The College of American Pathologists Electronic Cancer Checklists (CAP eCC): Providing a Clear Guide to the New World of Cancer Surveillance

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Outline

- The guide: CAP Cancer Checklists
- Transformation to the eCC
- Why XML?
- Examples
- What's next?
  - AJCC 7th edition
  - CS mapping
  - CAP Cancer Committee updates

CAP Cancer Checklists

What are they?

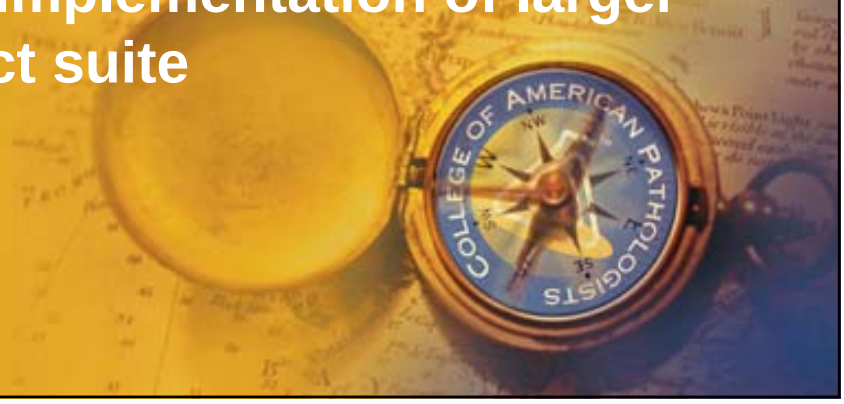
- **Guidelines to aid the pathologist in collecting the essential data elements needed in the pathology report for each tissue type**
- **Created in printable format by CAP Cancer Committee**
- **Transformed to electronic format (XML) with eCC**

eCC Features 2

- Interoperable (platform independent)
- Portable, exchangeable format (XML)
- Used in various lab and cancer registry Information Systems
- Mappings
  - SNOMED CT now
  - LOINC, CS future
- Regularly scheduled releases and updates
  - AJCC 7th Edition
  - SNOMED CT
  - CS 2.0
- Versioning

eCC Features

- Structured data elements in a logical workflow
- Customizable for individual lab practices
- An example implementation of larger DIHIT product suite



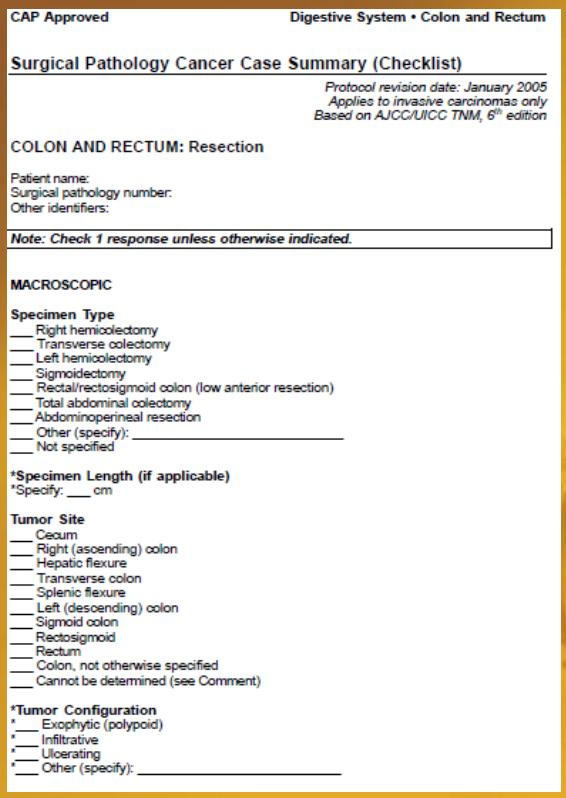
eCC Benefits

- Ensure essential data elements are collected in cancer reports
- Provides consistency, quality and efficiency in data collection and reporting
- Aids cancer registrars; educating residents
- Allows for compliance with
  - American College of Surgeons CoC reporting requirements
  - Canadian provincial and territorial requirements for pathology reporting

Why XML?

- Open standard broadly adopted by HIT
- Interoperable bridge for exchanging data between applications
- Structured electronic document representing the information to be exchanged
- Endorsed by main standards organizations (HL7, IHE, IHTSDO, etc)
- First release Jan 2009 with current checklists (AJCC 6th edition)

CAP eCC Evolution



CAP Approved — Digestive System • Colon and Rectum

Surgical Pathology Cancer Case Summary (Checklist)

Protocol revision date: January 2005
Applies to invasive carcinomas only
Based on AJCC/UICC TNM, 6th edition

COLON AND RECTUM: Resection

Patient name:
Surgical pathology number:
Other identifiers:

Note: Check 1 response unless otherwise indicated.

MACROSCOPIC

Specimen Type
___ Right hemicolectomy
___ Transverse colectomy
___ Left hemicolectomy
___ Sigmoidectomy
___ Rectal/rectosigmoid colon (low anterior resection)
___ Total abdominal colectomy
___ Abdominoperineal resection
___ Other (specify): _____
___ Not specified

***Specimen Length (if applicable)**
*Specify: ___ cm

Tumor Site
___ Cecum
___ Right (ascending) colon
___ Hepatic flexure
___ Transverse colon
___ Splenic flexure
___ Left (descending) colon
___ Sigmoid colon
___ Rectosigmoid
___ Rectum
___ Colon, not otherwise specified
___ Cannot be determined (see Comment)

***Tumor Configuration**
*___ Exophytic (polypoid)
*___ Infiltrative
*___ Ulcerating
*___ Other (specify): _____

- CAP Cancer Committee
  - PDF
  - Word
- Previous Names
  - CAP Cancer Protocols (CCP)
  - SNOMED Encoded CAP Cancer Checklists (SECCC)

CAP eCC Evolution-XML Format

- **XML file instance (each checklist)**

ColonRectumExcisnlBx.xml

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<template xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xmlns:xsd="http://www.w3
  <required xmlns="">true</required>
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    <versions>
      <version display-name="AJCC_UICC" major-version="6th Edition" minor-version="" />
      <version display-name="FIGO" major-version="" minor-version="" />
      <version display-name="CS" major-version="" minor-version="" />
    </versions>
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      <revision-date>2005-01-01</revision-date>
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    </publication>
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    <restrictions>Applies to invasive carcinomas only</restrictions>
  </template-header>
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    </note>
    <note note-id="8878.100004300" sort-order="200">
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    </note>
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      <title>MACROSCOPIC</title>
      <header-group-items>
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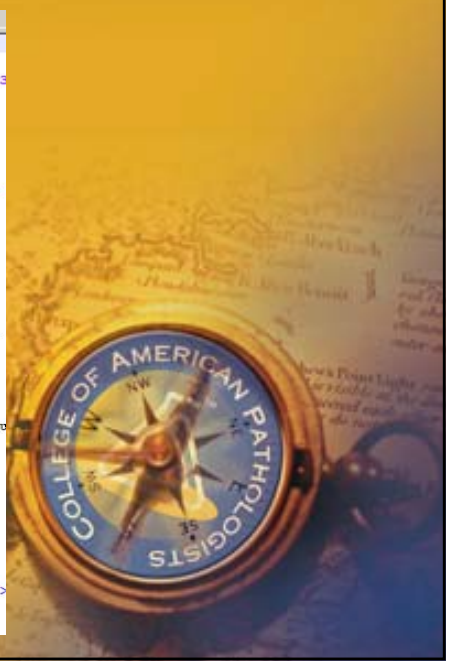

CAP eCC Features- XML Basic Format

Colon and Rectum - Digestive System

CAP Approved

Surgical Pathology Cancer Case Summary (Checklist)

Protocol revision date: 2005-01-01
Applies to invasive carcinomas only
Based on AJCC/UICC TNM, 6th Edition

Colon and Rectum: Excisional Biopsy (Polypectomy)

Patient Name:
Surgical pathology number:

*Data elements with asterisks, or otherwise marked as optional, are not required for accreditation purposes for the Commission on Cancer. These elements may be clinically important, but are not yet validated or regularly used in patient management. Alternatively, the necessary data may not be available to the pathologist at the time of pathologic assessment of this specimen.

Note: Check 1 response unless otherwise indicated

MACROSCOPIC

**SPECIMEN TYPE*

- ○ *Specimen from large intestine obtained by excisional biopsy (polypectomy) of lesion

TUMOR SITE

- ○ Cecum
- ○ Right (ascending) colon
- ○ Hepatic flexure
- ○ Transverse colon
- ○ Splenic flexure
- ○ Left (descending) colon
- ○ Sigmoid colon
- ○ Rectum
- ○ Not specified

POLYP SIZE

- ☐ Cannot be determined (see Comment)

Greatest dimension (cm)

**Additional dimension (cm)*

**Additional dimension (cm)*

POLYP CONFIGURATION

- ○ Pedunculated with stalk

Stalk length (cm)

- ○ Pedunculated, no stalk
- ○ Sessile
- ○ Fragmented

**Distance of Invasive Carcinoma from Anal Verge (per clinical report)*

- ○ *Specify distance from anal verge (cm)
- ○ *Distance from anal verge unknown

**Distance of Adenoma from Anal Verge (per clinical report)*

- ○ *Specify distance of adenoma from anal verge (cm)
- ○ *Distance from anal verge unknown

- **Style (design features)**

CAP eCC Features- XML Table of Contents Format

- Adrenal Gland: Resection
- Ampulla of Vater: Ampullectomy
- Ampulla of Vater: Pancreaticoduodenectomy
- Anus: Excisional Biopsy
- Anus: Local Excision (Transanal Disk Excision)
- Anus: Resection
- Appendix: Resection
- Bone Biopsy
- Bone Marrow: Blood Film, Aspirate, Cell Block, Trephine Biopsy, Touch Imprint
- Bone Resection
- Brain/Spinal Cord: Biopsy/Resection
- Breast: Excision Less Than Total Mastectomy (Includes Wire-Guided Localization Excisions); Total Mastectomy, Modified Radical Mastectomy, Radical Mastectomy
- Colon and Rectum: Excisional Biopsy (Polypectomy)
- Colon and Rectum: Resection
- Endometrium: Biopsy
- Endometrium: Hysterectomy, With or Without Other Organs or Tissues
- Esophagus: Biopsy
- Esophagus: Resection
- Extrahepatic Bile Ducts: Resection

Ampulla of Vater - Digestive System

CAP Approved

Surgical Pathology Cancer Case Summary (Checklist)

Protocol revision date: 2005-01-01
Applies to invasive carcinomas only
Based on AJCC/UICC TNM, 6th Edition

Ampulla of Vater: Ampullectomy

Patient Name:
Surgical pathology number:

*Data elements with asterisks, or otherwise marked as optional, are not required for accreditation purposes for the Commission on Cancer. These elements may be clinically important, but are not yet validated or regularly used in patient management. Alternatively, the necessary data may not be available to the pathologist at the time of pathologic assessment of this specimen.

Note: Check 1 response unless otherwise indicated

MACROSCOPIC

*SPECIMEN TYPE	TUMOR SITE
○ *Specimen from ampulla of Vater obtained by ampullectomy	○ Intra-ampullary
	○ Peri-ampullary
	○ Junction of ampullary and duodenal mucosa
	○ Not specified

TUMOR SIZE

☐ Cannot be determined (see Comment)

Greatest dimension (cm)

CAP eCC Features- XML Advanced Format

PATHOLOGIC STAGING

PRIMARY TUMOR (reset)

- Stage I: Confined to gland, 5 cm or less
- Stage II: Confined to gland, greater than 5 cm
- Stage III: Extraglandular extension without other organ involvement
- Stage IV: Distant metastasis or extension into other organs
- Cannot be determined

REGIONAL LYMPH NODES (reset)

- Cannot be assessed
- No regional lymph node metastasis
- Regional lymph node metastasis

Number of regional lymph nodes examined

Number of regional lymph nodes involved

DISTANT METASTASIS (reset)

- Cannot be assessed
- Distant metastasis

**Specify metastatic site(s), if known*

MARGINS (reset)

- Margins uninvolved by tumor
- Margin(s) involved by tumor

Specify margin(s)

- Cannot be determined

**VENOUS (LARGE VESSEL) INVASION (V)* (reset)

- *Absent
- *Present
- *Indeterminate

**ADDITIONAL PATHOLOGIC FINDINGS (check all that apply)*

- ☐ *None identified
- ☐ *Tumor necrosis
- ☐ *Hyperplasia
- ☐ *Adenoma
- ☐ *Other (specify)

**COMMENT(S)*

Submit

CAP eCC Features- XML Advanced Format

- Structured Report Example
  - SNOMED CT encoded
  - Can be placed in HL-7 message

Structured Report Data

```
<sr-data version-ckey="2.100004300" display-name="Adrenal gland: Resection">
    <question ckey="7161.100004300" display-name="HISTOLOGIC TYPE"/>
    <question ckey="7163.100004300" display-name="TUMOR SITE"/>
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        <answer ckey="7180.100004300" display-name="0.5" code="395512009"/>
    </question>
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Sample Cancer Report

Template: breast

Name	Value	Sou
specimen type	excision	HL7
lymph node sampling	sentinel_lymph_nodes_axillary_dissection	HL7
specimen size		ADF
specimen greatest dimension	10 cm	HL7
specimen additional dimensions	7 x 5 cm	HL7
tumor site	upper_inner_quadrant	HL7
laterality	left	HL7
invasive component size		ADF
invasive component greatest dimension	3.5 cm	HL7
invasive component additional dimensions	3.4 x 3.2 cm	HL7
histologic type	invasive_ductal_carcinoma	HL7
tubule formation	minimal_score_3	HL7
nuclear pleomorphism	score_3	HL7
mitotic count 25x		ADF
mitotic count 40x	score_3	HL7
total nottingham score	grade_iii	HL7
histologic grading system		ADF
histologic grade other		ADF
mitotic count other		ADF
primary tumor	pT2	HL7
regional lymph nodes	pN0	HL7
regional lymph nodes examined	3	HL7
regional lymph nodes involved	0	HL7

Total Errors: 12

MICROSCOPIC

Macroscopic
Specimen Type: Lumpectomy
Lymph Node Sampling: Sentinel lymph node with axillary dissection
Specimen Size: 10 cm x 7 cm x 5 cm
Laterality: Left
Tumor Site: Upper inner quadrant
Microscopic
Non-Invasive Carcinoma: Absent
Invasive carcinoma: Invasive ductal carcinoma
Size of invasive component: 3.5 cm x 3.4 cm x 3.2 cm
Histologic Grade: Nottingham System
Tubule formation: Score 3
Nuclear Pleomorphism: Score 3
Mitotic Score (40X): Score 3
Total Nottingham Score: Grade III 8-9 points
Tumor Necrosis: Present Extensive
Venous/Lymphatic (Large/Small Vessel) Invasion (V/L): Present
Perineural Invasion: Negative
Microcalcifications: Not identified
Tumor Marker(s)
Estrogen receptor: Pending
Progesterone receptor: Pending
HER-2/neu: Pending
Lymph node summary
Number examined: 3
Number involved: 0
Comments: The second specimen and the fourth specimen were submitted as putative sentinel lymph nodes. However multiple levels through the tissue blocks did not reveal any lymph nodes in these specimen.
Nipple: Not applicable
Status of margin involvement: Margin(s) uninvolved by invasive carcinoma
Distance of invasive carcinoma from the closest margin (mm): 1
Negative margin closest to invasive carcinoma: Deep
Additional Pathologic Findings: Nonproliferative fibrocystic changes.
AJCC Staging
Stage: pT2, pN0, pMX

What's next?

- CAP Cancer Committee
  - Integrates NAACCR, CS 2.0 and AJCC 7th edition data elements
  - New checklists (DCIS, Penis)
  - Updated clinical content (i.e. Molecular Diagnostics)
- CAP PERT
  - Transforms into XML
  - Next CAP eCC release

Thank you!

- **Thank you for your attention**
- **For further information, contact us at:**
  - (847)-832-7700
  - capecc@cap.org
  - **apitkus@cap.org**