuis er in dauwen, maargoed, ja...*
		Health values
- Ease of use	Any statements the interviewee makes on the level of difficulty he/she experiences when entering health values to an online platform.	***"Zou u bijvoorbeeld eens wat door te voeren? Bijvoorbeeld een fictieve waarde? Om te kijken of u dat lukt?*** **nieuwe meting... hier... eerste meting, oh dit wordt al lastig, wat is systolisch?* ***Dat is het samentrekken en het loslaten van het hart.*** *Oh haha dat weet ik natuurlijk niet. ik zou daar andere vakjes willen hebben."*
- Likelihood of use	Anything the interviewee states that indicates how likely he/she is to (continue to) enter health values to an online platform.	***"En zie je jezelf dit doen?'*** *als er een koppeling gemaakt wordt met een zorgverlener, in dit geval dan de cardioloog, of een cardioloog, de dienstdoende cardioloog, dan vind ik het prima om daaraan mee te doen. Dan vind ik het ook wel heel nuttig. Als dat niet het geval is, dan zie ik het meer als wat extra's wat ik bovenop die deelname aan die 2 accounts van menzis."*

Code	Description	Example quote
- External factors	Anything the interviewee states on how external factors (like not having the right equipment for measuring) influences him/her on entering health values to an online platform	*Maar bijvoorbeeld, je bloedsuiker dat zou je eventueel nog thuis kunnen, maar er zijn ook bepaalde dingen die je niet thuis kunt, je kunt bijvoorbeeld niet je cholesterol bepalen. Hoe gaat dat dan gebeuren?*
- General view	Any other opinions of the interviewee on entering online health values	*"Ik denk dat dat heel handig is, alleen nou mis ik, wat ik begrepen heb is dat leeftijd ook van belang is voor de verschillende waarden."*
		Online advice
- Need	Any statement the interviewee makes on his/her needs for advice through a online platform	***"Als je daar geweest bent dan krijg je natuurlijk veel informatie mee. Dat kan op een briefje gezet worden, maar dat kunnen ze ook op deze site zetten. Bijvoorbeeld 'zorg dat je dit en dit niet vergeet', 'let hier en hier nog even op'.*** *Oooh dat vind ik wel heel goed, want dat is ook wat ik eigenlijk als een gemis ervaar. Want veelal ben je met je hoofd nog ergens anders. Of je bent verward. Dat merk ik bij mezelf en ook bij anderen, dat je niet alles kan opnemen. En dit is wel goed dan."*
- likelihood of use	Anything the interviewee states that indicates how likely he/she is to look at the advice given trough online platforms.	***"Nou hier kunt u dus zien als er een advies is gestuurd dan zou u het kunnen nalezen. De zorgverleners kunnen ook informatie of brochures hier neerzetten.*** *Dat ik ze kan lezen? Eventueel kan downloaden of uitprinten?* ***Ja, wat vindt u daarvan?*** *Vind ik dan zelf wel prettig als er ook de uitprint mogelijkheid is. Dat vind ik prettig, daar ben ik ouderwets in, net als met die schriftjes. Maar om even iets na te lezen dat doe ik wel liever op papier."*
- General view	Any other opinions of the interviewee on advice through online platforms	***"Vindt u dat handig. Is die iets waar u behoefte aan heeft om dat in alle rust nog eens terug te lezen?*** *Ik niet zo, maar dat heeft denk ik ook te maken met het feit dat het mijn vak is, of was. Maar mijn ervaring met patiënten is wel dat ze dat prettig vinden om dat nog even te bekijken."*
		Coaching modules
- ease of use	Any statement the interviewee makes about whether he/she is able to work with online coaching modules.	*Maar zij is dus deskundige in coachen en ophouden met roken. En zij heeft dit dus allemaal geschreven en voorbereid voor mensen die dat op hun eigen manier en op hun eigen tijd willen doen?* ***Ja****. Ja ik snap hem. En dat is dus het idee van zo'n hele coach. Als je dit vervolgens eens doorleest. Dit is de introductie. Kijk en dan krijg je de vraag 'wil je hiermee doorgaan' als je dan op ja drukt kijk dan krijg je weer v-punten. en dan krijg je ook e-mails?* ***Ja even kijken dan ga ik terug en dan...*** *maar krijg je dan ook e-mailtjes of hoe werkt dat?"*

Code	Description	Example quote
-Likelihood of use	Anything the interviewee states that indicates how likely he/she is to make use of an online coach	***"Dit zijn dus de coachingsmodules op afstand, u heeft nu nee ingevuld, is dit iets dat u wel of niet zou doen?*** *Nee. Als ik straks in Duitsland ben dan ga ik ook een soort van ouwe wijven gym doen.* ***Ja dit is nu dan als voorbeeld een fitmodule, maar je hebt ook stoppen met roken. Dat is misschien iets wat beter thuis kan. Ik kan me voorstellen dat als het om bewegen gaat dat u dit niet doet, maar stel dat-*** *ja stoppen met roken heb ik gedaan, 2 keer. Een keer toen ik 15 was, dat heeft een jaar geduurd. En nu ben ik zo'n 30 jaar gestopt. Ik stop gewoon, of niet."*
-effectiveness	Any statements the interview makes about his/her perceived effectiveness of online coaching modules.	*ja stoppen met roken heb ik gedaan, 2 keer. Een keer toen ik 15 was, dat heeft een jaar geduurd. En nu ben ik zo'n 30 jaar gestopt. Ik stop gewoon, of niet.* ***Dat is knap, maar er zijn natuurlijk mensen die daar meer moeite mee hebben.*** *Ja die beginnen ook gewoon weer als ze de * gehad hebben.* ***Oke, maar denkt u dat dit iets is waar zij wat aan kunnen hebben?*** *Volgens mij is het gewoon een verslaving, en die is gedeeltelijk lichamelijk, maar zit grotendeels tussen je oren. Dat moet je voor jezelf willen. Al die dingen die daar bij komen die helpen even, maar ik ken niemand die met zo'n programma bezig is geweest, die langer dan een jaar gestopt is*
General view	Any statements the interviewee made about e-health that were relevant, but could not be clustered in one of the themes.	*Nee. Het zou misschien ook kunnen dat het op een bepaalde manier in een aanbod komt, net zo goed als dat je hier voor 60 euro 3 maanden gebruik kunt maken van de fysio. Voor een x bedrag kun je een jaar of een half jaar gebruik maken van deze diensten. Dat zou voor mij werkzaam zijn denk ik. Meer dan per keer denk ik. Maargoed dat hangt ook een beetje van de prijs af natuurlijk. Wat ik zei ik zit al op 120 euro vanwege die ??*zorg per maand vanwege die diabetes. Voor sommige dingen maak je dan een afweging van heb ik daar voldoende baat bij? Ja en heb ik er voldoende geld voor?*

Persuasive elements		
Code	**Description**	**Example quote**
		Motivational
- feedback	Any statement the interviewee makes about how he/she is motivated by feedback from either the system or from the caretakers.	*nouja, wat voor mij wel werkt, als ik dit zo zie, ik ben altijd in de weer met agenda's en dagboekjes, en dan probeer ik inderdaad meer controle te krijgen waardoor ik denk dat ik beter kan focussen op bijvoorbeeld; dan wil ik noteren, en dat mislukt dan altijd halverwege weer, maar dan wil ik noteren wat ik in een week gesport heb, wat ik bewogen heb, hoe vaak me dat gelukt is. Dan wil ik noteren hoe vaak ik gefrituurd gegeten heb zeg maar. Zo van 'he je hebt al een kroket gehad deze week, niet nog een keer patat'. Dan wil ik dat soort dingen noteren, en dat zou dus... maar dat loopt altijd weer mis, want ik heb meerdere boekjes en ben ik te chaotisch. Dit zou dan misschien wel een manier zijn.*
- moment of introduction	Any statements the interviewee makes about how he/she prefers to be introduced to the platform	***"Als u daar eens op klikt bij informatie en brochures, dan komt u op deze pagina. Hier zijn een aantal tegeltjes met nou ja u kunt het al wel zien.*** *Ja die* ken ik al bijvoorbeeld.* ***Ja het zijn een aantal brochures. En een aantal linkjes naar sites.*** *Dat is heel praktisch, ik heb me namelijk de pest pokke gezocht naar een aantal brochures dat ik vond dat ik die nodig had.* ***Oke dus dat is iets waar u positief over bent?*** *Ja.* ***De opmaak zal in de loop van de tijd wel iets mooier worden, met plaatjes.*** *Ja en contrast misschien.* ***Ja.*** *Als je tegenwoordig op internet zoekt, dan krijg je steeds meer troep eerst en dan kun je eigenlijk zelf gaan uitvissen welke site je denkt die geeft voldoende informatie die betrouwbaar is.* ***Maar hier is het allemaal centraal, en het is natuurlijk in die zin erop gezet door de zorgverleners zelf.*** *Ja precies dus dat is heel goed"*
- monetary	Any statements the interviewee makes regarding to how financial influences motivate him/her to make use of the platform	***"Ziet het er volgens u dan ook uitnodigend uit?*** *Ja, dat vind ik wel interessant."*
- personalization	Any statements the interviewee makes referring to how he/she feels the platform feels personal to him/her	dat werkt voor mij beter dan bijvoorbeeld een anoniem iets. Die mindfullness app, diegene die dat inspreekt, dat is sowieso een Engels of Amerikaans iets. Ik heb geen contact, allemaal heel anoniem, dus ik... ik schuif hem iedere keer ook weg, zo van even geen tijd hoor.
-real world feel	Any statements the interviewee makes about how he/she feels the system connects to his/her real life situation.	***Ja oke, en is dit iets wat jij ook zou doen, als het op jou van toepassing is natuurlijk?*** *Ja, ja ik vind het wel , die v-points vind ik ook echt wel grappig, daardoor wordt het ook wel een beetje interactief, een beetje een spelletje of zo.*

Code	Description	*Example quote*
-reduction	Any statement the interviewee makes about how the platform reduces unnecessary actions or information.	*en dat wordt dan door dit ding automatisch verwerkt? Niet dat ik zelf moet gaan rekenen van 'ik heb nu zoveel stappen gezet enzovoorts'?*
-reminders	Any statements the interviewee makes about how he/she could be motivated with the help of reminders.	***En hoe zou u daarbij geholpen kunnen worden, wat zou u daarvoor nodig hebben?*** *Ja misschien een functie, of het nou anoniem is of het een bekend gezicht is, maar stel als je 2 dagen of 5 dagen niet inlogt, dat je een appje krijgt van 'he waar ben je'. Dus een soort... niet een correctie maar een uitnodiging*
-social support	Any statements the interviewee makes about how he/she is motivated by social support	***Zou dit jou ook motiveren om hier ook meer mee bezig te zijn of?*** *Euhm.... ja, ja, jahoor. Vooral als je gepensioneerd bent bijvoorbeeld, dan denk ik dat je wat meer tijd hebt en ben je misschien... kijk stel nou dat je net pensioneert en je bent hartpatiënt en je begint een beetje met je computer, dat zie je wel vaker. Mensen die nooit met hun computer bezig geweest zijn en als ze dan klaar zijn met werken dan gaan ze ineens een computercursus volgen. Dat vinden ze misschien wel heel leuk. Het is een stukje interactiviteit.*
-tailoring	Any statements the interviewee makes about how the platform is customized to his/her needs	*Wat voor mij dan ook heel handig zou zijn, zou een of andere dieet... of een plek waar je eetgedrag kan noteren.* ***Een eetdagboek?*** *Nou eetdagboek gaat dan wel weer te ver, dat zijn altijd rampen om bij te houden. Maar gewoon iets... waar je iets kan doen met notities over eten*
-remaining	Any remaining statements the interviewee makes about how he/she is motivated to make use of eHealth technologies	*Vind ik dan zelf wel prettig als er ook de uitprint mogelijkheid is. Dat vind ik prettig, daar ben ik ouderwets in, net als met die schriftjes. Maar om even iets na te lezen dat doe ik wel liever op papier.*
		Demotivational
- dislike of computers	Any statement the interviewee makes about how he/she is demotivated by technology	***Maar wat denkt u dat afschrikkend zou zijn aan zo'n module die je dan thuis moet doen?*** *Tja, je moet de computer ervoor aanzetten, dat ik misschien wel het enige.*

Code	Description	Example quote
- extra work	Any statement the interviewee makes about how the extra work eHealth creates demotivates him/her	***Ja waar we dus naar streven is om mensen daar wel met hun computer actief mee bezig te laten houden. Wat denk jij nou dat kan helpen om er voor te zorgen dat mensen dat hier wel op invullen?*** *Tja, uiteindelijk is dat toch aan hun, dat is net als een dagboek, sommige mensen willen dat, voor anderen wordt het dan een stukje huiswerk. Als ze vragen hebben dan komen ze natuurlijk wel actief om hun groep op te zoeken. Maar dit gezondheidsaspect is een stukje huiswerk. Kijk ik denk dat de meeste hartpatiënten het best belangrijk vinden om hun bloeddruk te monitoren en als dit gelinkt is aan hun specialist dan vinden ze dat best wel fijn, maar misschien tot daar aan toe.*
- personalization	Any statement the interviewee makes about how he/she feels the platform does not apply to their context	*En daarvan denk ik denk ik dan ook, want ik begreep uit die brief dat er een soort platform komt, en dat kan werken, maar dat kan ook niet. Ik heb het bij de diabetes vereniging geprobeerd, en daar werkt het voor mij niet. Dat was een niveau waar ik niks mee kon, dat stond zo ver van me af. Bij wijze van spreken iemand die 30 kilo te zwaar is en die dan dat is heel goed-moedigend toegesproken voor het verlies van 2 ons of zo, maar het stond heel ver van me af allemaal.*
- rewards	Any statements the interviewee makes about how the reward system of the platform does demotivate him/her	***Als u hier op de site bepaalde acties uitvoert, zoals dus bijvoorbeeld het invullen van gewicht, of een bloedsuikerspiegel dan kunt u daar punten mee verzamelen. Met die punten kunt u uiteindelijk sparen voor een etentje, of van allerlei dingen zitten daartussen. Dat is een van de onderdelen van dit platform. Wat vindt u daarvan?*** *Ja goed.* ***En heeft u ook zoiets van dat is iets waardoor ik dit platform meer zou gaan gebruiken dan dat ik dat anders zou doen? Nodigt het u uit om?*** *Wat mij... wat mij een goed gevoel geeft... u zegt dit is iets nieuws, en daar wil ik wel aan meewerken. Dat er iets is dat goed is, het is goed voor mij en voor andere patiënten of cliënten. Cadeautjes interesseren me niet weet je. Kijk dit* vind ik heel fijn, en dat ik dat ook over kan brengen op anderen. Dat vind ik echt geweldig, dus ik vind dit eigenlijk heel mooi.*
- reel world feel	Any statements the interviewee makes regarding to how the platform does not depict their context.	***Ja het is ook niet verplicht om dit te doen. We willen dit dus stimuleren, onder andere door die punten.*** *Ja en daarom is dit misschien niet altijd een accurate reflectie van hoe ze wel met hun gezondheid bezig zijn. Tenzij je echt ziet dat hun bloeddruk omhoog gaat en dat het niet goed gaat met ze*

Other		
Code	**Description**	**Example quote**
Treatment method	Any statement the interviewee makes regarding the way they were treated for their illness.	*"Ik had wel vlak na de operatie dat ze mijn rechter longhelft in moesten klappen. Dus ik heb een pneumonie opgelopen in het ziekenhuis. Toen heb ik wel lang aan de antibiotica gezeten. Dus ik heb wel problemen gehad, niet grote problemen, maar wel enigszins problemen met m'n ademhaling. Er was ook sprake van op een gegeven moment dat ik astma had. Maar dat bleek dus uiteindelijk niet. Het zal ook wel iets te maken hebben met m'n diafragma misschien en met mijn eigen ademhaling"*
Rehabilitation	Any statements the interviewee makes about their rehabilitation process after surgery.	*"Maar dat komt ook denk ik persoonlijk omdat iedereen maar een facet doet van het totale plaatje. Dus de een die voert de operatie uit, de ander die doet de revalidatie, de ander die geeft nog weer de nazorg. Iedereen doet een gedeelte, en het totale geheel, vind ik persoonlijk, dat wordt dan... dat zien ze dan niet. En dat zie ik overal hoor, dat zie ik ook in mijn eigen werk, want ik doe hele grote projecten en dan doet iedereen zijn eigen facet. En dat grote geheel dat zien mensen vaak niet. Dat vindt ik wel voor verbetering vatbaar."*

Appendix 3; The requirement templates

De templates voor de requirements zijn oorspronkelijk in het Engels. Met het oog op de opdrachtgever van deze opdracht (Vital10) voor wie de requirements eventueel van belang kunnen zijn is besloten de requirements in het Nederlands in te vullen. Een korte toelichting over de invulling van de templates volgt (38):

Requirement ID: Het identificatienummer van de requirements wordt gebruikt om eenvoudig naar de desbetreffende requirements te verwijzen. Er zit geen rangschikking in de nummering. De nummering is gebaseerd op de volgorde waarin de resultaten zijn verwerkt.

Requirement type: Een requirement kan uit 5 types bestaan die als volgt luiden:

- **Function and modality**: Gaat over de technische kenmerken van het systeem bijvoorbeeld of het moet werken op Android of IOS.
- **Service**: Gaat over hoe diensten buiten de technologie georganiseerd moeten worden, bijvoorbeeld marketing of user support.
- **Organizational**: Gaat over hoe de technologie geïmplementeerd moet worden in de bestaande structuren en routines.
- **Content:** Gaat over de inhoud die het systeem over moet brengen zoals taalgebruik, persuasiviteit, speciale toegankelijkheidseisen.
- **Usability & User experience**: Gaat over hoe de gebruiker interactie aan kan gaan met het systeem en hoe het systeem ervaren gaat worden door de gebruikers.

Values: De onderliggende waarden van wat de patiënten bedoelen met hun quotes.

Attributes: Korte samenvatting van de behoefte of wens van de patiënten.

Description: Een beschrijving van wat het requirement inhoudt.

Rationale: Een kort statement om te rechtvaardigen waarom dit requirement nodig is, wat het requirement precies inhoudt, en hoe het eventueel toegepast kan worden.

Source: Geven respectievelijk het respondentnummer en de quote uit het desbetreffende interview weer. Zo kan bijvoorbeeld 3:31 gelezen worden als de 31e quote uit het 3e interview.

Fit Criteria: Laten zien waar het requirement aan moet voldoen zodat het daadwerkelijk gehoor geeft aan de waarden van de patiënten. Deze criteria moeten de basis kunnen vormen van een eventuele evaluatie. Niet elk requirement heeft een fit criteria. Zo wordt een 'function & modality' requirement vaak wel of niet toegepast, dat kan het toevoegen van een fit criteria overbodig. In andere gevallen hangt het af van de prioriteit van het requirement of in hoeverre het requirement meetbaar is.

Priority: De prioriteit geeft aan in welke requirements het belangrijkst zijn. De prioriteit gaat van laag naar middel naar hoog. In de literatuur zijn er veel gestructureerde aanpakken over hoe requirements het beste te sturen zijn (81). Dit is echter een aanpak voor de ideale situatie, die vaak gelimiteerd wordt door tijd en budget. Daarom wordt het aangeraden dit enkel zo grondig te doen wanneer er grote, nationale belangen op het spel staan. In kleinere gevallen voldoet discussie tussen de project onderzoekers vaak ook. In het geval van dit onderzoek is er weinig sprake geweest van discussie tussen project onderzoekers, aangezien dit onderzoek grotendeels individueel is gedaan. Dit houdt in dat er in hogere mate sprake is geweest van subjectiviteit, wat de validiteit van het prioriteitsniveau heeft beïnvloedt.

Conflicts: Geeft aan wanneer er requirements eventueel met elkaar kunnen botsen, of waar eventuele bottlenecks kunnen ontstaan.

History: Idealiter staat hier hoe en wanneer het requirement in het design is toegepast, of redenen waarom het juist niet is toegepast. Verder kan hier aangegeven worden wanneer er veranderingen zijn doorgevoerd binnen het design, op basis van het requirement. Uiteindelijk kunnen hier ook scores van effectiviteitmetingen komen te staan. In het geval van dit onderzoek is dit echter nog op geen enkel requirement van toepassing, daarom is hier enkel weergegeven wanneer het requirement geformuleerd is.

Requirement ID: 1	**Requirement type:** Service requirement
Value: Behoefte aan terugkoppeling van de zorgverlener Zich gezien/gehoord voelen door de zorgverlener Angst wegnemen, veiligheid creëren Behoefte aan snel / laagdrempelig contact	**Attribute:** De deelname van de arts is een vernieuwend aspect van dit platform Scepsis over participatie van de zorgverlener Wanneer er contact gelegd wordt moet de zorgverlener daar ook wat mee doen Participatie van de zorgverlener is volgens gebruikers essentieel om weer op het fysieke niveau te komen.
Description: Het systeem moet daadwerkelijk door de zorgverlener gebruikt gaan worden	
Rationale: Gebruikers gaven aan dat de koppeling met de zorgverlener een toegevoegde waarde van dit platform is, ten opzichte van anderen. Hier bleven echter veel vragen over, vooral wat betreft de (intensiteit van de) deelname van de zorgverleners. Actieve deelname van de zorgverleners zou ook de motivatie bij gebruikers verhogen.	
Source: 3:31, 5:7, 5:33, 5:34, 5:39, 5:41, 5:43, 5:44, 5:46, 5:47, 5:57, 5:58, 5:60, 7:28, 7:47, 8:33, 8:35, 8:37, 10:31, 10:44	
Fit criteria: Het systeem voldoet hieraan wanneer patiënten aangeven tevreden te zijn met het de intensiteit van het gebruik van hun zorgverlener.[4]	
Priority: Hoog	**Conflicts:** Sceptische houding van gebruikers t.o.v. deelname zorgverleners. Gebruik staat of valt bij veel gebruikers met de deelname van de zorgverleners Conflicteert met req. 5 vanwege evt. zorgverleners die niet (tijdig genoeg) gebruikmaken van het platform. Conflicteert met req. 38 vanwege evt. extra taken (en dus extra tijd) die het systeem met zich meebrengt. Conflicteert met req. 39 vanwege evt. problemen in multidisciplinaire communicatie.
History: gecreëerd: 9 januari 2019	

[4] Anderzijds kan er een quotum door Vital10 opgesteld worden waarin aangegeven wordt dat minimaal een X aantal procent van de zorgverleners ook daadwerkelijk gebruikt maakt van het systeem. Dit kan objectiever getoetst worden.

Requirement ID: 2	**Requirement type:** Usability & user experience requirements
Value: Gebruikers hebben een leidraad nodig die hen helpt hun ziekte te managen Zich gezien/gehoord voelen door de zorgverlener Behoefte aan terugkoppeling van de zorgverlener Overzicht plus integratie van informatie	**Attribute:** Als de gebruiker zelf dingen opschrijft, ontneem je werkdruk van de zorgverlener, plus het stelt gebruikers instaat zelf actie in hun herstelproces te nemen. Gebruikers zijn sceptisch over participatie van de zorgverlener en zijn daarom van mening dat eigen inbreng ervoor zorgt dat informatie sowieso op het platform terecht komt Oudere gebruikers vergeten dingen sneller, door deze informatie in het platform te zetten hebben ze beter overzicht in hun eigen herstelproces
Description: Het systeem stelt gebruikers in staat zelf informatie toe te voegen over consulten, adviezen, of zaken die ze zelf graag bijhouden	
Rationale: sommige gebruikers waren sceptisch over in hoeverre zorgverleners de tijd nemen om daadwerkelijk adviezen op het platform te plaatsen, daarom werd het alternatief genoemd om eventueel zelf informatie bij de adviezen te plaatsen, bijvoorbeeld een samenvatting van een consult. Ook vinden sommige gebruikers het gewoon fijn om zelf notities of dagboeken bij te kunnen houden op het platform.	
Source: 3:40, 3:54, 4:36, 4:44, 4:45, 4:47, 7:48, 9:25	
Fit criteria: Het systeem voldoet hieraan wanneer de gebruikers de mogelijkheid hebben om zelf informatie toe te voegen.	
Priority: Laag	**Conflicts:** In welke functies gebruikers allemaal de mogelijkheid willen hebben om zelf informatie toe te voegen kan nog onderzocht worden. Conflicterend op gebied van haalbaarheid, vaardigheden gebruikers,
History: gecreëerd: 9 januari 2019	

Requirement ID: 3	**Requirement type:** Content requirement
Value: Angst wegnemen, veiligheid creëren Overzicht plus integratie van informatie	**Attribute:** Gebruikers vergeten nog wel eens dingen die tijdens een consult gezegd worden. Deze informatie zien zij graag op het platform weer.
Description: Het systeem zou een overzicht moeten bieden van relevante adviezen gegeven door de zorgverlener.	
Rationale: Gebruikers gaven aan dat ze tijdens consulten wel eens een overload aan informatie krijgen. Het geeft ze dan een prettig en veilig gevoel als ze weten dat ze dit later terug kunnen lezen. Het gaat hierbij vaak om samenvattingen van consulten.	
Source: 1:21, 1:22, 3:15, 3:39, 3:40, 5:45, 6:35, 6:43, 6:47, 7:49, 8:33	
Fit criteria: Het systeem voldoet hieraan wanneer de adviezen van de zorgverlener op het platform te zien zijn.	
Priority: Hoog	**Conflicts:** Dit is in principe al toegepast in het mijnHEP systeem.
History: gecreëerd: 9 januari 2019	

Requirement ID: 4	**Requirement type:** Functional and modality requirement
Value: Overzicht plus integratie van informatie	**Attribute:** Het is handig als de informatie goed te vinden is, zodat mensen via het platform up to date kunnen blijven
Description: Het systeem moet up tot date informatie bevatten	
Rationale: Gebruikers geven aan dat vooral medicatie vaak verandert. Als dit in het platform overzichtelijk weergegeven worden zou dit hen helpen met vragen als de medicatie weer veranderd.	
Source: 5:50, 5:56, 8:22, 8:31	
Fit criteria: Het systeem voldoet hieraan wanneer het tijdig[5] veranderingen in zowel algehele zorgtrends als specifieke patiënt-gerelateerde uitkomsten (laboratorische onderzoeken, lichamelijke metingen etc.) toevoegt.	
Priority: Hoog	**Conflicts:** conflicteert met req. 9 vanwege evt. Problemen in de interoperabiliteit tussen verschillende systemen. Conflicteert met req. 1 vanwege evt. zorgverleners die niet (tijdig genoeg) gebruik maken van het platform.
History: gecreëerd: 9 januari 2019	

[5] Wat patiënten tijdig genoeg vinden is niet naar voren gekomen. Hier kan verder naar gevraagd worden.

Requirement ID: 5	**Requirement type:** Service requirement
Value: Behoefte aan terugkoppeling van de zorgverlener Behoefte aan bevestiging Zich gezien/gehoord voelen door de zorgverlener Angst wegnemen, veiligheid creëren	**Attribute:** De gebruiker vindt het belangrijk dat ze zelf controle over de gezondheidswaarden hebben, maar gaat het niet goed, dan moet er ingegrepen worden door de zorgverlener Gebruikers willen graag hun eigen gezondheidswaardes in kunnen zien. Wanneer zorgverleners hierop terugkoppelen geeft dat de gebruikers een gevoel van bevestiging. Dit neemt ook weer angst web bij de gebruikers Scepsis over participatie van de zorgverlener
Description: Zorgverleners kunnen via het systeem terugkoppeling geven op gezondheidsgerelateerde zaken.	
Rationale: Wanneer er gezondheidsgerelateerde zaken niet goed gaan is het geruststellend als men weet dat de arts meekijkt met de gezondheidswaarden. Gebruikers kunnen weten dat de arts meekijkt als deze regelmatig terugkoppeling geeft op de gezondheidswaarden.	
Source: 3:56, 4:11, 5:7,5:39, 5:44, 7:10, 7:44, 7:46, 7:47, 9:11, 10:17	
Fit criteria: Het platform voldoet hieraan als 56%[6] van de gebruikers aan geeft tevreden te zijn over de terugkoppeling van de artsen	
Priority: Hoog	**Conflicts:** Conflicteert met req. 38 vanwege evt. extra taken (en dus extra tijd) die het systeem met zich meebrengt. Req. 6 biedt een oplossing in de vorm van automatische feedback vanuit het platform Req. 35 biedt een oplossing in de vorm van alarm bij de zorgverlener in geval van afwijkende waardes.\
History: gecreëerd: 8 januari 2019	

[6] Dit cijfer is gebaseerd op de verwachte deelname van hartfalenpatiënten aan revalidatietrajecten in 2020 82. M.L. Bots IvdD, C. Koopman, I. Vaartjes, F.L.J. Visseren. Hart- en vaatziekten in Nederland 2014. Hartstichting. 2014:192.

Requirement ID: 6	**Requirement type:** Usability & User experience requirement
Value: patiënten verlangen naar autonomie in hun hersteltraject Behoefte aan terugkoppeling van de zorgverlener Behoefte aan bevestiging	**Attribute:** Het overzicht van de punten geeft gelijk een overzicht van hoe je bezig bent met het platform en dus je gezondheid. Wanneer het platform laat zien hoe het er voor staat met de gezondheid van de gebruiker geeft dit een gevoel van bevestiging
Description: Het systeem moet terugkoppeling geven aan de gebruiker	
Rationale: In dit geval moet het platform zelf de terugkoppeling geven, Dit zou dan met de v-punten kunnen, maar het zou ook anders vorm gegeven kunnen worden. Bijvoorbeeld door een statusbalk, motiverende berichten, of levels, voor een eventueel gamification element. Dit is een voorbeeld van visibilitiy of system status als omschreven in het PSD model.	
Source: 4:56, 7:11	
Fit criteria: Het systeem kan hier op meerder manieren aan voldoen, zolang het platform inzicht geeft in de voortgang van de gebruiker.	
Priority: Hoog	**Conflicts: -**
History: gecreëerd: 9 januari 2019	

Requirement ID: 7	**Requirement type:** Content requirement
Value: Overzicht plus integratie van informatie De patiënt wil gemakkelijk door het herstelproces geleid worden Reductie van inspanning op het platform Gebruikers hebben een leidraad nodig die hen helpt hun ziekte te managen Angst wegnemen, veiligheid creëren	**Attribute:** verschillende vormen van input kunnen allemaal overzichtelijk in dit platform staan Het is goed als informatie van tevoren al is geselecteerd en geverifieerd Het doorzoeken van meerder informatie kan vereenvoudigd worden via het platform Het platform kan helpen om informatie over verschillende onderwerpen (dieet, bewegen, cholesterol etc.) eenvoudig en gegroepeerd weer te vinden Informatie die op het platform te vinden is wordt betrouwbaarder geacht dan informatie die zelf op het internet gevonden moet worden.
Description: Het systeem moet informatie gegroepeerd onder 1 dak hebben	
Rationale: Gebruikers willen graag dat alle informatie over hun gezondheid onder 1 dak te vinden is, dat geld dus voor gezondheidswaarden, uitslagen van onderzoeken, informatie over hun aandoening etc. Echter moet dit wel goed gegroepeerd zijn, zodat het overzichtelijk blijft.	
Source: 3:35, 3:41, 3:42, 4:44, 4:45, 4:49, 5:50 6:39, 8:23, 8:32, 9:27	
Fit criteria: het systeem voldoet hieraan wanneer ALLE informatie aangaande de gezondheid van de gebruiker zichtbaar is in de verschillende tabbladen van het mijnHEP platform	
Priority: Hoog	**Conflicts:** Hier is binnen mijnHEP al tot op zekere hoogte sprake van.
History: gecreëerd: 9 januari 2019	

Requirement ID: 8	**Requirement type:** Content requirement
Value: Overzicht plus integratie van informatie Reductie van inspanning op het platform De patiënt wil gemakkelijk door het herstelproces geleid worden Patiënten verlangen naar autonomie in hun hersteltraject	**Attribute:** Gebruikers hebben graag linkjes in het platform naar informatie Een linkje met informatie over bijvoorbeeld een moeilijke term zorgt ervoor dat gebruikers minder moeite hoeven te doen om de definitie op te zoeken. Het is goed als informatie van tevoren al is geselecteerd en geverifieerd De mogelijkheid om makkelijk betrouwbare informatie te vinden empowered de patiënten
Description: Het systeem moet betrouwbare informatie ofwel bevatting ofwel linken.	
Rationale: De gebruikers gaven aan het fijn te vinden uitleg te hebben bij sommige moeilijke termen. Idealiter zou hier een 'i' achter kunnen staan waar overheen gehoverd of op geklikt kan worden om uitleg van deze term te kunnen zien.	
Source: 3:21, 3:22, 3:42, 4:32, 4:33,6:37, 7:29, 10:28, 10:51	
Fit criteria: het systeem voldoet hieraan wanneer er linkje te vinden zijn naar informatie bij termen waar de gebruikers graag meer over willen weten[7].	
Priority: Middel	**Conflicts:**
History: gecreëerd: 9 januari 2019	

[7] Welke termen dit allemaal moeten zijn kan gevraagd worden bij de gebruikers.

Requirement ID: 9	**Requirement type:** Functional and modality requirement
Value: Overzicht plus integratie van informatie Zich gezien/gehoord voelen door de zorgverlener Angst wegnemen, veiligheid creëren	**Attribute:** de gebruikers moeten op de hoogte blijven van ALLE medische zaken. een samenvatting van consulten was volgens gebruikers erg prettig om op het platform te hebben. Als een zorgverlener al zo'n dergelijke samenvatting heeft gemaakt dan moet deze makkelijk te integreren zijn in het platform scepsis over participatie zorgverlener
Description: Het systeem moet informatie kunnen integreren vanuit andere systemen	
Rationale: Het wekt frustratie op bij de gebruikers wanneer niet alle informatie over hun gezondheid in hun dossier komt. Om dit de kunnen voorkomen zou het systeem moeten kunnen integreren met andere systemen, zodat informatie tussen de systemen makkelijk uitgewisseld kan worden.	
Source: 9:28, 7:29, 7:48	
Fit criteria: Het systeem voldoet hieraan wanneer informatie uit andere elektronische patiënten dossiers automatisch geïntegreerd kan worden in het mijnHEP platform.	
Priority: Hoog	**Conflicts:** Kan conflicteren met privacy concerns
History: gecreëerd: 9 januari 2019	

Requirement ID: 10	**Requirement type:** Content requirement
Value: Overzicht plus integratie van informatie Patiënten verlangen naar autonomie in hun hersteltraject Angst wegnemen, veiligheid creëren	**Attribute:** Gebruikers vinden het prettig om ook zelf hun gezondheidswaarden in te kunnen zien, nu vertrouwen ze er maar blindelings op dat de zorgverlener alles goed invult Gebruikers worden wel geprikkeld als zij de mogelijkheid hebben hun gezondheidswaarden in te zien, het maakt ze enthousiast. Inzage in de uitslagen bij dossier geven een gevoel van zekerheid De gebruiker gaat ervan uit dat gezondheidswaarden vaak goed zijn, in het kader van controle is het goed zelf inzage in het dossier te hebben
Description: Het systeem ontsluit het medische dossier van de gebruiker	
Rationale: het is belangrijk voor de gezondheid en motivatie van de gebruikers om zelf in te zien wat er met hun gezondheidswaarden gebeurd.	
Source: 2:6, 4:61, 4:62 5:48, 5:49, 6:38, 6:39, 6:40, 8:22, 10:20	
Fit criteria: Het systeem voldoet hieraan wanneer gebruikers inzage hebben in hun online dossier.	
Priority: Hoog	**Conflicts:** Dit doet het mijnHEP al, de mensen waren tevreden over de opmaak van de dossier pagina.
History: gecreëerd: 9 januari 2019	

Requirement ID: 11	**Requirement type:** Content requirement
Value: Behoefte aan bevestiging Overzicht plus integratie van informatie	**Attribute:** Gebruikers willen graag hun eigen gezondheidswaardes in kunnen zien. Referentiepunten, zoals de normaalwaardes van bepaalde uitslagen, kunnen bevestiging geven over hun fysieke toestand.
Description: Het systeem laat naast gezondheidswaardes ook de normaalwaardes hiervan zien	
Rationale: Er is meerdere malen genoemd dat een kleine aanpassing, zoals het laten zien wat de normaalwaardes bij bepaalde uitslagen zouden zijn, het gebruikersgemak en plezier zou doen verhogen. Zodoende hebben de gebruikers namelijk eerder in de gaten wat deze uitslagen precies betekenen.	
Source: 3:44, 3:45, 3:55, 7:51, 10:17, 10:28, 10:50	
Fit criteria: Het systeem voldoet hieraan wanneer er bij alle gezondheidswaarden is te zien wat de normaalwaarde is.	
Priority: Hoog	**Conflicts: -**
History: gecreëerd: 10 januari 2019	

Requirement ID: 12	**Requirement type:** Functional and modality requirement
Value: Behoefte aan mobiliteit van het portaal Overzicht plus integratie van informatie	**Attribute:** Gebruikers willen graag thuis, onderweg of bij de zorgverlener op het platform kunnen werken Wanneer gebruikers op een laptop of op een smartphone inloggen, de opmaak moet op beide interfaces in orde zijn.
Description: Het systeem moet op meerdere interfaces werken	
Rationale: Gebruikers moeten makkelijk met het systeem kunnen werken op laptop, tablet, of smartphone. Ook moet het op alle besturingssystemen werken (android, ios, windows etc.)	
Source:1:22, 3:24, 3:26, 4:46, 5:26, 6:41, 8:18, 10:27, 10:28	
Fit criteria: Het systeem voldoet hieraan wanneer het werkt op laptop, tablet, smartphone, en op alle besturingssystemen; android, ios, windows.	
Priority: Hoog	**Conflicts: -**
History: gecreëerd: 10 januari 2019	

Requirement ID: 13	**Requirement type:** Organizational requirement / Content requirement
Value: Behoefte aan snel / laagdrempelig contact Angst wegnemen, veiligheid creëren Patiënten verlangen naar autonomie in hun hersteltraject Behoefte aan terugkoppeling van de zorgverlener Angst voor verlies persoonlijk contact zorgverlener	**Attribute:** De chat kan gebruikt worden voor snelle, kleine vragen. Wanneer een gebruiker ergens onzeker over is, voelt het fijn om binnen 24 uur contact te kunnen hebben op een laagdrempelige manier Door makkelijk contact te hebben kan de patiënt sneller en beter keuzes maken in het hersteltraject Door kleine vragen via de chat te doen kunnen consulten efficiënter ingedeeld worden. Communicatie via een portaal moet niet ten koste gaan van reguliere vormen van contact.
Description: Het systeem moet laagdrempelig contact met de zorgverlener faciliteren.	
Rationale: Gebruikers gaven aan dat de chat een vernieuwing was ten opzichte van huidige vorm van communicatie. De mogelijkheid om binnen 24 uur kleine vragen aan zorgverleners te stellen gaf de gebruikers een gevoel van veiligheid.	
Source: 3:19, 3:20, 3:32, 3:36, 4:34, 4:35, 4:36, 4:52, 5:22, 5:23, 5:28, 5:29, 5:33, 5:35, 5:36, 5:54, 6:18, 6:19, 6:25, 6:29, 6:36, 7:17, 7:18, 7:31, 7:36, 8:04, 8:14, 8:17, 8:21, 8:22, 8:37, 9:16, 10:09, 10:13, 10:14, 10:15,	
Fit criteria: Het systeem voldoet hieraan wanneer gebruikers aangeven tevreden te zijn over de manier waarop men via de chat in contact kan komen met de zorgverleners.	
Priority: Hoog	**Conflicts:** De chat zoals deze nu is in het mijnHEP werd positief ervaren, er zijn echter nog veel vragen over de omgang van deze chat. Daarnaast is online communicatie over gezondheidszaken erg gevoelig voor privacy issues.
History: gecreëerd: 10 januari 2019	

Requirement ID: 14	**Requirement type:** Organizational requirement / Content requirement
Value: Behoefte aan snel / laagdrempelig contact Behoefte aan lotgenotencontact Behoefte aan duidelijkheid over de functies van het platform Behoefte aan ondersteuning van de sociale kring	**Attribute:** De chat kan gebruikt worden voor snelle, kleine vragen. lotgenoten kunnen ook helpen met bepaalde dingen in het revalidatieproces. Het zou mooi zijn als de chatfunctie voor lotgenoten altijd toegangbaar is, dat verhoogd motivatie. Hier is nog veel onduidelijkheid over. Het werkt voor veel patiënten motiverend wanneer zij in samenwerking met hun sociale kring aan de revalidatie kunnen werken
Description: Het systeem moet laagdrempelig contact met lotgenoten faciliteren.	
Rationale: Lotgenotencontact is voor veel gebruikers net zo belangrijk als contact met de zorgverlener. Hier moet in de chat functie van het platform optimaal gebruik van gemaakt worden	
Source: 3:07, 4:06, 4:21, 4:23, 4:26, 4:28, 4:41, 4:52, 6:63, 7:23, 7:38, 7:55, 8:24, 8:25, 9:17,	
Fit criteria: Het systeem voldoet hieraan wanneer de gebruikers aangeven tevreden te zijn over de manier waarop men via de chat in contact kan komen met lotgenoten.	
Priority: Hoog	**Conflicts:** De chat zoals deze nu is in het mijnHEP werd positief ervaren, er zijn echter nog veel vragen over de omgang van deze chat. Daarnaast is online communicatie met lotgenoten gevoelig voor privacy issues.
History: gecreëerd: 10 januari 2019	

Requirement ID: 15	**Requirement type:** Content requirement
Value: Behoefte aan duidelijkheid over de functies van het platform De patiënt wil gemakkelijk door het herstelproces geleid worden Overzicht plus integratie van informatie Reductie van inspanning op het platform	**Attribute:** Er is veel onduidelijkheid over de verschillende functies van het platform, vooral de chat is erg onduidelijk. Het stapsgewijs invullen van de gezondheidswaardes is onduidelijk Doordat sommige gebruikers de functies in het portaal niet snappen wordt het onoverzichtelijk Het invullen van bepaalde waardes kan misschien stap voor stap
Description: Het moet duidelijk zijn hoe je met de functies van het systeem om moet gaan.	
Rationale: Het is voor veel gebruikers onduidelijk hoe de verschillende functies werken. Hier moet een oplossing voor komen. Hoe dit eruit gaat zien en of hier verschil in zit tussen de functies is voor overleg vatbaar.	
Source: 1:24, 3:38, 3:43, 3:47, 4:50, 4:51, 5:32, 5:50, 6:26, 6:27, 6:31, 6:32, 6:33, 6:49, 7:27, 7:33, 7:34, 7:36, 7:37, 7:38, 7:40, 8:20, 8:34, 8:43, 8:44, 9:23, 10:30, 10:37, 10:38	
Fit criteria: -	
Priority: Hoog	**Conflicts:** Dit is een breed requirement waar niet 1 gouden oplossing voor is. Zie voor meer toelichting de uitwerkingen onder het kopje 'results sub question 3'.
History: gecreëerd: 10 januari 2019	

Requirement ID: 16	**Requirement type:** Functional and modality requirement
Value: Veiligheid van persoonlijke informatie Kennis over de gegevens binnen het behandelproces	**Attribute**: De gebruiker is angstig voor zijn online privacy Het is onduidelijk voor de gebruiker wie er allemaal inzage heeft in zijn/haar gegevens
Description: Het systeem moet persoonlijke informatie goed beveiligen.	
Rationale: Privacy is een belangrijk onderdeel voor gebruikers. Voor sommige gebruikers zelfs zo erg dat dit afschrik het platform te gebruiken. Persoonlijke gegevens moeten daarom goed beveiligd worden. Ook moet er transparantie zijn over welke informatie beveiligd is, op welke manier, wie inzage heeft in de gegevens etcetera.	
Source: 6:23, 6:24, 6:28, 6:30, 6:34, 6:48, 7:39	
Fit criteria: Het systeem voldoet hieraan wanneer er geen persoonlijke informatie uitlekt.	
Priority: Hoog	**Conflicts:** Het verhogen van privacy/veiligheid kan lastig worden als het platform multidisciplinair ingezet moet worden.
History: gecreëerd: 10 januari 2019	

Requirement ID: 17	**Requirement type:** Content requirement
Value: Overzicht plus integratie van informatie Zich gezien / gehoord voelen door de zorgverlener	**Attribute**: Sommige gebruikers zeggen uit ervaring dat ze zich irriteren aan het feit dat niet alles aan hun dossier toegevoegd wordt Patienten voelen zich soms niet serieus genomen wanneer niet alle informatie die zij geven verwerkt wordt
Description: Het systeem moet ALLE beschikbare informatie over de gebruikers bevatten.	
Rationale: Als er met het systeem gewerkt gaat worden, willen gebruikers ook dat alle informatie aangaande hun gezondheid erin verwerkt wordt, dit verhoogd voor hen het gebruikersplezier.	
Source: 2:24, 3:03, 9:28	
Fit criteria: Het systeem voldoet hieraan wanneer de gebruikers aangeven tevreden te zijn over de hoeveelheid gezondheidsgerelateerde informatie die over hem/haar in het platform staat.	
Priority: Hoog	**Conflicts:** Dit betekend dat het systeem over meerdere disciplines gebruikt moet gaan worden, dit kan conflicten qua communicatie en privacy veiligheid opleveren.
History: gecreëerd: 10 januari 2019	

Requirement ID: 18	**Requirement type:** Organizational requirement
Value: De patiënt verlangt naar autonomie in het herstelproces	**Attribute**: Wanneer zorgverleners onderling over het behandeltraject van de gebruiker discussiëren, kan deze zich soms buitengesloten voelen
Gebruikers hebben een leidraad nodig die hen helpt hun ziekte te managen	Het platform kan nieuwe inzichten bieden en bewust maken van hun gezondheid. Zodoende kan het een leidraad in het leven vormen.
Kennis over gegevens binnen het behandelproces	Wanneer patiënten kennis over de gegevens binnen hun behandelproces hebben, zijn ze eerder in staat zelf beslissingen te nemen
Zich gezien / gehoord voelen door de zorgverlener	Patiënten vinden het fijn als er naar hen geluisterd wordt. Dat verhoogt de regie die ze durven te nemen.
Behoefte aan snel / laagdrempelig contact	Snel en laagdrempelig contact met zorgverleners vergroot de regie die patiënten hebben over hun leven.
Vertrouwen in eigen kennis	Patiënten voelen soms zelf wat het beste voor ze is. Zij moeten zelf in staat zijn keuzes te maken.
Description: Het systeem moet de gebruiker regie geven over zijn eigen zorgtraject.	
Rationale: Dit is een van de einddoelen van het platform. Dit kan bereikt worden door gehoor te geven aan de verschillende behoeften van de gebruikers, zoals het eenvoudige contact kunnen leggen, bijhouden / feedback op gezondheidswaarden, ecoach modules kunnen volgen, etcetera. Het uitvoeren van de specifiekere requirements zal er toe leiden dat ook deze requirement invulling krijgt	
Source: 3:04, 3:23, 4:07, 4:62, 5:29, 5:59, 7:17, 7:24, 9:21, 10:04, 10:11, 10:12, 10:18, 10:23, 10:29	
Fit criteria: -	
Priority: Hoog	**Conflicts: -**
History: gecreëerd: 10 januari 2019	

Requirement ID: 19	**Requirement type:** Content requirement
Value: overzicht plus integratie van informatie	**Attribute**: De plaatsing van belangrijke zaken moet groot duidelijk op het dashboard
Description: Het systeem moet de belangrijkste informatie gelijk op de eerste pagina laten zien.	
Rationale: De belangrijkste zaken moeten als eerst gebeuren, daarom is het belangrijk dat zij direct zichtbaar zijn.	
Source: 10:42	
Fit criteria: Het systeem voldoet hieraan wanneer de gebruikers aangeven tevreden te zijn over de informatie die op de eerste pagina te vinden is[8].	
Priority: Hoog	**Conflicts:** -
History: gecreëerd: 10 januari 2019	

[8] Wat de belangrijkste informatie is, verschilt per gebruiker. Hoe je dit per gebruiker uit kunt zoeken is nog voor onderzoek vatbaar.

Requirement ID: 20	**Requirement type:** Service requirement
Value: Angst wegnemen, veiligheid creëren Patiënten verlangen naar autonomie in hun hersteltraject Behoefte aan persoonlijke informatie	**Attribute**: het voelt prettig om alles in eigen tijd nog even na te kunnen slaan. Soms heeft de gebruiker even geen zin om met het platform te werken, ze willen daar ook vrij in gelaten worden Patiënten willen de mogelijkheid hebben zelf te bepalen wanneer ze welke oefeningen doen
Description: Gebruikers moeten in hun eigen tempo met het systeem kunnen werken.	
Rationale: Gebruikers gaven aan dat ze niet altijd met het platform bezig kunnen zijn. Het is dan belangrijk dat ze niet gepushed worden om er constant gebruik van te maken, dat werkt alleen maar averechts.	
Source: 1:07, 2:15, 4:13, 4:24, 5:37, 5:48, 6:44, 7:52, 8:07, 9:19,	
Fit criteria: Het systeem voldoet hieraan wanneer de gebruikers aangeven tevreden te zijn over het tempo waarop ze met het platform kunnen werken.	
Priority: Hoog	**Conflicts:** -
History: gecreëerd: 10 januari 2019	

Requirement ID: 21	**Requirement type:** Functional and modality requirement
Value: Reductie van inspanning op het platform.	**Attribute**: Gebruikers zien graag dat het platform automatisch kan verbinden met bijvoorbeeld een stappenteller of een bloeddrukmeter.
Description: Het systeem zou kunnen synchroniseren met andere apps, of met meetapparatuur.	
Rationale: Een automatische (bluetooth) verbinding met andere apps is niet alleen makkelijker, het voorkomt ook dat mensen vergeten hun waardes door te geven.	
Source: 4:48, 5:19, 5:43, 7:41, 8:10, 10:36	
Fit criteria: Het systeem voldoet hieraan wanneer het in staat is te synchroniseren met de apparatuur die gelinkt is aan het platform.	
Priority: Middel	**Conflicts:** Conflicteert met req. 16, vanwege evt. problemen met privacyregels.
History: gecreëerd: 14 januari 2019	

Requirement ID: 22	**Requirement type:** Service requirement
Value: Behoefte aan een goede introductie naar het platform De patiënt wil gemakkelijk door het herstelproces geleid worden Behoefte aan duidelijkheid over de functies van het platform	**Attribute**: Veel gebruikers gaven aan een voorkeur te hebben voor een 1 op 1 begeleiding bij de introductie met het platform. Er moet een vorm van hulp aanwezig zijn tijdens de eerste kennismaking met het platform Er is nog veel onduidelijkheid over de functies van het platform, dit kan voorkomen worden door een goede introductie
Description: Gebruikers moeten op een goede / geleidelijke manier met het platform geïntroduceerd worden.	
Rationale: Voor veel gebruikers staat of valt hun deelname aan het platform met dat zij het goed begrijpen. Om dit te faciliteren is het belangrijk dat ze goed worden geïntroduceerd naar het platform. Zodat duidelijk is wat het doel is van het platform en hoe ze met de functies om moeten gaan.	
Source: 3:28, 3:29, 3:52, 3:53, 5:17, 5:21, 7:26, 7:37, 7:46, 7:57, 7:58, 7:59, 7:60, 7:61, 8:29, 8:42, 10:33, 10:34, 10:46, 10:47, 10:49	
Fit criteria: Het systeem voldoet hieraan wanneer de gebruikers aangeven tevreden te zijn met de introductie naar het platform.	
Priority: Hoog	**Conflicts:** Hier kan op meerder manieren invulling aan gegeven worden.
History: gecreëerd: 14 januari 2019	

Requirement ID: 23	**Requirement type:** Content requirement / Organizational requirement
Value: Angst wegnemen, veiligheid creëren Behoefte aan persoonlijke informatie Angst voor verlies persoonlijk contact met de zorgverlener	**Attribute**: Communicatie met een zorgverlener die de gebruiker kent voelt veilig. Wanneer de gebruiker de zorgverlener niet kent willen zij graag informatie over deze zorgverlener, zodat ze een beeld van hem/haar kunnen vormen. Patiënten gaven aan het vervelend te vinden als ze weer met een nieuwe zorgverlener worden geïntroduceerd, dat geeft geen persoonlijk gevoel, en het vergt weer nieuwe introductie.
Description: Het systeem moet transparantie van communicatie waarborgen.	
Rationale: Gebruikers willen graag weten met welke zorgverlener ze contact hebben via het platform, als dit een onbekende arts is willen ze graag achtergrondinformatie om een beeld te vormen van deze arts.	
Source: 7:33, 7:35, 7:53, 8:04, 9:06, 10:13	
Fit criteria: -	
Priority: Middel	**Conflicts:** Kan nog onderzocht worden of de gebruikers ook behoefte hebben aan transparantie van communicatie tussen de zorgverleners zelf.
History: gecreëerd: 14 januari 2019	

Requirement ID: 24	**Requirement type:** Organizational requirement
Value: Behoefte aan duidelijkheid over de functies van het platform Behoefte aan kennis over het doel / achterliggende informatie over het platform	**Attribute**: Er is veel onduidelijkheid over het doel van sommige functies (voornamelijk de chat) Er zijn nog veel vragen over randzaken rondom het platform, zoals hoe het gefinancierd wordt, hoe bepaalde metingen moeten enzovoorts.
Description: Het doel van het platform / de functies van het platform moeten duidelijk zijn.	
Rationale: Naast de functionele kennis om het platform te kunnen gebruiken is het ook van belang dat gebruikers inzicht krijgen in wat het uiteindelijke doel van het platform is. Ook moeten zij met vragen over randzaken (bijvoorbeeld de financiering) ergens terecht kunnen.	
Source: 4:51, 4:58, 4:59, 5:27, 5:32 5:40, 10:40	
Fit criteria: -	
Priority: Hoog	**Conflicts:** Dit is een breed requirement waar niet 1 gouden oplossing voor is. Zie voor meer toelichting de uitwerkingen onder het kopje 'results sub question 3'
History: gecreëerd: 14 januari 2019	

Requirement ID: 25	**Requirement type:** Content requirement
Value: Overzicht plus integratie van informatie	**Attribute:** veel moeilijke medische termen schrikken de gebruikers af.
Description: Het systeem moet uitleg bieden bij moeilijke termen	
Rationale: In het dossier, of bij de gezondheidspagina staan soms moeilijke termen. Gebruikers gaven aan graag een 'i' of een '?' te hebben waar ze op kunnen klikken (of overheen hoveren) waarna er een korte uitleg van deze term te zien zou zijn.	
Source: 3:46, 7:50, 9:29	
Fit criteria: Het systeem voldoet hieraan wanneer elke term, waarvan de gebruikers aangeven hem niet te begrijpen, een 'i' of '?' bezit met tekst en uitleg.	
Priority: Middel	**Conflicts:** Wat de gebruikers allemaal moeilijke termen zijn moet nog uitgezocht worden.
History: gecreëerd: 14 januari 2019	

Requirement ID: 26	**Requirement type:** Usability & User experience requirements
Value: Behoefte aan persoonlijke informatie Angst wegnemen, veiligheid creëren Duidelijkheid over de functies van het platform	**Attribute:** De functies op het platform moeten van toepassing zijn op de gebruikers, Als zij bijvoorbeeld geen suikerziekte hebben zullen ze geen glucose toe willen voegen. De gebruikers zien graag een gezicht van de zorgverlener bij de ecoach modules.
Description: Het systeem moet persoonlijke & relevante opties bieden	
Rationale: De gebruikers willen graag informatie zien die voor hen van toepassing zien, overbodige informatie leidt alleen maar af. Verder willen ze graag weten wie er aan de andere kant van het platform zit, dus met wie ze chatten, of wie de ecoach modules heeft gemaakt. Dat maakt het een stuk persoonlijker.	
Source: 4:22, 4:40, 4:42, 4:53, 5:52, 6:44, 8:36, 8:39	
Fit criteria: 1. Het systeem voldoet hieraan wanneer gebruikers zelf kunnen kiezen welke opties zij willen. 2. Het systeem voldoet hieraan wanneer de gebruikers aangeven tevreden te zijn over de manier waarop het platform bij hem / haar past.	
Priority: Hoog	**Conflicts:** Dit is een breed requirement waar niet 1 gouden oplossing voor is. Zie voor meer toelichting de uitwerkingen onder het kopje 'results sub question 3'
History: gecreëerd: 15 januari 2019	

Requirement ID: 27	**Requirement type:** Content requirement
Value: Stok achter de deur Behoefte aan terugkoppeling van de zorgverlener	**Attribute:** Als je een paar dagen niet hebt ingelogd ontvangen gebruikers graag een soort van uitnodiging die vraagt of ze nog verder willen gaan. Dit kan automatisch of manueel via de zorgverlener.
Description: Het systeem kan positieve reminders bevatten	
Rationale: Gebruikers willen wel graag helpen herinnerd worden om het platform te gebruiken. Echter moet dit op een amicale manier. Wanneer er dwingende toon wordt gebruikt werkt dit alleen maar tegen.	
Source: 3:16, 3:50, 4:57, 7:27, 10:43, 10:44, 10:45	
Fit criteria: 1. Het systeem voldoet hieraan wanneer gebruikers zelf aan kunnen geven hoe ze deze reminders het liefst ontvangen (mail, sms enz.) 2. Het systeem voldoet hieraan wanneer de gebruikers aangeven tevreden te zijn over de inhoud van de reminders.	
Priority: Middel	**Conflicts:** -
History: gecreëerd: 15 januari 2019	

Requirement ID: 28	**Requirement type:** Usability & User experience requirement
Value: Stok achter de deur Behoefte aan lichamelijke activiteit, gezond worden	**Attribute:** v-punten geven een interactief spelelement, dat werkt motiverend. De beloningen zijn altijd leuk meegenomen. Een beloningssysteem kan gebruikers helpen hun doel qua revalidatie te bereiken.
Description: Het systeem moet gebruik maken van een beloningssysteem.	
Rationale: De gebruikers gaven aan het beloningssysteem niet altijd als initiële motivator te zien, echter is het altijd leuk mee genomen. Voor sommige geeft het een nieuw element aan werken aan de gezondheid. Het maakt het wat 'speelser'	
Source: 5:51, 7:30, 7:54, 8:27, 10:48	
Fit criteria: Het systeem voldoet hieraan wanneer er gebruik gemaakt wordt van een beloningssysteem	
Priority: Hoog	**Conflicts:** Hier maakt mijnHEP al gebruik van
History: gecreëerd: 15 januari 2019	

Requirement ID: 29	**Requirement type:** Usability & User experience requirement
Value: stok achter de deur	**Attribute:** Gezondheids- of ontspanningsartikelen spreken misschien meer aan dan zakelijke beloningen.
Description: Het beloningssysteem kan zich vooral focussen op artikelen die gezond gedrag bevorderen.	
Rationale: Één gebruiker gaf aan dat het misschien meer motiverend werkt om gezondheidsartikelen of ontspanningsartikelen te promoten. Niet alleen kan dit meer effect hebben op de gebruikers, dit past ook nog beter in het 'benefit' thema.	
Source: 10:48	
Fit criteria: -	
Priority: Laag.	**Conflicts:** Dit was meer een suggestie dan een harde eis.
History: gecreëerd: 15 januari 2019	

Requirement ID: 30	**Requirement type:** Content requirement
Value: Stok achter de deur Behoefte aan bevestiging	**Attribute:** Het is goed om feedback te krijgen. Ten eerste werkt het motiverend en ten tweede weet de gebruiker of hij goed bezig is of niet.
Description: Het systeem zou (positieve) feedback moeten geven	
Rationale: Naast de reminders en de terugkoppeling van de zorgverlener kan het systeem zelf ook feedback geven. In dit geval gaat het voornamelijk over berichtjes als 'goed gedaan!' wanneer iemand gezondheidswaardes invult	
Source: 3:34, 7:21, 10:17	
Fit criteria: Het systeem voldoet hieraan wanneer de gebruikers aangeven tevreden te zijn over de feedback die het platform geeft.	
Priority: Middel	**Conflicts:** Gebeurt al in het mijnHEP systeem
History: gecreëerd: 15 januari 2019	

Requirement ID: 31	**Requirement type:** Service requirement
Value: Behoefte aan lotgenoten contact	**Attribute:** in een groep het platform bespreken zou helpen voor sommige gebruikers. Het platform kan zorgen voor een stukje interactiviteit.
Description: Het systeem kan gezondheid/platform gerelateerde bijeenkomsten van lotgenoten faciliteren, die daar behoefte aan hebben	
Rationale: Sommige gebruikers hebben baat bij echt contact, dus niet alleen via het platform. Vanuit vital10 zouden er bijeenkomsten kunnen worden geregeld voor degenen die hier behoefte aan hebben. Deze bijeenkomsten kunnen bijvoorbeeld gaan over gezondheid, of over hoe om te gaan met het platform	
Source: 3:07, 4:06, 4:20, 4:21, 4:28, 4:41, 7:55	
Fit criteria: -	
Priority: Laag	**Conflicts:** Hier kan nog naar gevraagd worden onder de gebruikers in hoeverre hier behoefte naar is.
History: gecreëerd: 15 januari 2019	

Requirement ID: 32	**Requirement type:** Usability & User experience requirement
Value: Overzicht plus integratie van informatie Patiënten verlangen naar autonomie in hun hersteltraject	**Attribute:** inzage in gezondheidswaarden houden de gebruikers op de hoogte van hun voortgang
Description: Het moet mogelijk zijn eigen gezondheidswaardes in te vullen in het systeem	
Rationale: Gebruikers vinden het fijn hun eigen gezondheidswaarden in te vullen	
Source: 3:35, 4:55, 7:56, 8:28	
Fit criteria: Het systeem voldoet hieraan wanneer gebruikers hun eigen gezondheid in kunnen vullen	
Priority: Hoog	**Conflicts:** is al mogelijk in mijnHEP
History: gecreëerd: 15 januari 2019	

Requirement ID: 33	**Requirement type:** Content requirement
Value: Gebruikers hebben een leidraad nodig die hen helpt hun ziekte te managen Overzicht plus integratie van informatie	**Attribute:** Dankzij de grafiekjes kunnen gebruikers in 1 oogopslag zien of ze goed bezig zijn. Het is een weerspiegeling van de gezondheid.
Description: Het systeem moet gezondheidswaardes visueel weergeven	
Rationale: Veel gebruikers noemen de visuele weergaven van de gezondheidswaarden, met name de grafieken, een toegevoegde waarde.	
Source: 3:35, 7:56, 8:28	
Fit criteria: Het systeem voldoet hieraan wanneer de gezondheidswaarden in grafieken worden weergegeven.	
Priority: Hoog	**Conflicts:** Is al sprake van bij mijnHEP
History: gecreëerd: 15 januari 2019	

Requirement ID: 34	**Requirement type:** Usability & User experience requirement
Value: Overzicht plus integratie van informatie	**Attribute:** Sommige gebruikers zijn ouderwets en willen hun gegevens nog op papier uit kunnen printen, zodat ze dit nog eens kunnen naslaan en in mappen kunnen stoppen.
Description: Het zou mogelijk moeten kunnen zijn om bestanden via het platform uit te printen	
Rationale: Voor sommige mensen is het prettig bepaalde dingen uit te kunnen printen, zodat ze het ook kunnen bekijken zonder in te hoeven loggen op het platform.	
Source: 4:60	
Fit criteria: Het systeem voldoet hieraan wanneer er bestanden direct vanaf het platform uitgeprint kunnen worden.	
Priority: Middel	**Conflicts:** -
History: gecreëerd: 15 januari 2019	

Requirement ID: 35	**Requirement type:** Organizational requirement
Value: Behoefte aan terugkoppeling van de zorgverlener zich gezien / gehoord voelen door de zorgverlener Angst wegnemen, veiligheid creëren	**Attribute:** Als waardes er niet goed uit zien moet de arts contact opnemen. Dit geeft een gevoel van veiligheid bij de gebruikers
Description: Het systeem zou bij alarmerende waardes de arts moeten kunnen signaleren	
Rationale: Als een gebruiker waardes invult die alarmerend zijn, dan krijgt deze een waarschuwing te zien. Idealiter is er ook een manier waarop de arts gewaarschuwd wordt als de gebruiker gevaarlijke waardes doorgeeft	
Source: 5:41, 5:55	
Fit criteria: Het systeem voldoet hieraan wanneer de arts een notificatie krijgt wanneer er alarmerende waardes uit de zelfmetingen komen.	
Priority: middel	**Conflicts:** Bij foute metingen zal de arts onnodig vaak gestoord worden.
History: gecreëerd: 15 januari 2019	

Requirement ID: 36	**Requirement type:** Content requirement
Value: Behoefte aan persoonlijke informatie Overzicht plus integratie van informatie	**Attribute:** Gebruikers zien graag filmpjes met tekst en uitleg.
Description: Het systeem moet informatie zowel (audio)visueel als in tekst weer kunnen geven.	
Rationale: Naast uitleg via tekst zien gebruikers ook graag filmpjes, met beelden van degene die achter het platform zit. Dit kan direct contact met de arts zijn als in een skype videochat, of in het geval van de ecoach modules een korte video waarin de bedenker van de module zichzelf voorstelt. Dit vergemakkelijkt de communicatie en maakt het platform wat persoonlijker.	
Source: 4:33, 4:40, 4:42, 8:39	
Fit criteria: 1. Het systeem voldoet hieraan wanneer er een mogelijkheid is voor videocontact met zorgverleners 2. Het systeem voldoet hieraan wanneer de ecoach modules gebruik maken van videobeelden waarop het gezicht achter de module zich introduceert.	
Priority: Middel	**Conflicts:** videocontact met zorgverleners kan zowel vanwege privacygevoeligheid, als vanwege tijd limitaties conflicten opleveren.
History: gecreëerd: 15 januari 2019	

Requirement ID: 37	**Requirement type:** Usability & User experience requirement
Value: Voorkeuren van de gebruiker centraal	**Attribute:** Volgens sommige gebruikers zeggen gezondheidswaarden niet altijd alles. Het is vooral belangrijk hoe je je er bij voelt.
Description: Het moet mogelijk zijn om gevoelens te noteren bij het invoeren van een meting.	
Rationale: Soms als de meting zegt dat er niks aan de hand is voelt de gebruiker alsnog dat het niet goed zit. Daarom moeten gebruikers naast het invullen van gezondheidswaarden ook kunnen noteren hoe zij zich voelen naast de meting.	
Source: 3:21, 7:43, 10:22, 10:39,	
Fit criteria: Het systeem voldoet hieraan wanneer het mogelijk is gevoelens toe te voegen bij het invoeren van een meting.	
Priority: Middel	**Conflicts:** is al sprake van in mijnHEP
History: gecreëerd: 15 januari 2019	

Requirement ID: 38	**Requirement type:** Organizational requirement
Value: Reductie van inspanning op het platform	**Attribute:** Als het teveel taken met zich mee brengt begint het een beetje huiswerk te worden
Description: Het systeem moet niet te veel extra taken met zich mee brengen	
Rationale: Wanneer het systeem ervoor zorgt dat gebruikers veel extra handelingen moeten doen begint het op huiswerk te lijken. Hierdoor zal het minder snel gedaan worden.	
Source: 7:42	
Fit criteria: Het systeem voldoet hieraan wanneer de gebruikers aangeven dat het ze het systeem niet als te veel werk beschouwen.	
Priority: Hoog	**Conflicts:** Dit verschilt per gebruiker en is mede daarom lastig te meten.
History: gecreëerd: 15 januari 2019	

Requirement ID: 39	**Requirement type:** Service requirement
Value: Behoefte aan integrale zorg Zich gezien/gehoord voelen door de zorgverlener Angst wegnemen, veiligheid creëren De patiënt wil gemakkelijk door het herstelproces geleid worden	**Attribute:** De patienten moeten goed ingelicht worden over ALLE medische zaken. Het zou mooi zijn als het platform de samenwerking tussen verschillende zorgverleners bevordert. Scepsis over participatie van de zorgverlener Begeleiding door het herstelproces gaat makkelijker wanneer alle dienstdoende zorgverleners van de patiënt gebruik maken van het platform
Description: Het systeem moet multidisciplinair ingezet worden	
Rationale: Om goede communicatie tussen verschillende zorgfuncties te waarborgen is het verstandig om het platform door verschillende functies te laten gebruiken. Dat wil zeggen, dat zowel de cardioloog, als de fysiotherapeut als de diëtist etcetera gebruik maakt van het platform. Op deze manier heeft de gebruiker alle zorg onder hetzelfde dak.	
Source: 3:27, 4:12, 5:17, 6:16 6:46, 7:12, 8:41, 9:05, 9:06, 9:10, 9:28	
Fit criteria: Het systeem voldoet hieraan wanneer alle disciplines die zorg dragen over de betreffende gebruiker gebruik maken van het platform.	
Priority: Hoog	**Conflicts:** dit kan om verschillende redenen zeer lastig worden (privacy, samenwerking, tijd etc.) Daarnaast, is het wel nodig voor elke zorgverlener om alles in te kunnen zien?
History: gecreëerd: 15 januari 2019	

Requirement ID: 40	**Requirement type:** Service requirement
Value: Angst voor verlies persoonlijk contact met de zorgverlener	**Attribute:** Ehealth kan het gevoel van zorg op maat verminderen
Description: Het systeem moet als aanvulling op reguliere zorg fungeren, niet als vervanging.	
Rationale: Gebruikers moeten niet het gevoel krijgen dat ze alleen nog maar met het platform hoeven te werken. Reguliere zorg moet ook van belang blijven.	
Source: 10:32	
Fit criteria: -	
Priority: Hoog	**Conflicts:** -
History: gecreëerd: 15 januari 2019	

Requirement ID: 41	**Requirement type:** Service requirement
Value: Gebruikers hebben een leidraad nodig die hen helpt hun ziekte te managen Behoefte aan lichamelijke activiteit, gezond worden	**Attribute:** Het platform zorgt voor structuur in het leven bij mensen Veel patiënten hebben de intrinsieke motivatie wel om zo gezond mogelijk te leven, zij hebben daar echter ondersteuning in nodig
Description: Het systeem moet ondersteuning bieden bij leefstijlverandering.	
Rationale: Dit is een van de einddoelen van het platform. Dit kan bereikt worden door gehoor te geven aan de verschillende behoeften van de gebruikers, zoals het eenvoudige contact kunnen leggen, bijhouden / feedback op gezondheidswaarden etcetera. Het uitvoeren van de specifiekere requirements zal er toe leiden dat ook deze requirement invulling krijgt	
Source: 5:15, 6:21, 7:20, 8:16, 8:45, 10:24	
Fit criteria: -	
Priority: Hoog	**Conflicts:** Dit is een breed requirement, wat het nogal vaag maakt. Om dit uit te werken kan er dieper in gegaan worden op de andere requirements
History: gecreëerd: 15 januari 2019	

Requirement ID: 42	**Requirement type:** Service requirement
Value: Behoefte aan duidelijkheid over de functies van het platform Reductie van inspanning op het platform Overzicht plus integratie van informatie Gebruikers hebben een leidraad nodig die hen helpt hun ziekte te managen	**Attribute:** Het platform moet de mensen sturen door de functies. Informatie die niet nodig is voor de patienten kan weggelaten worden. Gebruikers kunnen niet met het platform overweg wanneer het niet duidelijk is hoe de functies werken, en waar de informatie staat. Het mijnHEP platform is kan als leidraad gelden in het omgaan met de aandoening.
Description: Het systeem moet de gebruiker begeleiden door de functies	
Rationale: Het moet logisch zijn welke functies op welke manier gebruikt moeten worden door de gebruiker. De stappen horen elkaar logischerwijs op te volgen.	
Source: 5:59, 7:29, 8:18, 10:41	
Fit criteria: -	
Priority: Hoog	**Conflicts:** Dit is een breed requirement waar niet 1 gouden oplossing voor is. Zie voor meer toelichting de uitwerkingen onder het kopje 'results sub question 3'
History: gecreëerd: 16 januari 2019	

Requirement ID: 43	**Requirement type:** Service requirement
Value: Reductie van inspanning op het platform Behoefte aan duidelijkheid over de functies van het platform	**Attribute:** Het is nog niet duidelijk wat de gebruiker allemaal moet doen als hij een bepaalde handeling wil uitvoeren.
Description: Het systeem moet makkelijk in de omgang zijn	
Rationale: Dit is een van de einddoelen van het platform. Dit kan bereikt worden door gehoor te geven aan de verschillende behoeften van de gebruikers, zoals het eenvoudige contact kunnen leggen, bijhouden / feedback op gezondheidswaarden etcetera. Het uitvoeren van de specifiekere requirements zal er toe leiden dat ook deze requirement invulling krijgt	
Source: 7:29	
Fit criteria: -	
Priority: Hoog	**Conflicts:** Dit is een breed requirement, wat het nogal vaag maakt. Om dit uit te werken kan er dieper in gegaan worden op de andere requirements
History: gecreëerd: 16 januari 2019	

Requirement ID: 44	**Requirement type:** Service requirement
Value: Reductie van inspanning op het platform Behoefte aan duidelijkheid over de functies van het platform	**Attribute:** Het is nog niet duidelijk wat de gebruiker allemaal moet doen als hij een bepaalde handeling wil uitvoeren.
Description: Het systeem moet gebruiksvriendelijk zijn	
Rationale: Dit is een van de einddoelen van het platform. Dit kan bereikt worden door gehoor te geven aan de verschillende behoeften van de gebruikers, zoals het eenvoudige contact kunnen leggen, bijhouden / feedback op gezondheidswaarden etcetera. Het uitvoeren van de specifiekere requirements zal er toe leiden dat ook deze requirement invulling krijgt	
Source: 7:29	
Fit criteria: -	
Priority: Hoog	**Conflicts:** Dit is een breed requirement, wat het nogal vaag maakt. Om dit uit te werken kan er dieper in gegaan worden op de andere requirements.
History: gecreëerd: 16 januari 2019	

Requirement ID: 45	**Requirement type:** Service requirement
Value: zich gezien / gehoord voelen door de zorgverlener Angst wegnemen, veiligheid creëren Behoefte aan erkenning, begrip Behoefte aan lichamelijke activiteit, gezond worden Vertrouwen in eigen kennis Behoefte aan bevestiging	**Attribute:** er heerst veel angst onder de gebruikers na hun aandoening, dit ontstaat soms komt dat door minder vertrouwen in het eigen lichaam, maar kan ook te maken hebben met inadequaat handelen van de zorgverleners. Ook hebben patiënten baat bij meer begrip van de omgeving, mensen in de omgeving doen soms te makkelijk over revalidatie van hartfalen, waardoor patiënten aan zichzelf gaan twijfelen Patiënten voelen soms zelf wat het beste voor ze is. Zij moeten zelf in staat zijn keuzes te maken. Een platform kan er ook voor zorgen dat patiënten meer vertrouwen krijgen in hun lichaam, omdat ze bij kunnen houden welke voortgang ze maken.
Description: Het systeem moet de gebruiker vertrouwen geven in het eigen lichaam	
Rationale: Dit is een van de einddoelen van het platform. Dit kan bereikt worden door gehoor te geven aan de verschillende behoeften van de gebruikers, zoals het eenvoudige contact kunnen leggen, bijhouden / feedback op gezondheidswaarden etcetera. Het uitvoeren van de specifiekere requirements zal er toe leiden dat ook deze requirement invulling krijgt	
Source: 2:09, 3:23, 5:06, 5:17, 5:18, 5:24, 5:25, 6:07, 6:11, 6:12, 7:05, 7:07, 7:08, 7:12, 7:10, 7:19, 9:07, 9:15, 10:08, 10:19, 10.21, 10:25,	
Fit criteria: -	
Priority: Hoog	**Conflicts:** Dit requirement is behoorlijk breed, wat het nogal vaag maakt. Om dit uit te werken kan er dieper in gegaan worden op de andere requirements
History: gecreëerd: 14 februari 2019	

Requirement ID: 46	**Requirement type:** organizational requirement
Value: Behoefte aan erkenning, begrip Behoefte aan ondersteuning van de sociale kring	**Attribute:** Gebruikers gaven aan dat ze vaak verkeerd begrepen worden door hun omgeving. Er is weinig begrip voor de situatie. Eventueel kan het platform hierbij helpen.
Description: Het systeem zou toegankelijk kunnen zijn voor naasten van de gebruikers	
Rationale: Het is fijn voor gebruikers om hun voortgang te kunnen delen of contact met naasten kunnen leggen. Dit is niet alleen in betrekking tot lotgenoten, maar ook met naasten (familie, echtgenoot etc.) Zij moeten ook de mogelijkheid hebben om deel te nemen in de revalidatie van de gebruiker. Dit geeft hen het gevoel dat ze er niet alleen voor staan.	
Source: 4:27, 5:13, 6:14, 8:13, 9:17	
Fit criteria: het systeem voldoet hieraan wanneer de gebruiker aan kan geven welke naasten inzage kunnen hebben in het systeem.	
Priority: Middel	**Conflicts:** conflicteert met req. 16, omdat dit lastig kan zijn in verband met privacygevoeligheid.
History: gecreëerd: 14 februari 2019	

Requirement ID: 47	**Requirement type:** service requirement
Value: Behoefte aan erkenning, begrip Behoefte aan ondersteuning van de sociale kring Angst wegnemen, veiligheid creëren	**Attribute:** er heerst volgens de gebruikers weinig begrip / kennis over de ernst van de situatie. Soms noch bij de arts, noch bij de gebruiker, noch bij de omgeving van de gebruiker. Wanneer artsen meer begrip voor de situatie tonen leidt dat bij de patiënten meer tot een gevoel van veiligheid.
Description: Het systeem moet bewustwording creëren bij zowel gebruikers als de omgeving	
Rationale: Dit staat los van het platform. Een belangrijk aandachtspunt volgens patiënten van hartfalen is dat er begrip moet komen in de omgeving. Dit is lastig via een eHealth portaal te bereiken, maar hier kan tijdens de implementatie wel aandacht aan geschonken worden. Bijvoorbeeld door middel van reclame, folders, contactmomenten met de omgeving van de patiënt.	
Source: 2:13, 3:18, 4:30, 4:31, 5:13, 5:20, 6:03, 6:07, 6:08, 6:09, 6:11, 6:12, 6:13, 6:15, 6:17, 7:16, 10:05, 10:07,	
Fit criteria: -	
Priority: Hoog	**Conflicts**: Hier kan wellicht los van het mijnHEP platform aandacht aan geschonken worden.
History: gecreëerd: 14 februari 2019	

Appendix 4; Screenshots of the mijnHEP platform[9]

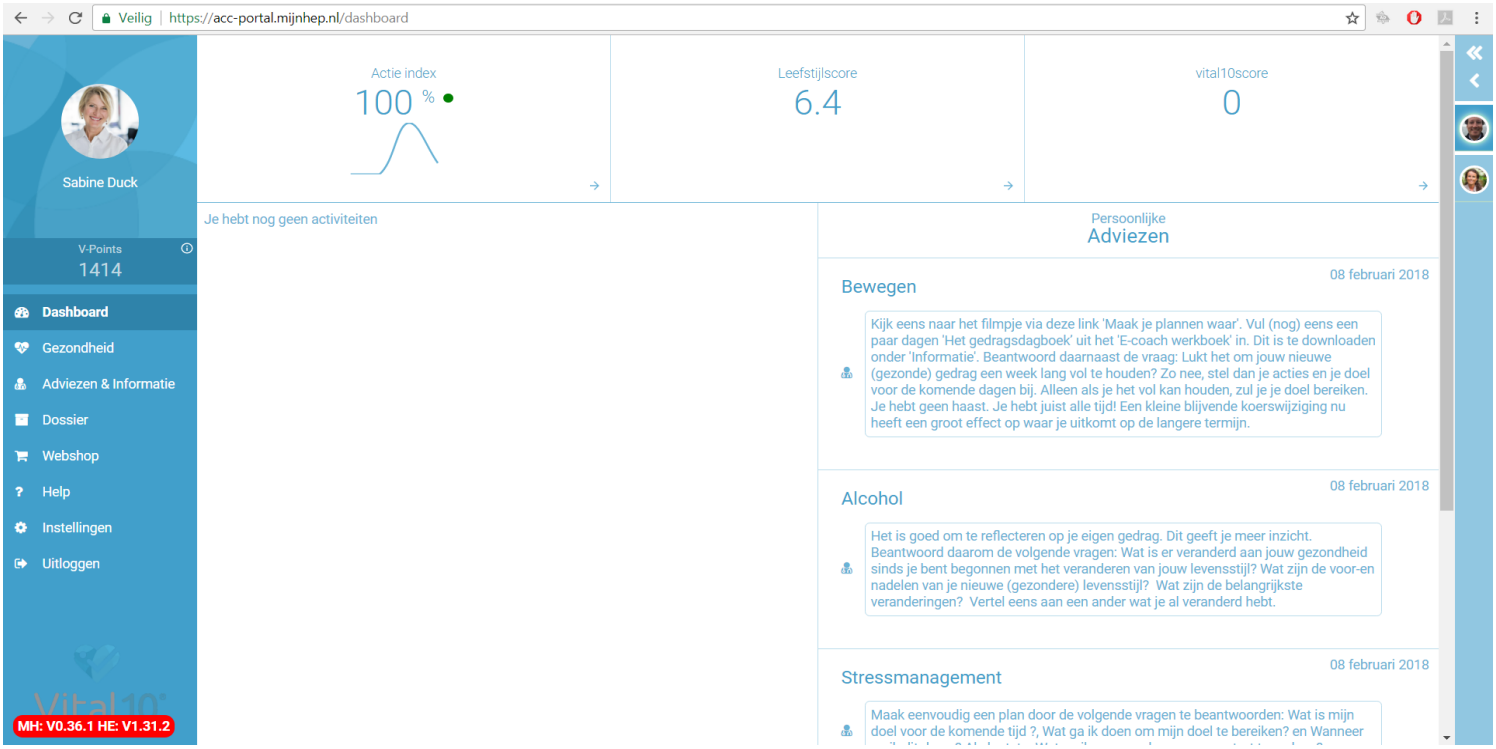

Figure 9, Screenshot of the 'dashboard' page (11-04-2018)

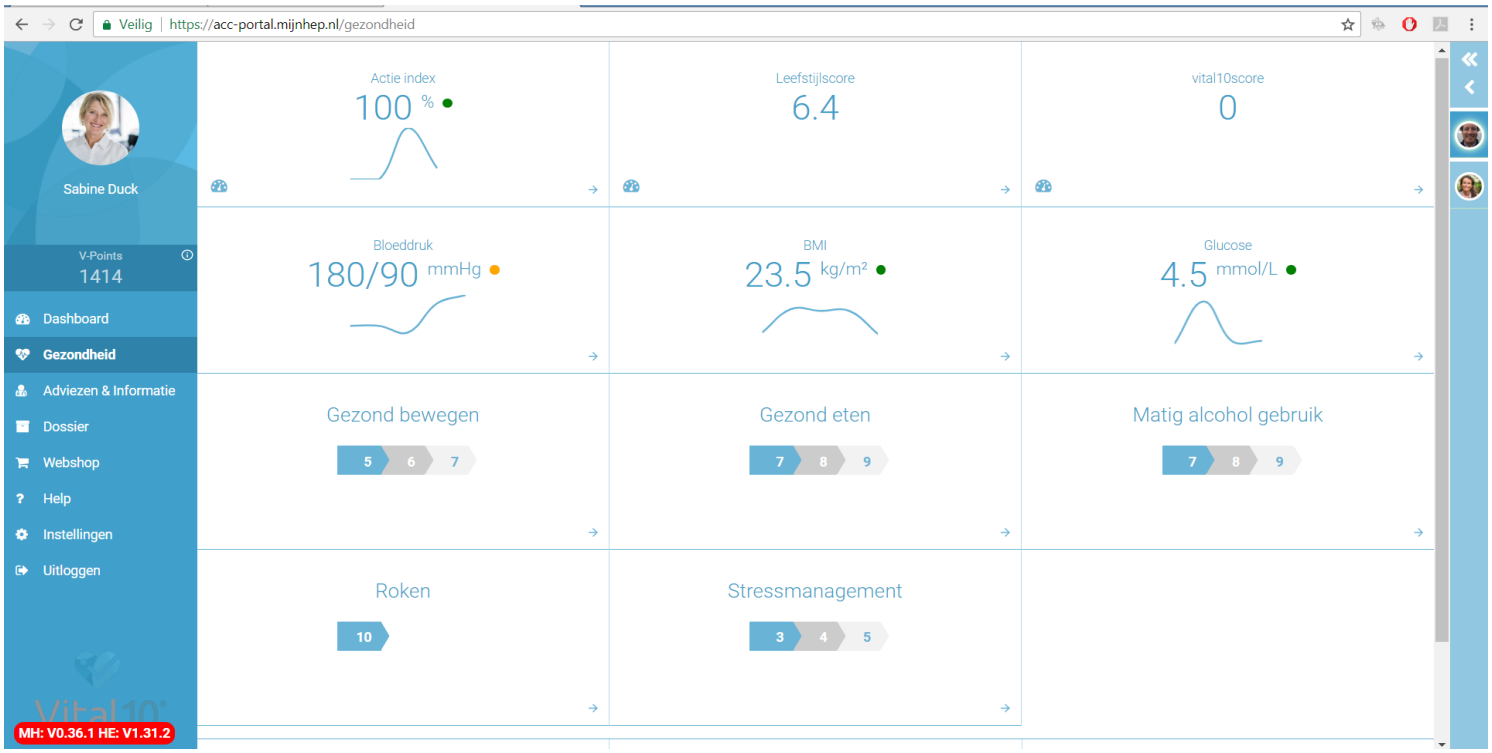

Figure10, Screenshot of the 'health measurements' page (11-04-2018)

[9] Dates of when the screenshots were taken are shown in between brackets, DD-MM-YYYY.

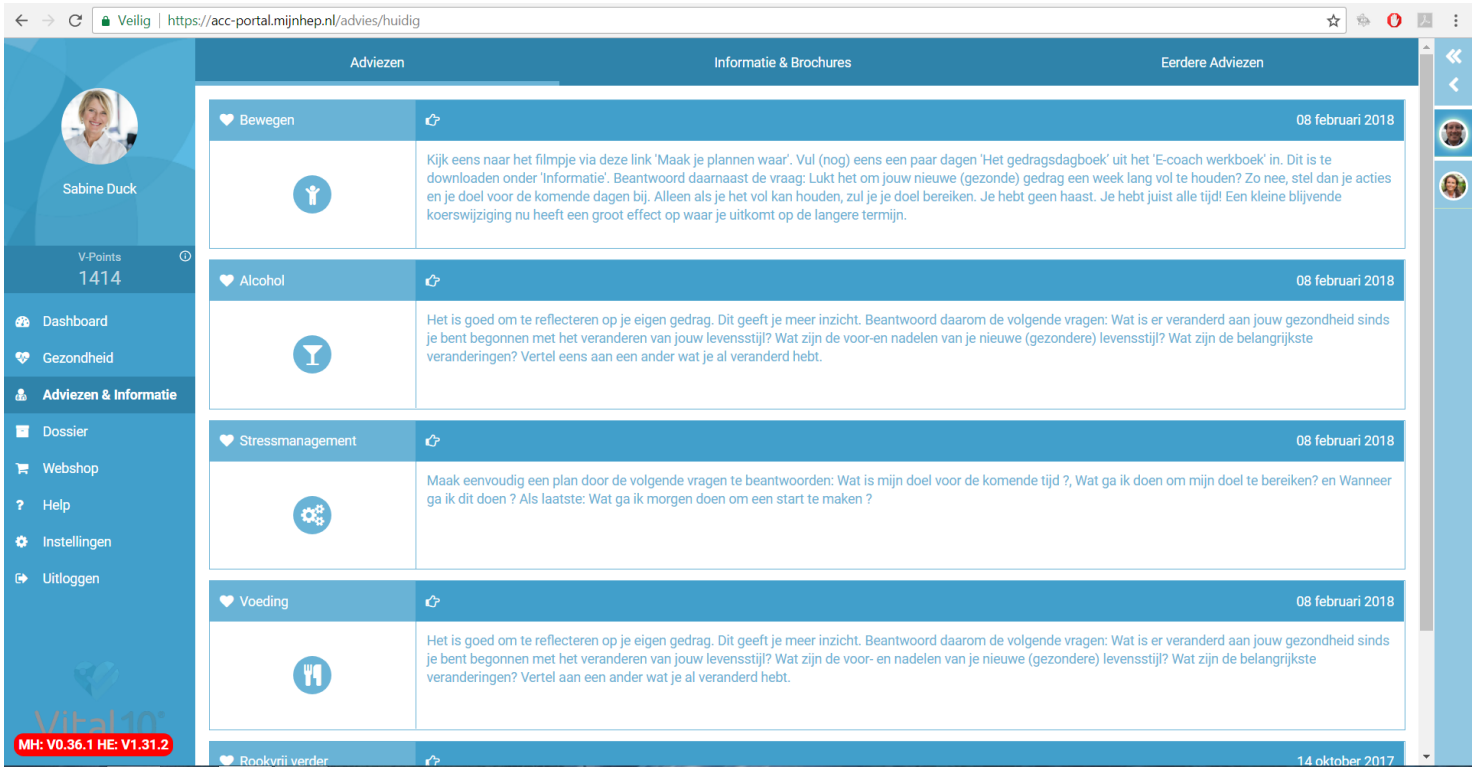

Figure 11, Screenshot of the 'advices' page (11-04-2018)

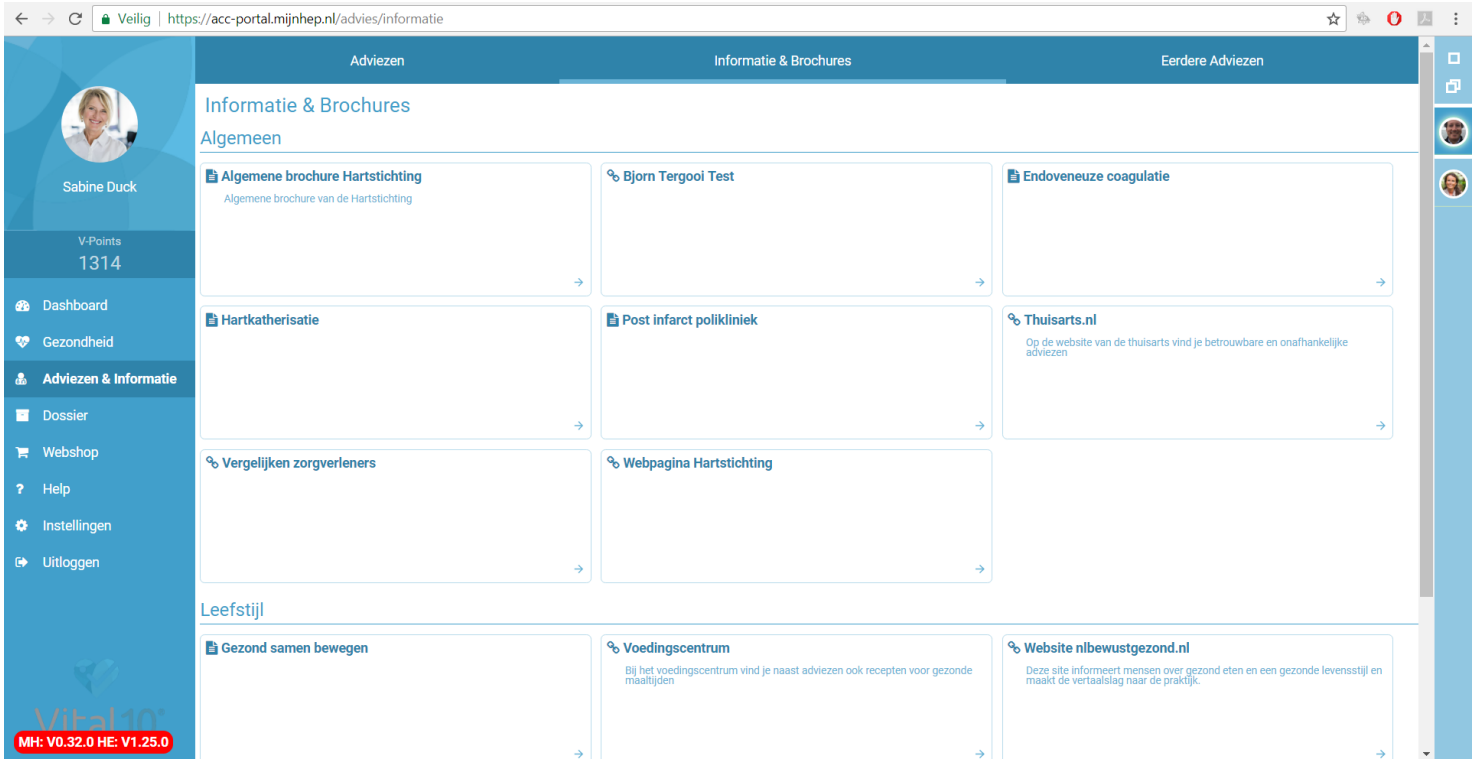

Figure 12, Screenshot of the 'brochures' page (22-02-2018)

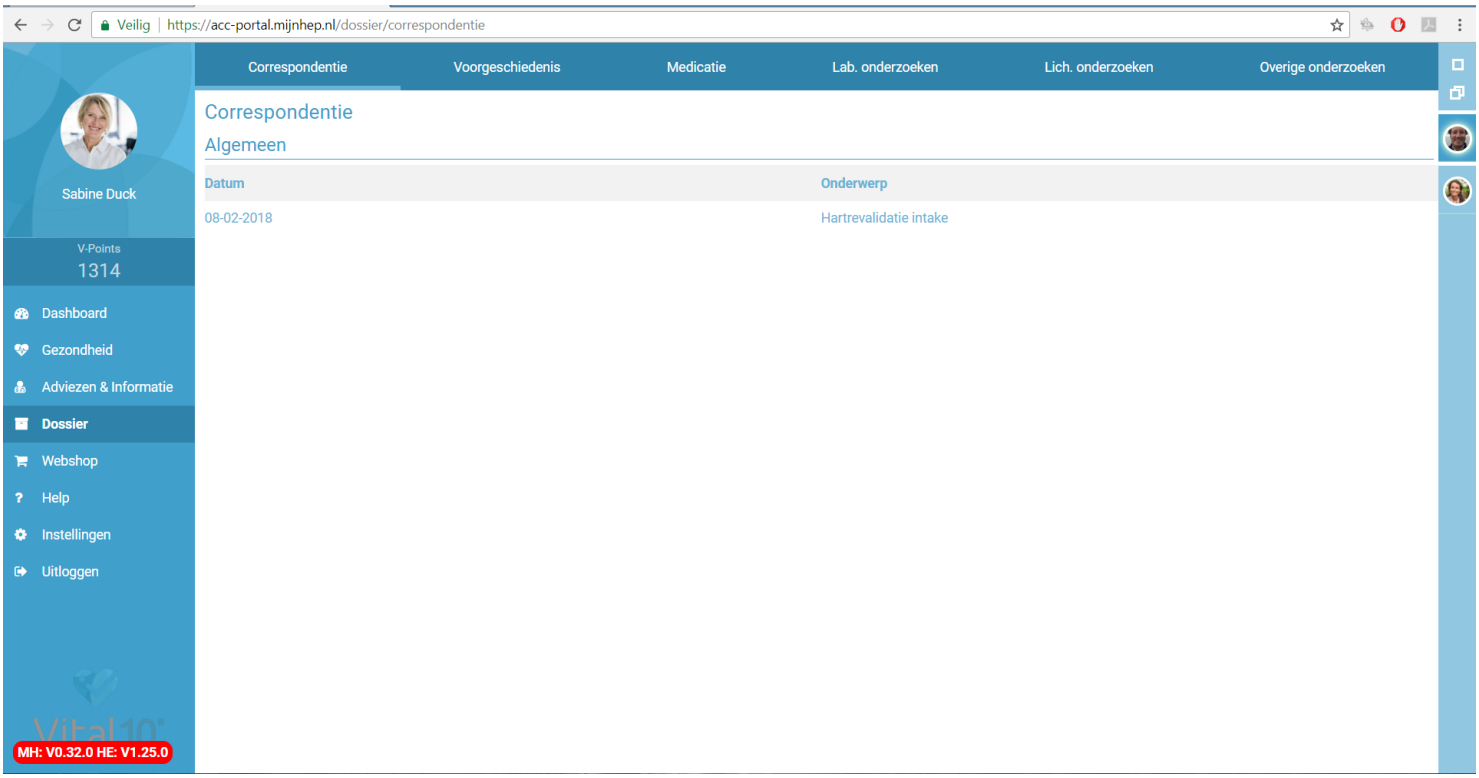

Figure 13, Screenshot of the 'Dossier, correspondence' page (22-02-2018)

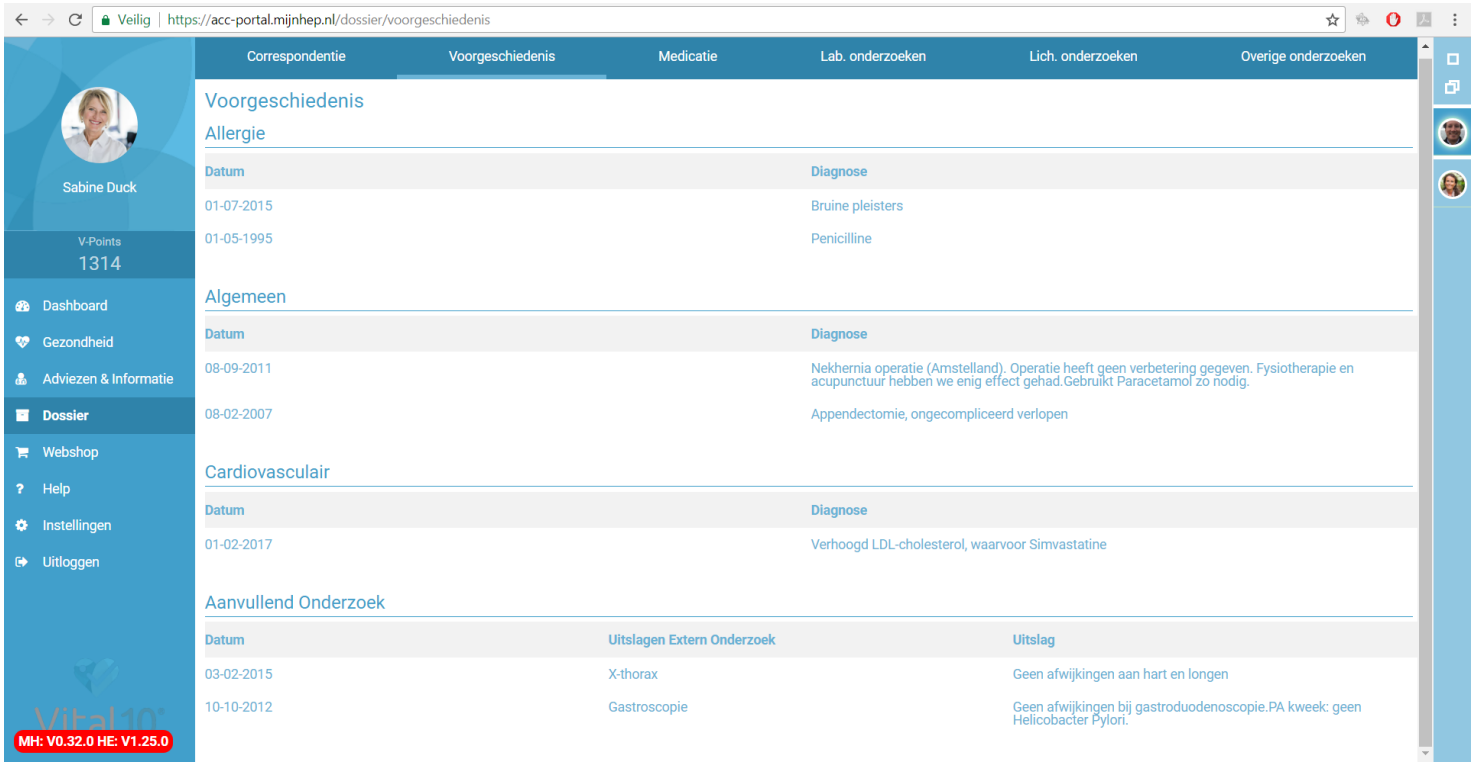

Figure 14, Screenshot of the 'Dossier, history' page (22-02-2018)

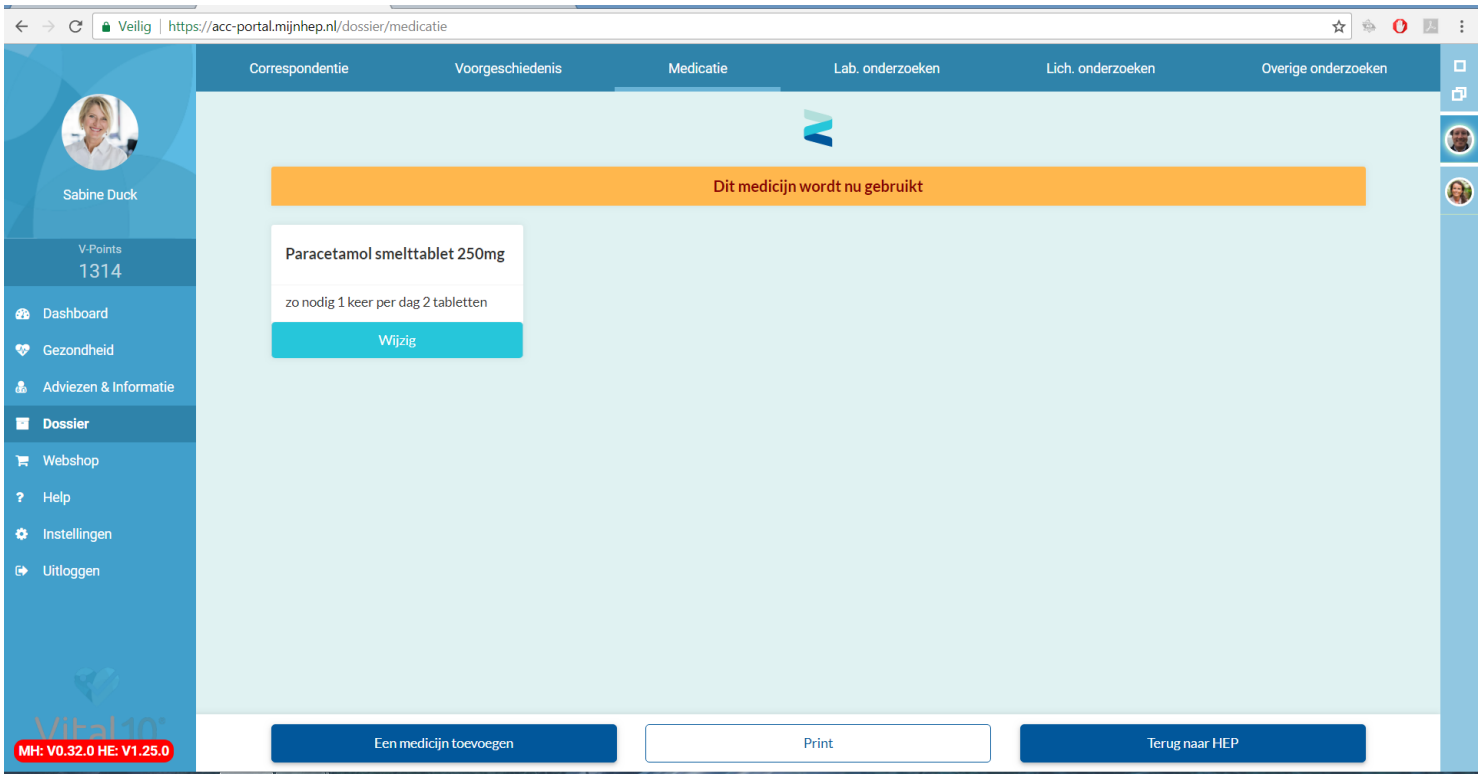

Figure 15, Screenshot of the 'Dossier, medication' page (22-02-2018)

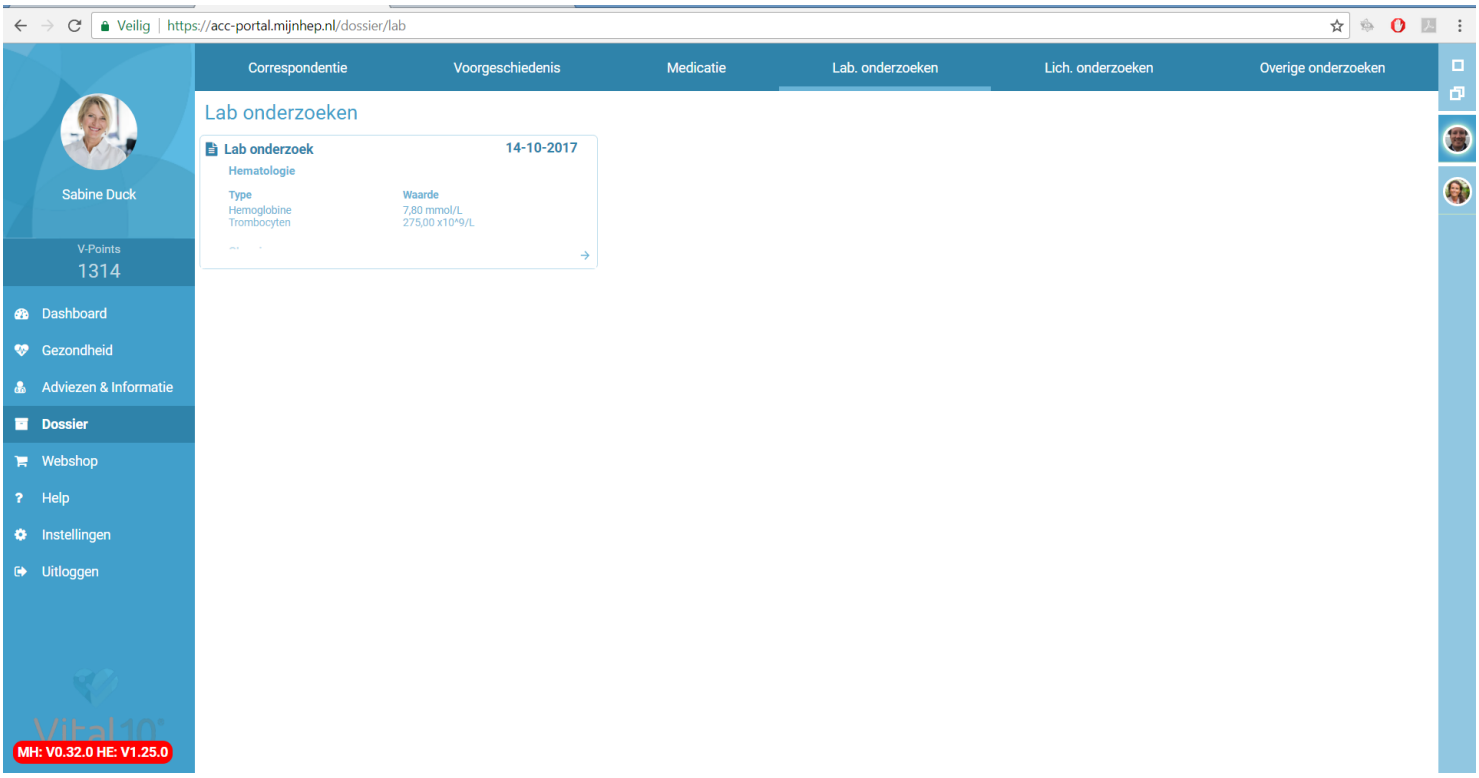

Figure 16, Screenshot of the 'Dossier, lab. research' page (22-02-2018)

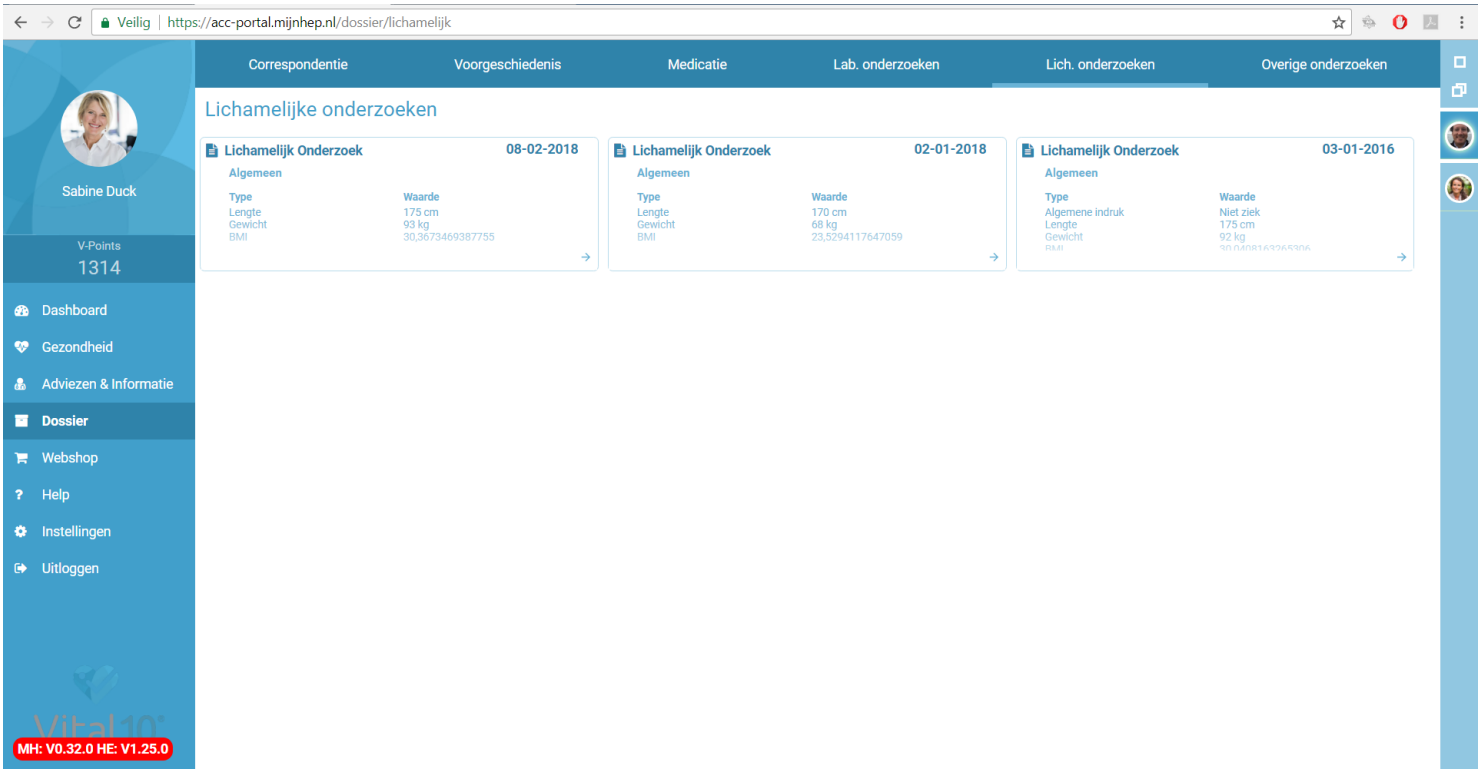

Figure 17, Screenshot of the 'Dossier, bodily research' page (22-02-2018)

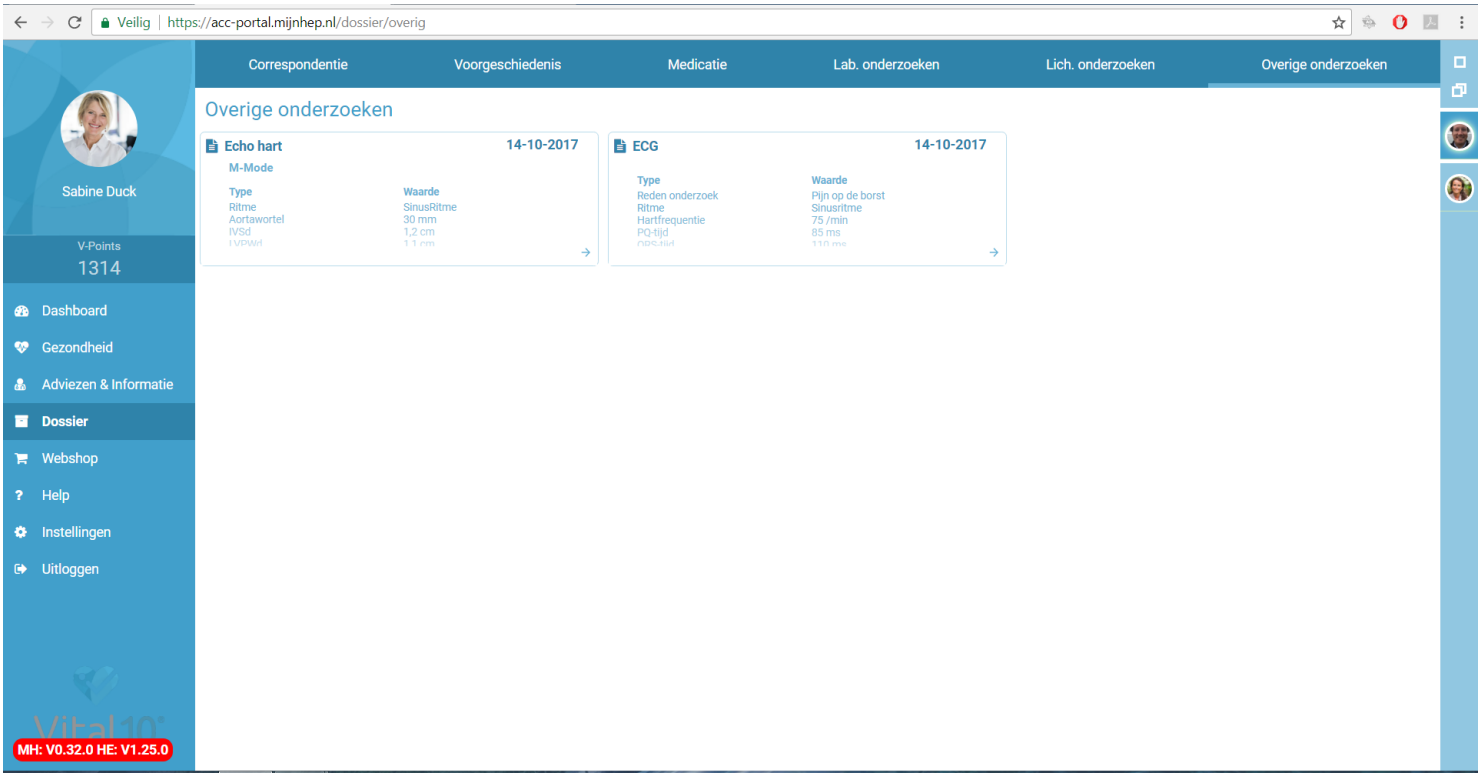

Figure 18, Screenshot of the 'Dossier, other research' page (22-02-2018)

Figure 19, Screenshot of the 'Web shop' page (11-04-2018)

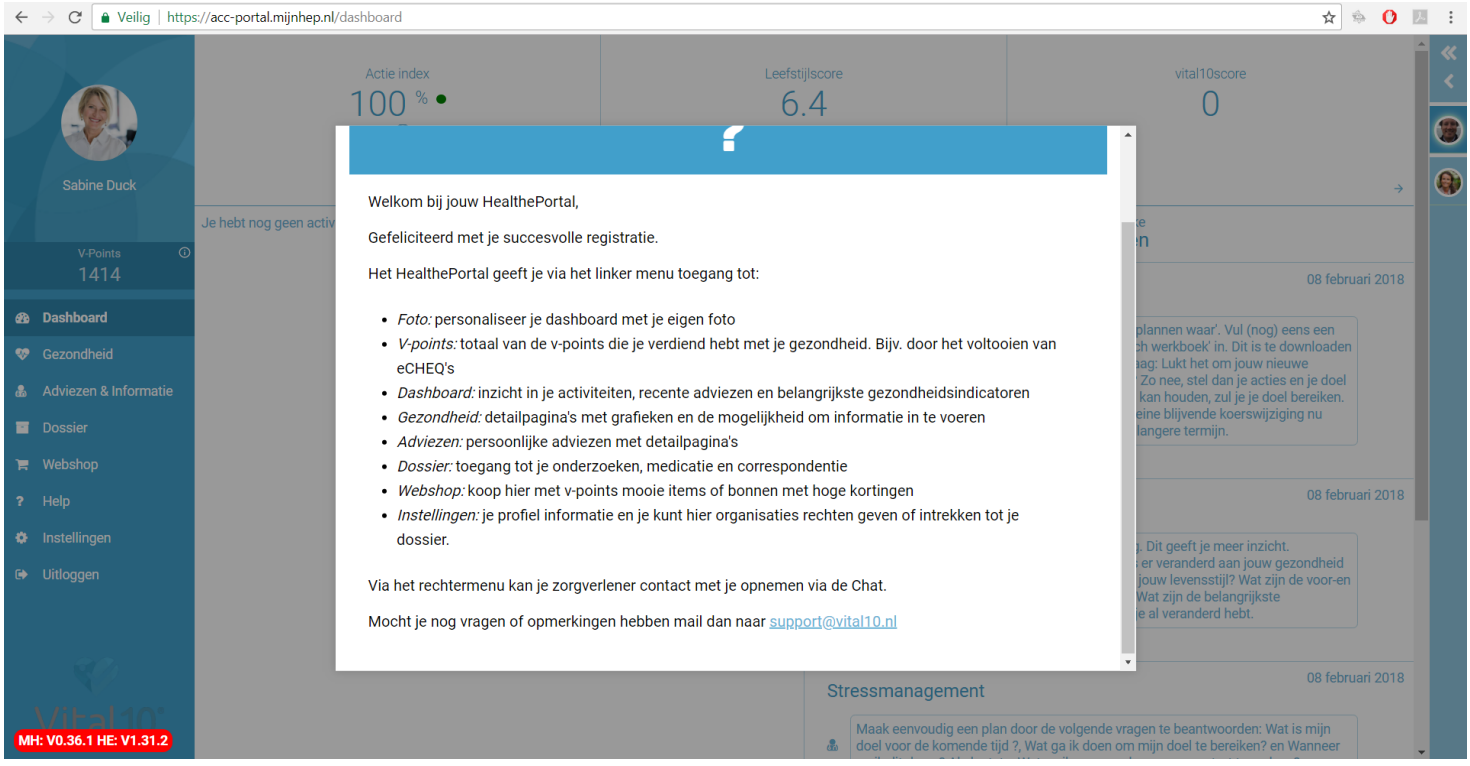

Figure 20, Screenshot of the 'Help' page (11-04-2018)

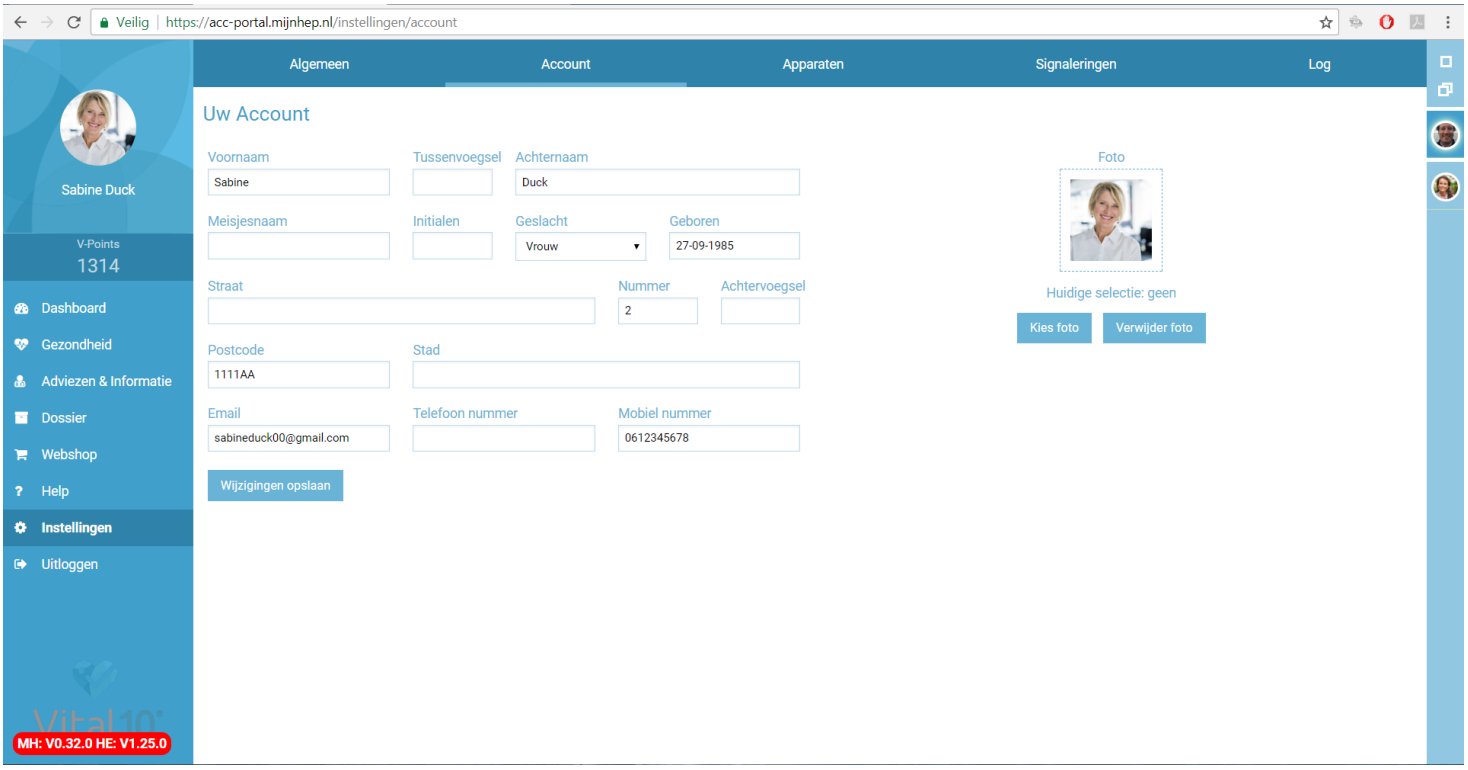

Figure 3, Screenshot of the 'Settings, account' page (22-02-2018)

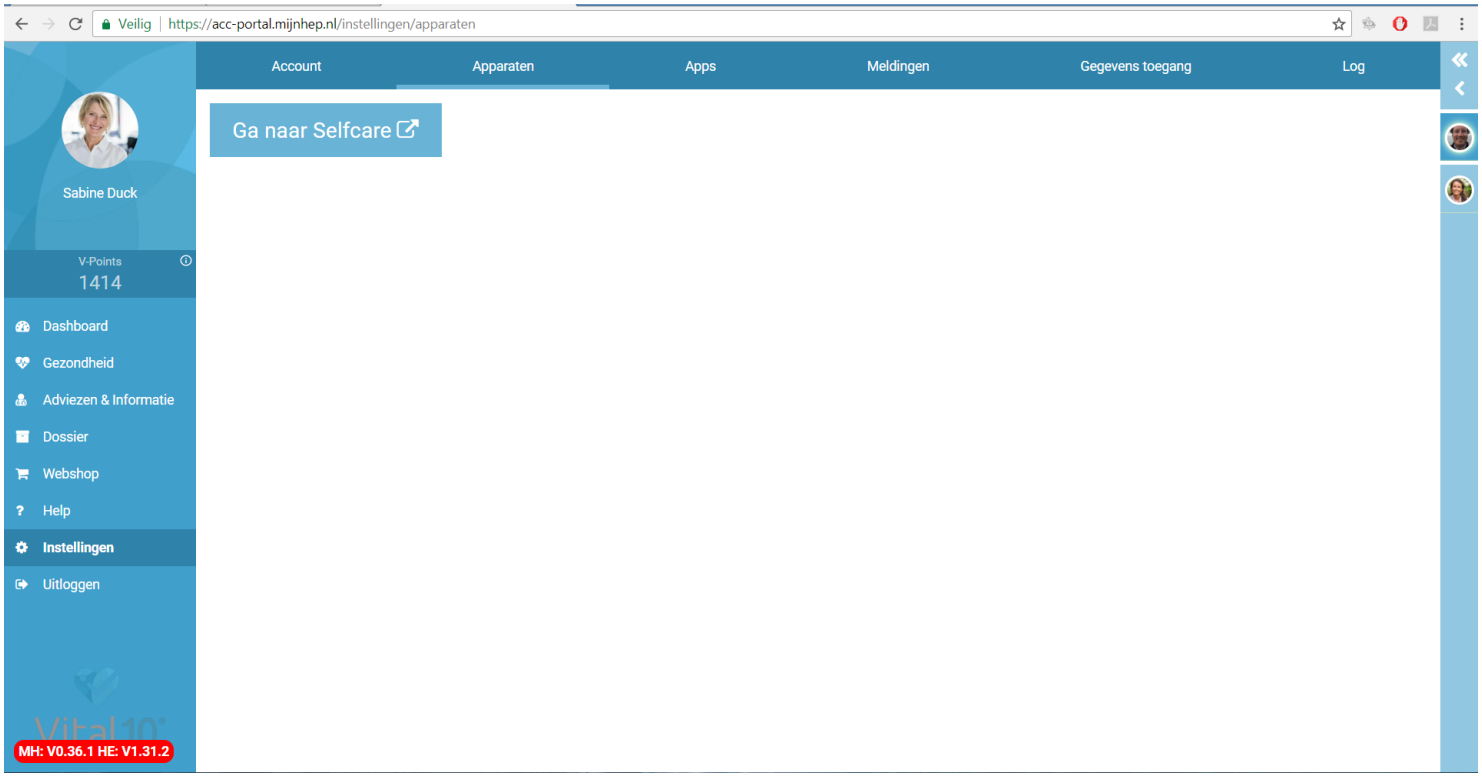

Figure 22, Screenshot of the 'Settings, devices' page (11-04-2018)

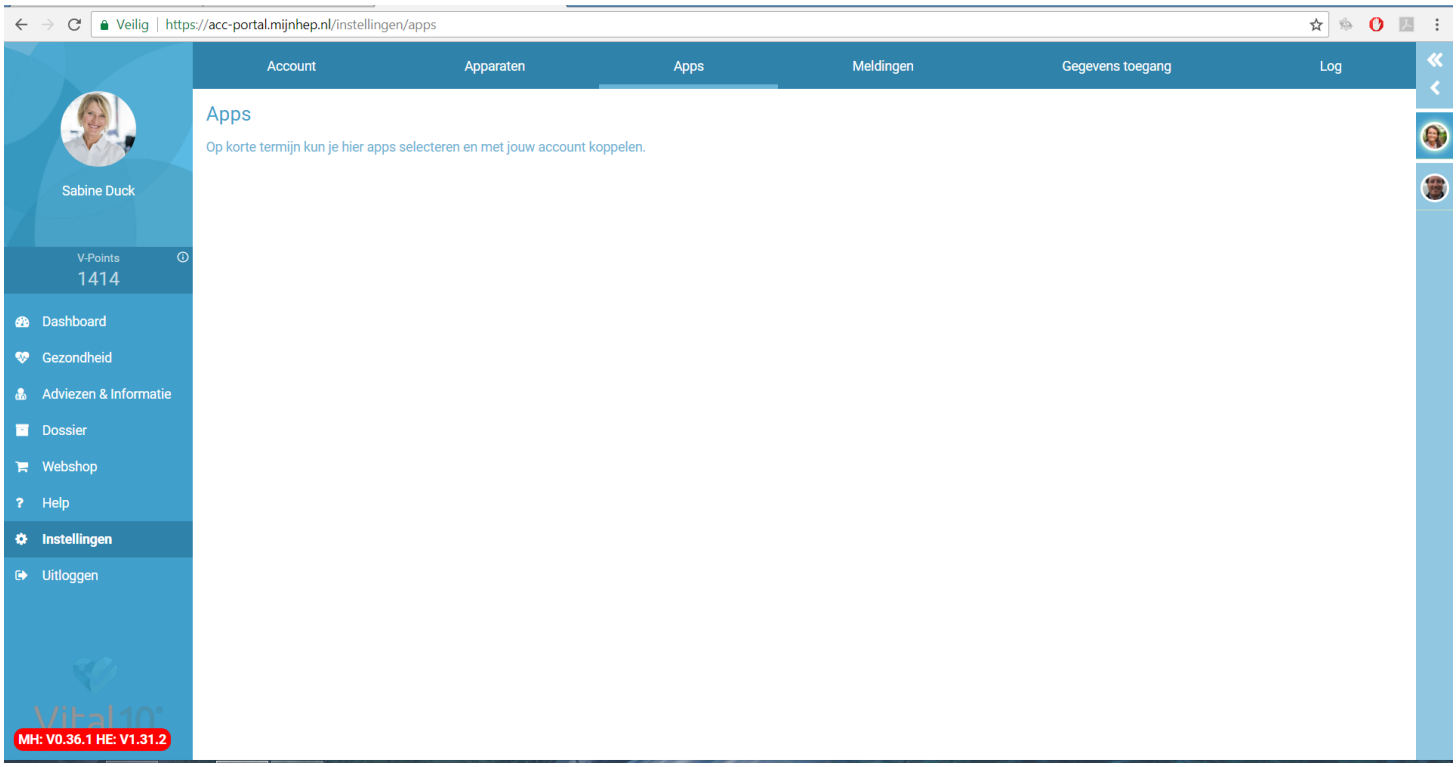

Figure 23, Screenshot of the 'Settings, apps' page (11-04-2018)

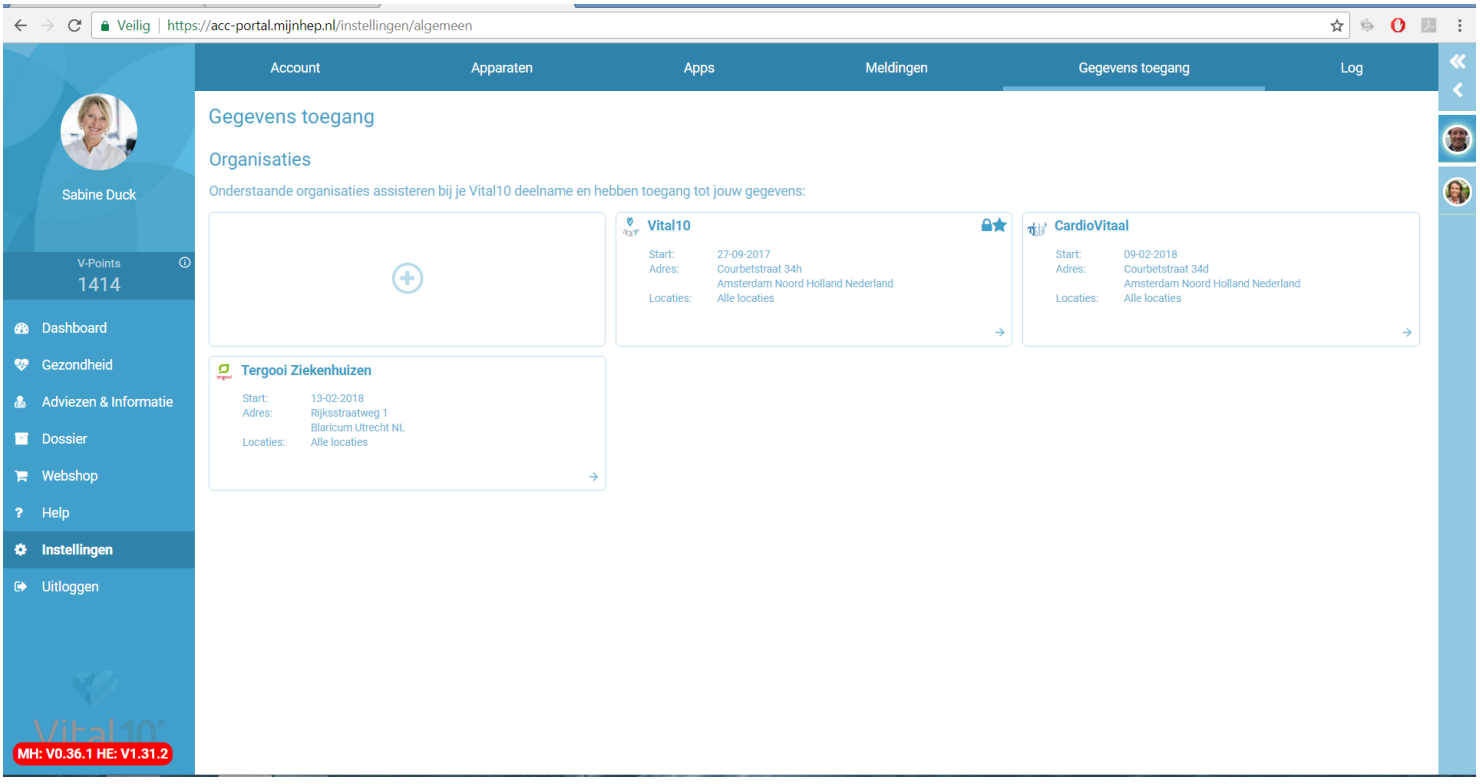

Figure24, Screenshot of the 'Settings, access' page (11-04-2018)

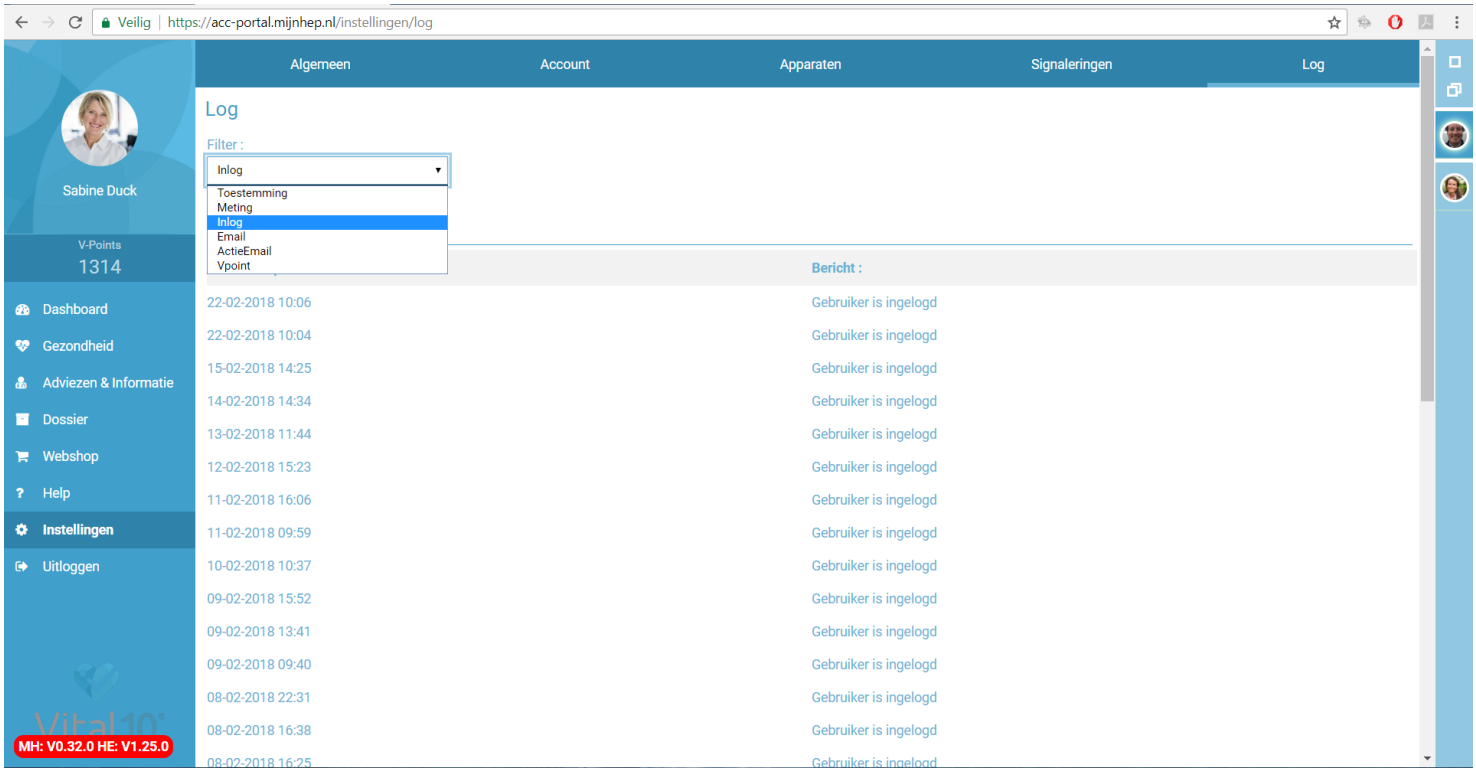

Figure 4, Screenshot of the 'Settings, log' page (22-02-2018)

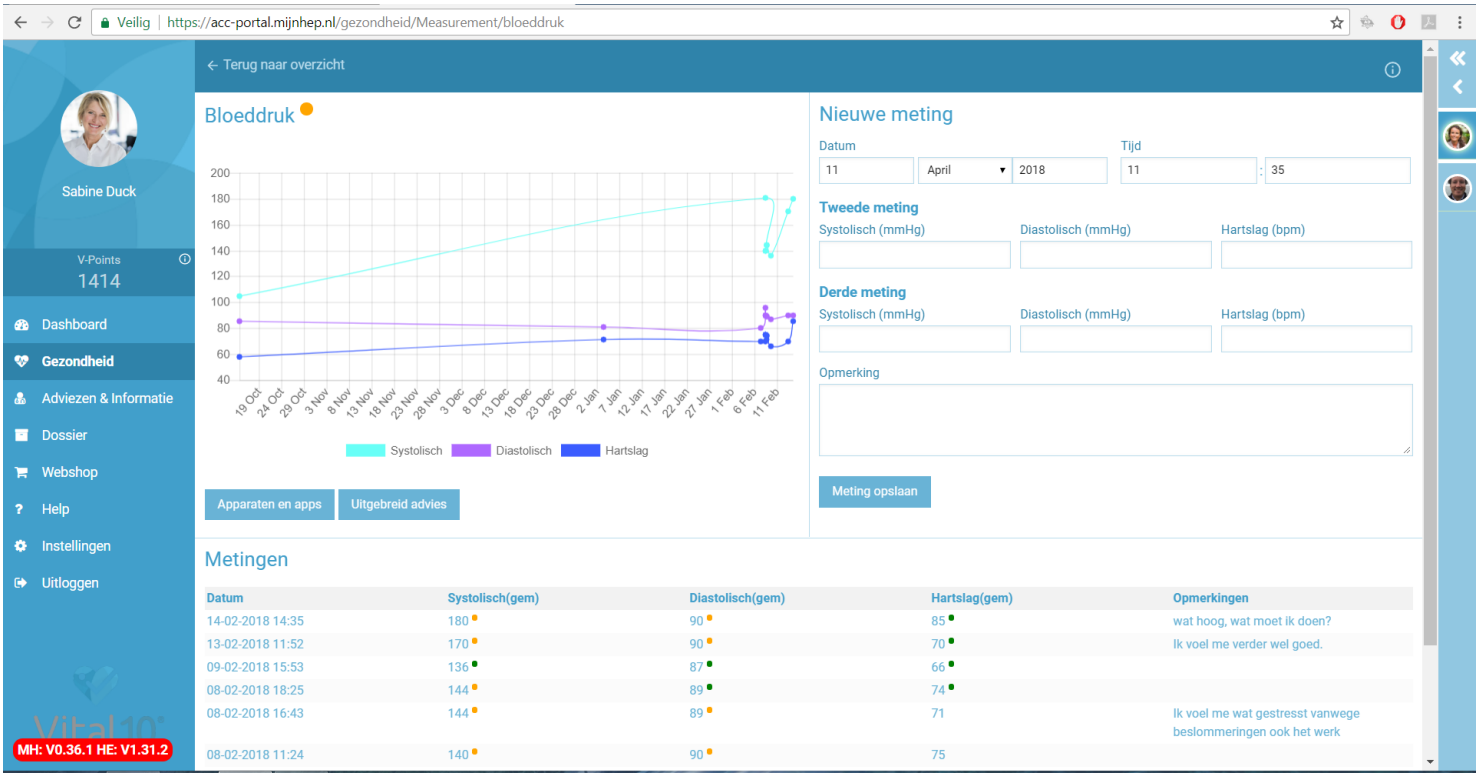

Figure 6, Screenshot of the 'Health measurements, blood pressure' page (11-04-2018)

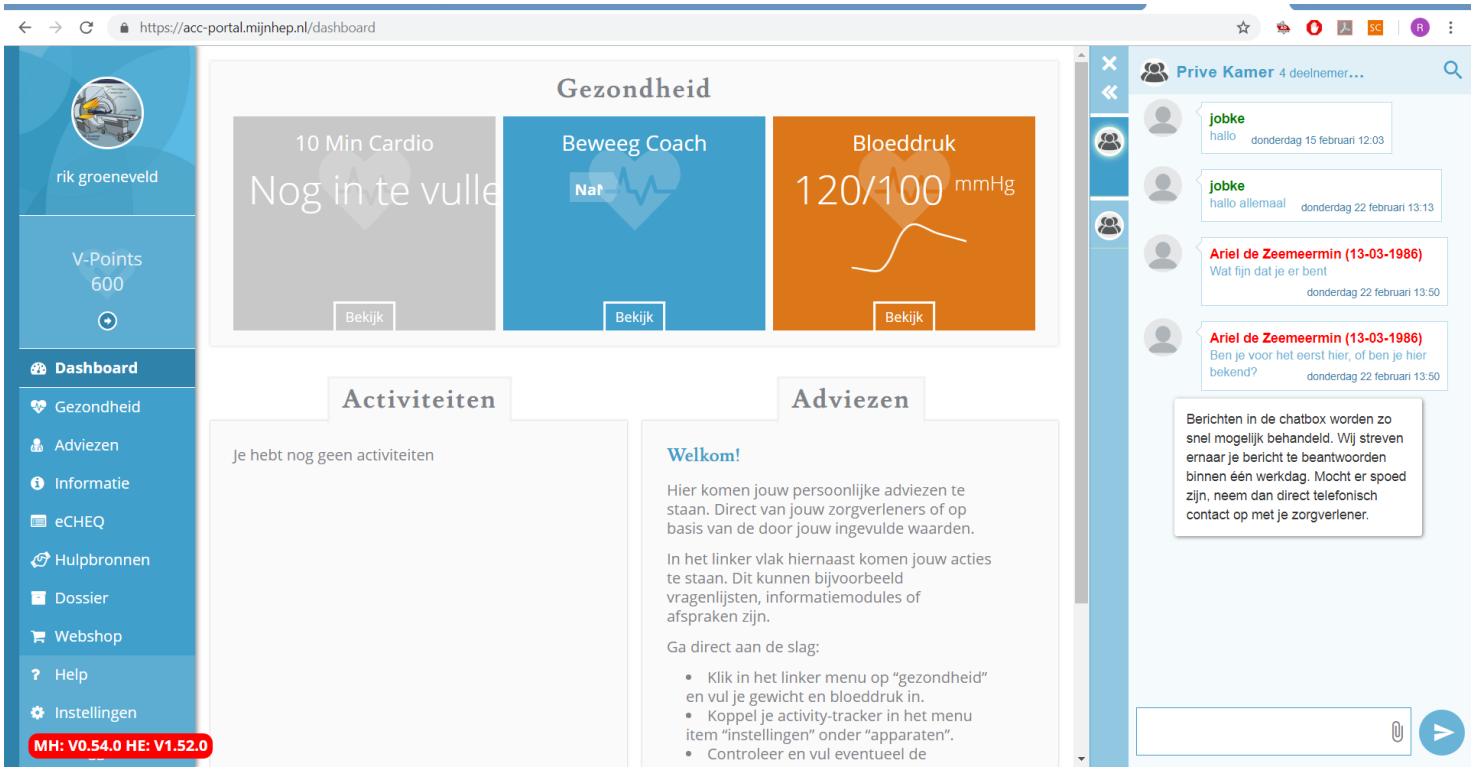

Figure 5, Screenshot of the 'Chat' (19-03-2019)