Structured Pathology Data: The Importance of Analytics in a Rocky Reimbursement Terrain

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Learning Objectives

• At the conclusion of this session, the participant should be able to:
  – Describe and illustrate multiple elements and parameters in an AP-LIS that are considered part of “structured data”
  – Describe and illustrate how structured data along with standard processes facilitates automation and best practices
  – Discuss the main barriers to the use of structured data
  – Discuss some opportunities in improving the quality of reporting and reimbursement when using structured data
Structured Data: *Elements & Parameters*

- **Single source** data
- **Standardized terminology** in multiple axes (anatomy, procedures, descriptors and diagnoses)
- **Indexing** by hierarchal codes, terminology and codifications
- **Multi-axial coding and links** for concepts and complex relationships
- **Metadata envelopes** for all specimens
- **Standard processes** for various specimen types

...digital proxy of reality

**A FULLY STRUCTURED** system has a controlled vocabulary and inter-related coding/indexing
Standardized Data: Single Source

- The data is in (or referenced from) a single location in the database so that when it is used, it is replicated to other areas via links or via harmonization with a central source.
- This approach means that the data is edited and verified. If it needs to be updated, it can be done once and can be replicated throughout the system.

Standardized data is just the beginning of building a FULLY STRUCTURED system.
Terminology: Fully Standardized

• The use of standardized data harmonizes the communication and analysis of results; but to function in a database, it is best organized in tables to allow the use of rules, indexes and codes for automation.

• This approach means that diagnostic terms and communications are unambiguous and accepted by the medical community at large.

Non-standardized data is used in a FULLY STRUCTURED system as needed for variance.
Standard Terminology: Indexed and Codified

- The **critical classification data** is indexed in ways that facilitate use and codified for interoperability, reimbursement and automation.
- This approach with **proper programming** facilitates the ease of use, process standardization, rules’ implementation and comprehensive auditing.

If designed correctly, a **FULLY STRUCTURED** system is the way to allow detailed audits, safety checks and reasonability logic.
Standard Terminology: *Multi-axial Codes & Links*

- The critical **classification data** needs to be structured in a way to harmonize with the need for “**concepts**” in clinical coding.
- This approach with **proper programming** can facilitate the ease of use, process standardization and **self-education**.

We feel the educational process will need to merge with the everyday work of the pathologist. As knowledge rapidly evolves the LIS has an opportunity to impact every case diagnosis and challenge in laboratory management.
Specimens: Metadata Envelopes

• Structured data should be used to define each specimen which is coupled with standardized structured processes so as to guide the path of each case to completion.

• This approach *maintains the cumulative acquisition of data* about each case during processing *to allow the system to anticipate a user’s and specimen’s needs*.

This is the essence of **AUTOMATION**
Specimens: *Standard Processes*

- A key to consistency is **standardized structured processes** that the system can correlate/integrate with other structured data and rules.
- Automation will allow the **LIS to anticipate what the user might need next in a process**.

We feel the LIS will need to be a “Knowledge Coordination Engine” for laboratory professionals and to aid the Pathologist in participating in the Clinical Care Team for patients and the Best Practices Committee for the health care institution.
A Fully Structured System: ALL Levels

- Structured, codified, standardized datasets
  - Diagnostic datasets
  - Anatomy datasets
  - Procedural datasets
  - Descriptive datasets

- Structured, codified case structure and metadata
  - Case datasets and specimen metadata

- Structured, standardized processes
  - Pre-analytical, analytical and post-analytical

- Structured, standardized report elements/formats

Licensed Codified Content
Structured Data: *Barriers to Use*

- Lack of comprehensive datasets and difficulty in managing (organizing, sorting, updating) large datasets
- Lack of experience with a system based on structured data (AP systems are based on word processors)
- Lack of experience with structured processes
- Inertia, learning curve and the difficulty of changing of habits (dictation, free-formed text use, etc.)
- Computer-based electronic data management often present an uncomfortable interface for more “seasoned” pathologists
Structured Standardized Datasets: Imported Content

- Comprehensive *standardized vocabulary* for diagnostic data (WHO, CAP, Bethesda, SNOMED, ICD and others)
- Ease of use *tools for these datasets* (over 10,000 records)
- High degree of *granular data with complete interoperability coding*.
- Designed to deal with *diagnostic “concepts”* and *concurrent, conflicting data mapping* in multiple coding sets.
- Designed to use *automation logic* within related datasets.
- Designed by someone *who understands informatics, pathology, general medicine, medical research* and *medical education*.

A central, single sourced, standardized terminology is the **CORE** of a **FULLY STRUCTURED** system.
Orchard® Pathology: *Anatomic* Coded Diagnoses

- Unique Orchard **Bi-axial Coding/Indexing** (DX-SITE)
- Highly granular coding + hierarchy for DX
- Highly granular coding + linked code to Anatomic SITE
- Dictionary includes mapping for **SNOMED, ICD-9, & ICD-10**

**DX CODE Prefix** – DX, FN, MG, CY, NG and hidden records SN, SM

**DX CODE Number** – `12345_123456` = Dx_Site Sequence

**DX TEXT** – Diagnosis text `{ICD?-site name}{SNOMED-type [details]}

**Source** – OSCname_MM-DD-YYYY (WHO, ADD, CAP eCC)

**IO Codes** – SNOMED, ICD-9, ICD-10

**Logic** – REPORT ENGINE with sequencing and data calculations

A single sourced, comprehensive codified terminology for **Diagnoses** with interoperability coding.
Orchard Pathology: *Tools for Coded Diagnoses*

- **Auto-navigation** by specimen level metadata to organ system category
- **Coded Diagnosis Test Type** includes ability to display a subset of potential diagnoses and has a sophisticated *Search & Sorting* system
- **REPORT ENGINE** provides a way to have “stacked” datasets with logic and sequencing control to standardize, “structure” and thus, automate these data input processes.

**It is all about the “Apps”, since applications (a form of analytics) will add automation and standardization to improve productivity.**
Orchard Pathology: Other Codified AP Datasets

- Comprehensive Orchard **Anatomic Site table** with SNOMED coding, hierarchy automation and easy selection for Specimen Source configuration (over 3,000 records)

- Comprehensive Orchard **Procedure table** with SNOMED coding and easy selection for Specimen Source configuration (over 500 records)

- Unique Orchard **Modifiers table** with SNOMED coding and easy selection for Specimen Source configuration (laterality and location detail terms)

A central, single sourced, standardized comprehensive codified terminology for **Anatomy, Procedures and Descriptors**
Controlling Process: Case Management

- Correct Vocabulary
- Correct Data Acquisition
- Correct Process
- Correct Documentation/Justifications
- Correct Communications
- Correct Coding
- Complete Audit Trails

Maximum Compliant Reimbursement
Controlling Process: *Facilitating Reimbursement*

- **Billing coding automation/documentation**
  - Ordering/accessioning
  - Ancillary testing
  - PQRS reporting
- **Billing audits**
  - PQRS reporting
- **Billing justification**
  - Ancillary testing
- **Workload Efficiency**

**Maximum Compliant Reimbursement**
Reimbursement Related Issues: Profit & Value

- Throughput (efficiency and TAT)
- Error rates (omission, mistaken data, discordant data, misspelling)
- Consistency (standardized vocabulary, processes and formats)
- Data feed for institutional data repository

Maximum Compliant Reimbursement
Structured Data: *Reimbursement Scenarios*

- “Rules-based” billing, special/ancillary testing “triggers” and reporting elements for charges filed (automation);
- Opportunities for higher reimbursement for “quality reporting” and avoid penalties in 2017 (PQRS);
- Requirements for reports and QA documentation typically required for operations and reimbursement (inspections);
- Data mining that derives from interoperability coding will be emphasized in the near future (institutional value); and
- Special testing implemented for “quality” outcomes need justification data confirming improvement *(examples = p16 for high grade SIL evaluation; various IHC stains for tumor typing).*
Reimbursement Scenario 1

• Rules-based billing
  – Patient visit based versus case/sample based service
  – Test level billing with service triggers
  – Procedures table will allow more automation with more *specific* Specimen Sources

• Special/ancillary testing “triggers”
  – Result evaluation rules
  – Test level billing with service triggers
FNA Clinic with Ultrasound Billing

This scenario has direct patient care, ultrasound testing, FNA processing and diagnostic billing included

- Billing is completed by result evaluation rules with the sequential delivery of services (patient visit, ultrasound, FNA collection) and documentation via the Orchard AP LIS report.
- Diagnostic billing is provided by result evaluation rules with the completion of Coded DX, with QC triggers and special testing triggers for ancillary services.
• **PQRS (Physician Quality Reporting System)**
  - Pathology specific measures are all related to the standardized reporting via terminology or synoptic elements from the CAP Cancer Checklists.
  - The **Coded Diagnosis files and system with the REPORT ENGINE** provide the ability to standardize and automate the AP report process so these are compliant, mandatory, documented and audited.
This scenario has application to all cancer resection specimens:

• Billing is tied to quality service criteria, documented in reports (requiring codes and analytics).

• The **Report Engine** will automate and standardize synoptic reports such that analytics can be automated.

• The Synoptic Datasets are a special “invisible” records that are only seen in the Report Engine interface or the Coded Diagnosis table.
New pathology measures developed by the CAP for 2015
- Lung Cancer (Biopsy/Cytology Specimens)
- Lung Cancer (Resection Specimens)
- Melanoma

Existing pathology PQRS measures
#99-Breast Cancer Resection – pT, pN and histologic grade
#100-Colorectal Cancer Resection - pT, pN and histologic grade
#249-Barrett’s Esophagus – include dysplasia statement
#250-Radical Prostatectomy - pT, pN and Gleason score and margin status statement
#251-Quantitative IHC for HER2 – by ASCO/CAP guidelines
New pathology measures developed by the CAP

- **Lung Cancer (Biopsy/Cytology Specimens) –**
  Specific histologic typing or NSCLC-NOS with explanation

- **Lung Cancer (Resection Specimens) -** pT, pN categories and for non-small cell carcinoma, the histologic type (squamous carcinoma or adenocarcinoma and *NOT NSCLC-NOS*)

- **Melanoma -** pT category and statement on thickness and ulceration and for pT1, mitotic rate
Measure = Cases with features/All cases

Rate of Successful Reporting

Measure #265 - Biopsy Follow-up (Registry Only)

Numerator- Percentage of new patients whose biopsy results have been reviewed and communicated to the referring doctor and patient.

Denominator- All patients undergoing a biopsy
Special testing implemented for “quality”

- need data confirming improvement
- may require specific evaluation sequence and test ordering criteria
- this type of justification will likely increase with more testing that impacts therapy

Examples that could be implemented:
- p16 stain to improve high grade SIL classification
- various IHC stains for tumor typing
Discussion focused on “synoptics” using third party implementation of CAP eCC files

Although this was felt to be largely successful, multiple issues were highlighted

- Inability to prevent updates from reversing local modifications
- Lack of integration with LIS data or functionality
- Lack of logic within synoptic datasets
- Inability to easily manage interface formatting or “illegal” message formats
Other **KEY needs** for an AP system where *structured data will facilitate process/reporting*…

- **Complete reporting** – force specific data
- **Accurate reporting** – force specific terms, provide instruction sets for specific testing, or assure “legal formats”
- **Implementing best practices**
- **Control reflex/ancillary testing**
- **Full documentation for billing**
Orchard Pathology 2015: Fully Structured

- Fully structured, standardized and codified diagnostic and synoptic datasets.
- Datasets fully integrated into LIS with internal logic between dataset elements, the ability to populate already known data and a sophisticated rules engine.
- Developing extensive tools to create and manage process standardization and to drive automation.
- Orchard’s approach of a **Fully Structured Pathology System** avoids all of the stated AP-LIS weaknesses.
Learning Objectives Review

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## Upcoming Training Classes

### 2015 Training Classes

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- **P.A.C.E.® Provider Number:** 526
- **Program Number:** 526-902-15
- **Program Title:** Day 2 Orchard Symposium 2015
- **Speakers:** Nancy Stoker, Dr. Michael Glant, Ginger Wooster, David Bracewell, Beth Eder, Ben Bush, John Wallihan, Jacob Eickhoff, Wendy Forgey, Ryan Howard
- **Contact Hours:** 4
Questions?

Thank you!