

## 4.2. Subtype Relationships

### Role of subtype Relationships

Subtype Relationships provide the main semantic hierarchy that relates Concepts to one another.

All Active Concepts, except the root Concept, have subtype Relationships with one or more Concepts. Each of these Relationships indicates that a Concept is a subtype of another Concept.

### Representation of Subtype Relationships

Subtype Relationships are expressed in the same way as all other SNOMED CT Relationships. They are identifiable by their RelationshipType, which refers to a Concept with the Fully Specified Name 116680003 |is a|.

The subtype Relationship Concept has a designated Concept Identifier, which is documented in this guide as an Important Concept Identifier.

### Subtype Relationships and the Subtype Hierarchy

Subtype Relationships represent the subtype hierarchy of SNOMED CT. This is illustrated here using a small sample set of concepts and Relationships listed in . [1

Table 4.2-1: Subtype Relationships Example

Source	Relationship Type	Destination
53084003  bacterial pneumonia	116680003  is a	312342009  infective pneumonia
53084003  bacterial pneumonia	116680003  is a	87628006  bacterial infectious disease
312342009  infective pneumonia	116680003  is a	40733004  infectious disease
312342009  infective pneumonia	116680003  is a	233604007  pneumonia
233604007  pneumonia	116680003  is a	19829001  disease of lung
19829001  disease of lung	116680003  is a	50043002  disease of respiratory system
50043002  disease of respiratory system	116680003  is a	64572001  disease
87628006  bacterial infectious disease	116680003  is a	40733004  infectious disease
40733004  infectious disease	116680003  is a	64572001  disease
64572001  disease	116680003  is a	138875005  SNOMED CT Concept


Only the most proximate 116680003 |is a| relationships are represented in the distribution files. These Relationships are shown by the blue lines in . However, a Concept is a subtype of any concept to which it has a direct or indirect 116680003 |is a| Relationship.

- Thus the Concept 53084003 |bacterial pneumonia| is a subtype of all the other concepts shown in the diagram.

#### Example:

53084003 |Bacterial pneumonia| is a subtype of 233604007 |pneumonia| because it is a subtype of 312342009 |infective pneumonia| which is a subtype of |pneumonia|.

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Figure 4.2-1: Figure 1. Graphical view of the of the Supertypes ofidINLINE53084003|Bacterial pneumonia (disorder)|

The number of links in the chain of 116680003 |is a| Relationships between two Concepts does not alter the logical meaning of the relationship between them. The number of 116680003 |is a| Relationships between two Concepts may change between releases of SNOMED CT as a result of the addition of an intermediate Concept. This does not alter the semantic relationship between them.

Some technical implementation issues are affected by whether a pair of Concepts is linked by a single subtype Relationship or by a sequence of several subtype Relationships. In this guide, the following terms are used where this distinction is technically significant:

A given Concept ( Concept -x) may have:

- Subtype children - Concepts with a subtype Relationship referring to Concept -x:

- 53084003 |bacterial pneumonia| is a **subtype child** of:
  - 87628006 |bacterial infectious disease|
  - 312342009 |infective pneumonia|
- **Supertype parents** - **Concepts** referred to by a **subtype Relationship** from **Concept** -x:
  - 40733004 |infectious disease| is a **supertype parent** of:
    - 87628006 |bacterial infectious disease|
    - 312342009 |infective pneumonia|
- **Subtype descendants** - **Concepts** with **subtype Relationships** that refer to other **Concepts** that are either **child** or **subtype descendants** of **Concept** -x:
  - 53084003 |bacterial pneumonia| is a **subtype descendant** of:
    - All other **Concepts** shown in the example.
- **Supertype ancestors** - **Concepts** referred to by **subtype Relationships** from other **Concepts** that are either parent or **supertype ancestors** of **Concept** -x:
  - 64572001 |disease| is an **supertype ancestor** of:
    - All other **Concepts** shown in the example, except for 138875005 |SNOMED CT Concept|.
- 53084003 |bacterial pneumonia|
  - 53084003 |bacterial pneumonia| 116680003 |is a| 312342009 |infective pneumonia|
    - 312342009 |infective pneumonia| 116680003 |is a| 40733004 |infectious disease|
      - 40733004 |infectious disease| 116680003 |is a| 64572001 |disease|
        - 64572001 |disease| 116680003 |is a| 138875005 |SNOMED CT Concept|
    - 312342009 |infective pneumonia| 116680003 |is a| 233604007 |pneumonia|
      - 233604007 |pneumonia| 116680003 |is a| 19829001 |disease of lung|
        - 19829001 |disease of lung| 116680003 |is a| 50043002 |disease of respiratory system|
          - 50043002 |disease of respiratory system| 116680003 |is a| 64572001 |disease|
            - 64572001 |disease| 116680003 |is a| 138875005 |SNOMED CT Concept|
    - 53084003 |bacterial pneumonia| 116680003 |is a| 87628006 |bacterial infectious disease|
      - 87628006 |bacterial infectious disease| 116680003 |is a| 40733004 |infectious disease|
        - 40733004 |infectious disease| 116680003 |is a| 64572001 |disease|
          - 64572001 |disease| 116680003 |is a| 138875005 |SNOMED CT Concept|

**Figure 4.2-2: Inverted hierarchical view of the Supertypes of 53084003|Bacterial pneumonia (disorder)|**