



Laboratory Panels & Tests Discussions

(a.k.a. Observation Groups verses Atomic Observations)

Requirements



1. Recognise atomic information:
 - To recognise the smallest piece of information that you can sensibly say about a patient.
2. Consistent query paths:
 - Ensure query paths to these can be consistent
3. Same test in different panels:
 - A test should be able to appear in more than one type of panel
4. Simple navigation:
 - It should be as simple as possible for a query to navigate from a Panel to the Test Results

Principles

1. The reference model should be able to support new use cases
2. The reference model should have no healthcare semantics (e.g. Observation)
3. Healthcare semantics should be represented in reference archetypes above the reference model (patterns)



Options

- Option 1: Sections & Entries
- Option 2: Entries & Clusters
- Option 3: Templated 'Uber Model'
- Option 4: Entries with Links
- Option 5: Entries with External Panels
- Option 6: Compound & Atomic Statements

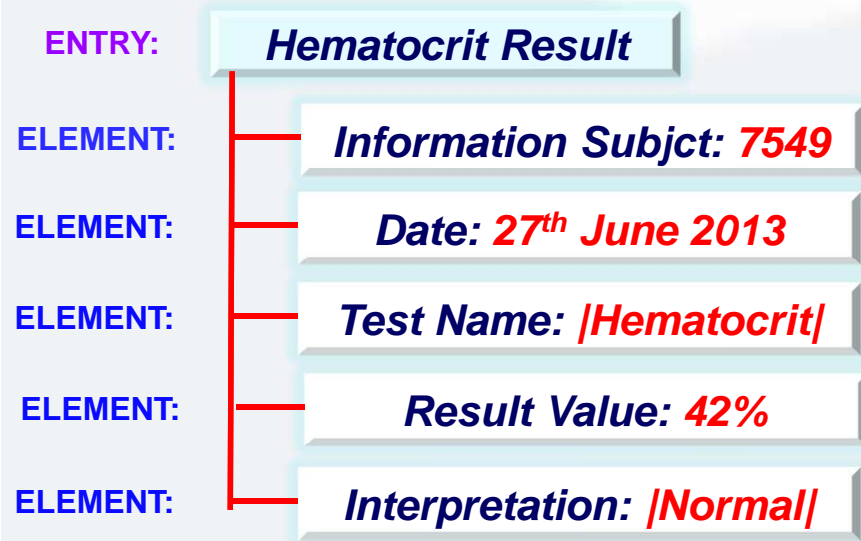


Option 1 – Sections & Entries

A blue stethoscope is positioned in the top right corner of the slide, partially overlapping the dark blue header and the white content area.

- Panels defined using Sections
- Tests defined using Entries
- Panel-level information defined in a separate Entry
- Pros
 - No need to change existing reference model
 - Query path can be consistent (see below)
- Cons
 - Sections are not intended to represent semantics, and this approach does overload sections with semantics
 - Panel information entry will need to be distinguished from Test entries.
 - Need either copy the context into each test or ensure that we can execute a derivation rule to ensure that the query path can remain consistent

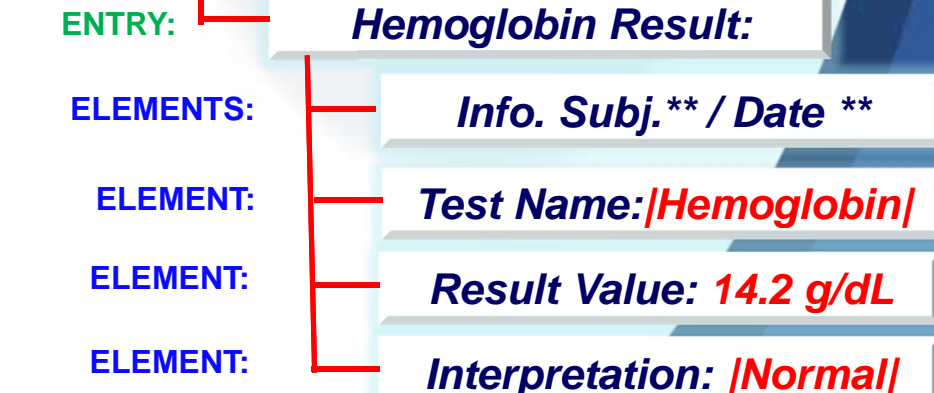
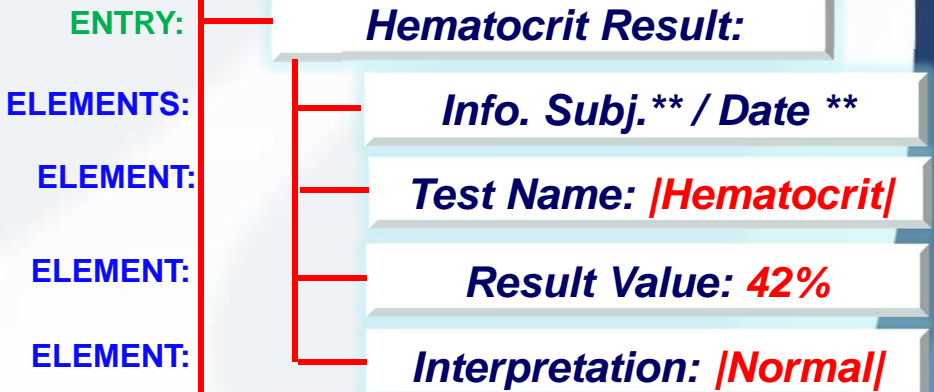
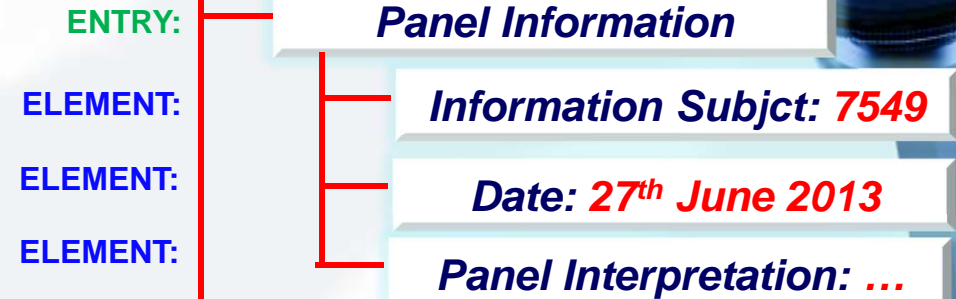
Option 1 – Sections & Entries



Q: List the Date and Result of all Hematocrit Tests for Information Subject 7549.

** : Derived using a rule

SECTION: Complete Blood Count

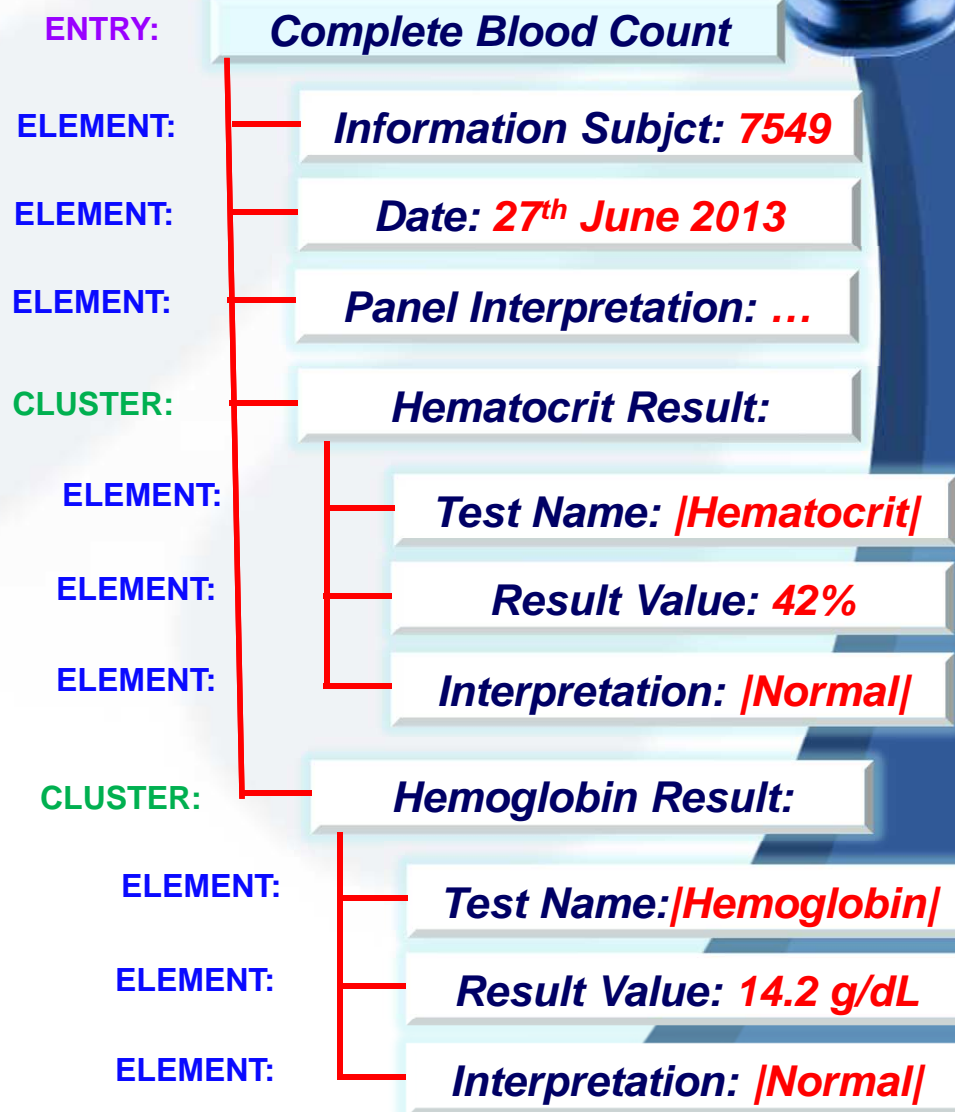
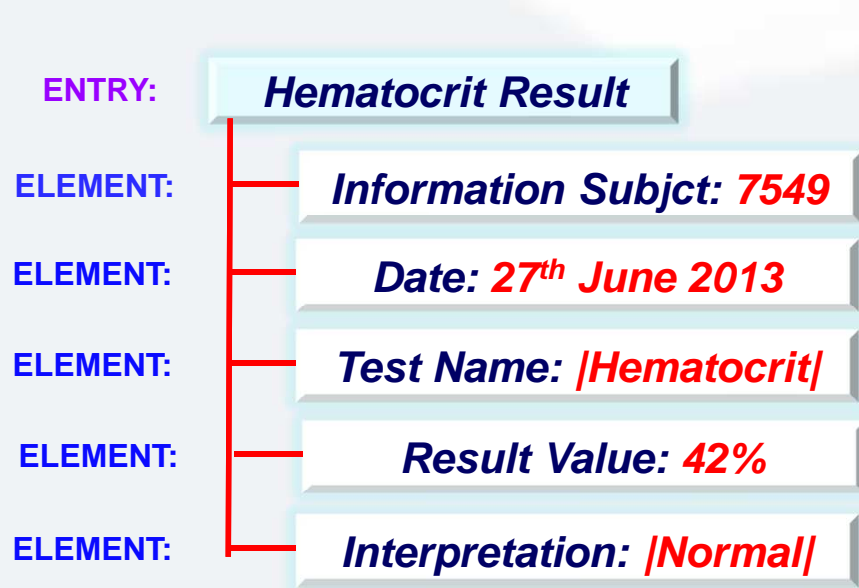


Option 2 – Entries & Clusters



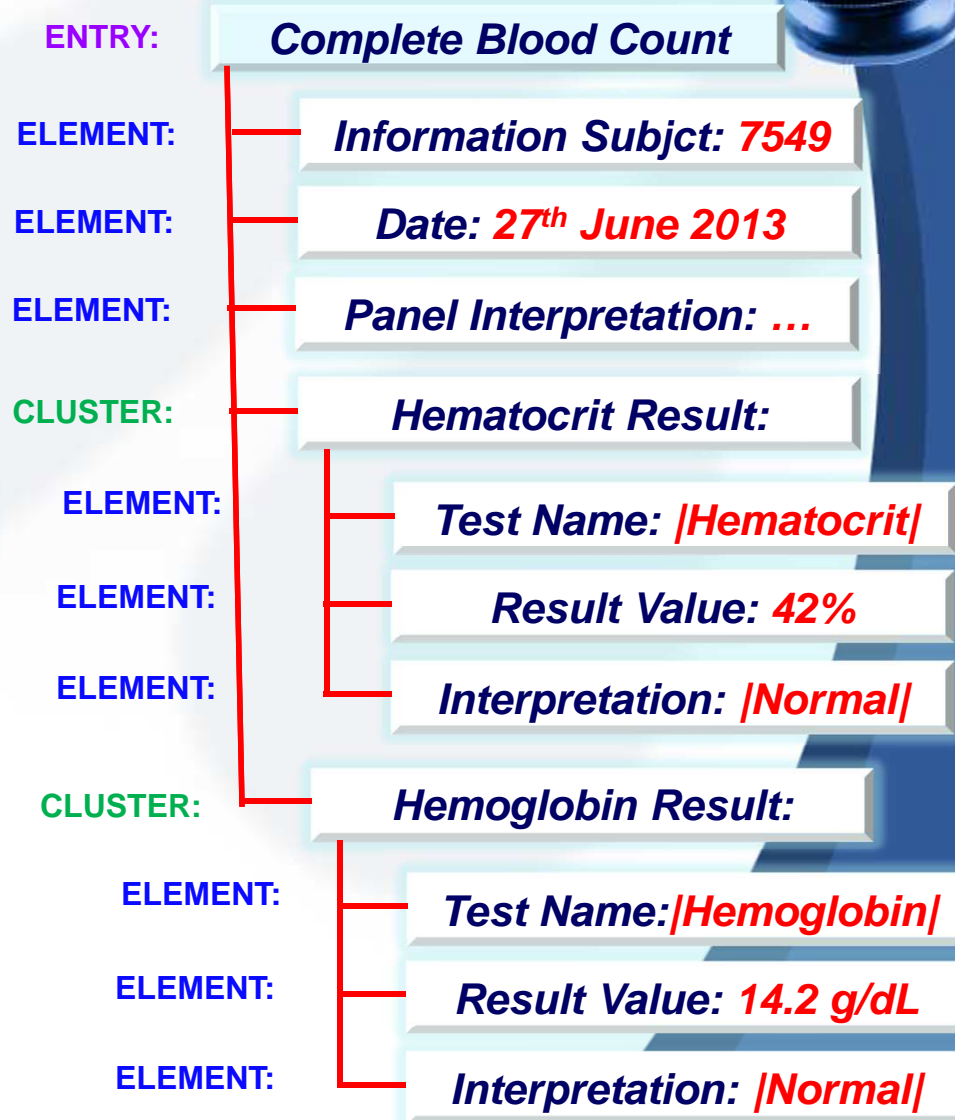
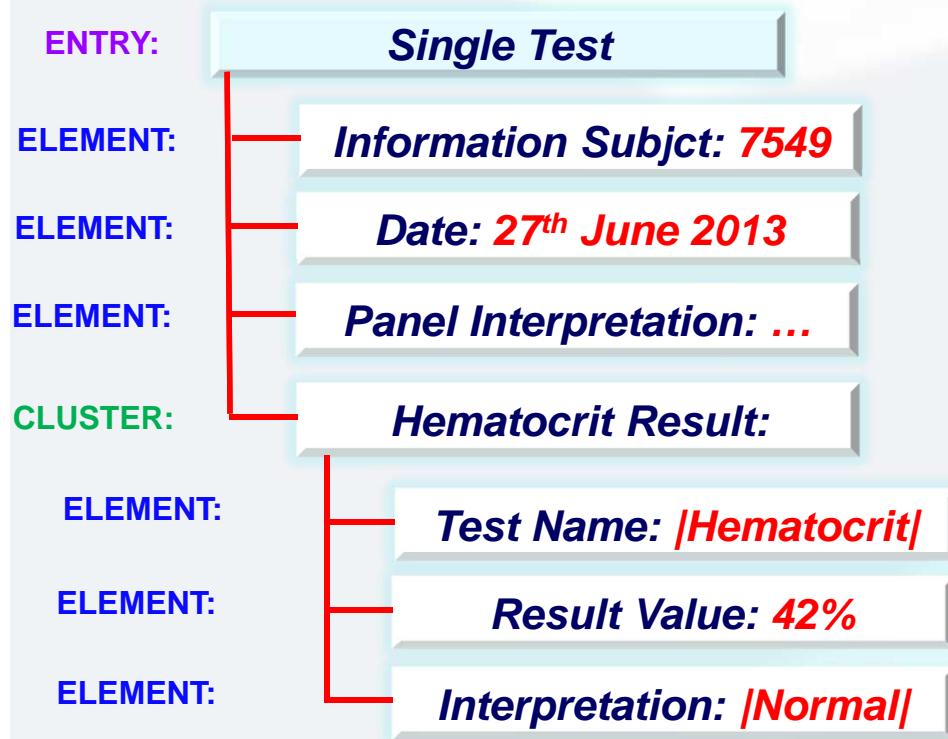
- Panels defined using Entries
- Tests defined using Clusters
- Pros
 - No changes required to reference model
 - Allows arbitrary level of grouping
- Cons
 - Does not recognise atomic pieces of information
 - Query path not stable for a particular type of test

Option 2a – Entries & Clusters

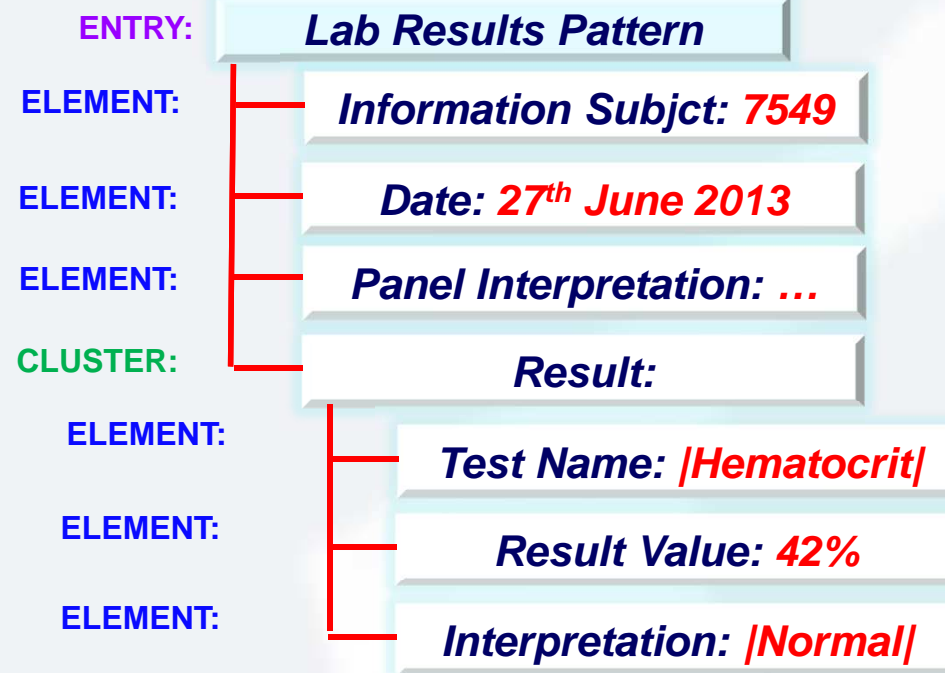


Q: List the Date and Result of all Hematocrit Tests for Information Subject 7549.

Option 2b – Entries & Clusters



Option 2b – Using Lab Results Pattern

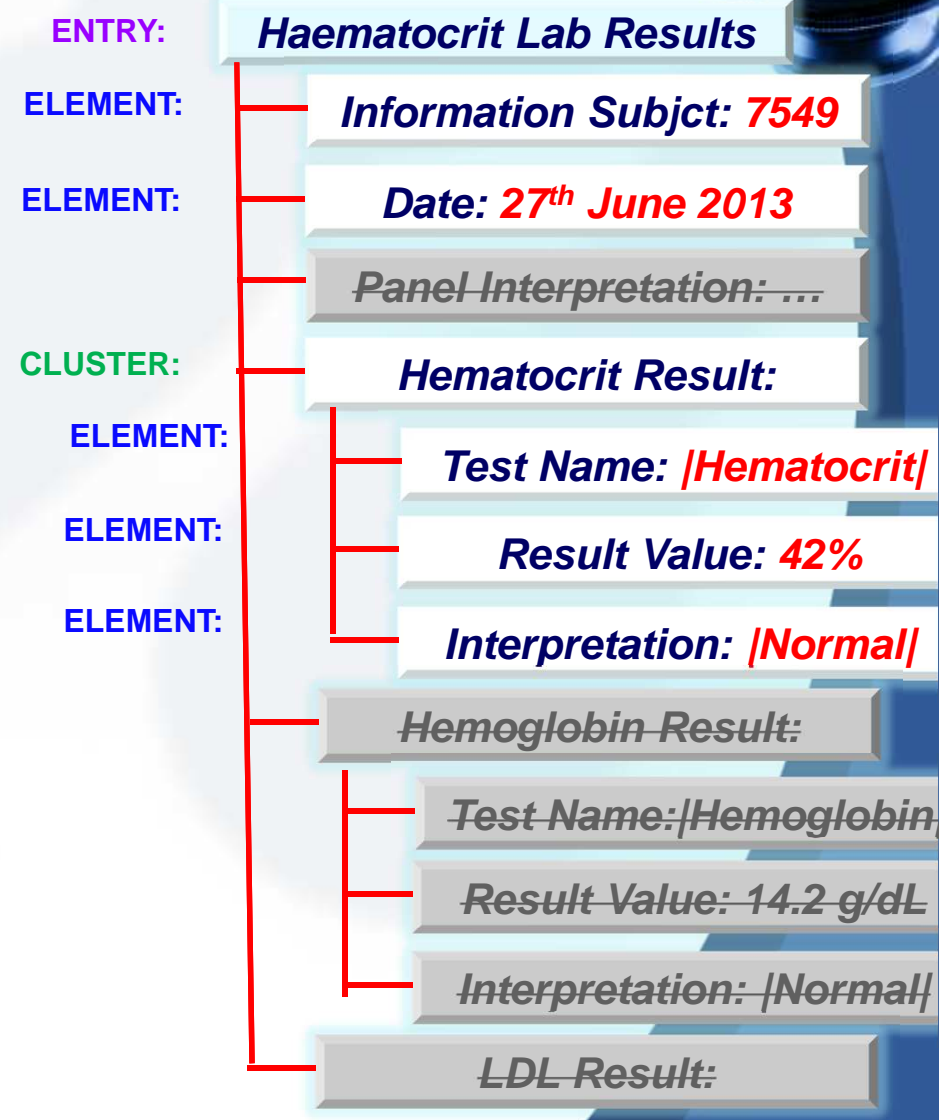
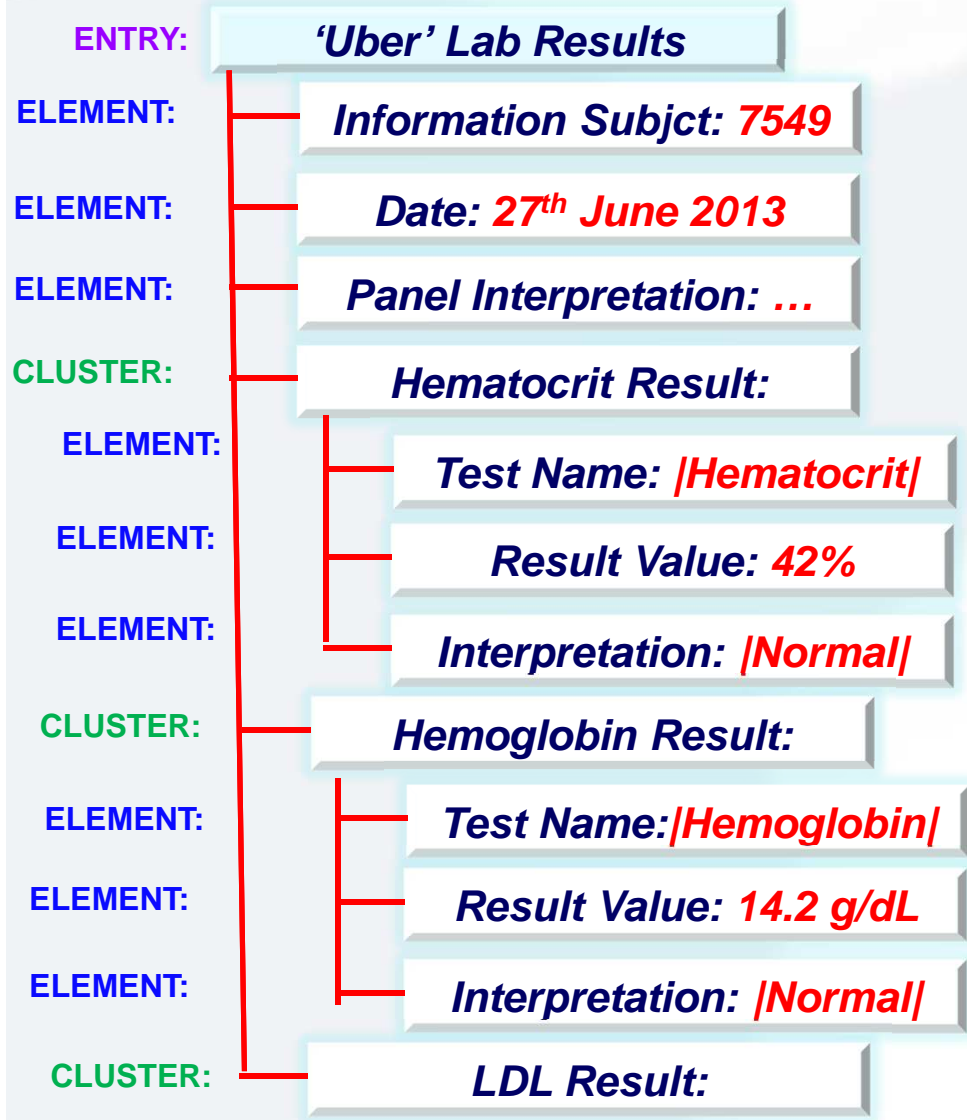


Option 3 – Templated ‘Uber Model’



- Same as Option 2 (Entries & Clusters) – except:
- One Lab Results ‘Uber Model’ is defined, which contains every possible test
- Each Panel is defined as a template (or constraint) on the ‘Uber Model’
- Pros
 - Query paths are stable
- Cons
 - Doesn’t identify smallest piece of queryable information

Option 3 – Templated 'Uber Model'

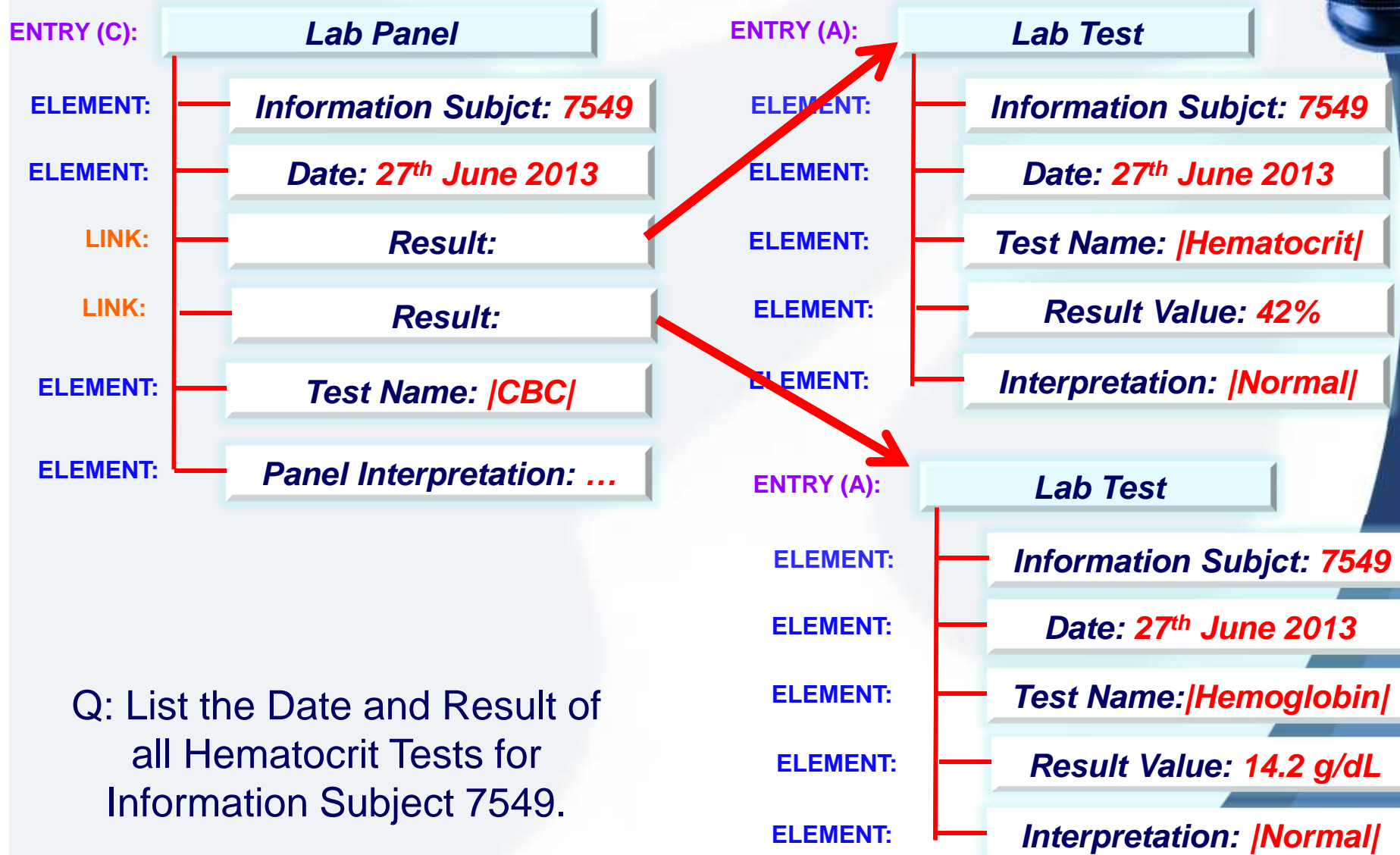


Option 4 – Entries With Links

A blue stethoscope is positioned in the top right corner of the slide, partially overlapping the dark blue header bar. The stethoscope is shown from a slightly elevated angle, with its chest piece and earpieces visible.

- Panels defined using Entries
- Tests defined using Entries
- Panel entry includes links to test entries
- Pros
 - No changes to the reference model
 - Query paths are consistent
 - Tests can stand independently with own context
 - Allows arbitrary levels of groupings
- Cons/Implications
 - Requires queries to navigate links and understand the semantics of the links
 - Need to repeat information in each test entry
 - Are reverse links also required?

Option 4 – Entries With Links



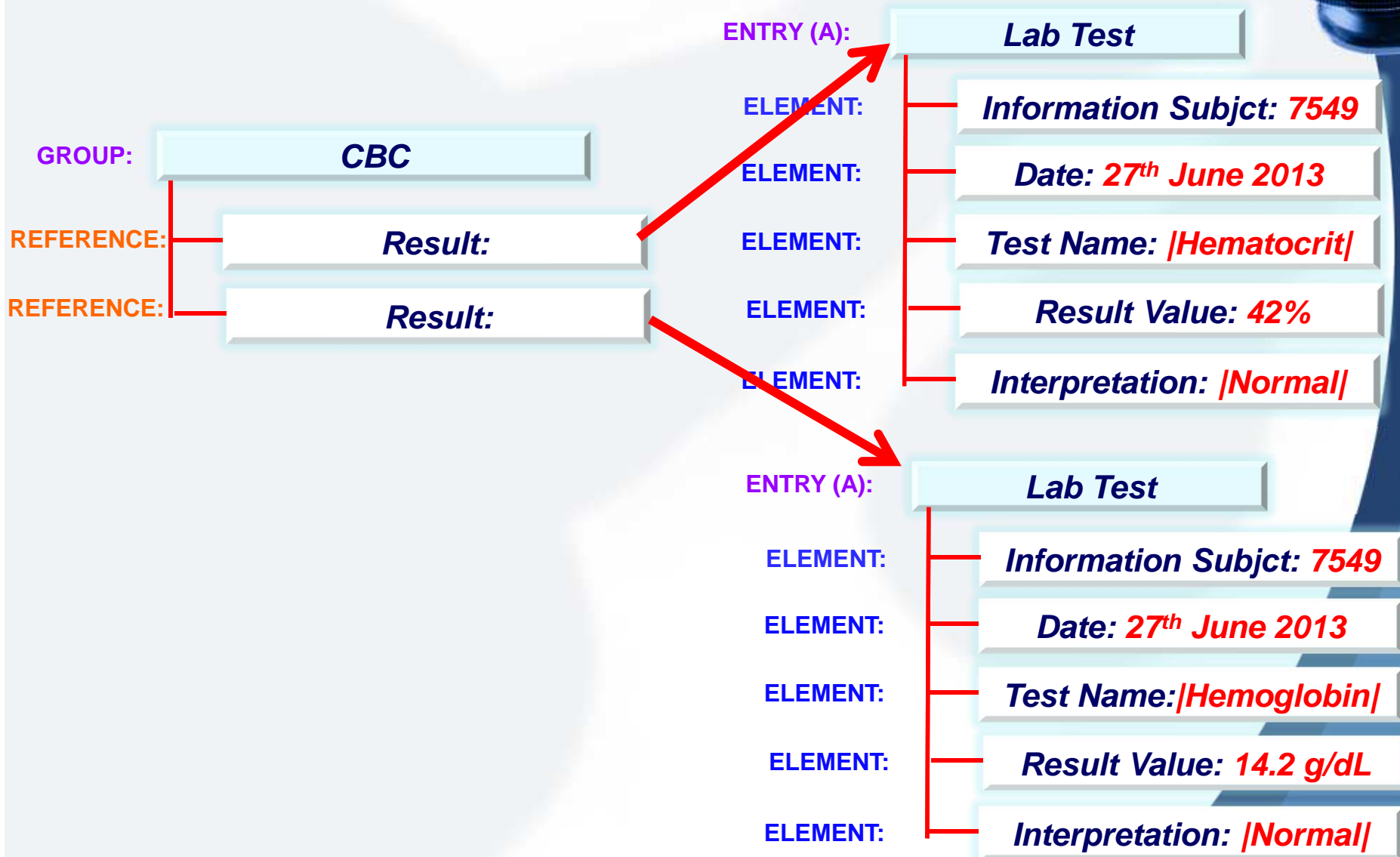
Q: List the Date and Result of all Hematocrit Tests for Information Subject 7549.

Option 5 – Entries With External Panels

A blue stethoscope is positioned in the top right corner of the slide, partially overlapping the dark blue header bar. The background of the slide features a faint, light blue image of a human torso, possibly a chest, which is partially obscured by the stethoscope and the header.

- Same as Option 4 – except:
- Panels defined in an external database, as a set of references to test entries
- Pros
 - Recognises atomic information
- Cons
 - Knowledge is split between the model and the external resource. Knowledge framework is not consistent.
 - No place in model to put information that applies to the whole panel.

Option 5 – Entries With External Panels



Option 6 – Compound & Atomic Statements



- Replace Entry with 2 new reference model classes
 - Compound Statements
 - Used for panels, and may contain data elements, compound statements or atomic statements; Contains shared context.
 - Atomic Statement
 - Used for individual tests, and represent indivisible unit of information about the patient; All context is self-contained or derivable.
- Pros
 - Consistent query paths
 - Identifies indivisible units of information
 - Allows arbitrary levels of nesting
 - Allows context derivation rules to be applied
- Cons / Implications
 - Requires reference model to be changed
 - Requires the implementation to ensure atomic statements are complete, and independently queryable

Option 6 – Compound & Atomic Statements

COMPOUND STATEMENT

Complete Blood Count

ELEMENT: Information Subj: **7549**

ELEMENT: Date: **27th June 2013**

ELEMENT: Panel Interpretation: ...

ATOMICSTATEMENT: Hematocrit Result

ELEMENT: Information Subj:** **7549**

ELEMENT: Date:**: **27th June 2013**

ELEMENT: Test Name: **|Hematocrit|**

ELEMENT: Result Value: **42%**

ELEMENT: Interpretation: **|Normal|**

ATOMICSTATEMENT: Hemoglobin Result

ELEMENT: Information Subj:**: **7549**

ELEMENT: Date:**: **27th June 2013**

ELEMENT: Test Name: **|Hemoglobin|**

ELEMENT: Result Value: **14.2 g/dL**

ELEMENT: Interpretation: **|Normal|**

** : Derived

Summary



Options/Reqmnts	A. Recognise Atomic Information	B. Consistent Query Paths	C. Same Test in Different Panels	D. Simple Navigation
1. Sections & Entries				
2. Entries & Clusters	No	No	Yes	Yes
3. Templated 'Uber Model'				
4. Entries with Links	Yes	Yes	Yes	No
5. Entries with External Panels				
6. Compound & Atomic Stmnts	Yes	Yes	Yes	Yes