

# GEM Cutter II User Guide

Copyright © 2007 Yale Center for Medical Informatics

Developed By:  
*George Michel*  
*and*  
*Richard Shiffman*



## OVERVIEW

The process of extracting knowledge from clinical guidelines so that it can be incorporated into computer programs has been challenging. In an effort to facilitate this process, we have been developing systems to convert guideline knowledge into formats that computers can “understand” and manipulate.

The **G**uideline **E**lements **M**odel (**GEM**) was developed to organize guideline knowledge into such a standardized structure. The first version of GEM was based on a document type definition (DTD), which allows for XML documents to be checked for document validity and format. The most recent version of GEM (GEM II) is based on an XML schema model. The transition from GEM to GEM II has created a need to update the GEM Cutter XML document creation tool.

This version of GEM Cutter (**GEM Cutter II**) facilitates the changes of the new model and adds enhanced platform support and functionality. It is intended to facilitate the transformation of guideline information from textual clinical guidelines into GEM II formatted XML. Thus, GEM II can be displayed and manipulated for a wide variety of purposes including guideline quality assessment, dissemination, and implementation.

## OPERATING ENVIRONMENT

The GEM Cutter II application operates on computers with Java 1.5 or later installed. It has been successfully tested on Mac OS X, Linux, and Windows XP.

## DOWNLOAD AND INSTALLATION

To obtain the most recent version of GEM Cutter II, visit our website

[http://gem.med.yale.edu/GEM\\_CutterII](http://gem.med.yale.edu/GEM_CutterII)

or to download the application directly, point to

[http://mithril.med.yale.edu/GEM\\_CutterII/gemcutterii.zip](http://mithril.med.yale.edu/GEM_CutterII/gemcutterii.zip).

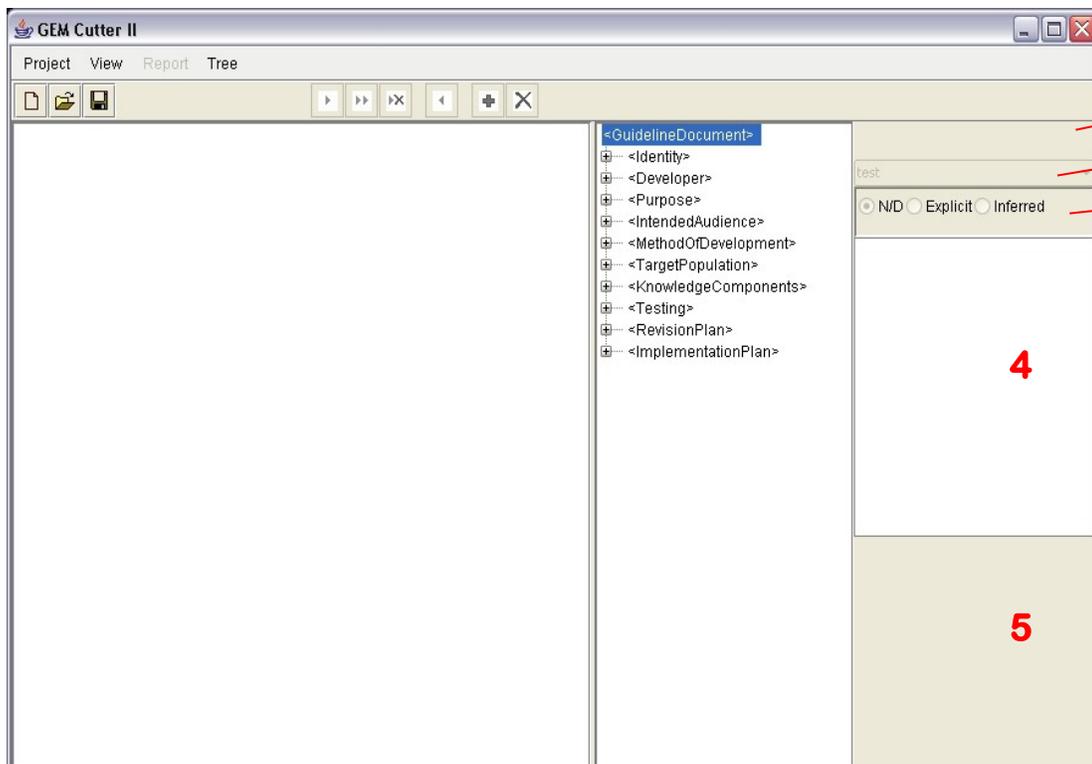
After saving the file **gemcutter2.zip**, you can uncompress the file to a favorite location. The folder, GEMCutterII will be created.

## GETTING STARTED

To markup a guideline, it must be saved in Rich Text Format (RTF), HTML, or plain text. RTF files retain formatting and are generally easier to use.

The GEM Cutter II main window comprises three panels, a menu bar, and button bar. Guideline text is loaded into the leftmost panel. The middle panel contains an expandable tree view of the GEM II hierarchy. The rightmost panel has 5 areas as shown in the figure.

1. **Element Name** - Contains the name of the Element that is currently selected in the tree view
2. Action Type – Dropdown list of action types
3. **Element Source** - Displays the source of the Element that is currently selected in the tree view. The Source value is derived from the manner in which the data was supplied to the GEM document.
  - a. ND - Not Defined
  - b. Inferred - User supplied or modified the text
  - c. Explicit - Copied directly from the Guideline Text Document
4. **Element Text** - Contains the complete text of the element that is currently selected in the tree view. Text can be input directly or edited in this window.
5. **Element Definitions** - Contains the definition of the element that is currently selected in the tree view



The buttons in the button bar are numbered in the figure and defined below



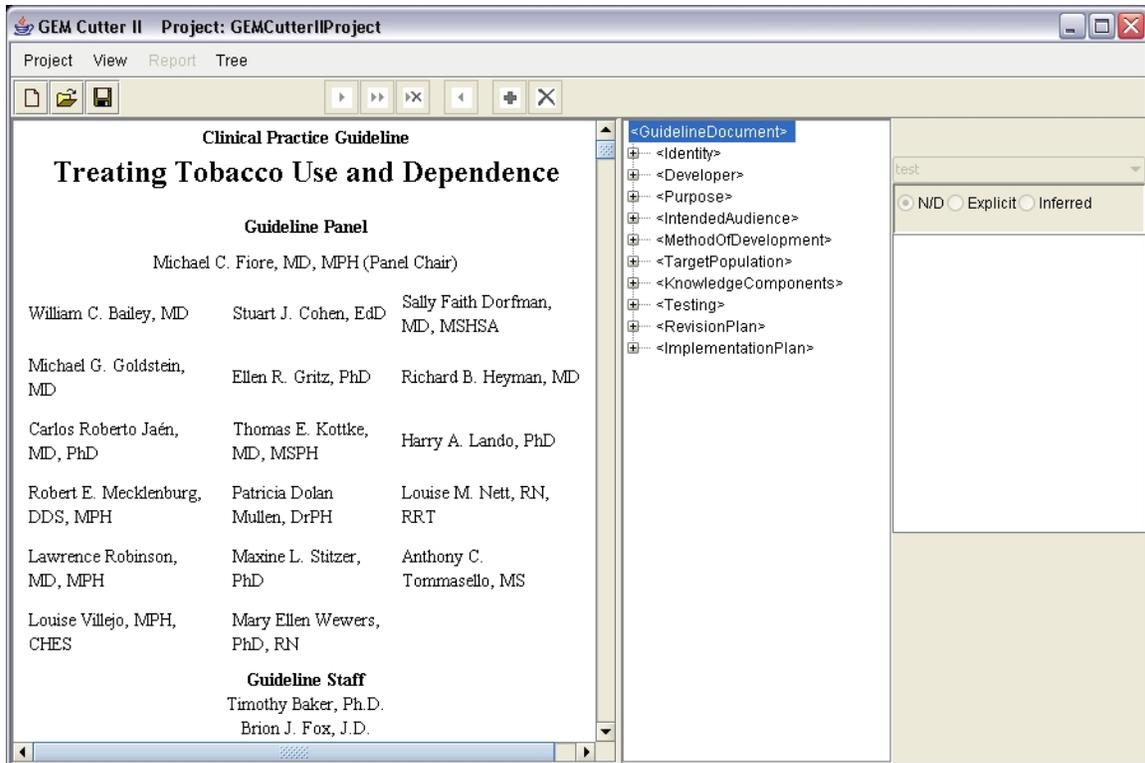
1. New Project – For creating a new GEM document project
2. Open Project – Open an existing GEM document project
3. Save Project – Save a project currently being edited
  
4. Move Text – Selected text is moved into the tree view
5. Append Text – Selected text is added to the existing text in the tree view
6. Overwrite Text – Replaces the existing text in the tree view with the selected text
7. Remove Text – Erases the contents of the element in the tree view
  
8. Clone Tree Element – Makes a copy of the currently selected element in the tree view and its child elements
9. Remove Tree Element – Deletes the currently selected element in the tree view and its child elements

To start using GEM Cutter II, go into the folder named GEMCutterII and double-click on the GemCutterII.jar file. This will launch the application and a screen as shown below will appear.

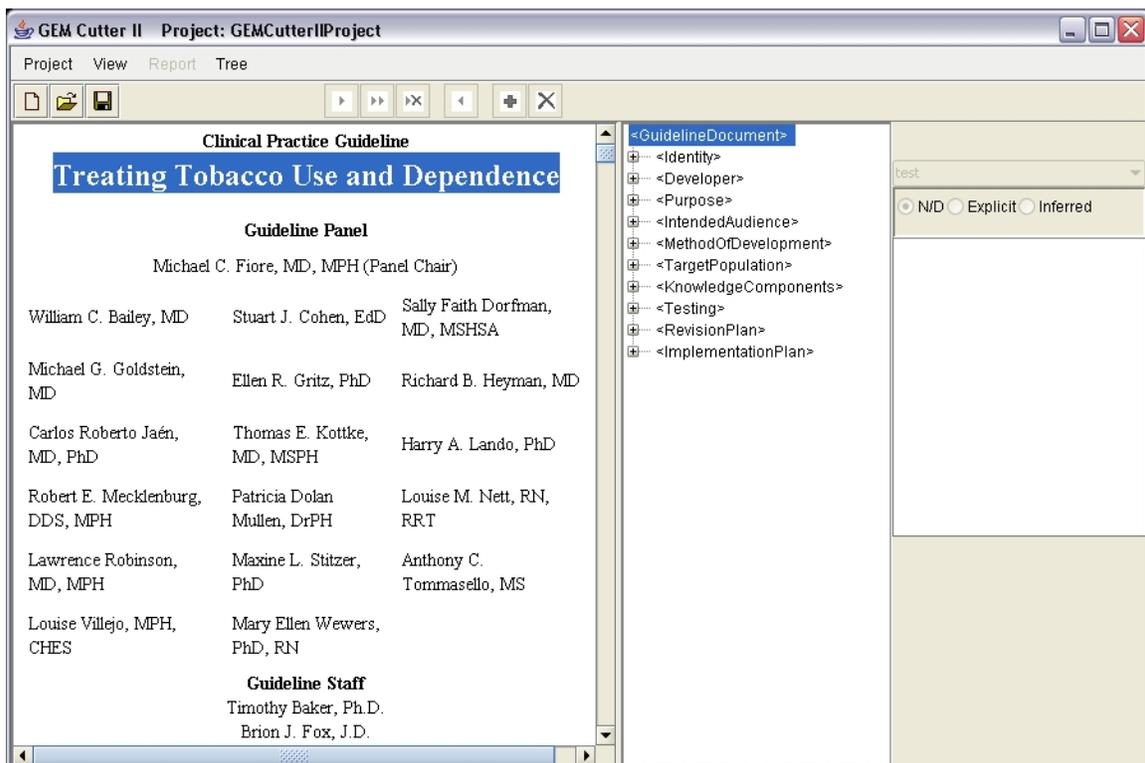
The next step is to start a new project. Select **Project** from the menu bar and then select **New Project**. The dialog screen appears.



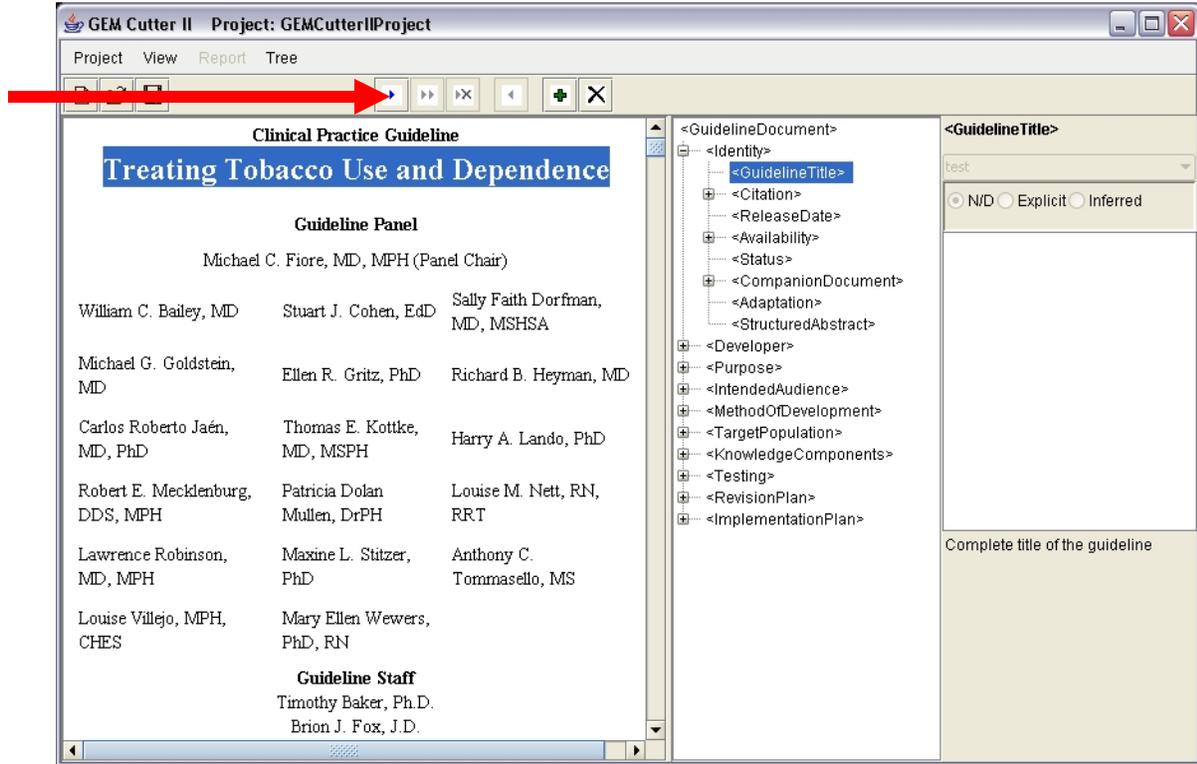
Enter a name for the project. **Do not use spaces in the name.** Use underscore if necessary. Finally, find the guideline text file on your computer by clicking on the button with the ellipsis. This will bring up a file chooser and you can easily navigate to the file on your computer. Click **Create Project** to get started. The screen should then appear as the one below. A folder is created in the GEM Cutter II directory in which the .xml file will be stored.



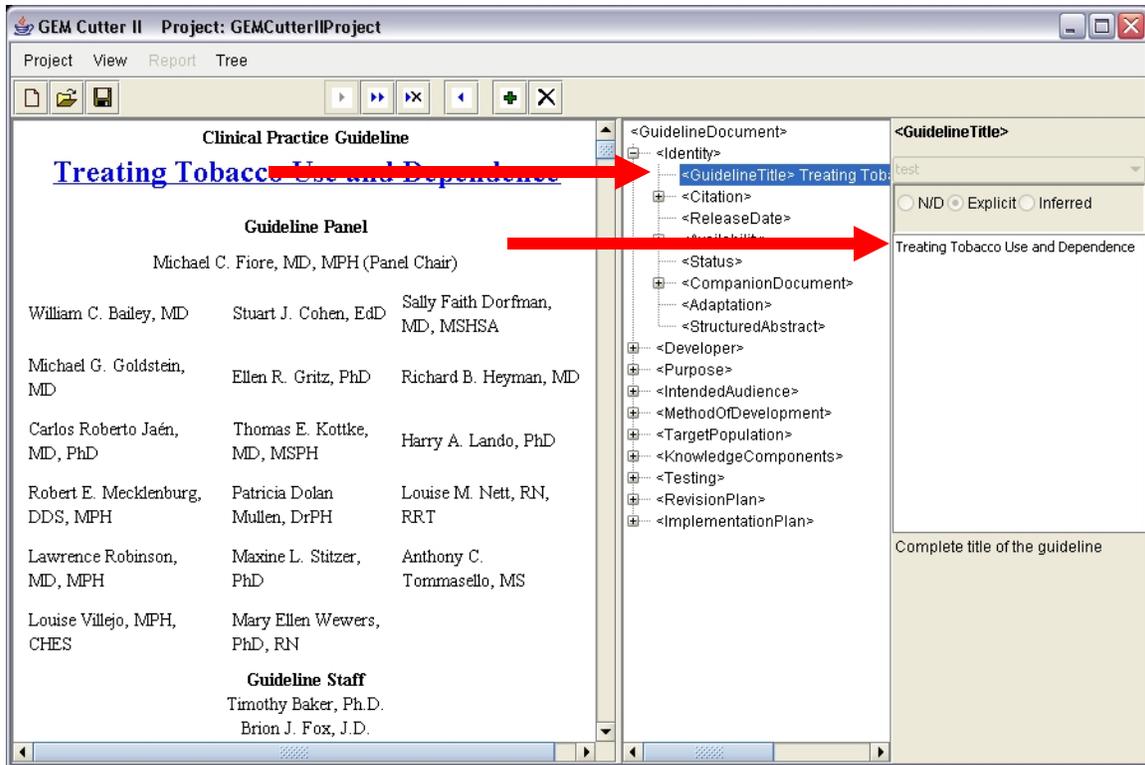
The guideline document is loaded into the panel on the left and the project name appears in the title bar of the application. To get started, select guideline text, e.g., Treating Tobacco Use and Dependence, as shown below:



Next, select the element in the tree view that pertains to this text, e.g., <GuidelineTitle> as shown below:

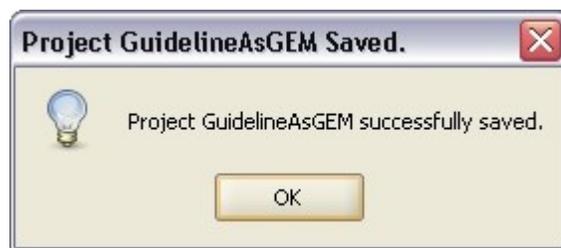


Finally, click on the first arrow button as shown above. The text will be moved into the outline and the text box on the right.



You can edit the text in the text box, if you wish to make changes to the original guideline text. If you choose to edit text, the button above the text box will move to **Inferred**, indicating in the XML document that this text is not the original, but has been modified.

To save the file, select **Project** from the menu bar and select **Save Project**. A screen like the one below should appear:



This action saves the project file as well as the GEM II XML file.

You can continue to markup the guideline in a similar fashion or exit the program.

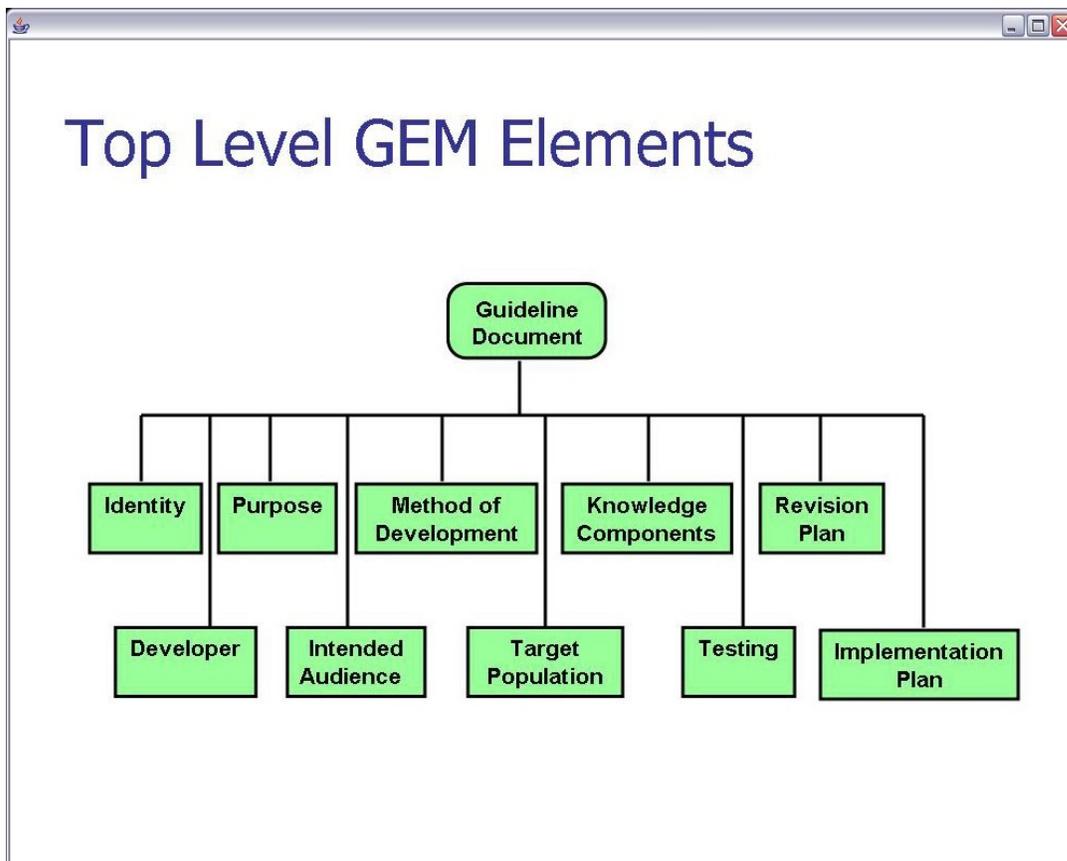
To use the program with a previously created project file, select **Project** and the **Open Project** menu item. The screen below will appear:



Click on the button with the ellipsis and navigate to your existing project folder. Select the file with **.zip** attached to the name of your project and press the **Select** button. (Note: Do **not** go into the subfolder called **projects** of your project folder.) Now select the Open Project button shown above. You should no be able to work on your previously started project.

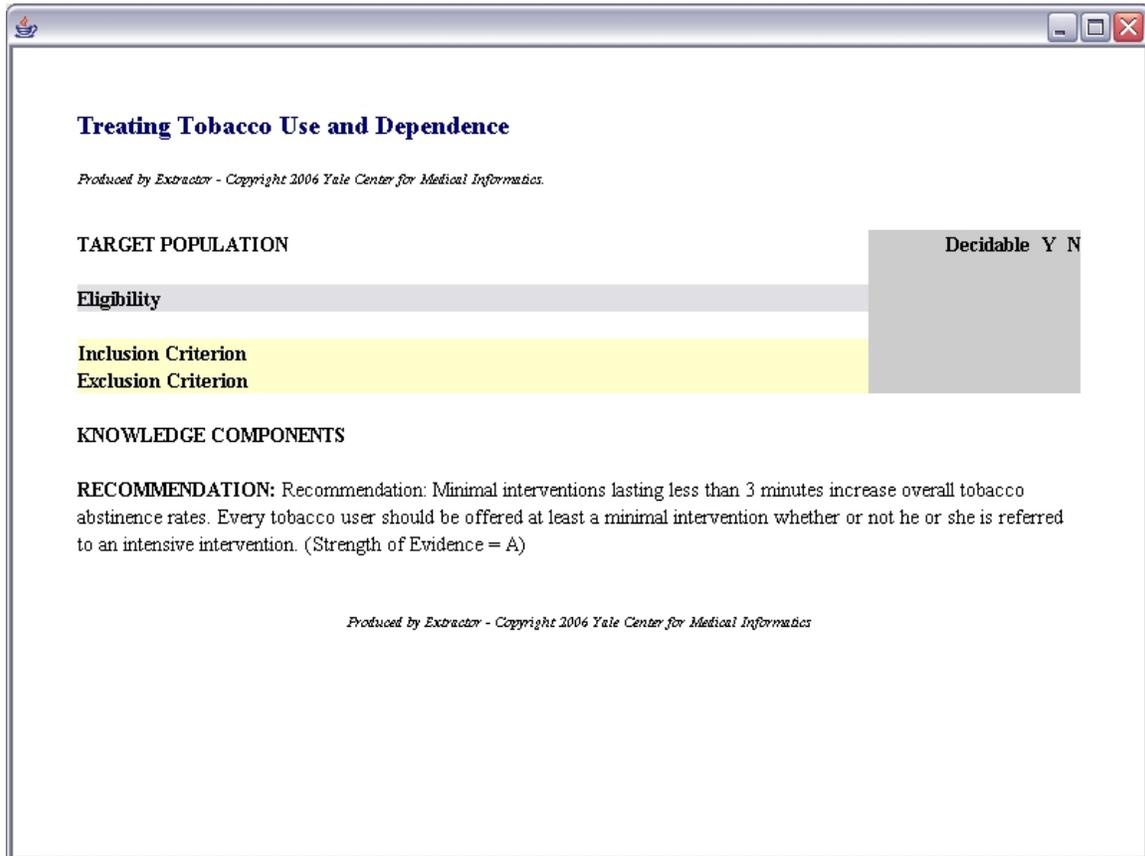
## FEATURES

If you wish to see the GEM hierarchy, you can click on the **View** menu bar item and select **View GEM Hierarchy**. The screen below is displayed:



Selecting any of the squared boxes will drill down the hierarchy to more specific elements in the GEM tree. Select Guideline Document to return to this screen.

The third menu bar item is Report. This item contains three menu choices. The first is **View Extractor Report**. By selecting this view, a screen showing the extracted version of the current GEM document is displayed.



The screenshot shows a web application window with the following content:

### Treating Tobacco Use and Dependence

*Produced by Extractor - Copyright 2006 Yale Center for Medical Informatics.*

TARGET POPULATION	Decidable Y N
Eligibility	
Inclusion Criterion	
Exclusion Criterion	

**KNOWLEDGE COMPONENTS**

**RECOMMENDATION:** Recommendation: Minimal interventions lasting less than 3 minutes increase overall tobacco abstinence rates. Every tobacco user should be offered at least a minimal intervention whether or not he or she is referred to an intensive intervention. (Strength of Evidence = A)

*Produced by Extractor - Copyright 2006 Yale Center for Medical Informatics.*

The second item is **View GEM-COGS Report**. This will show the elements in the current GEM II document that satisfy the COGS checklist. To learn more about COGS, you can visit the web site at <http://gem.med.yale.edu/cogs>.

Clinical Practice Guideline: Sinusitis in Adults	
(1) Overview material	Provide a structured abstract that includes the guideline's release date, status (original, revised, updated), and print and electronic sources.
Release Date	Empty
Status	Empty
Available in Electronic Format	Empty
Available in Print Format	Empty
Bibliographic citation	Empty
Contact Information	Empty
Adapted From Another Guideline	Empty
(2) Focus	Describe the primary disease/condition and intervention/ service/ technology that the guideline addresses. Indicate any alternative preventive, diagnostic or therapeutic interventions that were considered during development.
Primary disease or condition	Empty
Alternative Strategies Available	Empty
Comparable Guideline	Empty
(3) Goal	Describe the goal that following the guideline is expected to achieve, including the rationale for development of a guideline on this topic.

The last item **View XML** will display the current version of the XML file.

```
<?xml version="1.0" encoding="UTF-8"?>
<GuidelineDocument xmlns="http://gem.yale.edu" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://gem.yale.edu gemsc
hema.xsd">
  <Identity source="nd">
    <GuidelineTitle source="explicit">Treating Tobacco Use and Dependence</GuidelineTitle>
    <Citation source="nd">
      <GuidelineLength source="nd"></GuidelineLength>
    </Citation>
    <ReleaseDate source="nd"></ReleaseDate>
    <Availability source="nd">
      <Electronic source="nd"></Electronic>
      <Print source="nd"></Print>
      <Contact source="nd"></Contact>
    </Availability>
    <Status source="nd"></Status>
    <CompanionDocument source="nd">
      <PatientResource source="nd"></PatientResource>
      <QuickReferenceGuide source="nd"></QuickReferenceGuide>
      <TechnicalReport source="nd"></TechnicalReport>
    </CompanionDocument>
    <Adaptation source="nd"></Adaptation>
    <StructuredAbstract source="nd"></StructuredAbstract>
  </Identity>
  <Developer source="nd">
    <DeveloperName source="nd"></DeveloperName>
    <CommitteeName source="nd">
      <CommitteeExpertise source="nd"></CommitteeExpertise>
      <CommitteeMember source="nd">
        <MemberExpertise source="nd"></MemberExpertise>
      </CommitteeMember>
    </CommitteeName>
    <Funding source="nd"></Funding>
    <Endorser source="nd"></Endorser>
    <ComparableGuideline source="nd"></ComparableGuideline>
    <RoleOfSponsor source="nd"></RoleOfSponsor>
    <ConflictOfInterest source="nd"></ConflictOfInterest>
  </Developer>
  <Purpose source="nd">
    <MainFocus source="nd"></MainFocus>
  </Purpose>
</GuidelineDocument>
```

The last menu bar item is **Tree**. The two menu items are **Expand All** and **Collapse All**, which can be used to display all or none of the elements in the GEM tree. If the tree is fully collapsed, double-clicking <GuidelineDocument> will show the ten next level elements.

## DIFFERENCES BETWEEN GEM CUTTER I AND II

Although most of the functionality of the previous version of GEM Cutter has been retained, there are some changes. The panel that displays the guideline text can be in plain text, Rich Text Format (RTF), or HTML. However, not all the functionality of an HTML or RTF file can be displayed, so the simpler the layout, the better the representation. This is a limit of the Java component for displaying these formats.

The size of the guideline text panel can now be changed, which should help in displaying the guideline text.

By selecting a tree element in the middle panel, the cursor will jump to the text that the element contains. If the element is edited (Inferred), the connection may be lost, but for unedited elements, this should make navigating easier.

## FURTHER ASSISTANCE

If you experience problems running the application, you should check to be sure Java 1.5 or later is installed properly. The most recent version can be found at <http://java.sun.com>. If, after installing the latest version of Java, you are still experiencing problems getting the program to run or problems while running the program, please contact George Michel at [george.michel@yale.edu](mailto:george.michel@yale.edu) for help. Please include some basic platform information, such as Operating System and version of Java installed, along with a detailed description of the trouble you are experiencing.