Oncology in SNOMED CT

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Disclaimer

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SNOMED CT and oncology

- **SNOP (~1965)**
  - Systematized Nomenclature of Pathology

- **SNOMED International (~1990)**
  - Morphology and topology harmonized with the International Classification of Diseases for Oncology (ICD-O)

- **SNOMED CT (~2000)**
  - General clinical terminology
Breast cancer in SNOMED CT

http://browser.ihtsdotools.org/
Breast cancer in SNOMED CT
Main types of cancer-related entities

“situation”

No family history: breast carcinoma

**associated finding**

Carcinoma of breast

**associated morphology**

Malignant epithelial neoplasm – category

**disorders**
Types of cancer-related entities

- Sarcoma lower inner quadrant of female breast
- T3: Breast tumor >5 cm in greatest dimension
- CAP Cancer Checklist; Breast: Excision Less Than...
- Suspected breast cancer
- BRCA1 mutation carrier detection test
- Breast cancer type 1 susceptibility protein
- Tumor-node-metastasis (TNM) breast tumor staging
- Distance of tumor from closest surgical margin (breast)
- Mental adjustment to cancer scale
- Nottingham histologic grading system
### Coverage (pre-coordinated)

<table>
<thead>
<tr>
<th>Category</th>
<th>Top-level concept</th>
<th># descendants</th>
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<tbody>
<tr>
<td>Disorder</td>
<td>Malignant neoplastic disease</td>
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<td>Finding</td>
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<td>Record artifact</td>
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<td>Situation</td>
<td>- Family history of neoplasm</td>
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<td></td>
<td>- History of neoplasm</td>
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1.75% of SNOMED CT concepts are directly related to cancer
Coverage (post-coordinated)

- Compositional grammar
  - Based on the SNOMED CT “concept model”

- “Refinement” of existing concepts
  - Specific morphology
    - Primary vs. secondary
  - Specific anatomical structure
    - Laterality

- E.g., Family history of breast carcinoma in the mother
Use cases

- Clinical documentation
- Clinical research
  - Secondary use of data / observational research
- Cohort selection
  - For clinical quality measures ("Meaningful Use")
  - For clinical research
- Clinical decision support
## Breast Cancer: Hormonal Therapy for Stage IC-IIIC Estrogen Receptor/Progesterone Receptor (ER/PR) Positive Breast Cancer

<table>
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<th>eMeasure Identifier (Measure Authoring Tool)</th>
<th>eMeasure Version number</th>
<th>NQF Number</th>
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### Measurement Period
January 1, 20XX through December 31, 20XX

### Measure Steward
American Medical Association-convened Physician Consortium for Performance Improvement(R) (AMA-PCPI)

### Measure Developer
American Medical Association-convened Physician Consortium for Performance Improvement(R) (AMA-PCPI)

### Endorsed By
National Quality Forum

### Description
Percentage of female patients aged 18 years and older with Stage IC through IIIC, ER or PR positive breast cancer who were prescribed tamoxifen or aromatase inhibitor (AI) during the 12-month reporting period.

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### Metadata
**Name:**
Breast Cancer ER or PR Positive

**Type:**
Extensional

**Steward:**
American Medical Association-convened Physician Consortium for Performance Improvement(R)

**OID:**
2.16.840.1.113883.3.526.2.1387

**Definition ID:**
20150430

**Program:**
CMS, MU2 Update 2015-05-01 using this value set

### Value Set Members
**Expansion ID:** 20121025

### Expanded Code List

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SNOMED CT in the U.S.

◆ International release developed by IHTSDO
  ● 27 member countries, including U.S.

◆ NLM is the U.S. National Release Center
  ● Distribute international release (UMLS license)
    ▪ Released in January and July
  ● Develop the U.S. extension / U.S. edition
    ▪ Released in March and September
  ● Take requests for changes or new concepts / terms
    ▪ U.S. SNOMED CT Content Request System (USCRS)
    ▪ https://uscrs.nlm.nih.gov/
    ▪ E.g., cancer staging concepts added for clinical quality measures
Challenges

◆ Keep it simple (or hide complexity)
  ● Reproducible representation (ontology developer)
  ● Reproducible annotation (ontology user)

◆ Interoperability between biological and clinical data
  ● Clinical data is Big Data
  ● Necessary for translational research