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Coding Primary Site and Tumour Morphology

JRC-ENCR training course

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Outline

- What is coding and why do we need it?
- ICD-10 and ICD-O
- ICD-O-3 Topography coding rules
- ICD-O-3 Morphology coding rules
- How to code?
- ICD-O-3 online

What is coding and why do we need it?

Coding:

- to assign numerical codes to text descriptions

Example: Malignant neoplasm of the lung = C34

Advantages:

- group cases with similar concepts – site of origin, type of cancer
- complex series of pieces of information can be:
 - conveyed,
 - stored and
 - retrieved in the form of numbers (quickly, easier)

Cancer registry data - example

590915

ИСКАНЕ
ЗА ПАТОХИСТОЛОГИЧНО ИЗСЛЕДВАНЕ


на болестта на Урина Павлиева М. К. възраст 51 години
(за съхранение) ул. _____ № _____

Точен адрес: Окръг _____ гр. (к) _____ ул. _____
История на болестта (амбулаторен) № _____ Отделение _____
Материалът е взет чрез изрязване, кюретж _____ от мезенхима на езика

1. Сам 2. _____
3. _____ 4. _____
5. _____ 6. _____
7. _____ 8. _____

Анамнеза за специален статус: Наследствено заболяване
2 месеца преди смъртта на езика на устна
не обяснено с вирусна инфекция

При операция - вид на пат. процес и точна локализация _____



Съществени лабораторни данни: _____
Приложено лечение: Само биопсия
Травено ли е преди това биопсично изследване, къде, кога, резултат: _____

срочна клинична диагноза: _____
ифренич. диагноза: Само биопсия
ит на изпращане материала: Само биопсия 509, 11

Лекующа лекар: _____
(асистент и четвърт патолог)

ИЗПЪЛНЕНИЕ: За достоверна диагноза необходимо е материалът да се взема правилно, т.е. изва или тумор, ако с
еми и не може да се изпратят целите, да се изреже от ръба със здрава околност; да се изпраща в
ративен, биопсичен материал само в една хистопатологична лаборатория. Фиксиращата течност да е
и повече от обема на материала; най-добре се фиксира 10% формалин (продажният формалин е 40% са

PIN	Incidence date	Site	Morphology and behavior	grade
1011000047	04082000	C419	91803	1
1011000713	22062000	C504	85003	2
1011010324	26072001	C186	84803	2
1011010983	04052001	C56	84503	4
1011020767	30092009	C229	80003	2
1011030136	01032007	C80	80003	9
1011030898	27102005	C64	83103	4
1011040255	04012004	C629	91003	1

What is coding and why do we need it?

Coding is based on **classification**:

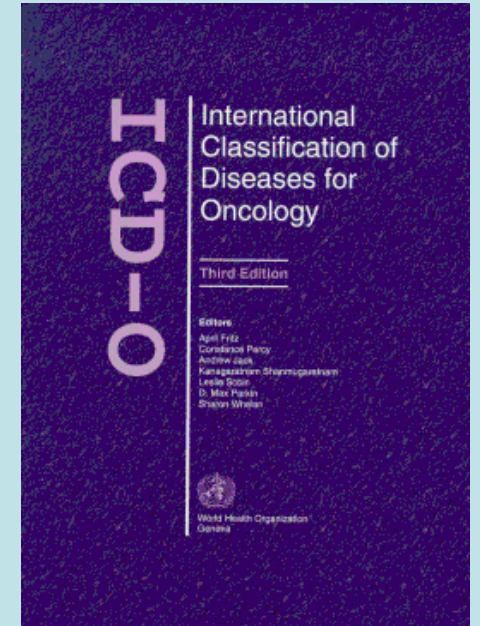
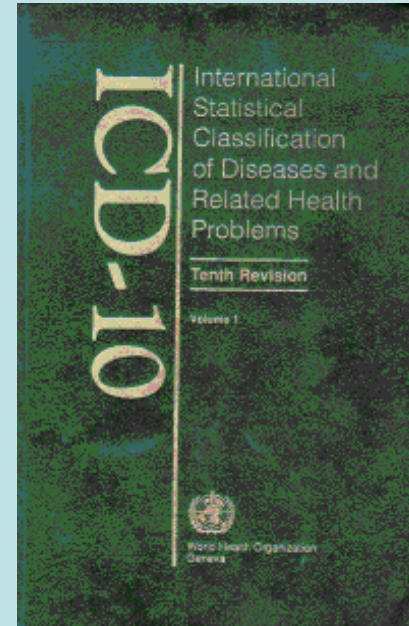
- arrangement of neoplasms or distribution in classes according to a method or system, ensuring **comparability**.

The two most important items of information are:

- **Topography**: the location (site) of the tumour in the body;
- **Morphology** (histology, cytology): the appearance of the tumour when examined under the microscope.

What is ICD-O?

- Subset of *International Classification of Diseases*
- Specific code set for neoplasms
- Coding system for primary site and cell type
 - *Example*: adenocarcinoma of lung = C34, 8140/3



Original - **all diseases** Subset - **neoplasms only**

Differences: **Organization**

- ICD-10 organized by
 1. Behavior
 2. Anatomic site involved
 3. Morphology codes optional
- ICD-O organized by
 1. Anatomical site involved
 2. Morphology + Behavior

ICD-10 and ICD-O-3

Term	ICD-10	ICD-O-3
Lung tumor, benign	D14.3	C34.9 8000/0
Lung tumor, borderline	D38.1	C34.9 8000/1
Lung tumor, in situ	D02.2	C34.9 8000/2
Lung tumor, invasive	C34.9	C34.9 8000/3
Lung tumor, metastatic	C78.0	C34.9 8000/6
Lung tumor, uncertain if primary or metastatic	D38.1	C34.9 8000/9



Differences: **Codes**

- Some special codes added in ICD-O
- Some ICD-10 codes not used
- Some codes used differently

ICD-O Special Site Codes

C42 Hematopoietic and reticuloendothelial system

- C42.0 Blood
 - C42.1 Bone marrow
 - C42.2 Spleen
 - C42.3 Reticuloendothelial system, NOS
 - C42.4 Hematopoietic system, NOS
-
- Use as primary site for **leukemia** (C42.1), **multiple myeloma** (C42.1), **Waldenstrom macroglobulinemia** (C42.0)

ICD-10 Codes Not Used in ICD-O

Histology-specific ICD-10 Codes

ICD-10		ICD-O
C43	Melanoma of skin	C44
C45	Mesothelioma	C38.4*
C46	Kaposi's sarcoma	C44*
C81-C96	Lymphomas, leukemias, other blood diseases	C42.1*, C77.*
		* For most cases

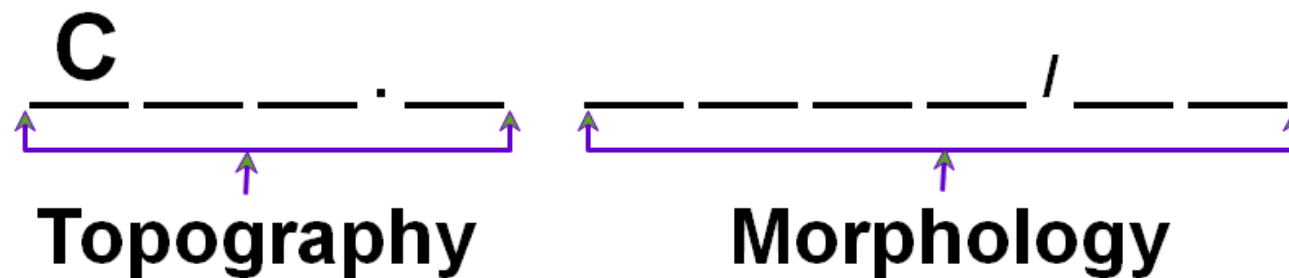
Other ICD-10 Codes Not Used in ICD-O

ICD-10		ICD-O
C26.1	Spleen	C42.2
C78-C79	Secondary malignant neoplasm of other specified sites	Code primary site (only) in ICD-O
C97	Malignant neoplasm of independent multiple primary sites	Code each primary separately

Site Codes Used **Differently**

ICD-10	ICD-O
C77 Lymph nodes (primary and secondary)	Use C77._ as primary site for nodal lymphomas. Do not code lymph node metastases as primary sites in ICD-O.

Structure of Code



Digits

Topography – 4

Cell type – 4

Behavior – 1

Grade – 1

Meaning

C 3 4 . 2

Primary
Subsite

8 0 7 0 / 3 2

Cell type
Behavior
Differentiation

C 3 4 . 2

Lung
Middle lobe

8 0 7 0 / 3 2

Squamous cell
carcinoma
Invasive
Moderately differentiated

Coding **topography** using ICD-O-3

- The **topography code**:
 - Indicates the **site of origin** of a neoplasm – where the tumor arose.
 - Has four-characters that run from C00.0 to C80.9
 - A decimal point (.) separates subdivisions of the three-character categories

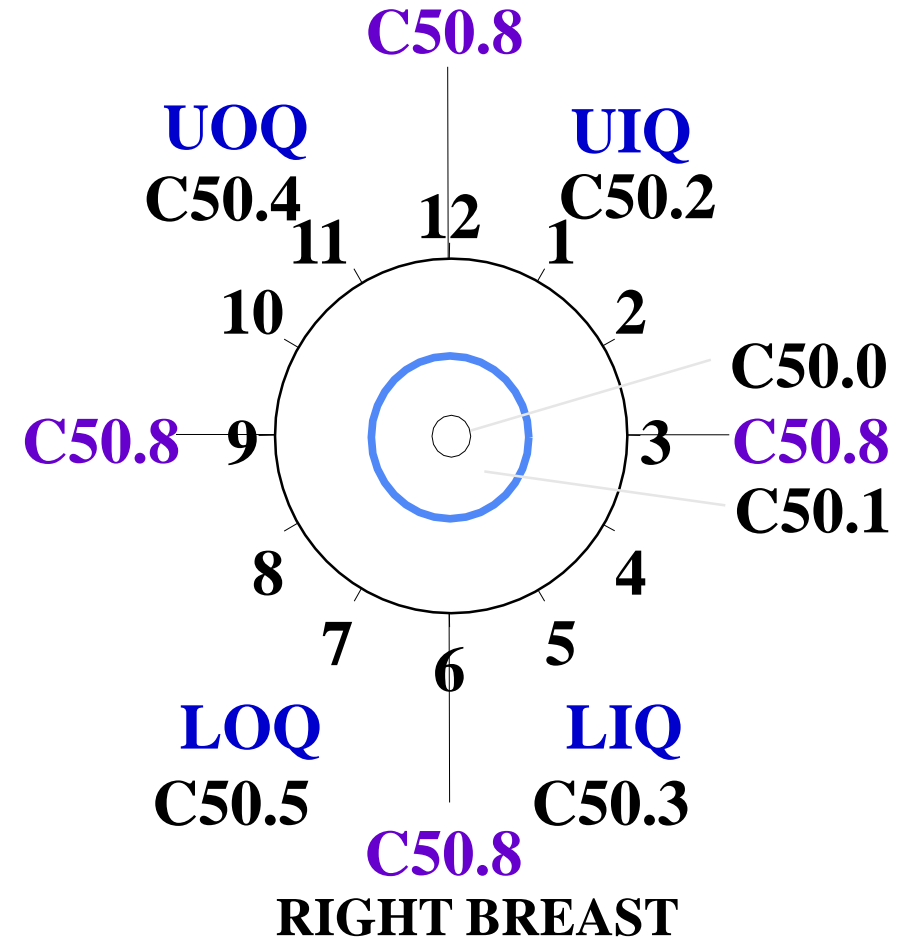
C _ _ . _
site subsite

C 50 . 2
breast, upper inner quadrant

ICD-O topography codes - example

C50 BREAST (excludes skin of breast C44.5)

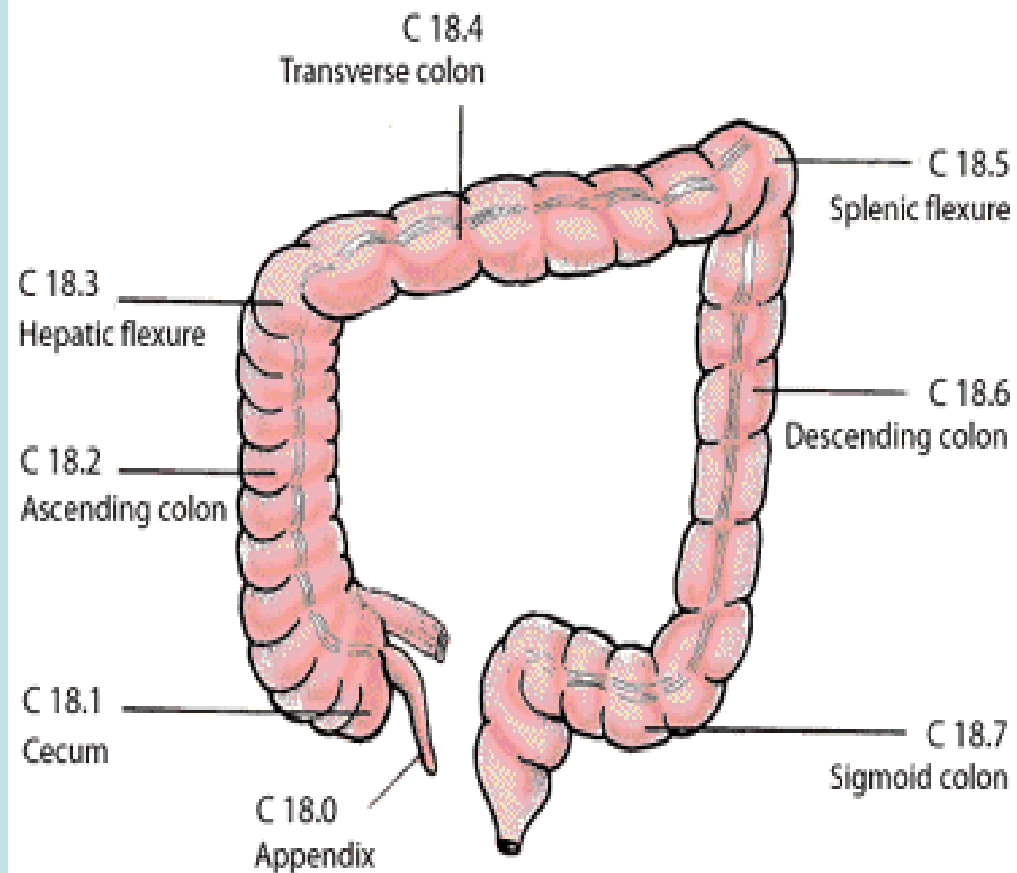
- C50.0 Nipple**
Areola
- C50.1 Central portion of breast**
- C50.2 Upper-inner quadrant of breast**
- C50.3 Lower-inner quadrant of breast**
- C50.4 Upper-outer quadrant of breast**
- C50.5 Lower-outer quadrant of breast**
- C50.6 Axillary tail of breast**
Tail of breast, NOS
- C50.8 Overlapping lesion of breast**
(see section 4.2.6)
Inner breast
Lower breast
Midline of breast
Outer breast
Upper breast
- C50.9 Breast, NOS**
Mammary gland



ICD-O topography codes - example

C18 COLON

- C18.0 Cecum**
Ileocecal valve
Ileocecal junction
- C18.1 Appendix**
- C18.2 Ascending colon**
Right colon
- C18.3 Hepatic flexure of colon**
- C18.4 Transverse colon**
- C18.5 Splenic flexure of colon**
- C18.6 Descending colon**
Left colon
- C18.7 Sigmoid colon**
Sigmoid, NOS
Sigmoid flexure of colon
Pelvic colon
- C18.8 Overlapping lesion of colon**
(see section 4.2.6)
- C18.9 Colon, NOS**
Large intestine (excludes rectum, NOS
C20.9 and rectosigmoid junction C19.9)
Large bowel, NOS



Special topography codes

Divisions of the Esophagus – two incompatible systems and both are included.

- C15 Esophagus
 - C15.0 Cervical esophagus
 - C15.1 Thoracic esophagus
 - C15.2 Abdominal esophagus
 - C15.3 Upper third of esophagus
 - C15.4 Middle third of esophagus
 - C15.5 Lower third of esophagus
 - C15.8 **Overlapping** lesion of esophagus
 - C15.9 Esophagus, **NOS**
- radiographic and intraoperative
descriptors
- endoscopic and clinical
descriptors

ICD-O-3 Topography Coding Rules

- Rule A. Topographic regions and ill-defined sites
- Rule B. Prefixes
- Rule C. Tumors involving more than one topographic category or subcategory
- Rule D. Topography codes for lymphomas
- Rule E. Topography code for leukemias

Rule A

Topographic Regions and Ill-defined Sites

“If the diagnosis does not specify the tissue of origin, code the **appropriate tissues** suggested in the alphabetic index for each **ill-defined site** in preference to the “**NOS**” category.”

Ill-defined site: term for area of the body used in a general sense - arm, ankle, face

NOS: Not otherwise specified

- Not elsewhere classified
- Term used in a general sense
 - When there are more specific codes
 - To encompass an organ as a whole

Rule A

Topographic Regions and Ill-defined Sites

- *Example:* Osteosarcoma of **ankle**
- *Issue:* Primary site not fully identified in diagnosis
- *Several non-specific codes available*
 - C76.5 **Ankle, NOS**
 - C40.3 Bone of **ankle**
 - C44.7 Melanoma of **ankle**
 - C49.2 Soft tissue of **ankle**
- Use information from the cell type to code primary site.
 - **Osteo**sarcoma of ankle
 - Code: C40.3 **bone** of ankle

Rule A

Topographic Regions and Ill-defined Sites

Implied rule:

- Code **as specifically as you can** with the information you have
- Avoid using ill-defined site codes if possible.

Rule B. Prefixes

- "If a topographic site is modified by a prefix such as **peri-****para-**, or the like which is not specifically listed in ICD-O, code to the appropriate ill-defined subcategory **C76**, unless the type of tumour indicates origin from a particular tissue".
- Prefix terms in ICD-O index:

Term	ICD-O code
Periampullary	C24.1
Periadrenal or perirenal	C48.0
Retrocecal or peripancreatic	C48.0
Supratentorial brain	C71.0

Rule B. Prefixes

- When term is not listed, determine the location it describes and code that.

- *Examples*

Paraspinal—along the spine:

C76.7 Ill-defined site of back

Perigastric—near the stomach:

C76.2 Ill-defined site of abdomen

Peribiliary—near the biliary tract:

C76.2 Ill-defined site of abdomen

Rule B. Prefixes

- **Implied rule:** When you can't find a code for the anatomic site term, use "ill-defined site of ..." **C76._**
- Do not code to primary site mentioned (such as spine, stomach, bile duct) when tumor is described as "near" that organ.

Rule C. Tumors Involving More Than One Topographic Category or Subcategory

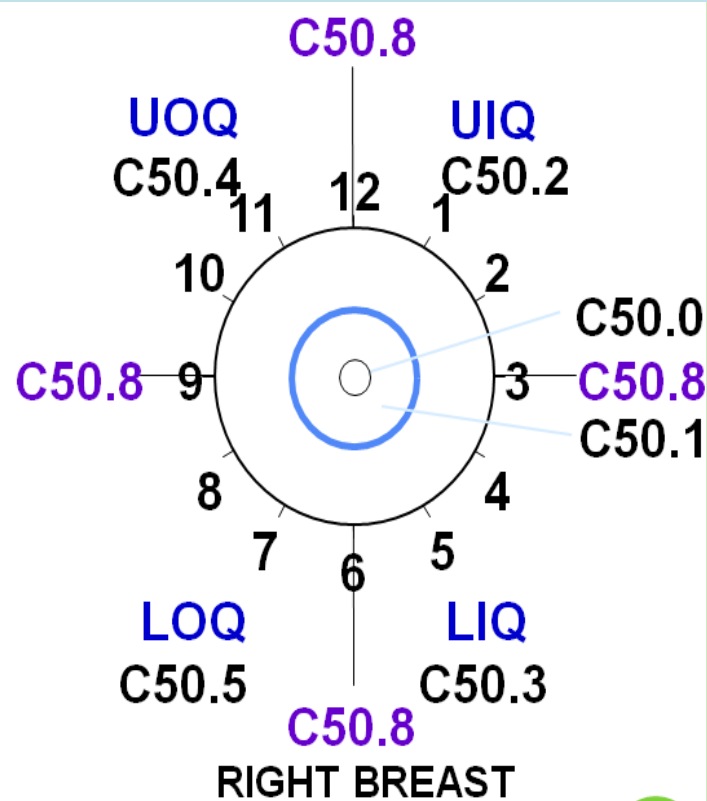
- “Use **subcategory “.8”** when a tumor overlaps the boundaries of two or more categories or subcategories and its point of origin cannot be determined.”
- **Implied rule:** If you can’t tell where a single tumor started in an **organ** or **system**, use an “overlapping site code, C_ _ . 8.

Rule C. Overlapping Sites - examples

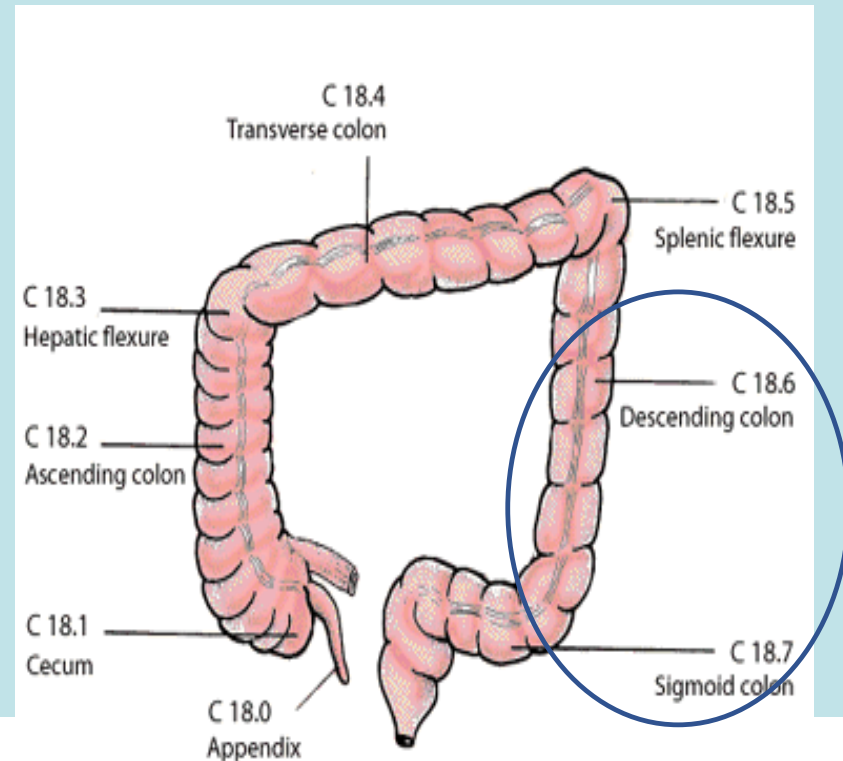
Overlapping lesion of	ICD-O code
Tongue	C02.8
Major salivary glands	C08.8
Lip, oral cavity and pharynx	C14.8
Rectum, anus and anal canal	C21.8
Biliary tract	C24.8
Digestive system	C26.8
Female genital organs	C57.8
Male genital organs	C63.8

Rule C. Overlapping Sites - examples

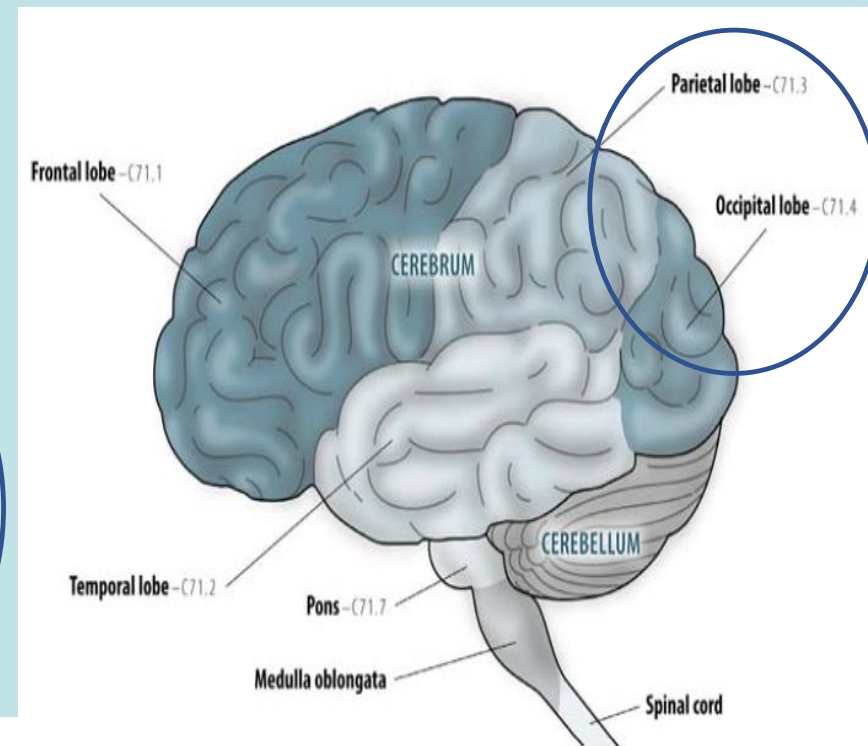
Tumor of breast at 12:00 – C50.8



Large neoplasm of descending and sigmoid colon – C18.8



Glioma involving parietal and occipital lobes – C71.8



Rule C. Overlapping Sites

Does not apply to non-adjacent sites

- Example: Squamous cell carcinoma of skin of forehead and skin of forearm
 - Primary site: C44.9 Skin, NOS

Forearm and forehead are not adjacent sites.

Does not apply to separate lesions

- Example: Separate tumors in UIQ and LOQ of breast
 - Primary site: C50.9 Breast, NOS

Rule D. Topography Codes for Lymphomas

Lymphomas arising in lymph nodes	Extranodal lymphomas
Code C77._	Code to the site of origin , which may not be the site of the biopsy.
If multiple lymph node regions are involved, code to C77.8 (lymph nodes of multiple regions).	If no site is indicated for a lymphoma and it is suspected to be extranodal, code to C80.9 (unknown primary site).
If no site is indicated for a [nodal] lymphoma, code to C77.9 (lymph node, NOS).	

Rule D. Topography Codes for Lymphomas

Implied rule: Code a lymphoma to its site of origin.

Examples:

- Hodgkin lymphoma of cervical lymph nodes → C77.0
- MALT lymphoma of stomach → C16.9
- B-cell lymphoma of inguinal and femoral nodes → C77.4
- Primary lymphoma of femur → C40.2

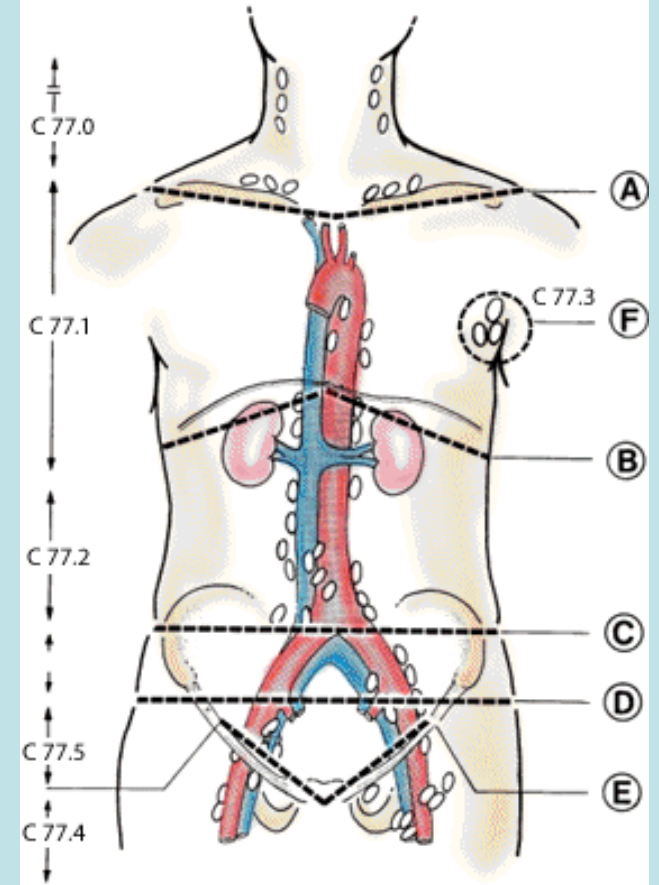
Rule D. Topography Codes for Lymphomas

C77.8 Special Rule: Involved lymph node chains do not have to be adjacent.

Examples:

Cervical and mediastinal nodes → C77.8

Axillary and periaortic nodes → C77.8



Rule E. Topography Code for Leukemias

“Code all leukemias except myeloid sarcoma (M-9903/3) to C42.1, bone marrow.”

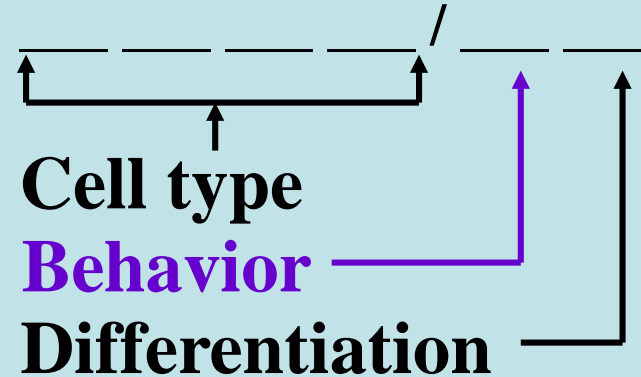
- Myeloid sarcoma: a deposit of malignant myeloid cells in soft tissue. Code to location of lesion.
- The following are also coded to **bone marrow, C42.1**
 - Multiple myeloma
 - Refractory anemias
 - Polycythemia vera
 - Myelodysplastic syndrome
 - Other hematopoietic diseases

ICD-O-3 Morphology Coding Rules

- Rule F. Behavior code in morphology
- Rule G. Grading or differentiation code
- Rule H. Site-associated morphology terms
- Rule J. Compound morphology diagnoses
- Rule K. Coding multiple morphology terms

Rule F. Behavior Code in Morphology

- “Use the appropriate **5th digit** behavior code even if the exact term is not listed in ICD-O.”



Rule F. Behavior Code in Morphology

- **Behavior** of a tumor is the way it acts within the body
- Codes:
 - **/0** – **benign** – the tumor grows in place without the potential for spread;
 - **/1** – **uncertain** whether benign or malignant
 - **/2** – **noninvasive or in situ** – the tumor is malignant, but still growing in place
 - **/3** – **malignant, primary site** – the tumor invades surrounding tissues
 - **/6*** – **malignant, metastatic site** – the tumor disseminates from its point of origin and begin to grow at another site
 - **/9*** – **malignant, uncertain** whether primary or metastatic site
 - * **Not used by cancer registries, but by pathologists**

Rule F. Behavior Code in Morphology

- **The Matrix principle**

8010/0	Epithelial tumor, benign
8010/1*	Borderline epithelial tumor
8010/2	Intraepithelial carcinoma, NOS
8010/3	Epithelial tumor, malignant (Carcinoma, NOS)
8010/6	Metastatic carcinoma
8010/9	Carcinomatosis

* 8010/1 is not printed in ICD-O-3, but **can be constructed** if the pathologist diagnoses a borderline epithelial tumor.

Rule F. Behavior Code in Morphology

Implied rule: It is OK to change the behavior code to accurately report what the pathologist said.

Example:

- Pathology report states “adenoid squamous cell carcinoma *in situ*”

ICD-O-3 only lists **8075/3 Adenoid squamous cell carcinoma.**

Change behavior code to **8075/2** to indicate in situ.

- Pathology report states “malignant adenomyoepithelioma”

ICD-O-3 only lists **8983/0 Adenomyoepithelioma.**

Code **8983/3** with behaviour code 3 to indicate malignant.

Rule F. Behavior Code in Morphology

Note: Most cancer registries collect only

/2 Carcinoma in situ; noninvasive; noninfiltrating; intraepithelial

/3 Malignant, primary site (invasive)

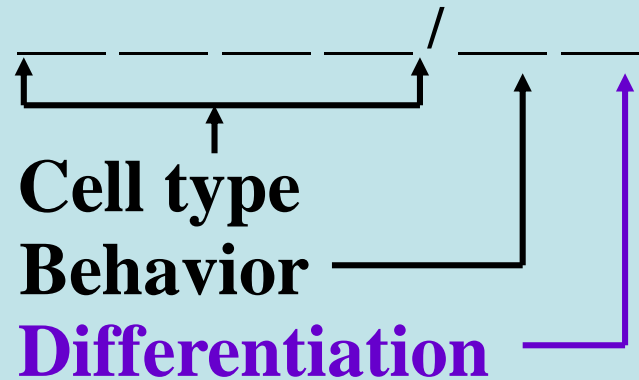
- If diagnosis comes from a **metastatic site**, **the cancer registry records primary site and morphology with behavior /3.**

Example: Pathology report says: "metastatic adenocarcinoma in lung biopsy." Coded as C34.9 8140/6 on report.

Cancer registry reports case as unknown primary site, C80.9 8140/3

Rule G. Grading or Differentiation Code

- "Assign the **highest grade** or differentiation code described in the diagnostic statement."



Rule G. Grading or Differentiation Code

Histologic grading and differentiation for malignant tumors – describes how much or how little a tumor resembles the normal tissue from which it arose (**codes 1 to 4 and 9**).

Codes:

- 1** – Grade I, well differentiated
- 2** – Grade II, moderately differentiated
- 3** – Grade III, poorly differentiated
- 4** – Grade IV, undifferentiated, anaplastic
- 9** – grade, differentiation or cell type not determined, not stated or not applicable

Rule G. Grading or Differentiation Code

- **Cell origin/lineage** for leukemias and lymphomas (**codes 5 to 8** and 9)

Codes:

5 – T-cell

6 – B-cell

7 – Null cell, Non T-non B

8 – NK cell

9 – grade, differentiation or cell type not determined, not stated or not applicable

Rule G. Grading or Differentiation Code

Implied rule: Code to the **higher grade**.

Example: moderately to poorly differentiated adenocarcinoma of prostate

- Moderately differentiated = grade 2
- Poorly differentiated = grade 3
- Code diagnosis as 8140/33

Rule G. Grading or Differentiation Code

- **Implied rule:** “**double code**” any statement of grade in the diagnostic term.

Example: undifferentiated carcinoma

- Undifferentiated carcinoma = 8020/3
- Undifferentiated = 4
- Code diagnosis as 8020/34

Rule G. Grading or Differentiation Code

Central Nervous System tumours follow a slightly different system (table 27 in ICD-O)

WHO Grade I (benign or borderline malignant)

WHO Grade II ('low grade')

WHO Grade III ('anaplastic')

WHO Grade IV

Examples:

oligodendroglioma, NOS → 9450/32

anaplastic astrocytoma → 9401/33

glioblastoma → 9440/34

Rule G. Grading or Differentiation Code

Implied rule: For **haematological malignancies** use **cell origin**, not the differentiation (grade), if both are stated.

Example:

- Poorly differentiated B-cell nodular lymphocytic lymphoma
Poorly differentiated = grade 3
B-cell origin = code 6
Code diagnosis as 9693/36
- Follicular B-cell lymphoma, grade 2
Follicular lymphoma, grade 2 = 9691/3
B-cell origin = code 6
Code diagnosis as 9691/36

Rule H. Site-associated Morphology Terms

“Use the topography code provided when a topographic site is not stated in the diagnosis.

This topography code should be disregarded if the tumor is known to arise at another site.”

Suggested site code

- In parenthesis () after morphology term
- Most common site associated with neoplasm

Examples:

M-8330/3 Adenocarcinoma, follicular (C73.9 {thyroid})

M-9700/3 Mycosis fungoides (C44._ {skin})

Rule H. Site-associated Morphology Terms

Examples of terms that include a root word mentioning a site

- Nephroblastoma, NOS (C64.9 – kidney)
- Thymoma, NOS (C37.9 – thymus)
- Cloacogenic carcinoma (C21.2 – cloacogenic zone of anal canal)
- Bronchiolar carcinoma (C34._ – bronchioles of lung)
- Hepatocellular carcinoma (C22.0 – liver)

No suggested site code is listed when malignancy could appear in many sites, such as adenocarcinoma, NOS

Rule H. Site-associated Morphology Terms

If a site is given that is different from the site indicated by the suggested site code, **use the site code appropriate to the diagnosis.**

Example: infiltrating duct carcinoma, head of pancreas

- 8500/3 Infiltrating duct carcinoma (C50._) *Suggested site code is breast—ignore this based on diagnosis!*
- Head of pancreas = C25.0
- Code diagnosis as C25.0 8500/3

Implied rule: Use the suggested site code as a guide to code the primary site. If the site stated in the pathology report is different, **code what the pathology report states (note: metastatic site).**

Rule J. Compound Morphology Diagnoses

“Change the order of word roots in a **compound term** if the term is not listed in ICD-O-3.”

HETEROGENEITY WITHIN 1 TUMOUR



Rule J. Compound Morphology Diagnoses

Compound terms have **multiple root words**

Example:

- Myxofibrosarcoma – not in ICD-O-3

Break into word roots

Myxo / fibro / sarcoma

Change around word roots, then look up new term

Fibromyxosarcoma 8811/3

- Chondro-osteosarcoma →

Osteochondrosarcoma 9180/3

Rule K. Coding Multiple Morphology Terms

“When no single code includes all diagnostic terms, use the **numerically higher** code number if the diagnosis of a single tumor includes two modifying adjectives with different code numbers.”

Implied rule: Code to higher code number if there is no combination code.

For haematological malignancies - code the most specific code (not necessarily the highest code), take into account specific diagnostics, such as immunohistochemistry and cytogenetics.

Rule K. Coding Multiple Morphology Terms

Examples:

- **"Papillary and tubular adenocarcinoma"**

Papillary adenocarcinoma 8260/3

Tubular adenocarcinoma 8211/3

Code morphology to **8255/3 (Adenocarcinoma with mixed subtypes)**

- **"Adenoid cystic spindle cell carcinoma"**

No combination code

Spindle cell carcinoma 8032/3

Adenoid cystic carcinoma 8200/3

Code morphology to higher number 8200/3

Rule K. Coding Multiple Morphology Terms

Look for a **code that represents the combined morphology**.
Common combinations may have a unique code.

- Usually say "mixed" or "combined" or "and"
Mixed embryonal carcinoma and teratoma = teratocarcinoma 9081/3
Ductal carcinoma and lobular carcinoma 8522/3
- Compound terms
Carcinosarcoma 8980/3
Adenocarcinoma and squamous carcinoma = adenosquamous carcinoma 8560/3
Small cell-large cell carcinoma 8045/3

How to Code

- Break phrase into topography and morphology
- Look up morphology first
- Use up all the words in the phrase
- Add 5th and 6th digit codes
- Look up topography

Coding example 1

Diagnosis: Poorly differentiated hepato-cellular carcinoma of right lobe of liver

- What is it (morphology)?

Hepatocellular carcinoma, NOS (C22.0): 8170/3

- Suggested site code is included in index

Liver, right lobe: C22.0 Liver, NOS

- What else do we know?

Poorly differentiated: /_3

- Complete codes: C22.0 8170/33

Coding example 2

Diagnosis: Moderately differentiated adenocarcinoma of prostate

- What is it (morphology)?

Adenocarcinoma [not otherwise specified]: 8140/3

- What else do we know?

Moderately differentiated: /_2

- Where did it start (topography)?

Prostate: C61.9

- Complete codes: C61.9 8140/32

ICD-O-3 online: codes.iarc.fr

International Agency for Research on Cancer



World Health Organization

International Classification of Diseases for Oncology
ICD-O-3 online



ABOUT ICD-O

USING ICD-O-3 ONLINE

MORPHOLOGICAL CODES

TOPOGRAPHICAL CODES

You are here: Home / Using ICD-O-3 online

► ICD-O-3.1 (2011)

► ICD-O-3 (2000)

► Updates 2011

ICD-O

INTERNATIONAL
CLASSIFICATION
OF DISEASES FOR ONCOLOGY
ICD-O-3 ONLINE

C15.9 Esophagus, NOS

C16 STOMACH

C16.0 Cardia, NOS

C16.1 Fundus of stomach

C16.2 Body of stomach

C16.3 Gastric antrum

C16.4 Pylorus

C16.5 Lesser curvature of stomach

C16.6 Greater curvature of stomach

C16.8 Overlapping lesion of stomach

C16.9 Stomach, NOS

International Agency for Research on Cancer



World Health Organization

International Classification of Diseases for Oncology
ICD-O-3 online



lymphoma



ABOUT ICD-O

USING ICD-O-3 ONLINE

MORPHOLOGICAL CODES

TOPOGRAPHICAL CODES

You are here:

Select ICD-O code and name:

8561/0 Adenolymphoma

9590/3 Malignant lymphoma, NOS

9591/3 Malignant lymphoma, diffuse, NOS

9591/3 Malignant lymphoma, non-cleaved cell, NOS

9591/3 B cell lymphoma, NOS

9591/3 Malignant lymphoma, non-Hodgkin, NOS

9591/3 Malignant lymphoma, small cell, noncleaved, diffuse

WHO CLASSIFICATION OF TUMOURS OF THE DIGESTIVE SYSTEM¹

C16 - Stomach:

Epithelial tumours
Lymphomas
Mesenchymal tumours
Secondary tumours

Epithelial tumours

Premalignant lesions

8140/0 Adenoma, NOS

Carcinoma

8140/3 Adenocarcinoma, NOS

8260/3 Papillary adenocarcinoma, NOS

8260/3 Papillary renal cell carcinoma

8260/3 Papillary carcinoma of thyroid

8211/3 Tubular adenocarcinoma

8480/3 Mucinous adenocarcinoma

8480/3 Pseudomyxoma peritonei with unknown primary site

8255/3 Adenocarcinoma with mixed subtypes



European
Commission