

# **Encoding of Guideline II: Clinical Algorithm**

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## **Session objectives:**

To encode a set of recommendations as a clinical algorithm and then execute the clinical algorithm to generate the patient specific recommendations in a testing environment.

## **Workbook: Encoding II- Clinical algorithm**

### **Output from previous session: Encoding I**

- **Documentation**
- **Eligibility criteria**
- **Goals**
- **Patient characterization (Abstractions about patients)**

## **Workbook: Encoding II- Clinical algorithm**

### **I. Patient scenarios**

Reference materials:

- Workshop Consensus
- ATP3 Executive Summary Page 3-5;
- ATP3 At-a-glance steps 2-4
- Previous exercises

**Purpose:** Define scenarios, which are starting points for patient data to traverse the clinical algorithm. Nodes have rule in/rule out criteria to determine trajectory of patient data.

**Directions: Brainstorm scenarios where patient data will enter the clinical algorithm.**

#### **HINTS:**

- You want manageable number of scenarios.
- Scenarios are mutually exclusive, make sure you capture all possible patients states
- Patient data used to define criteria for each scenario has to be reliable
- Categorizing elements for scenarios: drug class (none, statins...), number of drugs, goal achieved?
- Create common pathways in a “simplified” way for maintenance purposes

## Workbook: Encoding II- Clinical algorithm

### Demo clinical algorithm

HINTS about working with Protégé in the diagram form!

- To improve usability increase size of objects.



cursor:

- Click and drag to create link (arrow) between objects
- double click and view form (or use “View” button)

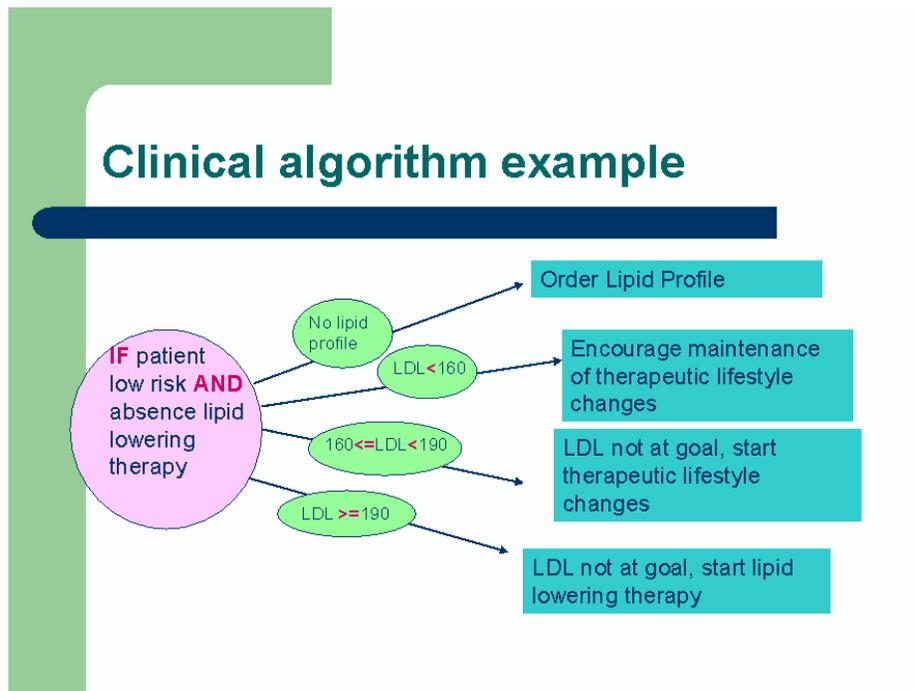


cursor:

- click and drag to move object
- double click in central area to edit display string

### Creating an EON clinical algorithm: Scenario 1

Patient state	criteria	Recommendation
Patient 0-1 risk factors not on lipid lowering therapy with LDL	No lipid profile in past 5 years	Order lipid profile
	LDL ≤ goal	Encourage maintenance of therapeutic lifestyle changes
	Goal < LDL < Threshold for therapy	LDL not at goal, start therapeutic lifestyle changes
	LDL ≥ threshold for drug therapy	LDL not at goal, start lipid lowering therapy

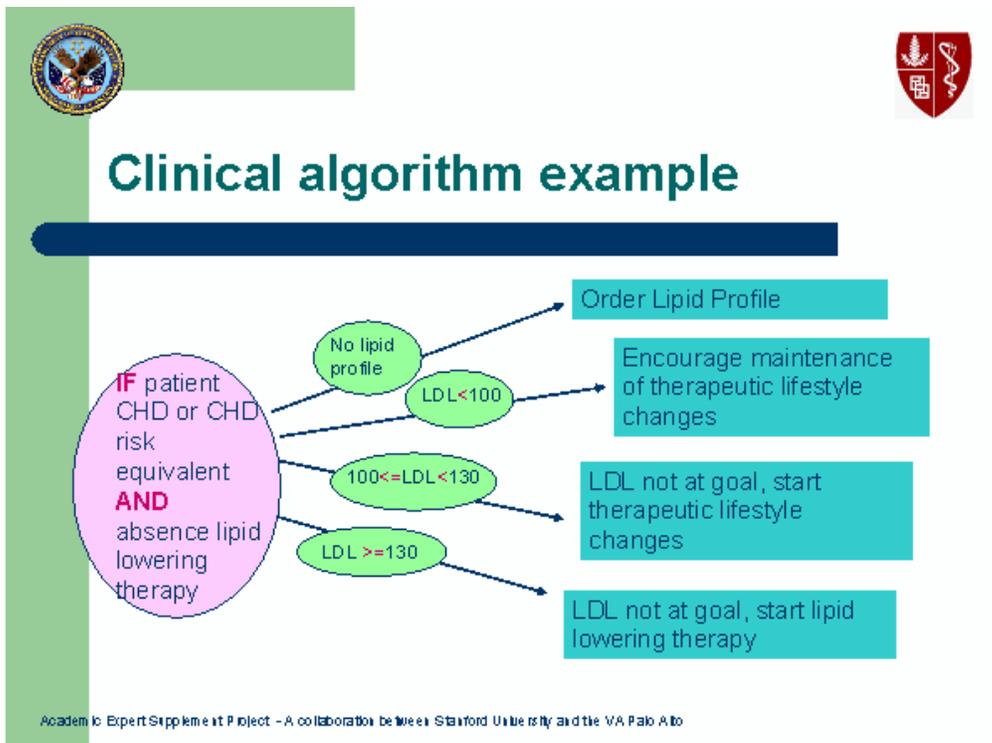


## Workbook: Encoding II- Clinical algorithm

1. Go to Knowledge Acquisition Tab
2. Create a clinical algorithm (click on create)
  - a. Add label: ATP III clinical algorithm
3. Create scenario
  - a. Add label: 0-1 risk factor and no lipid lowering drug
  - b. Rule in N-ary criteria (0-1 risk factor and absence of CHD) AND no drug
  - c. Click New encounter
4. Create Choice-Step
  - a. Add label: Low risk management
  - b. Connect with arrow to scenario
5. Create action choice: No lipid profile
  - a. Add label: No lipid profile
  - b. Add strict rule-in presence criteria “No lipid profile in past 5 years”
  - c. Add action choice message “Order lipid profile”
6. Create action choice: Goal met
  - a. Add label: Goal met
  - b. Add strict rule-in numeric criteria “LDL< 160”
  - c. Add action choice message “Encourage maintenance of therapeutic lifestyle changes”
7. Create action choice: Goal not met- TLC
  - a. Add label: Goal not met- TLC
  - b. Add strict rule-in criteria N-ary “ $160 \leq \text{LDL} < 190$  (threshold for therapy)”
  - c. Add action choice message “LDL not at goal, start therapeutic lifestyle changes”
8. Create action choice: Goal not met- drug therapy
  - a. Add label: Goal not met- drug therapy
  - b. Add strict rule-in numeric criteria “LDL $\geq$ 190”
  - c. Add action choice message “LDL not at goal, start lipid lowering therapy”
9. Test Patient
  - a. Case 1: Add hypertension, no lipid lowering drug, no lipid profile
  - b. Case 2: Add hypertension, no lipid lowering drug, LDL=100
  - c. Case 3: Add hypertension, no lipid lowering drug, LDL=180
  - d. Case 4: Add hypertension, no lipid lowering drug, LDL=200

**Scenario 2:**

Patient state	criteria	Recommendation
CHD or CHD equivalent and NOT on lipid lowering drugs	No lipid profile in past 5 years	Order lipid profile
	LDL <= goal	Encourage maintenance of therapeutic lifestyle changes
	Goal < LDL < Threshold for therapy	Start therapeutic lifestyle changes
	LDL >= threshold for drug therapy	Initiate lipid lowering therapy



1. Create new scenario
  - e. Add Label "CHD or CHD equivalent and NO drugs"
  - f. Rule in N-ary criteria (CHD or CHD risk equivalent) AND no drug
  - g. Click New encounter
2. Create Choice-Step
  - h. Add label "Management High Risk"
  - i. Connect with arrow to scenario
3. Create action choice: **No lipid profile**
  - j. Add label: **No lipid profile**
  - k. Add strict rule-in presence criteria "No lipid profile in past 5 years"

## Workbook: Encoding II- Clinical algorithm

- l. Add action choice “on-screen message”: Order lipid profile
- m. Connect with arrow
4. Create action choice: **Goal met**
  - n. Add label: **Goal met**
  - o. Add strict rule-in numeric criteria “LDL< 160”
  - p. Add action choice “on-screen message”: Encourage maintenance of therapeutic lifestyle changes
  - q. Connect with arrow
5. Create action choice: **Goal not met- TLC**
  - r. Add label: **Goal not met- TLC**
  - s. Add strict rule-in criteria N-ary “160= $\leq$ LDL<190( threshold for therapy)”
  - t. Add action choice message “LDL not at goal, start therapeutic lifestyle changes”
  - u. Connect with arrow
6. Create action choice: **Goal not met- drug therapy**
  - v. Add label: **Goal not met- drug therapy**
  - w. Add strict rule-in numeric criteria “LDL $\geq$ 190”
  - x. Add action choice “on-screen message”: LDL not at goal, start lipid lowering therapy
7. Test Cases
  - a. CHD, no lipid lowering drugs, no lipid profile
  - b. CHD, no lipid lowering drugs, LDL=90
  - c. CHD, no lipid lowering drugs, LDL=110
  - d. CHD, no lipid lowering drugs, LDL=180