



C3-Cloud

“A Federated Collaborative Care Cure Cloud Architecture for Addressing the Needs of Multi-morbidity and Managing Poly-pharmacy”

PRIORITY Objective H2020-PHC-25-2015 - Advanced ICT systems and services for integrated care

D5.2 Data Collection and Feedback Mechanism

Work Package: WP5 Patient Empowerment Platform

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EXECUTIVE SUMMARY

This document presents the demonstrator deliverable D5.2 “Data Collection and Feedback Mechanism” implemented in Task 5.2.

The goal of Task 5.2 was to develop interaction mechanisms for the patient (and any informal caregiver acting on behalf of the patient) to collect and share both structured and unstructured data, as well as communicated with the Multi-Disciplinary Team (MDT).

The first part of the document presents the methods to collect data and feedback. The second part of the report presents the data specified to be collected in the three pilot sites. The final section of the deliverable presents the integration with other C3-Cloud components. The report includes in the Annexes 1 through 4, the details of the questionnaires from a Patient Empowerment Platform (PEP) and patient user perspective. Annex 5 includes concrete examples of the integrations presented in the third part of the report.

This deliverable will be used by the following follow-on tasks and work packages:

T5.3 The results of T5.1 and T5.2 will be integrated in T5.3.

WP7 PEP solution is tightly integrated with the Coordinated Care and Cure Delivery Platform (C3DP) developed in WP7. The integration will be finalized in T7.4.

WP8 PEP solution will be deployed and piloted in the scope of WP8.

WP9 PEP solution will be tested, verified and evaluated in the scope of WP9.

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1. INTRODUCTION

1.1. Purpose

This document presents the demonstrator deliverable D5.2 “Data Collection and Feedback Mechanism” implemented in Task 5.2.

1.2. Outline of the deliverable

This report is organized as follows:

Chapter 1 gives an overview of the document and the role of this deliverable in the project.

Chapter 2 presents the methods to collect data and feedback from patients and presents how the solution works for each of the available methods.

Chapter 3 presents from an implementation perspective, the specification of the concrete data to be collected in C3-Cloud. Additional detail related to section 4 is given in Annexes 1 through 4.

Chapter 4 summarizes the relevant integrations with other C3-Cloud components to share the collected information. Additional detail of the integrations is given in Annex 5.

1.3. Task summary

The goal of task T5.2 was to develop interaction mechanisms for the patient (and any informal caregiver acting on behalf of the patient) to collect and share both structured and unstructured data with the MDT and to communicate with the MDT.

Task T5.2 is described in the Description of Action (DoA) in the following manner:

“In this task, interaction mechanisms to communicate with the patient to establish connection with the formal and informal care givers both synchronously and asynchronously will be developed. The Data Collection and Feedback Mechanism will be integrated with the Personalised Care Plan Development Platform of Task 7.3, to enable active participation of the patient to shared decision making. Based on the agreed integrated care plan, reminders will be sent to the patient regarding treatment interventions including medications and physical therapies and also about upcoming appointments, and the tests required. The aim is to establish a continuous reinforcement, motivation and support to the patient at every step of the care management process”

1.4. Follow-on tasks

This deliverable will be used by the following follow-on tasks and work packages:

T5.3. The results of T5.1 (Development of self-management training materials for increasing patient adherence to care plans) and T5.2 will be integrated in T5.3 (Development of the responsive multi-channel Patient Empowerment Platform).

WP7. PEP solution is tightly integrated with Coordinated Care and Cure Delivery Platform (C3DP) developed in WP7. The integration will be finalized in T7.4.

WP8. PEP solution will be deployed and piloted in the scope of WP8 (C3-Cloud Pilot Application Development & Deployment).

WP9. PEP solution will be tested, verified and evaluated in the scope of WP9 (Evaluation and Impact Assessment).

1.5. Abbreviations and acronyms

Abbreviation / Acronym	DEFINITION
C3DP	Coordinated Care and Cure Delivery Platform
PEP	Patient Empowerment Platform
Medixine Suite	The software product on which PEP is built.
RJH	Region Jämtland Härjedalen, Sweden (one of the pilot sites in the project)
BC	Basque Country, Spain (one of the pilot sites in the project)
KG	Kronikgune
OSAKI	Osakidetza
SWFT	South Warwickshire NHS Foundation Trust, United Kingdom (one of the pilot sites in the project)
MDT	Multi-disciplinary care team
BYOD	Bring Your Own Device
FHIR	FHIR – Fast Healthcare Interoperability Resources (hl7.org/fhir) – is a next generation standards framework created by HL7. FHIR combines the best features of HL7's v2, HL7 v3 and CDA product lines while leveraging the latest web standards and applying a tight focus on implement-ability.
DoA	Description of Action

1.6. Terminology

Multi-disciplinary care team. A team comprising members from various care sectors. The MDT collaboratively designs an integrated and personalised care plan for the patient. The MDT has access to patient data generated in all care settings.

Multi-disciplinary care team member. GPs, specialists, study nurses, pharmacists, physiotherapists, geriatricians, nutritionists, who comprise a multidisciplinary care team to provide care to a patient.

Patient. Patients with two or more of these chronic conditions: diabetes, heart failure, renal failure and depression, who can access the integrated care plan and their health data through C3-Cloud.

Informal caregiver. A person acting on behalf of the patient, who will have access to the patient's data and care plan. The informal care giver will have the same access permissions as the patient.

Questionnaire. A structured set of questions. The questions are ordered and grouped into coherent subsets, corresponding to the structure of the grouping of the underlying questions.

Care plan. Dynamic, personalized plan for a patient to tackle health issues, achieve health goals, and coordinate healthcare activities, collaboratively designed by MDT and executed by the systems in all involved care sectors.

Activity. An activity is a logical entity representing planned actions. C3-Cloud implements activities as activity definitions within the FHIR Care Plan resource instances.

Care plan activity. An activity defined in the care plan to maximize the prospects of the goals set within the care plan.

Questionnaire activity. The activity that requests patients to complete an assigned questionnaire at a specific time.

Observation activity. The activity that requests patients to enter the assigned observation during the activity period.

Measurement activity. The activity that requests patients to perform measurements during the activity period.

Questionnaire response. Questionnaire response provides a complete or partial set of answers to a questionnaire.

Observation. Measurements and simple assertions made about a patient, device or other subject. Observations are a central element in healthcare, used to support diagnosis, monitor progress, determine baselines and patterns and even capture demographic characteristics.

Measurement. Observation made using a sensor device. For instance, a blood glucose or blood pressure measurement.

Clinical measurement model. A model of measurement data collection where the healthcare provider acquires and provides patients with medical sensor devices to collect measurement data from the patients.

Bring Your Own Device (BYOD) measurement model. A model of measurement data collection where the patient uses a BYOD manufacturer's connected sensor device and service, which can transmit authorized measurements to the C3-Cloud solutions.

Device kit. A device kit consists of a device hub and one or more devices connected to the hub.

Device hub. A device used to collect measurements from the connected sensor device(s), to transfer these to the centralised C3-Cloud storage for access by the patient and other C3-Cloud users (MDT) and components (like C3DP).

Sensor device. A device used to make measurements.

Connected sensor device. A sensor device capable of transferring the measured values electronically to a device hub for upload and storage in a centralised solution like C3-Cloud.

Message. A message exchanged between the MDT and a patient using the messaging functionality.

2. COMMUNICATION AND DATA COLLECTION METHODS

The patient can communicate and share data with the MDT using any of the following methods:

1. Complete structured patient questionnaires.
2. Upload structured measurements using personal medical sensor devices.
3. Enter manually structured observations.
4. Communicate with care team via unstructured messages.
5. Provide feedback or progress notes with direct reference to a specific goal or care plan activity.

2.1. Patient questionnaires

Patient questionnaires are used to collect information from patients using a structured set of questions. The questions are ordered and grouped into coherent subsets, corresponding to the structure of the grouping of the underlying questions. The questionnaires can be completed by the patient or by another person acting on behalf of the patient (e.g. their informal caregiver). Questionnaires can be completed once or regularly, and periodically, as prescribed by the care plan activity schedule. A number of questionnaires include logic to calculate scores (for instance, the Alcohol Use Disorders Identification Test - AUDIT score calculated from the 10 questions the patient has filled in), and interpretations of these scores (the numeric score is for instance classified in 2 zones “no problems” or “some problems”), automatically from the answers. These are commonly used to allow a reviewer to quickly evaluate the responses entered by the patient.

Questionnaires can be used to collect information for virtually any purpose. This includes both medical (e.g., medical history, family diseases, physiological and mental functioning) and administrative/demographic information (e.g., preferences, contact information, information on living conditions). A single questionnaire can be multi-purpose (for instance a full virtual health check), or single-purpose (for instance questions on a single lifestyle factor like alcohol or smoking). Preferably, the questionnaires are validated and standardized, but there is also a clear need to include local, customized questionnaires to meet potential needs of the MDTs. The questionnaires are defined using the Medixine Suite admin tools, so it is easy to adapt to different needs over time (e.g., create completely new questionnaires, create modified versions of used questionnaires and remove used questionnaires from active use).

Some examples of commonly used, standardized questionnaires are:

- GDS-20 (Geriatric Depression Scale), MADRS (Montgomery-Asberg Depression Scale) and PHQ (Patient Health Questionnaire) questionnaires for mental health review.
- Lifestyle factor assessments like AUDIT for alcohol use and Fagerström test for nicotine dependence.
- EQ5D to measure health outcome.
- “NHS How are you?”- quiz for health assessment.

The process for making questionnaires available to patients in C3-Cloud is as follows:

1. A patient questionnaire is configured using the Medixine Suite admin tools.
2. The patient questionnaire is deployed in the centralized FHIR repository.
3. A MDT member assigns a patient questionnaire activity to the patient's care plan.
4. The patient is notified when the activity starts (i.e. it is time to fill in the questionnaire).
5. The patient views the active activity in PEP and starts filling in the questionnaire, as shown in the example below.

Fill in Morisky-Green questionnaire

Please complete the Morisky-Green questionnaire to help us review your status.

When: once on 2017-12-01

[Details...](#)
[Progress note](#)

6. The patient answers all the questions and completes the questionnaire.

Morisky-Green Scale

Do you ever forget to take your medicine? *	<input type="radio"/> Yes <input type="radio"/> No
Are you careless at times about taking your medicine? *	<input type="radio"/> Yes <input type="radio"/> No
When you feel better, do you sometimes stop taking your medicine? *	<input type="radio"/> Yes <input type="radio"/> No
Sometimes if you feel worse when you take the medicine, do you stop taking it? *	<input type="radio"/> Yes <input type="radio"/> No

7. If the questionnaire includes calculated scores and their interpretations, calculated by PEP. The scores are displayed to the health professional in C3DP. For some questionnaires, the scores are also displayed to the patient (for instance the PHQ-9 score and its interpretation).

Score

2

8. The patient receives the configured immediate feedback after completing the questionnaire. The immediate feedback may be a static message that is the same for all patients or a dynamic message generated according to a defined rule.

Morisky-Green Scale

Thank you, your care team will review your answers.

Continue

9. PEP stores the questionnaire response in the centralized FHIR repository and notifies C3DP.
10. The MDT can now view the response in C3DP.

2.2. Sensor device measurements

Connected sensor devices are used to make it easier for patients to collect their regular measurements (whether paper or sensor based) and share this data with the MDT. It is much easier and more convenient for the patient when this data is collected automatically compared to traditional models (like keeping paper diary with the measurement values). The patient collects measurement data when the patient and the MDT have agreed this and the MDT assigns a measurement activity to the patient.

A measurement activity can be performed in two different ways: (1) using the clinical model or (2) using the BYOD model.

In the clinical model, the healthcare provider has acquired sensor devices, which they configure as device kits (each kit includes an Android device hub with the Medixine VirtualHub software and the sensor devices paired with the device hub). They give the device kits to selected patients to use for some period of time. It is common that these devices are rotated between patients (i.e. the device is given to another patient when returned to the provider).



Figure 1. Example of a clinical model device kit

In the BYOD model, patients have acquired their own personal connected sensor devices and use them to take measurements at their own wish. The measured values are stored in the service provided by the BYOD device manufacturer. The BYOD device manufacturer may provide a service interface to allow the patient to transfer (authorize transfer) the collected data to other services of choice (like C3-Cloud). Examples of BYOD device manufacturers are Nokia Withings and iHealth.



Figure 2. Example of BYOD services connected with C3-Cloud

The following table summarizes relevant facts of the two measurement models.

Clinical devices (provider)	BYOD devices (personal)
Health organization owned and controlled.	Patient owned and controlled.
Quick and easy for patients to start using as device kits have been acquired and prepared in advance by organization.	Patient must acquire a supported BYOD sensor device after the MDT and patient have agreed what the patient shall measure using a sensor device.
Device kit can be assigned and activated for a patient without patient doing anything. All activation work is done by health organization personnel (activates a pre-configured device kit to the patient). The patient can immediately start measuring when device kit handed over.	Requires the patient to perform all tasks needed to connect and authorize the measurements to be transferred from the device manufacturer service to C3-Cloud service.
Patient doesn't have to own any personal IT equipment and have own Internet access (device kit assumed to have mobile data capability).	Patient must own, or purchase as part of their BYOD kit their own IT equipment and Internet access to be able to use the BYOD equipment and to upload measurements to the BYOD service.
Device kits can be rotated (i.e. transferred from one patient to another) and thus used by multiple patients over a longer time period.	Each device is personal and can only be used by the one patient.
The total cost per patient are likely to be lower in this model compared with the BYOD model. The organization will likely get a discount (lower	Each patient acquires their sensor devices individually and are likely to pay the list price for devices. Currently the price of CE marked

Clinical devices (provider)	BYOD devices (personal)
price per unit) when acquiring a large number of device kits. If the device kits are rotated, the cost per patient is lower as the same kit is used by multiple patients. The organization may charge their patients for the use of the devices to share costs with the patient.	connected devices for the BYOD model are at the same level as devices intended for the clinical model.
The organization has full control over the availability of devices in their organization (can keep suitable stock). This ensures that patients will be able to perform measurements whenever a measurement activity is added.	The organization has no control over which patients have necessary devices and uncertain whether patient will be able to perform an added measurement activity.
The organization has full control over the access to measured data as the measurements are collected using devices owned and controlled by the organization (i.e. the organization can set the rules which determine who may access the collected info).	The organization is not in control of access to the data and must get each patient to electronically give their authorization to access collected data.
The maintenance of the devices is controlled by the organization. Adds resource requirements, but on the other hand the organization controls when devices are serviced and re-calibrated.	The maintenance of the devices is controlled by the patient and the organization is not in control of when and how often devices are serviced and re-calibrated.
This model is well-suited both for short term follow-up (for instance when MDT chooses selected patients to measure their blood pressure for two weeks) and long-term follow-up.	This model is well-suited for use where one patient uses a sensor device for a longer period of time.

2.2.1. Sensor devices – clinical model

In the clinical model, sensor devices are used in the following manner:

1. The organization configures acquired devices and hubs in advance using Medixine Suite admin tools.

Device hubs

+ Add new

Hub ID #	Type #	Assigned	State #	Devices
hub1234	devicehub	–	Active	<div>Blood Pressure Monitor - 123456</div> <div>Connect device</div>
hub5678	devicehub	–	Active	<div>Weight Scale - 5678901</div> <div>Connect device</div>

2. The device kits with a hub and a set of paired sensor devices are automatically registered in the centralized FHIR repository.
3. The device kits are given to the MDT to be assigned and handed over to patients.
4. The MDT assigns a measurement activity with a selected device kit to the patient's care plan.
5. A MDT member gives the device kit to the patient and ensures the patient understands how to use the devices by providing training and relevant materials.
6. The patient is notified via SMS when the activity starts.
7. The patient views the active activity in PEP and starts executing it.

Observe

Measure blood pressure weekly

Measure your blood pressure once a week in the morning, just after you wake up. Make sure the measurement is available in your PEP record.

When: every week 1 time during the morning from 2009-07-21

Device: ACME Blood pressure monitor (20120602723VG)

[Open tracker](#)
[Update progress](#)

8. The patient uses the sensor device according to the activity schedule.
9. Measured values are automatically uploaded to PEP.
10. PEP stores the measurements in the centralized FHIR repository and notifies C3DP.
11. The MDT can view stored values in C3DP.
12. The patient can view stored values in PEP.



2.2.2. Sensor devices – BYOD model

BYOD sensor devices are used in the following manner:

1. The patient has acquired a connected personal sensor device supported by C3-Cloud and is using it to measure. The measured values are uploaded to the BYOD device manufacturer's service.
2. A MDT member assigns a measurement activity to the patient but does not assign any device hub to the patient.
3. The patient is notified when the activity starts.
4. The patient views the active measurement activity.

Observe

Measure blood pressure weekly

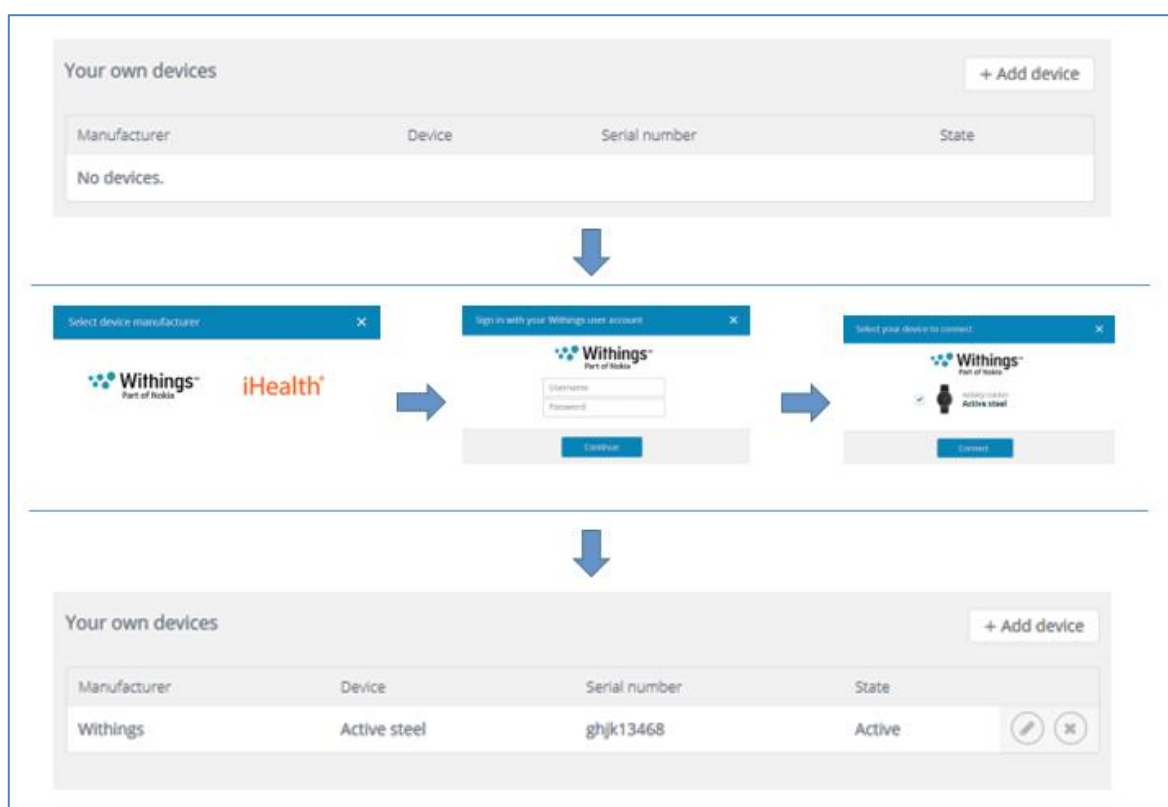
Measure your blood pressure once a week in the morning, just after you wake up. Make sure the measurement is available in your PEP record.

When: every week 1 time during the morning from 2009-07-21

Device: [device not yet set]

[Open tracker](#)
[My devices](#)
[Update progress](#)

5. The patient links the BYOD service with C3-Cloud. This authorizes C3-Cloud to transfer measured data from the BYOD service and store it in C3-Cloud.



6. The patient uses the device and measured values are automatically uploaded/stored in the BYOD device manufacturers service.
7. The stored measurements are transferred from the BYOD device manufacturers service to C3-Cloud.
8. The uploaded values are stored in the centralized FHIR repository.

9. The MDT can view stored values in C3DP.
10. The patient can view stored values in PEP.



2.3. Other manually entered observations

The patient can also enter other data as observations. The process for this type of information is the following:

1. The MDT assigns an observation activity to the patient's care plan.
2. The patient is notified when the activity starts.
3. The patient views the active activity and starts executing it.

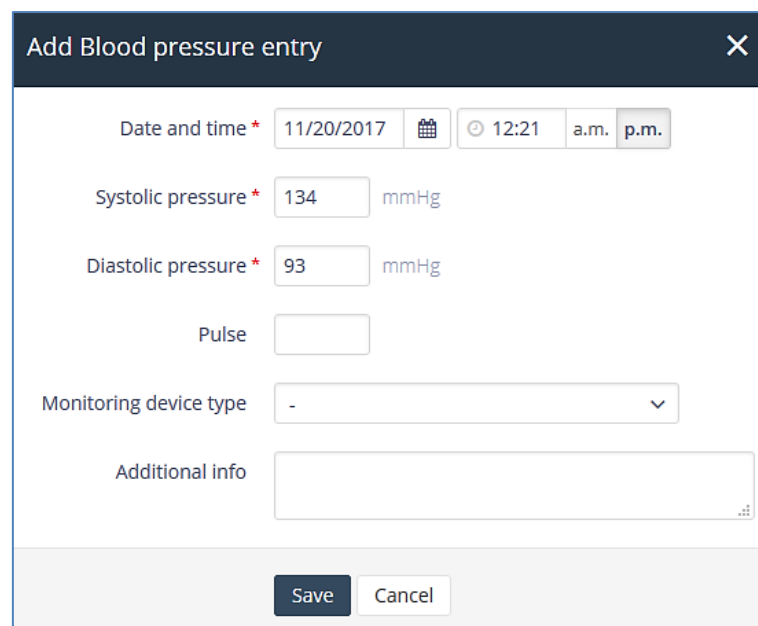
Daily meal photo

Take photos of your 3 main meals and upload them to PEP everyday, for a week.

When: every day 3 times at a meal from 2017-11-10 to 2017-11-17

Details...
Progress note

4. The patient manually enters observations in PEP according to the set activity schedule. The patient fills in the observation items (as configured for the observation using Medixine Suite admin tools). The observation can contain items of all common types including text, numbers, quantities, choices, coded values, dates and times and file attachments.



Add Blood pressure entry [X]

Date and time * 11/20/2017 [calendar icon] 12:21 a.m. p.m.

Systolic pressure * 134 mmHg

Diastolic pressure * 93 mmHg

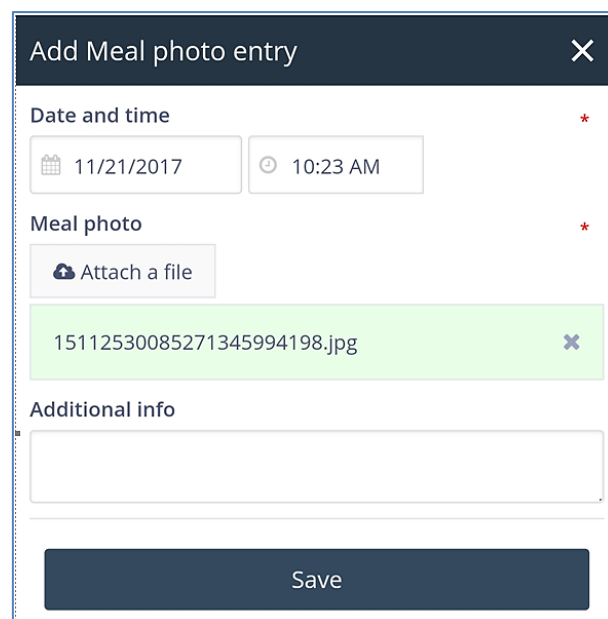
Pulse [input field]

Monitoring device type - [dropdown arrow]

Additional info [text area]

[Save] [Cancel]

If the observation type is configured to include file attachments, the patient can upload the allowed types (e.g., popular image types or pdf files). If the patient uses a mobile device, the patient can add pictures taken with the camera (e.g., meal photos).



Add Meal photo entry [X]

Date and time * 11/21/2017 [calendar icon] 10:23 AM

Meal photo *

[Attach a file]

15112530085271345994198.jpg [X]

Additional info [text area]

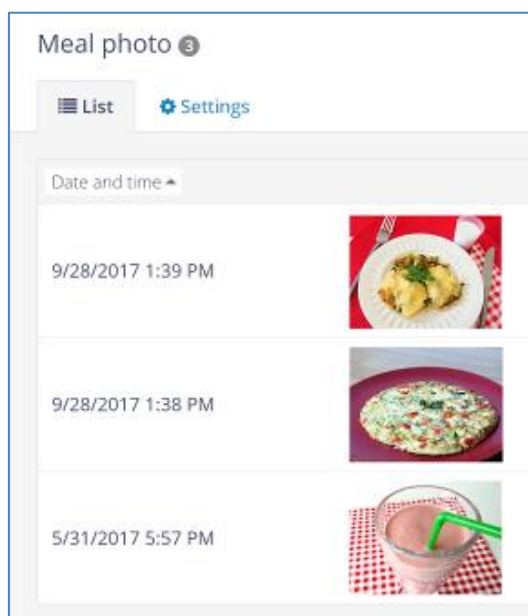
[Save]

5. PEP stores the observations in the centralized FHIR repository and notifies C3DP.
6. The MDT can view stored values in C3DP.

7. The patient can view stored values in PEP.



If the viewed observation includes file attachments (for instance the meal photos), the patient can open the attachments.



2.4. Unstructured, ad-hoc messaging

In addition to the methods described above for the collection of structured data from the patient in an organized manner, the patient and the MDT can exchange messages at any convenient time. The exchanged information is mostly free text, but file attachments can also be included in the messages.

There are two primary ways, the conversation between the care team and the patient can start:

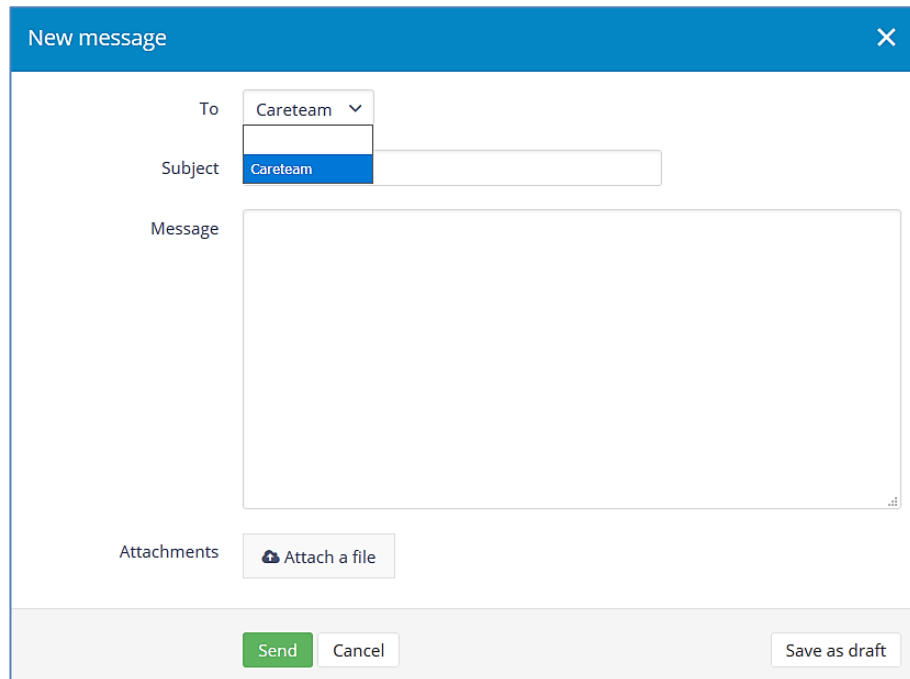
1. The conversation starts when a patient contacts the care team to ask something.

2. The conversation starts when a care team member sends a message to the patient.

In both use cases, the communication in the conversation can continue beyond the initial message. The recipient does this by replying to the received message.

2.4.1. Case 1: Patient contacts the MDT

1. The patient logs in to PEP, opens messaging and selects “New message”.
2. The patient chooses the recipient from the list of available recipients. The patient writes the subject and message. The patient can optionally add attachments to message. The patient completes the message by clicking on “Send”.



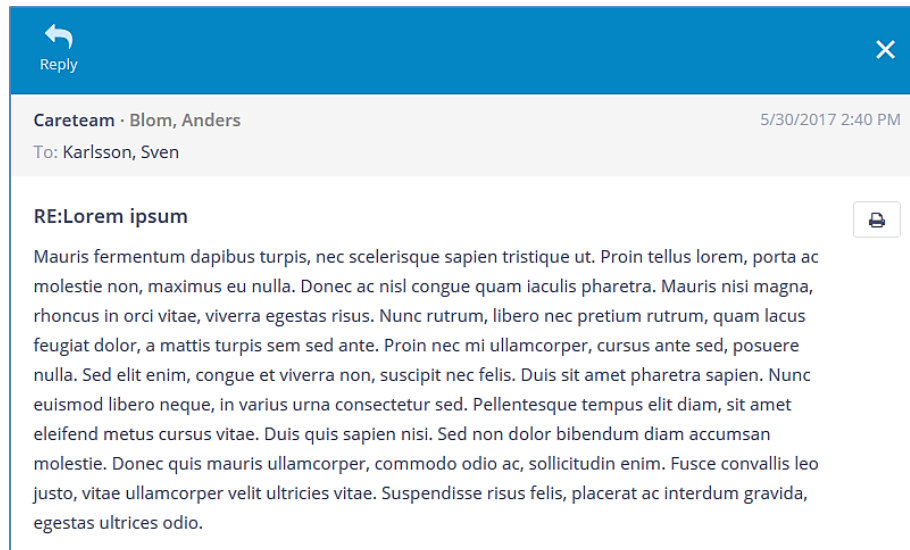
The screenshot shows a 'New message' dialog box with a blue header bar containing the title 'New message' and a close button (X). The form contains the following fields and controls:

- To:** A dropdown menu with 'Careteam' selected.
- Subject:** A text input field with 'Careteam' entered.
- Message:** A large text area for composing the message.
- Attachments:** A section with a button labeled 'Attach a file'.
- Buttons:** At the bottom, there are three buttons: 'Send' (green), 'Cancel' (white), and 'Save as draft' (white).

3. PEP stores the message in the FHIR repository and notifies C3DP of the new message.

2.4.2. Case 2: MDT contacts the patient

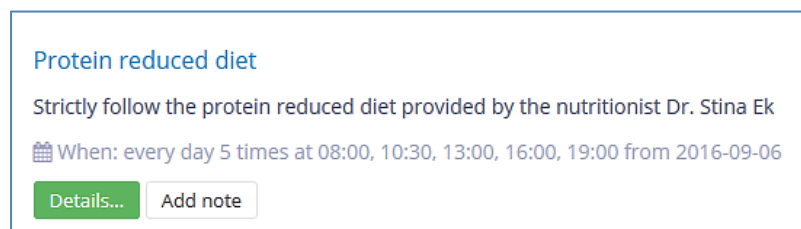
1. C3DP notifies PEP that there is a new message and PEP fetches the message from the FHIR repository.
2. PEP notifies the patient via SMS that there is a new message.
3. The patient logs in, opens messaging and reads the message.



2.5. Feedback & progress notes on goals and activities


The patient is able to provide feedback and progress notes directly on individual goals and activities in the care plan. This feedback can be totally unstructured or semi-structured so that progress information can be selected from dropdown menus. The process for this type of information flow is the following:

1. The patient logs in to PEP and opens a goal or an activity.



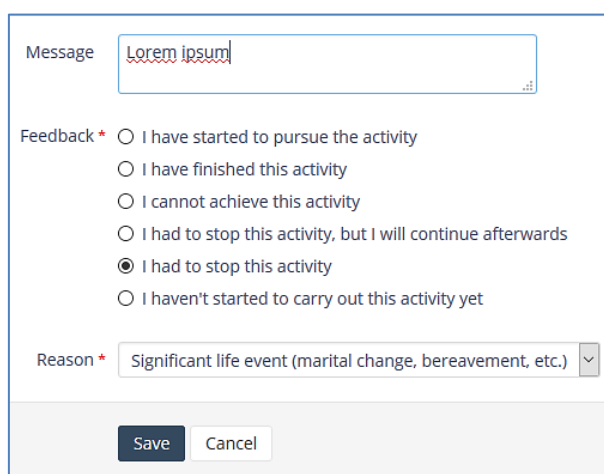
Protein reduced diet

Strictly follow the protein reduced diet provided by the nutritionist Dr. Stina Ek

 When: every day 5 times at 08:00, 10:30, 13:00, 16:00, 19:00 from 2016-09-06

[Details...](#) [Add note](#)

2. The patient clicks on “Add note”, and enters the feedback or progress note for the selected goal or activity.



Message

Feedback * ☐ I have started to pursue the activity
☐ I have finished this activity
☐ I cannot achieve this activity
☐ I had to stop this activity, but I will continue afterwards
☒ I had to stop this activity
☐ I haven't started to carry out this activity yet

Reason *

[Save](#) [Cancel](#)

3. The patient clicks on “Save” and the corresponding feedback is transmitted to the C3DP.

3. DATA COLLECTED IN C3-CLOUD PILOTS

This chapter describes the specific data defined by the project, to be collected using PEP. This includes the selected patient questionnaires, measurement types and the other types of data entered manually.

3.1. Patient questionnaires

The pilot site partners have analysed their concrete needs to collect data from patients in order to specify the patient questionnaires for the C3-Cloud pilots. They have shared their analysis results with the consortium and SRDC has compiled (from these suggestions), a master questionnaire catalogue (*see Annex 1 for the questionnaires master catalogue list*). This list contains mostly standardized questionnaires (like AUDIT and GDS-20 questionnaires), but also some local questionnaires, such as the RJH side-effects questionnaire.

The next action was for each pilot site to select from this master list the questionnaires they wanted to be included in their respective pilot. Medixine subsequently performed in collaboration with each pilot site, a detailed specification of these selected questionnaires (see Annexes 2 through 4 for details). These questionnaires will be used in the pilots in the respective local language. During development, the questionnaires will be in English to help all partners of the consortium understand the content of the questionnaires. For some questionnaires, the content was not readily available in English and for these only the local language (Spanish, Swedish) is used.

3.2. Sensor device measurements

3.2.1. Current sensor device use at pilot sites

The Basque Country (BC) has telemonitoring programs already in use (TeleIC and TeleEPOC). In these programs, they use connected sensor devices like A&D UA-767PBT-Ci blood pressure cuff, 355PBT-Ci scale and Nonin 3230 SpO2. The measured values are collected from these Bluetooth enabled sensor devices with an application running on a Samsung Android tablet. Patients not in the telemonitoring programs are using self-acquired blood pressure devices. The patients are encouraged to buy models validated by the SEH-LELHA (<https://www.seh-lelha.org/>). Glucometers are not included in the current telemonitoring programs of BC. Diabetic patients treated with insulin are given a glucometer and devices are also given temporarily to those patient treated with oral antidiabetic drugs, in situations of decompensation. Common glucometers used by patients are: ACCU-CHECK Aviva (Roche), GlucoMen Area 2K (A.Menarini diagnostics), Contour XT (Bayer), FreeStyle Optium Neo (Abbot), One Touch Select Plus (LifeScan).

Region Jämtland Härjedalen (RJH) reported that some patient's use sensor devices. Commonly used glucometers include GlucoMen Areo, GlucoMen LX Plus, Accu-Chek Mobile and Mylife Unio. Regarding blood pressure meters patient's buy them themselves and they recommend various types from Omron, Beurer e.g. BM 45, Braun exact fit or Nokia wireless.

South Warwickshire (SWFT) is currently not using connected devices to collect data from patients. They reported that it is likely in the future.

3.2.2. Planned sensor device use

The Consortium has determined a prioritized set of measurement types. Each clinical partner was asked to describe the priority of supported measurement types for the primary conditions of this project. As a result, Blood Pressure and Weight, have been chosen as the primary measurement types to be collected using sensor devices. Glucose was also stated to be of interest, but given that patients already use, to a high degree, non-connected sensor devices, it may be difficult to persuade patients to switch device for short-term use during the pilot study. Glucometers were therefore given a lower priority by the pilot

sites. Oxygen saturation (SpO2) measurement type is of lesser interest for the pilot sites and is not in the current scope.

From a technology point-of-view, no new measurement devices will be developed in the C3-Cloud project. The project will use commercial off-the-shelf sensor devices that are readily available in the market. The final decision on the actual sensor devices to be used, will be made at a later stage, as the project wants to use the best, available devices at the time of the pilots and adopt the newest devices, especially if the cost per device is lower than for the currently available devices. Some supported devices recommended at the time of this deliverable are listed in the table below.

Measurement type	Recommended devices - December 2017
Blood pressure	A&D UA 767 PBT-Ci
Weight	A&D 351
Glucose	Care Sense Dual
SpO2	Nonin ® Pulse Oximeter 3230

Table 1. Some recommended devices (December 2017)

3.3. Other observations

In the analysis of what data to collect, the majority of the data is collected either using questionnaires or sensor measurements. The only manually entered observations in the current scope are meal photos.

4. INTEGRATION WITH OTHER C3-CLOUD COMPONENTS

The integration and data sharing with other C3-Cloud components is achieved via the centralized FHIR repository. When a component changes data in the FHIR repository, the component sends an event to other components to signal to it to fetch and process the new data. The majority of the integration and data sharing of PEP is with the C3DP component.

The following FHIR resources are used in the integration with other C3-Cloud components:

Resource	Description
Careplan.activity	MDT assigned questionnaire, observation or general activity to the patient.
DeviceRequest	MDT assigned measurement activity.
Questionnaire	A structured questionnaire to be filled in.
QuestionnaireResponse	The patient's answers to a questionnaire.
Observation	Measurements and other types of observations entered by the patient.
Communication	Messages between patient and MDT.

*More details can be found in **Error! Unknown switch argument.***

5. ANNEXES

Annex 1. Questionnaire Master Catalogue

Annex 2. BC Questionnaires

Annex 3. RJH Questionnaires

Annex 4. SWFT Questionnaires

Annex 5. FHIR JSON Examples

ANNEX 1. QUESTIONNAIRE MASTER CATALOGUE

The following questionnaire master catalogue was compiled by the consortium:

1. Exercise Behaviours
2. Cognitive Symptom Management
3. Mental Stress Management/Relaxation
4. Communication with Physicians
5. Chronic Disease Self-Efficacy Scales
6. Self-Efficacy for Managing Chronic Disease - 6 item scale
7. Self-efficacy (Stanford)
8. Self-rated health
9. Illness intrusiveness rating
10. Fatigue visual numeric scale
11. Energy/Fatigue
12. Pain Visual Numeric
13. Pain severity
14. Shortness of Breath visual numeric scale
15. Sleep visual numeric
16. Stress visual numeric
17. Quality of life visual numeric
18. HAQ 20 item disability scale
19. HAQ 8 item disability scale
20. Health distress
21. Social/role activities limitation scale
22. Hyperglycaemia
23. Hypoglycaemia
24. Visits to providers
25. Visits to providers (diabetes)
26. Primer for evaluating outcomes
27. Questionnaire code book
28. NHS How Are You quiz
29. AUDIT (Alcohol Use Disorders Identification Test)
30. SF-36
31. Minnesota Living with Heart Failure Questionnaire
32. The UK Diabetes and Diet Questionnaire
33. PHQ-9
34. PHQ-2
35. Possible Drug adherence questionnaire for patients taking multiple drugs
36. Diabetes Assessment Form
37. Geriatric Depression Scale (GDS)
38. MADRS
39. EQ-5D-3L or EQ-5D-5L
40. RAND-36
41. PROMs in diabetes
42. Short questionnaire asking about side effects
43. PAM (Patient Activation Measure)
44. KAS-R (Kim Alliance Scale (KAS) measures the quality of therapeutic alliance)
45. Test Fagerstrom (An instrument designed to assess tobacco dependence).
46. Healthy lifestyles
47. VACS
48. Test Morisky-Green (to estimate the risk of medication non-adherence)
49. Health literacy

ANNEX 2. BC QUESTIONNAIRES

BC has selected the following patient questionnaires for their pilot:

1. Exercise Behaviours
2. Chronic Disease Self-Efficacy Scales
3. Self-efficacy (Stanford)
4. Illness intrusiveness rating
5. Energy/Fatigue
6. Pain Visual Numeric
7. Pain severity
8. Shortness of Breath visual numeric scale
9. Health distress
10. Visits to providers (diabetes)
11. Diabetes Self-Efficacy
12. Hyperglycaemia
13. Hypoglycaemia
14. NHS How Are You quiz
15. Test AUDIT (Alcohol Use Disorders Identification Test)
16. PHQ-9
17. GDS-20
18. EQ-5D-3L or EQ-5D-5L
19. Test Fagerstrom
20. Morisky-Green

Exercise Behaviours

Link to form definition: https://www.selfmanagementresource.com/docs/pdfs/English_-_exercise.pdf

Form

Exercise Behaviors

During the past week (even if it was not a typical week for you), how much total time (for the entire week) did you spend on each of the following?
Please choose one option for each question.

Stretching or strengthening exercises (range of motion, weights, etc.) *

☐ None
 ☐ Less than 30 minutes/week
 ☐ 30-60 minutes/week
 ☐ 1-3 hours/week
 ☐ More than 3 hours/week

Walk for exercise *

☐ None
 ☐ Less than 30 minutes/week
 ☐ 30-60 minutes/week
 ☐ 1-3 hours/week
 ☐ More than 3 hours/week

Swimming or aquatic exercise *

☐ None
 ☐ Less than 30 minutes/week
 ☐ 30-60 minutes/week
 ☐ 1-3 hours/week
 ☐ More than 3 hours/week

Bicycling (including stationary exercise bikes) *

☐ None
 ☐ Less than 30 minutes/week
 ☐ 30-60 minutes/week
 ☐ 1-3 hours/week
 ☐ More than 3 hours/week

Other aerobic exercise equipment (Stairmaster, rowing, skiing machine, etc.) *

☐ None
 ☐ Less than 30 minutes/week
 ☐ 30-60 minutes/week
 ☐ 1-3 hours/week
 ☐ More than 3 hours/week

Other aerobic exercise *

☐ None
 ☐ Less than 30 minutes/week
 ☒ 30-60 minutes/week
 ☐ 1-3 hours/week
 ☐ More than 3 hours/week

Please specify your other aerobic exercise:

Scoring

Each answer is converted to the number of minutes as follows:

0: None # 15: Less than 30 minutes/week # 45: 30-60 minutes/week # 120: 1-3 hours/week # 180: More than 3 hours/week

Score 1. Time spent in stretching or strengthening is the value for item 1.

Score 2. Time spent in aerobic exercise is the sum of the values for items 2 through 6.

The score is not displayed to the patient.

Score 1

Time spent in stretching or strengthening

45

Score 2

Time spent in aerobic exercise

255

Patient immediate feedback after completing the questionnaire

Static text same for all: "Thank you for completing".

Chronic Disease Self-Efficacy Scales

Link to form definition: https://www.selfmanagementresource.com/docs/pdfs/English_-_chronic_disease_self-efficacy_scales_32.pdf

Form

There are 10 scales, which each contain 1 or more questions:

1. Exercise Regularly Scale
2. Get Information About Disease Item
3. Obtain Help from Community, Family, Friends Scale
4. Communicate With Physician Scale
5. Manage Disease in General Scale
6. Do Chores Scale
7. Social/Recreational Activities Scale
8. Manage Symptoms Scale
9. Manage Shortness of Breath Item
10. Control/Manage Depression Scale

All questions are a number between 1 and 10 (1 = not at all confident; 10 = totally confident). All questions are mandatory.

Chronic Disease Self-Efficacy Scales

Exercise Regularly Scale

1. How confident are you that you can do gentle exercises for muscle strength and flexibility three to four times per week (range of motion, using weights, etc.)? *

Not at all confident
Totally confident

2. How confident are you that you can do aerobic exercise such as walking, swimming, or bicycling three to four times each week? *

Not at all confident
Totally confident

3. How confident are you that you can exercise without making symptoms worse? *

Not at all confident
Totally confident

NEXT →

Scoring

No scoring.

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing”.

Self-efficacy (Stanford)

No link to form definition. Definition provided as pdf file.

Form

Spanish Chronic Disease Self-Efficacy

We would like to know how confident you are in doing certain activities.
For each of the following questions, please choose the number that corresponds to your confidence that you can do the tasks regularly at the present time.

¿Qué tan seguro(a) se siente Ud. de poder evitar que la fatiga o cansancio debido a su enfermedad interfiera con las cosas que quiere hacer? *

muy inseguro(a)
muy seguro(a)

¿Qué tan seguro(a) se siente Ud. de poder evitar que las dolencias debido a su enfermedad interfieran con las cosas que quiere hacer? *

muy inseguro(a)
muy seguro(a)

¿Qué tan seguro(a) se siente Ud. de poder evitar que el estado emocional debido a su enfermedad interfiera con las cosas que quiere hacer? *

muy inseguro(a)
muy seguro(a)

¿Qué tan seguro(a) se siente Ud. de poder evitar que algunos otros síntomas o problemas de salud que tiene interfieran con las cosas que quiere hacer? *

muy inseguro(a)
muy seguro(a)

Scoring

No scoring.

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing”.

Illness Intrusiveness Rating

Link to form definition: https://www.selfmanagementresource.com/docs/pdfs/English_-_illnessintrusiveness.pdf

Form

Adapted Illness Intrusiveness Ratings	
<p>The following items ask about how much your illness and/or its treatment interferes with different aspects of your life. Please choose the one number that best describes your current life situation. If an item is not applicable, please leave the question empty to indicate that this aspect of your life is not affected.</p>	
How much does your illness and/or its treatment interfere with...	
your feeling of being healthy?	<div>Not very much</div> <div>Very much</div> <div></div>
social activities with your friends, neighbors, or groups?	<div>Not very much</div> <div>Very much</div> <div></div>
your religious or spiritual activities?	<div>Not very much</div> <div>Very much</div> <div></div>
your involvement in community or civic activities?	<div>Not very much</div> <div>Very much</div> <div></div>
your self-improvement or self-expression activities?	<div>Not very much</div> <div>Very much</div> <div></div>
the things you eat and drink?	<div>Not very much</div> <div>Very much</div> <div></div>
your work, including job, house work, chores, or errands?	<div>Not very much</div> <div>Very much</div> <div></div>
playing sports, gardening, or other physical recreation or hobbies?	<div>Not very much</div> <div>Very much</div> <div></div>
quiet recreation or hobbies, such as reading, TV, music, knitting, etc.?	<div>Not very much</div> <div>Very much</div> <div></div>
your financial situation?	<div>Not very much</div> <div>Very much</div> <div></div>
your relationship with your spouse or domestic partner?	<div>Not very much</div> <div>Very much</div> <div></div>
your sex life?	<div>Not very much</div> <div>Very much</div> <div></div>
your relationship and social activities with your family?	<div>Not very much</div> <div>Very much</div> <div></div>

Scoring

This scale has 5 subscales:

Physical Well-Being and Diet:	Items 1 and 2
Work and Finances:	Items 3 and 6
Marital, Sexual, and Family Relations:	Items 7, 8, and 9
Recreation and Social Relations:	Items 4, 5, and 10
Other Aspects of Life:	Items 11, 12, and 13

Subscale scores are the mean of the items within each subscale. To score the scale, average the subscale scores to correct for differences in the numbers of items combined.

Perceived Intrusiveness score. You may also generate a total Perceived Intrusiveness score by summing the individual items.

Scores not displayed to patient.

Score 1 Physical Well-Being and Diet	Score 2 Work and Finances	Score 3 Marital, Sexual, and Family Relations
4.50	1.50	1.00
Score 4 Recreation and Social Relations	Score 5 Other Aspects of Life	Total Perceived Intrusiveness score
4.33	3.67	3.00

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing”.

Energy/Fatigue

Link to form: <https://www.selfmanagementresource.com/docs/pdfs/English - energyfatigue.pdf>

Form

Energy/Fatigue
These questions are about how you feel and how things have been with you during the past month. For each question, please choose the option that comes closest to the way you have been feeling.
How much time during the past 4 weeks...
1. Did you feel worn out? *
<input type="radio"/> None of the time <input type="radio"/> A little of the time <input type="radio"/> Some of the time <input type="radio"/> A good bit of the time <input type="radio"/> Most of the time <input type="radio"/> All of the time
2. Did you have a lot of energy? *
<input type="radio"/> None of the time <input type="radio"/> A little of the time <input type="radio"/> Some of the time <input type="radio"/> A good bit of the time <input type="radio"/> Most of the time <input type="radio"/> All of the time
3. Did you feel tired? *
<input type="radio"/> None of the time <input type="radio"/> A little of the time <input type="radio"/> Some of the time <input type="radio"/> A good bit of the time <input type="radio"/> Most of the time <input type="radio"/> All of the time
4. Did you have enough energy to do the things you wanted to do? *
<input type="radio"/> None of the time <input type="radio"/> A little of the time <input type="radio"/> Some of the time <input type="radio"/> A good bit of the time <input type="radio"/> Most of the time <input type="radio"/> All of the time
5. Did you feel full of pep? *
<input type="radio"/> None of the time <input type="radio"/> A little of the time <input type="radio"/> Some of the time <input type="radio"/> A good bit of the time <input type="radio"/> Most of the time <input type="radio"/> All of the time

Scoring

Scores: None of the time (0), A little of the time (1), Some of the time (2), A good bit of the time (3), Most of the time (4), All of the time (5).

Score the chosen option, except items 1 and 3, which are reversed (i.e., 5, 4, 3, 2, 1), then take the mean of the five items.

Range is 0-5; higher score indicates more energy.

Score is not displayed to patient.

Score
3.00

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing”.

Pain Visual Numeric

Link to form definition: https://www.selfmanagementresource.com/docs/pdfs/English_-_Pain_visual_numeric.pdf

Form

Pain Visual Numeric

We are interested in learning whether or not you are affected by PAIN.

Pain *
Please choose below a number between 0 and 10 that describes your pain in the past 2 weeks:

No pain Severe pain

Slider bar with a blue circle and double-headed arrow in the center.

Scoring

No calculated scores.

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing”.

Pain Severity

Link to form definition: https://www.selfmanagementresource.com/docs/pdfs/English_-_painseverity.pdf

Form

Pain Severity

Please choose the number between 0 and 10 that best describes your physical discomfort or pain on the average over the past 4 weeks: *

None

6

As bad as you can imagine

Please choose the one number between 0 and 10 that best describes your physical discomfort or pain at its WORST over the past 4 weeks: *

None

2

As bad as you can imagine

During the past 4 weeks, how often have you had physical discomfort or pain? *
If you have had more than one discomfort or pain, answer by describing your feelings of discomfort or pain in general.

☐ Never
☐ Once or twice
☐ A few times
☐ Fairly often
☐ Very often
☐ Every day or almost every day

How much bodily discomfort or pain have you generally had during the past 4 weeks? *

☐ None
☐ Very mild
☐ Mild
☐ Moderate
☐ Severe
☐ Very severe

When you had physical discomfort or pain during the past 4 weeks, how long did it usually last? *
If you have had more than one discomfort or pain, answer by describing your feelings of discomfort or pain in general.

☐ Didn't have any
☐ A few minutes
☐ Several minutes to an hour
☐ Several hours
☐ A day or two
☐ More than 2 days

Scoring

No calculated scores.

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing”.

Shortness of Breath visual numeric scale

Link to form: [https://www.selfmanagementresource.com/docs/pdfs/English -
shortness of breath visual numeric.pdf](https://www.selfmanagementresource.com/docs/pdfs/English-_shortness_of_breath_visual_numeric.pdf)

Form

Shortness-of-Breath Visual Numeric


We are interested in learning whether or not you are affected by SHORTNESS OF BREATH.

Please choose below the number between 0 and 10 that describes your shortness of breath in the past 2 weeks: *

No shortness of breath

3

Severe shortness of breath

A horizontal slider bar with a blue circle marker positioned at the number 3. The bar is light blue and has a thin grey line above it. The number 3 is centered above the marker.

Scoring

No calculated scores.

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing”.

Health Distress

Link to form: <https://www.selfmanagementresource.com/docs/pdfs/English - healthdistress.pdf>

Form

Health Distress

These questions are about how you feel and how things have been with you during the past month. For each question, please choose the option that comes closest to the way you have been feeling.

How much time during the past month...

1. were you discouraged by your health problems? *

☐ None of the time
☐ A little of the time
☐ Some of the time
☐ A good bit of the time
☐ Most of the time
☐ All of the time

2. were you fearful about your future health? *

☐ None of the time
☐ A little of the time
☐ Some of the time
☐ A good bit of the time
☐ Most of the time
☐ All of the time

3. was your health a worry in your life? *

☐ None of the time
☐ A little of the time
☐ Some of the time
☐ A good bit of the time
☐ Most of the time
☐ All of the time

4. were you frustrated by your health problems? *

☐ None of the time
☐ A little of the time
☐ Some of the time
☐ A good bit of the time
☐ Most of the time
☐ All of the time

Scoring

Each answer is given a score value: None of the time (0), A little of the time (1), Some of the time (2), A good bit of the time (3), Most of the time (4), All of the time (5). The scale score is the mean of the four items.

The score is not displayed to the patient.

Score

Scores range from 0-5; higher score indicating more distress about health.

1.50

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing”.

Visits to Providers (Diabetes)

Link to form: <https://www.selfmanagementresource.com/docs/pdfs/English - utilizdiabetes.pdf>

Form

Diabetes Health Care Utilization
<p>In the past 6 months, how many times did you visit a physician? *</p> <p>Do not include visits while in the hospital or to a hospital emergency room.</p> <p>Fill in with "0" or another number.</p> <p><input type="text"/> times</p>
<p>In the past 6 months, how many time did you go to a hospital emergency room? *</p> <p>Fill in with "0" or another number.</p> <p><input type="text"/> times</p>
<p>How may total nights did you spend in the hospital in the past 6 months? *</p> <p>Fill in with "0" or another number.</p> <p><input type="text"/> nights</p>
<p>When was the last time you had your eyes examined (example: for glaucoma or any other problem)? *</p> <p>Please enter month and year.</p> <p>Example: 5/2017</p> <p><input type="text"/></p>
<p>How many times did the doctor or nurse examine your feet in the past 6 months? *</p> <p>Fill in with "0" or another number.</p> <p><input type="text"/> times</p>

Scoring

No calculated scores.

Patient immediate feedback after completing the questionnaire

Static text same for all: "Thank you for completing".

Diabetes Self-Efficacy

Link to form: [https://www.selfmanagementresource.com/docs/pdfs/English - self-efficacy_diabetes.pdf](https://www.selfmanagementresource.com/docs/pdfs/English_-_self-efficacy_diabetes.pdf)

Form

Self-Efficacy for Diabetes

We would like to know how confident you are in doing certain activities.
For each of the following questions, please choose the number that corresponds to your confidence that you can do the tasks regularly at the present time.

How confident do you feel that you can eat your meals every 4 to 5 hours every day, including breakfast every day? *

Not at all confident
Totally confident

How confident do you feel that you can follow your diet when you have to prepare or share food with other people who do not have diabetes? *

Not at all confident
Totally confident

How confident do you feel that you can choose the appropriate foods to eat when you are hungry (for example, snacks)? *

Not at all confident
Totally confident

How confident do you feel that you can exercise 15 to 30 minutes, 4 to 5 times a week? *

Not at all confident
Totally confident

How confident do you feel that you can do something to prevent your blood sugar level from dropping when you exercise? *

Not at all confident
Totally confident

How confident do you feel that you know what to do when your blood sugar level goes higher or lower than it should be? *

Not at all confident
Totally confident

How confident do you feel that you can judge when the changes in your illness mean you should visit the doctor? *

Not at all confident
Totally confident

How confident do you feel that you can control your diabetes so that it does not interfere with the things you want to do? *

Not at all confident
Totally confident

Scoring

No scoring.

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing”.

Hyperglycaemia

Link to form: https://www.selfmanagementresource.com/docs/pdfs/English_-hyperglycemia.pdf

Form

Hyperglycemia	
In the past week ...	
In the past week, did you ever have increased thirst? *	<input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Don't know
In the past week, did you ever have dry mouth? *	<input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Don't know
In the past week, did you ever have decreased appetite? *	<input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Don't know
In the past week, did you ever have nausea or vomiting? *	<input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Don't know
In the past week, did you ever have abdominal pain? *	<input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Don't know
In the past week, did you ever have frequent urination at night? (Do you have to get up to urinate 3 or more times a night?) *	<input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Don't know
In the past week, did you ever have severely high blood sugar (blood glucose readings of 300 mg or higher)? *	<input type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Don't know

Scoring

Score items as follows: No="0", Yes="1", Don't know=blank. Score is the sum of the seven items, with higher score indicating more hyperglycemia symptoms.

Score is not displayed to patient.

Score
Higher score indicating more hyperglycemia symptoms.
5

Patient immediate feedback after completing the questionnaire

Static text same for all: "Thank you for completing".

Hypoglycaemia

Link to form: <https://www.selfmanagementresource.com/docs/pdfs/English - hypoglycemia.pdf>

Form

Hypoglycemia	
In the past week ...	
In the past week, did you ever have morning headaches? *	<input checked="" type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Don't know
In the past week, did you ever have nightmares? *	<input checked="" type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Don't know
In the past week, did you ever have night sweats? *	<input type="radio"/> No <input checked="" type="radio"/> Yes <input type="radio"/> Don't know
In the past week, did you ever have lightheadedness? *	<input checked="" type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Don't know
In the past week, did you ever have shakiness or weakness? *	<input type="radio"/> No <input checked="" type="radio"/> Yes <input type="radio"/> Don't know
In the past week, did you ever have intense hunger? *	<input checked="" type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Don't know
In the past week, did you ever have times when you passed out, fainted, or lost consciousness, even for a short time? *	<input checked="" type="radio"/> No <input type="radio"/> Yes <input type="radio"/> Don't know

Scoring

Score items as follows: No="0", Yes="1", Don't know=blank. Score is the sum of the seven items, higher score indicating more hypoglycemia symptoms.

Score is not displayed to patient.

<p>Score</p> <p>Higher score indicates more hypoglycemia symptoms.</p> <p>2</p>

Patient immediate feedback after completing the questionnaire

Static text same for all: "Thank you for completing".

NHS How Are You Quiz

Link to form: <https://www.nhs.uk/oneyou/hay>

Page 1

How are you questionnaire

1/10 About you

How are you feeling right now? *

Move the sliders to let us know where on the scale you are at the moment for the different wellbeing measures.

Really knackered

Full of beans

Can run for miles

Can't run for a bus

Feeling calm

Totally wound up

Sleepless nights

Sleep like a baby

Lean and mean

Fat and flabby

Down in the dumps

Over the moon

NEXT →

Page 2

How are you questionnaire

2/10 About you

What stops you taking care of yourself? *

Pick as many as you like

- ☐ I don't have the time
- ☐ It's more important I look after others
- ☐ I don't know what to do
- ☐ I don't have the money
- ☐ I start but can't keep it up
- ☐ I'm ill or disabled
- ☐ Nothing - I take good good care of myself

NEXT →

Page 3

How are you questionnaire

3/10 About you

Who depends on you being healthy? *

Pick as many as you like

- ☐ My partner
- ☐ My kids
- ☐ My parents
- ☐ My grandkids
- ☐ My close friends
- ☐ My brothers and sisters
- ☐ My pets
- ☐ None of these

NEXT →

Page 4

How are you questionnaire

4/10 About you

Apart from not getting ill, what are your top 3 health priorities? *

Pick 3 of the following choices

☐

Fitting into my jeans

☐

Having more energy

☐

Avoiding aches and pains

☐

Feeling young

☐

Staying independent

☐

Keeping my mind sharp

☐

Having a more active social life

☐

Staying young looking

☐

Being there for my kids and grandkids

NEXT →

Page 5**How are you questionnaire****5/10 Eating****Drinks ***

What kind of choice would you usually make?

☐ Sugary drinks ☐ Diet drinks ☐ Water ☐ Unsugared tea/coffee**Carbohydrates ***

What kind of choice would you usually make?

☐ Chips ☐ Boiled potatoes ☐ Roast potatoes ☐ Jacket potatoes**Breakfast ***

If you had to, which one would you usually pick?

☐ Sugary cereal ☐ Plain porridge ☐ Plain cereal e.g. Cornflakes ☐ Wholegrain cereal**Cheese ***

If you had to, which one would you usually pick?

☐ Hard cheese ☐ Cottage cheese ☐ Lower fat hard cheese ☐ Low fat vegan cheese**Protein ***

If you had to, which one would you usually pick?

☐ Burger ☐ Fish ☐ Ham ☐ Lean meat or meat substitute**NEXT →**

Page 6

How are you questionnaire
6/10 Eating

How many servings of fruit and vegetables do you eat a day? *

☐ 0 ☐ 1-2 ☐ 3-4 ☐ 5+

Which snacks do you eat in a normal day? *
Pick as many as you like

☐ Fruit
☐ Chocolate and sweets
☐ Crisps
☐ Cakes
☐ Biscuits
☐ Teacakes
☐ Unsalted nuts
☐ Toast with low fat spread
☐ None of these

NEXT →

Page 7

On page 7 the configuration displays initially only one question. Depending on the answer, additional questions may be displayed (the choice never does not have any additional questions).

How are you questionnaire
7/10 Drinking

Do you drink alcohol? *

☐ Most weeks ☐ 2-4 times a month ☐ Monthly or less ☐ Never

NEXT →

How are you questionnaire

7/9 Drinking

Do you drink alcohol? *

☐ Most weeks
 ☒ 2-4 times a month
 ☐ Monthly or less
 ☐ Never

Which days in a normal week do you drink?

☐ Monday
 ☐ Tuesday
 ☐ Wednesday
 ☐ Thursday
 ☐ Friday
 ☐ Saturday
 ☐ Sunday

How much do you drink on weekdays?
Select the number of drinks in the boxes below

Beer or cider (Pint - 4%)	0 ▼
Beer or cider (330ml - 5%)	0 ▼
Spirits (Single shot)	0 ▼
Wine (175ml - 13%)	0 ▼

How much do you drink on weekends?
Select the number of drinks in the boxes below

Beer or cider (Pint - 4%)	0 ▼
Beer or cider (330ml - 5%)	0 ▼
Spirits (Single shot)	0 ▼
Wine (175ml - 13%)	0 ▼

In the last year, how many times have you had at least 3 pints of beer to drink in one day? *

☐ Never
 ☐ Less than monthly
 ☐ Monthly

NEXT →

How are you questionnaire

7/9 Drinking

Do you drink alcohol? *

☐ Most weeks
 ☐ 2-4 times a month
 ☐ Monthly or less
 ☒ Never

NEXT →

Page 8**How are you questionnaire****8/10 Moving****How much exercise do you get every day?**

Anything that makes you breathe harder counts e.g. fast walking, cycling, sport

Monday



Tuesday



Wednesday



Thursday



Friday



Saturday



Sunday

**NEXT →**

Page 9

How are you questionnaire	
9/10 Moving	
How much strengthening activity do you do? For example weights, sit-ups, yoga, carrying heavy shopping bags, digging the garden	
Monday	<div><div>0</div><div><div></div><div></div></div><div>150</div></div>
Tuesday	<div><div>0</div><div><div></div><div></div></div><div>150</div></div>
Wednesday	<div><div>0</div><div><div></div><div></div></div><div>150</div></div>
Thursday	<div><div>0</div><div><div></div><div></div></div><div>150</div></div>
Friday	<div><div>0</div><div><div></div><div></div></div><div>150</div></div>
Saturday	<div><div>0</div><div><div></div><div></div></div><div>150</div></div>
Sunday	<div><div>0</div><div><div></div><div></div></div><div>150</div></div>
<div>NEXT →</div>	

Page 10

How are you questionnaire
10/10 Smoking

Do you smoke? *

☐ Yes, every day

☐ Yes, but not every day

☐ No, I've quit

☐ No, never have

NEXT →

Scoring

No scoring.

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing”.

AUDIT

Link to form: http://www.talkingalcohol.com/files/pdfs/WHO_audit.pdf

Spanish content: http://contenidos.ceoe.es/PRL/var/pool/pdf/cms_content_documents-file-767-test-audit-y-cage.pdf

Form

AUDIT

Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest. Please choose the option that best describes your answer to each question.

1. How often do you have a drink containing alcohol? *

☐ Never
☐ Monthly or less
☐ 2-4 times a month
☐ 2-3 times a week
☐ 4 or more times a week

2. How many drinks containing alcohol do you have on a typical day when you are drinking? *

☐ 1 or 2
☐ 3 or 4
☐ 5 or 6
☐ 7 to 9
☐ 10 or more

3. How often do you have six or drinks or more on one occasion *

☐ Never
☐ Less than monthly
☐ Monthly
☐ Weekly
☐ Daily or almost daily

4. How often during the last year have you found that you were not able to stop drinking once you had started? *

☐ Never
☐ Less than monthly

Scoring

Score calculated according http://www.talkingalcohol.com/files/pdfs/WHO_audit.pdf page 18.

Score result is either no problem or some problem. The rule is: 8 p or higher in men, 6 p or higher in women (7 p or higher in men and women > 65 years) indicates some problem.

Score interpretation is either no problem or some problem. The interpretation rule is: 8 p or higher in men, 6 p or higher in women (7 p or higher in men and women > 65 years) indicates some problem.

Score and result is not displayed to patient.

Score	Result
10	Some problem

Patient immediate feedback after completing the questionnaire

Text 1 (no problem): "Thank you for your answers. Your consumption is within the limits of what is medically considered ok"

Text 2 (some problem): "Thank you for your answers. Your answers indicate some problems that your care team will follow up".

PHQ-9

Link to form: <https://patient.info/doctor/patient-health-questionnaire-phq-9> (on-line version)

Form

PHQ-9	
1. Over the past two weeks, how often have you been bothered by any of the following problems?	
Little interest or pleasure in doing things. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Feeling down, depressed, or hopeless. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Trouble falling or staying asleep, or sleeping too much. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Feeling tired or having little energy. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Poor appetite or overeating. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Feeling bad about yourself - or that you are a failure or have let yourself or your family down. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Trouble concentrating on things, such as reading the newspaper or watching television. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Moving or speaking so slowly that other people could have noticed. Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Thoughts that you would be better off dead, or of hurting yourself in some way. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day

Scoring

The PHQ-9 is the depression module, which scores each of the nine DSM-IV criteria as "0" (not at all) to "3" (nearly every day)

Rule: Depression Severity: 0-4 none, 5-9 mild, 10-14 moderate, 15-19 moderately severe, 20-27 severe.

Score and interpretation is displayed to patient when all questions have been answered.

Total score	Result
11	Moderate

Patient immediate feedback after completing the questionnaire

Static text same for all: "Thank you for completing".

Geriatric Depression Scale (Swedish GDS-20)

Link to form definition: <https://vardgivare.skane.se/siteassets/3.-kompetens-och-utveckling/sakkunniggrupper/kunskapscentrum-demens/arbetsdokument---fillistning/gds-20-skala.pdf>

Form

GDS 20	
Choose the best answer for how you have felt over the past week:	
Är du i grund och botten nöjd med ditt liv ? *	<input type="radio"/> Yes <input type="radio"/> No
Har du gett upp många aktiviteter och intressen ? *	<input type="radio"/> Yes <input type="radio"/> No
Tycker du att ditt liv är tomt ? *	<input type="radio"/> Yes <input type="radio"/> No
Blir du ofta uttråkad ? *	<input type="radio"/> Yes <input type="radio"/> No
Är du oftast på gott humör ? *	<input type="radio"/> Yes <input type="radio"/> No
Är du rädd att något skall hända dig ? *	<input type="radio"/> Yes <input type="radio"/> No
Känner du dig oftast glad och nöjd ? *	<input type="radio"/> Yes <input type="radio"/> No
Känner du dig ofta hjälplös ? *	<input type="radio"/> Yes <input type="radio"/> No
Vill du hellre stanna hemma än gå ut och prova nya sysselsättningar ? *	<input type="radio"/> Yes <input type="radio"/> No
Tycker du att du har fler problem med ditt minne än de flesta andra ? *	<input type="radio"/> Yes <input type="radio"/> No
Tycker du att det känns bra att leva ? *	<input type="radio"/> Yes <input type="radio"/> No
Känner du dig tämligen värdelös som du är nu ? *	<input type="radio"/> Yes <input type="radio"/> No
Känner du dig full av energi ? *	<input type="radio"/> Yes <input type="radio"/> No
Tycker du att din situation är hopplös ? *	<input type="radio"/> Yes <input type="radio"/> No
Tycker du att de flesta andra har det bättre än du ? *	<input type="radio"/> Yes <input type="radio"/> No
Har du svårt att somna och/eller vaknar du tidigt på morgonen ? *	<input type="radio"/> Yes <input type="radio"/> No
Är du ofta orolig och ängslig ? *	<input type="radio"/> Yes <input type="radio"/> No
Kan du ibland känna så kraftig oro att det känns outhärdligt ? *	<input type="radio"/> Yes <input type="radio"/> No
Har du ofta smärtor och/eller värk i kroppen ? *	<input type="radio"/> Yes <input type="radio"/> No
Oroar du dig ofta för att du har en kroppslig sjukdom ? *	<input type="radio"/> Yes <input type="radio"/> No

Scoring

Yes, based simply on answers yes/no, 20 questions giving 0 or 1 point each. This used for score rule: <https://vardgivare.skane.se/siteassets/3.-kompetens-och-utveckling/sakkunniggrupper/kunskapscentrum-demens/arbetsdokument---fillistning/gds-20-skala.pdf>

2 zone score interpretation: depression unlikely (0-5 points) and depression suspected (6-20 points).
Score is not displayed to patient.

Score	Result
16	Misstanke om depression

Score is not displayed to patient.

Patient immediate feedback after completing the questionnaire

Text 1 (Depression unlikely): "Thank you for your answers. They do not indicate that you have any depression. Your doctor will review the result and respond to you".

Text 2 (Depression suspected): "Thank you for your answers. They indicate the possibility that you could have a depression. Your doctor will review the result and respond to you".

EQ-5D-5L

BC has shared material in PDF document format. BC has confirmed they have a license for this questionnaire.

Form

Health quality EQ5

Mobility *

☐ I have no problems in walking about
 ☐ I have some problems in walking about
 ☐ I am confined to bed

Self-care *

☐ I have no problems with self-care
 ☐ I have some problems washing or dressing myself
 ☐ I am unable to wash or dress myself

Usual activities *

E.g. work, study, housework, family or leisure activities.

☐ I have no problems with performing my usual activities
 ☐ I have some problems with performing my usual activities
 ☐ I am unable to perform my usual activities

Pain / Discomfort *

☐ I have no pain or discomfort
 ☐ I have moderate pain or discomfort
 ☐ I have extreme pain or discomfort

Anxiety / Depression *

☐ I am not anxious or depressed
 ☐ I am moderately anxious or depressed
 ☐ I am extremely anxious or depressed

We would like to know how good or bad your health is TODAY *

This scale is numbered from 0 to 100. 100 means the best health you can imagine. 0 means the worst health you can imagine.

0

100

Scoring

Health state

Each question is scored 1 – no problem, 2 – some problems, 3 extreme problems. A unique health state is defined by combining 1 level from each of the 5 dimensions. A total of 243 possible health states is defined in this way. Each state is referred to in terms of a 5-digit code. For example, state 11111 indicates no problems on any of the 5 dimensions, while state 11223 indicates no problems with mobility and self-care, some problems with performing usual activities, moderate pain or discomfort and extreme anxiety or depression.

Health index

To calculate the value of any health status, first, the value of 1 is assigned to status 11111 (without health problems in any dimension). If the state is different from 11111, the value of the **constant** is subtracted (**Table 1** below). Subsequently, if there are problems of level 2 in a certain dimension, the value corresponding to each dimension is subtracted, according to table 1. The same procedure is followed when there are problems of level 3, but multiplying the value of the dimension with problems by 2. Finally, the coefficient corresponding to the parameter N3 - a parameter that represents the importance given to the presence of problems from level 3- is subtracted once when there is one or more problems of level 3. For example, in the case of health status 13111 it is said that there is a value of 1 and it would be subtracted the value of the constant and 0.2024 (0.1012×2) because there are problems level 3 in the personal care dimension (table 1). In addition, parameter N3 was subtracted also, which would finally give an index of 0.4355 ($0.4355 = 1 - 0.1502 - 0.2024 - 0.2119$).

The use of these techniques allows to take into account that an improvement in the pain dimension may not have the same value for the interviewees as a magnitude equal to that of mobility. Precisely, and as can be seen in table 1, the fact of subtracting 0.0897 from 1 when it comes to any mobility problem compared to the subtracting of 0.0596 when it is a pain problem, indicates that, at least in the Spanish population, mobility problems are more important than problems of pain. Interestingly, this finding appears inverted in a study conducted in the United Kingdom.

TABLA 1 Coeficientes para el cálculo de la tarifa social de valores para el EQ-5D en España	
Parámetro	Coefficiente
Constante	0,1502
Movilidad	0,0897
Cuidado personal	0,1012
Actividades cotidianas	0,0551
Dolor/malestar	0,0596
Ansiedad/depresión	0,0512
N3	0,2119
Adaptada de Badia et al, 1999 ⁷ .	

Health state	Health index *
12312	0.52

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing”.

Test Fagerstrom

An instrument designed to assess tobacco dependence.

Link to form:

https://www.tco.gov.hk/english/quitting/files/Fagerstrom_Test_of_Nicotine_Dependence.pdf

Form

Fagerstrom Test of Nicotine Dependence	
How soon after you wake up do you smoke your first cigarette? *	<input type="radio"/> 5 minutes <input type="radio"/> 6-30 minutes <input type="radio"/> 31-60 minutes <input type="radio"/> 60 minutes or more
Do you find it difficult to refrain from smoking in places where it is forbidden (e.g. shopping mall, MTR train or lift)? *	<input type="radio"/> Yes <input type="radio"/> No
Which cigarette would you hate most to give up? *	<input type="radio"/> The first one in the morning <input type="radio"/> Any other
Do you smoke more frequently during the first hours after waking up than the rest of the day? *	<input type="radio"/> Yes <input type="radio"/> No
Do you smoke if you are so ill that you are in bed most of the day? *	<input type="radio"/> Yes <input type="radio"/> No
How many cigarettes do you smoke every day? *	<input type="radio"/> 31 or more <input type="radio"/> 21-30 <input type="radio"/> 11-20 <input type="radio"/> 10 or less

Scoring

Score / Interpretation / Comments

0-3 / Low / Drugs may not be required

4-5 / Medium / May use drugs of lower dosage

6-10 / High / May use drugs of higher dosage

Score is not displayed to patient.

Score	Result
8	High ▼
Comments May use drugs of higher dosage	

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing”.

Morisky-Green

Test Morisky-Green (to estimate the risk of medication non-adherence).

Link to questionnaire: <http://www.measureuppressuredown.com/hcprof/find/toolkit/plank4tool1.pdf>

Form

Morisky-Green Scale	
Do you ever forget to take your medicine? *	<input checked="" type="radio"/> Yes <input type="radio"/> No
Are you careless at times about taking your medicine? *	<input type="radio"/> Yes <input checked="" type="radio"/> No
When you feel better, do you sometimes stop taking your medicine? *	<input checked="" type="radio"/> Yes <input type="radio"/> No
Sometimes if you feel worse when you take the medicine, do you stop taking it? *	<input type="radio"/> Yes <input checked="" type="radio"/> No

Scoring

The score is count of yes answers. Range 0-4.

No score interpretation.

Score is not displayed to patient.

Score	2
-------	---

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you, your care team will review your answers.”

ANNEX 3. RJH QUESTIONNAIRES

RJH has selected the following patient questionnaires:

1. AUDIT
2. GDS-20
3. MADRS-S
4. Custom side-effects
5. Morisky-Green

AUDIT

Swedish version of the questionnaire: <http://dok.sls.se/BeroendeC/AUDIT.pdf>

An official Swedish interpretation/ scoring can be found at: <https://ltdalarna.se/PageFiles/9973/AUDIT-%20tolkning%202008.pdf>

Form

AUDIT	
Här är ett antal frågor om Dina alkoholvanor. Vi är tacksamma om Du besvarar dem så noggrant och ärligt som möjligt genom att markera det alternativ som gäller för Dig	
1. Hur ofta dricker Du alkohol? *	<input type="radio"/> Aldrig <input type="radio"/> 1 gång i månaden eller mer sällan <input type="radio"/> 2-4 gånger i månaden <input type="radio"/> 2-3 gånger i veckan <input type="radio"/> 4 gånger/vecka eller mer
2. Hur många "glas" Dricker Du en typisk dag då Du dricker alkohol? * <small>Med ett glas menas 50cl folköl, 33cl starköl, 1 glas rött eller vitt vin, 1 litet glas starkvin eller 4cl sprit t.ex. whisky.</small>	<input type="radio"/> 1 - 2 <input type="radio"/> 3 - 4 <input type="radio"/> 5 - 6 <input type="radio"/> 7 - 9 <input type="radio"/> 10 eller fler
3. Hur ofta dricker Du sex sådana "glas" eller mer vid samma tillfälle? *	<input type="radio"/> Aldrig <input type="radio"/> Mer sällan än en gång i månaden <input type="radio"/> Varje månad <input type="radio"/> Varje vecka <input type="radio"/> Dagligen eller nästan varje dag

+ questions 4 – 10 similar to the ones above.

Scoring

An official Swedish interpretation/ scoring can be found at: <https://ltdalarna.se/PageFiles/9973/AUDIT-%20tolkning%202008.pdf>

Age and gender fetched from patient record person demographics. Age calculated from birth date using system current date.

Maximum points = 40 p. 8 p or higher in men, 6 p or higher in women (7 p or higher in men and women > 65 years) indicates either a risk behavior or more serious abuse.

Score interpretation is either no problem or some problem. The interpretation rule is: 8 p or higher in men, 6 p or higher in women (7 p or higher in men and women > 65 years) indicates some problem.

The score and interpretation is not displayed to patient.

Score	Result
10	Some problem

Patient immediate feedback after completing the questionnaire

To the patient the dichotomous answers:

Text 1 (no problem): *"Thank you for your answers. Your consumption is within the limits of what is medically considered ok"*

Text 2 (some problem): *"Thank you for your answers. Your answers indicate some problems that your care team will follow up".*

AUDIT

Thank you for your answers. Your consumption is within the limits of what is medically considered ok

Continue

GDS-20 (Swedish version)

Swedish GDS-20 : <https://vardgivare.skane.se/siteassets/3.-kompetens-och-utveckling/sakkunniggrupper/kunskapscentrum-demens/arbetsdokument---fillistning/gds-20-skala.pdf>.

It is validated and the scoring is described in this document.

Form

GDS 20	
Choose the best answer for how you have felt over the past week:	
Är du i grund och botten nöjd med ditt liv ? *	<input type="radio"/> Yes <input type="radio"/> No
Har du gett upp många aktiviteter och intressen ? *	<input type="radio"/> Yes <input type="radio"/> No
Tycker du att ditt liv är tomt ? *	<input type="radio"/> Yes <input type="radio"/> No
Blir du ofta uttråkad ? *	<input type="radio"/> Yes <input type="radio"/> No
Är du oftast på gott humör ? *	<input type="radio"/> Yes <input type="radio"/> No
Är du rädd att något skall hända dig ? *	<input type="radio"/> Yes <input type="radio"/> No
Känner du dig oftast glad och nöjd ? *	<input type="radio"/> Yes <input type="radio"/> No
Känner du dig ofta hjälplös ? *	<input type="radio"/> Yes <input type="radio"/> No
Vill du hellre stanna hemma än gå ut och prova nya sysselsättningar ? *	<input type="radio"/> Yes <input type="radio"/> No
Tycker du att du har fler problem med ditt minne än de flesta andra ? *	<input type="radio"/> Yes <input type="radio"/> No
Tycker du att det känns bra att leva ? *	<input type="radio"/> Yes <input type="radio"/> No
Känner du dig tämligen värdelös som du är nu ? *	<input type="radio"/> Yes <input type="radio"/> No
Känner du dig full av energi ? *	<input type="radio"/> Yes <input type="radio"/> No
Tycker du att din situation är hopplös ? *	<input type="radio"/> Yes <input type="radio"/> No
Tycker du att de flesta andra har det bättre än du ? *	<input type="radio"/> Yes <input type="radio"/> No
Har du svårt att somna och/eller vaknar du tidigt på morgonen ? *	<input type="radio"/> Yes <input type="radio"/> No
Är du ofta orolig och ängslig ? *	<input type="radio"/> Yes <input type="radio"/> No
Kan du ibland känna så kraftig oro att det känns outhärdligt ? *	<input type="radio"/> Yes <input type="radio"/> No
Har du ofta smärtor och/eller värk i kroppen ? *	<input type="radio"/> Yes <input type="radio"/> No
Oroar du dig ofta för att du har en kroppslig sjukdom ? *	<input type="radio"/> Yes <input type="radio"/> No

Scoring

Yes, based simply on answers yes/no, 20 questions giving 0 or 1 point each. This used for score rule: <https://vardgivare.skane.se/siteassets/3.-kompetens-och-utveckling/sakkunniggrupper/kunskapscentrum-demens/arbetsdokument---fillistning/gds-20-skala.pdf>

2 zone score interpretation: depression unlikely (0-5 points) and depression suspected (6-20 points).

Score is not displayed to patient.

Score	Result
16	Misstanke om depression

Patient immediate feedback after completing the questionnaire

Text 1 (Depression unlikely): "Thank you for your answers. They do not indicate that you have any depression. Your doctor will review the result and respond to you". ("Tack för dina svar. Svaren tyder på att du inte har någon depression. Din doktor kommer att se resultaten och höra av sig till dig med en bedömning").

Text 2 (Depression suspected): "Thank you for your answers. They indicate the possibility that you could have a depression. Your doctor will review the result and respond to you". ("Tack för dina svar. Svaren visar att det är möjligt att du skulle kunna ha en depression. Din läkare kommer att se resultaten och höra av sig till dig")

MADRS-S

Link to form: <http://www.viss.nu/Global/Blanketter/MADRS-Sjalvskattning.pdf>

Form

9 questions. Questions displayed one question per page.

All pages/questions follow this pattern (example page 2):

MADRS

2. Reported sadness *

Representing reports of depressed mood, regardless of whether it is reflected in appearance or not. Includes low spirits, despondency or the feeling of being beyond help and without hope.

☐ Occasional sadness in keeping with the circumstances.
☐ Sad or low but brightens up without difficulty.
☐ Pervasive feelings of sadness or gloominess. The mood is still influenced by external circumstances.
☐ Continuous or unvarying sadness, misery or despondency.

NEXT →

1

2

3

4

5

6

7

8

9

Scoring

Only score calculated (no interpretation result), for which the rule is taken from:

<http://www.viss.nu/Global/Blanketter/MADRS-Sjalvskattning.pdf>

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you, your care team will review your answers.”

Custom Side-effects Questionnaire

Link to form: custom questionnaire. No link.

Questions:

"do you experience side effects on your medications? (yes/no) "

If yes, which side effects and how severe do you experience them?"

In Swedish:

"Upplever du biverkningar av din medicinering? (ja/nej).

Berätta i så fall vilka biverkningarna är och hur besvärande dessa är".

Visual

The form is titled "Medication Side-Effects". It contains the following elements:

- A question: "Do you experience side effects on your medications? *
- Two radio buttons: "Yes" and "No". In the top version, "No" is selected. In the bottom version, "Yes" is selected.
- If "Yes" is selected, there are two more questions:
 - "Which side effects have you experienced?" followed by a text input field.
 - "How severe are the side-effects you have experienced?" followed by three radio buttons: "Mild", "Medium", and "Severe".

Scoring

No scoring.

Patient immediate feedback after completing the questionnaire

Static text same for all: "Thank you, your care team will review your answers."

Misc

This questionnaire can be both be added to the planned care plan activities and be completed at any time the patient wants to.

Morisky-Green

Test Morisky-Green (to estimate the risk of medication non-adherence).

Link to form: <http://www.measureuppressuredown.com/hcprof/find/toolkit/plank4tool1.pdf>

Visual

Morisky-Green Scale	
Do you ever forget to take your medicine? *	<input checked="" type="radio"/> Yes <input type="radio"/> No
Are you careless at times about taking your medicine? *	<input type="radio"/> Yes <input checked="" type="radio"/> No
When you feel better, do you sometimes stop taking your medicine? *	<input checked="" type="radio"/> Yes <input type="radio"/> No
Sometimes if you feel worse when you take the medicine, do you stop taking it? *	<input type="radio"/> Yes <input checked="" type="radio"/> No

Scoring

The score is count of yes answers. Range 0-4.

No score interpretation.

Score is not displayed to patient.

Score	2
-------	---

Patient immediate feedback after completing the questionnaire

Static text same for all: "Thank you, your care team will review your answers."

ANNEX 4. SWFT QUESTIONNAIRES

SWFT has selected the following patient questionnaires:

1. Chronic Disease Self-Efficacy Scales
2. Shortness of Breath visual numeric scale
3. HAQ 20 item disability scale
4. SF-36
5. The UK Diabetes and Diet Questionnaire
6. PHQ-9
7. Morisky-Green

Chronic Disease Self-Efficacy Scales

Link to form: <https://www.selfmanagementresource.com/docs/pdfs/English - chronic disease self-efficacy scales 32.pdf>

Form

All questions are a number between 1 and 10 (1 = not at all confident; 10 = totally confident).

All questions are mandatory.

There are 10 scales, which each contain 1 or more questions:

1. Exercise Regularly Scale
2. Get Information About Disease Item
3. Obtain Help from Community, Family, Friends Scale
4. Communicate with Physician Scale
5. Manage Disease in General Scale
6. Do Chores Scale
7. Social/Recreational Activities Scale
8. Manage Symptoms Scale
9. Manage Shortness of Breath Item
10. Control/Manage Depression Scale

Chronic Disease Self-Efficacy Scales

Exercise Regularly Scale

1. How confident are you that you can do gentle exercises for muscle strength and flexibility three to four times per week (range of motion, using weights, etc.)? *

Not at all confident
Totally confident

2. How confident are you that you can do aerobic exercise such as walking, swimming, or bicycling three to four times each week? *

Not at all confident
Totally confident

3. How confident are you that you can exercise without making symptoms worse? *

Not at all confident
Totally confident

NEXT →

Scoring

The score for each item is the number circled. The score for each scale is the mean of the items.

The score is not displayed to the patient.

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing this questionnaire.”.

Shortness of Breath visual numeric scale

Link to form: [https://www.selfmanagementresource.com/docs/pdfs/English -
shortness of breath visual numeric.pdf](https://www.selfmanagementresource.com/docs/pdfs/English-_shortness_of_breath_visual_numeric.pdf)

Form

Shortness-of-Breath Visual Numeric

We are interested in learning whether or not you are affected by SHORTNESS OF BREATH.

Please choose below the number between 0 and 10 that describes your shortness of breath in the past 2 weeks: *

No shortness of breath

3

Severe shortness of breath

Scoring

No calculated scores.

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing this questionnaire.”.

HAQ 20 Item Disability Scale

Link to form: https://www.selfmanagementresource.com/docs/pdfs/English - Stanford_haq20.pdf

Page 1

Stanford HAQ 20-Item Disability Scale	
DRESSING - Are you able to:	
Dress yourself, including tying shoelaces and doing buttons? *	With SOME difficulty ▼
Shampoo your hair? *	Without ANY difficulty ▼
ARISING - Are you able to:	
Stand up from a straight chair? *	UNABLE to do ▼
Get in and out of bed? *	With MUCH difficulty ▼
Eating - Are you able to:	
Cut your meat? *	- ▼
Lift a full cup or glass to your mouth? *	- ▼
Open a new milk carton? *	- ▼
WALKING - Are you able to:	
Walk outdoors on flat ground? *	- ▼
Climb up five steps? *	- ▼
AIDS OR DEVICES	
Please check any AIDS OR DEVICES that you usually use for any of the above activities.	
<input type="checkbox"/> Devices used for dressing (button hook, zipper pull, etc.) <input checked="" type="checkbox"/> Walker <input type="checkbox"/> Special or built up chair <input type="checkbox"/> Crutches	
<input checked="" type="checkbox"/> Built up or special utensils <input type="checkbox"/> Wheelchair <input type="checkbox"/> Cane	
HELP FROM ANOTHER PERSON	
Please check any categories for which you usually NEED HELP FROM ANOTHER PERSON.	
<input type="checkbox"/> Dressing and grooming <input type="checkbox"/> Eating <input checked="" type="checkbox"/> Arising <input type="checkbox"/> Walking	

Page 2

Stanford HAQ 20-Item Disability Scale	
HYGIENE - Are you able to:	
Wash and dry your body? *	- <input type="text"/>
Take a tub bath? *	- <input type="text"/>
Get on and off the toilet? *	- <input type="text"/>
REACH - Are you able to:	
Reach and get down a 5 pound object (such as a bag of sugar) from above your head? *	- <input type="text"/>
Bend down to pick up clothing from the floor? *	- <input type="text"/>
GRIP - Are you able to:	
Open car doors? *	- <input type="text"/>
Open previously opened jars? *	- <input type="text"/>
Turn faucets on and off? *	- <input type="text"/>
ACTIVITIES - Are you able to:	
Run errands and shop? *	- <input type="text"/>
Get in and out of a car? *	- <input type="text"/>
Do chores such as vacuuming or yard work? *	- <input type="text"/>
AIDS OR DEVICES Please check any AIDS OR DEVICES that you usually use for any of the above activities.	
<input type="checkbox"/> Raised toilet seat <input type="checkbox"/> Long-handled appliances in bathroom <input type="checkbox"/> Bathtub seat <input type="checkbox"/> Long-handled appliances for reach <input type="checkbox"/> Bathtub bar <input type="checkbox"/> Jar opener (for jars previously opened)	
HELP FROM ANOTHER PERSON Please check any categories for which you usually NEED HELP FROM ANOTHER PERSON.	
<input type="checkbox"/> Hygiene <input type="checkbox"/> Gripping and opening things <input type="checkbox"/> Reach <input type="checkbox"/> Errands and chores	

Scoring

Score each answer: Without ANY difficulty (0), With SOME difficulty (1), With MUCH difficulty (2), UNABLE to do (3).

There are eight categories; first score within each category:

Dressing and Grooming	includes items 1 and 2
Arising	includes items 3 and 4
Eating	includes items 5, 6 and 7
Walking	includes items 8 and 9
Hygiene	includes items 10, 11, and 12
Reach	includes items 13 and 14

Grip	includes items 15, 16 and 17
Activities	includes items 18, 19, and 20

Category score. The score for each category is the single response within the category with the highest score (greatest difficulty).

However, if any "aids or devices" and/or "help from another person" items at the bottom of each page are checked, **the category to which they apply** is adjusted upward to "2".

If the basic score is already "2" or "3", the score remains unchanged. "Aids or devices" and "help from another person" can only change a category's score to "2"; they do not change the score to a "1" or a "3".

Disability index. The score for the disability index is the mean of the eight category scores. The higher score indicates greater disability.

The scores are not displayed to the patient.

Patient immediate feedback after completing the questionnaire

Static text same for all: "Thank you for completing this questionnaire."

SF-36

Link to form: https://www.brandeis.edu/roybal/docs/SF-36_website_PDF.pdf

Page 1**SF-36**

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. Thank you for completing this survey! For each of the following questions, please choose the option that best describes your answer.

In general, would you say your health is: *

- ☐ Excellent
- ☐ Very good
- ☐ Good
- ☐ Fair
- ☐ Poor

Compared to one year ago, *

- ☐ Much better now than one year ago
- ☐ Somewhat better now than one year ago
- ☐ About the same
- ☐ Somewhat worse now than one year ago
- ☐ Much worse now than one year ago

Page 2

The following items are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?

- | | |
|--|---|
| a. Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports * | <input type="radio"/> Yes, Limited a Lot
<input type="radio"/> Yes, Limited a Little
<input type="radio"/> No, Not limited at All |
| b. Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf * | <input type="radio"/> Yes, Limited a Lot
<input type="radio"/> Yes, Limited a Little
<input type="radio"/> No, Not limited at All |
| c. Lifting or carrying groceries * | <input type="radio"/> Yes, Limited a Lot
<input type="radio"/> Yes, Limited a Little
<input type="radio"/> No, Not limited at All |

Page 3

During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of your physical health?	
a. Cut down the amount of time you spent on work or other activities *	<input type="radio"/> Yes <input type="radio"/> No
b. Accomplished less than you would like *	<input type="radio"/> Yes <input type="radio"/> No
c. Were limited in the kind of work or other activities *	<input type="radio"/> Yes <input type="radio"/> No
d. Had difficulty performing the work or other activities (for example, it took extra effort) *	<input type="radio"/> Yes <input type="radio"/> No
During the past 4 weeks, have you had any of the following problems with your work or other regular daily activities as a result of any emotional problems (such as feeling depressed or anxious)?	
a. Cut down the amount of time you spent on work or other activities *	<input type="radio"/> Yes <input type="radio"/> No
b. Accomplished less than you would like 1 2 *	<input type="radio"/> Yes <input type="radio"/> No
c. Didn't do work or other activities as carefully as usual *	<input type="radio"/> Yes <input type="radio"/> No

Page 4

During the past 4 weeks, to what extent has your physical health or emotional problems interfered with your normal social activities with family, friends, neighbors, or groups? *	
<input type="radio"/> Not at all <input type="radio"/> Slightly <input type="radio"/> Moderately <input type="radio"/> Quite a bit <input type="radio"/> Extremely	
How much bodily pain have you had during the past 4 weeks? *	
<input type="radio"/> None <input type="radio"/> Very mild <input type="radio"/> Mild <input type="radio"/> Moderate <input type="radio"/> Severe <input type="radio"/> Very severe	
During the past 4 weeks, how much did pain interfere with your normal work (including both work outside the home and housework)? *	
<input type="radio"/> Not at all <input type="radio"/> A little bit <input type="radio"/> Moderately <input type="radio"/> Quite a bit <input type="radio"/> Extremely	

Page 5

How much of the time during the past 4 weeks . . .	
These questions are about how you feel and how things have been with you during the past 4 weeks. For each question, please give the one answer that comes closest to the way you have been feeling.	
a. Did you feel full of pep? *	<input type="radio"/> All of the Time <input type="radio"/> Most of the Time <input type="radio"/> A Good Bit of the Time <input type="radio"/> Some of the Time <input type="radio"/> A Little of the Time <input type="radio"/> None of the Time
b. Have you been a very nervous person? *	<input type="radio"/> All of the Time

plus additional similar questions repeated until “i. Did you feel tired?”.

Page 6

During the past 4 weeks, how much of the time has your physical health or emotional problems interfered with your social activities (like visiting with friends, relatives, etc.)? *	
<input type="radio"/> All of the time <input type="radio"/> Most of the time <input type="radio"/> Some of the time <input type="radio"/> A little of the time <input type="radio"/> None of the time	
How TRUE or FALSE is each of the following statements for you.	
a. I seem to get sick a little easier than other people *	<input type="radio"/> Definitely True <input type="radio"/> Mostly True <input type="radio"/> Don't Know <input type="radio"/> Mostly False <input type="radio"/> Definitely False
b. I am as healthy as anybody I know *	<input type="radio"/> Definitely True <input type="radio"/> Mostly True <input type="radio"/> Don't Know <input type="radio"/> Mostly False <input type="radio"/> Definitely False
c. I expect my health to get worse *	<input type="radio"/> Definitely True <input type="radio"/> Mostly True <input type="radio"/> Don't Know <input type="radio"/> Mostly False <input type="radio"/> Definitely False
d. My health is excellent *	<input type="radio"/> Definitely True <input type="radio"/> Mostly True <input type="radio"/> Don't Know <input type="radio"/> Mostly False <input type="radio"/> Definitely False

Scoring

The SF-36 has eight scaled scores; the scores are weighted sums of the questions in each section. Scores range from 0 - 100 Lower scores = more disability, higher scores = less disability

Sections: • Vitality • Physical functioning • Bodily pain • General health perceptions • Physical role functioning • Emotional role functioning • Social role functioning • Mental health

The score is not displayed to the patient.

Patient immediate feedback after completing the questionnaire

Static text same for all: “Thank you for completing this questionnaire”.

The UK Diabetes and Diet Questionnaire

Link to form:

https://static.onlinesurveys.ac.uk/media/account/346/survey/167368/question/ukddq_self_administered_versionio.pdf

Page 1

Diabetes and Diet Questionnaire

This questionnaire asks about your diet over the past month. Answer the questions by choosing the option that is most like your usual diet. You may want to discuss your answers with your health care provider.

How often did you eat a portion of vegetables? *

A portion of fresh, raw, tinned and frozen vegetables is 80g.
These are some examples of what counts as a portion:

- 2 florets of broccoli or cauliflower or 4 tablespoons green, leafy vegetables
- 3 heaped tablespoons of cooked vegetables like carrots, peas, okra or courgettes
- A dessert or cereal bowl of salad
- 7 cherry tomatoes

☐ Never or very rarely
 ☐ Once a week or less often
 ☐ 2-4 times a week
 ☐ 5-6 times a week
 ☐ 1-2 times a day
 ☐ 3 or more times a day

How often did you eat a portion of fruit? *

A portion of fresh, tinned, frozen or cooked fruit is 80g.
These are some examples of what counts as a portion:

- 1 medium fruit like a banana, apple, orange, pear, peach or nectarine
- 2 small fruit like plums or satsumas
- A handful of grapes or berries
- A 5cm slice of a large fruit like a melon or pineapple
- A tablespoon of dried fruit

☐ Never or very rarely
 ☐ Once a week or less often
 ☐ 2-4 times a week
 ☐ 5-6 times a week
 ☐ 1-2 times a day
 ☐ 3 or more times a day

NEXT →

1

2

3

4

5

6

7

Page 2

<p>How often did you eat a cake, a sweet pastry like a Danish pastry, a donut or a sweet biscuit? *</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Once a week or less often <input type="radio"/> 2- 4 times a week <input type="radio"/> 5-6 times a week <input type="radio"/> 1-2 times a day <input type="radio"/> 3 or more times a day </p>
<p>How often did you eat some sweets or a bar of chocolate? *</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Once a week or less often <input type="radio"/> 2- 4 times a week <input type="radio"/> 5-6 times a week <input type="radio"/> 1-2 times a day <input type="radio"/> 3 or more times a day </p>
<p>How often did you drink sugary drinks? *</p> <p>Include non-diet fizzy drinks, squashes, mixers, energy drinks, fruit juices or coffee, tea or other hot drinks with sugar or flavoured syrups.</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Once a week or less often <input type="radio"/> 2- 4 times a week <input type="radio"/> 5-6 times a week <input type="radio"/> 1-2 times a day <input type="radio"/> 3 or more times a day </p>
<p>How often did you use full-fat spread (butter or a full fat margarine) on your bread, potatoes or vegetables? *</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Once a week or less often <input type="radio"/> 2- 4 times a week <input type="radio"/> 5-6 times a week <input type="radio"/> 1-2 times a day <input type="radio"/> 3 or more times a day </p>

Page 3

<p>How often did you eat full-fat cheese? *</p> <p>Include cheese in sandwiches, on biscuits, in sauces and when used as a topping. Full fat cheeses include hard cheeses like cheddar, blue cheeses and soft cheeses like brie or cream cheese or full-fat goat cheeses.</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Less than once a week <input type="radio"/> Once a week <input type="radio"/> 2-5 times a week <input type="radio"/> Nearly every day or daily <input type="radio"/> Twice or more per day </p>
<p>How often did you eat processed meat? *</p> <p>Include processed meat in sandwiches, ready meals and if eaten as a snack. Processed meat includes foods like bacon, ham, spam, sausages, salami or chorizo.</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Less than once a week <input type="radio"/> Once a week <input type="radio"/> 2-5 times a week <input type="radio"/> Nearly every day or daily <input type="radio"/> Twice or more per day </p>
<p>How often did you eat a savoury pastry? *</p> <p>Think about food like pies, pasties, samosas, sausage rolls or vol-au-vents.</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Less than once a week <input type="radio"/> Once a week <input type="radio"/> 2-5 times a week <input type="radio"/> Nearly every day or daily <input type="radio"/> Twice or more per day </p>
<p>How often did you eat savoury foods like crisps, corn chips, corn puffs, salted nuts or Bombay mix? *</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Less than once a week <input type="radio"/> Once a week <input type="radio"/> 2-5 times a week <input type="radio"/> Nearly every day or daily <input type="radio"/> Twice or more per day </p>

Page 4

<p>How often did you eat 'fast foods' from a takeaway or in a restaurant? *</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Less than once a week <input type="radio"/> Once a week <input type="radio"/> 2-5 times a week <input type="radio"/> Nearly every day or daily <input type="radio"/> Twice or more per day </p>
<p>How often did you eat pudding or dessert, apart from fruit, with your meals? *</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Less than once a week <input type="radio"/> Once a week <input type="radio"/> 2-5 times a week <input type="radio"/> Nearly every day or daily <input type="radio"/> Twice or more per day </p>
<p>How often did you drink alcohol? *</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Less than once a week <input type="radio"/> Once a week <input checked="" type="radio"/> 2-5 times a week <input type="radio"/> Nearly every day or daily </p>
<p>How often did you eat oily fish? *</p> <p>Think about fresh or tinned salmon, trout, sardine, mackerel, pilchards, herring or red mullet, or fresh tuna.</p> <p> <input type="radio"/> Never <input checked="" type="radio"/> Less than once a week <input type="radio"/> Once a week <input type="radio"/> Twice or more per week </p>

Additional notes displayed depending of question choices:

<p>How often did you drink alcohol? *</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Less than once a week <input type="radio"/> Once a week <input type="radio"/> 2-5 times a week <input checked="" type="radio"/> Nearly every day or daily </p>
<p>Note</p> <p>Scoring for alcohol does not take into account binge drinking. It is likely that drinking more than once a day exceeds guidelines</p>
<p>How often did you eat oily fish? *</p> <p>Think about fresh or tinned salmon, trout, sardine, mackerel, pilchards, herring or red mullet, or fresh tuna.</p> <p> <input checked="" type="radio"/> Never <input type="radio"/> Less than once a week <input type="radio"/> Once a week <input type="radio"/> Twice or more per week </p>
<p>Note</p> <p>The omega-3 fatty acids are essential and must be consumed in the diet. For vegetarians, or people who dislike oily fish, good alternate sources are rapeseed oil (commonly vegetable oil), flaxseed oil, walnut oil, ground flaxseeds, chia seeds and walnuts, edamame (cooked soy beans) and tofu. If appropriate consider foods fortified with omega-3s, such as omega-3 eggs.</p>

Page 5

<p>How often did you have 3 or more regular meals in a day? *</p> <p>Include light meals like a sandwich, a soup and roll or something on toast. Don't include snack times when you ate only a biscuit or cake or a piece of fruit or vegetable sticks or a packet of crisps or piece of cheese.</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Less than once a week <input type="radio"/> Once a week <input type="radio"/> 2-4 times a week <input type="radio"/> 5-6 times a week <input type="radio"/> Every day </p>
<p>How often did you eat breakfast (more than just a drink or one or two sweet biscuits) within about 2 hours of waking? *</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Less than once a week <input type="radio"/> Once a week <input type="radio"/> 2-4 times a week <input type="radio"/> 5-6 times a week <input type="radio"/> Every day </p>
<p>How often did you 'snack' or 'pick' on high-fat or high-sugar foods between meals? *</p> <p>Think about food like biscuits, chocolate, cakes, crisps, nuts and cheese.</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Less than once a week <input type="radio"/> Once a week <input type="radio"/> 2-4 times a week <input type="radio"/> 5-6 times a week <input type="radio"/> Every day </p>

Page 6

<p>How often did you eat a portion of bread? *</p> <p>Include bread in sandwiches and wraps. A portion of bread is 1 slice of bread, a bread roll, half a baguette, a bagel, a tortilla wrap, a small naan, a chapatti or a paratha.</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Once a week or less than once a week <input type="radio"/> 2-6 times a week <input type="radio"/> 1-2 times a day <input type="radio"/> 3-4 times a day <input type="radio"/> More than 4 times a day </p>
<p>How often did you eat a bowl of breakfast cereal, porridge or muesli? *</p> <p> <input type="radio"/> Never or very rarely <input type="radio"/> Less than once a week <input type="radio"/> Once a week <input type="radio"/> 2-5 times a week <input type="radio"/> Nearly every day or daily <input type="radio"/> Twice or more per day </p>
<p>What type of milk did you usually use, if any? *</p> <p> <input type="radio"/> Full fat (cow, goat or sheep) <input type="radio"/> Semiskimmed (cow, goat or sheep) <input type="radio"/> Skimmed (cow, goat or sheep) <input type="radio"/> Sometimes full fat, sometimes skimmed or semi skimmed <input type="radio"/> Soya, oat, rice or other nondairy milk <input type="radio"/> None </p>

Conditional question asked only if the main question answer is other than “Never”:

<p>How often did you eat a bowl of breakfast cereal, porridge or muesli? *</p> <p> <input type="radio"/> Never or very rarely <input checked="" type="radio"/> Less than once a week <input type="radio"/> Once a week <input type="radio"/> 2-5 times a week <input type="radio"/> Nearly every day or daily <input type="radio"/> Twice or more per day </p>
<p>If you ate breakfast cereal how often did you choose higher fibre cereals? *</p> <p>Cereals that are high in fibre include porridge, muesli, Weetabix, Shredded Wheat, multigrain cereals and wheat or oat bran cereals</p> <p> <input type="radio"/> All of the time <input type="radio"/> Most of the time <input type="radio"/> About half the time <input type="radio"/> Less than half the time <input type="radio"/> Never <input type="radio"/> I did not eat cereals </p>

Additional note if skimmed milk:

What type of milk did you usually use, if any? *

☐ Full fat (cow, goat or sheep)
 ☐ Semiskimmed (cow, goat or sheep)
 ☒ Skimmed (cow, goat or sheep)
 ☐ Sometimes full fat, sometimes skimmed or semi skimmed
 ☐ Soya, oat, rice or other nondairy milk
 ☐ None

Note


You may want to discuss other sources of calcium such as calcium fortified foods, tofu set with calcium salts, tinned fish with bones, broccoli and spring greens.

Page 7


Are you concerned about your weight? *

☐ I am not concerned about my weight
 ☐ I am a little concerned about my weight
 ☐ I am moderately concerned about my weight
 ☐ I am very concerned about my weight

How important is it to you to change your diet? *

Not at all important
 
 Extremely important

How confident are you that you could change your diet? *

Not at all confident
 
 Extremely confident

Page 8

How many As or Bs?	How many Cs?	How many Ds?	How many Es?	How many Fs?
5	2	1	1	1
What does the score mean				
More As and Bs mean healthier dietary habits. Look back at the questions where you scored E or F. You can use these as a guide to see where you can make healthy changes.				
Questions with score E		Questions with score F		
7. How often did you eat full-fat cheese?		1. How often did you eat a portion of vegetables?		
I plan to think about these changes... Use your answers to questions 23, 24 and 25 to think about and discuss how much you want to make changes to your diet and whether you think changes are possible.				
Questions 23-25:				
23. Are you concerned about your weight: I am moderately concerned about my weight				
24. How important is it to you to change your diet: 3 (0 = Not at all important, 10 = Extremely important)				
25. How confident are you that you could change your diet: 6 (0 = Not at all confident, 10 = Extremely confident)				
1.				
<input type="text"/>				
2.				
<input type="text"/>				
3.				
<input type="text"/>				

Scoring

No calculated scoring as result.

Patient immediate feedback after completing the questionnaire

Static text same for all: "Thank you for completing this questionnaire."

PHQ-9

Form

Link to form: <https://patient.info/doctor/patient-health-questionnaire-phq-9> (on-line version).

PHQ-9	
1. Over the past two weeks, how often have you been bothered by any of the following problems?	
Little interest or pleasure in doing things. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Feeling down, depressed, or hopeless. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Trouble falling or staying asleep, or sleeping too much. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Feeling tired or having little energy. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Poor appetite or overeating. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Feeling bad about yourself - or that you are a failure or have let yourself or your family down. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Trouble concentrating on things, such as reading the newspaper or watching television. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Moving or speaking so slowly that other people could have noticed. Or the opposite - being so fidgety or restless that you have been moving around a lot more than usual. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day
Thoughts that you would be better off dead, or of hurting yourself in some way. *	<input type="radio"/> Not at all <input type="radio"/> Several days <input type="radio"/> More than half the days <input type="radio"/> Nearly every day

Scoring

The PHQ-9 is the depression module, which scores each of the nine DSM-IV criteria as "0" (not at all) to "3" (nearly every day)

Rule: Depression Severity: 0-4 none, 5-9 mild, 10-14 moderate, 15-19 moderately severe, 20-27 severe.

Score and interpretation is displayed to patient when all questions have been answered.

Total score	Result
11	Moderate

Patient immediate feedback after completing the questionnaire

Static text same for all: "Thank you for completing this questionnaire."

Morisky-Green

Test Morisky-Green (to estimate the risk of medication non-adherence).

Link to form: <http://www.measureuppressuredown.com/hcprof/find/toolkit/plank4tool1.pdf>

Form

Morisky-Green Scale	
Do you ever forget to take your medicine? *	<input checked="" type="radio"/> Yes <input type="radio"/> No
Are you careless at times about taking your medicine? *	<input type="radio"/> Yes <input checked="" type="radio"/> No
When you feel better, do you sometimes stop taking your medicine? *	<input checked="" type="radio"/> Yes <input type="radio"/> No
Sometimes if you feel worse when you take the medicine, do you stop taking it? *	<input type="radio"/> Yes <input checked="" type="radio"/> No

Scoring

The score is count of yes answers. Range 0-4.

No score interpretation.

Score is not displayed to patient.

Score	2
-------	---

Patient immediate feedback after completing the questionnaire

Static text same for all: "Thank you, your care team will review your answers."

ANNEX 5. FHIR JSON EXAMPLES

This annex presents the following FHIR message examples used by PEP for data collection and feedback:

1. Questionnaire
2. Careplan activity to fill in questionnaire
3. QuestionnaireResponse
4. DeviceRequest
5. Observation
6. Communication

Questionnaire

```
{
  "resourceType": "Questionnaire",
  "id": "xbju6o91ihm1hy4p9x6sxa4jzzpcrytn",
  "language": "en",
  "name": "howareyou2",
  "title": "How are you questionnaire (2)",
  "status": "active",
  "item": [
    {
      "linkId": "h86ipzc4ue38m9ffcpp11x38f4lwyn46",
      "text": "About you",
      "type": "group",
      "item": [
        {
          "linkId": "feeling",
          "type": "group",
          "item": [
            {
              "linkId": "rffnuq4otjys4ha4jqfdbw27vij944vb",
              "text": "How are you feeling right now?",
              "required": true,
              "type": "group",
              "item": [
                { "linkId": "rffnuq4otjys4ha4jqfdbw27vij944vb-feeling01", "type": "decimal", "text": "Energy", "extension": [{"url": "http://hl7.org/fhir/StructureDefinition/questionnaire-item-extension", "value": "http://hl7.org/fhir/StructureDefinition/questionnaire-item-extension"}] },
                { "linkId": "rffnuq4otjys4ha4jqfdbw27vij944vb-feeling02", "type": "decimal", "text": "Moving", "extension": [{"url": "http://hl7.org/fhir/StructureDefinition/questionnaire-item-extension", "value": "http://hl7.org/fhir/StructureDefinition/questionnaire-item-extension"}] },
                { "linkId": "rffnuq4otjys4ha4jqfdbw27vij944vb-feeling03", "type": "decimal", "text": "Stress", "extension": [{"url": "http://hl7.org/fhir/StructureDefinition/questionnaire-item-extension", "value": "http://hl7.org/fhir/StructureDefinition/questionnaire-item-extension"}] },
                { "linkId": "rffnuq4otjys4ha4jqfdbw27vij944vb-feeling04", "type": "decimal", "text": "Sleep", "extension": [{"url": "http://hl7.org/fhir/StructureDefinition/questionnaire-item-extension", "value": "http://hl7.org/fhir/StructureDefinition/questionnaire-item-extension"}] },
                { "linkId": "rffnuq4otjys4ha4jqfdbw27vij944vb-feeling05", "type": "decimal", "text": "Weight", "extension": [{"url": "http://hl7.org/fhir/StructureDefinition/questionnaire-item-extension", "value": "http://hl7.org/fhir/StructureDefinition/questionnaire-item-extension"}] },
                { "linkId": "rffnuq4otjys4ha4jqfdbw27vij944vb-feeling06", "type": "decimal", "text": "Mood", "extension": [{"url": "http://hl7.org/fhir/StructureDefinition/questionnaire-item-extension", "value": "http://hl7.org/fhir/StructureDefinition/questionnaire-item-extension"}] }
              ]
            }
          ]
        }
      ]
    }
  ],
  {
    "linkId": "yxuqo77ui94u6dhgorev77utehod8n",
    "text": "About you",
    "type": "group",
    "item": [
      {
        "linkId": "dynbxv2xkyheyvpbnvzlu032rng4w8k",
        "text": "What stops you taking care of yourself?"
      }
    ]
  }
]
```

Figure 3. Extract from Questionnaire message.

Questionnaire activity (Careplan.activity)

```

    "detail": {
      "category": {
        "coding": [{
          "system": "http://hl7.org/fhir/care-plan-activity-category",
          "code": "observation",
          "display": "Observation"
        }]
      },
      "extension": [{
        "url": "http://www.c3-cloud.eu/fhir/StructureDefinition/identifier",
        "valueIdentifier": {
          "value": "a-008"
        }
      },
      {
        "url": "http://www.c3-cloud.eu/fhir/StructureDefinition/introducedBy",
        "valueReference": {
          "reference": "Practitioner/2-000003",
          "display": "Erik Larsson"
        }
      }
    ],
    "description": "Fill in the questionnaire to collect information about your lifestyle",
    "definition": {
      "reference": "Questionnaire/q-001",
      "display": "Lifestyle questionnaire"
    },
    "status": "completed",
    "prohibited": false,
    "scheduledTiming": {
      "repeat": {
        "frequency": 1,
        "period": 1,
        "periodUnit": "wk",
        "duration": 20,
        "durationUnit": "min",
        "boundsPeriod": {
          "start": "2009-07-22",
          "end": "2009-07-29"
        }
      }
    }
  }

```

Figure 4. Extract from Questionnaire careplan activity message

QuestionnaireResponse

```
{
  "resourceType": "QuestionnaireResponse",
  "id": "a71aa3dcd14e44ee99f4f788d02391df",
  "language": "en",
  "questionnaire": {
    "reference": "Questionnaire/173b490102ef4285886239a2e259ce33"
  },
  "status": "completed",
  "subject": {
    "reference": "Patient/1-000001",
    "display": "Sven Karlsson"
  },
  "authored": "2017-08-29T13:40:00+02:00",
  "item": [
    {
      "linkId": "h86ipzc4ue38m9ffcpp11x38f4lwyn46", "text": "About you",
      "item": [
        {
          "linkId": "feeling",
          "item": [
            {
              "linkId": "rffnuq4otjys4ha4jqfdbw27vij944vb", "text": "How are you feeling right now?",
              "item": [
                {
                  "linkId": "rffnuq4otjys4ha4jqfdbw27vij944vb-feeling01", "text": "Energy", "answer": [{"valueDecimal": 15.0}],
                  "linkId": "rffnuq4otjys4ha4jqfdbw27vij944vb-feeling02", "text": "Moving", "answer": [{"valueDecimal": 15.0}],
                  "linkId": "rffnuq4otjys4ha4jqfdbw27vij944vb-feeling03", "text": "Stress", "answer": [{"valueDecimal": 15.0}],
                  "linkId": "rffnuq4otjys4ha4jqfdbw27vij944vb-feeling04", "text": "Sleep", "answer": [{"valueDecimal": 15.0}],
                  "linkId": "rffnuq4otjys4ha4jqfdbw27vij944vb-feeling05", "text": "Weight", "answer": [{"valueDecimal": 15.0}],
                  "linkId": "rffnuq4otjys4ha4jqfdbw27vij944vb-feeling06", "text": "Mood", "answer": [{"valueDecimal": 15.0}]
                }
              ]
            }
          ]
        }
      ]
    },
    {
      "linkId": "yxuqo77ui94u6dhgorev77utehod8n", "text": "About you",
      "item": [
        {
          "linkId": "dynbxv2xkyheyvpbqnvzlu032rng4w8k", "text": "What stops you taking care of yourself?",
          "answer": [

```

Figure 5. Extract from QuestionnaireResponse message.

Measurement activities (DeviceRequest)

```

{
  "resourceType": "DeviceRequest",
  "id": "b4635f0ed75d4f06b1ad199e36631097",
  "extension": [
    {
      "url": "http://www.c3-cloud.eu/fhir/StructureDefinition/title",
      "valueString": "Measure your blood pressure daily in the morning, just after you wake up for two weeks (clinical)"
    },
    {
      "url": "http://www.c3-cloud.eu/fhir/StructureDefinition/description",
      "valueString": "Make sure the measurement is available in your PEP record."
    }
  ],
  "status": "active",
  "intent": {
    "coding": [{"code": "order"}]
  },
  "codeReference": {
    "reference": "Device/3d43bea093734b5e8006d06b2febeb21"
  },
  "subject": {
    "reference": "Patient/1-000001"
  },
  "occurrenceTiming": {
    "repeat": {
      "frequency": 1,
      "period": 1, "periodUnit": "d", "when": "MORN",
      "boundsPeriod": {
        "start": "2017-09-15",
        "end": "2017-09-29"
      }
    }
  },
  "performer": {
    "reference": "Patient/1-000001"
  }
}

```

Figure 6. Measurement activity using provider device (clinical).

```

{
  "resourceType": "DeviceRequest",
  "id": "da2d4f5837544f59a075f84a94f5fc09",
  "extension": [
    {
      "url": "http://www.c3-cloud.eu/fhir/StructureDefinition/title",
      "valueString": "Measure your blood pressure daily in the morning, just after you wake up for two weeks (BYOD)"
    },
    {
      "url": "http://www.c3-cloud.eu/fhir/StructureDefinition/description",
      "valueString": "Make sure the measurement is available in your PEP record."
    }
  ],
  "status": "active",
  "intent": {
    "coding": [{"code": "order"}]
  },
  "codeCodeableConcept": {
    "coding": [{"system": "http://snomed.info/sct", "code": "70665002", "display": "Blood pressure cuff"}]
  },
  "subject": {
    "reference": "Patient/1-000001"
  },
  "occurrenceTiming": {
    "repeat": {
      "frequency": 1,
      "period": 1, "periodUnit": "d", "when": "MORN",
      "boundsPeriod": {
        "start": "2017-09-15",
        "end": "2017-09-29"
      }
    }
  },
  "performer": {
    "reference": "Patient/1-000001"
  }
}

```

Figure 7. Measurement activity with patient's own device (BYOD).

Observation activity (Careplan.activity)

```
{
  "extension": [
    {
      "url": "http://hl7.org/fhir/StructureDefinition/careplan-activity-title",
      "valueString": "Upload meal photos daily for a week"
    }
  ],
  "detail": {
    "category": {
      "coding": [{ "system": "http://hl7.org/fhir/care-plan-activity-category", "code": "observation", "display": "Observation" }],
      "extension": [
        {
          "url": "http://www.c3-cloud.eu/fhir/StructureDefinition/identifier",
          "valueIdentifier": { "value": "3f9ce03719a644858e4b04912ca66263" }
        }
      ],
      "code": {
        "coding": [
          { "system": "http://snomed.info/sct", "code": "226075008", "display": "Dietary intake assessment using observation" }
        ]
      },
      "description": "Take photos of your meals and upload these daily to PEP.",
      "status": "in-progress",
      "prohibited": false,
      "scheduledTiming": {
        "repeat": {
          "frequency": 1,
          "period": 1,
          "periodUnit": "d",
          "boundsPeriod": {
            "start": "2017-10-21",
            "end": "2017-10-28"
          }
        }
      },
      "performer": [
        {
          "reference": "Patient/1-000001",
          "display": "Sven Karlsson"
        }
      ]
    }
  }
}
```

Figure 8. Extract from observation activity

Observation

```
{
  "resourceType": "Observation",
  "id": "bf9c0ee8becc4ed58142c830cf90a81c",
  "status": "final",
  "subject": {
    "reference": "Patient/1-000001"
  },
  "performer": {
    "reference": "Patient/1-000001"
  },
  "effectiveDateTime": "2017-09-06T12:32:51+01:00",
  "code": {
    "coding": [{ "system": "http://loinc.org", "code": "85354-9", "display": "Blood pressure panel with all children optional" }]
  },
  "device": {
    "reference": "Device/770308fe0bb14c64b0a0ebe0e7c5241d"
  },
  "category": [
    { "coding": [{ "system": "http://hl7.org/fhir/observation-category", "code": "vital-signs", "display": "Vital Signs" }] }
  ],
  "component": [
    {
      "code": {
        "coding": [{ "system": "http://loinc.org", "code": "8480-6", "display": "Systolic blood pressure" }]
      },
      "valueQuantity": {
        "value": 123, "unit": "mmHg", "system": "http://unitsofmeasure.org", "code": "mm[Hg]"
      }
    },
    {
      "code": {
        "coding": [{ "system": "http://loinc.org", "code": "8462-4", "display": "Diastolic blood pressure" }]
      },
      "valueQuantity": {
        "value": 76, "unit": "mmHg", "system": "http://unitsofmeasure.org", "code": "mm[Hg]"
      }
    }
  ]
}
```

Figure 9. Blood pressure Observation message

```
{
  "resourceType": "Observation",
  "id": "9d036340d80943d89ca0b5f39c4e77df",
  "status": "final",
  "subject": {
    "reference": "Patient/1-000001"
  },
  "performer": {
    "reference": "Patient/1-000001"
  },
  "effectiveDateTime": "2017-09-06T12:32:51+01:00",
  "code": {
    "coding": [{ "system": "http://loinc.org", "code": "3141-9", "display": "Body weight Measured" }]
  },
  "category": [
    { "coding": [{ "system": "http://hl7.org/fhir/observation-category", "code": "vital-signs", "display": "Vital Signs" }] }
  ],
  "valueQuantity": {
    "value": 83.1,
    "unit": "kg",
    "system": "http://unitsofmeasure.org",
    "code": "kg"
  }
}
```

Figure 10. Weight Observation message

```
{
  "resourceType": "Observation",
  "id": "2c4dd758030440f4aefaac46a372cfa2",
  "status": "final",
  "subject": {
    "reference": "Patient/1-000001"
  },
  "performer": {
    "reference": "Patient/1-000001"
  },
  "effectiveDateTime": "2017-09-26T17:05:51+01:00",
  "code": {
    "coding": [{ "system": "http://loinc.org", "code": "226075008", "display": "Dietary intake assessment using food photographs" }]
  },
  "category": [
    { "system": "http://hl7.org/fhir/observation-category", "code": "imaging" }
  ],
  "valueAttachment": {
    "contentType": "image/jpeg",
    "data":
      "/9j/4SzQRXhpZgAASUkqAAgAAAAJAABAgAGAAAegAAABABAgAgAAAqAAABIBAwABAAAAQAAABoBBQABAAAAoAAAAABBBQABAAAAqAAACgBAwABAAAAAQAADI
      AAQAAAGmHBAABAAAAxAAAAEAABDYW5vbG9DYW5vb3Q3dGlcllNob3Q3RzMAAAAAAAAAAAAAAAAAALQAAAAAABAAAAAATAAAAAEAAAAyMDAzOjA0OjA1IDE1OjE3OjE3YABQ
      AADCAQAAAAJAHAQAQAAMwIwIwASACABQAAADKQAABJACABQAAADeAQAAAZEHAAQAAAAABAgMAAZIKAAEAAADyAQAAApIFAAEAAAD6QAABJIKAAEAAAAACgAACpIFAAE
      AhpIHAAgBAABYAwAAAKAHAQAQAAMwMTAwAaADAEEAAAAABAAAAqADAAEAAAD/AQAAA6ADAAEAAACpAgAABaAEAAEAAAB6BAAADqIFAAEAAACwBAAAD6IFAAEAAAC4BAA
      AADIBAAKAAAAoAAAAyMDAzOjA0OjA1IDE1OjE3OjE3YADiAwMDM6MDQ6MDUgMTU6MTc6MTIAsQEAAACAAAAACAAAAIAAAAAAAAAAGAAAAZQEAAACAAAAAHAAEAwAuAAA
      AAwAhAAAA0AIAAAyAAAgAgAAAAEgMAAAcAAgAgAAAAAgMAAAgABAABAAAAfh0VAakAAgAgAAAAUgMAAAAAABcAAIAAAABgAUAAAAAAAAQA////////wAACAAAAAAAAAAAAAA
      AAAAAA
```

Figure 11. Extract from Meal photo message

Communication

```
{
  "resourceType": "Communication",
  "id": "co-001",
  "recipient": [
    {
      "reference": "Practitioner/2-000001",
      "display": "Anna Svensson",
      "extension": [{
        "url": "http://www.c3-cloud.eu/fhir/StructureDefinition/recipientStatus",
        "valueCode": "received"
      }]
    }
  ],
  "sent": "2016-08-11T14:35:00+02:00",
  "sender": {
    "reference": "Patient/1-000001",
    "display": "Sven Karlsson"
  },
  "meta": { ... },
  "extension": [ ... ],
  "identifier": [
    {
      "value": "co-001"
    }
  ],
  "basedOn": [ ... ],
  "status": "completed",
  "category": [ ... ],
  "medium": [ ... ],
  "subject": {
    "reference": "Patient/1-000001",
    "display": "Sven Karlsson"
  },
  "payload": [
    {
      "contentString": "Hi, I do feel a bit more tired in the last 2 days. My left leg also seems a bit swelled t"
    }
  ]
}
```

Figure 12. Extract from message sent by patient to MDT


```

{
  "resourceType": "Communication",
  "id": "co-002",
  "subject": {
    "reference": "Patient/1-000001",
    "display": "Sven Karlsson"
  },
  "recipient": [
    {
      "reference": "Patient/1-000001",
      "display": "Sven Karlsson",
      "extension": [{
        "url": "http://www.c3-cloud.eu/fhir/StructureDefinition/recipientStatus",
        "valueCode": "received"
      }]
    }
  ],
  "sent": "2016-08-12T09:15:00+02:00",
  "sender": {
    "reference": "Practitioner/2-000001",
    "display": "Anna Svensson"
  },
  "meta": { ...
  },
  "extension": [ ...
  ],
  "identifier": [ ...
  ],
  "basedOn": [ ...
  ],
  "status": "completed",
  "category": [ ...
  ],
  "medium": [ ...
  ],
  "payload": [
    {
      "contentString": "Hi Sven, Please stop doing your physical exercises for 3 days, and then do let me know how you feel."
    }
  ]
}

```

Figure 13. Extract from message sent by MDT to patient