SNOMED CT Encoded CAP Cancer Checklists (SECCC) and NAACCR Data Mapping

2007 NAACCR Conference

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CAP CANCER PROTOCOLS

- Improved Patient Care
- Quality
- Communication
- Standardization
- Research
- Cancer Registry & Public Health

Multidisciplinary Physicians

Pathologists
Colon and Rectum Cancer Checklist

Colon and Rectum
Protocol applies to all invasive carcinomas of the colon and rectum. Carcinoid tumors, lymphomas, sarcomas, and tumors of the vermiform appendix are excluded.

Protocol revision date: January 2004
Based on AJCC/UICC TNM, 6th edition

Procedures
• Incisional Biopsy (No Accompanying Checklist)
• Excisional Biopsy, Polypectomy
• Local Excision (Transanal Disk Excision)
• Segmental Resection
• Rectal Resection (Low Anterior Resection; Abdominoperineal Resection)
Colon and Rectum Cancer Checklist

COLON AND RECTUM: Polypectomy

Patient name:
Surgical pathology number:

Note: Check 1 response unless otherwise indicated.

MACROSCOPIC

Tumor Site
___ Cecum
___ Right (ascending) colon
___ Hepatic flexure
___ Transverse colon
___ Splenic flexure
___ Left (descending) colon
___ Sigmoid colon
___ Rectum
___ Not specified
SNOMED CT Encoded CAP Checklist

TUMOR SITE  \([R-0025A, 371480007]\) Tumor site (observable entity)

___ Cecum  \([T-59100, 32713005]\) Cecum structure (body structure)

___ Right (ascending) colon  \([T-59400, 51342009]\) Right colon structure (body structure)

___ Hepatic flexure  \([T-59438, 48338005]\) Structure of right colic flexure (body structure)

___ Transverse colon  \([T-59440, 485005]\) Transverse colon structure (body structure)

___ Splenic flexure  \([T-59442, 72592005]\) Structure of left colic flexure (body structure)

___ Left (descending) colon  \([T-59450, 55572008]\) Left colon structure (body structure)

___ Sigmoid colon  \([T-59470, 60184004]\) Sigmoid colon structure (body structure)

___ Rectum  \([T-59600, 34402009]\) Rectum structure (body structure)

___ Not specified  \([T-59000, 14742008]\) Large intestinal structure (body structure)
Reporting Pathology Protocols (RPP)

- Demonstration projects funded by CDC-NPCR
- Implement SNOMED CT Encoded CAP Cancer Checklists
- In 2001
  - California and Ohio
  - Cancers of the colon and rectum
- In 2004
  - California, Maine, and Pennsylvania
  - Cancers of the breast, prostate, and melanoma of the skin
**CAP Cancer Checklist**

**SNOMED CT Encoded Checklist**

**NAACCR Data Dictionary**

### Table

<table>
<thead>
<tr>
<th>CAP Checklist Question</th>
<th>Alpha Code</th>
<th>Concept Code</th>
<th>HL7 Segment</th>
<th>Data Type</th>
<th>NAACCR Data Item Name(Number)</th>
<th>NAACCR Data Item Code</th>
<th>CAP Checklist Answer</th>
<th>Alpha Code</th>
<th>Concept Code</th>
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Computerizing the CAP SNOMED CT Encoded Cancer Checklists (SECCC)
Previous releases

- SNOMED concepts created to encapsulate ideas in the printed checklists
- Standard SNOMED framework concepts attempted to establish consistency of encoding
- Distributed Word docs containing SNOMED-encoded CAP Cancer Checklists (SECCC)
Next phase - computerization of the checklists

- To improve efficiency and accuracy of data entry
- Reduce duplication of data entry
- Create specifications of all data elements
- Improve data retrieval capabilities
  - Facilitate secondary use of registry data
- Create Access database
- Create specifications of all data elements
Why we computerize

- Difficult to edit in Word format
- Difficult to compare across checklists for semantic consistency
- Difficult to check for SNOMED-encoding errors
- Difficult to transfer info from encoded Word docs into SNOMED core tables (Oracle)
Typical problem - Appendix
What’s wrong here?

Margins (check all that apply)
Proximal Margin
___ Cannot be assessed
___ Uninvolved by invasive carcinoma
___ Involved by invasive carcinoma
___ Adenoma absent at proximal margin (for appendectomy specimens)
___ Adenoma present at proximal margin (for appendectomy specimens)

Specify grade of dysplasia: _____________________

Answer 1: Nothing, provided you are a human filling out a paper form
What the computer cannot know

- **Margins (check all that apply)**
  - **Proximal** Margin
  - ___ Cannot be assessed
  - ___ Uninvolved by invasive carcinoma
  - ___ Involved by invasive carcinoma
  - ___ Adenoma **absent** at proximal margin (for appendectomy specimens)
  - ___ Adenoma **present** at proximal margin (for appendectomy specimens)

- **Specify grade of dysplasia:** _____________________
Interoperability problems

• Lack of data transport standards
• Lack of standard mechanism of data presentation
• Lack of backward compatibility: No versioning systems
• Non interoperable with research systems or custom databases
Interoperability levels

• **Syntactic**: Technical construction that allows exchange, accumulation and aggregation of data and information.

• **Semantic**: The meaning of the data elements: questions and responses (answers)
  • Concept definition (SNOMED CT)
  • Concept relationships (SNOMED CT concept model)
  • Concept context
    • Template metadata
    • Version metadata
    • Relation to other templates versions -metadata
Network 1

Network 2

EMR 1

EMR 2

Patient Care
Research
Practice Analysis
Epidemiology
Surveillance
Accreditation

SNOmed +
Public Template

SNOmed +
Public Template
Automatic screen generation

**Hide Patient Info** John Doe (Surgical Pathology Number: Surgical 1)

**Surgical Pathology Cancer Case Summary (Checklist)**

College of American Pathologists Cancer Checklist; Breast: Excision Less Than Total Mastectomy (Includes Wire-Guided Localization Excisions); Total Mastectomy, Modified Radical Mastectomy, Radical Mastectomy

Protocol revision date: January 2005
Applies to invasive carcinomas only
Based on CAP, 1/31/2007
Based on SNOMED, 1/31/2007 12:00:00 AM
Breast Excision Less Than Total Mastectomy
Total Mastectomy
Modified Radical Mastectomy
Radical Mastectomy
Excision of breast tissue

**MACROSCOPIC**

**SPECIMEN TYPE** □

**LYMPH NODE SAMPLING** □

**SPECIMEN SIZE (for excisions less than total mastectomy)**

- □ Specimen size cannot be determined (see Comment)

*Note: The size of the tumor, as measured by gross examination, must be verified by microscopic examination. If there is a discrepancy between gross and microscopic tumor measurement, the microscopic measurement of the invasive component takes precedence and should be used for tumor staging.*

- **Greatest dimension** □
- **Specimen Y Dimension** □
- **Specimen Z Dimension** □

**LATERALITY** □

**TUMOR SITE (check all that apply)**

- □ Upper outer quadrant
- □ Lower outer quadrant
- □ Upper inner quadrant
- □ Lower inner quadrant

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Vendors perspective

- Empowers vendors to easily incorporate the SECCC component into their products.
- Developer can add custom fields to the templates.
- Regardless of deployment venue, the data can be version-linked, interoperable and transmissible via the standard and simple XML format, or via an HL7 format derived from it.

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Other related activities

- To improve interoperability between NAACCR data elements and other reporting systems we are also considering the incorporation of additional SNOMED CT-encoded data elements.
- Support and consulting
- Working with outside groups to fine tune and gain widespread acceptance
In summary

- Since January 2007 Release – MS Access Database
- Create database structure to allow specification of all data elements required to unambiguously and consistently render the checklist in a computer readable format
- Contain versioning information
- Create plug and play tool for software developers
- Map NAACCR Data Items and Collaborative Stage
In summary

- To allow multiple centers to present SECCCs to pathologists in a consistent manner, enabling the collection of meaningful and comparable data.

- To enable multiple centers to transmit, receive, and interpret data, enabling collaborative QA, surveillance, and research efforts.
In summary

- By standardizing the SECCCs for data collection, cancer registries can efficiently collect and analyze vast amounts of SNOMED-CT encoded data without the need for manual data extraction and conversion.

- To lower costs of patient management, QA, surveillance and research through standardized data collection and transmission mechanisms.
Support acknowledgement

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Thank you

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The findings and conclusions in this presentation are those of the author(s) and do not necessarily represent the views of the Centers for Disease Control and Prevention.