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Improving patient-centeredness for older people in a digitalizing healthcare context

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Publication date

2019

Document Version

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Citation for published version (APA):

Wildenbos, G. A. (2019). *Design speaks: Improving patient-centeredness for older people in a digitalizing healthcare context*. [Thesis, fully internal, Universiteit van Amsterdam].

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Chapter



How do patients value and prioritize patient portal functionalities and usage factors? A conjoint analysis study with chronically ill patients

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BMC Medical Informatics and Decision Making. 2018.18:108
doi: 10.1186/s12911-018-0708-5

Abstract

Background: Patient portal use can be a stimulant for patient engagement. Yet, the heterogeneous landscape of tethered patient portals, is a major barrier to further portal development and implementation. A variety in portal access means, functionalities, usability and usefulness exists; without having accurate sight on patient perspectives. We aimed to get insights on possible coherence between patients' preferred usage factors of portals and patients' prioritization of functionalities, within the complexity of their disease management across different healthcare organizations.

Methods: A conjoint analysis questionnaire was sent to patient panels of two large patient associations in The Netherlands, centered on heart and vascular diseases and lung diseases.

Results: Of 1294 patient respondents, 81% were 55+ years old and 49% were 65+ years old. Overall respondents significantly prioritized user-friendly access to a portal, via a laptop or desktop. Patients aged <65 were less negative about using tablets to access a portal compared to the total respondents. Patients had no preference for a digital interoperable export functionality; most respondents preferred to create printable overviews. Built-in publication delay of two weeks for medical information was not preferred. Our results show no significant preference of patients between 'instant publication' versus 'publication after new information has been explained by a healthcare provider'. Overall respondents and experienced portal users had a strong preference to be able to communicate with their provider via a portal and to use a portal providing information from multiple providers. Lung patients preferred information from one provider and did not require the possibility to ask online questions.

Conclusions: Heart and vascular patients as well as lung patients prefer similar technical patient portal aspects, independent of their medical condition. Yet, in current portals consistency on this matter is lacking. It is highly assumable that offering a more consistent user-experience across the variety of patient portals could help increase patient portal acceptance, ultimately helping to stimulate patient engagement via patient portal use. We further affirm the need for customization on medical information publication and sharing information of various providers through patient portals, where information provision can be adapted to preferences of patients related to their medical condition(s).

Keywords: conjoint analysis, patient portal, elderly, patient preferences, technology acceptance

1. Background

Patients nowadays live in an information driven world, where they can get support in self-management of their health and conditions by accessing their medical record and communicating with healthcare providers via patient portals [1]. Especially older patients, chronically ill patients and patients with co-morbidities can benefit from patient portal use [1-4]. Patients can be assisted in accomplishing health-related and administrative tasks by having access to personal health information, such as laboratory test results and appointment information, as well as digital opportunities for patient-provider communication. The foremost type of a patient portal is the tethered patient portal. A tethered patient portal is an application build on an Electronic Health Record (EHR) infrastructure of a specific healthcare organization [5]. This organization manages the portal and decides which information can be accessed by the patient. In this aspect, the tethered patient portal differs from a personal health record, in which the patient can collect health data and he/she decides whether to share that data with providers or family members. Most tethered patient portals hold medical information that is derived from the EHR, such as a discharge summary, a medication and allergy list and laboratory results [4, 6-8]. Portals can include more interactive features and allow patients to send secure messages to clinical staff, schedule appointments or request prescription refills [4].

Driven by innovation goals for eHealth set by the Dutch government, the tethered patient portal is now increasingly being implemented in The Netherlands [9]. Yet, due to a lack of a clear strategy and vision on portal functionalities, many different portals exist in the Dutch market; a market-scan identified 34 portals in 2015, each varying in provided functionalities and interface [9]. This heterogeneous landscape of patient portal products is a main barrier in development and implementation activities [9-10]. Patient engagement through patient portal use is jeopardized, due to variable access and usability, creating user-friendliness problems for patients. Further, patients may have doubts regarding a portal's usefulness, since there is no standard set of portal functionalities [10]. This heterogeneity further results in interoperability problems, complicating the exchange of information between portals of different healthcare organizations. Patient engagement and interoperability problems may pose particular issues to older chronically ill patients and patients with (multiple) diseases. These patients often receive care among a variety of healthcare centers and obtain medical information from these centers. In addition, these are often older patients, experiencing motivational barriers in using eHealth [2, 6]. In managing their care with the scattered information provided by different healthcare organizations, such barriers may prevent them to use patient portals.

A solution to these problems is to design more uniform portals, meeting the disease management needs of patients defined by their characteristics and associated preferences and capacities [10]. Previous research provides insights on patient preferences in relation to patient portal functionalities and use, such as the ability to view test results via a portal [4, 11], and recognized the (feasibility) patient portal usage by chronically ill patients, such as cardiovascular or lung disease patients [3-4, 12-14]. There is nevertheless little evidence of how patient preferences on specific portal functionalities and usage factors are correlated to each other and how this is valued by patients within the context of the full portal product. Insights are further needed on how sharing of medical information through a portal, possible coherence of portal functionalities, and usage factors fit the complexity of disease management across different healthcare organizations. Our research project aimed to advance the understanding on this matter by using a conjoint analysis approach to examine how patients of the 'Harteraad' and the 'Longfonds' patient panels, two recognized Dutch patient associations respectively centered on cardiovascular diseases and lung diseases, value and prioritize specific portal functionalities and usage factors.

2. Methods

2.1 Study design: conjoint analysis questionnaire

This study used a conjoint analysis questionnaire. 'Conjoint analysis' is a survey-based statistical technique mainly used in market research that helps determine how people value different attributes of a product [15-16]. The objective of conjoint analysis is to determine what combination of a limited number of attributes is most influential on a respondent's choice or decision making. We used a discrete choice experiment conjoint analysis in our study, since is the most common type of conjoint analysis used in health economics, outcomes research, and health services research [15]. This type of conjoint analysis consists of two steps: 1) a choice experiment with respondents and 2) a statistical analysis. In the choice experiment, the attributes are used to describe a certain product and can consist of one or more levels. Different fictive profiles, possible variations of the product, can be created by combining various attributes and levels, which are then shown to a respondent to determine which combination he/she prefers. For instance, a product can be a tablet that is described by various attributes and levels of those attributes: price (levels \$100, \$200), screen size (levels 8.9, 10.1) and battery length (levels 14 hours, 9 hours). Fictive profiles can be presented to a respondent, such as:

- A. the tablet costs \$100, has screen size 10.1 and a battery length of 9 hours;
- B. the tablet costs \$100, has screen size 8.9 and a battery length of 14 hours;
- C. the tablet costs \$200, has screen size 8.9 and a battery length of 14 hours.

The respondent can choose option A, B or C in the trade-off process whether he/she would buy that tablet. This process is repeated for various fictional profiles. In the second step of the conjoint analysis, the statistical analysis of all respondents' choices for all presented profiles, the relative importance of different attributes and the trade-offs between these attributes are statistically determined [15-17]. In other questionnaire based methods to measure respondents' preferences, such as rating or interest questions, it is often not measurable to accurately value how much a certain attribute would influence a respondents' choice in preferring one attribute above the other [18-19]. However, choice-based conjoint analysis does determine which individual attributes and levels are favored over others. Conjoint analysis is gaining popularity in the health care setting [17], where it recently has been used to assess patients' preferences regarding pharmacological treatment for bipolar depression [20] and to examine how older adults rate and identify the importance of healthcare seeking and utilization aspects in the United States [21].

2.2 Study protocol

We conducted a comprehensive literature review (Supplementary file A and B) in which 42 factors were initially found influencing the use of patient portals by patients. Based on this review, four experts in healthcare discussed recurrent as well as meaningful factors that could be used as an attribute and defined the attributes and levels to be used in the conjoint analysis. Seven attributes were constructed for our conjoint analysis, shown in Table 1, each consisting of three assigned levels. The fictional profiles of patient portals presented in our questionnaire were generated using the orthogonal main effects plan: instead of presenting all possible combinations ($\text{levels}^{\text{attributes}} = 3^7 = 2,187$), the smallest manageable combination of profiles to test with respondents are presented - knowing that the statistical analysis will be able to balance how often a specific level is presented to a respondent. By means of 18 profiles our respondents were asked to choose their preferences for patient portals. Additional questions were asked to gain sight on respondents' demographic characteristics, health status and experience with patient portal use. A potential bias of the questionnaire could have been that respondents would not be able to envision a patient portal by the items or wordings chosen in the questionnaire. For this reason the questionnaire was validated by means of cognitive interviews with six people representative for the target group. During these interviews, eight unique problems were identified. All issues were addressed by changing several formulations and the visual design of the questionnaire. The questionnaire is shown in Supplementary file C.

2.3 Study population and data analysis

We recruited respondents by sending the questionnaire to patient panels of two Dutch patient associations: the Heart Council (HVG) and the Lung Fund (LF). Data was collected in the months April and May 2017 by means of the tool *spidox.net*. Members of the panels

consisted of chronically ill patients with a cardiovascular disease and patients with a lung disease.

Table 1: Attributes and levels used in conjoint analysis

Attribute	Level
Accessibility	1. Portal can be accessed via a computer (laptop and/or desktop)
	2. Portal can be accessed via a tablet (for example iPad)
	3. Portal can be accessed via a smartphone (for example iPhone)
Login	1. Username and password (least secure)
	2. DigiD with SMS verification (secure)
	3. Username, password and SMS verification (secure)
Interoperability	1. No export of data
	2. Export of data to non-interoperable format (e.g. PDF)
	3. Export of data to interoperable format (e.g. Continuous Care Document)
Availability of information	1. Direct publication of information
	2. Information delayed until discussed with provider
	3. Available after 2 weeks independent if information has been discussed with provider
Content	1. Reports and basic information (e.g. medication overviews and allergies)
	2. Reports and basic information and professional summary
	3. Complete uncensored medical file
Number of providers	1. Contains information from one provider (e.g. hospital or general practitioner)
	2. Contains information from multiple providers (e.g. hospitals and general practitioner)
Patient-provider communication	1. No possibility to ask online questions
	2. Possibility to ask questions about medical data or previous visits in the portal
	3. Online in-patient consult

Of the total chronically ill patient population in The Netherlands, 16% are cardiovascular patients and 11% are patients with a lung disease [22-24]. Members of the HVG and LF patient panels were therefore representative for the Dutch chronically ill population and all respondents were eligible for data analysis. Respondents were only excluded if 1) the questionnaire was not completed; 2) response time was under four minutes; 3) response time was above 60 minutes and 4) data entries were possible spam since they had the same IP address. To calculate the minimum required sample size of this study, we used the recommendations of Orme regarding sample size determination on choice experiment conjoint analysis [25]. Orme recommends a formula for this sample size determination: $\frac{n * t * a}{c} \leq 500$.

In this formula, n is the number of minimum respondents needed, t is the number of profiles presented to the respondents (18 in our study), a is the number of options to choose from per profile (3 in our study) and c is the highest level per attribute (3 in our study). The number 500 is the threshold for representing the main-effect level of interest in the statistical analysis, yet Orme explains this number is intended to be a minimum threshold. We chose to increase that threshold, in order to be certain of sufficient representations per main-effect level. We therefore used the following formula: $\frac{n * 18 * 3}{3} \leq 2000$. This resulted in a minimum required sample size of 111 respondents. Standard to conjoint analysis, a conditional logistic regression was used to analyze the data. The data analysis was performed using RStudio version 1.1.383, using packages support.CEs(0.4-1), survival (2.41-3), lmtest(0.9-35), plyr(1.8.4).

3. Results

The questionnaire was sent to 3900 panel members; with a response rate of 34% this resulted in a total of 1307 respondents. After exclusion, 1294 respondents were included in the analysis. Table 2 shows the respondent characteristics per patient association. Most respondents are from the HVG ($n=929$) and 81% of all respondents are 55 years old or above. More than half of the respondents proclaimed to currently have a good to excellent health status.

3.1 Generic portal preferences

Table 3 and 4 show the overall results of the conjoint analysis, including all attributes and differences between the levels of the attributes. The most prominent and significant result is that respondents prefer to access a patient portal via a laptop or desktop above using a smartphone or tablet. Second, they prioritized to ask questions about medical data or about earlier visits to the provider via the portal. Thirdly, they dislike a delay of two weeks of their information shown in a portal as compared to direct publication of information, yet this is not a significant difference.

3.2 Difference in preferences of subgroups

3.2.1 Medical condition and usage factors

Twenty-eight percent of the respondents were lung patients. Looking at the differences with the overall respondents and these lung patients, shown in Table 5, the overall respondents prefer a portal to contain information about multiple providers (e.g. hospitals and general practitioner), whereas the lung patients showed a small disfavor of this. A similar result appeared regarding which content to display in a portal. Overall respondents prefer reports, basic information and a professional summary, whereas lung patients prefer just reports and basic information, such as medication overviews.

3.2.2 Age and usage factors

Of the overall respondents, 49% was aged 65+ and 46% was aged between 45 and 64 years old. Results of the subgroup analysis of patients aged <65 are shown in Table 5. As the table shows, <65 respondents prefer to access a portal via a laptop or desktop. They are less negative about using mobile devices compared to the overall respondent group, especially when it comes to using tablets. Patients aged <65 further prefer secure login methods and do not necessarily want to have options for patient-provider communication via a portal.

3.2.3 Patient portal experience and usage factors

Thirty percent of the respondents had used a patient portal in their daily life and were thus experienced portal users. Table 5 shows that the experienced portal users are more positive towards using a smartphone or tablet to access a patient portal compared to the overall respondents. This accounts as well for the login means, experienced users are more positive towards using a more secure login means, such as a username, password and a verification code sent to a mobile phone.

3.2.4 Gender and usage factors

Of the overall respondents, 58% were male. In Table 5 it is reported that male respondents, similar to experienced portal users, are more positive regarding the use of mobile devices to access a patient portal compared to the overall respondents. Male respondents further prefer reports and basic information presented in a portal above a professional summary or a complete uncensored medical file. Male respondents likewise prefer to have information in a portal from one healthcare organization and do not necessarily want to have options for patient provider communication via a portal.

Table 2: Characteristics of respondents (n=1.294)

	Overall N=1.294	HVG N=929	LF N= 365
Age (years)			
18-34	20 (1%)	6 (1%)	14 (4%)
35-44	49 (4%)	29 (3%)	20 (6%)
45-54	177 (14%)	121 (13%)	56 (15%)
55-64	416 (32%)	281 (30%)	135 (37%)
65-74	500 (39%)	388 (42%)	112 (31%)
>75	132 (10%)	104 (11%)	28 (7%)
Gender			
Female (n) / Male (n)	549 (42%) / 745 (58%)	323 (35%) / 606 (65%)	226 (62%) / 139 (38%)
Educational level			
Low (primary/secondary)	276 (22%)	181 (20%)	69 (28%)
Intermediate (low vocational)	391 (30%)	283 (30%)	108 (29%)
High (high vocational/uni)	604 (47%)	453 (49%)	151 (41%)
Other	19 (1%)	12 (1%)	7 (2%)
Patient portal experience			
Yes / No	394 (30%) / 900 (70%)	272 (29%) / 657 (71%)	122 (33%) / 243 (67%)
Frequency of healthcare visits			
< 1 time per year	160 (12%)	132 (14%)	28 (8%)
1-4 times per year	517 (40%)	405 (44%)	112 (31%)
5-11 times per year	419 (32%)	281 (30%)	138 (38%)
1 time per month	75 (6%)	48 (5%)	27 (7%)
2-4 times per month	85 (7%)	49 (5%)	36 (10%)
> 1 time per week	38 (3%)	14 (2%)	24 (6%)
Health status			
Excellent	18 (1%)	17 (2%)	1 (0%)*
Very good	117 (9%)	106 (11%)	11 (3%)
Good	619 (48%)	517 (56%)	102 (28%)
Poor	441 (34%)	263 (28%)	178 (49%)
Bad	99 (8%)	26 (3%)	73 (20%)

Table 3: General conjoint analysis of all respondents | Levels 2 and 3 compared to level 1

Attribute	Level	LogLike Diff.	P-Value
Accessibility	1. Portal can be accessed via a computer (laptop and/or desktop)	*	
	2. Portal can be accessed via a tablet (for example iPad)	-0.922	< 0.001
	3. Portal can be accessed via a smartphone (for example iPhone)	-1.086	< 0.001
Login	1. Username and password	*	
	2. DigiD with SMS verification	0.004	0.900
	3. Username, password and SMS verification	0.018	0.540
Interoperability	1. No export of data	*	
	2. Export of data to non-interoperable format (e.g. PDF)	0.259	< 0.001
	3. Export of data to interoperable format (e.g. Continuous Care Document)	0.165	< 0.001
Availability of information	1. Direct publication of info	*	
	2. Information delayed until discussed with provider	-0.024	0.460
	3. Available after 2 weeks independent if discussed with provider	-0.184	<0.001
Content	1. Reports and basic information (e.g. medication overviews)	*	
	2. Reports and basic information and professional summary	0.312	< 0.001
	3. Complete uncensored medical file	0.303	< 0.001
Number of providers	1. Contains information about one provider (e.g. hospital or general practitioner)	*	
	2. Contains information about multiple providers (e.g. hospitals and general practitioner)	0.290	< 0.001
Patient-provider communication	1. No possibility to ask online questions	*	
	2. Possibility to ask questions about medical data in the portal or about earlier visits	0.684	< 0.001
	3. Online in-patient consult	0.539	< 0.001

* The asterisk indicates the base value.

Table 4: General conjoint analysis of all respondents | Level 3 compared to level 2

Attribute	Level	LogLike Diff.	P-Value
Accessibility	2. Portal can be accessed via a tablet (for example iPad)	*	
	3. Portal can be accessed via a smartphone (for example iPhone)	20.32	< 0.001
	2. DigiD with SMS verification	*	
Login	3. Username, password and SMS verification	0.14	0.597
	2. Export of data to non-interoperable format (e.g. PDF)	*	
	3. Export of data to interoperable format (e.g. Continuous Care Document)	5.48	0.001
Availability of information	2. Information delayed until discussed with provider	*	
	3. Available after 2 weeks independent if discussed with provider	9.82	< 0.001
	2. Reports and basic information and professional summary	*	
Content	3. Complete uncensored medical file	0.05	0.749
	2. Possibility to ask questions about medical data in the portal or about earlier visits	*	
	3. Online in-patient consult	13.93	< 0.001

* The asterisk indicates the base value.

Table 5: Conjoint analysis of sub groups | Levels 2 and 3 compared to level 1

Attribute	Level	LogLike Diff.				
		Total	Patient group	Age	Portal use experience	Gender
Accessibility	1. Portal can be accessed via a computer (laptop and/or desktop)	*				
	2. Portal can be accessed via a tablet (for example iPad)	-0.922	0.146	-0.301	0.376	-0.360
	3. Portal can be accessed via a smartphone (for example iPhone)	-1.086	0.228	-0.494	0.441	-0.549
Login	1. Username and password	*				
	2. DigiD with SMS verification	0.004	-0.064	-0.200	0.358	0.127
	3. Username, password and SMS verification	0.018	0.058	-0.124	0.236	0.038
Interoperability	1. No export of data	*				
	2. Export of data to non-interoperable format (e.g. PDF)	0.259	0.050	-0.217	0.297	-0.101
	3. Export of data to interoperable format (e.g. Continuous Care Document)	0.165	-0.008	0.169	0.335	0.140
Content	1. Reports and basic information (e.g. medication overviews)	*				
	2. Reports and basic information and professional summary	0.312	-0.031	-0.219	0.347	-0.099
	3. Complete uncensored medical file	0.303	0.069	-0.236	0.362	-0.045
Number of providers	1. Contains information about one provider (e.g. hospital or general practitioner)	*				
	2. Contains information about multiple providers (e.g. hospitals and general practitioner)	0.290	-0.018	-0.120	0.304	-0.113
Patient-provider communication	1. No possibility to ask online questions	*				
	2. Possibility to ask questions about medical data in the portal or about earlier visits	0.684	-0.003	-0.212	0.399	-0.158
	3. Online in-patient consult	0.539	0.005	-0.150	0.265	-0.039

* The asterisk indicates the base value.

4. Discussion

This study set out with the aim to value and prioritize patient portal usage factors reported by over 1200 cardiovascular patients and lung patients. It is interesting to note that the majority of our respondents (81%) were above 55 years old and 49% of our respondents were even aged 65 years and above. The results of this study show that our respondents prioritize user-friendly access to a portal, via a laptop or desktop, as well as being able to communicate with their provider via the portal to ask questions about their medical data or previous visits over other functionalities. Cardiovascular patients (72%) and lung patients (28%) differed in portal preferences regarding the medical information shown in a portal; lung patients prefer reports and basic information, such as medication overviews, and do not seem to require the option to contact a provider or to have a multiple provider overview.

4.1 Access and login means in relation to older patients

The results of this study indicate that aging characteristics influence patient portal preferences, especially regarding technical aspects, such as access and login means. Our respondents state a preference to access a patient portal using a laptop or desktop, rather than using a tablet or a smartphone. Nevertheless, respondents aged younger than 65 years old, the majority being between 45 and 64 years old, were less negative about using a tablet as an access means than the overall respondent group. A possible explanation for older respondents' access preference may be that the older adult and elderly target group had experience with inadequate user-interface designs of portals on small screens. Portals - both web-based and native app versions - have complex navigation structures. However, to suit the cognitive capacities of older patients and prevent usability problems, navigation complexities should be minimized [26-27]. Furthermore, irrelevant information and cluttered presentation of (medical) information on smaller screens of tablets and smartphones inhibit older patients in reading and interpreting this information [28-29]. A recent study has showed that older people increasingly do show interest in using tablets, yet they have concerns about the process of learning how to use such devices. They further worry about unclear instructions and support during that learning process [30]. Patient portal developers should take advantage of the older user interest in these devices. Albeit, in further development of mobile versions of patient portals, current knowledge on aging barriers influencing the experienced usability of mobile user-interface design [27] and portal functionalities should be taken into account.

Our analysis surprisingly showed that especially the elderly respondents preferred using a solely username and password as a login means to a patient portal. They preferred this above the more secure methods, called two factor authentication (2FA). Privacy and security are important aspects discussed in literature on patient preferences on patient portals [31-34]

and the 2FA method is often mandated by governments to ensure privacy and security. The 2FA method is yet complex to use and often leads to usability problems experienced by older patients [35-36]. We encourage software engineers in the field of privacy and security together with usability experts to rethink login means to patient portals in order to create a secure as well as a user-friendly login means. They can explore the opportunities for biometric authentication for example. In doing so, it is important to take the challenges of biometric authentication into account in relation to physical effects of older adults' medical complications, such as cataracts and stroke [36]. An improved login means addressing both privacy and security as well as experienced ease of use by older patients, will likely strengthen their engagement in using patient portals.

4.2 Publication of medical information

Respondents in our study were negative about a built-in publication delay of two weeks of their medical information. Nevertheless, our results show no significant difference in preferences between the options of 'instant publication' versus 'publication after new information has been explained by a healthcare provider'. Previous studies evaluating the publication of medical information in patient portals show inconsistent results on whether publication empowers patients or if publication might harm patients when information is shown without mediating physician input [37-38]. This is especially discussed within the perspective of publication of test results [37-38]. Our study provides a strong indication that chronically ill patients do not prefer a delay in publication of their medical information in a patient portal. We therefore advise against such a delay feature in the implementation of portals of which chronically ill patients are the main user group. We further want to affirm the need for customization of medical information publication, where settings can be changed for each individual patient based on his/her preferences in obtaining medical information with or without mediating input from a physician.

The customizability of medical content in a portal is further emphasized in relation to the terminology used to publish this content in a portal. Most respondents prefer a summary of the medical information in laymen's terms, presenting less but more understandable information, above a complete uncensored medical file. Our study therefore supports the idea that patients experience difficulties in understanding the medical information and jargon published in patient portals [31-33, 39-41]. In developing patient portals, we advise to consider customized features in which the provider can manually edit the content before publication. Another possible solution, better suited to the high workload of providers, is to automatically transform medicals terminology standards into laymen terms [42].

4.3 Patient-provider communication

In our study, the option for using features to contact the healthcare provider is seen as a main priority by the respondents, which is in line with other studies claiming that such a functionality is an important facilitator for patient engagement [41, 43]. Patient-provider communication via a patient portal can yet be ineffective due to the absence or late replies from their physician [44]. This combination of findings suggest the need for further research on what patients define as a prompt response for various types of questions and how providers' workflows can allow for such prompt responses on questions asked by patients via a portal.

4.4 Patient portals and care across healthcare centers

An interesting finding of our study is that respondents showed a strong preference to use a portal with medical information from multiple providers, possibly working in various healthcare organizations. Especially experienced portal users preferred this, whereas male respondents were more in favor of obtaining medical information from one provider. Our results further show no preference for a digital interoperable export functionality and most respondents are interested in the option to create printable overviews such as in Word or PDF. Negative experiences with the cumbersome tasks of distributing health information across different centers, without any benefit of portals supporting this process, may be a possible explanation for this finding. This finding further shows that for chronically ill patients to gain more benefits from portals, the portal landscape needs to transform from 'silos' to an integrated 'ecosystem' of actors. In addition, it can be assumed that chronically ill patients currently manage their data across different healthcare centers by printing the data whereas they do want to have a holistic overview of their medical data across these centers in the future. Yet, they do not like to spend much effort in manually exporting digital information from one portal to another. In transforming portal silos to an integrated ecosystem, it is thus important to create systems that minimize the tasks of patients in creating a complete multicenter overview of their health data. A first step to achieve this is to technically facilitate the sharing of medical record information across centers by adopting interoperability standards, such as Fast Healthcare Interoperability Resources (FHIR) in the development of (future) digital environments for patients to access, manage and share their medical data [45].

4.5 Limitations

This study has several limitations. First, respondents were part of a patient panel; we can therefore assume they have a high interest in aspects related to their health and disease management. Consequently, the findings of this study cannot be extrapolated to patients with a (very) low health status and/or interest in their health. These patients might have different preferences regarding patient portal design and use. In spite of this limitation, since our study is based on a large sample of respondents from two different chronically ill patient groups,

this study certainly adds to our understanding of possible coherence of portal functionalities and usage factors in relation to disease management from the perspective of chronically ill patients. Furthermore, despite of the interest of the patient panels' members in health and disease management, the majority of the respondents had no experience with patient portal use and were older people. Aspects that make them representatives of the Dutch chronically ill patient group. Second, it is possible that some words or formulations in the questionnaire were misunderstood by respondents or that respondents who had no prior experience in using a patient portal could not envision a portal based on the wording of the questionnaire. This problem was limited by validating the questionnaire before using it in practice. Third, the underlying model for a choice-based conjoint experiment is nonlinear due to the modeling using a logit function. The variance-covariance matrix which is used to generate the design is dependent on betas. Since we had no prior knowledge about these betas we chose to assume linearity just as rating-based methods and developed the choice sets using heuristics. In order to gain a more optimal design a pre-test or assuming a prior distribution would have improved the outcomes and statistical efficiency.

5. Conclusions

The current study found that preferred technical aspects by our older patient respondents, such as patient portal access via a laptop, secure login means and being able to export data via Word or PDF, are similar and independent of a specific medical condition. Yet, lung patients and heart and vascular patients do vary when it comes to preferences on usage factors related to publication of medical content and digital patient-provider communication means via a portal. It is therefore highly assumable that offering solid and user-friendly access as well as a consistent technical basis of functionalities across the variety of patient portals, could help increase patient portal acceptance by older patients; ultimately helping to stimulate patient engagement via patient portal use. By researching underlying reasons to preferences on patient portal functionalities and usage factors, future studies can gain more understanding of how to adjust patient portals to the needs of patients with specific or multiple medical conditions and their distinguishing patient journeys.

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Supplementary file A - Search strategy

To perform the literature review, two independent searches were conducted in two databases: Ovid and the Cochrane library. A predefined search strategy was used in both databases between November 15th and the 6th of December 2016. The search in the Cochrane library served as an orienting search to find high level evidence such as systematic reviews.

To build the search query used in the second search, keywords were extracted from the references and supplemented by performing an explorative search on Google (Scholar), PubMed and elicited from key papers. The second search was performed in Ovid and search results from this search were used to in- and exclude studies. Table 1 provides the used search queries for the first and second search.

Table 1. Search queries of first and second search

First search	((online portal) or (patient portal) or (personal health record))
Database: Cochrane	
Goal: orienting, form correct search terms for second search	
Second search	((online portal or personal health records or ((portal or portals) adj5 (patient or patients)) or (health adj3 record adj3 (patient or patients))) and ((engagement adj5 (patient or patients)) or implementation or facilitator* or barrier* or (acceptance adj5 (patient or patients)) or adoption or (perception* adj5 (patient or patients)) or (satisfaction adj5 (patient or patients)) or ((experience or experiences) adj5 (patient or patients)) or (perspective* adj5 (patient or patients)) or willingness or need or needs or demand or demands or tethered or implication or implications or (electronic adj5 (patient or patients)))) <u>not</u> (portal vein or hepatic vein or portal hypertension))

Inclusion criteria were: 1) availability of English full text version; 2) article studied a patient portal; 3) study objectives were to describe possible (subjective) factors which could influence patients' usage. Exclusion criteria were: 1) study reported quantitative outcomes (e.g. number of telephone calls, clinical outcome, and number of online messages) 2) study reported solely on overall satisfaction of patients' portal usage. Articles were first screened on title and abstract. Subsequently, articles were screened on full text. Results from included studies were discussed with two other researchers to check for validity and completeness. Screenings were performed by two independent reviewers to increase screening reliability. Consensus was reached by discussing the results. Quality assessment of articles was performed by constructing a predefined appraisal list, including publication year, country, study design, key participant characteristics, setting, measurements, portal type, main functionalities of portal defined by article, possible influencing factors on use, and severe limitations.

Supplementary file B - Overview included studies

The Ovid search resulted in 1,229 unique articles. After title and abstract screening 115 articles remained for full-text screening. After this second screening, 38 articles met all inclusion criteria and were included for analysis. Most common reasons for exclusion during full text screening were; articles did not discuss any barriers/facilitators (n=10), only objective measures were presented (n=8) or the portal was managed by a third party (e.g. patient or insurer) (n=18). The flow diagram displayed in Figure 1 shows a graphic overview of the selection process. Table 1 and 2 provide the study characteristics and reported portal functionalities and influencing factors of the included studies.

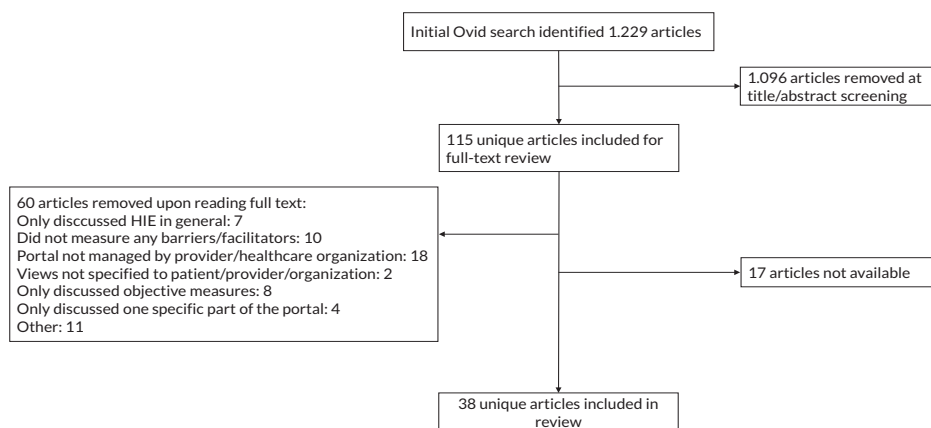


Figure 1: Flow diagram study selection

Table 1: Study characteristics of included studies

No.	Author	Year	Country	Study design	Sample size	Portal
1	White	2016	United Kingdom	Cross-sectional study using self-completed questionnaire	209	No portal used
2	Kamo	2016	United states	Description of system	0	MyVirginiaMason
3	Lyles	2016	United states	Qualitative study using ten focus groups	87	kp.org
4	Gagnon	2015	Canada	Qualitative using semi-structured interviews	35	No portal used
5	Sorondo	2016	United states	Qualitative prospective focus groups and structured interview	92	Kryptiq CareCatalyst
6	Vydra	2015	United states	Qualitative study using focus groups	5	Mychart
7	Tieu	2015	United states	Qualitative study using focus groups	16	No portal used
8	Reicher	2015	United states	Description of system	16.101	kp.org
9	Ammerlaan	2015	Netherlands	Qualitative study using semi-structured interviews	13	Reumaportaal
10	Black	2015	United states	Qualitative study using focus groups	31	Mychart
11	Ålander	2015	Sweden	Qualitative study using questionnaire	3266	My Healthcare Contacts
12	Ronda	2015	Netherlands	Qualitative study using questionnaire	632	Digitaal Logboek
13	Bush	2015	United states	Qualitative study using structured telephone interviews	9	Mychart
14	Clark	2015	United states	Qualitative study using questionnaire	1420	No portal used
15	Otte-trojel	2015	Netherlands	Qualitative study using interviews	10	Multiple
16	Hassol	2004	United states	Qualitative study using questionnaires and two focus groups	1.421 (questionnaire) 25 (focus group)	Mychart
17	Mcnamara	2014	United states	Qualitative study using questionnaire	41	No portal used
18	Latulipe	2015	United states	Qualitative study using semi-structured interviews	52	No portal used
19	Tieu	2016	United states	Qualitative study using semi-structured interviews	25	MYSFHEALTH

No.	Author	Year	Country	Study design	Sample size	Portal
20	Luque	2013	United states	Qualitative study using questionnaires and focus groups	90 (questionnaire) 8 (focus group)	No portal used
21	Alpert	2016	United states	Qualitative study using questionnaires and two focus groups	31 (questionnaire) 13 (focus group)	MyPreventiveCare
22	Turner	2015	United states	Qualitative study using semi-structured interviews	74	MyChart
23	Grunloh	2016	Sweden	Qualitative study using structured interviews	12	My Healthcare Contacts
24	Nguyen	2016	Canada	Qualitative study using four focus groups	29	No portal used
25	Harrison	2015	Canada	Qualitative study using questionnaire	63	No portal used
26	Mishuris	2014	United states	Qualitative study using semi-structured interviews	16	My HealtheVet
27	Miller	2016	United states	Qualitative study using semi-structured interviews	20	Multiple
28	Hess	2008	United states	Qualitative study using two focus groups (pre-post implementation)	39	UPMC HealthTrak
29	Mayberry	2011	United states	Qualitative study using focus groups	75	My-HealthAtVanderbilt
30	Wells	2014	New Zealand	Qualitative study using structured telephone interviews	30	Multiple
31	Ronda	2015	Netherlands	Qualitative study using questionnaire	12,793	Digitaa Logboek
32	Zarcadoolas	2013	United states	Qualitative study using focus groups	28	No portal used
33	Goel	2011	United states	Qualitative study using structured telephone interviews	159	My chart
34	Gee	2015	United states	Qualitative study using semi-structured interviews	18	Multiple
35	Britto	2013	United states	Qualitative study using semi-structured interviews	24	Multiple
36	Woods	2013	United states	Qualitative study using focus group interviews.	36	My HealtheVet
37	Yau	2011	Canada	Qualitative study using semi-structured interviews	10	mydoctor.ca
38	Dhanireddy	2012	United states	Qualitative study using focus groups	30	No portal used

Table 2: Reported portal functionalities and influencing factors per included study

No.	Author	Main functionalities defined by article	Influencing factors
1	White	Not applicable	Need for engagement; Health literacy/ numeracy skills; Alignment of workflow/increase of workload
2	Kamo	Appointment requests and self-schedule; Clinical messaging with providers; Test results; Medications; Allergies; Upcoming appointments; Medication refill requests	Health literacy/ numeracy skills; Proxy access; Accessibility/completeness; Limited access to the Internet / computer; Timeliness; Alignment of workflow /increase of workload
3	Lyles	Viewing medical history; Visit summaries; Immunizations; Allergies, Laboratory results; Prescription renewals; Appointment requests; Clinical messaging with providers	Health literacy/ numeracy skills; Computer/technical skills / IT literacy; Interfere with personal relationships; Prefer talking to real person; Conservative; Security/ privacy; Registration & login process; Difficult medical content; Need for training/support
4	Gagnon	Not applicable	Health literacy/ numeracy skills; Accessibility/completeness; Limited access to the Internet / computer; Computer/technical skills / IT literacy; Conservative; Security/ privacy; (Perceived) usefulness; Support from professional; Costs/ Usage fees; Cross-platform software; Difficult medical content; Need for training/support; User interface customization; Interoperability; Remuneration; Restricted patient control of data
5	Sorondo	Problem list, Medications; Laboratory and radiology results; Appointment requests; Prescription renewals; Obtaining referrals.	Prefer talking to real person; Security/ privacy; (Perceived) usefulness; Support from professional; Technical problems; Need for training/support; Remuneration
6	Vydra	Not reported in article	Alignment of workflow /increase of workload; Training and education; Remuneration; Improved patient satisfaction
7	Tieu	Not applicable	easier means of communication; Possibility to improve the effectiveness of in-patient consult; Limited access to the Internet / computer; Proxy access; Computer/technical skills / IT literacy; Communication supplement; Interfere with personal relationships; Security/ privacy; Registration & login process; Difficult medical content
8	Reicher	Basic healthcare information; Optional access to radiology results; Clinical messaging with providers	Accessibility/completeness; Technical problems; Rapid access to new data

No.	Author	Main functionalities defined by article	Influencing factors
9	Ammer-laan	E-consult; Clinical notes; Laboratory results; Upcoming appointments; Online self-monitoring	Involvement of others; Easier means of communication; Possibility to improve the effectiveness of in-patient consult; Need for engagement; Cognitive overload; Security/ privacy; (Perceived) usefulness; Registration & login process
10	Black	Upcoming appointments; Lab results; Requesting or canceling appointments; Prescription renewals; Past AVS forms	Limited access to the Internet / computer; Computer/technical skills / IT literacy; Interfere with personal relationships; Security/ privacy; (Perceived) usefulness; Support from professional; Lack of awareness; Expectations vs experience; Alignment of workflow / increase of workload;
11	Álander	Appointment requests and self-schedule; Request certificates; Basic medical data information; Extend sick leave; Clinical messaging with providers; Update personal data; Change house physician/family doctor; Prescription renewals and assistive tools; Order a written copy of the medical health record	Proxy access; Difficult medical content
12	Ronda	Clinic notes; Results physical examination; Laboratory results; Problem lists and treatment goals; Medications; General diabetes information	Communication supplement; Lack of awareness
13	Bush	Clinical messaging with providers; Appointment scheduling; Result reporting; Health information	Security/ privacy; (Perceived) usefulness; Registration & login process; Need for training/support
14	Clark	Not applicable	Need for engagement; Timeliness; Security/ privacy; Lack of awareness
15	Otte-trojel	Not reported in article	Health literacy/ numeracy skills; Alignment of workflow /increase of workload; Interoperability; Cost
16	Hassol	View of 25 frequently ordered laboratory tests and explanation of the results; Allergies; medications; Problem list; Past/Upcoming appointments; Health-related histories; Clinical messaging with providers; Appointment requests; Prescription renewals; Request referrals	Easier means of communication; Accessibility/completeness; Proxy access; Security/ privacy; Registration & login process; Difficult medical content; Restrict patient to access the data/ patient anxiety

No.	Author	Main functionalities defined by article	Influencing factors
17	Mcnamara	Not applicable	Possibility to improve the effectiveness of in-patient consult; Restrict patient to access the data/ patient anxiety
18	Latulipe	Not applicable	Accessibility/completeness; Limited access to the Internet / computer; Computer/technical skills / IT literacy; Communication supplement; Interfere with personal relationships; Prefer talking to real person; Conservative; Security/ privacy; (Perceived) usefulness; Registration & login process; Difficult medical content; Need for training/support
19	Tieu	Not reported in article	Computer/technical skills / IT literacy; Difficult medical content
20	Luque	Not applicable	Health literacy/ numeracy skills; Limited access to the Internet / computer; Computer/technical skills / IT literacy; Conservative; Security/ privacy; Costs/ Usage fees
21	Alpert	Laboratory results; Viewing information from the medical record, personalized recommendations	Accessibility/completeness; Communication supplement; Interfere with personal relationships; (Perceived) usefulness; Registration & login process; Difficult medical content
22	Turner	Not reported in article	Need for engagement; Limited access to the Internet / computer; Conservative; Security/ privacy; Registration & login process
23	Grunloh	Health care information; Test results; 10 eHealth services such as appointment scheduling, following referrals, Information about which provider accessed the medical record	Possibility to improve the effectiveness of in-patient consult; Communication supplement; Difficult medical content; Alignment of workflow /increase of workload; Improved patient satisfaction; Restrict patient to access the data/ patient anxiety; Fear of control
24	Nguyen	Not reported in article	Easier means of communication; Need for engagement; Health literacy/ numeracy skills; Computer/technical skills / IT literacy; Communication supplement; Security/ privacy; (Perceived) usefulness; Costs/ Usage fees; Difficult medical content; User interface customization
25	Harrison	Not reported in article	Communication supplement; Limited access to the Internet / computer; Security/ privacy; (Perceived) usefulness; Restrict patient to access the data/ patient anxiety

No.	Author	Main functionalities defined by article	Influencing factors
26	Mishuris	Download medical record; Clinical messaging with providers; Prescription renewals; Input data about health; Generic health information; Education tools	Easier means of communication; Limited access to the Internet / computer; (Perceived) usefulness; Support from professional; Lack of awareness; Need for training/support; Training and education
27	Millier	Not reported in article	Easier means of communication; Health literacy/ numeracy skills; Proxy access; Computer/technical skills / IT literacy; Communication supplement; Security/ privacy; Alignment of workflow /increase of workload; Improved patient satisfaction; Restrict patient to access the data/ patient anxiety; Easier means for communication; Low uptake
28	Hess	Test results; Medications; Problem lists; Health reminders; Communicate electronically; Education tools; User entered health data	Easier means of communication; Need for engagement; Accessibility/completeness; Communication supplement; Rapid access to new data; Registration & login process;
29	Mayberry	Not reported in article	Support from professional; Proxy access; Support from kin; Lack of awareness; Cross-platform software; Need for training/support
30	Wells	Not reported in article	Communication supplement; Lack of awareness; Alignment of workflow /increase of workload; Training and education; Remuneration; organizational vision
31	Ronda	Clinic notes; Results physical examination; Laboratory results; Problem lists and treatment goals; Medications; General diabetes information	Conservative; Lack of awareness
32	Zarcadoolas	Not applicable	Easier means of communication; Health literacy/ numeracy skills; Proxy access; Communication supplement; Prefer talking to real person; Security/ privacy; (Perceived) usefulness
33	Goel	Upcoming appointments; Laboratory results; Appointment scheduling; Prescription renewals; Viewing past AVS forms	Limited access to the Internet / computer; Communication supplement; Conservative; Security/ privacy; Lack of awareness; Registration & login process

No.	Author	Main functionalities defined by article	Influencing factors
34	Gee	Not reported in article	Possibility to improve the effectiveness of in-patient consult; Need for engagement; Health literacy/ numeracy skills; Timeliness; Communication supplement; Security/ privacy; Difficult medical content; Need for training/support; User interface customization; Accessibility/completeness
35	Britto	Demographic and contact information; Test results; Medications; Clinical messaging with providers	Interfere with personal relationships; Prefer talking to real person; Easier means of communication; Communication supplement; Difficult medical content
36	Woods	Clinic notes; Hospital discharge notes; Problem lists; Vital signs; Medications; Allergies; Appointments; Laboratory and imaging results; Education tools; Proxy access, User entered health data	Involvement of others; Possibility to improve the effectiveness of in-patient consult; Accessibility/completeness; Communication supplement; Inconsistencies in Content; Difficult medical content
37	Yau	Not reported in article	Security/ privacy; Difficult medical content; Alignment of workflow /increase of workload; Remuneration; Restrict patient to access the data/ patient anxiety; Fear of control
38	Dhanireddy	Not applicable	Easier means of communication; Possibility to improve the effectiveness of in-patient consult; Need for engagement; Cognitive overload; Accessibility/completeness; Communication supplement; Interfere with personal relationships; Prefer talking to real person; Security/ privacy; (Perceived) usefulness; Support from professional; Difficult medical content

Supplementary file C - Questionnaire

In Supplementary file C we first show screenshots of an example of the original digital questionnaire in Dutch. Then we provide the text of the questionnaire in English.

Please note: 1) only the Dutch questionnaire has been sent to the patient panels. The English text is made for this article to provide sight on the questionnaire items for non-Dutch speakers. Due to the translation into English the meaning of the text might be interpreted differently. For questions about the meaning of the original Dutch version of the questionnaire please contact the corresponding author. 2) The question on which portal the respondent prefers is asked for each questions. To show the phrasing of the question, we placed it at question 1, yet not at the other boxes.

zivver

Dit is een voorbeeld, er worden geen resultaten geregistreerd.

Vragenlijst gebruik van patiëntenportalen

Bedankt voor uw deelname, het invullen van deze vragenlijst zal slechts 10 minuten van uw tijd in beslag nemen. De vragenlijst wordt anoniem en vertrouwelijk gebruikt. Dit betekent dat niemand weet welke antwoorden u heeft gegeven. Ook worden uw gegevens niet met anderen gedeeld. Bij vragen en/of opmerkingen over de vragenlijst kunt u een email sturen naar frank.horenberg@zivver.com.



Wat is een patiëntenportaal?

De meeste vragen in deze vragenlijst gaan over patiëntenportalen, het is daarom belangrijk dat u weet wat een patiëntenportaal is. Door middel van dit onderzoek wordt onderzocht welke portalen u voorkeur heeft en hoe een patiëntenportaal in de toekomst eruit moet zien.

Een patiëntenportaal is een online omgeving (bijvoorbeeld een website) die u kunt gebruiken om uw eigen zorggegevens te bekijken. Zo kunt u een patiëntenportaal gebruiken om laboratorium uitslagen te bekijken zoals bloedwaarden, afspraken bekijken, aantekeningen van de arts lezen, online vragen stellen aan uw zorgverleners en nog veel meer.

Er zijn veel verschillende patiëntenportalen in Nederland die worden gebruikt door uw huisarts of ziekenhuizen in uw regio. Elke portaal heeft ook andere functionaliteiten, zo kunt u bij sommige portalen uw gehele medische dossier bekijken en bij andere portalen slechts bepaalde delen.

Bekijk eventueel het onderstaande filmpje om in 50 seconden erachter te komen wat een patiëntenportaal is.



Werkt het filmpje niet? Klik dan [hier](#)

Volgende »

0% volledig

Dit is een voorbeeld, er worden geen resultaten geregistreerd.

Wat moet u doen?

Op de vorige pagina is uitgelegd wat een patiëntenportaal is. Op deze pagina zal aan de hand van een voorbeeld worden uitgelegd hoe deze vragenlijst is opgebouwd.

U krijgt straks 18 vragen over fictieve portalen met 7 verschillende kenmerken.

Op basis van deze kenmerken wordt gevraagd om een keuze te maken tussen twee portalen. (zie voorbeeld hieronder)

De verschillende portalen zullen vaak niet volledig aan uw verwachtingen voldoen, daarom zult u vaak een overweging moeten maken welk portaal u "beter" vindt.

Wanneer de portalen helemaal niet aan uw verwachtingen voldoen kunt er ook voor kiezen om geen van beide te kiezen.

De tekst in **grijze vlakken** geeft aan dat de kenmerken bij portaal 1 en 2 hetzelfde zijn.

Hieronder wordt een voorbeeld getoond:

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via computer (bv. laptop)	Via smartphone (bv. iPhone)
Inloggen:	Gebruikersnaam en wachtwoord	Gebruikersnaam en wachtwoord met sms verificatie
Exporteren:	Data kan niet uit portaal worden gehaald	Data kan naar een overzicht worden omgezet (bv. PDF)
Beschikbaarheid:	Informatie wordt direct gepubliceerd	Informatie wordt direct gepubliceerd
Inhoud:	Uitslagen en basis informatie; medicatieoverzicht en allergieën	Compleet medisch dossier (mogelijk lastige medische termen)
Gericht op:	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)
Interactie:	Geen mogelijkheid om online vragen te stellen	Geen mogelijkheid om online vragen te stellen

Welk portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken

Voorbeeld van een overweging:

Meneer Peters vindt het lastig om een smartphone te gebruiken en hij vindt het niet belangrijk om de informatie uit het portaal te halen (exporteren). Hij kiest daarom voor portaal 1 zodat hij zijn medische informatie via zijn laptop kan inzien

Terug

Volgende »

0% volledig



Dit is een voorbeeld, er worden geen resultaten geregistreerd.

Er zullen nu 18 vragen worden gesteld waarbij u een keuze moet maken tussen portaal 1 of 2.
Tekst in **grijs vlakken** geeft aan dat de kenmerken bij portaal 1 en 2 hetzelfde zijn.

*1. Vraag 1 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via smartphone (bv. iPhone)	Via smartphone (bv. iPhone)
Inloggen:	Gebruikersnaam en wachtwoord met sms verificatie	Gebruikersnaam en wachtwoord met sms verificatie
Exporteren:	Data uit portaal kan in andere zorgsystemen worden gezet	Data kan niet uit portaal worden gehaald
Beschikbaarheid:	Informatie na twee weken gepubliceerd, onafhankelijk of dit is besproken met zorgverlener	Informatie wordt direct gepubliceerd
Inhoud:	Compleet medische dossier (mogelijk lastige medische termen)	Uitslagen en basisinformatie; medicatieoverzicht, allergieën en samenvattingen van consulten
Gericht op:	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)	Informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)
Interactie:	Online consult met zorgverlener	Mogelijkheid om online vragen te stellen over uitslagen en eerdere afspraken

Welk portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken

*2. Vraag 2 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via computer (bv. laptop)	Via smartphone (bv. iPhone)
Inloggen:	Gebruikersnaam en wachtwoord met sms verificatie	Gebruikersnaam en wachtwoord
Exporteren:	Data uit portaal kan in andere zorgsystemen worden gezet	Data uit het portaal kan in andere zorgsystemen worden gezet
Beschikbaarheid:	Informatie pas gepubliceerd als is besproken met zorgverlener	Informatie pas gepubliceerd als is besproken met zorgverlener
Inhoud:	Uitslagen en basisinformatie; medicatieoverzicht en allergieën	Uitslagen en basis informatie; medicatieoverzicht, allergieën en samenvattingen van consulten
Gericht op:	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)
Interactie:	Mogelijkheid om online vragen te stellen over uitslagen en eerdere afspraken	Geen mogelijkheid om online vragen te stellen

Welk portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken

*3. Vraag 3 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via tablet (bv. iPad)	Via computer (bv. laptop)
Inloggen:	Gebruikersnaam en wachtwoord met sms verificatie	Gebruikersnaam en wachtwoord
Exporteren:	Data kan niet uit portaal worden gehaald	Data kan naar een overzicht worden omgezet (bv. PDF)
Beschikbaarheid:	Informatie pas gepubliceerd als is besproken met zorgverlener	Informatie pas gepubliceerd als is besproken met zorgverlener
Inhoud:	Compleet medisch dossier (mogelijk lastige medische termen)	Compleet medisch dossier (mogelijk lastige medische termen)
Gericht op:	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)
Interactie:	Geen mogelijkheid om online vragen te stellen	Online consult met zorgverlener

Welk portaal heeft u voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken

*4. Vraag 4 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via smartphone (bv. iPhone)	Via tablet (bv. iPad)
Inloggen:	Gebruikersnaam en wachtwoord	DigiD met sms verificatie
Exporteren:	Data uit portaal kan in andere zorgsystemen worden gezet	Data kan naar een overzicht worden omgezet (bv. PDF)
Beschikbaarheid:	Informatie pas gepubliceerd als is besproken met zorgverlener	Informatie pas gepubliceerd als is besproken met zorgverlener
Inhoud:	Uitslagen en basis informatie; medicatieoverzicht, allergieën en samenvattingen van consulten	Uitslagen en basis informatie; medicatieoverzicht, allergieën en samenvattingen van consulten
Gericht op:	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)
Interactie:	Geen mogelijkheid om online vragen te stellen	Mogelijkheid om online vragen te stellen over uitslagen en eerdere afspraken

Welk portaal heeft u voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken

*5. Vraag 5 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via computer (bv. laptop)	Via smartphone (bv. iPhone)
Inloggen:	DigiD met sms verificatie	Gebruikersnaam en wachtwoord met sms verificatie
Exporteren:	Data uit portaal kan in andere zorgsystemen worden gezet	Data uit portaal kan in andere zorgsystemen worden gezet
Beschikbaarheid:	Informatie wordt direct gepubliceerd	Informatie na twee weken gepubliceerd, onafhankelijk of dit is besproken met zorgverlener
Inhoud:	Uitslagen en basis informatie; medicatieoverzicht, allergieën en samenvattingen van consulten	Compleet medisch dossier (mogelijk lastige medische termen)
Gericht op:	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)
Interactie:	Online consult met zorgverlener	Online consult met zorgverlener

Welk portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken

*6. Vraag 6 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via smartphone (bv. iPhone)	Via computer (bv. laptop)
Inloggen:	Gebruikersnaam en wachtwoord met sms verificatie	Gebruikersnaam en wachtwoord met sms verificatie
Exporteren:	Data kan niet uit portaal worden gehaald	Data uit portaal kan in andere zorgsystemen worden gezet
Beschikbaarheid:	Informatie wordt direct gepubliceerd	Informatie pas gepubliceerd als is besproken met zorgverlener
Inhoud:	Uitslagen en basis informatie; medicatieoverzicht, allergieën en samenvattingen van consulten	Uitslagen en basis informatie; medicatieoverzicht en allergieën
Gericht op:	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)
Interactie:	Mogelijkheid om online vragen te stellen over uitslagen en eerdere afspraken	Mogelijkheid om online vragen te stellen over uitslagen en eerdere afspraken

Welk portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken

Terug

Volgende »

23% volledig

Dit is een voorbeeld, er worden geen resultaten geregistreerd.

Tekst in **grijze vlakken** geeft aan dat de kenmerken bij portaal 1 en 2 hetzelfde zijn.

*7. Vraag 7 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via computer (bv. laptop)	Via smartphone (bv. iPhone)
Inloggen:	Gebruikersnaam en wachtwoord	DigiD met sms verificatie
Exporteren:	Data kan niet uit portaal worden gehaald	Data kan naar een overzicht worden omgezet (bv. PDF)
Beschikbaarheid:	Informatie wordt direct gepubliceerd	Informatie wordt direct gepubliceerd
Inhoud:	Uitslagen en basis informatie; medicatieoverzicht en allergieën	Compleet medisch dossier (mogelijk lastige medische termen)
Gericht op:	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)
Interactie:	Geen mogelijkheid om online vragen te stellen	Geen mogelijkheid om online vragen te stellen

Welk portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken

*8. Vraag 8 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via smartphone (bv. iPhone)	Via computer (bv. laptop)
Inloggen:	Gebruikersnaam en wachtwoord	DigiD met sms verificatie
Exporteren:	Data kan naar een overzicht worden omgezet (bv. PDF)	Data kan niet uit portaal worden gehaald
Beschikbaarheid:	Informatie na twee weken gepubliceerd, onafhankelijk of dit is besproken met zorgverlener	Informatie na twee weken gepubliceerd, onafhankelijk of dit is besproken met zorgverlener
Inhoud:	Uitslagen en basis informatie; medicatieoverzicht en allergieën	Compleet medisch dossier (mogelijk lastige medische termen)
Gericht op:	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)
Interactie:	Mogelijkheid om online vragen te stellen over uitslagen en eerdere afspraken	Mogelijkheid om online vragen te stellen over uitslagen en eerdere afspraken

Welk portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken

9. Vraag 9 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via tablet (bv. iPad)	Via tablet (bv. iPad)
Inloggen:	Gebruikersnaam en wachtwoord	DigiD met sms verificatie
Exporteren:	Data uit portaal kan in andere zorgsystemen worden gezet	Data uit portaal kan in andere zorgsystemen worden gezet
Beschikbaarheid:	Informatie wordt direct gepubliceerd	Informatie na twee weken gepubliceerd, onafhankelijk of dit is besproken met zorgverlener
Inhoud:	Compleet medisch dossier (mogelijk lastige medische termen)	Uitslagen en basis informatie; medicatieoverzicht en allergieën
Gericht op:	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)
Interactie:	Mogelijkheid om online vragen te stellen over uitslagen en eerdere afspraken	Geen mogelijkheid om online vragen te stellen

Welk portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken

10. Vraag 10 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via tablet (bv. iPad)	Via computer (bv. laptop)
Inloggen:	Gebruikersnaam en wachtwoord	Gebruikersnaam en wachtwoord met sms verificatie
Exporteren:	Data kan niet uit portaal worden gehaald	Data kan naar een overzicht worden omgezet (bv. PDF)
Beschikbaarheid:	Informatie na twee weken gepubliceerd, onafhankelijk of dit is besproken met zorgverlener	Informatie na twee weken gepubliceerd, onafhankelijk of dit is besproken met zorgverlener
Inhoud:	Uitslagen en basis informatie; medicatieoverzicht, allergieën en samenvattingen van consulten	Uitslagen en basis informatie; medicatieoverzicht, allergieën en samenvattingen van consulten
Gericht op:	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)
Interactie:	Online consult met zorgverlener	Geen mogelijkheid om online vragen te stellen

Welk portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken

*11. Vraag 11 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via computer (bv. laptop)	Via computer (bv. laptop)
Inloggen:	Gebruikersnaam en wachtwoord	Gebruikersnaam en wachtwoord
Exporteren:	Data kan naar een overzicht worden omgezet (bv. PDF)	Data kan niet uit portaal worden gehaald
Beschikbaarheid:	Informatie pas gepubliceerd als is besproken met zorgverlener	Informatie wordt direct gepubliceerd
Inhoud:	Compleet medisch dossier (mogelijk lastige medische termen)	Uitslagen en basis informatie; medicatieoverzicht en allergieën
Gericht op:	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)
Interactie:	Online consult met zorgverlener	Geen mogelijkheid om online vragen te stellen

Weik portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken

*12. Vraag 12 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via smartphone (bv. iPhone)	Via tablet (bv. iPad)
Inloggen:	DigiD met sms verificatie	Gebruikersnaam en wachtwoord met sms verificatie
Exporteren:	Data kan naar een overzicht worden omgezet (bv. PDF)	Data kan naar een overzicht worden omgezet (bv. PDF)
Beschikbaarheid:	Informatie wordt direct gepubliceerd	Informatie wordt direct gepubliceerd
Inhoud:	Compleet medisch dossier (mogelijk lastige medische termen)	Uitslagen en basis informatie; medicatieoverzicht en allergieën
Gericht op:	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)
Interactie:	Geen mogelijkheid om online vragen te stellen	Online consult met zorgverlener

Weik portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken

Terug

Volgende »

46% volledig

Dit is een voorbeeld, er worden geen resultaten geregistreerd.

Tekst in **grijze vlakken** geeft aan dat de kenmerken bij portaal 1 en 2 hetzelfde zijn.

*13. Vraag 13 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via tablet (bv. iPad)	Via computer (bv. laptop)
Inloggen:	Gebruikersnaam en wachtwoord met sms verificatie	DigiD met sms verificatie
Exporteren:	Data kan naar een overzicht worden omgezet (bv. PDF)	Data uit portaal kan in andere zorgsystemen worden gezet
Beschikbaarheid:	Informatie wordt direct gepubliceerd	Informatie wordt direct gepubliceerd
Inhoud:	Uitslagen en basis informatie; medicatieoverzicht en allergieën	Uitslagen en basis informatie; medicatieoverzicht, allergieën en samenvattingen van consulten
Gericht op:	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)
Interactie:	Online consult met zorgverlener	Online consult met zorgverlener

Welk portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
- Portaal 2
- Ik zal portaal 1 of portaal 2 nooit gebruiken

*14. Vraag 14 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via smartphone (bv. iPhone)	Via tablet (bv. iPad)
Inloggen:	DigiD met sms verificatie	Gebruikersnaam en wachtwoord met sms verificatie
Exporteren:	Data kan niet uit portaal worden gehaald	Data kan niet uit portaal worden gehaald
Beschikbaarheid:	Informatie pas gepubliceerd als is besproken met zorgverlener	Informatie pas gepubliceerd als is besproken met zorgverlener
Inhoud:	Uitslagen en basis informatie; medicatieoverzicht en allergieën	Compleet medisch dossier (mogelijk lastige medische termen)
Gericht op:	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)
Interactie:	Online consult met zorgverlener	Geen mogelijkheid om online vragen te stellen

Welk portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
- Portaal 2
- Ik zal portaal 1 of portaal 2 nooit gebruiken

*15. Vraag 15 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via computer (bv. laptop)	Via tablet (bv. iPad)
Inloggen:	Gebruikersnaam en wachtwoord met sms verificatie	Gebruikersnaam en wachtwoord
Exporteren:	Data kan naar een overzicht worden omgezet (bv. PDF)	Data uit portaal kan in andere zorgsystemen worden gezet
Beschikbaarheid:	Informatie na twee weken gepubliceerd, onafhankelijk of dit is besproken met zorgverlener	Informatie wordt direct gepubliceerd
Inhoud:	Uitslagen en basis informatie; medicatieoverzicht, allergieën en samenvattingen van consulten	Compleet medisch dossier (mogelijk lastige medische termen)
Gericht op:	Bevat informatie van meerdere zorgverleners (meerdere ziekenhuizen en/of huisarts)	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)
Interactie:	Geen mogelijkheid om online vragen te stellen	Mogelijkheid om online vragen te stellen over uitslagen en eerdere afspraken

Welk portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken

*16. Vraag 16 van 18

Eigenschap	Portaal 1	Portaal 2
Toegankelijkheid:	Via computer (bv. laptop)	Via tablet (bv. iPad)
Inloggen:	DigiD met sms verificatie	Gebruikersnaam en wachtwoord
Exporteren:	Data kan niet uit portaal worden gehaald	Data kan niet uit portaal worden gehaald
Beschikbaarheid:	Informatie na twee weken gepubliceerd, onafhankelijk of dit is besproken met zorgverlener	Informatie na twee weken gepubliceerd, onafhankelijk of dit is besproken met zorgverlener
Inhoud:	Compleet medisch dossier (mogelijk lastige medische termen)	Uitslagen en basis informatie; medicatieoverzicht, allergieën en samenvattingen van consulten
Gericht op:	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)	Informatie van één van uw zorgverleners (ziekenhuis of huisarts)
Interactie:	Mogelijkheid om online vragen te stellen over uitslagen en eerdere afspraken	Online consult met zorgverlener

Welk portaal heeft uw voorkeur als u zou mogen kiezen tussen de bovenstaande portalen?

- Portaal 1
 Portaal 2
 Ik zal portaal 1 of portaal 2 nooit gebruiken



Dit is een voorbeeld, er worden geen resultaten geregistreerd.

Over uzelf

Tot slot willen wij u 6 vragen stellen die over uzelf gaan.

Deze achtergrondkenmerken zijn belangrijk om meer inzicht te krijgen in de kwaliteit van de zorg rondom zorg voor verschillende groepen mensen.

*19. Wat is uw leeftijd?

- Jonger dan 18 jaar
- 18 t/m 24 jaar
- 25 t/m 34 jaar
- 35 t/m 44 jaar
- 45 t/m 54 jaar
- 55 t/m 64 jaar
- 65 t/m 74 jaar
- 75 jaar of ouder

*20. Bent u een man of een vrouw?

- Man
- Vrouw

*21. Wat is uw hoogst voltooide opleiding? (een opleiding afgerond met diploma of voldoende getuigschrift)

- Geen opleiding (lager onderwijs: niet afgemaakt)
- Lager onderwijs (basisschool, speciaal basisonderwijs)
- Lager of voorbereidend beroepsonderwijs (zoals LTS, LEAO, LHNO, VMBO)
- Middelbaar algemeen voortgezet onderwijs (zoals MAVO, (M)ULO, MBO-kort, VMBO-t)
- Middelbaar beroepsonderwijs en beroepsbegeleidend onderwijs (zoals MBOlang, MTS, MEAO, BOL, BBL, INAS)
- Hoger algemeen en voorbereidend wetenschappelijk onderwijs (zoals HAVO, VWO, Atheneum, Gymnasium, HBS, MMS)
- Hoger beroepsonderwijs (zoals HBO, HTS, HEAO, HBO-V, kandidaats wetenschappelijk onderwijs)
- Wetenschappelijk onderwijs (universiteit)
- Anders, namelijk:

*22. Heeft u zelf wel eens gebruik gemaakt van een patiëntenportaal?

- Ja
- Nee

*23. Hoe vaak heeft u contact met een zorgverlener? (schriftelijk, mondeling, telefonisch, consult)

- < 1 keer per jaar
- 1 - 4 keer per jaar
- 5 - 11 keer per jaar
- 1 keer per maand
- 2 - 4 keer per maand
- 1 - 2 keer per week
- > 2 keer per week

*24. Hoe zou u over het algemeen uw gezondheid noemen?

- Uitstekend
- Zeer goed
- Goed
- Matig
- Slecht

25. Op de hoogte blijven van dit onderzoek? Laat dan hier je e-mailadres achter.

26. We willen de vragenlijst blijven verbeteren. We horen dan ook graag wat u van de vragenlijst vindt. Mist u iets in deze vragenlijst? Of heeft u nog opmerkingen of tips? Dan kunt u dat hieronder opschrijven.

Terug

Voltooien

100% volledig

Survey on usage of patient portals

Thank you for participating, completing this survey will only take 10 minutes of your time.

The survey will be used anonymously and confidentially. This means that nobody knows which answers you have given. In addition your personal data will not be shared with others. If you have any questions and/or remarks regarding the survey, you can send an email to frank.horenberg@zivver.com.

What is a patient portal?

Most questions in this survey will address patient portals. That is why it is important that you understand what a patient portal is. By means of this study your preferences on patient portals are examined, as well as how a patient portal should look like in the future. A patient portal is online environment (for example a website) which you can use to review your own health data. For example, you can use a patient portal to view lab results, such as blood values, or to see your appointments, notes of the doctor or to ask online questions to your healthcare providers.

There are many different patient portals in The Netherlands that are used by your general practitioner or hospitals within your region. Each portal has different functionalities. At some portals you can access your total medical record, at others just some parts of your record. You can watch the short clip (50 seconds) below to learn more on patient portals. If the clip doesn't load, please [click here](#).

What is requested of you?

The previous page explained what is understood by 'patient portals'. At this page, an example is given on how the survey works. You will get 18 questions on 'fictive' portals with 7 different features. Based on these features you will be asked to make a choice between two portals (please see example below). The various portals might not fully comply with your expectations. That is why we ask you to consider with portal option you like most. If both of the options do not comply with your expectations, you can choose 'none of both'. The text in the grey boxes indicates that that specific feature is similar in portal 1 and 2. An example is shown below:

Example

Feature	Portal 1	Portal 2
Accessibility	Via computer (i.e. laptop)	Via smartphone (i.e. iPhone)
Login	Username and password	Username and password with SMS verification
Export	Data cannot be exported from portal	Data can be put in an overview (i.e. PDF)
Availability	Information is directly published	Information is directly published
Content	Test results and basic information; medication overview and allergies	Complete medical record (including possible difficult medical terms)
Aimed at	Information from one of your health providers (i.e. hospital or general practitioner)	Information from one of your health providers (i.e. hospital or general practitioner)
Interaction	No possibility to ask online questions	No possibility to ask online questions

Which portal would you prefer if you could choose between the portals presented above?

- Portal 1
- Portal 2
- I will never use portal 1 or portal 2

Example of a consideration:

Mister Peters finds it difficult to use a smartphone and downloading information (export) from a portal is not of importance to him. That is why he chooses portal 1 in this example, so he can view his medical information online via his laptop.

In the following 18 questions you will have to make a choice between portal 1 or 2.

The text in the grey boxes indicates that that specific feature is similar in the portals.

1. Question 1 of 18

Feature	Portal 1	Portal 2
Accessibility	Via smartphone (i.e. iPhone)	Via smartphone (i.e. iPhone)
Login	Username and password with SMS verification	Username and password with SMS verification
Export	Data from portal can be exported to other care systems	Data cannot be exported from portal
Availability	Information is published after two weeks, regardless if discussed with health provider	Information is directly published
Content	Complete medical record (including possible difficult medical terms)	Test results and basic information; medication overview and allergies and summaries of consults
Aimed at	Information from one of your health providers (i.e. hospital or general practitioner)	Information from several health providers (i.e. various hospitals and/or general practitioner)
Interaction	Online consult with health provider	Possibility to ask online questions regarding tests and previous appointments

Which portal would you prefer if you could choose between the portals presented above?

- Portal 1
- Portal 2
- I will never use portal 1 or portal 2

Please note: the question 'which portal would you prefer if you could choose between the portals presented above?' was asked at each question from 1 to 18. To show the phrasing of the question, we placed it at question 1 in this translation, yet not at the other boxes.

2. Question 2 of 18

Feature	Portal 1	Portal 2
Accessibility	Via computer (i.e. laptop)	Via smartphone (i.e. iPhone)
Login	Username and password with SMS verification	Username and password
Export	Data from portal can be exported to other care systems	Data from portal can be exported to other care systems
Availability	Information is published only after being discussed with health provider	Information is published only after being discussed with health provider
Content	Test results and basic information; medication overview and allergies	Test results and basic information; medication overview and allergies and summaries of consults
Aimed at	Information from several health providers (i.e. various hospitals and/or general practitioner)	Information from several health providers (i.e. various hospitals and/or general practitioner)
Interaction	Possibility to ask online questions regarding tests and previous appointments	No possibility to ask online questions

3. Question 3 of 18

Feature	Portal 1	Portal 2
Accessibility	Via tablet (i.e. iPad)	Via computer (i.e. laptop)
Login	Username and password with SMS verification	Username and password
Export	Data cannot be exported from portal	Data can be put in an overview (i.e. PDF)
Availability	Information is published only after being discussed with health provider	Information is published only after being discussed with health provider
Content	Complete medical record (including possible difficult medical terms)	Complete medical record (including possible difficult medical terms)
Aimed at	Information from several health providers (i.e. various hospitals and/or general practitioner)	Information from several health providers (i.e. various hospitals and/or general practitioner)
Interaction	No possibility to ask online questions	Online consult with health provider

4. Question 4 of 18

Feature	Portal 1	Portal 2
Accessibility	Via smartphone (i.e. iPhone)	Via tablet (i.e. iPad)
Login	Username and password	DigiD with SMS verification
Export	Data from portal can be exported to other care systems	Data can be put in an overview (i.e. PDF)
Availability	Information is published only after being discussed with health provider	Information is published only after being discussed with health provider
Content	Test results and basic information; medication overview and allergies and summaries of consults	Test results and basic information; medication overview and allergies and summaries of consults
Aimed at	Information from one of your health providers (i.e. hospital or general practitioner)	Information from several health providers (i.e. various hospitals and/or general practitioner)
Interaction	No possibility to ask online questions	Possibility to ask online questions regarding tests and previous appointments

5. Question 5 of 18

Feature	Portal 1	Portal 2
Accessibility	Via computer (i.e. laptop)	Via smartphone (i.e. iPhone)
Login	DigiD with SMS verification	Username and password with SMS verification
Export	Data from portal can be exported to other care systems	Data from portal can be exported to other care systems
Availability	Information is directly published	Information is published after two weeks, regardless if discussed with health provider
Content	Test results and basic information; medication overview and allergies and summaries of consults	Complete medical record (including possible difficult medical terms)
Aimed at	Information from several health providers (i.e. various hospitals and/or general practitioner)	Information from several health providers (i.e. various hospitals and/or general practitioner)
Interaction	Online consult with health provider	Online consult with health provider

6. Question 6 of 18

Feature	Portal 1	Portal 2
Accessibility	Via smartphone (i.e. iPhone)	Via computer (i.e. laptop)
Login	Username and password with SMS verification	Username and password with SMS verification
Export	Data cannot be exported from portal	Data from portal can be exported to other care systems
Availability	Information is directly published	Information is published only after being discussed with health provider
Content	Test results and basic information; medication overview and allergies and summaries of consultations	Test results and basic information; medication overview and allergies
Aimed at	Information from one of your health providers (i.e. hospital or general practitioner)	Information from one of your health providers (i.e. hospital or general practitioner)
Interaction	Possibility to ask online questions regarding tests and previous appointments	Possibility to ask online questions regarding tests and previous appointments

7. Question 7 of 18

Feature	Portal 1	Portal 2
Accessibility	Via computer (i.e. laptop)	Via smartphone (i.e. iPhone)
Login	Username and password	DigiD with SMS verification
Export	Data cannot be exported from portal	Data can be put in an overview (i.e. PDF)
Availability	Information is directly published	Information is directly published
Content	Test results and basic information; medication overview and allergies	Complete medical record (including possible difficult medical terms)
Aimed at	Information from one of your health providers (i.e. hospital or general practitioner)	Information from one of your health providers (i.e. hospital or general practitioner)
Interaction	No possibility to ask online questions	No possibility to ask online questions

8. Question 8 of 18

Feature	Portal 1	Portal 2
Accessibility	Via smartphone (i.e. iPhone)	Via computer (i.e. laptop)
Login	Username and password	DigiD with SMS verification
Export	Data can be put in an overview (i.e. PDF)	Data cannot be exported from portal
Availability	Information is published after two weeks, regardless if discussed with health provider	Information is published after two weeks, regardless if discussed with health provider
Content	Test results and basic information; medication overview and allergies	Complete medical record (including possible difficult medical terms)
Aimed at	Information from several health providers (i.e. various hospitals and/or general practitioner)	Information from several health providers (i.e. various hospitals and/or general practitioner)
Interaction	Possibility to ask online questions regarding tests and previous appointments	Possibility to ask online questions regarding tests and previous appointments

10. Question 10 of 18

Feature	Portal 1	Portal 2
Accessibility	Via tablet (i.e. iPad)	Via computer (i.e. laptop)
Login	Username and password	Username and password with SMS verification
Export	Data cannot be exported from portal	Data can be put in an overview (i.e. PDF)
Availability	Information is published after two weeks, regardless if discussed with health provider	Information is published after two weeks, regardless if discussed with health provider
Content	Test results and basic information; medication overview and allergies and summaries of consults	Test results and basic information; medication overview and allergies and summaries of consults
Aimed at	Information from several health providers (i.e. various hospitals and/or general practitioner)	Information from one of your health providers (i.e. hospital or general practitioner)
Interaction	Online consult with health provider	No possibility to ask online questions

9. Question 9 of 18

Feature	Portal 1	Portal 2
Accessibility	Via tablet (i.e. iPad)	Via tablet (i.e. iPad)
Login	Username and password	DiGiD with SMS verification
Export	Data from portal can be exported to other care systems	Data from portal can be exported to other care systems
Availability	Information is directly published	Information is published after two weeks, regardless if discussed with health provider
Content	Complete medical record (including possible difficult medical terms)	Test results and basic information; medication overview and allergies
Aimed at	Information from several health providers (i.e. various hospitals and/or general practitioner)	Information from several health providers (i.e. various hospitals and/or general practitioner)
Interaction	Possibility to ask online questions regarding tests and previous appointments	No possibility to ask online questions

11. Question 11 of 18

Feature	Portal 1	Portal 2
Accessibility	Via computer (i.e. laptop)	Via computer (i.e. laptop)
Login	Username and password	Username and password
Export	Data can be put in an overview (i.e. PDF)	Data cannot be exported from portal
Availability	Information is published only after being discussed with health provider	Information is directly published
Content	Complete medical record (including possible difficult medical terms)	Test results and basic information; medication overview and allergies
Aimed at	Information from one of your health providers (i.e. hospital or general practitioner)	Information from several health providers (i.e. various hospitals and/or general practitioner)
Interaction	Online consult with health provider	No possibility to ask online questions

12. Question 12 of 18

Feature	Portal 1	Portal 2
Accessibility	Via smartphone (i.e. iPhone)	Via tablet (i.e. iPad)
Login	DigiD with SMS verification	Username and password with SMS verification
Export	Data can be put in an overview (i.e. PDF)	Data can be put in an overview (i.e. PDF)
Availability	Information is directly published	Information is directly published
Content	Complete medical record (including possible difficult medical terms)	Test results and basic information; medication overview and allergies
Aimed at	Information from several health providers (i.e. various hospitals and/or general practitioner)	Information from several health providers (i.e. various hospitals and/or general practitioner)
Interaction	No possibility to ask online questions	Online consult with health provider
13. Question 13 of 18		
Feature	Portal 1	Portal 2
Accessibility	Via tablet (i.e. iPad)	Via computer (i.e. laptop)
Login	Username and password with SMS verification	DigiD with SMS verification
Export	Data can be put in an overview (i.e. PDF)	Data from portal can be exported to other care systems
Availability	Information is directly published	Information is directly published
Content	Test results and basic information; medication overview and allergies	Test results and basic information; medication overview and allergies and summaries of consults
Aimed at	Information from one of your health providers (i.e. hospital or general practitioner)	Information from one of your health providers (i.e. hospital or general practitioner)
Interaction	Online consult with health provider	Online consult with health provider

14. Question 14 of 18

Feature	Portal 1	Portal 2
Accessibility	Via smartphone (i.e. iPhone)	Via tablet (i.e. iPad)
Login	DigiD with SMS verification	Username and password with SMS verification
Export	Data cannot be exported from portal	Data cannot be exported from portal
Availability	Information is published only after being discussed with health provider	Information is published only after being discussed with health provider
Content	Test results and basic information; medication overview and allergies	Complete medical record (including possible difficult medical terms)
Aimed at	Information from several health providers (i.e. various hospitals and/or general practitioner)	Information from one of your health providers (i.e. hospital or general practitioner)
Interaction	Online consult with health provider	No possibility to ask online questions

15. Question 15 of 18

Feature	Portal 1	Portal 2
Accessibility	Via computer (i.e. laptop)	Via tablet (i.e. iPad)
Login	Username and password with SMS verification	Username and password
Export	Data can be put in an overview (i.e. PDF)	Data from portal can be exported to other care systems
Availability	Information is published after two weeks, regardless if discussed with health provider	Information is directly published
Content	Test results and basic information; medication overview and allergies and summaries of consults	Complete medical record (including possible difficult medical terms)
Aimed at	Information from several health providers (i.e. various hospitals and/or general practitioner)	Information from one of your health providers (i.e. hospital or general practitioner)
Interaction	No possibility to ask online questions	Possibility to ask online questions regarding tests and previous appointments

16. Question 16 of 18

Feature	Portal 1	Portal 2
Accessibility	Via computer (i.e. laptop)	Via tablet (i.e. iPad)
Login	DigiD with SMS verification	Username and password
Export	Data cannot be exported from portal	Data cannot be exported from portal
Availability	Information is published after two weeks, regardless if discussed with health provider	Information is published after two weeks, regardless if discussed with health provider
Content	Complete medical record (including possible difficult medical terms)	Test results and basic information; medication overview and allergies and summaries of consults
Aimed at	Information from one of your health providers (i.e. hospital or general practitioner)	Information from one of your health providers (i.e. hospital or general practitioner)
Interaction	Possibility to ask online questions regarding tests and previous appointments	Online consult with health provider

17. Question 17 of 18

Feature	Portal 1	Portal 2
Accessibility	Via tablet (i.e. iPad)	Via smartphone (i.e. iPhone)
Login	DigiD with SMS verification	DigiD with SMS verification
Export	Data can be put in an overview (i.e. PDF)	Data cannot be exported from portal
Availability	Information is published only after being discussed with health provider	Information is published only after being discussed with health provider
Content	Test results and basic information; medication overview and allergies and summaries of consults	Test results and basic information; medication overview and allergies
Aimed at	Information from one of your health providers (i.e. hospital or general practitioner)	Information from one of your health providers (i.e. hospital or general practitioner)
Interaction	Possibility to ask online questions regarding tests and previous appointments	Online consult with health provider

18. Question 18 of 18

Feature	Portal 1	Portal 2
Accessibility	Via tablet (i.e. iPad)	Via smartphone (i.e. iPhone)
Login	DigiD with SMS verification	Username and password
Export	Data from portal can be exported to other care systems	Data can be put in an overview (i.e. PDF)
Availability	Information is published after two weeks, regardless if discussed with health provider	Information is published after two weeks, regardless if discussed with health provider
Content	Test results and basic information; medication overview and allergies	Test results and basic information; medication overview and allergies
Aimed at	Information from one of your health providers (i.e. hospital or general practitioner)	Information from one of your health providers (i.e. hospital or general practitioner)
Interaction	No possibility to ask online questions	Possibility to ask online questions regarding tests and previous appointments

Regarding yourself.

To conclude we would like to ask you 6 questions regarding yourself. These characteristics are important to get more sight on the quality of care for different groups of people.

*19. What is your age?

- Younger than 18 years
- 18 till 24 years
- 25 till 34 years
- 35 till 44 years
- 45 till 54 years
- 55 till 64 years
- 65 till 74 years
- 75 years and above

20. Are you male or female?

- Male
- Female

*21. What is your highest completed education? (Education completed with a degree or a certificate)

- No education (primary school: not finished)
- Lower education (primary school, special primary school)
- Lower or preparatory vocational education (such as LTS, LEAO, LHNO, VMBO)
- Middle-level secondary education (such as MAVO, (M)ULO, MBO-kort, VMBO-t)
- Middle-level vocation education (such as MBOlang, MTS, MEAO, BOL, BBL, INAS)
- Higher secondary education (such as HAVO, VWO, Atheneum, Gymnasium, HBS, MMS)
- Higher vocation education (such as HBO, HTS, HEAO, HBO-V, candidates scientific education)
- Scientific education (university)
- Other, please specify:

.....

22. Have you ever used a patient portal yourself?

- Yes
- No

*23. How often are you in contact with a healthcare provider? (written, face-to-face, by telephone, via a consult)

- < 1 time per year
- 1 - 4 times per year
- 5 - 11 times per year
- 1 time per month
- 2 - 4 times per month
- 1 - 2 times per week
- > 2 times per week

*24. In general, how do you describe your health?

- Excellent
- Very good
- Good
- Poor
- Bad

25. Would you like to be updated on this research? If so, please register your email address.

26. We would like to improve the survey. For this reason we would like to hear your opinion on the survey. Was something lacking in the survey? Do you have any remarks or tips regarding the survey? You can give your feedback in the box below.