

Change request / New concept proposal

Access Device Presence / Access Device

Author	Harald Witte	Date last updated	14.11.2023
Project	General interest	Contact	DCC
Dataset release	2024.1	Consulted expert	Nora Toussaint

1 Rationale

In its current form (SPHN dataset release 2023.2), the concept “Access Device Presence” features a composed “medical device” (described as “type of device inserted”) of Type Medical Device with a value set restricted to descendant of: 105789008 [Cannula/tube/catheter, device (physical object)]. This leads to a semantic inconsistency with children of Medical Device (currently relevant for concept Lab Analyzer) (Figure 1): Due to the way the composedOf 'medical device' is defined, a 'Lab Analyzer' would also be a possible value for this composedOf, which is inconsistent with the intent and semantics of the concept 'Access Device Presence'.

Thus, the change proposed here is to create a new concept 'Access Device' which is a child of the concept 'Medical Device' and then use this concept as the value set for the composedOf 'medical device'. This improves the clarity of the concept 'Access Device Presence' and fixes the semantic inconsistency observed in the context of the composedOf 'medical device'.

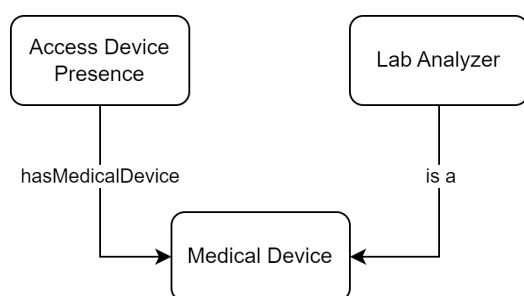


Figure 1: Interplay of Access Device Presence, Medical Device and Lab Analyzer in the SPHN schema (release 2023.2)

2 Concept information

2.1 Change request to Access Device Presence

2.1.1 Currently released concept

Concept or concept compositions or inherited	General concept name	General description	Contextualized concept name	Contextualized description	Type	Standard	Value set or subset	Meaning binding	Cardinality for composed Of
concept	Access Device Presence	application of medical access device, such as cannula, tube, catheter or drainage	Access Device Presence	application of medical access device, such as cannula, tube, catheter or drainage				SNOMED CT: 397578001 Device in situ (finding)	
composedOf	medical device	medical device of the concept	device	type of medical device inserted	Medical Device	SNOMED CT	descendant of: 105789008 Cannula/tube/catheter, device (physical object)		1:1
composedOf	insertion point	point of insertion	insertion point	point of insertion of the device	Body Site				0:1
composedOf	resting point	point of resting	resting point	location in the body where the device ends and interacts with a body part or anatomical site	Body Site				0:1
composedOf	start datetime	datetime at which the concept started	insertion datetime	datetime of insertion of the access device	temporal				0:1

A project of

SAMWASSM
Schweizerische Akademie der Medizinischen Wissenschaften
Académie Suisse des Sciences Médicales
Accademia Svizzera delle Scienze Mediche
Swiss Academy of Medical Sciences

SIB
Swiss Institute of Bioinformatics

SIB | Swiss Institute of Bioinformatics
PHI | Personalized Health Informatics Group
www.sphn.ch | dcc@sib.swiss

composedOf	end datetime	datetime at which the concept ended	removal datetime	datetime of removal of the access device	temporal				0:1
------------	--------------	-------------------------------------	------------------	--	----------	--	--	--	-----

General concept name	cardinality for concept to Administrative Case	cardinality for concept to Data Provider Institute	cardinality for concept to Subject Pseudo Identifier
Access Device Presence	0:1	1:1	1:1

2.1.2 Proposed new concept

Concept or concept compositions or inherited	General concept name	General description	Contextualized concept name	Contextualized description	Type	Standard	Value set or subset	Meaning binding	Cardinality for composed Of
concept	Access Device Presence	presence of a medical access device, such as cannula, tube, catheter or drainage	Access Device Presence	presence of a medical access device, such as cannula, tube, catheter or drainage					
composedOf	medical device	medical device of the concept	access device	medical access device associated to the access device presence	Access Device				1:1
composedOf	insertion point	anatomical site of insertion	insertion point	anatomical site where the access device is inserted	Body Site				0:1

composedOf	resting point	anatomical site of the end position	resting point	anatomical site where the concept is resting	Body Site				0:1
composedOf	start datetime	datetime at which the concept started	insertion datetime	datetime of insertion of the access device	temporal				0:1
composedOf	end datetime	datetime at which the concept ended	removal datetime	datetime of removal of the access device	temporal				0:1

General concept name	cardinality for concept to Administrative Case	cardinality for concept to Data Provider	cardinality for concept to Subject Pseudo Identifier	cardinality for concept to Source System
Access Device Presence	0:1	1:1	1:1	1:1

2.2 New concept proposal Access Device

Concept or concept compositions or inherited	General concept name	General description	Contextualized concept name	Contextualized description	Type	Standard	Value set or subset	Meaning binding	Cardinality for composed Of
concept	Access Device	product intended for medical use to gain access to the body, such as cannula, tube, catheter or drainage	Access Device	product intended for medical use to gain access to the body, such as cannula, tube, catheter or drainage	Medical Device			SNOMED CT: 105789008 Cannula/tube/catheter, device (physical object)	
composedOf	type code	coded information specifying the type of the concept	type identifier	coded information specifying the access device type	Code	SNOMED CT	descendant of: 105789008 Cannula/tube/catheter, device (physical object)		0:1
composedOf	product code	coded information specifying the product of the concept	product identifier	coded information specifying the access device product	Code				0:1

General concept name	cardinality for concept to Administrative Case	cardinality for concept to Data Provider	cardinality for concept to Subject Pseudo Identifier	cardinality for concept to Source System
Access Device	-	-	-	-

3 Pros and cons

3.1 Advantages

The proposed changes to Access Device Presence and the introduction of the new concept Access Device (child of Medical Device) resolve a semantic inconsistency between composedOfs of Type Medical Device with children of Medical Device (currently Lab Analyzer).

3.2 Disadvantages

The change features no disadvantages.

4 Impact on the SPHN Dataset

A new concept Access Device is created, and the existing concept Access Device Presence is adapted by using Access Device. There is no further impact on other concepts of the SPHN dataset.

5 Discussion

As of version 2023.2 of the SPHN dataset, the concept 'Access Device Presence' has a composedOf 'medical device' the value set of which is the concept 'Medical Device'. Incidentally, the concept 'Medical Device' has a child concept 'Lab Analyzer' and due to the way the composedOf 'medical device' is defined, a 'Lab Analyzer' would also be a possible value for this composedOf, which is inconsistent with the intent and semantics of the concept 'Access Device Presence'. Thus, the change proposed here is to create a new concept 'Access Device' which is a child of the concept 'Medical Device', use this concept as the value set for the current composedOf 'medical device' of Access Device Presence, and rename the composedOf to 'access device'. This improves the clarity of the concept 'Access Device Presence' and fixes the inconsistency observed with the composedOf 'medical device'.

Meaning binding: In context of the development of the concept '[Implant Presence](#)' an ambiguity of the meaning binding of 'Access Device Presence' (SNOMED CT: [397578001](#) |Device in situ (finding)|) has come into focus: SNOMED CT does not clearly distinguish access devices and implants in its finding hierarchy ([397578001](#) |Device in situ (finding)|, the meaning binding of 'Access Device Presence' contains both) and no other suitable code could be found. The meaning binding of 'Access Device Presence' has therefore been removed in release 2024.1.

6 Example

Access Device Presence

access device

type code: 26412008 |Endotracheal tube, device (physical object)|

product code: GUDID:00609038352114 |Microcuff* Endotracheal Tube for Adults|

insertion point:

code: 123851003 |Mouth region structure (body structure)|

laterality

code: 66459002 |Unilateral (qualifier value)|

resting point

code: 39607008 |Lung structure (body structure)|

laterality

code: 66459002 |Unilateral (qualifier value)|

start datetime 2023-08-02T09:23:00+01:00

end datetime 2023-08-07T14:35:00+01:00