Integrating Evidence to Inform Lab Test Selection into a Knowledge Management Framework
Supporting Best Practices

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Disclosure

I and my spouse/partner have no relevant relationships with commercial interests to disclose.
Learning Objectives

After participating in this session the learner should be better able to:

• apply knowledge management approaches to information related to laboratory tests to inform test selection decisions
The Building of A Knowledge Infrastructure

*Bringing all forms of knowledge* (explicit, tacit, and embedded) *together* into a workable and reusable infrastructure is essential to an effective KM model.

Different environments will determine the level of complexity of the KM model:

- **Traditional businesses** in various industries use their knowledge infrastructure to manage resources such as labor, money, and products; most industries are *predictable*
- **Scientific organizations** lack predictability and often deals with *more uncertainty* and complex politics


Knowledge Management: Central Themes

Organizational Learning
- Understanding of all tacit/embedded knowledge within the organization
- Increasing the efficiency and effectiveness of knowledge workers & impacting their ability to communicate and collaborate

Document Management
- Capture explicit knowledge from outside the organization
- Retrieving, organizing, and archiving knowledge for use/reuse
- Communicating best practices

Technology
- Codifying knowledge management into systems
- Creation of tools to facilitate information retrieval, organization, and archiving

VUMC Lab Tests: Expert Guide and Data Repository

Collaborative, up to date knowledgebase

Will provide appropriate access to:

- Basic test information
- Evidence
- Local practice

![Lab Test Table](image_url)
Test Content Details

1,25-Dihydroxyvitamin D Level

**General Information**

- **Name:** 1,25-Dihydroxyvitamin D Level
- **Lifecycle State:** Pending SME Review
- **Date Lab Test Last Updated:** 2018-04-23
- **Synonyms:**

**Relationships**

- **New Lab Relation**
  - **Relation:** 1
  - Related to Vitamin D, Total
  - Related to Vitamin D2/D3 Fractionated

**LOINC Code:**

- 1649-3
Test Content Details (cont.)

**Location**

<table>
<thead>
<tr>
<th>Laboratory:</th>
<th>Laboratory 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Name:</td>
<td>1,25 Dihydroxy Vitamin D</td>
</tr>
<tr>
<td>Available from this laboratory:</td>
<td>Yes</td>
</tr>
<tr>
<td>Able to be Ordered Individually:</td>
<td>Yes</td>
</tr>
<tr>
<td>Orderable Active Indicator:</td>
<td>1</td>
</tr>
</tbody>
</table>

**Methodology**

<table>
<thead>
<tr>
<th>Methodology:</th>
<th>Quantitative Chemiluminescent Immunoassay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Instructions:</td>
<td></td>
</tr>
<tr>
<td>Date Accessed:</td>
<td>2017-04-11</td>
</tr>
</tbody>
</table>

**Turn Around Time**

| Turn Around Time: | 1 day |
List of Performing Laboratories

Resulted Component

Reference Range/Interpretive Information if available

**Resulted Component**

**List of Performing Laboratories**

**Reference Range/Interpretive Information if available**

**List of Performing Laboratories**

**Resulted Component**

**Reference Range/Interpretive Information if available**
Question

There are many sources that provide relevant information on lab testing for patient care decisions and analytics. These sources are internal and external, and refer to testing at different scales and for different purposes. Furthermore, sources are constantly emerging, changing, or being deprecated. To make a fully informed decision, e.g. selection of lab tests to perform or lab tests to restrict to certain clinical scenarios, it is often necessary to consult multiple resources concurrently. How can an institution maximize use of these heterogeneous data sources?

A. Publish a list of approved resources.
B. Negotiate contracts with vendors to present data in institutionally-approved formats.
C. Invest in mechanisms to bring informational resources to the point of care.
D. Bring all applicable data together in a consistent internal format that references each data source.
Answer

A. Publish a list of approved resources.
B. Negotiate contracts with vendors to present data in institutionally-approved formats.
C. Invest in mechanisms to bring informational resources to the point of care.
D. Bring all applicable data together in a consistent internal format that references each data source.

Explanation: (d) is the best option because it allows flexibility in integrating new sources as they become available, provides a single access point, and creates a standard representation users can gain familiarity with. (a) allows a user to have confidence in selected sources, but still places a burden on the user to consult each individually. Among other challenges, (b) precludes the existence of emergent knowledge sources, while (c) is not relevant to acknowledging heterogeneity of data sources.

Evidence Content Details

Evidence facets separate evidence into ACCE model\(^1\)

CKM-curated retrieval of primary literature\(^2-4\)

- Allows clinician to explore literature for themselves
- Provides a resource for institution and clinicians to make responsible decisions

Ongoing maintenance at periodic intervals

- New evidence reviewed and incorporated


Evidence Content Details (cont.)

Comprehensive evidence summary for prioritized facets

- Builds on expert concept searching
- Represent all viewpoints in the literature

Hyperlinked citations

<table>
<thead>
<tr>
<th>Citation</th>
<th>Evidence Title</th>
<th>Clinical Utility</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Evidence Content</th>
<th>Tests with completed curated strategies</th>
<th>Tests with completed Clinical Utility evidence summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>278</td>
<td>558</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total: 836</td>
</tr>
</tbody>
</table>
Local Practice

Derived from authoritative best practices

Consensus decisions from Laboratory Formulary Committee
  • Considers many sources internal and external

Detailed information for each known decision
  • Point in time

At-a-glance summaries for each test
  • Combines all known local decisions affecting that test

B-Type Natriuretic Peptide

General Information

Name: B-Type Natriuretic Peptide
Lifestyle State:
Date Lab Test Last Updated: 2018-02-10
Synonyms: B-type Natriuretic Peptide, BNP, Brain Natriuretic Peptide, Cardiac Biomarkers, Cardiac Markers, Natriuretic Peptides
VUMC Ordering Recommendations (public view): For patients on Entresto (Sacubitril/Valsartan), N-terminal pro B-type natriuretic peptide (NT-proBNP) is the preferred test.
Question

An academic medical center makes evidence-based local practice decisions across multiple content domains on a frequent, recurring basis. New external knowledge, e.g. a new guideline or meta-analysis, is shared through various institutional channels and eventually leads to each institutional decision being made or revised. Documenting this underlying knowledge has the potential to promote adherence and reuse, while simultaneously establishing a basis for crucial ongoing decision maintenance. To maximize efficiency of documentation, the institution should consider which of the following?

A. Creating a shareable document that provides a running tally of all decisions by a decision-making body.
B. Creating a single record of the underlying knowledge and linking it to a unique record of each decision.
C. Selecting a standardized citation format for each publication type.
D. Requiring all committees to use an approved communication channel for official communications.
Answer

A. Creating a shareable document that provides a running tally of all decisions by a decision-making body.

B. Creating a single record of the underlying knowledge and linking it to a unique record of each decision.

C. Selecting a standardized citation format for each publication type.

D. Requiring all committees to use an approved communication channel for official communications.

Explanation: (b) is the best option because this allows the institution to create and maintain the minimum number of records of the knowledge disseminated across the institution and formally links each decision that draws on the same evidence. While (a) shares many of these benefits, it does not allow the institution to clearly draw links and ensure consistency between the decisions from multiple committees/working groups that draw on the same knowledge. (c) and (d) are unrelated to efficiency of knowledge documentation.

Lifecycle

Draft
• Uses best practices to represent all viewpoints

CKM reviewer

Leadership assesses new data and decides next steps (e.g., engages with Subject Matter Expert (SME))

Engaged SME reviewer
• Reassesses data for final editing

Publish
Clinical Support Knowledge Acquisition and Archival Tool (CS-KAAT)

Central portal

Shared access to Labs, Ordersets, and Legacy content
Practical Application of this Session

Knowledge of clinical content includes

• basic properties and build metadata
• organizational strategies and deployment
• underlying evidence

Knowledge from multiple sources can be unified to facilitate decision-making

• organizational level
• point-of-care
Acknowledgments

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Thank you!

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