Service Innovations
Webinar Series

Mastering the Integrated Report

M. Elizabeth H. Hammond, MD, FCAP

April 4, 2012
Welcome!

• **Service Innovations Webinar Series**
  Drive wider adoption of value added services by sharing how they’ve been implemented by others.

• To extend your learning and share experiences, an **online collaboration group** will be available.

• This session will be **recorded** for future review.

• All lines are muted. To ask questions or provide comments, please use the **Question** box.

• Please complete the **evaluation** to be emailed to you.
About the Presenter

Elizabeth H. Hammond, MD, FCAP

- Pathologist and recent chair, Department of Pathology at Urban Central Region, Intermountain Health Care, Salt Lake City
- Professor of Pathology at the University of Utah School of Medicine
- Served as elected Medical Staff President at LDS Hospital
- A Governor of the College of American Pathologists
- Chair of the CAP Sub Committee for the Pathology and Laboratory Quality Center
- Author or co-author of 195 original publications; topics include synoptic reporting and breast cancer predictive factors guidelines
Objectives

• Describe the benefits of implementing integrated reports.

• Define an implementation process.

• Understand the role and value of the pathologist in the implementation.

• Recognize the skills and resources required for implementation.

• Describe potential barriers and solutions.
What is “Integrated” Reporting?

**Definition:**
Report which summarizes the final pathologic findings on a patient, taking into account:

- Clinical history
- Imaging findings
- Pathology and Lab Reporting Findings

**Purpose:**
To provide clinicians with a single readable document containing all relevant information for patient treatment and follow up based usually on report review, not slide or image review.
What is the Value of Integrated Reports?

• Pathologists’ major role is providing accurate information.
  ✓ Degree to which we do this defines our competence and value to patient care

• Pathologists are often sidelined in clinical care.
  ✓ Integrated reports provide opportunity for more central role

• Pathologists can improve patient safety by eliminating confusion in reports
  ✓ Integrated reports clarify best clinical decisions
Value to Healthcare Systems

- Eliminates confusion about findings
- Saves time for physicians and other providers
- Limits opportunity for lost reports/lost information
- Enables better medical recordkeeping
- Provides a useful performance measure that likely affects patient outcome
- Highly useful for patients and patient discussions
Share your ideas and experiences

• Do you have any forms of integrated reporting in your institution?
  o Yes, all
  o Yes, a few
  o No
  o Do not know
Share your ideas and experiences

• What value has integrated reporting provided in your institution?
  o Kudos from providers
  o Acceleration of care
  o Better record keeping
  o Enabled patient safety
  o Other
Breast Cancer Reporting at Intermountain

1993
Breast cancer reports changed to be synoptic in format.
- Received kudos from oncologists.

1996
Survey of oncologists described satisfaction, but...
- No integration of ER, PR, HER2 in reports
- Many reports on one patient:
  - What if they conflict?
  - Which is most important?
  - How do I know if any are missing?
Share your ideas and experiences

• Are all reports about breast cancer patients available in your practice setting?
  o Yes, all
  o Yes, most
  o Yes, a few
  o No
  o Do not know
Questions to Consider for Process Resolution

• What is the current process of breast cancer reporting?
• Who are the stakeholders?
• How could reporting be done so that a summary could be generated?
• What should the summary report include?
• What steps are needed to make the summary report operational?
Process of Resolution

• How many and what kinds of reports were being generated on one patient?
  ✓ Up to 8 reports/patient

• Who generated them?
  ✓ Whatever pathologist was signing out on the day of the specific report
  ✓ Pathologists in up to 6 locations and slides also in 6 locations including surgical pathology and special IHC/FISH lab
### Usual Breast Cancer Reporting Scenario

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Needle Biopsy</td>
<td>Dx1</td>
</tr>
<tr>
<td>Initial Lumpectomy Sample</td>
<td>Dx2</td>
</tr>
<tr>
<td>Lumpectomy Predictive Factor Testing</td>
<td>ER/PR/HER2 by IHC  &lt;br&gt; + HER2 FISH</td>
</tr>
<tr>
<td>Resection</td>
<td>Dx 3 with add of margins, other features  &lt;br&gt; + ER/PR/HER2</td>
</tr>
<tr>
<td>Sentinel Node/Axillary Dissection</td>
<td>Dx 4</td>
</tr>
</tbody>
</table>
Process of Resolution (continued)

- **Who were the stakeholders?**
  - Breast pathology leader
  - Other pathologists
  - AP supervisor
  - Special IHC supervisor
  - IS coordinator or team
  - HIS interface team
  - Breast program leaders (clinicians)
  - Administrative leader of breast program
  - Patients
Share your ideas and experiences

- If you were working on breast cancer report integration in your institution, could you name the individuals mentioned?
  - Yes, some
  - No
  - Do not know
Share your ideas and experiences

- If not, do you know where to find the names of those whose services you need?
  - Yes, some
  - No
  - Do not know
Process of Resolution (continued)

• How could we address the problem most effectively?
  o Brainstorm with pathology leader and clinician leader about desired outcome for patients while reviewing reality of current situation
  o Design summary report to meet needs
  o Convene team to see how report format could be implemented
IS Tools are very important to resolution
## Macroscopic Summary

### Tumor Checklist: Breast, Resection

- **Comment:**

### Macrophscopic Summary:

- **Specimen:**
  - Total breast (including nipple and skin)

- **Procedure:**
  - Total mastectomy (including nipple and skin)

- **Lymph Node Sampling:**
  - Axillary dissection (partial or complete dissection)

- **Specimen Integrity:**
  - Single intact specimen (imagery can be evaluated)

- **Specimen Size (less than total mastectomy):**
  - No Answer

- **Specimen Laterality:**
  - Left

- **Tumor Site Invasive Carcinoma:**
  - Upper outer quadrant

- **Tumor Size, Size of Largest Invasive Carcinoma:**
  - Greatest dimension of largest focus of invasion over 0.1 cm
    - Specify: 0.5 cm
    - Additional dimensions: __ cm x __ cm

- **Tumor Size, Size of Smaller Invasive Carcinoma:**

- **Tumor Size, Size of Noninvasive Carcinoma:**

- **Tumor Size, Size of In Situ Carcinoma:**

- **Size (Extent) of DCIS:**
  - Estimated size (extent) of DCIS (greatest dimension using gross and microscopic evaluation) is at least: 0.2 cm
  - Additional dimensions: __ cm x __ cm
### Microscopic Features

**Microscopic Summary:**

- **Histologic Type:** Invasive ductal carcinoma (no special type or not otherwise specified)

**Histologic Grade: Nottingham Histologic Score**

<table>
<thead>
<tr>
<th>Glandular/Accretive/Tubular Differentiation</th>
<th>Score 3: &lt;10% of tumor area forming glandular/tubular structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nuclear Pleomorphism</td>
<td>Score 2: Cells larger than normal with open vesicular nuclei, visible nucleoli, and moderate variability in both size and shape</td>
</tr>
<tr>
<td>Mitotic Count (see Table 2)</td>
<td>Score 1</td>
</tr>
</tbody>
</table>

- **Number of mitoses per 10 high-power fields:** [ ]
- **Diameter of microscopic field:** [ ] mm

**Overall Grade:** Grade 2: Score of 6 or 7

**Margins**

- **Margins uninvolved by invasive carcinoma**
  
  - Distance from closest margin: [ ] mm
  - Distance from superior margin: [ ] mm
  - Distance from inferior margin: [ ] mm
  - Distance from anterior margin: [ ] mm
  - Distance from posterior margin: [ ] mm
  - Distance from medial margin: [ ] mm
  - Distance from lateral margin: [ ] mm

**Margins Comment**

- Invasive carcinoma is seen associated with area of scar. SCC tumor is seen 1.5 cm away from the posterior margin and 2.3 cm away from the anterior/superior margin. Margins are also negative for DCIS.

**Treatment Effect/Resect**

- (No Answer)

**Treatment Effect/Lymph Nodes**

- (No Answer)

**Lymph/Vascular Invasion**

- Present

**Thermal/Laser/Vapor Vicinity/Invasion**

- (No Answer)
### Lymph Nodes and Stage

#### Lymph Nodes (required only if lymph nodes are present in the specimen)

<table>
<thead>
<tr>
<th>Lymph Nodes</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of sentinel lymph nodes examined</td>
<td></td>
</tr>
<tr>
<td>Total number of lymph nodes examined (sentinel and nonsentinel)</td>
<td>3</td>
</tr>
<tr>
<td>Number of lymph nodes with metastases (&gt;0.2 cm)</td>
<td></td>
</tr>
<tr>
<td>Number of lymph nodes with micrometases (0.2 mm to 0.2 cm and/or ≥200 cells)</td>
<td></td>
</tr>
<tr>
<td>Number of lymph nodes with isolated tumor cells (&lt;0.2 mm or less than 200 or less cells)</td>
<td></td>
</tr>
<tr>
<td>Size of largest metastatic deposit (if present)</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The sentinel node is usually the first involved lymph node. In the unusual situation in which a sentinel node is not involved by metastatic carcinoma, but a nonsentinel node is involved, this information should be included in a note.

**TNM Descriptors**

- **t**N: (No Answer)
- **t**M: (No Answer)
- **t**T: PT1a: Tumor more than 1 mm but not more than 5 mm in greatest dimension
- **N** (Regional Lymph Nodes): pN1a: Metastasis in 1 to 3 axillary lymph nodes, at least 1 metastasis greater than 2.0 mm
- **M** (Distant Metastasis): Not applicable
- **Additional Pathologic Findings:**
- **Sentinel Node:** (No Answer)
### Ancillary Studies Template

**Worksheet 1**

<table>
<thead>
<tr>
<th>Worksheet Name</th>
<th>Created Date</th>
<th>Specimens Involved</th>
<th>Released Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ancillary Studies</td>
<td>2023-01-15</td>
<td>1 specimen</td>
<td>2023-01-16</td>
</tr>
</tbody>
</table>

#### Estrogen Receptor

- **Immunohistochemical results for invasive carcinoma performed on this specimen or a prior core needle biopsy or incisional biopsy**
- **Estrogen Receptor Results**
  - Positive
  - Type of Estrogen Receptor
- **Estrogen Receptor Results Comment**
  - "Estrogen Antibody Vendor and Clone"
  - "Type of Isotype, if other than mouse or rabbit antibody" (Mouse/neutral)
- **Progesterone Receptor**
  - **Progesterone Receptor Results**
  - Positive
  - Type of Progesterone Receptor
- **Progesterone Receptor Results Comment**
  - "Progesterone Antibody Vendor and Clone"
  - "Type of Isotype, if other than mouse or rabbit antibody" (Mouse/neutral)
- **HER2/neu Immunoreactivity Studies**
  - **HER2/neu Results**
  - Positive (Score 2+)
  - Immunoreactive tumor cells present
  - Classification: 70%
- **Other Ancillary Studies**
  - **Fluorescence In Situ Hybridization (FISH) for HER2/neu**
  - **FISH Results**
  - **FISH Name of Assay**
  - **Other Ancillary Studies**
  - Name of Other Ancillary Test
  - Name of Other Ancillary Test

#### Microcalcifications

- Present in non-neoplastic tissue

#### Specimen Mammogram

- [No Answer]

#### Clinical History

- [No Answer]
MACROSCOPIC SUMMARY:
Specimens: Needle biopsy, Total breast
Lymph Node Sampling: Axillary dissection, partial
Specimen Laterality: Left
Tumor Site: Invasive Carcinoma: Upper outer quadrant
Tumor Size: Size of Largest Invasive Carcinoma: 0.5 cm max diameter
Tumor Focality: Single focus of invasive carcinoma
Ductal Carcinoma In Situ (DCIS): DCIS is present
  Size (Extent) of DCIS: 0.2 cm
  Architectural Patterns: Solid
  Necrosis: Not identified
  Nuclear Grade: Grade III (high)
MICROSCOPIC SUMMARY:
Histologic Type: Invasive ductal carcinoma
Histologic Grade: Nottingham Score 2
Margins: Uninvolved with DCIS or invasive carcinoma
Lymph-Vascular Invasion: Present
Dermal Lymph-Vascular Invasion: Not identified
Lymph Nodes
   Total number of lymph nodes examined 3
   Number with macrometastases (>0.2cm): 3
   Extra-nodal Extension: Present
PATHOLOGIC STAGING:
Primary Tumor (pT): PT1a:
Regional Lymph Nodes (pN): pN1a
Distant Metastasis (M): Mx

ANCILLARY STUDIES:
Estrogen Receptor Results: Positive (70%, 2+)
Progesterone Receptor Results: Negative (0%)
HER2/neu Results: Positive (Score 3+)
BUT…….Questions Raised by Stakeholders

• How can all the reports on one patient be easily accessed?
• How can a pathologist know when the report sequence was complete?
• How can previous reports be easily reviewed by the final summary reporting pathologists?
• Is there a need to review individual slides?
• What information should the final report contain?
• Should there be a patient friendly version of the report?
• How will pathologists be paid for this consultation?
Process Knowledge Help is Required

• Are there individuals in the laboratory who are familiar with the necessary resources to carry out this change?

• Are there individuals who can act as facilitators and initiators of this activity, or must a pathologist do it?

• Is there administrative and clinical support for this activity?
Convening the Team

• Obtained administrative support and resources to engage in this activity

• Stakeholders identified and committed

• Team meeting planned with agendas and milestones

• Administration must support interventions required and support payment options
Share your ideas and experiences

• Which are the most serious barriers to implementation that you see?
  o Apathy by pathologists
  o Lack of institutional or clinical support
  o Lack of IS resources to implement interventions
  o Lack of time (team members too busy)
  o Lack of skills to run team
Barrier: Apathy of Pathologists

- Perception of overwork
- Perception of lack of value
- Fear of failure
- Fear of lack of payment
Barrier: Team Support

- Do you have individuals in your institution who would participate on teams for reporting?
- Would there be administrative support for this activity?
- Do you have individuals who could facilitate team activities?
- Are there IS resources who could help with the activity?
Breast Reporting at Intermountain

• Since we had synoptic reporting set up as part of our APIS implementation, we were able to develop another report type without new IS support

• Breast summary report was defined by team who initially requested that we do this

• Barriers remaining
  o Easy reviewing mechanism for reports
  o Triggering of the report as part of the workflow
  o Payment for report type
Review Mechanisms

• Review enabled electronically by APIS system which provided tab for old reports on same patient

• Some pathologists required paper copies for review and so mechanism for printing by staff had to be set up

• Clinical information and imaging reports on patients readily available through EHR
Triggers

• Trigger alert at time of sentinel node report
• Trigger alert at time of resection specimen
• Request by clinician
• Request by patient
• Request by breast tumor board
Payment

• Summary reports represent a type of consultation reporting
  o Pathologist payment company consulted
  o Hospital outpatient billing consulted
  o Team dealt with options for payment
  o Medical executive team consulted

• If the consultation was requested, it could be billed as consultation 88321

• Ordering information must be created and approved
• Medical Executive Committee must approve
• Administration must approve
Outcome

- Although report format is operative, reports are not routinely generated,
- Payment model is not established
- Breast cancer pathologist generates them because he uses them at tumor board
- Other pathologists are resistant
  - Worried about risk of writing report based on others’ findings
  - Imaging is not included
Measurement is Key to Implementation

- Number of breast cancer patients with summary/number of total breast cancer patients
- Time to treatment for those with summary versus others
- Audit of missing/confusing reports in those with/without summary
- Breast cases with/without summary by pathologist
- Report findings to breast cancer clinical group
Other Integrated Report Types…
Which Resonates with You?

- Other cancer types with multiple excisions
- Hematopathology Reports
- CSF Reports
- Renal Biopsy Reports
- Liver Biopsy Reports
- Lung Biopsy Reports
- Any sample with infection

PROSTATE: ADENOCARCINOMA

Malignant locations: left base, left mid
Benign locations: left apex, right base, right mid, right apex
Gleason score: $3 + 4 = 7$
Maximum dimension: 7mm (left base)
Histologic type: conventional prostatic adenocarcinoma
Perineural invasion is present
Necessary Steps

• Robust interfaces between clinical lab/ reference lab/pathology/ EHR systems to avoid duplicate entry

• Report formatting templates
  o Likely better in APIS systems

• Payment mechanisms
  o CAP Economic Affairs Committee
  o Payer inquiries
  o Liaisons with clinician groups
Summary

- Integrated Reporting is a valuable clinical activity that improves the value of pathology reports for patients and clinicians.
- It requires teamwork and commitment to make it happen for any report type.
- Administrative, Pathology and Clinical champions will enable success.
- How should CAP help?
Share your ideas and experience

• What types of collaborations among pathologists will help to create reports and processes?
  o Work groups by report type
  o Work groups by barrier type
  o Work groups by process: template, format, IS etc
  o None
  o Don’t know
Next Steps

• Join and participate in the *Mastering the Integrated Report* group on LinkedIn (email to be sent tomorrow)

• Investigate interest and feasibility for at least one type of integrated report with your lab staff, medical staff, clinical colleagues, IS staff

• Devise templates for reports

• Share what you learn with the group

• Share barriers you encounter
CAP Promise

• If you will participate, we will make something happen!

• If you get involved, you will become an important resource in your institution for patient care teams and patients

• Come to CAP ‘12 and see what we have learned…. TOGETHER
Thank you for participating, today!

Reminders:

• Please join the online collaboration group and invite others to join! You will receive an email tomorrow.

• Your feedback is valuable. Please complete the evaluation to be emailed to you shortly.

• Next Service Innovations Series webinars:
  
  June 19
  The Pathologist's Role in the ACO presented by Dr. Conrad Schuerch