

# AntigenCode

## What's new in this release?

### Serogroups W and W-135

SNOMED International updated its organism content related to N meningitidis in 2019, and updated the FSN from "Neisseria meningitidis serogroup W-135 (organism)" to "Neisseria meningitidis serogroup W (organism)". Serogroup W135 is now an acceptable synonym for serogroup W. SNOMED CT's organism hierarchy is updated and in alignment with current naming conventions for Neisseria meningitidis, which considers serogroup W and W-135 equivalent (Tzeng, et. al.).

The vaccine products containing only Neisseria meningitidis serogroup A, C, W135 and Y antigens (medicinal product) will require an update, as the Serogroup W and W-135 can now be considered equivalent.

Reference: Tzeng, Y.-L.; Stephens, D.S. A Narrative Review of the W, X, Y, E, and NG of Meningococcal Disease: Emerging Capsular Groups, Pathotypes, and Global Control. *Microorganisms* 2021, 9, 519.

This change will also impact the generic concepts that contain the W-135. Please refer to the [VaccineHistoricalNameCode](#) page for the details.

### Known Issues

All concepts related to Neisseria meningitidis serogroup A, C, W135 and Y antigens will be reviewed and the necessary RFCs processed for the Canadian and International editions by the next releases.

**The below sections are currently under review due to the Immunization Redesign**

**If you have questions or need information, please [contact us](#)**

## Antigens

This content is intended to be used to query the antigens as active ingredient substances of vaccines that were administered. This is to facilitate immunization forecast management. It consists of concepts from the Substance class and the SNOMED CT Substance hierarchy.

### Scope Definition:

The scope of this subset is to describe antigens contained within the vaccines (based on VaccineHistoricalNameCode subset) that may be administered to or have been received by a patient. In some cases more than one antigen per disease or pathogen may be included when the sub-type, serotype or formulation (adjuvant) is relevant (e.g. pneumococcal conjugate and pneumococcal polysaccharide). This is to facilitate population of a comprehensive immunization history, forecasting and inventory management.

## General rules applied to this section

### A) Antigens included in this subset are based on clinical requirements found in the Canadian Immunization Guide:

- Where required, antigens are added to reflect the product active component(s) and allow linkage between products and components. These are then drawn from the product monograph.
- Serotypes and antigen formulation were identified as required for forecasting
- For some categories of antigens the granularity level has been driven by the forecasting schedule. For example, pneumococcal polysaccharide has the same forecast regardless of whether the patient received a single or multi-valent product. Therefore only one higher parent is created as pneumococcal polysaccharide antigen to accommodate for all pneumo-p. The same has been done for the pneumococcal conjugate formulation: only one higher parent is created as pneumococcal conjugate antigen to accommodate for all pneumo-c.
- Specific strains are not always needed for forecasting; therefore where multiple strains exist, the antigens were identified along with terms such as conjugate. Examples where this has been used include: pneumococcal conjugate and pneumococcal polysaccharide (no requirement for specifying to 23 valency).
- For HPV, the clinical requirement for forecasting is to identify whether the product is HPV 2 or HPV 4, therefore the HPV antigens were identified including HPV bivalent (i.e. HPV 2), HPV quadrivalent (i.e. HPV 4), but also the individual antigens were included HPV types 6, 11, 16, 18.

### B) Technical requirements were addressed by the following

- Creation of 'buckets'
  - The rationale for doing this is to combine similar antigens together in the groups required to support the immunization schedule forecast logic.
  - Buckets created: Pneu-C7, Pneu-C10, Pneu-C13, Penu-P23, Rota, HPV-2-4 and Men
    - The bucket will carry a (product) semantic tag. This is because the concept represented by this code is not an 'atomic' concept
  - The terms "standard dose" and "low dose" were used to differentiate between antigen strength, when applicable (e.g. Upper-case "D" for diphtheria = standard / pediatric dose; Lower-case "d" for diphtheria = low / adult dose).
    - These types of concepts are not usually allowed in the substance hierarchy, therefore may need to be edited eventually.

- These codes will carry a (substance) semantic tag.
- A discussion with stakeholders took place on the use of the disease antigen verses the use of the microorganism antigen for this subset. The decision was to go with the disease antigen to align with the Canadian Immunization Guide naming conventions. Some existing international content is based on Microorganism e.g.: *Neisseria meningitidis conjugate antigen* (substance). In order to keep it simple, preferred synonyms have been added to international concepts and described as per the Canadian Immunization Guide (CIG) e.g.: Preferred synonym for *Neisseria meningitidis conjugate antigen* (substance) is: *Meningococcal conjugate antigen*
- All Canadian Edition content will be developed based on the disease antigen.
  - Vi polysaccharide typhoid antigen is the antigen for the Typhi-I
  - Typhoid live attenuated Ty21a antigen is the antigen for the Typhi-O
  - Live unattenuated vaccinia virus antigen is the antigen for Smallpox
- There are currently international concepts that include in one of their descriptions 'antigen' or 'toxoid' but if the Fully Specified Name contains the word 'vaccine' these concepts were not selected because they do not represent an Antigen or a Toxoid. In order to best represent the antigen, we have created those in the Canadian Edition. Only concepts that represent an antigen or a toxoid in its FSN were selected from the international version.

For example:

1. Diphtheria vaccine (substance)
  - has a description of: diphtheria toxoid
  - Not selected from the international version, but created in Canadian Edition
2. *Bordetella pertussis antigen* (substance)
  - Was selected from the international version
  - A Canadian English Preferred Synonym was added to this concept

## C) SNOMED International has updated the editorial guidelines naming convention, for antibodies and antigens.

- New concepts created in the Canadian Edition will follow these guidelines  
For example: Antigen of X organism (substance)

## Fully Specified Name

The format for the Fully Specified Name (FSN) is as follows:

Antigen Name (strength) (substance) or (product)

E.g.: *Bordetella pertussis antigen* (substance)

E.g.: *Pertussis antigen low dose* (substance)

## FSN Components

### Antigen Name

- The word "toxoid" or "antigen" is included in the FSN (except for the concepts that are representing a 'bucket' \* and have a semantic tag of (product))
- There are no parentheses (...) other than for the semantic tag

### (strength)

- This is to identify the different strength for same antigen which can be administered to different clients

For example: Hepatitis B antigen dialysis strength

- The following pattern has been applied to some antigen categories:
  - A higher parent which is more generic and could be selected when more specific information is not available.
  - Children that will allow the capture of different strengths for different targeted clients.
  - The defaulted/ideal pattern is:
    - Higher parent = Antigen
    - Children = toxoid

Note: Exceptions to the pattern are as follows:

- If there is only one (1) formulation available, then only that type will be added to the subset. It may be required that the parent be created in the Canadian Edition but not to be part of the subset. When there is no business requirement to have that higher level parent, it will not be created.
- The descriptions below are the PS:

Diphtheria antigen (Not in Antigen subset)

**Diphtheria toxoid**

Diphtheria toxoid low dose

Diphtheria toxoid standard dose

**Pertussis antigen** (No toxoid formulation for this type of antigen)

Pertussis antigen low dose

Pertussis antigen standard dose

Acellular pertussis antigen

Acellular pertussis antigen low dose

Acellular pertussis antigen standard dose

Whole cell pertussis antigen

**Tetanus toxoid** (Tetanus antigen not required)**Streptococcus pneumoniae antigen** (on international concepts) = **pneumococcal antigen**

Pneumococcal polysaccharide antigen

Pneumococcal conjugate antigen

**Poliomyelitis antigen**

inactivated poliomyelitis antigen

live poliomyelitis antigen

**Neisseria meningitidis antigen** (on international concepts) = **meningococcal antigen**

Meningococcal group A antigen

Meningococcal group C antigen

Meningococcal group W135 antigen

Meningococcal group Y antigen

Meningococcal conjugate antigen

Meningococcal conjugate group A antigen

Meningococcal conjugate group C antigen

Meningococcal conjugate group W135 antigen

Meningococcal conjugate group Y antigen

Meningococcal polysaccharide antigen

Meningococcal polysaccharide group A antigen

Meningococcal polysaccharide group C antigen

Meningococcal polysaccharide group W135 antigen

Meningococcal polysaccharide group Y antigen

**Influenza virus antigen**

Influenza A antigen

Influenza A virus subtype H1N1 antigen

**Typhoid antigen**

Vi polysaccharide typhoid antigen

Typhoid live attenuated Ty21a antigen

**Varicella antigen**

varicella-zoster virus antigen

## Hepatitis B antigen

Hepatitis B antigen dialysis strength

Hepatitis B antigen pediatric strength

Hepatitis B antigen regular strength

### (substance)

- This is the semantic tag representing the context of use within SNOMED CT: for concepts that are within the substance hierarchy.

### (product)

- This is the semantic tag representing the context of use within SNOMED CT: for any concept that is a 'bucket' or has a strength.

\* A 'bucket' refers to a high level representation for a group of antigens. In this case, the concept rather represents a product when it is not representing an atomic concept like a substance would.

For example: Human papillomavirus bivalent vaccine (product)

## Preferred Synonym (English)

The format for the Preferred Synonym (PS) is as follows:

Antigen Name (strength)

E.g.: Pertussis antigen

E.g.: Pertussis antigen low dose

## PS Components

- There is no PHAC abbreviation, except for the concepts that are representing a 'bucket\*' and have a semantic tag of (product)

### Antigen Name

- The word "toxoid" or "antigen" is included in the PS.
- The word "virus" may be part of the PS

### (strength)

- This is to identify the different strengths for same antigen which may be administered to different clients. Refer to FSN Components for more information.

## Preferred Synonym (French)

- La traduction des expressions suivantes '*regular strength*', '*dialysis strength*' et '*pediatric strength*' est la même que celle trouvée dans le sous-ensemble des codes historiques (*Vaccine Historical Subset*).

Example: *Hepatitis B antigen X strength* (substance)

*regular strength* traduit par: formulation régulière

*dialysis strength* traduit par: formulation pour dialyse

*pediatric strength* traduit par: formulation pédiatrique

- Dans le Guide Canadien d'immunisation, on traduit
  - '*reduced dose*' par dose réduite en français. Ceci fait référence à une dose pour adolescent/adulte et sera documenté en utilisant des lettres minuscule.
  - '*full strength dose*' qui est la même chose que '*standard dose*' par dose standard en français. Ceci fait référence à une dose pour enfants et sera documenté en utilisant des lettres majuscules.
- Certains termes ont été uniformisés lorsqu'utilisés dans plusieurs concepts :
  - Groupe vs sérogroupe
    - '*group*' a été traduit par 'sérogroupe' pour les concepts identifiants les groupes de méningocoques E.g.: Antigène du méningocoque du sérogroupe C
    - Antigène du méningocoque ou antigène méningococcique et Antigène du pneumocoque ou Antigène pneumococcique
      - Le terme à utiliser est 'Antigène du X' selon Helen Anyoti (VWVG)(SCT-6540). Les termes similaires suivent ce modèle.