ASSOCIATION
OF COMMUNITY
CANCER CENTERS

PRECISION MEDICINE: INTEGRATION OF PATHOLOGY WITH THE CANCER CARE TEAM

CONSIDERATIONS FOR COORDINATED PATHOLOGY REPORTING

ACCC
Association of Community Cancer Centers

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INTRODUCTION

The evolution of cancer treatments is driving the need for care that is not only multidisciplinary but also interdisciplinary, often requiring cross-specialty knowledge. However, our current healthcare system is largely siloed by specialty, and independent specialty groups use ambulatory electronic health record (EHR) systems that lack full interoperability with hospital EHR systems. This lack of alignment brings to light areas of pressing need for change so that different disciplines can communicate clearly and efficiently to deliver optimal care for patients with cancer. One such area is the pathology report.

Pathologists use the pathology report to communicate with cancer clinicians; it provides essential information to clinicians as they predict prognosis and make therapeutic decisions. At a time when healthcare is transitioning to a value-based care model and knowledge of cancer biology and treatment options is rapidly evolving, the need for pathology reports to convey all relevant information in an easy-to-understand and up-to-date format is pressing.

Because of a fragmented healthcare system, pathology information and ancillary test results are often delivered as multiple reports and filed away in different sections of a patient's EHR. Clinicians often have to spend additional time looking at several places in the EHR, searching for all the pathology-related reports, and may miss important information when developing treatment plans. This type of disconnected record keeping, EHR information overload, and inefficient communication has been known to hinder clinical workflow and contribute to physician burnout.[1] Missing information can also lead to waste, suboptimal care, and patient harm.

Ongoing advances in molecular biology and translational research are leading to increased scientific knowledge about tumor biology and therapeutic targets. Application of this knowledge depends on appropriate ancillary testing that often includes tumor (somatic) and hereditary (germline) biomarker testing, interpretation of the results, and the formation of tailored treatment plans based on actionable findings. As community cancer programs deliver precision medicine based on this wealth of information, close integration among pathologists and cancer clinicians is needed to ensure the requisite coordination and reporting of pathologic findings, interpretation and understanding of biomarker test results, and to inform evidence-based therapeutic decision-making.

In 2019, the Association of Community Cancer Centers (ACCC) reviewed the literature and conducted individual interviews with pathologists, medical oncologists, surgeons, radiologists, nurses, administrators, and other members of the cancer care team to gain a deeper understanding of the evolving role of pathology reporting. This white paper explores both aspirational concepts and practical ideas to achieve a more coordinated pathology reporting approach, reduce the risk of medical errors, minimize delays to treatment, and improve communication between pathologists and members of the cancer care team to aid in the integration of precision medicine for patients with cancer.

CONSOLIDATING PATHOLOGY AND ANCILLARY REPORTS

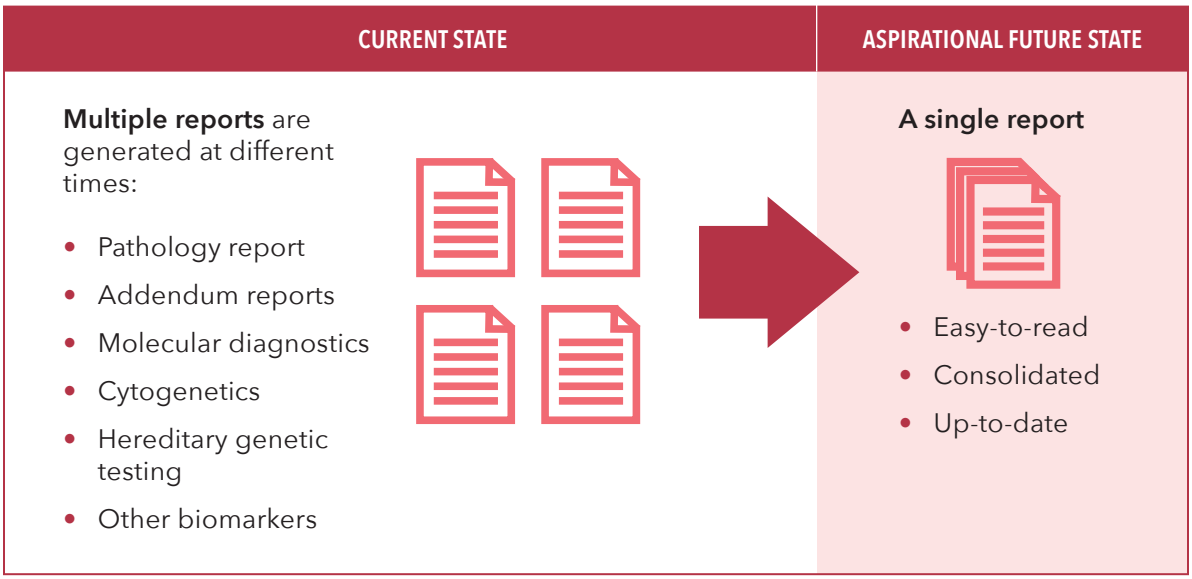
Pathology departments use laboratory information systems (LIS) to input data, process results, and generate reports. Oncology clinicians usually read these reports in the inpatient or outpatient electronic health record (EHR). Some community cancer programs use electronic systems that provide fully interoperable functionality between the LIS and EHR. However, many cancer programs have limited interfaces between the LIS and EHR and still rely on faxed or scanned pathology reports. As a result, pathology reports are often difficult to find, poorly formatted for readability, and may be mixed in with other types of reports. In many EHRs, pathology reports, addendum reports, and ancillary test results are not adequately categorized when entered in the EHR; the way in which the information is formatted and the length of the reports make finding and organizing the information difficult.

To better align with the delivery of precision medicine, a single, consolidated, up-to-date pathology report that includes the latest addendum reports and both in-house and external ancillary tests results (e.g., molecular diagnostics, cytogenetics, and other biomarkers) is needed. Pathology reports should be formatted for optimal readability with key elements entered as machine-readable, structured data for efficient and accurate reporting. Ancillary test results, which are often separate reports, may be particularly hard to locate in the EHR. If not correctly labeled and categorized, ancillary reports may be scanned into the general "media tab" along with many other scanned reports. At times, scanned reports may appear upside down in the EHR or may be missing pages. Molecular test results using next-generation sequencing (NGS) are often very long reports (e.g., 25 pages or more).

CURRENT VS. FUTURE STATE

In the ideal future state, the key actionable results from pathology and ancillary test reports would be consolidated into a single report that includes links to each detailed report (e.g., a clinician would click on a link to read the detailed molecular findings in the separate 25-page report). *See Figure 1*. However, given the current state, where there may be delays in obtaining certain test results, and the complexity of information included in lengthy reports, the concept of a single, consolidated, up-to-date report remains largely an aspirational goal. Multiple organizations and companies are also involved in the analysis and delivery of diagnostic information to the cancer care team. Cancer programs have the opportunity to examine their current processes and make incremental changes and improvements to achieve a more coordinated approach around reporting key pathology and lab findings. These changes can help clinicians to work more effectively as they develop tailored treatment plans for patients.

Figure 1. Pathology Reporting: Current vs. Aspirational Future State



STANDARDIZING TERMINOLOGY

Pathology departments may issue different types of pathology reports. To ensure optimal communication and comprehension of pathology reports, members of the cancer care team should agree on how the following terms are defined. The College of American Pathologists (CAP) defines the terms as follows:[2]

- **Final pathology report.** This is a completed report that becomes a part of the medical record. The report includes the final diagnosis and all necessary diagnostic information.
- **Provisional or preliminary report.** This may be issued if a pathologist anticipates a delay in producing the final report. This type of report should describe what is pending and indicate that the initial findings may change in the final report.
- **Addendum report.** This is issued when new information becomes available after the final report has been submitted.
- **Amended or revised report.** This is issued when the final diagnosis changes or other important pathologic information becomes available.
- **Corrected report.** This is issued when transcription, patient information, specimen site, or other related reporting errors occur. A corrected report differs from a revised report because the diagnosis remains unchanged.

However, pathologists may disagree on when an amended report is warranted rather than an addendum report.[3] Some pathologists believe that an amended report should be issued when new information becomes available, even if that information does not change the diagnosis. Others only issue amended reports when the diagnosis changes. As a result of these differences in interpretation, there is a lack of uniform practice in the community regarding the use of amended vs. addendum reports.[4] Amended reports are typically given greater emphasis, often replacing the final pathology report and accompanied by electronic notifications to clinicians. In contrast, addendum reports—if not clearly labeled or coupled with electronic notification—may be overlooked by clinicians.

FORMATTING PATHOLOGY REPORTS FOR READABILITY

> *"Achieving quality communication in surgical pathology is dependent on pathologists addressing multiple situations including managing physicians' expectations for turnaround time and ancillary testing, understanding what information is needed to manage the patient at intraoperative consultation and in the final report, assuring adequate report content with the use of synoptic checklist reports, and using report formatting suggestions that aid report comprehension."*
>
> **Nakhleh RE.** Quality in surgical pathology communication and reporting. *Arch Pathol Lab Med*. 2011;135(11):1394-7.

Pathologists have long recognized that report formatting may aid report comprehension and be a key part of quality communication with oncologists.[5] Historically, pathology reports were written in narrative free-text, and the information was not organized in a standardized way. Some pathologists still use narrative formats and may issue reports that have sections containing large amounts of verbiage and technical jargon. If pathology reports are not formatted for optimal readability, oncology clinicians reviewing long narrative reports may experience information overload and have difficulty finding a specific piece of information. In one study, surgeons misunderstood pathology reports 30 percent of the time, and poor formatting was a key factor contributing to this problem.[6] In another study, physicians reported high levels of satisfaction when pathology information was presented in organized synoptic formats and noted greater ease of finding information for clinical decision-making.[7] Of note, in the Commission on Cancer (CoC) *Optimal Resources for Cancer Care: 2020 Standards*, the American College of Surgeons (ACoS) has revised synoptic reporting requirements in its accreditation standards for cancer programs.[8]

Standard 5.1: CAP Synoptic Reporting requires that 90 percent of eligible cancer pathology reports are structured using synoptic reporting formats.

"Eligible cancer pathology reports" are defined as:

- Definitive surgical resection of primary invasive malignancies and ductal carcinoma in situ (DCIS), and
- Definitive surgical resection in patients who have received neoadjuvant therapy AND who have residual tumor

Standard 5.7: Total Mesorectal Excision and Standard 5.8: Pulmonary Resection are new and are based on guidelines described in the *Operative Standards for Cancer Surgery*. These new standards will be phased-in and compliance will be determined based on the elements contained in synoptic reporting format.

In contrast to narrative reports, synoptic reports allow pathologists to provide data elements using defined organizational structures.[9] The College of American Pathologists provides guidance on the features that define synoptic report formatting for CAP accreditation compliance.[10] However, the types of synoptic reporting formats and styles used by pathology groups vary. As a result, the readability of synoptic reports is not always optimal. For example, within the framework of synoptic reporting, pathologists may choose to format information into separate columns for data elements and responses. Some synoptic reports may include checklists or optimal data elements. Pathologists may use bolding, italics, or indentation to increase the readability of a report. Also, synoptic reporting formats may allow varying amounts of free-text entry in different sections of the report. See the Appendix (page 14–15) for examples of different synoptic reporting formats.

In the pathology literature, the following suggestions have been proposed to improve the readability of pathology reports:[11]

- Use headlines to emphasize key findings
- Maintain layout continuity
- Optimize information density for readers
- Reduce clutter

Moreover, human factors and usability testing research has demonstrated that clinicians prefer consistent reporting formats in which data elements follow the same order. The positioning, grouping, and pairing of data elements facilitate readability and comprehension.[12] For example, non-pathology clinicians have an easier time reading information that is presented in columned format and in single-line, rather than multiple-line, format.[13] These human factor considerations have led radiologists to move to templated standardized reports that are uniform, easily understood, and readable by humans and machines (templates are freely available at www.RadReport.org, a website provided by the Radiological Society of North America).

Aspirations and Potential Solutions

- Include an easy-to-read summary section (e.g., brief synopsis) at the beginning of the pathology report that highlights key findings (i.e., a brief synopsis, independent of primary site). *See Figure 3*. The complete report including all the technical details would follow the summary section.

  Example of a potential easy-to-ready synopsis:

  "Ms. X has triple-negative grade 3 metastatic invasive ductal carcinoma with a germline BRCA1 mutation also detected in the tumor. The tumor also had TP53 mutation. Margins of resection are negative, stage is T3N1."

- Use machine-readable electronic reporting templates that also organize the information in a way that improves readability.
- Employ a consistent reporting format that includes checklists to ensure completeness of pathology reports. Checklists have been shown to increase the completeness of pathology reports by 54 percent by ensuring that all the elements required by the CoC are in the report.[14]

INCORPORATING STRUCTURED BIOMARKER DATA

In an era where molecular biomarker tests using next-generation sequencing (NGS) often result in lengthy reports that exceed 20 pages, there is a need for a summary section at the beginning of the report to highlight key findings. Moreover, key pieces of information should be entered as machine-readable structured data to facilitate reporting, research, and clinical decision support.[15] Structured data must be entered in specific text fields so that each data element has its own predefined place in order for computers to read the data and categorize the information correctly. Since clinicians rely on biomarker test results to match patients with appropriate targeted therapies, entering positive test results into the EHR as structured data would allow clinicians to easily search for patients who may be eligible for newly approved therapies or emerging clinical trials based on specific biomarker test results. The CAP Cancer Biomarker Reporting Protocols provide a framework for structured data and uniformity around commonly ordered biomarkers.[16] These currently include:

- Bone Marrow Cancer Reporting (includes CLL, CML, Diffuse Large B-cell Lymphoma, and Myeloproliferative Neoplasms Biomarker Reporting)
- Breast Biomarker Reporting
- Colon and Rectum Biomarker Reporting
- DNA Mismatch Repair Biomarker Reporting
- Endometrium Biomarker Reporting
- Gastric HER2 Biomarker Reporting
- GIST Biomarker Reporting
- Head and Neck Biomarker Reporting
- Lung Biomarker Reporting
- Melanoma Biomarker Reporting
- Thyroid Biomarker Reporting

While the Biomarker Reporting Protocols are not required for CAP accreditation purposes, they provide valuable guidance and are updated regularly.

Aspirations and Potential Solutions

- Adopt the CAP Cancer Biomarker Reporting Protocols for commonly ordered biomarkers.
- Enter positive biomarker results as structured data into the EHR.

ATTAINING LABORATORY INFORMATION SYSTEM & ELECTRONIC HEALTH RECORD INTEROPERABILITY

Interoperability of electronic records varies across different cancer programs. Pathologists rely on their laboratory information system (LIS) while oncology clinicians routinely use their electronic health record (EHR) system. In some instances, oncology clinicians may directly access a pathology LIS, but this does not occur commonly.

Some cancer programs may use the same EHR system across all departments and have specialty-specific modules (e.g., Epic Beacon for medical oncology and Epic Beaker for pathology). The following grid *(Figure 2)* characterizes the complexity of how the laboratory information systems (LIS) and electronic health records (EHRs) may interface at various cancer programs:

Figure 2. Laboratory Information Systems (LIS) and Electronic Health Records (EHRs): Sample Program Models

	LABORATORY INFORMATION SYSTEM (LIS) USED BY PATHOLOGY	INPATIENT ELECTRONIC HEALTH RECORD (EHR) SYSTEM	OUTPATIENT ELECTRONIC HEALTH RECORD (EHR) SYSTEM*
CANCER PROGRAM 1	**Electronic System 1** *(e.g., Cerner or Epic)* Fully interoperable; pathology reports are formatted and readable across all the electronic systems		
CANCER PROGRAM 2	**Electronic System 1** *(e.g., Cerner)*	**Electronic System 2** *(e.g., Epic or Meditech)* Limited interoperability with the LIS**	
CANCER PROGRAM 3	**Electronic System 1** *(e.g., Cerner)*	**Electronic System 2** *(e.g., McKesson)* Limited interoperability with the LIS**	**Electronic System 3** *(e.g., Epic)* Limited interoperability with the LIS**

* Different medical groups that are affiliated with a single cancer program may use multiple different outpatient EHRs.

** Limited interoperability between the LIS and EHR; pathology reports may lose formatting and may not be easily readable in the EHR; pathology reports may be faxed or scanned into the EHR and filed into a "scanned media" section.

The ease of sending pathology reports from the LIS to the EHR largely depends on the electronic systems that are being used, the interfaces between the systems, and the level of customizations built into the systems. Reporting formats depend on how the pathologist chooses to organize the information and on the capabilities of the LIS. As pathology reports are entered into the LIS, the report formatting may not transfer to the outpatient or inpatient EHR systems; therefore, clinicians may have difficulty reading these reports.

In the ideal future state, the LIS and EHR would be fully interoperable, reports would be formatted for readability across all systems, and information would be entered as structured data. Use of tools like the CAP electronic Cancer Checklists (eCC) would facilitate structured data capture and streamline reporting into tumor registries.[17] Furthermore, in a fully interoperable environment, computerized provider order entry (CPOE) would interface directly between the EHR and LIS so that molecular testing orders would be entered and tracked in the EHR.

Aspirations and Potential Solutions

- Check to ensure that pathology reports do not lose their readability as they move from the LIS to EHRs.
- If the LIS and EHRs are not fully interoperable, then compare and contrast how pathology reports appear on the screens of the LIS, the outpatient EHR, and the inpatient EHR. Explore ways to improve report readability and searchability across all of the electronic systems.
- Try to minimize the use of scanned pathology reports. Incorporate interfaces and EHR customizations that allow the pathology report to enter directly into the EHR in a machine-readable format.
- Utilize the CAP electronic Cancer Checklists (eCC) to facilitate structured data capture and reporting.
- Consider replacing the pathology LIS with modules built by the inpatient EHR vendor (e.g., Epic Beaker or Cerner CoPathPlus).

TUMOR (SOMATIC) & HEREDITARY (GERMLINE) TESTING

In the rapidly evolving era of precision medicine, the domains of tumor (somatic) genomic profiling and hereditary (germline) genetic testing are intersecting. Terms like genomic vs. genetic testing may be confused, misused, or misunderstood. Tumor molecular testing (which may also be called genomic profiling) remains the standard of care for many cancers since patients may be treated with targeted therapies that are directed at genomic alterations (e.g., EGFR mutation in non-small cell lung cancer) or protein expressions (e.g., HER2 expression in breast cancer).[18] Hereditary genetic testing has traditionally been the domain of genetic counselors who spend time counseling patients and identifying cancer risks in patients and family members.[19]

Table 1: Tumor (Somatic) Testing Comparison to Hereditary (Germline) Testing

TUMOR (SOMATIC) TESTING	HEREDITARY (GERMLINE) TESTING
• May also be called molecular testing, genomic profiling, etc.	• May also be called genetic testing
• Usually does not require informed consent from the patient	• Requires informed consent from the patient
• Performed in patients with cancer by sampling tumor tissue or blood	• Performed in patients with cancer and also in individuals (e.g., family members) who do not have cancer by sampling healthy cells in serum or saliva
• Usually does not include genetic counseling	• Should include genetic pre-test and post-test counseling
• Mutations are detected in tumor cells	• Mutations are inherited at birth and present in almost every cell in the body
• Detected abnormalities may be hereditary or may have occurred over time	• Assesses hereditary risk for cancer; positive finding is heritable; factors such as penetrance and variable expressivity must be considered
• May provide "actionable" results that inform treatment decisions with targeted therapies	• May provide "actionable" results that inform treatment decisions with targeted therapies
• May be performed more than once to identify new alterations (e.g., resistance mutation) after patient begins treatment	• Typically only performed once
• Not typically used to assess future cancer risk in individuals who do not have cancer	• May have lifelong implications related to overall cancer risk; may provide information about future preventative measures (e.g., a breast cancer patient with BRCA mutation may consider prophylactic oophorectomy to prevent ovarian cancer in the future)

The scope of hereditary testing is expanding and evolving now that certain germline mutations are treatable targets in patients with cancer. For example, patients with ovarian or breast cancer who have somatic or germline BRCA mutations may be treated with certain FDA-approved poly (ADP-ribose) polymerase (PARP) inhibitors.[20] Patients with advanced prostate cancer may have actionable mutations that are discovered by tumor (somatic) and hereditary (germline) testing.[21]

Additionally, certain mutations that are identified during tumor (somatic) testing may lead patients and their family members to undergo hereditary (germline) testing.[22] Since up to 12 percent of tumor genomic profiling reports may raise the question of a pathogenic germline variant, pathologists, oncologists, and genetic counselors need to coordinate tumor (somatic) testing to identify actionable targets for treatment and to recommend hereditary (germline) testing in patients and family members.[23]

As noted above, the reports generated from genomic and genetic tests are often lengthy and may be scanned or imported into the EHR. Tumor molecular tests may occur in the pathology lab, but are often sent to an outside reference lab. While most hereditary genetic tests are sent to an outside lab, they are often sent from genetic counseling or physician offices. Report formats for these tests may vary depending on the lab that performs the tests, the technical methods used to perform the tests, and the amount of interpretation of results that is provided. Pathologists are often asked to review the genomic (somatic) reports and generate an addendum report that summarizes key findings. Genetic counselors may review genetic (germline) results and provide a risk assessment and results interpretation report.

Aspirations and Potential Solutions

- Coordinate tumor (somatic) and hereditary (germline) testing between pathologists and genetics professionals so that the results are available to both groups.
- Create a section in the EHR for molecular/genomic, and genetic test results. In this section, pathologists will work with genetic counselors to document test results pertaining to molecular targets (e.g., tumor protein expression, genomic alterations) and actionable hereditary genetic test results. Oncologists will be alerted to results that may impact treatment plans. Bidirectional and thorough communication may also help reduce the rate of duplicative testing.
- As the complexity of testing continues to increase, coordinated efforts will be required to ensure that pathologists, cancer clinicians, and genetic professionals are updating their testing policies and communicating about how to optimize tumor and hereditary testing processes.

LINKING THE FINAL PATHOLOGY REPORT TO ADDENDUM REPORTS

After issuing a final report that includes a histologic cancer diagnosis, the pathologist may issue an addendum report as other ancillary tests are performed on the specimen.[24] Addendum reports may contain clinically relevant prognostic and therapeutic information, but no standards currently exist for structured reporting or interoperable data elements for these reports. Depending on the functionality of various EHR systems, addendum reports may or may not be clearly linked to the final report. As a result, an oncology clinician may view the final report and miss the fact that an addendum report is also in the chart. Since addendum reports may contain important information that may alter treatment plans (e.g., molecular test results for non-small cell lung cancer), clinicians should be alerted to view these reports when they are entered into the EHR. Ideally, pathologists should also indicate when an addendum report is pending (e.g., molecular testing was ordered and the results will be provided in an addendum report).

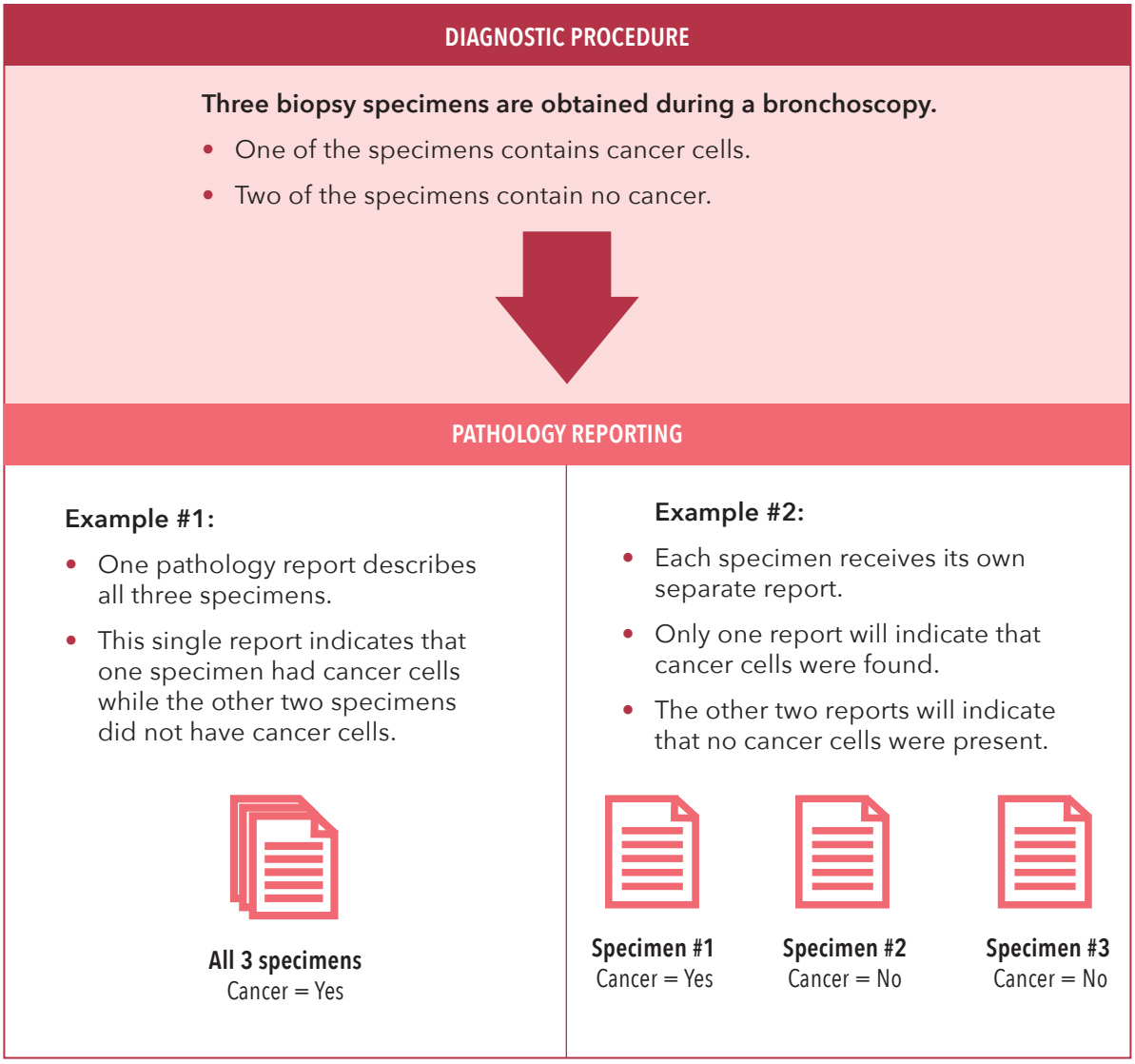
Aspirations and Potential Solutions

- In the EHR, link the final pathology report to all subsequent addendum reports. This would eliminate the need to search and scroll down the screen to find all the pathology reports from a given specimen. After opening the final report, the clinician would easily see links to the addendum reports, reducing the likelihood of missing an addendum report when viewing the patient's chart.
- When issuing the final report, pathologists should indicate that an addendum report is pending (e.g., molecular testing was ordered and the results will be provided in an addendum report). This would alert clinicians that new information may necessitate a change in the treatment plan.
- Utilize electronic notifications in EHRs to alert clinicians that an addendum report has been entered into the chart.
- Since many pathology reports are scanned into the EHR, optimize the use of optical character recognition (OCR) software so that clinicians can search all pathology reports using keywords.

COORDINATING REPORTS FROM DIFFERENT BIOPSY SPECIMENS

During several stakeholder interviews, ACCC discovered variability in how pathology groups report on multiple biopsy specimens that are obtained from a single diagnostic procedure. The specialist performing the diagnostic biopsy may obtain multiple specimens. When the pathologist receives these specimens, some pathology groups generate a single report for all the specimens while other groups generate individual reports for each specimen. *See Figure 3*.

Figure 3. Reporting Paths after Diagnostic Procedure



Based on the interviews conducted by ACCC, oncology clinicians seem to prefer receiving a single report that covers all the specimens obtained during a diagnostic procedure. In some instances, however, patients may undergo several different biopsy procedures before a cancer diagnosis is made. For example, a patient diagnosed with lung cancer may have a CT-guided lung biopsy, a bone biopsy, a liver biopsy, and a lymph node biopsy. When this occurs, pathology reports are created for each procedure and only certain reports may contain a diagnosis of cancer. In this circumstance, with multiple pathology reports in the patient's chart, there may be a need to better organize this information so that oncology clinicians can easily find the correct report with the information about the cancer diagnosis.

Aspirations and Potential Solutions

- If pathology groups are generating individual reports for each specimen, consider switching to a single report that contains all the specimens.
- When patients have multiple pathology reports in their chart, create a single "at-a-glance" diagnostic overview in the EHR that lists all the biopsy procedures the patient received. Link each of the procedures to a set of pathology reports that includes the final report and any addendum reports.
- In the EHR, link the diagnosis of cancer on the patient's problem list to the pathology report that contains the detailed information. This would allow clinicians to easily find the correct pathology report.

SUMMARY

In an era of precision medicine and rapidly advancing cancer therapeutics, the role of pathology in the diagnosis and management of cancer is evolving. As members of the multidisciplinary care team, pathologists are uniquely positioned at the intersection of multiple points along the cancer care continuum. Starting at the point of cancer diagnosis, pathologists provide expert interpretation, may recommend tumor biomarker testing, and may coordinate hereditary testing with genetic counselors. To stay current and provide the best care for patients, cancer clinicians must read and digest an ever-increasing amount of data, much of which is contained in pathology and biomarker test reports. Many genomic and genetic test reports include large amounts of information that is unfamiliar to oncology clinicians, so pathologists trained in molecular genetic pathology and genetic counselors can provide valuable guidance as cancer clinicians review and interpret the complex information for clinical decision-making.

Ongoing advances in targeted therapies, molecular biology, and immuno-oncology necessitate better coordination of pathology reporting, ancillary testing, communication across the multidisciplinary team, and treatment planning as cancer programs and practices deliver precision medicine in their communities. Optimal cancer care delivery requires cross-specialty collaboration in the interest of the patient. Improved pathology reporting will better allow clinicians to incorporate a growing amount of pathology, genomic, and genetic information to provide precision medicine in their communities.

APPENDIX

Examples of Synoptic Reporting Formats

Synoptic Report Example
THYROID CARCINOMA

Procedure: Total thyroidectomy
Tumor Focality: Single focus
Tumor Site: Right lobe
Tumor Size: 2.3 cm
Histologic Type: Papillary carcinoma, NOS
Margins: Uninvolved by carcinoma
Angioinvasion: None
Lymphatic Invasion: Equivocal
Extra-thyroidal Extension: Not identified
Lymph nodes, # involved: 0
Lymph nodes, # sampled: 3
Lymph nodes, levels: Level VII
Extranodal Extension: Not identified
Pathologic Stage Classification (AJCC 8): pT2 pN0a

Synoptic Report Example

This example combines specimen, laterality, and procedure on one line, as allowed.

DUCTAL CARCINOMA IN SITU OF THE BREAST

Specimen, Laterality, Procedure: Partial breast, right, excision without wire-guided localization
Estimated size of DCIS: at least 380 mm
Histologic Type: Ductal carcinoma in situ
Architectural Patterns: Solid
Nuclear Grade: Grade II (intermediate)
Necrosis: Present, focal
Margins: Margin(s) uninvolved by DCIS
Distance from closest margin: 4 mm
Specify closest margins: Superior
Regional Lymph Nodes: No lymph nodes submitted or found
Pathologic Staging (pTNM)
Primary Tumor (pT): pTis (DCIS)
Regional Lymph Nodes (pN): pNX

Examples continued, page 15

Examples of Synoptic Reporting Formats (continued)

Synoptic Report Example
LEFT BREAST MASTECTOMY

Procedure:
Total mastectomy (including nipple and skin)

Specimen Laterality:
Left

Tumor Size:
Greatest dimension of largest focus of invasion >1MM: 3.5 mm

Histologic Type:
Invasive ductal carcinoma (no special type or otherwise specified)

Histologic Grade:
Glandular (Acinar) / Tubular Differentiation: Score 2
Nuclear Pleomorphisim: Score 1
Mitotic Rate: Score 1
Overall Grade: Grade 1

Tumor Focality:
Single focus of invasive carcinoma

DCIS:
No DCIS present in specimen

Invasive Carcinoma Margins:
Margins uninvolved by invasive carcinoma\
Distance from closest margin: 25mm
Closest Uninvolved Margin: Deep

Lymph Nodes:
Uninvolved by tumor cells
Total number of nodes examined (sentinel and nonsentinel): 13
Number of sentinel lymph nodes examined: 3

Treatment Effect:
No known presurgical therapy

Primary Tumor (pT):
pT1a

Regional Lymph Nodes (pN):
pN0

Estrogen and Progesterone Receptors:
Previously performed

(HER2) ERBB2 Status:
Previously performed

Synoptic Report Example
This example uses the CAP Cancer Checklist, as allowed.

Gastrointestinal Stromal Tumor (GIST)

Based on AJCC/UICC TNM, 8th edition

Procedure
____ Local excision
_X_ Resection
Specify type (eg, partial gastrectomy): _____total gastrectomy_____
____ Metastasectomy
____ Other (specify): _____
____ Not specified

Tumor Site
Specify (if known): __gastric body_____
____ Not specified

Tumor Size
Greatest dimension: _5.3_ cm
*Additional dimensions: _4.8_ x _4.5_ cm
____ Cannot be determined (see "Comment")

Tumor Focality
_X_ Unifocal
____ Multifocal
Specify number of tumors: _____
Specify size of tumors: _____

HistologicSubtype
____ Gastrointestinal stromal tumor, spindle cell type
____ Gastrointestinal stromal tumor, epithelioid type
_X_ Gastrointestinal stromal tumor, mixed
____ Gastrointestinal stromal tumor, other (specify):
_____

Mitotic Rate
Specify: __2 /5 mm2

*Necrosis
*_X_ Not identified
*____ Present
*Extent: ____%
*____ Cannot be determined

Histologic Grade
____ GX: Grade cannot be assessed
_X_ G1: Low grade; mitotic rate ≤5/5 mm2
____ G2: High grade, mitotic rate >5/5 mm2

Examples provided by the College of American Pathologists:
https://documents.cap.org/protocols/dSynoptic_Report_DefinitionAndExamples_v4.0.pdf

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