NPCR-AERRO: Electronic Pathology (ePath) and Biomarker Synoptic Reporting Activities

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Good Morning.
Background and Purpose

- U.S. Laboratories still produce narrative reports
- Non-standard across labs
- Time-consuming
- Enhance data completeness, timeliness, and quality using the CAP Cancer Protocols and electronic Cancer Checklists (eCC)
Overview of Necessary Components

Development of CAP Cancer Pathology and Biomarker Templates

Laboratory Systems to Integrate and Implement

Pathologists to Use

Laboratories to Report to Cancer Registries
The Stars are aligning...

- NPCR-AERRO ePath Project began working with national laboratories to transmit narrative reports using NAACCR Volume V in 2006
- CAP eCCs first published in 2007
  - CAP Cancer Protocols cancer reporting gold–standard since 1984
- Cancer Care Ontario (CCO) implemented a CCO-developed checklist in 2008 and implemented the CAP eCCs from 2010-2012
- PathGroup implemented CAP eCCs in 2012
- CA pilot project with St. Joseph’s Health, CAP, and mTuitive began in January 2014
Project Collaboration for Greater Impact

CDC NPCR-AERRO ePath Project

Implement laboratory reporting to all cancer registries

CAP eCC Project

Implement CAP eCC in hospital laboratory information systems (LIS)

California Pilot Project

Implement reporting of CAP eCC data from California hospitals to cancer registry
Use NAACCR Volume V
  • HL7 2.3.1 or 2.5.1 ORU message for narrative reports

Established ICD-10-CM filter to identify cancer cases for reporting
  • Core vs. Expanded

Use Public Health Information Network Messaging System (PHINMS) for secure message transport

Currently implemented ePath reporting from 25 national/regional labs to over 40 registries
CAP Cancer Pathology and Biomarker Templates

- 3,162 pathologists using checklists
- 96 CAP Cancer eCCs, including 13 Biomarker Templates
  - Breast Biomarkers
  - Stomach: Gastric HER2 Biomarkers
  - Lung Biomarkers, Non-Small Cell Carcinoma
  - Colorectal Biomarkers
  - CNS Biomarkers
  - GIST Biomarkers
  - MPN Biomarkers
  - CLL Biomarkers
  - CML Biomarkers
  - Melanoma Biomarkers
  - DLBCL Biomarkers
  - Thyroid Biomarkers
  - Endometrium Biomarkers

Source: Cancer Protocols on www.cap.org
Pathology Reporting in Cancer Care Ontario (CCO)

Proportion of Ontario hospitals reporting cancer pathology to CCO, by level of standardization, from narrative to synoptic format

<table>
<thead>
<tr>
<th>Reporting Level</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>Level 4</th>
<th>Level 5</th>
<th>Level 6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Narrative</td>
<td>Narrative</td>
<td>Level 2 + Synoptic-like structured format</td>
<td>Level 3 + Electronic reporting Tools using drop-down menus</td>
<td>Level 4 + Standardized reporting language</td>
<td>Level 5 + Common data and messaging standards with keys, SNOMED CT or other encoding</td>
</tr>
<tr>
<td>% Ontario Hospitals 2004-05</td>
<td>5%</td>
<td>40%</td>
<td>50%</td>
<td>5%</td>
<td>0%</td>
<td>0%</td>
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<tr>
<td>% Ontario Hospitals 2006-07</td>
<td>0%</td>
<td>5%</td>
<td>70%</td>
<td>25%</td>
<td>0%</td>
<td>0%</td>
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<tr>
<td>% Ontario Hospitals 2008-09</td>
<td>0%</td>
<td>0%</td>
<td>65%</td>
<td>17%</td>
<td>18%</td>
<td>0%</td>
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<tr>
<td>% Ontario Hospitals 2009-10</td>
<td>0%</td>
<td>0%</td>
<td>20%</td>
<td>2%</td>
<td>78%</td>
<td>0%</td>
</tr>
<tr>
<td>% Ontario Hospitals January 2012</td>
<td>0%</td>
<td>0%</td>
<td>8%</td>
<td>0%</td>
<td>0%</td>
<td>92%</td>
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<tr>
<td>% Ontario Hospitals May 2012</td>
<td>0%</td>
<td>0%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>97%</td>
</tr>
<tr>
<td>% Ontario Hospitals October 2015</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Data Source: CCO ePath, as of October 2015

Ontario hospitals includes 119 acute care facilities – primary and secondary. Primary sites submit cancer pathology reports directly to CCO Ontario Cancer Registry via CCO ePath system. Primary sites may also report cancer pathology for secondary hospitals. Private labs and Paediatric facilities are not included.
CCR Structured Reporting Initiative – to date

Phase 1 (Pilot)
- Feb 2013 – July 2013
- 2 sites, de-identified, legacy reports (Cerner, mTuitive)

Phase 2
- Feb 2014 – Dec 2014
- St. Joseph’s Health System (mTuitive)
- UCSF Benioff Children’s Hospital Oakland (SCC Soft)
- Real-time transmission of structured pathology reports

Phase 3
- 2015-2016+
- Associated Pathologist LLC (PathGroup)
- 2 additional organizations, 7 new labs
- New site onboarding, maintenance and sustainability
PathGroup facilities using CAP eCCs

- Marin General
  - represents 1 facility
- Red stars represent multiple facilities

Total of 60 facilities use CAP eCCs (~80% of all PathGroup facilities)
PathGroup Implementation Activities

Secure Transport
- Setup, configure, and test PHINMS

HL7 ORU Message
- NAACCR Vol. V specification for narrative and CAP eCC reports
- Map eCC data elements to HL7 message
- Implement and train staff in Marin General

CAP Checklist
- Filter cases based on ICD-10
- Patient state of residence

Reporting
Sample PathGroup HL7 Message

MSH | &PathSys|Associated Pathologists, LLC d/b/a PathGroupA44093432AQLIA|Eureka|CCR|20160607141304|ORU|M001|ORU_001|201606071413040001|P|2.5.1|VOL_V_40_C
PID | |N00150471AAMA|A9999900|Test PathGroup Systems UniversityCPS|AM|US|ASA-A00150471AAMA|PathGroupAPI|Testauto|CCPat1|AML|19420901|M|2420 Sunnyview LaneN
PV1 | |N
ORC | RE | |||||Test PathGroup Systems University|5301 Virginia Way|Suite 300 | 1| Brentwood| TN| 37027| APR| PHA| 1| 615| 5629350| CM| Nashvill| TN| 37076

OBX | 1 | 116-000988|PathSys|A44093432AQLIA|AI1529-5 | SURGICAL PATH REPORT|20160607000000|20160607000000|&esophagus, biopsy|1234567890|TestDoc
OBX | 1 | TX|22637-3Path report.final diagnosis|ESOPHAGUS, M | ADENOCARCINOMA, poorly differentiated, signet ring cell type, with
tumor invades through the muscularis propria into the periesophageal soft tissue (advanced) | XOD|XOA | MARGINS |XOD|XOA | Uninvolved |XOD|XOA | TNM Descriptors: Not applicable |XOD|XOA | Primary Tumor (P): pt3: Tumor invades adventitia |XOD|XOA | Regional lymph nodes (N): pt3: Tumor invades adventitia |XOD|XOA | Organisms (M): order
OBX | 2 | TX|22638-1Path report.comments |XOD|XOA | Comments - Results communicated by phone. An immunohistochemical stain for Her-2 is XOD|XOA | order
OBX | 3 | TX|22633-2Path report.site of origin |XOD|XOA | Mid esophagus biopsies
OBX | 4 | TX|22634-4Path report.gross description |XOD|XOA | Received in formalin labeled "CCPat1 Testauto. esophagus" are multiple white |XOD|XOA | irregular tissues
OBX | 5 | TX|22635-5Path report.microscopic examination |XOD|XOA | Microscopic examination is performed.
OBX | 6 | TX|22636-5Path report.relevant Hx |XOD|XOA | History - PEG tube
OBX | 7 | TX|22637-5Path report.relevant Hx |XOD|XOA | History
OBX | 8 | TX|22638-5Path report.relevant Hx |XOD|XOA | History
OBX | 9 | TX|22639-5Path report.relevant Hx |XOD|XOA | History
ST | 1 | ST|60572-3SYNCOPIC REPORT|20160607000000|20160607000000|&esophagus, biopsy|1234567890|TestDoc
ST | 2 | ST|60572-3SYNCOPIC REPORT|20160607000000|20160607000000|&esophagus, biopsy|1234567890|TestDoc
ST | 3 | ST|60572-3SYNCOPIC REPORT|20160607000000|20160607000000|&esophagus, biopsy|1234567890|TestDoc
ST | 4 | ST|60572-3SYNCOPIC REPORT|20160607000000|20160607000000|&esophagus, biopsy|1234567890|TestDoc
ST | 5 | ST|60572-3SYNCOPIC REPORT|20160607000000|20160607000000|&esophagus, biopsy|1234567890|TestDoc
ST | 6 | ST|60572-3SYNCOPIC REPORT|20160607000000|20160607000000|&esophagus, biopsy|1234567890|TestDoc
ST | 7 | ST|60572-3SYNCOPIC REPORT|20160607000000|20160607000000|&esophagus, biopsy|1234567890|TestDoc
ST | 8 | ST|60572-3SYNCOPIC REPORT|20160607000000|20160607000000|&esophagus, biopsy|1234567890|TestDoc
ST | 9 | ST|60572-3SYNCOPIC REPORT|20160607000000|20160607000000|&esophagus, biopsy|1234567890|TestDoc

Additional information and details may be provided in subsequent segments of the HL7 message, which are not shown in the provided segment.
Strategies to increase use of CAP eCCs

1. Describe benefits to laboratories
2. Demonstrate ease of use for pathologists
3. Introduce use of eCCs at academic level
4. Market to standard setters at national level
5. Market to labs, pathologists and lab system vendors
6. Market to oncologists and other physician specialists
Acknowledgement of Co-Authors

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- Richard Moldwin

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- Amy Nichols
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## Additional Acknowledgements

<table>
<thead>
<tr>
<th>Organization</th>
<th>Acknowledged Names</th>
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<tr>
<td>College of American Pathologists</td>
<td>Samantha Spencer, Joe Schramm, Ted Carithers</td>
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<tr>
<td>PathGroup</td>
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<td>Gemma Lee</td>
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Questions?
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Visit: www.cdc.gov | Contact CDC at: 1-800-CDC-INFO or www.cdc.gov/info

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