RA Support

Conversational system for monitoring and education of patients with rheumatoid arthritis in remission/low activity

High-level Data Model

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- **Core Practitioner Information (profile: ParticipantPatientRAProfile, base resource: Patient)**

Description of demographic and personal details of the participant patient

Data element	FHIR path	Data type	Comments
Name (first)	Patient.name.given	humanName	Patient.name
Surname	Patient.name.family		
Age	-	integer	**Can be calculated from birthDate**
Gender	Patient.gender	code	Male, female, other from *RestrictedGenderValueSet* because the base resource also contains unknown.
Date of birth	Patient.birthDate	dateTime	Added instead of age
Disease duration	Patient.extension[duration]	Quantity	#a=enforce years

- **System output and date of assessment (profile: SystemPatientOutputCommunication, Base resource: Communication)**

  Output of the interaction between the conversational agent and the user (patient)

  This data element is confusing since it is called "system output" but I do not think it is rational to only record the output of the system in a whole conversation. In case we decide to record all, I can revise this profile using multiple payloads.

Data element	FHIR path	Data type	Comments
System output	Communication.payload.content[x]	String	Conversation with the system
Date of assessment	Communication.sent	dateTime	(when sent)-date of communication with system. *I assumed the "date of assessment" in the Excel file was the date the patient communicated with the system. However, to be sure, I also considered the date for other observations.*

- **Usability assessment and date: Usability questionnaire results, Patient self-report (Profile: SUSUsabilityAssessment, base resource: Observation)**

  I considered the sus as an observation since we wanted to record the overall sus score (a number between 0-100). In case we wanted to record each item of the questionnaire separately, we could do so using Questionnaire and QuestionnaireResponse resources. (I defined the SUSAnswerCodes codesystem for the Likert scale as an experiment, but it is not actually necessary if we want to use Observation.)

Data element	FHIR path	Data type	Comments
SUS score	Observation.code Observation.extension[SUSScore] – this is just for constraint (value should be in range 0-100) *-A separate **Extension: SUSScore** is implemented to define the data structure which should be Int.*	Integer 0-100	Example custom code for sus
Date of assessment	Observation.effectiveDateTime	dateTime	Date of sus assessment

- **Disease activity and disability assessments (Profiles: DAS28ScoreProfile and HAQScoreProfile, base resource: Observation)**

Data element	FHIR path	Data type	Comments
Assessment of disease activity			
DAS28 score	Observation.code	Quantity	Score (0-10, decimals allowed) http://loinc.org#75633-8 "Rheumatoid arthritis disease activity score Calculated by VectraDA"
Date of assessment	Observation.effectiveDateTime	dateTime	Date of DAS28 assessment
Assessment of functional disability			
HAQ score	Observation.code	Quantity	Score (0-3, decimals allowed) http://loinc.org#71950-0 "Health Assessment Questionnaire [HAQ]" // https://loinc.org/71950-0
Date of assessment	Observation.effectiveDateTime	dateTime	Date of HAQ assessment