Cancer Care Ontario’s Role in Improving Quality in the Cancer System:
As part of CCO’s mission to improve the performance of Ontario’s cancer system, CCO is leading numerous strategies to improve cancer care. These include setting quality standards, establishing clinical guidelines and supporting health care providers to offer the best possible care. To measure the progress of the cancer system towards the attainment of these goals, CCO undertakes rigorous measurement and reporting activities.

For example, as part of its Wait Time Strategy, CCO has signed Cancer Surgery Agreements (CSA) with 47 Ontario hospitals. These agreements require hospitals to deliver more cancer surgeries and to deliver better care. Schedule B of this agreement entails that hospitals adopt a uniform pathology standard to improve the completeness and accuracy of cancer pathology reports.

CCO’s Pathology Checklist Reporting Project
The purpose of the pathology checklist reporting project is to implement province-wide quality standards for cancer-related pathology reporting, which would facilitate improved patient outcomes and a better clinical quality of care. This is important because pathology reports are generally widely disseminated to the clinical care team and the information contained within these reports guides decisions around subsequent treatment.

The Pathology report audit is also used as a foundation for several Surgical Oncology indicators that assess quality of care and appropriateness of interventions. For example, for the colorectal cancer disease site, pathology report data is used to assess the percent of colorectal cancer resection specimens with at least 12 nodes examined (where the examination of at least 12 nodes, where possible, has been shown to be necessary for accurate detection of cancer spread into lymph nodes). As such the Pathology report audit is used to provide additional educational support to both surgeons and pathologists.

The College of American Pathologists (CAP) Cancer Checklist
CCO has endorsed high-quality, evidence-based Cancer Checklists developed and maintained by the College of American Pathologists (CAP) for sixteen disease sites as the content standard for pathology reporting. Cancer Care Ontario chose the CAP Standard based on the following benefits:

• The CAP Cancer Checklists are an internationally recognized standard, and are required by the American College of Surgeons - Commission on Cancer (ACS-COC) for accreditation of cancer centres in the United States
• The Checklists have been derived by the CAP Cancer Committee, with extensive input from leading disease site experts across the USA and Canada
• The Checklists are evidence-based protocols and lists of criteria
• The Checklists are regularly updated

The Benefits of the CAP Standard and Synoptic Format
The CAP Cancer Checklist standard, in synoptic format, will enhance the quality of pathology reporting across the province by ensuring that reports contain all of the relevant clinical information required to make informed patient care decisions.

“Synoptic format” involves gathering data items in a structured, standardized format and layout with a pre-specified choice of responses. Information is stored as discrete data elements. Synoptic reporting provides several benefits, including:

• *Standardized and easy to interpret reports:* Standardized reports enable the clinician receiving the report to quickly and easily pick out key information thereby reducing the risk of making a clinical error.
• While there was an initial increase in report turn around time for Pathologists while learning to use the synoptic reporting applications, the CCO/UHN voice recognition pilot project demonstrated an overall decrease report turn around time by 50% once established.
• The potential to report results and findings back to hospitals for benchmarking and performance evaluation purposes.
• A rich, readily available resource for research, planning and evaluation.

The results of the 2005/06 pathology audit unequivocally demonstrated that pathology report completeness rates dramatically increased by a factor of two- to three-fold for all disease sites when synoptic or synoptic-like templates were used for pathology reporting. These results are highlighted in the table below.

Comparison of Pathology Report Completeness Rates for Narrative vs. Synoptic-Like Reports by Disease Site, 2005/06 Audit

<table>
<thead>
<tr>
<th>Disease Site</th>
<th>Total Reports/Cases</th>
<th>Synoptic(-Like)</th>
<th>Narrative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prostate</td>
<td>828</td>
<td>674 (97%)</td>
<td>154 (50%)</td>
</tr>
<tr>
<td>Lung</td>
<td>535</td>
<td>442 (86%)</td>
<td>93 (34%)</td>
</tr>
<tr>
<td>Breast</td>
<td>1746</td>
<td>1517 (80%)</td>
<td>229 (43%)</td>
</tr>
<tr>
<td>CRC</td>
<td>1431</td>
<td>1178 (78%)</td>
<td>253 (28%)</td>
</tr>
</tbody>
</table>

Project Target
The target of the Pathology completeness is for 90% of all Ontario cancer pathology reports to meet the content standard across 16 disease site groups. In order to facilitate this, the project will:
• facilitate the use and implementation of data standards for Pathology reporting
• support the adoption of electronic synoptic reporting tools for capturing standardized Pathology data
• implement a method of storing the Pathology data in a standardized and structured format
• develop disease site specific surgical pathology requisition forms
• audit disease sites for CAP checklist completeness and report to CSQI, and
• provide aggregate and location specific reports back to the source hospitals.

Cancer System Quality Index (CSQI)
The CSQI, published by CCO, is a system-wide monitor to track the quality and consistency of all key services delivered across the spectrum of Ontario’s cancer system, from prevention through to end-of-life care. The completeness of pathology reports is a key component of the Index’s “Measurement” axis. Pathology report completeness results in 2005/06 were published at the LHIN and provincial levels for four major disease sites: prostate, lung, breast and colorectal cancers. Hospital-specific results were shared within each LHIN to identify performance issues and facilitate practice changes. The CSQI is located at http://www.cancercare.on.ca/qualityindex2006/.

The completeness results for the 2006/07 audit were reported in the CSQI at the LHIN and provincial levels. Results were released in April, 2007. Pathology report completeness measurements were undertaken for four disease sites during the 2005/06 audit (lung, breast, prostate and colorectal cancer disease sites); the 2006-07 audit has been expanded to include the endometrial cancer disease site. An audit of prostate biopsies was also conducted to provide the field with a baseline of report completeness in advance of the prostate biopsy coming into effect by CAP in April 2007 (results have only been provided at the provincial level). It is anticipated that the next audit will include prostate biopsy completeness.
**2005-06 and 2006-07 Pathology Report Completeness Audits**

The 2005-2006 audit provided CCO with a solid baseline for determining pathology report completeness relative to the mandatory data elements of the CAP Cancer Checklists. The audit concluded that prostate pathology reports, being 87% complete provincially, were very close to achieving the 90% target. (90% of the reports were 100% complete). Completeness rates for other disease sites were lower and concrete recommendations were provided to individual hospitals to increase the pathology report completeness rates. The recommendations included, but were not limited to the adoption of synoptic style reporting and the implementation of surgical requisition forms.

This year’s audit results demonstrate that we are moving even closer to the 90% completeness marker, even while raising the bar for completeness. In many cases, for certain disease sites and certain LHINs, the 90% target has already been achieved. Where applicable by disease site, this year’s audit has been more stringent in developing the definition of pathology report ‘completeness’. Please see Appendix A for disease site specific audit details.

Based on feedback from the field, we have implemented many of the recommendations put forward by the Pathology community in response to the 2005-2006 Education sessions. These include:

- sharing notification of CAP changes
- sharing the results of the technology pilots
- continuing with monthly Hospital Working Group sessions
- continuing with the Education sessions in April
- creation of aggregate and location specific reports back to the source hospitals
- feedback to CAP for adaptation of their next checklist revisions
- creating Surgical pathology requisition forms to enhance pathology report completeness

Please note: Completed Surgical Pathology requisition forms are available from the Pathology intranet site. [http://cco.projects.pathology.webexone.com](http://cco.projects.pathology.webexone.com)

**Solution Evaluations**

During the 2005-2006 Pathology Project, the project team worked with four (4) hospitals to conduct a pilot of three (3) synoptic reporting tools. These tools were Meditech Forms and Questionnaires, Cerner Co-Path Plus and the mTuitive solution.

The Meditech solution utilizes the existing Meditech forms and questionnaires native to Meditech. Synoptic forms for breast, lung, prostate, endometrium and CRC are presently available in MAGIC format. The remaining eleven (11) disease sites for Meditech have yet to be developed by Meditech or any other source.

The Cerner Co-Path Plus synoptic reporting solution is an anatomical pathology module that is an add-on to the existing Cerner Pathology module. Cerner has developed synoptic CAP checklist reports for all disease sites.

The mTuitive solution can be used with any hospital or lab information system (LIS), and even as a stand alone application (without an LIS) to perform synoptic reporting.

The disease sites tested were breast, lung, prostate, and CRC. Each of these tools met the established evaluation criteria, namely:

- Fulfilled CSA and Data book requirements
- Contained mandatory elements of the CAP checklist in synoptic format
- Data was stored in discrete data fields
The tools each supported CCO reporting objectives (indicators)

However, what we learned was that each vendor and hospital had implemented the CAP cancer checklist to suit their individual work flows and as a result, the data is not standardized and cannot be used in its present format for other purposes such as cancer planning, research and cancer surveillance. As a result, the project will focus on facilitating the identification, adoption, implementation and maintenance of consistent content and format CAP standards. International standards such as SNOMED CT are currently being investigated as well as technical solutions to support the short and long term plans for the efficient collection and use of this information.

**Collaborative Staging and the Pathology Project**

CCO’s vision is to ultimately receive all the data elements for calculating TNM and prognostic factors electronically through electronic submissions of synoptic pathology, diagnostic imaging, surgery and lab reports. While the attainment of this vision is still a long time away, CCO has commenced “Collaborative Staging Pilots” to assess the feasibility of obtaining staging data from synoptic pathology reports as efficiently as possible. This will be achieved by augmenting the CAP checklist with some additional CS elements so that the checklists are both CAP-aligned as well as CS-aligned.

This pilot is currently underway at three hospitals with synoptic pathology modules. The lessons learned from this pilot will drive the development of a roadmap for further expansion in anticipation of the alignment of CAP and CS checklists by CAP in 2009/10. It is anticipated that the scope of the CS pilot project will be expanded to include more hospitals and disease sites in the coming years.
Appendix A: Audit Criteria

Prostate (Radical Prostatectomies):
A report was considered "complete" only if the report contained all of the following data elements:

- **Microscopic**: histologic type, histologic grade (both primary and secondary patterns)
- **Staging - Tumour**: extraprostatic extension and seminal vesicle invasion, or an explicit statement of organ confinement.
- **Staging - Nodes**: statement of nodal examination, statement of nodal involvement
- **Margin**: statement of margin involvement or uninvolvment, statement of the name(s) of the involved margin(s), if applicable

**Note**: Although a mandatory CAP checklist element, pM was not required for completeness. Explicit assignment of pT and pN was not required as long as each could be derived from the other mandatory data elements.

Prostate (Needle Biopsies):
A report was considered "complete" only if the report contained all of the following data elements:

- **Microscopic**: histologic type, histologic grade (both primary and secondary patterns) and tumour quantitation which includes:
  - % of prostatic tissue involved by tumour AND/OR
  - Total linear mm of carcinoma, length of core(s) AND/OR
  - Other quantitation AND
  - # cores positive, total # of cores (note: this is a new mandatory data element)

**Note**: Although they are mandatory CAP checklist elements, pM, venous invasion, and arterial invasion were not required for completeness. Explicit assignment of pT and pN was not required as long as each could be derived from the other mandatory data elements.

Lung Cancer Resections:
A report was considered "complete" only if the report contained all of the following data elements:

- **Macroscopic**: specimen type, laterality, tumour site, tumour size
- **Microscopic**: histologic type, histologic grade
- **Staging – Tumour**: direct extension of tumour, and the other data elements important to derive pT
- **Staging - Nodes**: statement of nodal examination, statement of nodal involvement, location of involved nodes
- **Margin**: distance to closest margin if uninvolved, name of margin(s) if involved

**Note**: Although they are mandatory CAP checklist elements, pM, venous invasion, and arterial invasion were not required for completeness. Explicit assignment of pT and pN was not required as long as each could be derived from the other mandatory data elements.

Colorectal Cancer Resections:
A report was considered "complete" only if the report contained all of the following data elements:

- **Macroscopic**: specimen type, tumour site, tumour size
Microscopic: histologic type, histologic grade

Staging - Tumour: pT

Staging - Nodes: number of nodes examined, number of nodes involved

Margins: status of involvement of each of proximal, distal and radial margins

Invasion: lymphatic (small vessel) invasion AND venous (large vessel) invasion

Notes: 1) Although a mandatory CAP checklist element, pM was not required for completeness. 2) Explicit assignment of pT was required for completeness as there are no other mandatory CAP elements measuring depth of invasion. 3) Explicit assignment of pN was not required as long as each could be derived from the other mandatory data elements. 4) For this year’s audit, explicit notation of margin status for each of the proximal, distal and radial margins was mandatory for completeness (notation of ‘n/a’ was accepted in instances where a radial margin did not apply). This is consistent with synoptic-style reporting, and takes into account that the determination of the existence of a radial margin is highly contextual. Unambiguous notation of margins is crucial for making appropriate adjuvant treatment decisions. 5) Ambiguous terminology around vessel invasion was still accepted for this audit, but explicit statements for each of lymphatic and venous invasion will be required in the subsequent audit.

Breast Cancer Surgeries:
For the breast disease site only, all specimen reports pertaining to an eligible case were audited. Completeness was attributed if all data elements were noted in any of the reports for the individual case. Each institution providing at least 1 report to a particular case was credited for that case.

A case was considered "complete" if any one of the component reports contained all of the following data elements:

- Macroscopic\(^1\): specimen type, type of lymph node sampling, specimen size, laterality
- Microscopic: size of the invasive component, histologic type, histologic grade, tubule formation, nuclear pleomorphism, mitotic score
- Staging - Tumour: if the data elements important to derive pT were present (e.g., histologic type, size)
- Staging - Nodes: number of nodes examined, number of nodes involved
- Margins: distance to the closest margin (when all margins uninvolved), name of involved margin(s) (when margin(s) involved)

Notes: Although mandatory CAP checklist elements, pM and # mitoses/10 HPF were not required for completeness. Explicit assignment of pT and pN was not required as long as each could be derived from the other mandatory data elements.

\(^1\)Notation of tumour site (quadrant) is a key element for pathology completeness; this data, however, needs to be provided by the surgical team. The next audit will include tumour site (quadrant) as part of the completeness definition. 2006 results show that if tumour site (quadrant) is included as part of the completeness definition, the provincial completeness rate for breast cancer surgeries falls from 92% to 73%.

Endometrial Cancer Hysterectomies
A report was considered "complete" only if the report contained all of the following data elements:
o **Macroscopic:** specimen type, tumour size, other organs present
o **Microscopic:** histologic type, histologic grade
o **Staging - Tumour:** myometrial invasion, depth of invasion, myometrial thickness
o **Staging - Nodes:** statement of nodal examination and statement of nodal involvement
o **Margin:** statement of margin involvement or uninvolvement, statement of the name(s) of the involved margin(s), if applicable
o **Invasion:** Venous/lymphatic (V/L) invasion

**Notes:** Although mandatory CAP checklist elements, tumour size and pM were not required for completeness. Explicit notation of pT and pN was not required as long as each could be derived from the other mandatory data elements. Myometrial thickness was only required if depth of invasion was measured as a distance. Information on margins was only required for cases with pT \( \geq \) pT2.