Review Manager 5.2 Tutorial

for Diagnostic test accuracy reviews

September 2012

Welcome to the RevMan Diagnostic test accuracy (DTA) Tutorial. This tutorial is designed to give Cochrane review authors an introduction to the process of writing a Cochrane systematic review of the accuracy of diagnostic tests using RevMan.

The tutorial does not provide all the information necessary to write a Cochrane DTA review, and does not address other types of Cochrane systematic reviews such as reviews of intervention studies or overviews of reviews. For detailed instructions on how to conduct a Cochrane DTA review, please refer to the *Cochrane Handbook for Diagnostic Test Accuracy Reviews*, available from the following website http://srdta.cochrane.org.

Later parts of this tutorial rely on activities completed in the earlier sections, so we recommend you start working from the beginning. If you would like to skip ahead, click on the section you would like to read in the Contents list. The approximate time needed to complete this tutorial will be about three to four hours.

If you have technical questions regarding RevMan software, please contact the Cochrane Information Management System team at ims.cochrane.org.net/revman. Other questions related to preparing protocols or reviews in RevMan should be directed to the relevant Cochrane Review Group.

About this tutorial

The tutorial for Cochrane diagnostic test accuracy reviews in RevMan 5 was developed by Mariska Leeflang in 2010, with assistance from the Australasian Cochrane Centre and the UK and Continental European Support Unit for diagnostic test accuracy reviews, and with funding from The Cochrane Collaboration Steering Group. The tutorial was revised in February 2011 to incorporate new features of RevMan 5.1 and in September 2012 for new features of RevMan 5.2. Please note that the results reported in this tutorial are fictional and were created by the authors for teaching purposes only.

Note about using mouse right-clicks

Many of the functions in RevMan that involve **selecting a button** on the *outline pane* toolbar can also be achieved by **right-clicking** the sub-headings in the *outline pane* and selecting the function from the drop-down list.

PART 1 – Getting started

Opening your review

All Cochrane reviews are stored in Archie, The Cochrane Collaboration's central server for managing documents and contacts details. When you have registered a review with a Cochrane Review Group, they will set up a user account for you in Archie. To work on your review, you will need to find your review online in Archie and check it out into RevMan using the **My Reviews** 🏠 button on the toolbar. Doing this opens a new window which provides information on the location of your reviews and what the next task for your review is. In this window you can check a review out by selecting the title and pressing the **Check Out** ⬇ button.

Before going ahead it is important to make sure that RevMan is currently in 'Standard' mode rather than 'Non-Cochrane' mode. 'Non-Cochrane' mode is a preference that allows users to specify that they are using RevMan to author reviews that will not be published in *The Cochrane Library*. In 'Non-Cochrane' mode, all Cochrane-specific functions like check in/out and connection settings to Archie are absent from the interface. To complete this tutorial you need to be in 'Standard' RevMan mode.

1. From **Tools** menu on the toolbar, select **Preferences** which will open the **Preferences** window**.**
2. Under **User mode** on the **General** tab, confirm that the **Non-Cochrane mode** option is NOT checked.
3. If the **Non-Cochrane mode** option is checked, uncheck it and press **OK**. A warning will appear indicating that "Not all changes may take effect until you restart the program". Click **OK**, and **Exit** out of RevMan and restart it.
4. If the **Non-Cochrane mode** option is NOT checked, simply click **OK**.

For this tutorial we will use a sample review called 'Laboratory tests for caffeine addiction in PhD students'. Instead of checking the review out of Archie, it has been provided as an additional file with RevMan 5.2.

1. From the **File** menu, select **Open**, or click the **Open** button 📂 on the toolbar.
2. Find the folder where RevMan was installed on your computer. If you are using Windows and accepted the default installation location, this will be **C:\\Program Files\Review Manager 5**. If you are using Mac OS or Linux, the tutorial files are copied to a subfolder of your home directory named 'RevMan tutorial'.
3. Open the **doc** folder, and then the **tutorial** folder.
4. Select the file 'Laboratory tests for caffeine addiction in PhD students.rm5'.
5. Click **Open**.

Note: It is possible to create a new review in RevMan by selecting **New** from the **File** menu, or clicking the **New** button 🗋 on the toolbar. Be aware that if you create a review yourself, you cannot check it into Archie or use it for publication in *The Cochrane Library*.


Setting up user details

If you will be using RevMan regularly on the same computer, you may wish to enter your user details (such as your name). RevMan will attach these user details to any editing done using track changes so that co-authors and editors can easily identify who has made the changes. Open your user details by selecting **Preferences** from the **Tools** menu. Enter your name directly or click **Choose** to find your details in Archie.
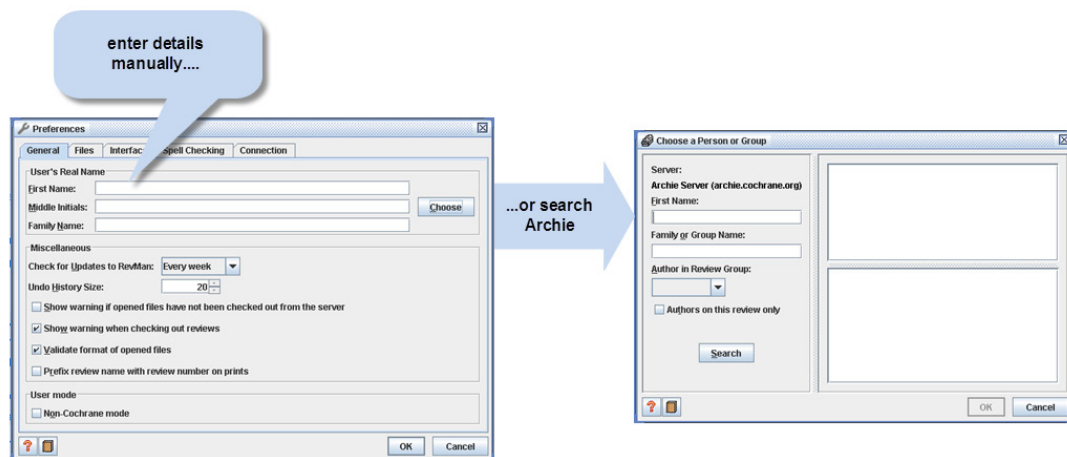
Note: You will need to set up RevMan access to Archie via the internet. In the **Preferences** window, open the **Connection** tab. Click the **Wizard** button to set up your connection, or enter your Archie user name and password directly and click the **Test** button to check the connection. You may need to enter proxy server details. Consult the RevMan 5.2 Help or your local IT support for more information.

The RevMan 5.2 interface

When a review is open in RevMan 5.2, you will see there are two separate window panes that interact with each other as you navigate through the different sections of a review. The pane on the left hand side shows the outline of a review. This is referred to as the *outline pane*. The area on the right hand side shows all the information contained in a review. This is referred to as the *content pane*. The *content pane* will usually show the text of your review, but can also contain additional tabs for results, figures, etc.
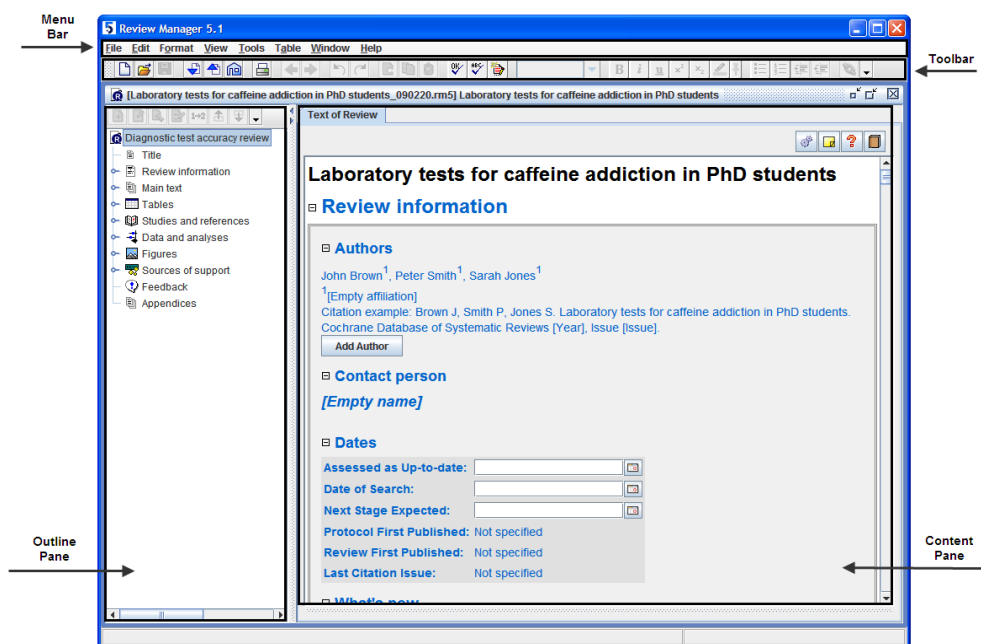
In the *outline pane*, you can use the key icon ⚷ next to each heading to expand and collapse subheadings. In the *content pane*, use the ⊞ symbol.

RevMan allows you to change the appearance of the interface by selecting **Preferences** from the **Tools** menu and going to the **Interface** tab. The default **Look and Feel** of the interface is **Metal**. All screen captures presented in this tutorial display the **Metal** look and feel. It is also possible to set language and spelling options in the **Preferences** window.

By default, your new review is at the **protocol stage**, indicating that you are planning the methods for a review. Sections of a review that are not required at the protocol stage (but will be needed later for your completed review) appear as inactive (light grey) in both the *outline pane* and the *content pane.*

Note: You can tell the stage of a review by looking for the protocol 🄿 or review 🅁 icon at the top left of the *outline pane*.

When you undertake a Cochrane review, the protocol must be completed and submitted for publication before moving on to the review stage. For this tutorial, to convert the file from the protocol stage to review stage, use the following directions:

1. Click the **Properties** button 🛠 in the top-right of the *content pane*.
2. In the **Properties** window, select the **General** tab.
3. Note the automatically generated **Version Number** – this number will change each time the review is checked into Archie. Note that you do not need a separate **Review Number** unless your Review Group provides one.
4. Enter the **Version Description** 'First draft'. When choosing a version description, make sure it is brief and clearly indicates what's different about this draft, e.g. 'Edited by [your initials]' or 'Methods section complete'.

5. For the **Stage**, select **Full Review**.
6. Click **OK**. Note that all of the section headings of the review are now activated for inclusion (there are no light grey section headings).

Saving a review

When you have finished working on a review from Archie, we recommend that you always save the review by checking it back into Archie using the Check In button on the toolbar. This ensures the most recent version of your review is safely stored and can always be accessed from Archie by your co-authors and editors.

We recommend that you **do not** keep saved reviews on your computer, to avoid confusion with different versions. Be careful not to use a version of your review from your computer if a more recent version is available in Archie. If for some reason you do need to save a review to your computer, such as this tutorial review which is not from Archie, go to the **File** menu and select **Save As**, or click the **Save** button on the toolbar. You can open a saved review by going to the **File** menu and selecting **Open**, or clicking the **Open** button on the toolbar.

RevMan also creates automatic backups of your review. See the **Help** menu for information on retrieving a backup file.

Adding authors to a review

For a real review, your Review Group will add your name as an author of the review when they create the file, along with any known co-authors. You may wish to add additional authors later.

There are two ways to add authors to a review:

- **Add an author based on their record in Archie** – this option allows you to add authors who are already listed in the Archie database. You will need to have internet access and an Archie user account for this option.
- **Add a local record (name only) that can be linked to Archie later** – this option allows you to add authors that are not yet listed in Archie.

1. In the *content pane*, click the ⊞ icon next to the **Review information** heading to show further subheadings.
2. Click the ⊞ icon to open the **Authors** section. Note that three authors have already been added to this review.
3. In the *outline pane*, click the key icon ⚷ next to **Review information**.
4. Select the **Authors** heading.
5. Click the **Add Author** button on the *outline pane* toolbar to open the **New Author Wizard**.
6. Select **Add a local record (name only) that can be linked to Archie later**. Click **Next.**
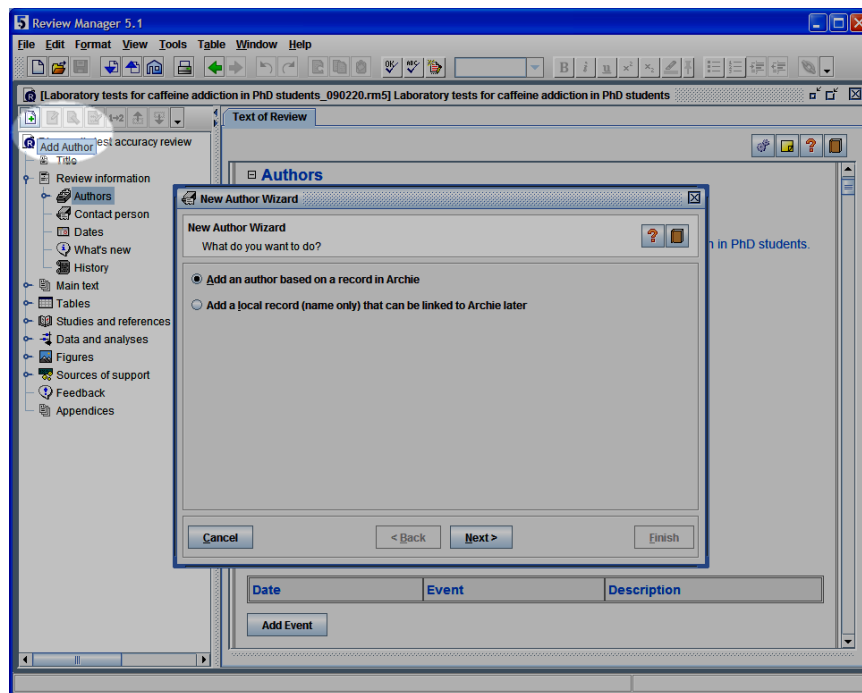
7. Enter your name in the **First Name** and **Family Name** fields.
8. Click **Finish**. You will now see your name listed next to the other authors of the review. Note that no affiliation is available for your name. Affiliations can only be added from records in Archie.

Note: Many of the functions in RevMan which involve selecting a button on the *outline pane* toolbar can also be achieved by right-clicking the sub-headings in the *outline pane* and selecting the function from the drop-down list. For example, rather than clicking the **Add Author** button on the outline pane toolbar to open the **New Author Wizard**, you can also right-click the **Author** sub-heading and select **Add Author** from the drop-down list.

Under the author details in both the *outline* and *content panes* you will note that a **Contact person** can be specified for the review. By default, this is the first author, but another person (who may or may not be an author of the review) can be nominated by selecting the **Contact person** heading in the *outline pane* and clicking the **Edit Contact Person** button on the *outline pane* toolbar. The contact person must be listed in Archie.

Note: To add new people to Archie or to make changes to contact details, please contact your Review Group Co-ordinator.

Accessing the *Cochrane Handbook for Diagnostic Test Accuracy Reviews*

For detailed instructions on what to report in each section of your review, you can refer to the *Cochrane Handbook for Diagnostic Test Accuracy Reviews*. This can be accessed from the **Help** menu, or by clicking the **Handbook** button in the top right-hand corner of the *content pane,* which will open a new window that will allow

you to browse through all sections of the Handbook. A particular section of the Handbook can be opened in the new window depending on which section of the **Main text** you are working on.
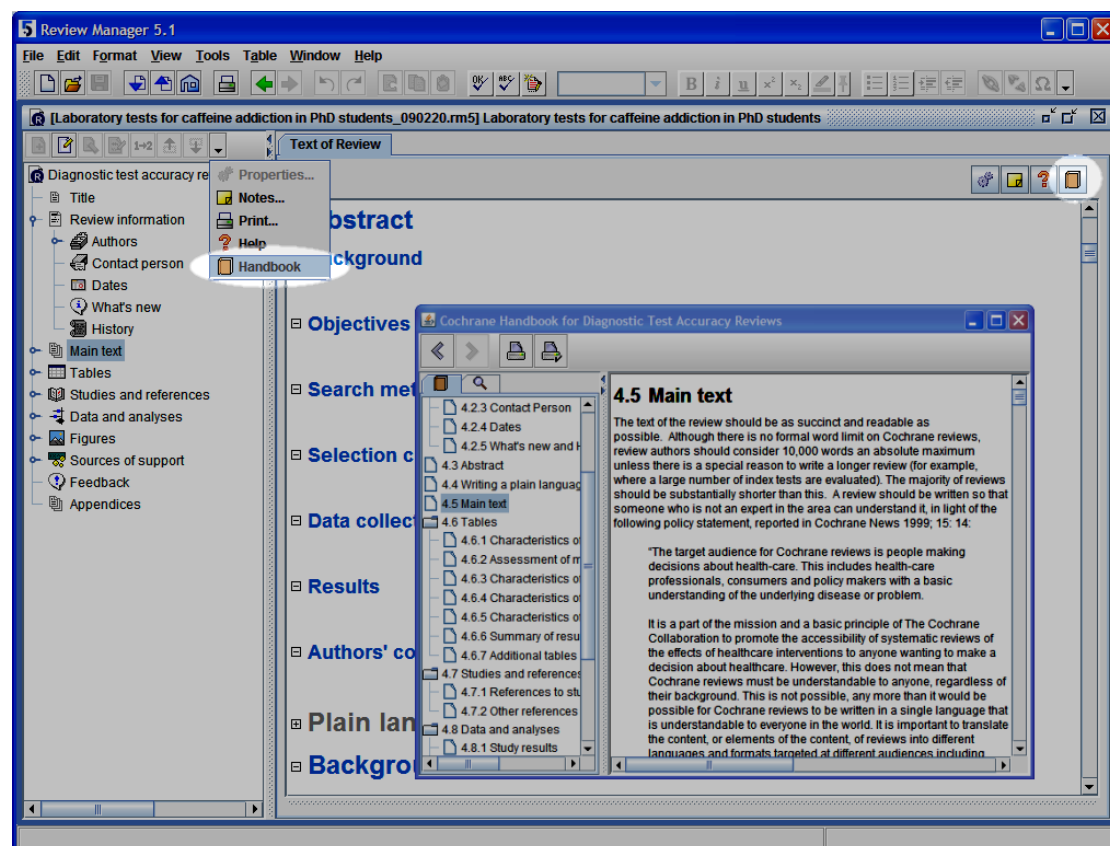
1. In the *outline pane*, if it is not already expanded, click the key icon ⟜ next to the **Main text** heading.
2. Click on the word **Abstract**.
3. In the *content pane*, click the **Handbook** 🔲 button (or right click and select **Handbook**). Note that the **Cochrane Handbook for Diagnostic Test Accuracy Reviews** window has opened at the section with guidance on what to write in the abstract of the review.
4. Close the **Cochrane Handbook for Diagnostic Test Accuracy Reviews** window.

|	
Note:	In February 2011, only Chapter 4 of the Cochrane Handbook for Diagnostic Test Accuracy Reviews was available in RevMan. The other chapters are available through the following webpage http://srdta.cochrane.org.

PART 2 – Working with text

Adding text to a review

Text can be copied and pasted from a word processor document, imported as an html file or typed directly into RevMan.

1. In the *content pane*, if it is not already expanded, click the ⊞ icon next to the **Background** heading.
2. Click the ⊞ icon next to the **Target condition being diagnosed** heading. A blank line will open under the heading.
3. Click to place the cursor in the blank line and type "Caffeine addiction is a common problem that affects productivity of PhD students, mainly due to too much talking at the coffee machine."

Formatting text

RevMan text formatting options are available from the toolbar, including bold **B**, italics *i*, underline u, superscript x², subscript x₂, and highlighting text ✎ similar to most other word processing software. You cannot change the font or type size, as these are standard for all Cochrane reviews.

The **Insert Symbol** button Ω allows you to insert symbols into the text of the review, including in tables and author names. You can also insert a non-breaking space.

RevMan also allows bulleted ☰ and numbered lists ☰, including multi-level lists.

Making changes to headings

RevMan includes the standard headings for a complete Cochrane review, but new headings can be added and some standard headings can be deactivated.

1. In the *outline pane*, click the key icon ⚷ next to **Main text** to reveal the subheadings.
2. Click the key icon ⚷ next to **Background**.
3. Click the key icon ⚷ next to **Clinical pathway**.
4. Any heading with the ✅ icon is optional and can be deactivated. Right-click the **Alternative tests** subheading and select **Deactivate Heading**

   (alternatively, select the heading **Alternative test(s)** then click the ▼ button on the *outline pane* toolbar and select **Deactivate Heading** from the drop down menu).
5. Note that the heading appears deactivated (light grey) in the *outline pane* and the text of the heading has been removed from the *content pane*.
6. In the *content pane*, click to place the cursor at the end of the text in the **Target condition being diagnosed** section and press **Enter** to create a new line.
7. On the toolbar, you will see a drop-down box showing the text style currently in use. By default, text is in the **Normal** style. Click the drop-down arrow and select **Heading 3**.

8. Type the text 'Reference standard'. Note that formatting of Heading 3 is bold and italics.
9. Press **Enter** again. Note that the new blank line is in the **Normal** style again.

Adding notes

You can add notes to assist in drafting the review. These notes will not appear in the published version of the review.

1. In the *content pane*, make sure the cursor is still in the **Background** section.
2. Click the **Notes** button 🗒 on the *outline pane* toolbar (NOT the **Notes** button in the *content pane*). This will open the **Notes** window.
3. Enter a note, 'This text needs revision.' You will see the user details you entered in the **Preferences** window at the beginning of the tutorial appears at the bottom of the **Notes** window.
4. Click the **Close** button to save the note and close the window.
5. A yellow **Note** icon 🗒 appears next to the relevant heading in both the *content pane* and *outline pane*.
6. To see all the notes for a review while you are working, go to the **View** menu and select **Notes**. A separate window pane will appear below the *content pane* showing the notes for each section.
7. In the *content pane*, click to place the cursor back in the **Background** section. The notes area will automatically display the note you have entered in that section.
8. Click the 🖝 icon at the top left of the notes area to minimise it, or go to the **View** menu and select **Notes** to close the notes pane.
9. In the *content pane*, click the **Note** icon 🗒 to open the **Notes** window again.
10. Click **Delete** to delete the note.

Tracking changes in the text

RevMan has a **Track Changes** system to help you manage editing in the text.

1. From the **Tools** menu, select **Track Changes**, or click the **Track Changes** 📝 button on the toolbar. Note that the **Track Changes** button is now activated.
2. In the *content pane*, go to the **Background** section and replace the word 'problem' with the word 'condition'. The old text will appear in red with a line through it, and the new text will appear in green.
3. In the same section of the review, change the word 'at' to 'by'. Leave the cursor in the text after your changes.
4. From the **Tools** menu, select **Accept or Reject Changes**. This will open the **Accept or Reject Changes** window.
5. In the window you just opened, click the **Find** button with the arrow pointing left 📝 to search backwards toward the beginning of your document.
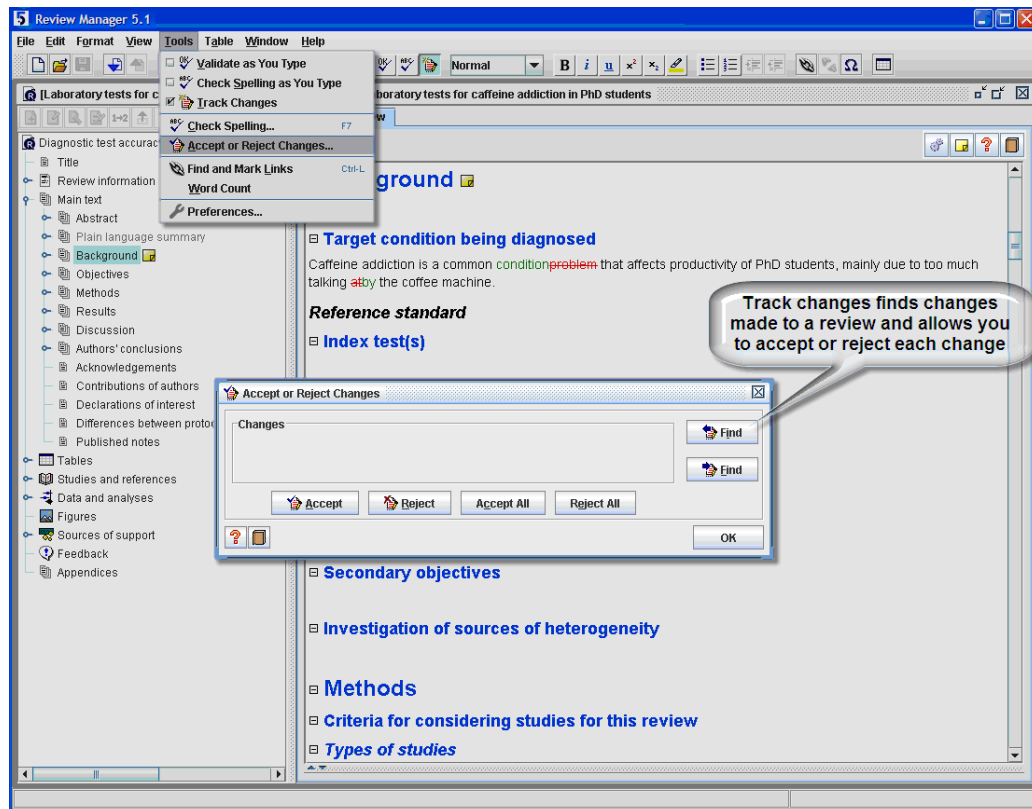
6. The first change found will be the word 'function'. The word will be highlighted in the *content pane*. You may need to move the **Accept or Reject Changes** window out of the way to see the highlighted section of text. Click **Accept** to accept the change.
7. RevMan will automatically find the next change and highlight the relevant text. Click **Accept** again to accept the deletion of the word 'at'.
8. Reject the rest of the changes you made by clicking the **Reject All** button.
9. Click **OK**.
10. In the *content pane*, change the word 'problem' to 'condition' again.
11. Hover the mouse pointer over the change. A popup message will appear showing the user details and when the change was made.
12. Right-click each change (both the added word and deleted word) and select **Accept Change**.
13. Turn off the **Track Changes** feature by clicking the **Track Changes** button on the toolbar.

Checking your spelling

RevMan can either check your spelling as you type, or check all the spelling in your review at the one time.

1. From the **Tools** menu, select **Preferences**.
2. Select the **Spell Checking** tab.
3. Select which dictionaries you would like RevMan to use, including **UK**, **US** or **Canadian English**. You can select more than one dictionary if you wish.

4. Click **OK**.
5. In the *content pane*, create a spelling mistake by deleting an 'm' from the word 'common'.
6. Open the **Tools** menu and select the **Check Spelling** option. This will open the **Check Spelling** window.
7. Depending where your cursor was placed, RevMan may ask whether you wish to continue checking from the beginning of the document. Click **Yes**.
8. RevMan will highlight the spelling mistake and suggest 'common' as the correct spelling. Click **Change**.

Note: The **Check Spelling** tool cannot correct spelling errors in some sections of the review text, such as author's names and contact details or the **Data and Analyses** section.

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9. A notice will appear to say that the spell check is complete. Click **OK**.
10. Click **OK** again to close the **Check Spelling** window.
11. To check spelling continuously while you type, go to the **Tools** menu and select **Check Spelling as You Type,** or click the **Check Spelling as You Type** button on the toolbar.
12. Delete the 'm' from 'common' again, and click to place the cursor elsewhere in the text. The spelling mistake will be underlined in red.
13. To correct the word, right-click it and select the correct spelling from the options available.

Note: The **Check Spelling** tool identifies the "s" in constructions like "Index Test(s)" and "Comparison Test(s)" as spelling mistakes.

PART 3 – Adding studies and references

There are two kinds of references that can be added to a review:
- **References to studies** – these are references to studies that have been either included or excluded from your review. A study can have more than one reference, for example if there has been more than one published paper, or if you have received additional information from the study author.
- **Other references** – these are any other source you would like to cite in your review, such as background articles, methodological references, software, etc.

Adding studies to a review

When you are ready to add included and excluded studies to your review, you will need to create a Study ID for each study, and then add the associated references. For Cochrane reviews, the Study ID is usually the name of the lead author of the main published paper and the year of publication. If you have more than one reference with the same name and year, you can add a letter to the year to differentiate them (e.g. Egberts 2001a, Egberts 2001b).

1. In the *outline pane*, click the key icon ⌐ next to Studies and references.
2. Click the key icon ⌐ next to the **Reference to studies** section. You will see that there are already some studies included.
3. Select **Included studies** and click the **Add Study** button on the *outline pane* toolbar. This will open the **New Study Wizard**.
4. Enter the **Study ID** '**Dorlas 2006**' and click **Next**.
5. From the **Data source** drop-down list, choose **Published and unpublished data**. Click **Next**.
6. The year the study was conducted will appear by default as '2006'. Click **Next**.
7. If your study has an ID number, such as a document ID, you can enter it here by clicking the **Add Identifier** button, selecting an ID type from the drop-down list, and entering the ID.
8. Click **Next**.
9. Select **Add another study in the same section** and click **Finish**.
10. Repeat steps 4-9 and add the following studies to the tutorial review:
    Egberts 2001
    Levelt 2007
    Smit 2006
11. When you have added the details for the last study, instead of step 9, select **Nothing** and click **Finish.**
12. In the *outline pane*, click the key symbol ⌐ next to **Included Studies** to see the new studies listed.

Adding references to a study

1. In the *outline pane*, select the **Dorlas 2006** study.

2. Click the **Add Reference** ⊞ button on the *outline pane* toolbar. This will open the **New Reference Wizard**.
3. By default, the Reference Type is set to Journal article (click the drop-down list to see the other options available). Click Next.
4. Enter the following details in the form provided (note that fields appearing in bold are mandatory):
   Authors: Dorlas S, Egberts D
   English title: Questionnaires to measure caffeine addiction
   Journal/book/source: Journal of Addictive Research
   Date of publication: 2006
   Volume: 15
   Issue: 4
   Pages: 567-71

> **Note:** You can right-click in the **Journal/book/source** field and select **Choose from list…** to select your journal from a list of titles. If your journal does not appear on this list, you can right-click in the **Journal/book/source** field and select **Edit custom journals list…** which will open a text file where you can create a custom list of journal titles. This text file will need to be saved each time a new journal title is added to your custom list, and you can use this file to copy the relevant journal title into the **Journal/book/source** field for each reference.

5. Click **Next**. As for a study, you will have the option to add an ID number for the reference, such as a MEDLINE reference number.
6. Click **Finish**. The reference will now appear in the *content pane*. In the *outline pane*, click the key symbol ⚷ next to **Dorlas 2006** to see the new reference listed.

> **Note:** To add an **Other reference** to your review, select **Additional references** in the *outline pane* and follow steps 2 to 6 above. You will need to give your reference a Reference ID, which should have the same format as a Study ID (first author and year of publication).
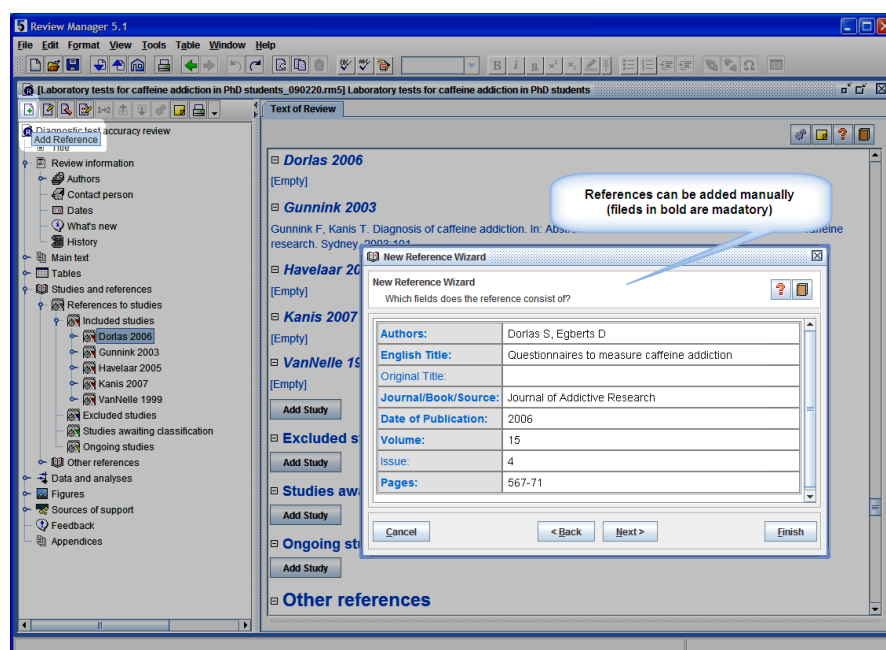
Editing an existing reference

1. In the *outline pane*, double-click the reference listed under the **Dorlas 2006** study (or right-click and select **Edit Reference**). This will open a new tab in the *content pane* showing all the details you entered.
2. Open the **Reference Type** drop-down box and change the type from 'Journal article' to 'Book'. Note that the fields have changed and some rows are now shaded. Shaded rows will not appear in your published review.
3. Change the reference information to the following (you need to scroll down to see some of these fields):
   Authors: Dorlas S, Egberts D
   Journal/book/source: Measuring caffeine addiction
   Date of publication: 2006
   Publisher Name: Grinder Press
   City of publication: London
4. At the bottom of the reference tab, note that the reference is displayed as it will appear in the published review. Note that this display changes as you make the changes to the reference. Check that the reference appears correctly.
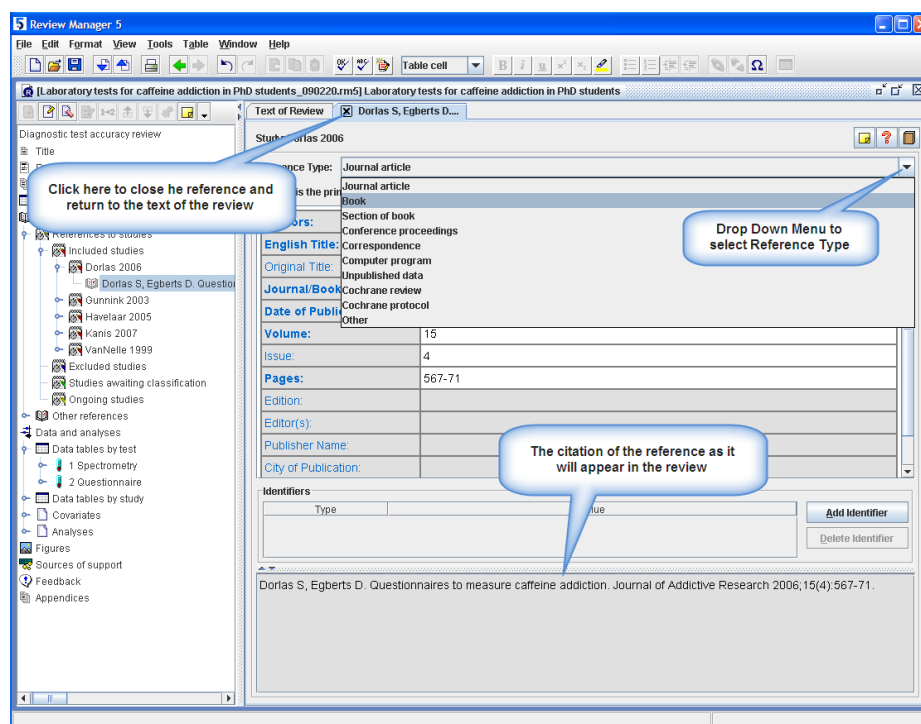
5. Go to the tab header and click the ⊠ button next to the first author's name to close the reference tab (**do not** click the ⊠ button at the top right corner as this will close the review).


Note: For further details on how to enter different reference types, see the RevMan Help or the *Cochrane Style Guide*, available from the **Help** menu.

Importing references from a text file

If you have already entered your references in another program, you can avoid typing them in again by importing them from a text file. A sample text file has been provided with RevMan 5 for this tutorial.

> **Note:** For details on how to generate a text file, see the help files in your reference management software. RevMan can read text files created from most major reference management software using the RIS format. You may need to check that you are using the right filter when exporting your references to a text file.

1. Go to the **File** menu and select **Import**, then **References**. This will open the **Import References Wizard**.
2. Click **Next.**
3. RevMan should automatically open the same folder we used to open the sample review: **c:\\program files\review manager 5\doc\tutorial**. Select the file '**DTA Study References.txt**' and click **Open**.
4. You will see a preview of the text file. Click **Next**.
5. By default, **RevMan Format** is selected as the format of the text file (other options include RIS or PubMed MEDLINE formats). Click **Next**.
6. By default, RevMan will save references to the **Classification pending references** section, under **Other References** in the *outline pane*. References in this section will not appear in the published review (for this reason they are shown in grey). Click **Next**.
7. If you wish, you can assign different locations for each individual reference, or exclude specific references from the text file while importing the rest. For this tutorial, leave the settings as they are and click **Finish**.
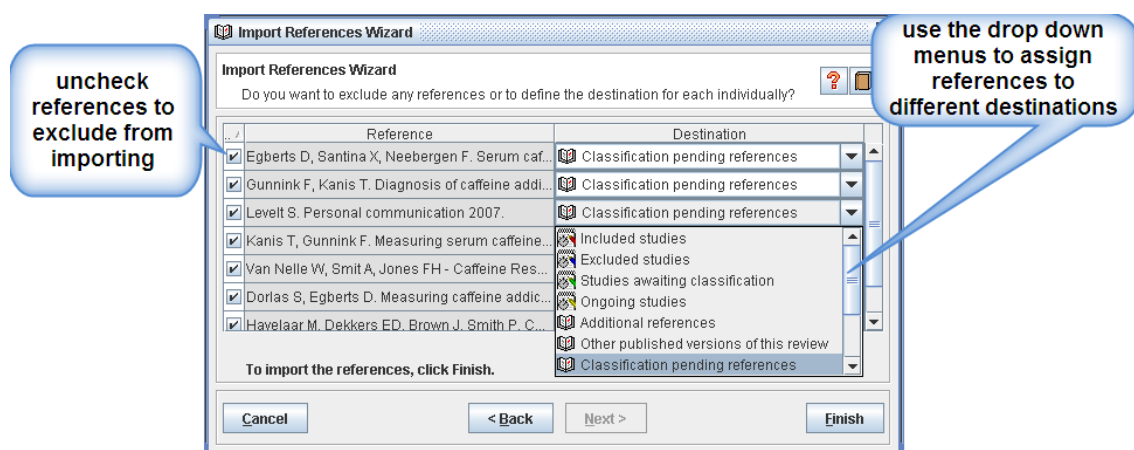
8. RevMan will report that 8 references have been imported. Click **OK**.
9. In the *outline pane*, use the key icons ⚷ to open the **Other references** section and then the **Classification pending references** section. You will see the references you imported.

Moving references

There are several ways to move references to the appropriate study.

1. In the *outline pane*, in the **Classification pending references** section, select the reference **Egberts 2001**.
2. From the **Edit** menu, select **Cut** or click the **Cut** button ⬚ on the toolbar.
3. Use the key icons ⬚ to open the **Included studies** section, and open the **Egberts 2001** study. An [Empty] reference has been added here. To add a reference manually, you can edit the empty reference using the instructions in the previous section.
4. Select the **Egberts 2001** study.
5. From the **Edit** menu, select **Paste,** or click the **Paste** button ⬚ on the toolbar.
6. The reference will be deleted from the **Classification pending references** section and added to the **Egberts 2001** study. Note that the [Empty] reference has gone.
7. Go to **Classification pending references** and right-click **Gunnink 2003**.
8. Select **Move to**, then **Included studies**. As there was no study with a name matching the reference, RevMan will automatically create a new study in the **Included studies** section with the ID **Gunnink 2003**.
9. Go to the **Classification pending references** section and select **Kanis 2007**.
10. Click and drag the reference to the **Kanis 2007** study.
11. Repeat steps 1 to 6 and 10 to move the remaining references to the corresponding studies.
12. In the *outline pane*, click the key icons ⬚ to open the **Included studies** section, and then open the **Egberts 2001** study.
13. Select the first reference and double-click to open the reference tab.
14. In the *content pane*, check the **This is the primary reference for the study** box.
15. In the *outline pane*, note that the book icon beside the primary reference appears in black ⬚, and the icons beside the other references are grey ⬚.

Adding links to references in the text

Rather than typing citations in the text or including footnotes, RevMan allows you to include active hyperlinks to references in the text of your review.

1. In the *content pane*, scroll up to find the **Target condition being diagnosed** section.
2. Click to place the cursor after the word 'machine'.
3. From the **Format** menu, select **Insert Link**, or click the **Insert Link** ⬚ button on the toolbar. This will open the **Insert Link** window.
4. From the list, select the study **Gunnink 2003**. Note that you can use this same method to link to included and excluded studies, figures, tables, sections of the review text and external web links.
5. Click **OK**. You will see a blue hyperlink to the reference appear in the text. This link will be active after the review is published in *The Cochrane Library*.
6. Add a space before the link and parentheses ( ) before and after the link, so that it appears as "…the coffee machine (Gunnink 2003)."
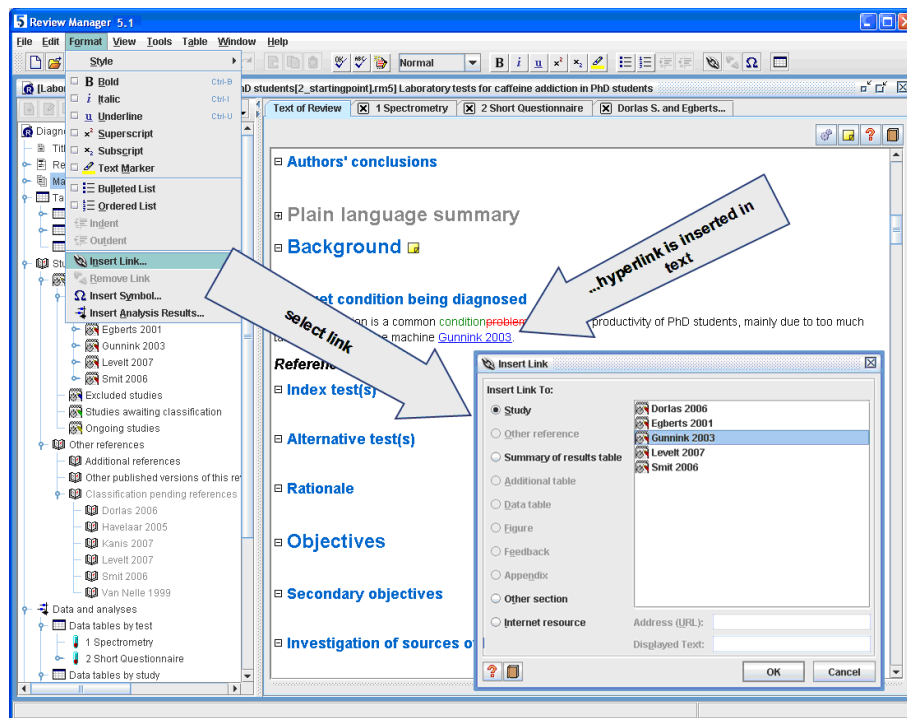
Removing a link

To remove a link you have already inserted in a review, you can either delete it as you would any other text, or use the **Remove Link** feature.

1. In the *content pane*, click to place the cursor in the link to **Gunnink 2003**.
2. Click the **Remove Link** button on the toolbar, or right-click and select **Remove Link**. Note that the text is no longer blue.

Adding multiple links automatically

Instead of inserting one link at a time, RevMan can create all your links automatically by searching through the text to identify studies and other references.

1. In the *content pane*, select the sentence in the **Target condition being diagnosed** section, including the text '(Gunnink 2003)'.
2. From the **Tools** menu, select **Find and Mark Links**.
3. A notice will be displayed to let you know that one link has been created. Click OK. You will notice that the blue reference link has again been created.

Note: If you do not select a section of text before using the **Find and Mark Links** tool, RevMan will give you the option to check the whole review. Note that this tool will only search through text that is expanded (that is, visible in the *content pane*). Click the ⊞ icon next to a section heading to expand and see the text.

PART 4 - Tables

Characteristics of included studies tables

Now that you have included references to studies in your review, you can add a description of each study. This is done in the text of the review, and also in the **Characteristics of included studies** table, which combines the characteristics of included studies and the results from quality assessment.

The four domains—**Patient Selection**, **Index Test**, **Reference Standard**, and **Flow and Timing**—are mandatory. All domains require a general description; this is the Characteristics of Included studies part of the tables. All domains are assessed in terms of risk of bias and the first three domains are also assessed in terms of concerns regarding applicability.

When the review is published the tables are rendered separately. The study characteristics table can be previewed for each study in RevMan by right clicking on the study name and selecting **View study characteristics**.

Patient selection

The first domain to be completed is the Patient selection domain. The upper half of the table refers to **Risk of Bias**, while the lower half refers to **Concerns regarding applicability**.

1. In the *outline pane*, use the key icon ⌐ to expand the **Tables** heading, then the **Characteristics of studies** heading and the **Characteristics of included studies** heading. You will see a list of the studies you have created.
2. Select the **Dorlas 2006** study.
3. In the *content pane*, you will see the same study shown. Click the ⊞ icon next to **Dorlas 2006** to show the **Characteristics of included studies** table.
4. Type or copy and paste the following text into the **Patient sampling** box: "Cross-sectional design; single group with equal suspicion of caffeine addiction; consecutive enrolment".
5. The next step is to enter the Risk of Bias assessment for this study. The three questions below the descriptive box are the signalling questions. The question there under, in bold, is the overarching question for Risk of Bias in this domain.
6. Set the three drop-down boxes for the signalling questions to **Yes** and the drop-down box for the overarching question to **Low risk**.
7. Type or copy and paste the following text into the **Patient characteristics and setting** box:
   Sample size: 405 patients
   Mean age: not reported; PhD students
   Presentation: sleep deprivation, loss of concentration, hyperactivity.
   Setting: Primary care; The Netherlands.
8. Set the drop-down box for the **Concerns regarding applicability** question to **Low concern**.

Index Test, Reference Standard, and Flow and Timing

The same can be done for the other domains. Hereunder are some examples of what can be put into the descriptive boxes.

Index and comparator tests	Index test is spectrometry; comparator is questionnaire.
Target condition and reference standard(s)	Caffeine addiction, measured by coffee consumption in liters per day
Flow and timing	Two weeks follow up. Three students withdrew; reasons not explained.

Unlike the other domains, the Index test domain is assessed for each index test or group of tests in the review. To enable assessment by test, the various index tests should have been defined under Data tables by test. Therefore, we will come back to that later, after we have added tests to the review (see Part 5, page 33).

Editing the Characteristics of included studies table

Signalling questions can be added or removed in each domain as appropriate for each review. Additional domains cannot be created except a domain called Comparative for specific comparative issues (in reviews that compare the accuracy of tests) which do not fit in any of the other domains.

1. Click the **Properties** ✦ icon next to any of the headings of the **Characteristics of included studies** table.
2. You will see a window with five tabs. It will open on a particular tab, depending on next to which heading you clicked the **Properties** ✦ icon.
3. For example, on the **Patient selection** tab, you will find the three signalling questions belonging to the **Patient selection** domain. All three questions

have a tick symbol ✓ next to it, indicating it is included in the table by default.

4. Only in very specific cases (see the Handbook for this), authors may decide not to include one of the items in the table. Deactivate **Was a case-control design avoided** by selecting it from the list and by clicking on the **Activated** box, which then becomes deactivated.

5. Click '**OK**'. The signalling question has now been removed from the original list of signalling questions for every study in your review. (Please note, that you will lose any text that had already been entered in the description column!)

Adding user-defined items

In some cases, it may be useful to add user-defined study characteristics. For example, if you are assessing a commercially available device, it may be useful to check for sponsoring.

1. In the *content pane*, find the **Characteristics of included studies** table heading (you may need to click the ⊞ icon).

2. Click the **Properties** 🌼 icon next to the **Characteristics of included studies** table heading in the main screen.

3. It opens now on the **General** tab. You can add a **User Defined Field** by ticking the box next to **User Defined 1** and enter your extra characteristic.

4. Click '**OK**'. Your User defined field now appears at the bottom of the table, just above the textbox for **Notes**.

5. Click again the **Properties** ⚙ icon next to the **Characteristics of included studies** table heading in the main screen and go to the Index test tab.
6. Click on the **Add** button in the **Concerns regarding applicability** section. A new item will appear.
7. Enter the name of the new signalling question: '**Was the cut-off used representative for the cut-off used in practice?**'.Whenever you add a new item to the table, make sure you phrase the question so that answering "Yes" indicates low risk of bias or low concerns regarding applicability.
8. Click '**OK**'.
9. The **Index test domain** of each table will now include a row for the new question. Set the new drop-down box to **Yes**, **No** or **Unclear**.

⊟ Index Test ⚙	
Index tests	

⊟ All tests ⚙ ⊗

A. Risk of Bias	
Were the index test results interpreted without knowledge of the results of the reference standard?	▾
If a threshold was used, was it pre-specified?	▾
Could the conduct or interpretation of the index test have introduced bias?	▾

B. Concerns regarding applicability	
Was the cut-off used representative for the cut-off used in practice?	▾
Are there concerns that the index test, its conduct, or interpretation differ from the review question?	▾

Note:	For information on assessing the methodological quality and its relation with risk of bias, see the Cochrane Handbook for Systematic Reviews of Diagnostic Test Accuracy, available from http://srdta.cochrane.org/en/authors.html.

Characteristics of excluded studies

Studies identified in your search that met the exclusion criteria of the review may be listed under **Characteristics of excluded studies**, along with the reason each study was excluded. You do not need to list every study identified by your search, but it is useful to list those which might appear to readers to meet your inclusion criteria.

1. In the *outline pane*, select **Characteristics of excluded studies**.
2. Click the **Add Study** 🗎 button on the *outline pane* toolbar and enter the new study 'Bean 1988'. Click **Next**.
3. Select **Published data only**, and click **Next**.
4. Accept '1988' as the year the study was conducted, and click **Next**.
5. Click **Next** without adding any identifiers.
6. Accept '**Nothing**' as your next action, and click **Finish**. In the *content pane*, you will see the Excluded studies section and the study you have created.

7. In the *outline pane*, click the key icon ⊶ next to **Characteristics of excluded studies**.
8. Select the new study **Bean 1988**. In the *content pane*, you will see a table under this study with the heading **Reason for exclusion**.
9. In the table, enter the text, 'Coffee machine only contained decaf coffee.'

|	
Note:	Footnotes can be added below the Table for Characteristics of Excluded Studies.

Adding Footnotes to tables

In the content pane, below each tables section, there is a place to add footnotes for these tables. To add Footnotes, click on the white space below the Caption heading and type in some text.
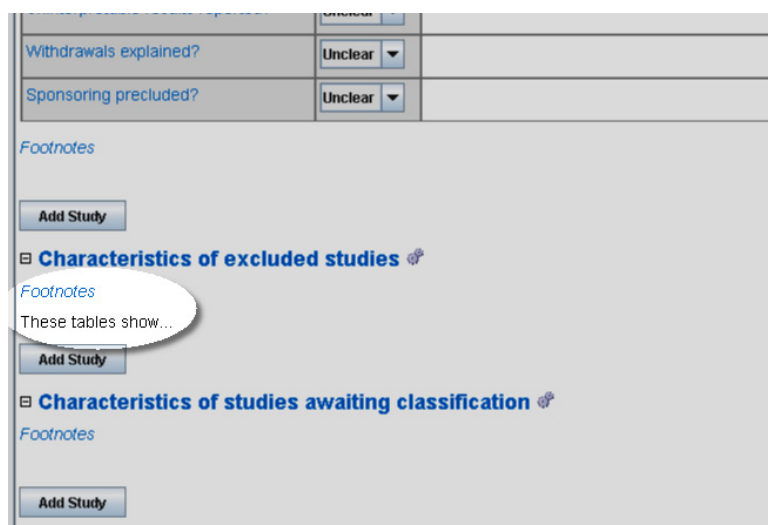
Additional tables

Additional information can be included in table format either in the text of the review, in an **Appendix** or as an **Additional table**. To add a table into the text of the review:

1. In the *content pane*, scroll up to the **Background** section and place the cursor in the **Target condition being diagnosed** section.
2. Click the **Insert Table** button ⊞ on the toolbar. A 3x3 table will be created.
3. Right-click the top left cell. Note the table edit options.
4. Select **Toggle Heading/Cell**. The selected cell will be shaded, and any text entered will appear in bold. Text can now be entered directly into the table.
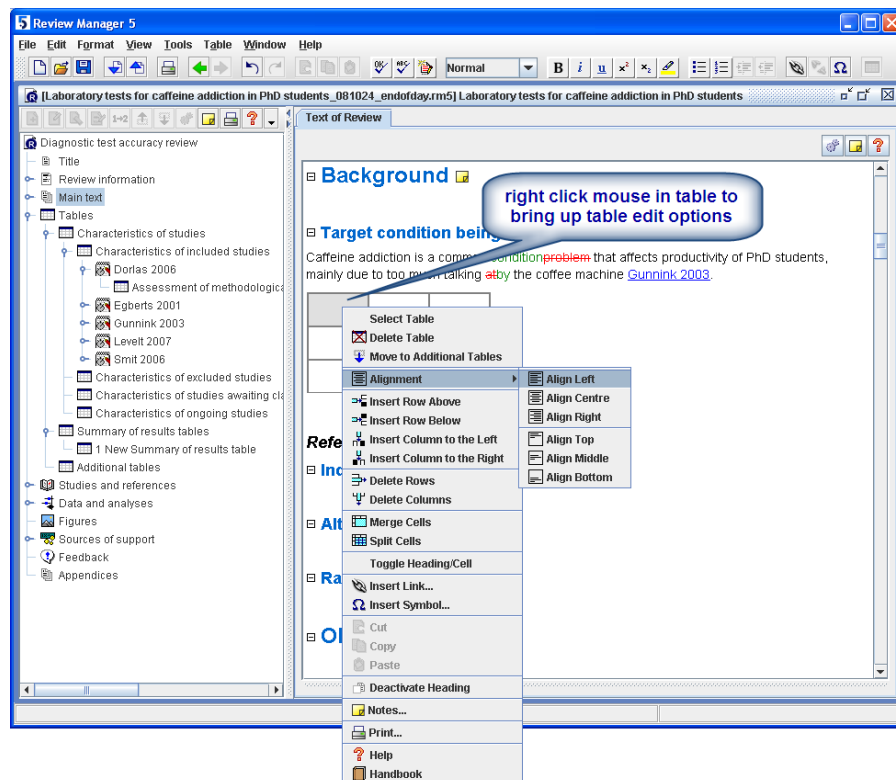
To add an **Additional table** that will appear at the end of the published review:

1. In the *outline pane*, under the **Tables** heading, select **Additional tables**.
2. Click the **Add Table** button ⊞ on the *outline pane* toolbar. This will open the **New Additional Table Wizard**.
3. Enter the title, 'Decaffeinated coffee: chemical information'.
4. Click **Next**.
5. Accept the default number of rows and columns and click **Finish**. In the *content pane*, you will see the table in the **Additional tables** section. You can now enter text directly into the table.
6. In the *outline pane*, click the key icon ⊶ to see the new table listed under **Additional tables**.

Note: Tables created in another program (e.g., Microsoft Word) can be copied and pasted into RevMan 5.2. To do this, you need to copy the table to the clipboard in the other program (e.g., in Microsoft Word, highlight the table and click 'Copy', then in RevMan 5.2, repeat steps 1-4 above and at Step 5, select **Paste in table copied from another program**.
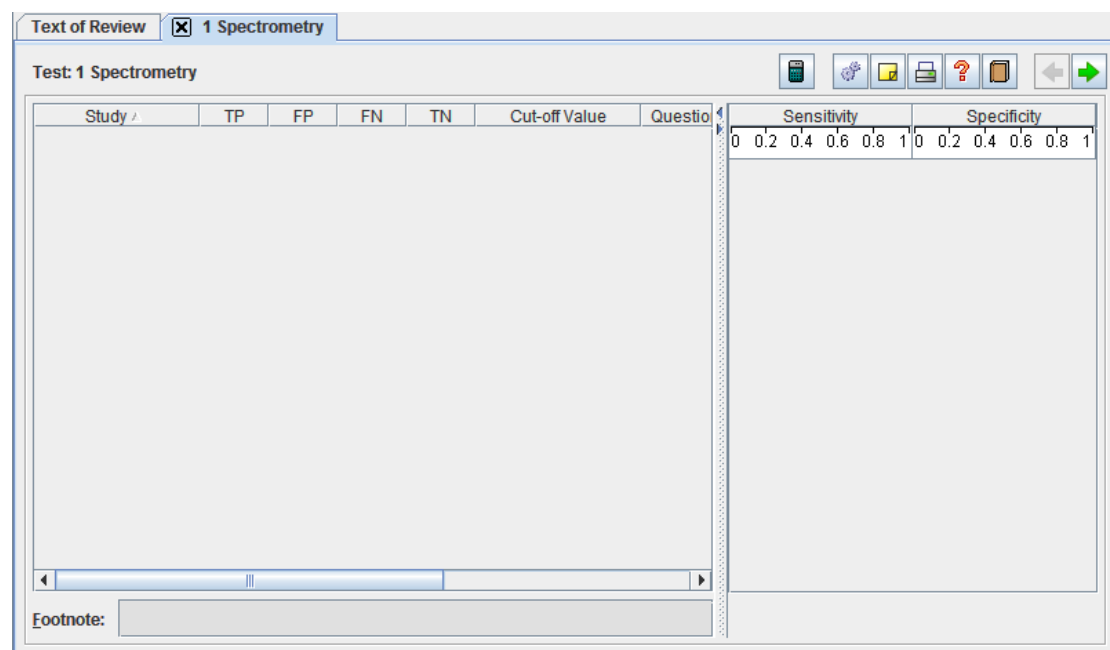
PART 5 - Data and analyses

Once you have described your included studies, you can begin analysing the results. Before analysing the results, you will need to enter data and, if applicable, covariates. Entering data can be done in two ways. You can enter them by test, under **Data tables by test**. Using this option, you enter the data for one test at a time as reported in each study. Alternatively, you can enter the data by study, under **Data tables by study**. Using this option, you enter the data for one study at a time, for all tests reported in that study. This may be advantageous when the included studies analysed many tests.

When you have added included studies in your RevMan file, you will see the key icon ⊶ next to **Data tables by study**. That means that RevMan has listed all your included studies under that heading.

Adding tests

The first step in analysing diagnostic accuracy data in RevMan is to enter the tests that you are interested in. Reviews may include one or more tests.

1. In *outline pane*, select **Data tables by test**.
2. Click the **Add Test** ⊞ button on the *outline pane* toolbar. This will open the **New Test Wizard**.
3. Enter the **Name** 'Spectrometry' and, if applicable, the Full Name of the test (for example, if you have different manufacturers for spectrometers). Then click **Next**.
4. You can add a description of the test in the next pane. Click **Finish**. This will open an empty Data Tables tab.
5. Repeat steps 1-4 to add another test called 'Questionnaire'.

Entering data by test

When you are interested in only one or a few tests, or when you expect the included studies to report the results of only one or a few tests, it will probably be easiest to enter your data by test.

1. In the *outline pane*, click the key icon ⚷ to see the new test(s) listed under **Data tables by test**.
2. Select **Spectrometry** and click the **Add Test Data** 🔳 button on the *outline pane* toolbar. This will open the **New Test Data Wizard**.
3. You will now select the studies that report data for Spectrometry. By holding down the Ctrl/Command-button on your computer, you can select multiple studies at once.
4. Select the following studies:
   > Gunnink 2003
   > Havelaar 2005
   > Kanis 2007
   > Smit 2006
   > VanNelle 1999
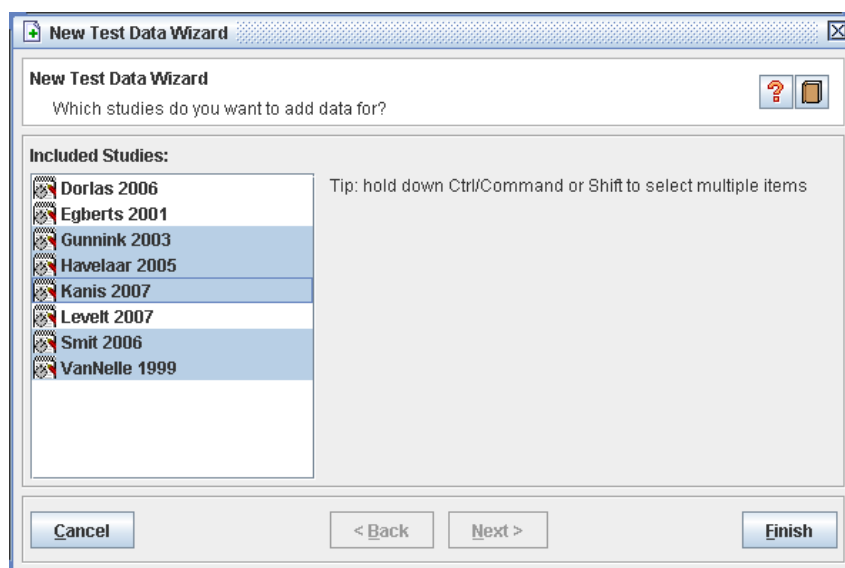
5. Click **Finish**, this will open the Data Tables ready for you to enter the selected studies listed. Beside each study is a row of cells ready for you to enter the numbers of true positive results (TP), false positive results (FP), false negative results (FN) and true negative results (TN).
6. Enter the following data into the table:

Study	TP	FP	FN	TN
Gunnink 2003	18	4	32	46
Havelaar 2005	22	17	1	38
Kanis 2007	60	87	16	371

Smit 2006	8	8	4	59
VanNelle 1999	9	2	5	65

7. RevMan will automatically calculate the sensitivity and specificity (with 95% confidence intervals) for each study. The results are also displayed in a forest plot. The sensitivity and specificity for each study are shown as a blue square, and with a horizontal line showing the confidence intervals.
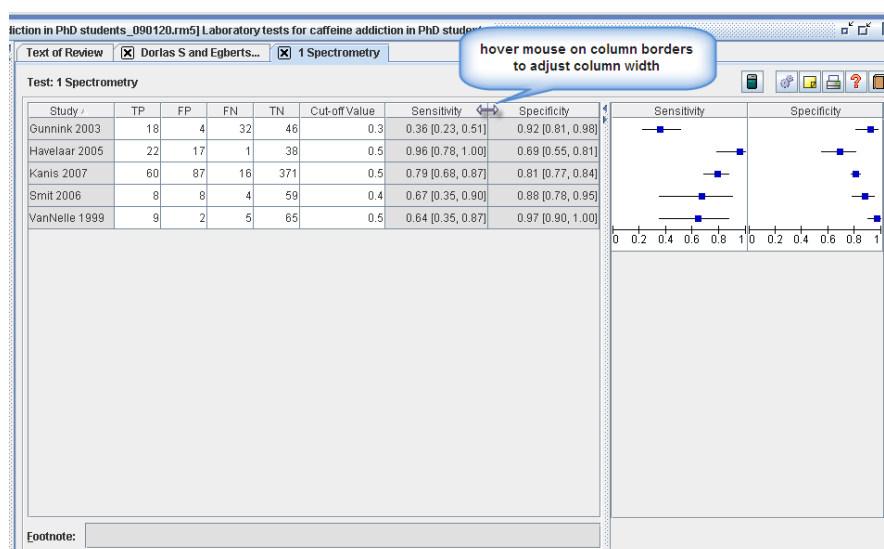
> **Note:** For those of you who are familiar with intervention reviews, note the following. There is no pooled result shown for sensitivity and specificity, RevMan does not calculate weights for the forest plots, and no measures of heterogeneity are given. For more details on why these features are not provided, please refer to the *Cochrane Handbook for Systematic Reviews of Diagnostic Test Accuracy*, available at http://srdta.cochrane.org.
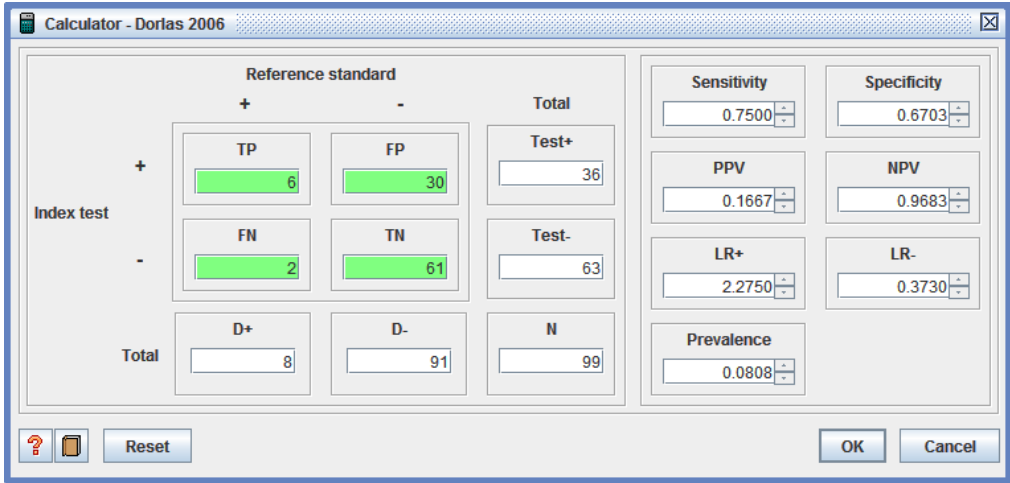
8. At the bottom of the screen under the results table is space to enter footnotes. In the results table, select the **Kanis 2007** study. In the **Footnote** field, enter the text 'Unpublished data provided by author'.
9. At the top of the *content pane*, click the **Text of review** tab. Note that RevMan has added a table with a brief summary of the results for this outcome, including the number of studies and participants.

Entering data using the calculator

Another way to enter your data is to use the calculator. This is particularly useful when you do not have the numbers of true and false positives and negatives, but you do have sensitivity, specificity (or likelihood ratios) and the total numbers of people with and without the target disease.

1. Select under **Data tables by test** the test called **Questionnaire** and click the **Add Test Data** button on the *outline pane* toolbar. This will open the **New Test Data Wizard**.

2. Select the following studies that report data for Questionnaire and click **Finish**:

> Dorlas 2006
> Egberts 2001
> Gunnink 2003
> Havelaar 2005
> Levelt 2007

3. Select the first cell in the first row (Dorlas 2006) and click on the calculator icon ▣ . A new window opens.
4. Enter 0.75 in the Sensitivity box. Note that RevMan will only recognize numbers between 0 and 1, so you cannot enter 75%.
5. Enter 8 in the D+ box. D+ stands for 'Diseased'. This means that there were in total eight people with caffeine addiction included in the study.
6. RevMan will now automatically calculate TP and FN.
7. Enter 0.67 in the Specificity box and 91 in the D- box. D- stands for 'Not Diseased'. This means that there were in total 91 people without caffeine addiction included in the study.
8. RevMan will now automatically calculate FP, TN and all other measures, including positive and negative likelihood ratios. It also checks for correctness. If the numbers seem to be correct (i.e. if the given parameters can be used to calculate round numbers of TP, FP, FN, TN), the boxes appear green. Otherwise the sensitivity box and/or specificity box will appear red.
9. Click 'OK'. The cells in the first row will be filled with numbers and a forest plot of sensitivity and specificity will be displayed.

Entering data by study

When you expect the included studies to report the results of many tests at one time, you may want to enter your data tables by study.

1. In the *outline pane*, click the key icon ↤ to see the studies listed under **Data tables by study**.

2. Click the key icon ⊶ next to **Egberts 2001** to see the tests that are already added to this study. Double-click on **Egberts 2001** to open the data tables for this study.

3. Enter these data into the table:

Study	TP	FP	FN	TN
Egberts 2001	19	9	6	51

4. In the *outline pane*, click the key icon ⊶ next to **Gunnink 2003** to see the tests that are already added to this study. Double-click on **Gunnink 2003** to open the data tables for this study.

5. You will see that RevMan has already entered the data for Spectrometry, taking the data you entered under **Data tables by test**.
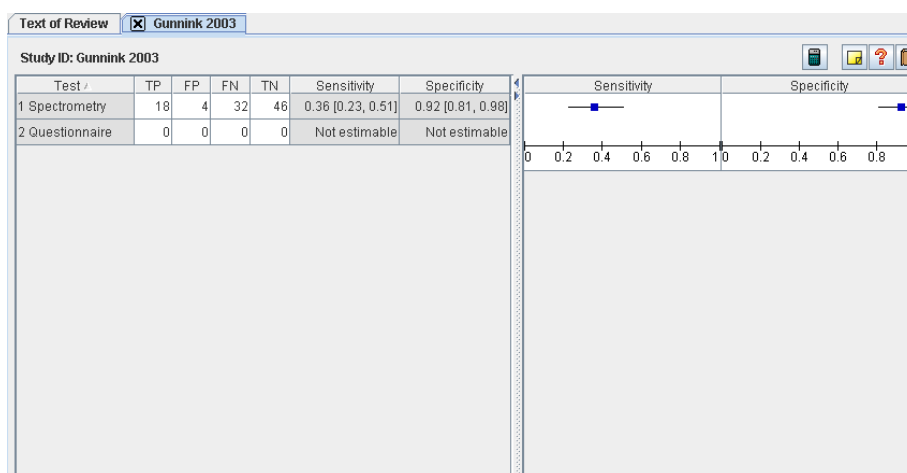
6. Enter the data for the Questionnaire:

Study	TP	FP	FN	TN
Gunnink 2003	10	15	2	53
Havelaar 2005	74	54	26	246
Levelt 2007	9	23	1	51

Note: You can also enter the data by copying these from a spreadsheet. In that case, you select all the cells containing TP, FP, FN, TN and copy those cells. Then you right-click on the first left-hand cell in the RevMan data table and choose **Paste**. Make sure that the rows and columns in your spreadsheet and in RevMan follow the same order!

> **Note:** When you update a value in the data tables, make sure that you press Enter/Return afterwards. If you do not press Enter, RevMan will not regard the number as really being entered and will not update the matching forest plots.

Assessment of methodological quality for two tests

Unlike the other domains, the Index test domain is assessed for each index test or group of tests in the review. RevMan allows you to add separate information for each test, but in order to do that, the various index tests should have been defined under Data tables by test.

1. In the *content pane*, select the **Characteristics of included studies table** heading.
2. Click the **Properties** ✤ icon next to the **Index Test** heading.
3. By default 'All tests' is displayed in the **Test Group** area.
4. To assess the signalling question 'If a threshold was used, was it pre-specified?' separately for both index tests included, select this item and click the **Add** button next to the **Test Group** area.
5. A new test group with the label 'Test Group A' is created. Create the number of groups that you require (by repeatedly clicking the Add button); in this case we need two test groups, spectrometry and questionnaires.
6. You can modify the label of each (group of) test(s) and choose the test(s) that should be part of the group from the list of tests that appears below by ticking the box in front of each test. You can also choose the studies from the list of studies that should be linked to the test group.
7. Tick the Spectrometry box and replace Test group A with Spectrometry. De-select the studies from Levelt, Dorlas and Egberts.
8. Do the same for the questionnaires. De-select the studies from Kanis, Smit and Van Nelle.
9. Click OK.
10. The properties window closes and the Index test domain for the test group is added to the table. If you defined multiple test groups, there will be a domain with signalling questions for each. Note there is only one descriptive text box for all test groups.
11. You can also delete each test from each study after you have set up the table, by clicking the Delete icon ❌ next to each test.

⊟ Index Test ⚙

Index tests	

⊟ Spectrometry ⚙ ❌

A. Risk of Bias	
Were the index test results interpreted without knowledge of the results of the reference standard?	▾
If a threshold was used, was it pre-specified?	▾
Could the conduct or interpretation of the index test have introduced bias?	▾

B. Concerns regarding applicability	
Was the cut-off used representative for the cut-off used in practice?	▾
Are there concerns that the index test, its conduct, or interpretation differ from the review question?	▾

⊟ Test group B ⚙ ❌

A. Risk of Bias	
Were the index test results interpreted without knowledge of the results of the reference standard?	▾
If a threshold was used, was it pre-specified?	▾
Could the conduct or interpretation of the index test have introduced bias?	▾

| **B. Concerns regarding applicability**	
Was the cut-off used representative for the cut-off used in practice?	▾
Are there concerns that the index test, its conduct, or interpretation differ from the review question?	▾

Covariates

It is possible to add covariates as well, for example, the cut off values of the tests that are being assessed.

1. In *outline pane* under "Data and analyses", right-click **Covariates** and choose **Add Covariate**. This will open the **New Covariate Wizard**.
2. Enter the **Name** 'Cut-off Value' and click **Next**.
3. Select **Test Level** and click **Next**.
4. There are two types of covariates: **Categorical** or **Continuous**.
5. Select **Continuous**. For continuous covariates, you can leave the **Default Value** blank or you can enter, for example, 0 for default.
6. Click **Finish**.
7. In the **Data Tables** (for both tests), a column will appear for **Cut-off Value**.
8. If you left the **Default Value** blank, you will see an empty column, otherwise, this column will be filled with your default value.
9. Enter the following values in the tables (either via **Data tables by test** or **Data tables by study**).
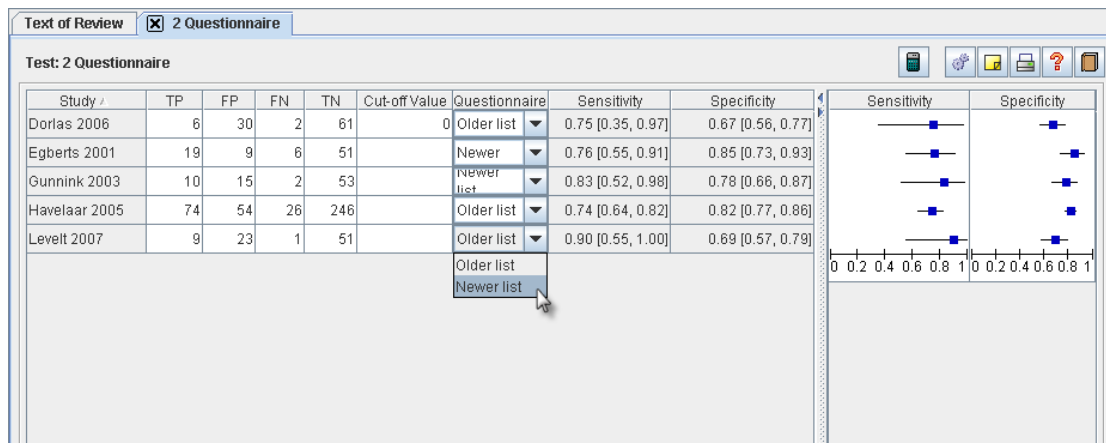
Study	Test	Cut-off Value
Gunnink 2003	Spectrometry	0.3
Havelaar 2005	Spectrometry	0.5
Kanis 2007	Spectrometry	0.5
Smit 2006	Spectrometry	0.4
VanNelle 1999	Spectrometry	0.5

10. Note that both Covariates appear in the Data Table of all included Tests. We leave cut-off value for questionnaires blank.
11. For the questionnaire, we will add another covariate, called 'Questionnaire Type'.
12. In *outline pane*, right-click **Covariates** and select **Add Covariate** again.
13. Enter the **Name** 'Questionnaire Type' and click **Next**.
14. Select **Test Level** and click **Next**.
15. Select **Categorical** and click **Next**.
16. For categorical covariates, you must define the different categories. Click **Add** to create a category.
17. Delete '**New category**' and replace it with '**Older List**'.
18. Click **Add** to create the second category. Replace the name '**New Category**' with '**Newer List**'.
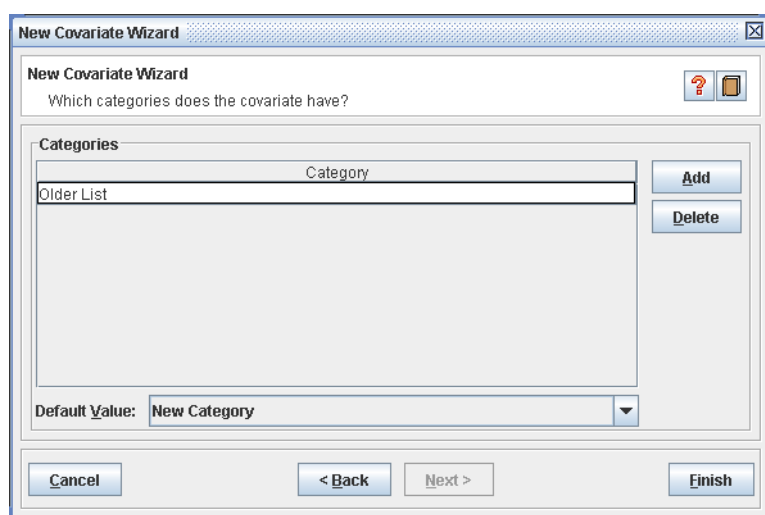
19. Click **Finish**.
20. In the **Data Tables** (for both tests), a column will appear for **Questionnaire Type**. In the **Questionnaire** data table, use the drop down menus to assign the questionnaire types as follows:

Study	Test	Questionnaire Type
Dorlas 2006	Questionnaire	Older List
Egberts 2001	Questionnaire	Newer List
Gunnink 2003	Questionnaire	Newer List
Havelaar 2005	Questionnaire	Older List
Levelt 2007	Questionnaire	Newer List

Study	TP	FP	FN	TN	Cut-off Value	Questionnaire	Sensitivity	Specificity
Dorlas 2006	6	30	2	61	0	Older list ▼	0.75 [0.35, 0.97]	0.67 [0.56, 0.77]
Egberts 2001	19	9	6	51		Newer ▼	0.76 [0.55, 0.91]	0.85 [0.73, 0.93]
Gunnink 2003	10	15	2	53		Newer list ▼	0.83 [0.52, 0.98]	0.78 [0.66, 0.87]
Havelaar 2005	74	54	26	246		Older list ▼	0.74 [0.64, 0.82]	0.82 [0.77, 0.86]
Levelt 2007	9	23	1	51		Older list ▼	0.90 [0.55, 1.00]	0.69 [0.57, 0.79]

Note: Although you may wish to explore the effect of Risk of bias or Concerns regarding applicability items, these need not to be entered as covariates. The signalling questions and the overall judgments are already available as sources of heterogeneity.

Analyses

RevMan is not able to perform meta-analysis or calculate summary estimates for DTA studies. You will need external software to do this. RevMan is capable of graphical analysis of the data at hand, either on its own or with the input of parameters from external software.

1. In *outline pane*, select **Analyses**.
2. Click the **Add Analysis** button on the *outline pane* toolbar. This will open the **New Analysis Wizard**.
3. Enter the **Name** 'Spectrometry' and click **Next**.
4. Select **Single test analysis**, and then select **Spectrometry** from the list of available tests. Click **Next**.

5. Click **Finish**.
6. An Analysis pane will open, showing three different areas:
   a. The **Forest plot** area
   b. The **SROC plot** area
   c. The **Externally Calculated Parameters** area, including the area in which the lay-out of the sROC plot can be defined.
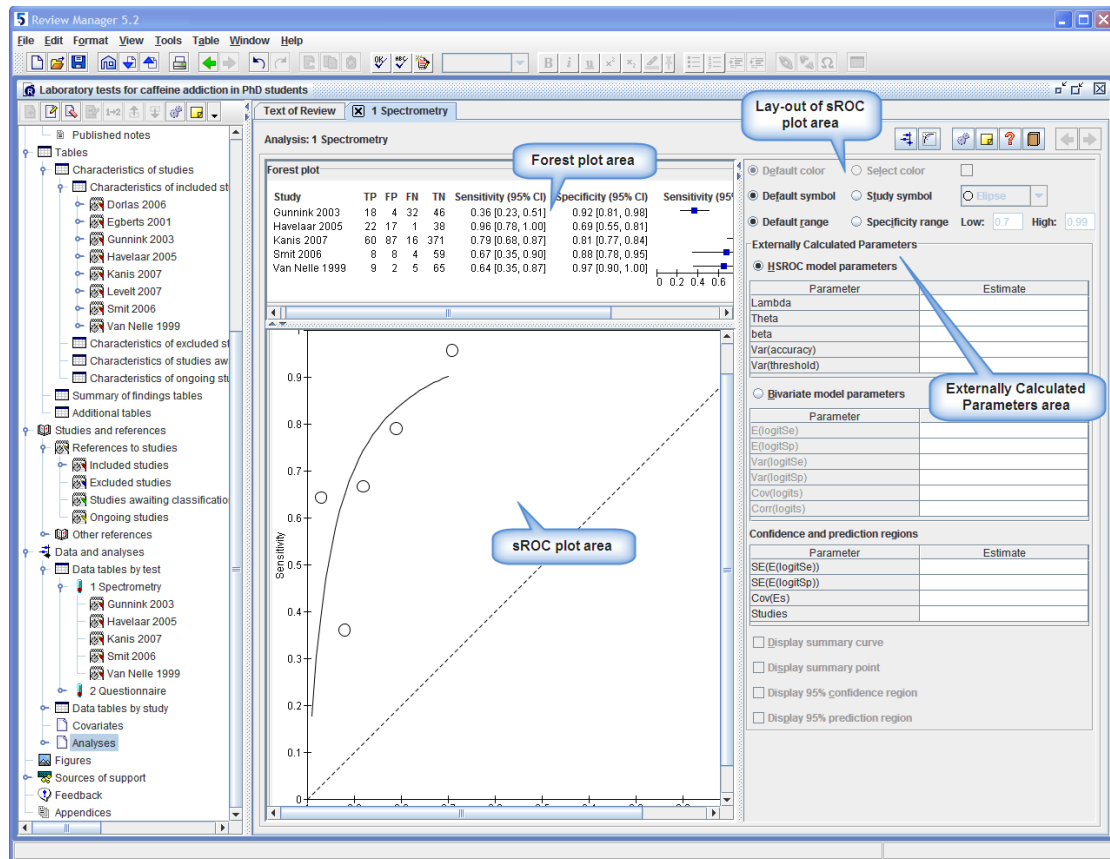
a. Changing Forest Plot properties

1. In the outline pane, click the key icon ⊶ to see the analyses listed under **Analysis**.
2. Click the **Properties** ⚙ button in the top right corner. This will open the **Analysis Properties** window.
3. Click the **Forest Plot** tab.
4. Select **Cut-off Value** as the **Covariate Displayed on Forest Plot**. Click **Apply** and then **OK**. Note that a column is added to the forest plot.

b. Changing SROC Graph properties

1. Click the **Properties** [icon] button in the top right corner to open the **Analysis Properties** window again.
2. Click the **SROC Plot** tab.
3. Select **Sample Size** as the **Scale for size of points**. Click **Apply.** Note that the forms and size of the points in the graph have changed.

4. Under **Symmetry**, select Asymmetric. Click **Apply.** Note that the shape of the curve changed.
5. Click **Apply.** Click **OK**.
6. On the right hand side of the Analysis pane, in the area in which the lay-out of the sROC plot can be defined, set the low end of the **Specificity Range** at 0.60 and the high end at 0.99. Note that the SROC curve covers a different range in the plot.

**c. Entering Externally Calculated Parameters**
To obtain valid pooled estimates of sensitivity and specificity, and when statistical testing is needed (e.g. to test whether the summary ROC curves of two tests significantly differ), external software has to be used. The resulting parameters can be entered here. Please consult the DTA Handbook or a statistician to explain how these parameters should be used.
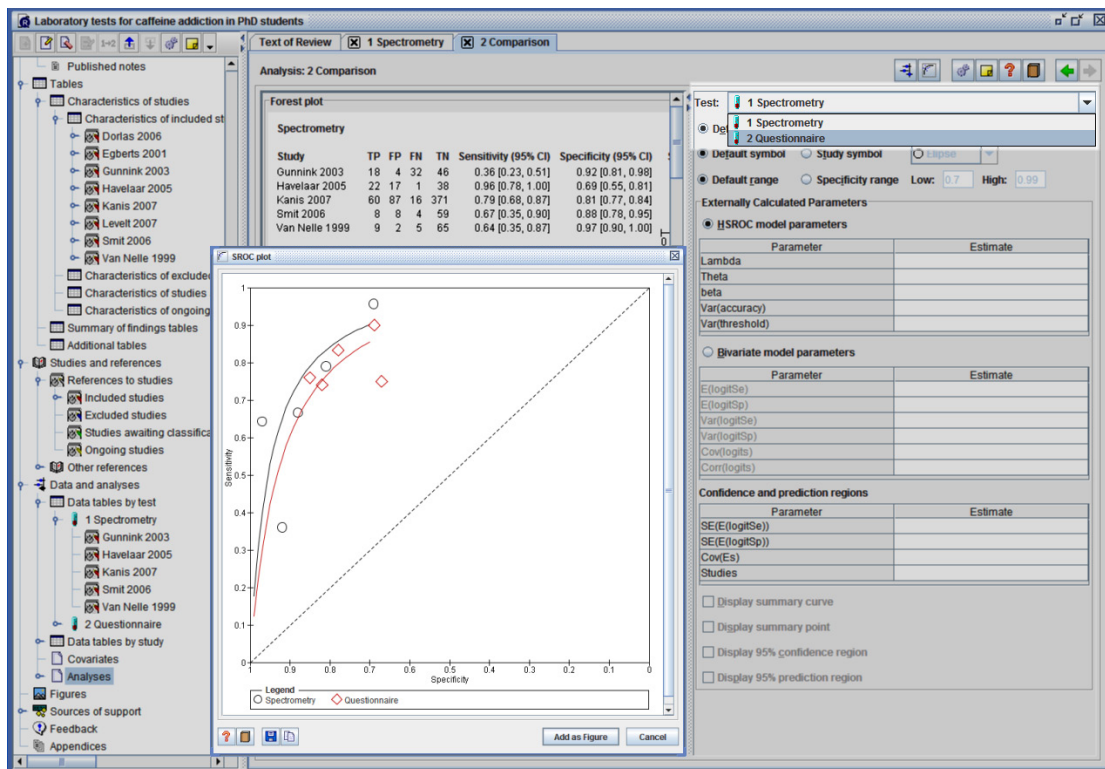
Test Comparisons
Most review questions will be comparative rather than looking at one specific test.

1. In *outline pane*, select **Analyses**.
2. Click the **Add Analysis** button on the *outline pane* toolbar. This will open the **New Analysis Wizard**.

3. Enter the **Name** 'Comparison' and click **Next**.
4. Select **Multiple tests analysis**.
5. Select both **Spectrometry** and **Questionnaire** and click **Next**.
6. Click **Finish**.
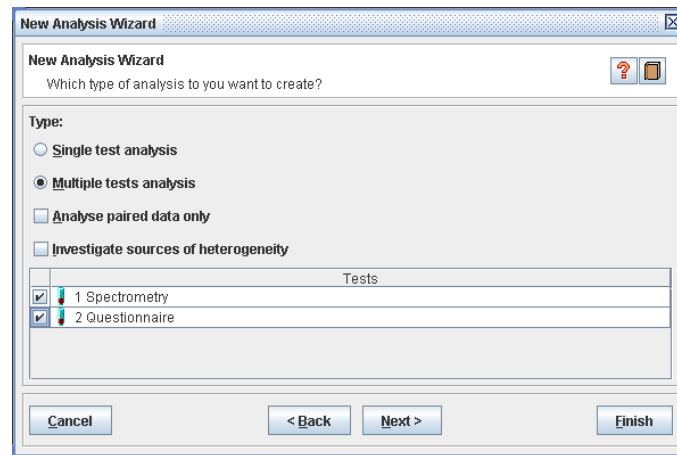
7. After clicking finish, the Analysis pane occurs and again you will see three different areas:
   a. The **Forest plot** area: scroll down to see two forest plots, one for each test.
   b. The **SROC plot** area: two different symbols with two different colours are now used. The black circles indicate the spectrometry studies and the red diamonds indicate the questionnaire studies.
   c. The **Externally Calculated Parameters** area: a drop-down menu appears to enable you to enter the externally calculated parameters for each test separately.

Paired Test Comparisons

RevMan enables you to restrict the Analyses to the data from studies that looked at both tests together.

1. Click the **Properties** button in the top right corner to open the **Analysis Properties** window.
2. Select **Analyse paired data only**.
3. Click **OK**.
4. While the two forest plots display all the data for each study, the SROC plot only shows the studies that contain data for both tests, linked to each other by a solid line.
5. The curves no longer reflect the data points displayed, and should be removed.
6. Click the **Properties** button, select the SROC plot tab and deselect **Display SROC curve(s)** option.
7. Note that in one study, the questionnaire seems to have a much higher sensitivity than spectrometry, while in the other study, spectrometry has a higher sensitivity.
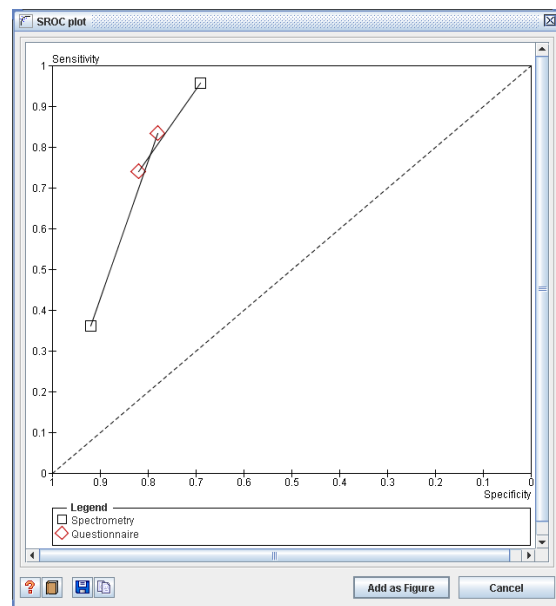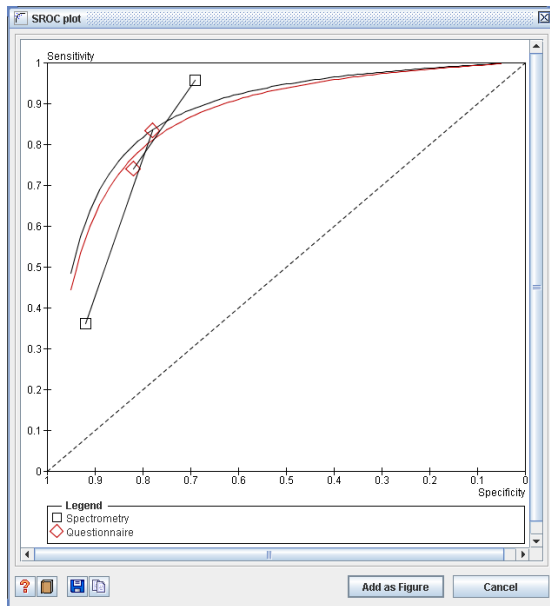
Investigating heterogeneity

RevMan allows you to investigate heterogeneity visually. You can examine whether the accuracy of studies differ by certain characteristics of studies. A stratified analysis of studies will be performed showing whether accuracy of studies differ by subgroups of studies. In RevMan no formal testing will be performed to determine whether results are significantly different. RevMan will only show a summary ROC curve for each subgroup. The forest plots may show the values of both categorical and continuous covariates, whereas the summary ROC plots will only be plotted for categorical covariates.

1. In *outline pane*, select **Analyses**.
2. Click the **Add Analysis** button on the *outline pane* toolbar. This will open the **New Analysis Wizard**.
3. Enter the **Name** 'Effect of questionnaire type' and click **Next**.
4. Select **Investigate sources of heterogeneity**, then select **Questionnaires,** click **Next**, click **Finish**.
5. After clicking finish, the Analysis pane will appear, although at first there will be no indication that heterogeneity has been taken into account. To address the effect of different questionnaire types, click the **Properties** button in the top right corner. This will open the **Analysis Properties** window.
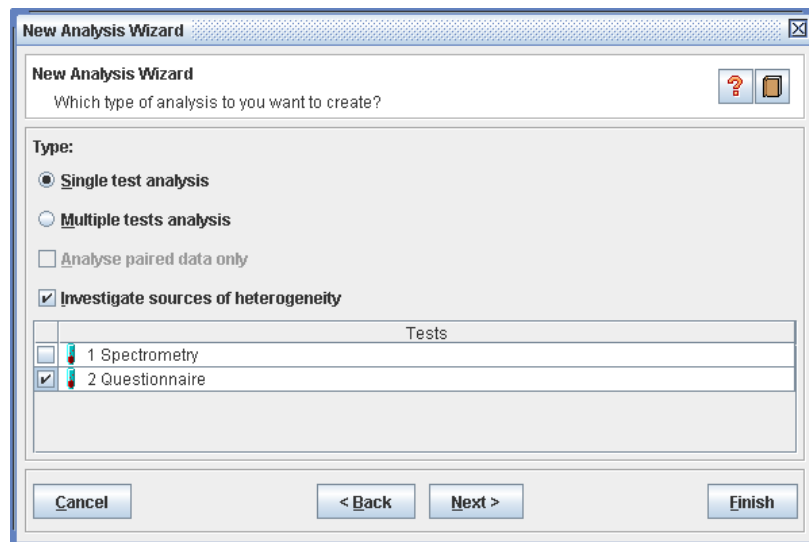
6. Open the tab **Sources of heterogeneity** and select **Covariate**.
7. Click on the drop down menu and select **Questionnaire Type**.
8. Click **OK**.
9. In the **Externally Calculated Parameters** area, a drop-down menu appears to enable you to enter the externally calculated parameters for each covariate separately.

Adding a figure to your review

A small number of key summary ROC plots and forest plots can be included as figures in the text of your review, which will be published as a PDF. Forest plots for all outcomes will still be accessible as additional data in (the full version of) your published review.

1. In the *outline pane*, double-click the **Spectrometry** analysis to open the **Spectrometry** tab in the *content pane*.
2. Click the **Forest plot** ⊞ button or the SROC plot ⊡ in the top right corner of the **Spectrometry** tab. This will display the plots as they will appear in the published review.
3. Click **Add as Figure**. This will open a new tab showing the forest plot, labelled as **Figure 1**.
4. In the *outline pane*, click the key icon ⊶ next to the **Figures** heading to see that the figure has been added.
5. In the *outline pane*, click on the **Spectrometry** data table to return to the Data Tables.
6. In the **Gunnink** study, change the number of true positives from 18 to 80.
7. Click on the **Figure 1** tab again. Note that the numbers have been automatically updated.
8. Click the **Save As** 💾 button in the top right corner of the **Figure 1** tab. This allows you to save the figure as a graphic file on your computer. Click **Cancel**.
9. Click the **Text of Review** tab. Scroll up to the **Results** section of your review.
10. Click the ⊞ icon to open the **Results** section, and then the **Findings** section.

11. Click to place the cursor in the **Findings** section.
12. Click the **Insert Link** button on the toolbar.
13. From the **Insert Link To** list, select **Figure**.
14. Select **Figure 1** and click **OK**. A link to Figure 1 will now appear in the text of the review. In the published version, a thumbnail image will appear.

Risk of bias and applicability concerns graph and summary

1. In the *outline pane*, select **Figures**.
2. Click the **Add Figure** button on the *outline pane* toolbar. This will open the **New Figure Wizard**.
3. Select **Risk of bias and applicability concerns graph** and click **Next**.
4. Click **Finish.** RevMan will create a graphical representation of the judgments entered in your **Characteristics of Included Studies tables**.
5. As you will see, there are no yellow bars to indicate an 'unclear' judgment. This is because no reasons for our judgments have been entered in the tables. RevMan interprets an unclear judgment with no reason given as "not applicable", and removes these judgments from the tables in your published review.
6. Repeat steps 1 and 2. This time select **Risk of bias and applicability concerns summary**.
7. Click **Next** and then **Finish**. RevMan will create an alternative graphical representation of the judgments in the **Characteristics of Included Studies tables**. You can now add links to either of these figures in the text of the review.

PART 6 – Finishing the review

Summary of Findings tables

When your review is complete, you should add one or more tables to briefly summarise your results. There is no fixed format for these tables in reviews of diagnostic test accuracy. For more information on how to complete a summary of findings table, see the *Cochrane Handbook for Diagnostic Test Accuracy Reviews*, available from http://srdta.cochrane.org.

1. In the *outline pane*, use the key icon ⚷ to expand the **Tables** heading, and select **Summary of Findings** tables.
2. Click the **Add Summary of Findings Table** button on the *outline pane* toolbar. This will open a 3 by 3 empty table, free to adjust as you like.
3. You can add rows and columns to this table by right-clicking on the table.
4. Select the top row of the table, right-click and select **Merge Cells**. A merged top row can be used to state the review question and other information needed to use the table as a stand-alone document.
5. The **Summary of Findings** table will be added to your review.

Adding an appendix

You can include more detailed information that is not essential to the main body of your review in an appendix, such as detailed search strategies or statistical methods.

1. In the *outline pane*, select the **Appendices** heading (the last heading on the list).
2. Click the **Add Appendix** button on the *outline pane* toolbar. This will open the **New Appendix Wizard**.
3. Enter the **Title** 'Detailed search strategies'.
4. Click **Finish**. In the *content pane*, the Appendices section will open and your appendix title will be shown. You can now enter text or tables in the appendix.

Validating a review

Before publication, every review should be validated to make sure all sections have been completed and meet the requirements of The Cochrane Collaboration.

1. From the **Tools** menu, select **Validate as You Type**, or click the **Validate as You Type** button on the toolbar. In the *outline pane*, any sections with problems identified will be underlined.
2. Hover the mouse over a section underlined in red. A **Validation error** message will appear. Validation errors must be corrected before publication.
3. Hover the mouse over a section underlined in blue. A **Validation warning** message will appear. It is not compulsory to correct Validation warnings.
4. From the **File** menu, select **Reports**, and then **Validation report**. A report will be displayed listing all the **Validation errors** and **Validation warnings**. You can choose to copy, print or save this report.

5. Click OK.
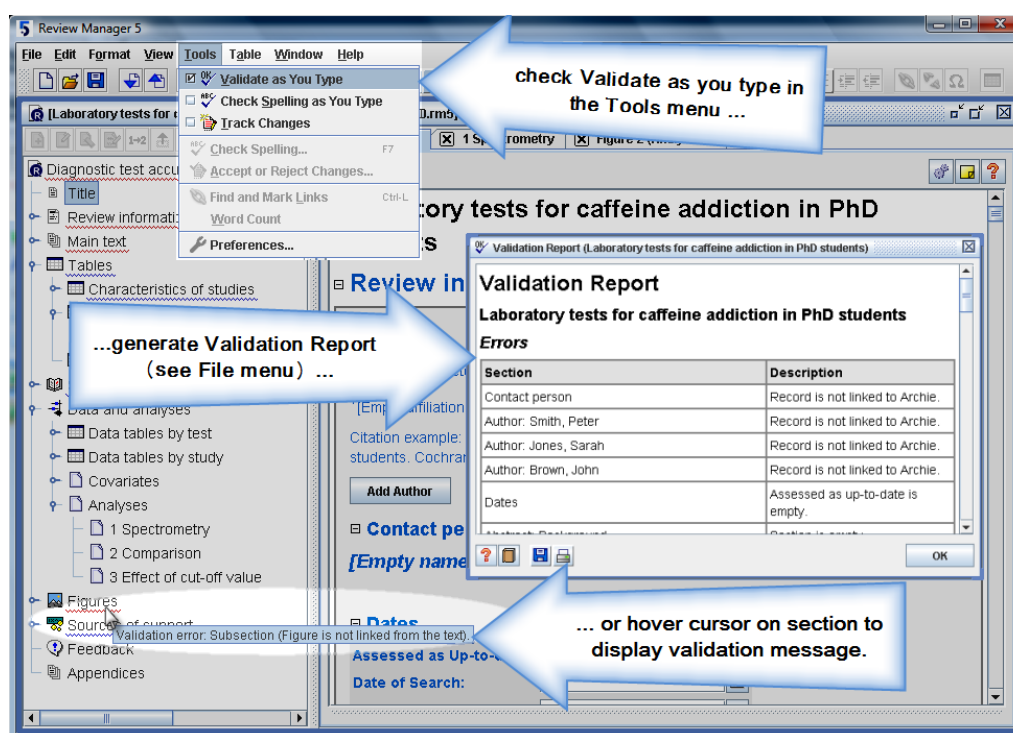
Submitting a review for editorial approval

When you have completed all the remaining sections of the review, including the **Abstract**, you will need to submit the review to your Cochrane Review Group for editorial approval. You can select this option when checking the review into the Archie database, and your Managing Editor will receive an automatic message advising that the review is ready.

You will not be able to access your review during the editorial process.

When you have made all the changes requested and the review is ready to publish, you and all your co-authors will need to sign the **Licence for Publication Form**, available from the **File** menu under **Reports**.

Appendix – To convert to QUADAS-2 from QUADAS

1. Click the Properties icon [icon] next to the 'Assessment of methodological quality table' heading.
2. On the General tab click the button Switch to QUADAS-2.
3. A dialogue box will appear asking you to confirm that you want to switch to QUADAS-2. The process cannot be undone so click Yes if you are sure otherwise click No.
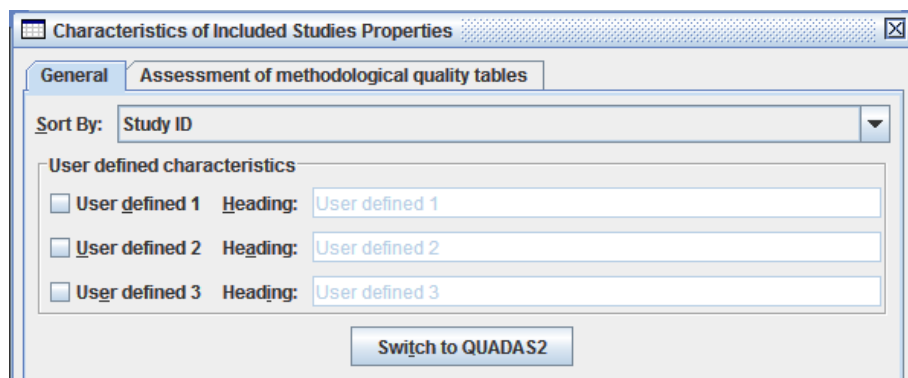
Data is not lost during the conversion process. The old QUADAS items and the characteristics table will be converted as shown in the table below.

Study characteristics		
RevMan 5.1	**RevMan 5.2 – Text boxes for QUADAS-2 Domains**	
Study design	Patient sampling	
Participants Clinical features and setting	Both fields in 5.1 merged into one called Patient characteristics and setting	
Index and comparator tests	Index tests	
Target condition and reference standard(s)	Target condition and reference standard(s)	
Follow up	Flow and timing	
Notes	Notes	
User defined fields	Notes	
Methodological quality		
QUADAS item	QUADAS-2 signalling question	QUADAS-2 Domain
Representative spectrum?		Patient selection
Acceptable reference standard?		Reference standard
Partial verification avoided?		Flow and timing
Differential verification avoided?	Did all patients receive the same reference standard?	Flow and timing
Incorporation avoided?		Reference standard
Reference standard results blinded?	Were the reference standard results interpreted without knowledge of the results of the index test?	Reference standard
Index test results blinded?	Were the index test results interpreted without knowledge of the results of the reference standard?	Index test
Relevant clinical information?		No related domain so added to Notes field
Uninterpretable results reported?		Flow and timing
Withdrawals explained?		Flow and timing