ADDIS MCDA Tutorial

# Subjects covered

* Creating a new workspace based on an example dataset
* Exploring different methods for preference elicitation, that is, quantifying how important (side-) effects of treatments are to you
* Seeing how these preferences impact the relative value of the alternatives offered

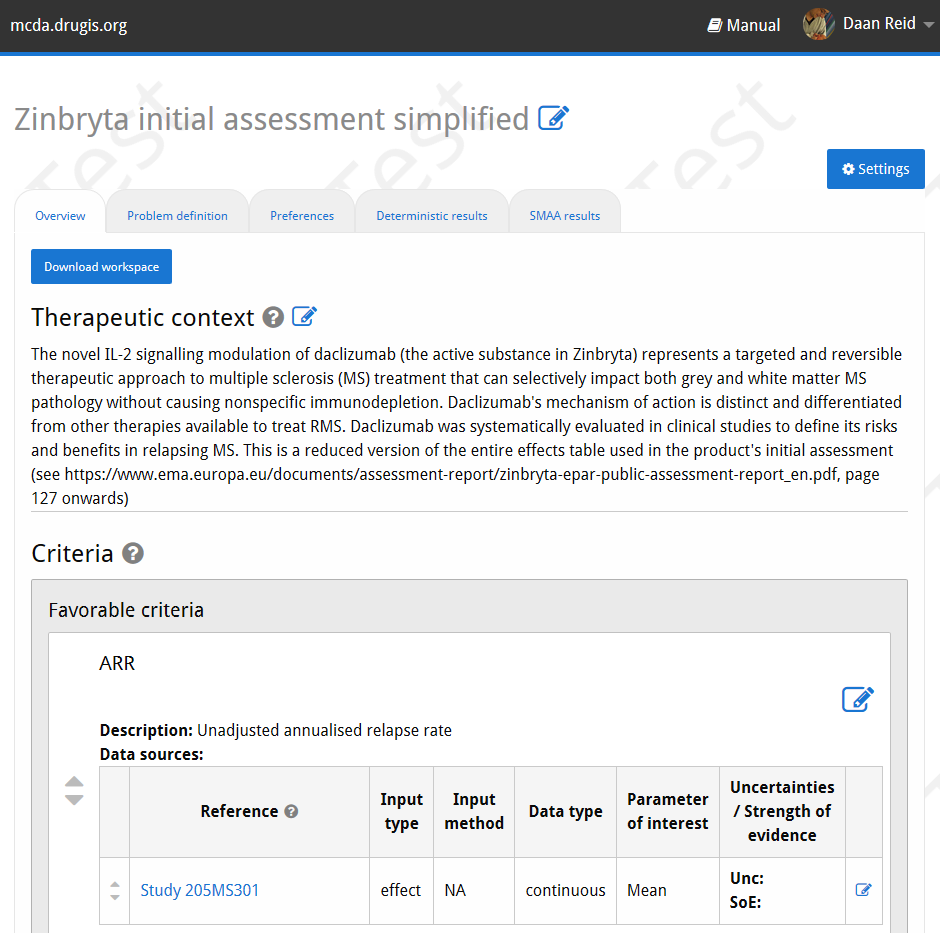
# Tutorial: Multicriteria decision analysis

## Sign in to MCDA.drugis.org

**👉** Open your browser of choice and navigate to [https://mcda.drugis.org](https://mcda.drugis.org/). Use your Google account to sign in.

## Create the example workspace

**👉** Click the ‘Create workspace’ button. In the dialog that appears, choose the ‘Zinbryta initial assessment simplified’ option. You should now be on the Overview screen of a fresh workspace, like on Figure 1.

  
Figure 1: Workspace overview

**💡** The overview screen shows you the criteria and their data sources and characteristics, the alternatives and the table with measurement data. Note that many elements in the interface have a contextual help icon (Figure 2) that you can click for explanation and links to the relevant section in the manual.

  
Figure 2: Contextual help icon, outlined in red

**💡** The example concerns a simplified version of the [Zinbryta assessment](https://www.ema.europa.eu/en/medicines/human/EPAR/zinbryta" \l "authorisation-details-section). The criteria are the primary endpoint (Annualised Relapse Rate) and several adverse events. Only data from the 205MS301 study are included, as can be seen in the effects table. The references column contains links to the clinicaltrials.gov registry version of this study in case you want to look at the source data.

## Evaluate evidence

👉 Take a moment to look at the data table at the bottom of the overview tab. Do you have a clear preference for one of the two alternatives? What makes this alternative better in your view?

We are now going to quantify your preferences in several ways to see whether your intuitive answer in the previous step matches the outcome of MCDA.

## Preferences: partial value functions

**👉** Go to the ‘Preferences’ tab.

**💡** At the top are the partial value functions, which indicate how the desirability of a criterion’s outcome varies with its value. Below this is the weights section which is the main concern of this tutorial. Before setting preferences, the partial value functions need to be defined.

**👉** Click on the ‘Define partial value function’ button for ARR. Lower relapse rate is better, and we are going to assume that there is a linear relation between how much the relapse rate goes down and how valuable we find the treatment, so the type of function is ‘Linear’. Click on ‘Save’.

**👉** Also define linear partial value functions for the adverse event criteria, with low values being best. The result should look like Figure 3.

## Preferences: ranking elicitation

First let’s see how the criteria compare if we only give an ordinal ranking, with efficacy as the most important.

**👉** Click the ‘Ranking’ button below the weights table, then indicate that ARR is the most important criterion, followed by Hep. AE, then Inf. AE. Then click on the ‘Deterministic results’ tab.

**💡** The deterministic results screen shows the effects table, but the values can be changed to do sensitivity analysis (subject of a later tutorial). Below this are the representative weights, showing which weights the system has based the value profiles on. Because we did not supply direct numerical weights but did ordinal ranking instead, the system has calculated a default ordinal set of weights which is shown in the table.

**💡** The total value indicates how good a criterion is according to the weights you supplied and the data in the effects table. The value profile plot below the total value table shows how the value of each criterion is composed (see Figure 5). In the current situation, we can see that Daclizumab is much better at reducing the relapse rate, while the other treatment is better as far as all the adverse events goes. Because we have indicated that ARR is much more important than the adverse events, it follows that we should prefer Daclizumab.

Let’s see how the picture changes if we weight all criteria equally.

**👉** Go back to the ‘Preferences’ tab, and click the copy icon next to the scenario dropdown (Figure x). Give the new scenario an intuitive name like ‘Equal weights.’

👉 Click the ‘Precise Swing weighting’ button below the weights table, indicate that ARR is the most important, and then leave all the sliders at 100% and click ‘Save’. Now navigate to the ‘Deterministic results’ tab again, and the picture should be quite different. The representative weights are 0.25 for each criterion, and IFN β-1a 30µg is now better than Daclizumab. Because there are simply more adverse event criteria, they together outweigh the higher effectiveness of Daclizumab.

You can switch between scenarios using the dropdown at the top of the tab, and the results will reload.

Also explain Matching weighting here? Seems maybe too complicated?

There is no uncertainty in this simplified scenario, meaning that the stochastic component of our MCDA tool is not relevant and the ‘SMAA’ tab should be ignored. It is the subject of a later tutorial.

We hope that this tutorial has demonstrated adequately how assigning different importance to criteria can drastically change the relative value judgment of treatments. We’ve also shown how quantifying these importances makes it easy to see where these differences originate. Finally, we’ve shown that in the MCDA interface it is easy to input different preference scenarios and switch between them.