SYADEM
Systèmes d'Aide
à la Décision Médicale

NUVA – Unified Nomenclature of Vaccines

What we do

We develop and operate a Clinical Decision System on vaccination, able to determine the next required vaccinations for a person based upon:

- Individual situation : vulnerabilities (medical profile) and risk exposure (social and professional profile)
- Locally enforced vaccination policy
- History of administered vaccines

We complemented it with a vaccination information system where individuals and health professionals can store and share profiles and vaccination histories.

It is today massively used in France and Luxembourg.

What we needed

- To capture any vaccination trail
  - Written or digital,
  - Fully explicit or degraded,
  - Whatever the date and country of the vaccination.
- To determine the vaccination agents (the valences) contained into each vaccine.

Capturing any vaccination trail

Support	Variant	Trail	NUVA Code
Written	Fully explicit	Infanrix Hexa	VAC0014
	Abbreviated	Infanrix6	
Digital	CIS (FR)	62966063	
	CNK (BE)	1665363	
Written	Valences FR	dTca	VAC0610
	Valences EN	Tdap	
Digital	CVX	115	
Written	Target disease FR	Vaccin grippe	VAC0110
Digital	CVX	88	
	SNOMED-CT	1181000221105	

Determining the valences

A valence is not a single ingredient, but a shorthand notation used by vaccinologists for a combination and a dose of antigens against a same disease.

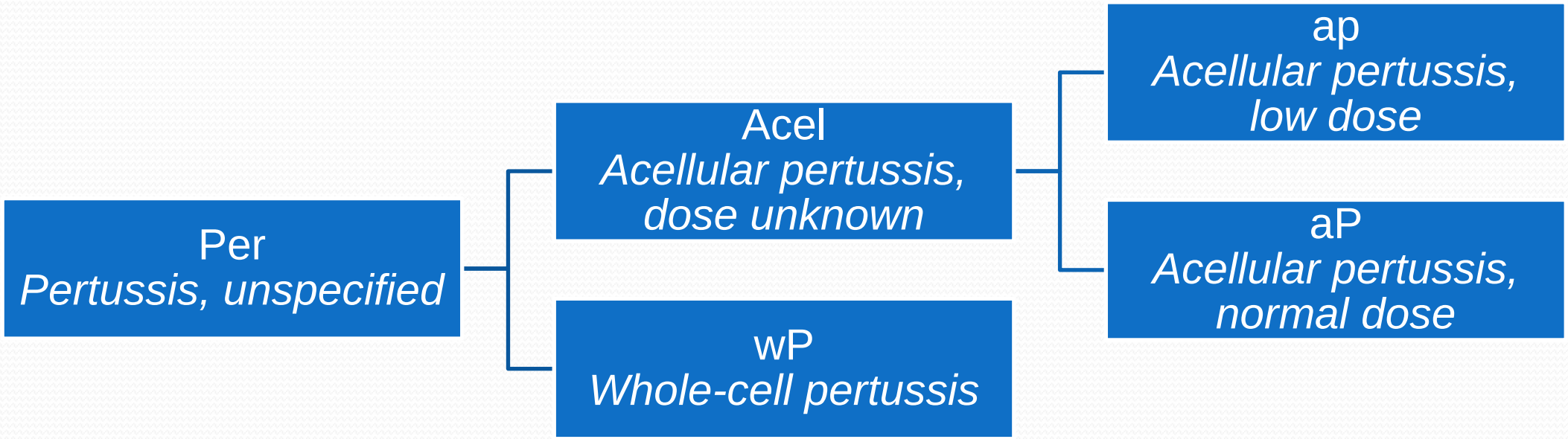
Examples:

- aP – Acellular pertussis vaccine, standard dose
- ap – Acellular pertussis vaccine, low dose
- IPV – Whole inactivated trivalent polio vaccine
- mOPV1 – Live attenuated monovalent oral polio vaccine type 1

Protection is determined by the history of administered valences.

Hierarchical representation of valences

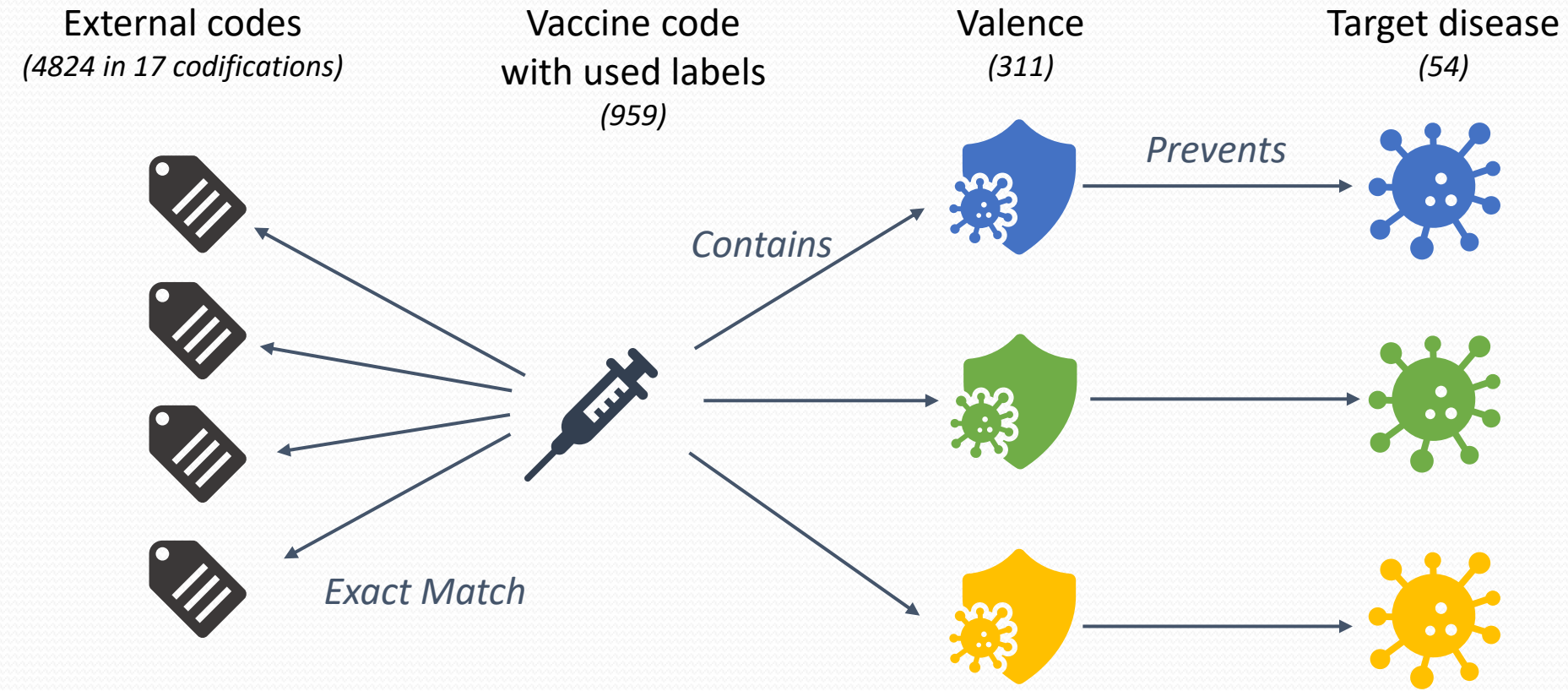
Allows to include vaccines that are not fully identified.
Illustrated here with the case of pertussis valences



What valences bring

- They structure the reasoning for the decision support system
- They solve the usual issue of classification of multivalent vaccines (in ATC, J07AE = Cholera, J07AP = Typhoid,
  but J07AE51 = Cholera + Typhoid)
- They allow to navigate between different levels of abstraction:
  - Finding all vaccines that can be represented byJ07CA01
  - Finding possible SNOMED-CT representations for REPEVAX
  - A demonstrator is available at https://nuva.mesvaccins.net/mapping

All NUVA concepts

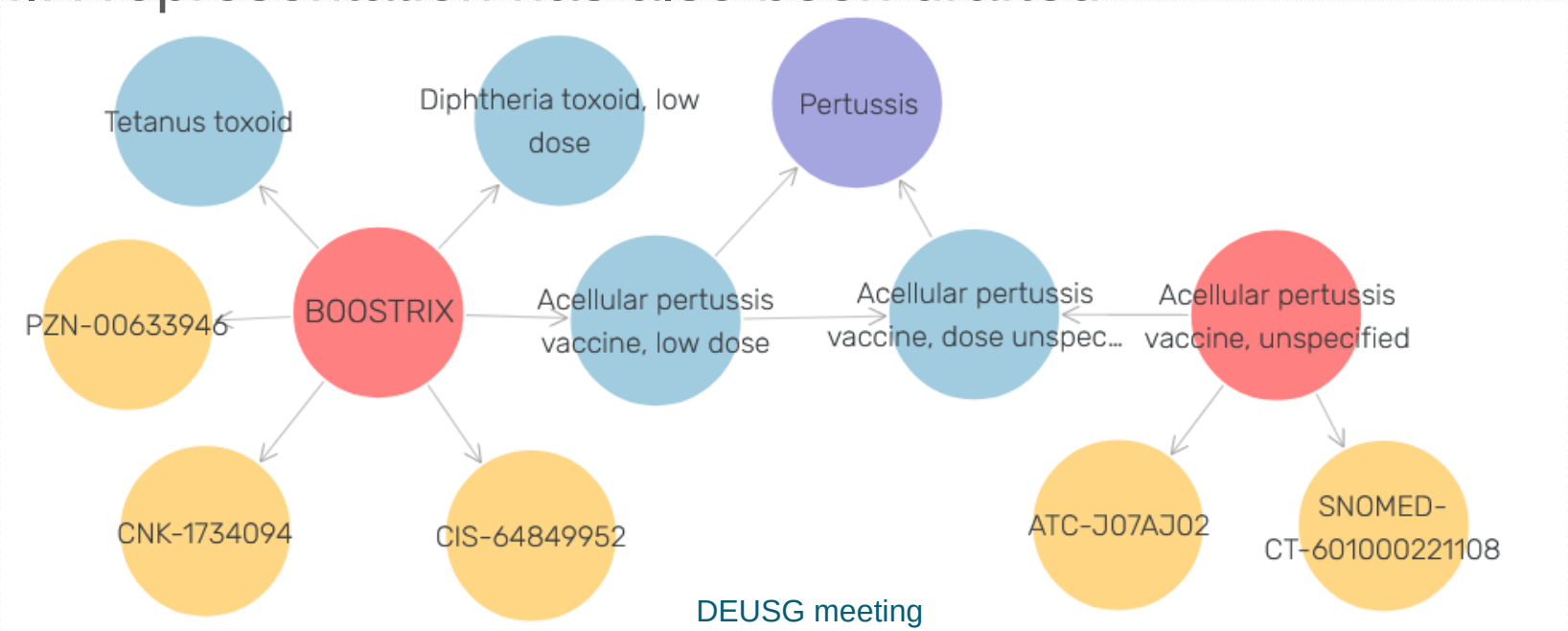


Counted on February 10th, 2023

NUVA representations

Available:

- As an OWL/RDF graph at https://smt.esante.gouv.fr/terminologie-nuva/
  A SPARQL query interface is included.
- Through an exploration tool at https://nuva.mesvaccins.net
- A FHIR representation has also been drafted



Field experience

- Used in France by MesVaccins.net (2M vaccination cards), the French Army EHR and some editors relying upon our CDS.
- Used in Luxembourg for the national Electronic Vaccination Card.
- Only 40% of the records in the MesVaccins database could have been encoded with the national drug code system.

Our proposal for the future

- We propose to make NUVA a common good since:
  - We consider it has a value for public health
  - It could feed a value set for the HL7 International Patient Summary
  - It will create a favourable ground for decision support systems
- After a study done for the European Commission on the EU citizen vaccination card, we intend to launch a pilot with several countries.
- The appropriate governance structure is still to be defined; this should be part of the pilot project.

Takeaway – One possibility among many

Reusing the technology of the Digital Covid Certificate, it is possible to create a NUVA encoded QR Code carrying a whole vaccination history (prototyped up to 100 events).

This could ultimately replace the yellow international vaccination certificate.

LE GOUVERNEMENT DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère de la Santé

Carnet de Vaccination Electronique

Carnet de Vaccination Éléctronique au 30/09/2021

NOM:	Charles	SEXE:	Masculin
NOM DE NAISSANCE:		DATE DE NAISSANCE:	25/02/1984
PRÉNOM:	Charnby	MATRICULE:	1984022560043

Historique Vaccinal

DATE	NOM DU VACCIN	MALADIES
30/09/2021	Prepandemic influenza vaccine (H5N1) Novartis Vaccines and Diagnostic	Grippe aviaire
30/09/2021	FLUVIRINE (rappel)	Grippe saisonnière
30/09/2021	PENTAVALENTE (rappel)	Coqueluche, Diphtérie, Haemophilus influenzae b, Hépatite B, Hépatite B, Hépatite B, Hépatite B, Tétanos
30/09/2021	MENCEVAX A (rappel)	Méningocoque A
30/09/2021	MENPOVAX 4 (rappel)	Méningocoques ACWY
30/09/2021	A.D.T. (rappel)	Diphtérie, Tétanos
30/09/2021	D.T. POLIO MERIEUX (rappel)	Diphtérie, Poliomyélite, Tétanos
30/09/2021	DTVax	Diphtérie, Tétanos
30/09/2021	PRIORIX-TETRA (rappel)	Oreillons, Rougeole, Rubéole, Varicelle
30/09/2021	VICPS (TYPHIM VI)	Typhoïde

Statut Vaccinal

EN RETARD

MALADIE	DEPUIS LE
Test 1	18/07/2015
Test 2	28/03/2018
Test 3	03/11/2020

À FAIRE

MALADIE	À PARTIR DU	AVANT LE
Test 4		18/01/2022
Test 5	10/02/2022	
Test 6	05/01/2022	

CAS PARTICULIERS

MALADIE	INFORMATIONS COMPLÉMENTAIRES
Pneumocoque	La vaccination n'est recommandée que s'il existe des facteurs de risque.
Papillomavirus	Pas d'indication chez l'homme après 26 ans.

À JOUR

Covid 19, Fièvre jaune, Hépatite B, Tétanos

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