

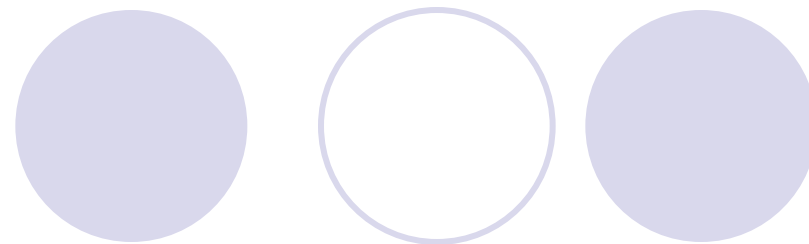
SNOMED CT in Anatomic Pathology

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SNOMED CT



- **S**ystematized
- **N**omenclature of
- **M**edicine
- **C**linical **T**erms

- Nomenclatura
- Sistematizada de
- Medicina -
- Términos
- Clínicos

Contenido amplio, estructura lógica

- Alrededor de 350.000 conceptos
 - Procedimientos, hallazgos clínicos, fármacos, anatomía, etc.
- Creado por médicos, enfermeros y otros profesionales del equipo de salud



Contenidos de SNOMED

Julio 2009

311.000 Conceptos
794.000 Descripciones
1,300.000 Relaciones

- **Hallazgos/conclusiones/evaluaciones**
 - Trastornos
 - **Hallazgos clínicos** (por lugar, método, función)
- **Procedimientos**
 - planes, intervenciones, tratamientos, prescripciones
- **Especímenes**
- Estructuras anatómicas
 - Estructuras normales (anatomía/ topografía)
 - **Estructuras anormales (patología/ morfología)**
- Función (incluso habilidades y propiedades)
- Organismos Vivos
- **Sustancias** (drogas, productos químicos, productos biológicos)
- Agentes físicos, fuerzas y actividades (causas de lesión)
- Ocupaciones
- Contexto social y demográfico (raza, grupo étnico, religión, estado civil, nivel de la educación, hábitos, relaciones familiares, etc.)
- General (contexto, modificadores, localización, certeza, severidad, curso, períodos de tiempo, estadificación, estado, características)
- Otros (relaciones espaciales, unidades)

Background

SNOMED CT useful in:

- **Reference terminology:** Information Systems (IS) integration (semantic interoperability)
 - EHR – Pathology IS
 - Electronic request Pathology Study (specimens, anatomy)
 - Pathology report available in EHR (diagnosis, clinical problems, episode coding-billing)
 - Pathology IS and telepathology portal (specimens and diagnosis)
 - Pathology IS and DICOM image manager (specimens and diagnosis)
 - Pathology IS and hospital tumor registry, biobank IS,...
- **Interphase terminology**
 - Searches made easier, Concept navigation, Qualifiers can be added, synonyms are available

Structured pathology reports

- The general approach to coding items on the CAP and IHE checklist that ask questions has been to use concepts from the SNOMED CT ***Observable Entity*** hierarchy.
- The answers to these questions can be chosen from concepts in any of several hierarchies. Primarily, they are found in the *Finding*, *Disorder*, or *Morphologic Abnormality* hierarchies (van Berkum, 2003).

CATÁLOGO DE MUESTRAS (SEAP)

C	T	E	SNOMED CT	AUTOPSIAS (A)	Unidades	Minutos	Horas	
1	1	1	56417000	Autopsia adulto, completa	84	840	14	procedure
1	2	1	41770000	Autopsia adulto (sin SNC)	72	720	12	
1	3	1	90864005	Autopsia de alto riesgo	102	1020	17	
1	4	1	74348008	Autopsia parcial, regional, sólo SNC	42	420	7	
1	5	1	309502007	Autopsia fetal (Desde 12 semanas hasta 22 semanas de gestación y/o 500 g)	42	420	7	specimen
1	6	1	4447001	Autopsia perinatal (Desde 22 semanas de gestación y/o 500 g hasta 28 días)	72	720	12	procedure
1	7	1	16361008	Autopsia postnatal (Desde 28 días de vida hasta 1 año de vida)	72	720	12	
1	8	1	430339001	Autopsia pediátrica (Desde 1 año de vida hasta 18 años)	84	840	14	

C	T	E	SNOMED CT	BIOPSIAS (B)	Unidades	Minutos	
2	1	1	309066003	DER Piel, enfermedades dermatológicas, biopsia	6	60	specimen
2	1	2	309075001	DER Piel, lesiones benignas no complejas, exéresis	2	20	
2	1	3	309504008	DER Piel, tumores (punch, afeitado), biopsia	4	40	
2	1	4	35646002	DER Piel, tumores, resección	6	60	procedure
2	2	1	309209004	DIG Esófago, biopsia endoscópica	4	40	specimen
2	2	2	254573006	DIG Esófago, polipectomía	4	40	clinical finding specimen
2	2	3	122630008	DIG Esófago, esofagectomía	6	60	
2	2	4	438351003	DIG Esófago, esofagogastrectomía	12	120	

Encoding specimens

- Spanish Society of Anatomic Pathology (SEAP):
www.seap.es
- Consensus from 8 institutions from all over Spain.
- Criteria for classifying specimens (without consideration of workload or diagnosis)
 1. General topography (skin)
 2. Obtaining procedure or intention: In biopsies
 - Superficial biopsy (punch, tru-cut or needle)
 - Incisional biopsy
 - Enucleation
 - Complete excision (generally with adjacent tissue)
 - Partial resection of an organ
 - Complete removal of an organ
 - Removal of organ and adjacent structures (e.g. lymphadenectomy)
 - Special resection (Whipple, abdominoperineal,...) o method (stereotactic, endoscopy)

Encoding specimens

- Cytology
 - Exfoliative cytology, brushings or scrapings
 - Fluid sample
 - Touch preparation
 - Fine Needle Aspiration (FNA)
- Autopsy
 - Coded as procedures

Specimen and Procedures subset

E21 fx 127464006:118171006=71658001

	A	B	C	D	E	F	G	H	I
1	Sociedad Española de Anatomía Patológica-División Española de la Academia Internacional de Patología (SEAP-IAP)								
2	Catálogo de muestras de anatomía patológica codificado en SNOMED CT								
3	Basado en SNOMED CT Internacional versión 2012-01-31 (FSN = Fully Specified Name)								
4	BIOPSIAS								
5									
6	DERMATOPATOLOGÍA				Espécimen	Espécimen FSN		Procedimier	Procedimiento FSN
7	Biopsia de piel				119325001	Skin (tissue) specimen (specimen)		240977001	Biopsy of skin (procedure)
8		Cilindro (punch, BAAG, tru-cut) de piel			309504008	skin punch biopsy sample (specimen)		87697008	punch biopsy of skin (procedure)
9		Afeitado de piel			396483002	specimen from skin obtained by shave excision (specimen)		177346002	shave biopsy of skin (procedure)
10		Curetaje de piel			309067007	specimen from skin obtained by curettage (specimen)		87591000	curettage of skin lesion (procedure)
11		Biopsia por incisión de piel			309505009	skin incision biopsy sample (specimen)		282014007	incision biopsy of skin (procedure)
12		Enucleación de lesión cutánea (p. ej. Quistes de in			309068002	skin lesion sample (specimen)		428737009	enucleation of lesion of skin (procedure)
13		Biopsia de uña			119327009	nail specimen (specimen)		244604004	biopsy of nail (procedure)
14		Biopsia por escisión de piel			309506005	skin excision biopsy sample (specimen)		312968005	excision biopsy of skin lesion (procedure)
15		Resección cutánea amplia			396354001	specimen from skin obtained by wide excision (specimen)		440258006	excision of skin (procedure)
16									
17									
18									
19	PATOLOGÍA DEL APARATO DIGESTIVO				Espécimen	Espécimen FSN		Procedimier	Procedimiento FSN
20	Biopsia de esófago				127464006	Tissue specimen from esophagus (specimen)		32218000	Biopsy of esophagus (procedure)
21		Biopsia endoscópica de esófago			127464006:118171006=71658001	Tissue specimen from esophagus (specimen) : specimen proced		71658001	esophagoscopy for biopsy (procedure)
22		Biopsia por incisión de esófago			122628006	specimen from esophagus obtained by incisional biopsy (specimen)		22673000	incisional biopsy of esophagus (procedure)
23		Biopsia por escisión de esófago (ej: polipectomía)			122629003	specimen from esophagus obtained by excisional biopsy of lesi		116226004	excisional biopsy of lesion of esophagus (proce
24		Esofaguectomía parcial			122630008:118171006=3981	specimen from esophagus obtained by esophageal resection (sp		3980006	subtotal resection of esophagus (proce) (1)
25		Esofaguectomía total			122630008:118171006=1407	specimen from esophagus obtained by esophageal resection (sp		14072009	total esophagectomy (procedure)
26		Esofagogastrrectomía			122631007	specimen from esophagus obtained by esophagogastrectomy (s		24506003	esophagogastrectomy (procedure)
27									

Results of encoding specimens and procedures with SNOMED CT

- Biopsies: 345 specimens and procedures
 - 112 specimens (32%) post-coordinated
 - 47 procedures (14%) post-coordinated
- Cytologies: 206 specimens and procedures
 - 73 specimens (35%) post-coordinated
 - 92 procedures (46%) post-coordinated
- Autopsies: 21 different procedures (3 post-coordinated)

Guidelines for encoding specimens with SNOMED CT

- **specimen from** ___[topography]___ **obtained by** ___[procedure]___
Where procedure <> “biopsy”. Procedure can be general (“excision”) or very specific (“Whipple resection | subtotal adrenalectomy”). (229 concepts)
- **specimen from** ___[topography]___ **obtained by** ___[|core |excisional |image guided core |incisional |open |...]___ **biopsy**
Very specific procedures, from “incisional biopsy” to “stereotactically guided core needle biopsy” or “CT guided needle biopsy”. (55 concepts).
- **specimen from** ___[topography]___ **obtained by biopsy (specimen)**
Biopsy type is not stated. (46 concepts)
- [topography]___ **biopsy sample**
(75 concepts).
- **tissue specimen from** ___[topography]___
(62 concepts)

Postcoordination rules

Refinement ($\mathbf{C:A=V}$) ($\mathbf{C:A_1=V_1,A_2=(V_2),\dots,A_n=V_n}$)

- Specimens:

- specimen : specimen procedure (attribute) = procedure**
- specimen : specimen source topography (attribute) = body structure
- specimen :
specimen source topography (attribute) = body structure ,
specimen procedure (attribute) = procedure

- Procedures:

- procedure : procedure site - Direct (attribute) = body structure

specimen : specimen procedure (attribute) = procedure

- 128171007 | tissue specimen from stomach (specimen) | :
118171006 | specimen procedure (attribute) | =
10077008 | endoscopic biopsy of stomach (procedure) |

(Simplified notation)

specimen : specimen procedure (attribute) = procedure

How to distinguish partial from total esophagectomy specimen:

- 122630008 | specimen from esophagus obtained by esophageal resection | :
118171006 | specimen procedure | =
3980006 | subtotal resection of esophagus (procedure) |

Laterality

118169006 | specimen source topography (attribute) |
272741003 | laterality (attribute) |

Values admitted by this attribute are descendants from the concept: 182353008 | **side (qualifier value) |**:

- 7771000 | left |
 - 51440002 | right and left |
 - 419161000 | unilateral left |
- 24028007 | right |
 - 51440002 | right and left |
 - 419465000 | unilateral right |

DIAGNOSES. Implementation of SNOMED CT. Hierarchies

- 81% precoordinated concepts
- Morphology – Abnormal body structure
 - Only 44% of the codes! (1076)
- Clinical findings
 - 48% of the codes
- Qualifiers, normal anatomic structures, procedures, physical object, substance, organism
 - 10% of the codes

Citología: códigos morfológicos

Anomalías de Células Epiteliales	373886001	Estructura corporal
<u>Células Escamosas</u>	80554009	Estructura corporal
• Células escamosas atípicas (ASC)	69740004	Estructura corporal
- de significado indeterminado (ASC-US)	39035006	Estructura corporal
- no puede excluirse HSIL (ASC-H)	373878001	Estructura corporal
• Lesión intraepitelial escamosa de bajo grado (LSIL) comprendiendo: HPV/displasia leve/CIN 1	112662005	Estructura corporal
• Lesión intraepitelial escamosa de alto grado (HSIL) comprendiendo: displasia moderada y severa, carcinoma in situ (CIS)/CIN 2 y CIN 3	22725004	Estructura corporal
- con características sospechosas para invasión (si la invasión es sospechada)	373879009	Estructura corporal
• Carcinoma de células escamosas	28899001	Estructura corporal

Open questions

- Should pathology diagnosis be coded using the **morphological** abnormality sub-hierarchy (part of the Body Structure hierarchy) or should they be coded using **Clinical Finding** hierarchy?
- Does using a **mixture** of hierarchies (Body Structure and Clinical Finding) in pathology diagnosis coding make sense when implementing data exploitation of information systems?
- Should we ask IHTSDO to **complete the list** of morphological codes to add all those codes missing in the morphological abnormality sub-hierarchy?