Cough models compared

Guideline 1 (Based on the Chronic Cough management guideline. Contains 3 recommendations)
1) Chronic cough is cough that lasts for at least 3 weeks. Chest radiographs should be ordered before any treatment is prescribed in nearly all patients with chronic cough (Grade II-2). Chest radiographs do not have to be routinely obtained before beginning treatment, for presumed PNDS (post nasal drip syndrome) in young nonsmokers, in pregnant women, or before observing the result of discontinuation of an ACE-I (ACE Inhibitor) for 4 weeks for patients who developed cough shortly after beginning to take an ACE-I.

(Note: In this recommendation, please pay attention to the following points:
  a) Please model chronic cough, ordering a chest radiograph, treatment (dimensions 2, 6, 9)
  b) Please model the grade of evidence (dimension 8)
  c) Please model the fact that Chest radiographs do not have to be routinely obtained before beginning treatment. That is, they may or may not be obtained, and both options are valid. (dimension 4)
  d) Please model the criteria: (a) presumed PNDS (post nasal drip syndrome) in young nonsmokers, (b) pregnant women, (c) before observing the result of discontinuation of an ACE-I (Angiotensin-converting Enzyme Inhibitor) for 4 weeks for patients who developed cough shortly after beginning to take an ACE-I. (dimensions 1, 2, 9, 10)

1. Defining chronic cough
EON:
The first scenario, “Unevaluated chronic cough” has the following criterion:
Asbru:
In this scenario the user repeatedly enters whether the patient is currently coughing and the data abstraction unit performs the abstraction of repeated single instances of coughs to the decision whether cough lasts for 3 weeks. This is modeled as an abstracted Boolean parameter based on a directly entered Boolean parameter is-coughing. The circumstances under which the patient is considered to be coughing are subject to the judgment of the physician. The question "Is the patient coughing?" is answered repeatedly by the physician (at her discretion) and as soon as a period of 3 weeks is over, at the beginning of which is-coughing was true (physician clicked yes) and during which there was no instance at which no was entered, the parameter proposition defining has-chronic-cough is fulfilled and the value of that parameter changes from false to true.

We (Andi and Silvia) added a definition of the time period, during which the entered value for the first parameter is considered valid. If someone is coughing today, she need not be coughing next week. On the other hand you do not want to ask her every day during the 3 weeks. So we set the trust-period to 2 weeks, which makes sure, that entering yes once and forgetting about the patient does not automatically set has-chronic-cough three weeks later. Instead the value of is-coughing is set to invalid after two weeks. If the patient would show up again coughing, the first incident is not considered and a new period of three weeks is started. Therefore, the trust-period should not be to short either.

A parameter called is-coughing of type Boolean is defined to have a trust period of 2 weeks. The value of is-coughing is set to false after 2 weeks if no new is-coughing with value yes has occurred since.
A parameter called `has-chronic-cough` of type `Boolean` is defined. `has-chronic-cough` is abstracted from `is-coughing`. `has-chronic-cough` assumes a value of `yes` if `is-coughing` is equal to `yes` for a minimum duration of 3 weeks.

**PROforma:**

The enquiry “Initial Assessment” has the follow post-condition:

\[
\text{Chronic_cough} = \text{if} (\text{Cough_duration} \geq 3, \text{Yes}, \text{No})
\]

i.e., upon completion of the task, the value of the data item “Chronic_cough” is set by the user to ‘Yes’ if the reported duration of the cough is greater or equal to 3 weeks, ‘No’ otherwise.

**PRODIGY:**
The action diagram has a `New_Consultation_Scenario` called “Chronic cough - symptom”. It has the precondition:
cough present 3 weeks ago

Name

cough present 3 weeks ago

User Name

cough present 3 weeks ago

Abstract Term

Presence

Period

3 weeks before today

Assumption If Not Found

assume_false

3 weeks before today (Relative_Time_Interval)

Name

3 weeks before today

Polarity

Before

Time Units

weeks

How Many

3

Granularity

week

Time Point

Now