

## Knowledge Engineers are „Specialists“ ...

... and so are physicians. They just don't understand each other very well.

### Situation:

This knowledge engineer is to process a clinical guideline into a computer executable model; unfortunately he does not understand the medical concepts.

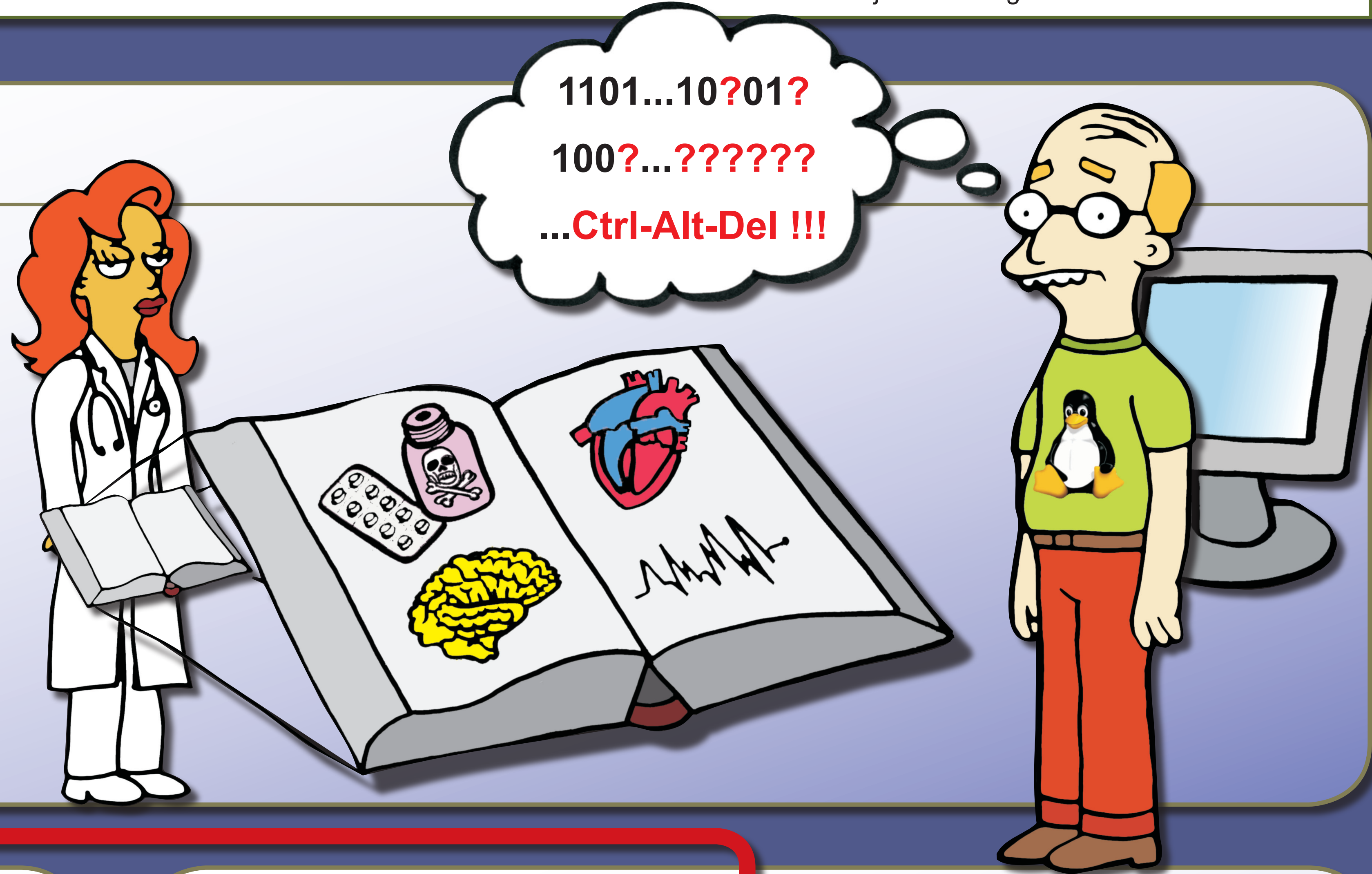
### Help:

The **MMTx** program (a semantic annotation system) creates a mapping of free text to corresponding concepts in the **UMLS** Metathesaurus (the largest thesaurus in the biomedical domain).

### Problems:

- sometimes the mapping is not correct or ambiguous
- the complete reliability of results is crucial
- the MMTx program is hard to handle for physicians who need to confirm or correct the results

### Solution: the **MapFace** editor



## 1 & 2 Generating a Correct Mapping

### Object:

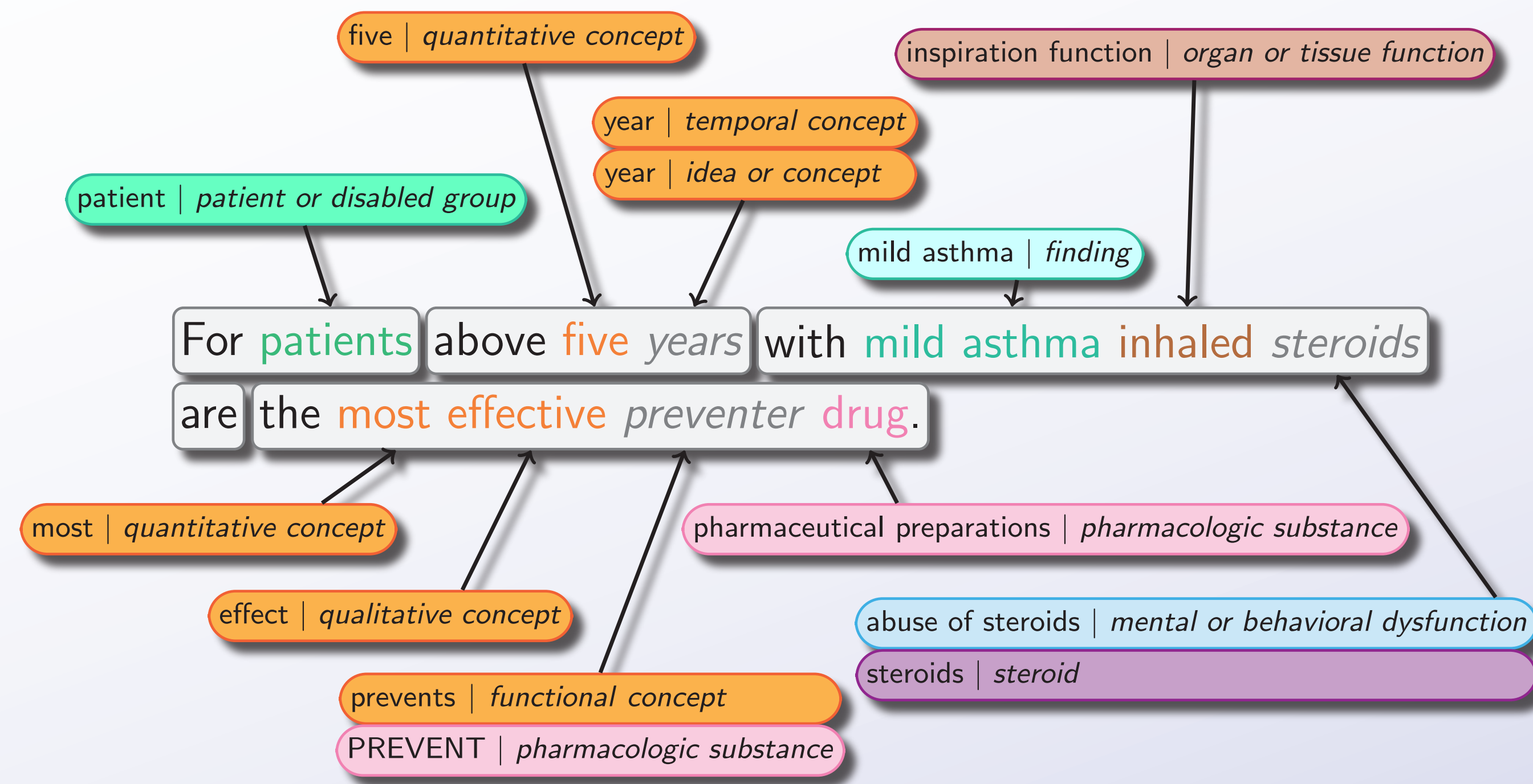
- creating a correct mapping of the text of a clinical guideline to UMLS concepts

### Example:

For patients above five years with mild asthma inhaled steroids are the most effective preventer drug.

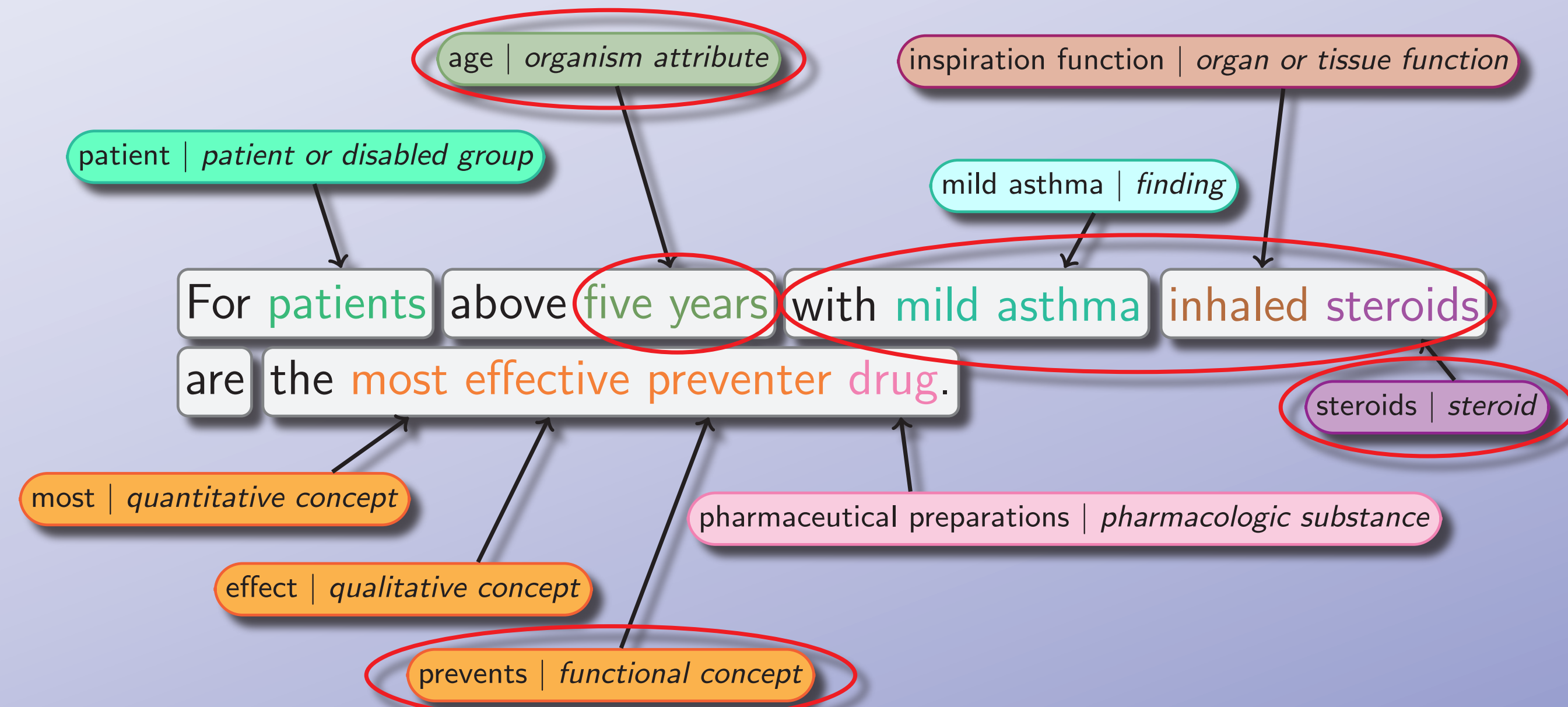
### MMTx:

- tokenizes the sentence into phrase chunks and concept chunks
- maps the medical concepts in the text to corresponding UMLS concepts



### Corrections:

- splitting the phrase chunk „with mild asthma inhaled steroids“
- choosing the correct UMLS concept in ambiguous cases
- merging the two concept chunks „five“ and „years“
- assigning a UMLS concept with the semantic meaning of „age“ to the new chunk



objects:

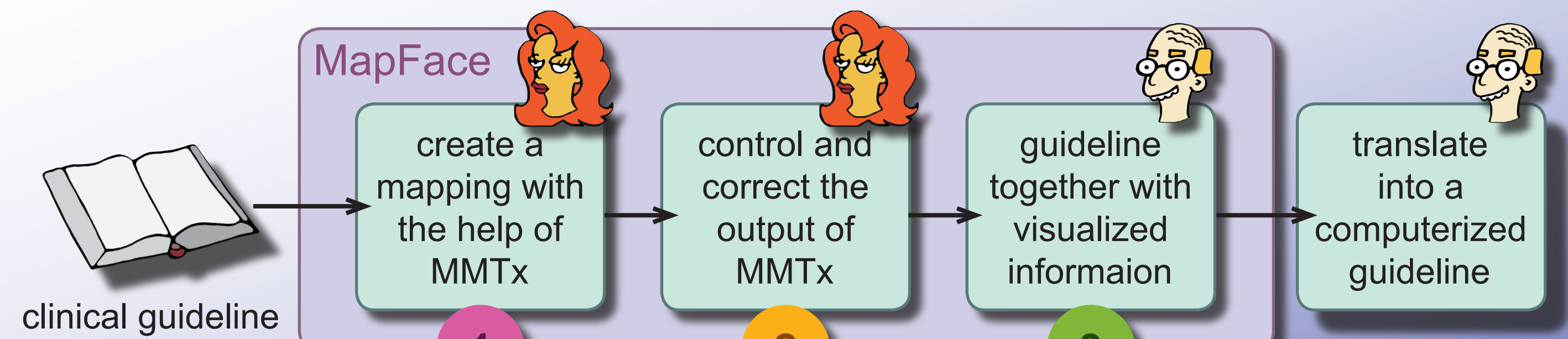
phrase	...phrase chunk
concept   type	...UMLS concept   semantic type
concept	...concept chunk
concept	...concept chunk with ambiguous mapping

semantic collections:

...chemical	...finding
...group	...idea or concept
...organism attribute	...pathologic function
...pharmacologic substance	...physiologic function

## MapFace

- 1 provides an easy way to process a guideline with the help of MMTx
- 2 facilitates the correction of the mapping created by MMTx
- 3 visualizes the resulting information together with the guideline



## 3 Providing Visualized Information

### Object:

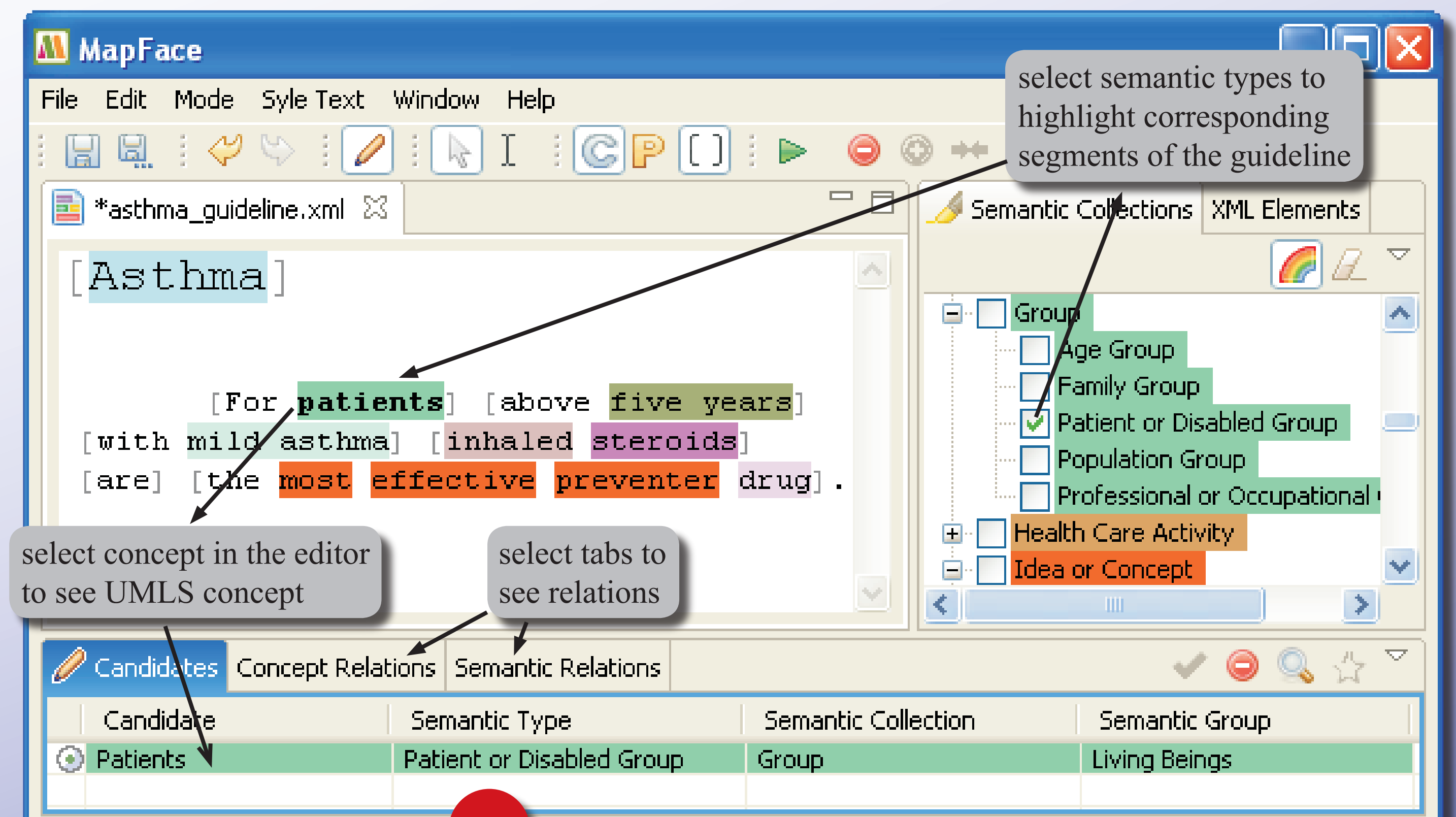
- facilitating the correct interpretation of the guideline

### Available Information:

- the corresponding UMLS concept of each concept of the text,
- semantic type, semantic collection, and semantic group of each concept or phrase
- relations between concepts or phrases

### Enhanced Visualization:

- color-coding of semantic types
- highlighting concepts or phrases accordingly
- highlighting relations between concepts or phrases



## Conclusion

Generating and providing reliable information about the concepts of a medical text, MapFace is a first step towards the realization of a computerized guideline.