

# Change request

## Allergy and Allergy Episode

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### 1 Change request input / rationale

Allergies can be caused by different allergens. Not all of them seem to be of type Substance - as it is currently stated in the SPHN Dataset. In the table below, there is a compilation of actual allergens found in university hospital data so far. Despite the fact that the category in terminology is already much more diverse than the current Substance concept allows, it is possible that not all allergen categories are captured yet.

Category in terminology	Allergen examples	Substance code	Substance name	Substance coding system version	Substance category
<b>substance</b>	ACETYLCYSTEINE / CARBOCYSTEINE	102751005	Sulfur-bearing amino acid (substance)	SNOMED-CT	Medication
<b>medicinal product</b>	amoxicillin + clavulanic acid	734844004	Product containing amoxicillin and clavulanic acid (medicinal product)	SNOMED-CT	Medication
<b>product</b>	NSAID	16403005	Non-steroidal anti-inflammatory agent (product)	SNOMED-CT	Medication
<b>physical object</b>	Leather	19627002	Leather (physical object)	SNOMED-CT	Biologic
<b>organism</b>	HOUSE DUST MITE	260147004	House dust mite (organism)	SNOMED-CT	Biologic
<b>body structure</b>	Apparent epidermal production	7748002	Skin appendage structure (body structure)	SNOMED-CT	Biologic
<b>physical force</b>	SUN LIGHT	49926000	Light emitted by the sun (physical force)	SNOMED-CT	Environment
	ACCUPAQUE SOL INJ 300 MG	V08AB02	Iohexol	ATC	Medication
	MEFIX	73325515862 25	Mefix vlies autocollant	GTIN	Biologic

## 2 Comparison to other standards/data models

### 2.1 HL7 Switzerland and eHealth Suisse

#### Allergy/intolerance reaction substance value set

The value set published by HL7 Switzerland contains SNOMED CT codes from several hierarchies, e.g. (substance), (medicinal product), (organism).

Link to the value set:

<https://fhir.ch/ig/ch-allergyintolerance/ValueSet-CHAllergyIntoleranceReactionSubstanceValueSet.html>

#### IPAG report

The report, published by the interprofessional working group - electronic patient dossier in 2019, contains recommendations regarding the exchange format for Allergies and Intolerances.

Link to the report:

[https://www.e-health-suisse.ch/fileadmin/user\\_upload/Dokumente/D/ipag-bericht-eallergien-intoleranzen.pdf](https://www.e-health-suisse.ch/fileadmin/user_upload/Dokumente/D/ipag-bericht-eallergien-intoleranzen.pdf)

#### Definition of allergen category ( <http://hl7.org/FHIR/valueset-allergy-intolerance-category.html> )

Food	Any substance consumed to provide nutritional support for the body.
Medication	Substances administered to achieve a physiological effect.
Environment	Any substances that are encountered in the environment, including any substance not already classified as food, medication, or biologic.
Biologic	A preparation that is synthesized from living organisms or their products, especially a human or animal protein, such as a hormone or antitoxin, that is used as a diagnostic, preventive, or therapeutic agent. Examples of biologic medications include: vaccines; allergenic extracts, which are used for both diagnosis and treatment (for example, allergy shots); gene therapies; cellular therapies. There are other biologic products, such as tissues, which are not typically associated with allergies.

#### Definition of severity code ( <http://hl7.org/fhir/R4B/codesystem-allergy-intolerance-criticality.html> )

Low Risk	Worst case result of a future exposure is not assessed to be life-threatening or having high potential for organ system failure.
High Risk	Worst case result of a future exposure is assessed to be life-threatening or having high potential for organ system failure.
Unable to Assess Risk	Unable to assess the worst case result of a future exposure.

**Note from CHUV:** we have 3 severity codes in our system : light, moderate, severe and 'null' that we mapped to these 3 like this:

Light and moderate	→ low risk
Severe	→ high risk
Null	→ undetermined

## 3 Change content

### 3.1 Currently released concept

Concept name	Description	Type	Standard	Value set	Meaning binding SNOMED CT
<b>Allergy</b>	risk of harmful or undesirable, physiological response which is unique to an individual and associated with exposure to a substance				SNOMED 418038007   Propensity to adverse reactions to substance (finding)
<b>verification status code</b>	code, name, coding system and version describing the certainty regarding the relationship between the substance declared and the adverse reaction	Code	SNOMED-CT	410605003   Confirmed present (qualifier value)  ; 415684004   Suspected (qualifier value)  ; 723511001   Refuted (qualifier value)  ; 723510000   Entered in error (qualifier value)	
<b>substance</b>	any matter of defined composition that has discrete existence, whose origin may be biological, mineral or chemical	Substance			
<b>reaction type code</b>	code, name, coding system and version describing the type of reaction observed	Code	SNOMED-CT	419199007   Allergy to substance (finding); 782197009   Intolerance to substance (finding); 261665006   Unknown (qualifier value)	
<b>first record date time</b>	datetime the concept was first recorded	temporal			
<b>severity code</b>	code, name, coding system and version describing the severity of concept	Code	SNOMED-CT	723505004   Low risk (qualifier value)  ; 723509005   High risk (qualifier value)  ; 723507007   Unable to determine risk (qualifier value)	
<b>last reaction date time</b>	datetime of the last adverse reaction	temporal			
<b>substance category</b>	category of the substance to which the individual is allergic to	qualitative		food; medication; environment; biologic	

### 3.2 Proposed new concept

Concept name	Description	Type	Standard	Value set	Meaning binding SNOMED CT
<b>Allergy</b>	risk of harmful or undesirable, physiological response which is unique to an individual and associated with exposure to an allergen				SNOMED 418038007   Propensity to adverse reactions to substance (finding)
<b>verification status code</b>	code, name, coding system and version of the verification status of the concept	Code	SNOMED-CT	410605003   Confirmed present (qualifier value)  ; 415684004   Suspected (qualifier value)  ; 723511001   Refuted (qualifier value)  ; 723510000   Entered in error (qualifier value)	
<b>allergen</b>	any substance, product or physical force producing immediate hypersensitivity responsible for the concept	Allergen			
<b>reaction type code</b>	code, name, coding system and version describing the type of reaction observed for the concept	Code	SNOMED-CT	419199007  Allergy to substance (finding) ; 782197009  Intolerance to substance (finding) ; 261665006   Unknown (qualifier value)	
<b>first record date time</b>	datetime the concept was first recorded	temporal			
<b>severity code</b>	code, name, coding system and version describing the severity of the concept	Code	SNOMED-CT	723505004   Low risk (qualifier value)  ; 723509005   High risk (qualifier value)  ; 723507007   Unable to determine risk (qualifier value)	
<b>last reaction date time</b>	datetime of the last reaction	temporal			

## 4 Pros and cons

### 4.1 Advantages

Changing the composedOf from substance to allergen will allow all cases to be taken into account using also the ATC and GTIN terminology.

### 4.2 Disadvantages

None

## 5 Impact and effort

### 5.1 Impact on SPHN Dataset

The same change needs to be introduced in the Allergy Episode concept. A new concept Allergen needs to be developed as Allergen is used in more than once concept: Allergen and Allergy Episode.

### 5.2 Impact on SPHN RDF Schema

SHACL rules must be adapted.

## 6 Discussion

The example data *Inhalationsscreen (multiple allergens)* provided by one of the hospitals is not considered as data for the Allergy concept as it is considered as a LabTest. The composedOf *substance category* has been removed as categories can be derived from the Allergen code (via standard used and SNOMED CT hierarchy if applicable).