



**a Dynamic Model for Health Impact Assessment**

**Hands on training**

**Workshop on DYNAMO-HIA**

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## **Exercise I: DYNAMO in a nutshell**

**In the first exercise in this workshop, you will pass in large steps through several parts of DYNAMO. The exercise is based on the User Guide and Manual (Tutorial 1). The aim of this exercise is to get familiar with the DYNAMO-HIA tool. It sketches in a nutshell how the tool works. All data and specifications to run the simulation are already defined in this exercise.**

**First you have to install DYNAMO-HIA and the data on your computer.**

- On USB-stick: locate and click on the file “setup.exe”.
- The installer asks you to specify the desired installation directory (the software itself requires some 140MB of disk space).
- After DYNAMO-HIA finished the installations, click “close”. DYNAMO-HIA is installed now and is added to the list of programs in the start menu.

You have to do this only once.

Before you start DYNAMO-HIA, check that the tutorial data and country data from the DYNAMO-HIA database are on your computer. After installation, the data should be in the directory “Program Files/RIVM/DYNAMO-HIA/DYNAMO-HIA”. There you should see two folders: “Tutorial\_data” and “countrydata”. In the folder “Tutorial\_Data” and of each country in the folder “countrydata”, you will see two directories: “Reference\_data” and “Simulations”. It is important to realise that the working directory has to adhere to a fixed structure, i.e. containing certain directories. DYNAMO creates this structure. If in the future you decide to make a new directory, follow the User Guide on page 8.

**Second you have to open the DYNAMO-tool to get the User Interface.**

- To start the software open the start menu, go to the folder “Program Files/RIVM/DYNAMO-HIA/DYNAMO-HIA application/eclipse” and click on the icon “DYNAMO-HIA.exe”. After starting the program, a file browser appears with the sentence “In the DYNAMO-HIA home directory data and simulations are stored”. This window allows you to choose the working directory with the data you want to work with

during this session. For this exercise choose “directory /Program Files/RIVM/DYNAMO-HIA/DYNAMO-HIA/Tutorial\_Data”.

- Click on “Tutorial\_data, “Tutorial\_Data” appears in the white box and click on “OK”.  
Now the User Interface appears.

The **User Interface** allows to open and edit the data files that are stored in the working directory, add new files to them, and setup and run simulations. The structure of the home directory (in this case: “Tutorial\_Data”) mimics the directory structure of the folder specified as the home directory. The home directory always has a Reference\_Data and a Simulations directory.

- Explore the “**Reference\_Data**” directory. In the directory Reference\_Data all the input data required to run simulations is stored (all the data files for the reference scenario and the additional risk factor files for the intervention scenario). Press on the + sign next to the “Reference\_Data” directory, and view the directories “Diseases”, “Populations” and “Risk\_Factors”.
- Press on the + sign next to the directory “Diseases” to expand the “Diseases” directory and view the content. All diseases that are available for simulation are now listed. How many diseases are included? Also explore the content of the “Populations” and “Risk\_Factors” directories.
- Explore the “**Simulations**” directory. Click on the + sign right next to the “Simulations” directory to expand the view (if this is not already expanded).
- Locate the directory “Tutorial\_1” in the “Simulations” directory and click the + sign to expand the directory. The “Tutorial\_1” directory includes a file “configuration”.

**Third you have to configure and run the first simulation.**

- Right click on this file “configuration” and choose “Configure and Run Simulation” from the context menu. The simulation screen appears.

In “Simulations” screen all the choices for running simulations can be made. Configuring a simulation requires making several choices. For example, which risk factor to use, which diseases and RRs to include, the length of a simulation period, whether or not to include births, the minimum and maximum age of the population, and most importantly the risk factor

exposure in the baseline year (prevalences) and whether, and if so, how this will change in the future (transitions) in the reference scenario (business as usual) and in the intervention scenarios. All choices in this exercise have been made and are already incorporated in the simulation configuration. This simulation in this exercise explores how the population health of Batavia would develop in the next 25 years if Batavia would have the (age and sex-specific) prevalence of normal weight, overweight and obesity of the UK. Batavia is a fictional country that shares almost all health and population characteristic of the Netherlands.

- Click on “Simulations”, “Tutorial 1” and next right click on “configurations”, “configure and run simulation. You will see that all data and other choices are specified.
- Run this simulation by clicking on the button “save and run”. After a few seconds the output screen appears.

#### **Fourth you inspect the outcomes.**

The first image of the Outcome Interface is always the “Population Pyramid”, which graphically shows the overall population development over time and presents the share of the population that has a given diseases. The User Manual on page 12-13 gives more information on this figure and its different options.

- Click on the “autoRun” button in the bottom left corner. This starts an animation that shows the development of population and population health for the projection time in one year increments.
- Select “IHD” from the pull-down menu “disease”. What is the result of changing “total disease” to “IHD” for the part of the population with disease (light red area)?
- Select “Scenario 1” from the pull-down menu “scenario”. What happens to the part of the population with IHD? You may find this difficult to see. Therefore, click on the radio button in the middle of the screen and switch the y-axis from “absolute value for scenario” to show the “difference with reference scenario”. Now the light red area shows the part of the population that has a given disease in both the “reference scenario” (Batavia) and “Scenario 1” (UK prevalence). Also a red area appears. How would you interpret this red area? (You may consult the User Guide on pages 12-13).
- Move the mouse over the graph, it shows you the exact numbers in each bar-part.
- Look more in detail by clicking and holding the left mouse button and then move to the right. Undo this by repeating the procedure, but moving to the left.

- Click Right on the Figure. This will show a menu, where you can choose to print or save the graph, or change the titles, etc. Change the title by adding “Batavia” by selecting “properties”. Then save the figure.

#### **Fourth you inspect the outcomes.**

On the top of the output interface different tabs are visible that allow analyzing the simulation results further: disease plots, risk factor plots, life expectancy plots and mortality/survival plots.

- Click on the tab “disease plots”. This screen gives a graphical overview of the development of disease prevalence for the simulated scenarios. Again this screen allows several different choices. When first viewing the tab “disease plots” after a simulation run, usually the plot graphs the development of the disease prevalence (any disease) over time for all scenarios (here: “reference scenario” and “Scenario 1”).
- In the pull-down menu “**disease**”, a specific simulated disease can be chosen.
- When selecting the radio button “**by gender**”, the view changes, and the plot shows the prevalence development separately for men, women, and the total population. The scenario for which this is done can be selected in the pull-down menu “**scenario**”.
- When selecting the radio button “**x-axis**”, the perspective can be change from “year” to “age” and vice versa.
- When selecting the radio button “**y-axis**”, the perspective can be change from “rate” to “number of cases” and vice versa.
- Make a graph that compares the age-and sex specific prevalence rate of IHD between persons with normal weight, overweight and obesity in the reference scenario.
- Click now on the tab “life expectancy plots”. It allows you to graph the life expectancy for the different scenarios, their development over time, and the number of expected life years with any disease or with a given disease, at different ages and both from the period and cohort perspective.
- Feel free to explore different options in the output screen for risk factor plots and mortality/survival plots.

#### **Fifth write your output to a file**

- Click on the tab “Write output”. Save the results “per year of simulation”, separately for men and women and per disease. Where can you find the output file? Open the file for men with the results of the reference scenario.

## Exercise II: Configuration of a simulation

Exercise 2 aims to teach you how to configure a simulation. This means filling in the information required in the top half of the simulation configuration screen with information about the population and some technical aspects of the simulation, and fill in the tabs: “risk factor”, “diseases”, “relative risks” and “scenarios”. This exercise guides you through these tasks.

As in the prior exercise, the simulation explores how the population health of Batavia (largely resembling the Netherlands) would develop in the next 25 years if Batavia would have the (age and sex-specific) prevalence of normal weight, overweight and obesity of the UK.

**First, open the screen to configure a new simulation.**

- In the User Interface, go to Simulations and select “Tutorial\_2”. Click right “configure and run simulation”.

**Second, fill in the simulation configuration screen**

Some information is already present in the **top half of the simulation** configuration screen. The “name” is taken by DYNAMO from the name of the directory and should read here “Tutorial\_2”. “Batavia” is taken as the “population”, as this is the only population in the directory Population (you may want to check this). “Starting year” is 2010 as default and should read as the current year. “Random seed” is taken as 1. For more information, see User Guide on pages 22-24.

Other information may need changing.

- Change the “population size” to 50. This is the number simulated for each age/gender combination. A large number usually yields a lower stochastic variation in the risk factor histories.
- Include “newborns”.
- Change “number of year” to 25, so that DYNAMO projects the scenarios 25 years into future.

- Choose “0” for “the minimum age” of the population you want to simulate, and “95” for the “maximum age”.

**Second, fill in the risk factor tab** (see also User Guide on pages 25-26).

- Click on the “Risk Factor” tab. This tab consists of three pull-down menus. The first on the top, “**Risk Factor**”, allows choosing the directory that contains the desired risk factor. Select: “BMI\_cat3”.
- The second menu “**Risk Factor Prevalence**” allows choosing the file with data on the risk factor prevalence in the baseline year in the business-as-usual (reference) scenario. Chose: “NL\_RF\_BMI\_cat3\_Prev\_V1”. This is the age and sex-specific prevalence of normal weight, overweight and obesity of the Netherlands.
- The third menu “**Transition**” allows choosing the file with the transitions between risk factor states in the reference scenario. Chose: NL\_RF\_BMI\_cat3\_netto.
- Read the manual on pages 26 and 27. Here it is explained why dynamic modelling needs specification of the prevalence and future transitions and what the options are in DYNAMO.
- Since you specified nett transitions, what will be the change in the age-specific prevalence normal weight in the projection period?

**Fourth complete the “Diseases” tab.**

- Click on the “Diseases” Tab. This tab allows choosing which diseases to include and further specifies them.
- Click on the button “create”. At the top is a pull-down menu, showing the diseases that can be included in the simulation. The names in this pull-down menu are the directory names in the “Diseases” directory of the “Reference\_Data”. How many diseases can be selected?
- First select “IHD”
- For every disease, (first IHD), four files can be specified. The prevalence of the disease (“Disease Prevalence”), the incidence of the disease (“Incidence”), the excess mortality (“Excess Mortality”), and the DALY weights (“DALY Weights”). The pull-down menus shows all the files contained in the respective sub-directory of the chosen disease. In this dataset only one per sub-directory.

- Click eight more times on the “create” button. Now nine diseases are included and each of the included diseases has a file for prevalence, incidence, mortality, and DALY weights.
- The mortality file can be specified in different ways, depending on the disease type. For more information see the User Guide on pages 21-22.

**Fifth complete the “Relative Risks” tab.**

- Select the “Relative Risk” tab. This tab allows determining which relative risks to include.
- Press the “create” button 12 times. Look at the 12 RRs that are now included. You have nine diseases. Why do you have more than nine RRs? You may consult the User Guide on pages 28-30.

It is noteworthy that the default choices for the data files are the right files in this exercise, as each subdirectory only includes one file. Otherwise the user has to select the file to be used.

By having specified the risk factor (prevalence and transition), the included diseases, and the relative risks, the **reference scenario** is fully specified.

**Finally complete the “Scenarios” tab to specify alternative scenario(s) (intervention scenarios).**

- Click on the “Scenarios tab”, and next click on the button “create”. Give you scenario the name “UK prevalence”.

The main choices are in the pull down menu “Transitions” and “Risk Factor Prevalence”, where the alternative scenarios can be specified. To specify what is expected in risk factor exposure due to the policy or intervention (=intervention scenario), the user change as compared to the reference scenario (specified in the “Risk Factor” tab):

1. Only the baseline exposure
2. Only the future transitions
3. Both baseline exposure and transitions.

If the user wants to change only one (1 or 2), (s)he has to choose the other input equal to that in the reference scenario (= as selected on the “Risk Factor” tab). For more information, consult the User Guide, pages 30-32. In this exercise, we change both, as we assume that

Batavia would have the (age and sex-specific) prevalence of normal weight, overweight and obesity of the UK during the entire simulation interval. To keep the new age- and sex specific prevalences constant during the simulation interval, choose:

- For “Transitions”: “UK\_RF\_BMI\_cat3\_transitionNetto”.
- For “Risk Factor Prevalence”: “UK\_RF\_BMI\_cat3\_Prev”.

Furthermore, success rate and target of intervention can be specified.

- Keep the success rate at 100%.
- Change the target of the intervention, so it includes all ages from 0 to 95 for both men and women.

The success rate and age range can also be changed in the output screen, i.e. after the simulation has been run.

- After this complete configuration you can run the simulation.

## **Exercise III: Inspect the outcomes from the Results Object**

**Exercise 3 focuses on the “resultsObject.obj” which contains the output of a simulation. It is created in every run and opens directly after running or can be re-opened without re-running later. The aim of this exercise is learning to use the “resultsObject.obj” and to graph and analyse the different aspects of the risk factor prevalence, disease prevalence, mortality and survival plots and life expectancy plots. This exercise starts from the “resultsObject.obj” of tutorial 3. In fact this is the “resultsObject.obj” obtained by running the scenario in exercise 2. Hence the simulation has not changed. To be sure that that everyone has the same starting point, this “resultsObject.obj” is already present in “Simulations/Tutorial\_3”.**

**First you open the results object.**

- Open the file “resultsObject.obj” of tutorial 3. To do so, in the directory “Simulations” expand the sub-directory “Tutorial\_3” by clicking on the + sign. “Tutorial\_3” already contains a run simulation that created three sub-directories. Click on the + sign next to the directory “results”. Right click on the “resultsObject.obj” and choose “View results”.

After a few moments the output screen appears. The output screen has a number of different views that can be accessed via tabs, including:

- Population Pyramid
- Disease plots
- Riskfactor plots
- Life expectancy plots
- Mortality/survival plots

Graphing and analysing the different output options is not only a way of selecting the most appropriate output for your target audience. It is also important for checking purposes. Did your simulation do what you expected it to do: is the change in risk factor in the future what you expect? Is the resulting change in disease prevalence what you expect? Is the resulting change in mortality/survival and life expectancies what you expect? The User Guides on pages 33-50 shows in detail how to graph and analyse the different output options.

- Navigate with pages 33-50 of the User Guide through the results of your scenario outcomes.

**Second you change the scenario settings.**

- The “resultsObject.obj” is not only important to graph and analyses the outcomes. The “change scenario settings” tab also allows adjusting the several scenario options even after the simulation has been run, by changing “Success Rate”, ”Minimum Age”, “Maximum Age” and “Target Gender” after you have run the scenario.
- Change the age range of the intervention to maximum 50 years. In this simulation, a maximum age of 50 would mean that the in the intervention scenario (“UK\_Prevalence”) only the people of 50 year and younger would be switched from the Dutch BMI-prevalence to the UK BMI-prevalence.

## Exercise IV: Getting to know the DYNAMO-HIA database

In exercises 1-3 all input files were already available in the tutorial dataset. For your own future applications this will not be the case. However, this does not mean that you have to start from scratch. DYNAMO-HIA already includes data for a large number of EU member states.

The aim of the fourth exercise is to introduce you to the DYNAMO-HIA database. All data files in DYNAMO\_HIA are entered in the DYNAMO directory structure and are named according to the naming convention in Appendix B of the User Guide.

### First quickly inspect the DYNAMO-HIA database.

- Choose the home directory that includes the DYNAMO-HIA database. If DYNAMO is already open, you can change the working by going to the “File” menu, “change workdirectory”.
- Now select the folder with the DYNAMO-HIA database. Go to: /”Program Files/RIVM/DYNAMO-HIA/DYNAMO-HIA/countrydata”. You will see the names of all EU member states in this folder. You always have to select a particular country. Select the “UK”.
- Expand the directory “Reference\_Data” by clicking on the + sign. This reveals the three sub-directories: “Populations”, “Diseases” and “Risk\_factors”.
- Expand the view of “**Populations**” by clicking on the + sign. This gives “United Kingdom”.
- Expand the view of “United Kingdom”. This gives the files with UK data on newborns, overall daily weights, overall mortality, and size.
- Expand the view of “**Risk\_factors**” by clicking on the + sign. This gives the directories with UK data on Alcohol (5 exposure categories), BMI (normal weight, overweight, obesity), BMI (continuous), smoking (never, former, current smokers), and smoking (time since quitting).
- Expand the view of “BMI-cat3” by clicking on the + sign. This gives the directories with “Prevalences”, “Transitions”, “Relative Risks for Death” and “Relative Risks for Disability” (not yet implemented).
- Expand the view of “Prevalences” by clicking on the + sign. You see the file “UK\_RF-BMI-cat3\_Prev\_V1, which was used in the prior exercise. Also you see a file with all

normal weight “RF\_BMI\_cat3\_All Normal-Weigth\_Prev” that can be used in a simple intervention scenario.

- Expand the view of “Transitions” by clicking on the + sign. You see predefined nett transitions (“UK\_RF-BMI-cat3\_transitions-netto”) and zero transitions ((“UK\_RF-BMI-cat3\_transitions-zero”).

You could repeat this for all countries. The directory structure is the same, but some countries miss data on (specific) diseases or risk factors.

More details on the origin of the data are given in the data reports from the DYNAMO-HIA project (today present in print and soon available on the website: [www.dynamo-hia.eu](http://www.dynamo-hia.eu)).

## **Exercise V: Prepare and import own Risk Factor data**

**The aim of the fifth exercise is to learn how to prepare and import new data. We will focus in this exercise on the Risk factor “prevalences” and “transitions” files. You will have to prepare and import new prevalence data specifying the risk factor prevalence for an intervention scenario (unless you use prevalence data from other country (exercise 1-3) or predefined counterfactual prevalences (e.g. all normal weight)). You may have to prepare your own nett transition file if you want to assume in the intervention scenario that the new age-specific prevalence remains unchanged in the future.**

**But this exercise also shows in general how data (e.g. population size or mortality) can be added to DYNAMO, using the DYNAMO Excel templates (macros) and the DYNAMO import function.**

Assume that an interventions reduces the prevalence of normal weight by 40% in each age-sex group and assume that 75% of these are added to overweight and 25% to obese (thus of the 40% leaving normal weight, 30% goes to overweight and 10% to obese).

### **First make a new risk factor prevalence file/modify existing risk factor prevalence**

- Use the explorer to select file “UK-RF\_cat3\_Prev\_V1”. Thus browse to "C:\Program Files\RIVM\DYNAMO-HIA\DYNAMO-HIA\CountryData\UK\Reference\_Data\Risk\_Factors\BMI\_cat3\Prevalences".
- Click right to “open with” and choose “Excel”. It then opens in Excel (select “as an xml-list”, and next select “OK”).
- You can now change its presentation by using selecting in Excel: “data/pivot table and pivot report”. Select “Microsoft Excel list or database” and “pivot table”. Click “next”. Accept the select area. Select “new worksheet” and next “Finish” Now drag and drop “age” in rows fields, “cat” in columns fields, “percents” in “drop data here” and “sex” in “drop page fields”. In the pull-down menu “sex”, you can select “males” and “females”.
- Make the new prevalence (thus of 40% leaving normal weight, 30% to overweight and 10% to obese) for both genders. Check that sum is still 100% for each row, for each gender.

- Use DYNAMO “Excel templates” (macros) to create an xml –file according to the DYNAMO format. Macros are available in C:\Program Files\RIVM\DYNAMO-HIA\Macros.
- Select the macro: “5- risk factor categorical” by double clicking. Enable macros in Excel. Now you see a brief explanation for categorical (and compound risk) factors on the worksheet “help”.
- Select worksheet “Risk factor prevalence\_Cat”.
- In the top bar between “Windows” and “help”, you see “DYNAMO-HIA”. Select “new”, enter the number of classes (3), and press GO! This is to specify the number of categories of the exposure variable (here 3: normal weight, overweight, obesity).
- Now you can copy/paste your new prevalence data.
- After entering your data, click again on “DYNAMO-HIA” and select “export to xml”. Specify directory and name of the xml file.
- Now import this in DYNAMO-HIA in the User Interface. Select “UK/Reference Data/Risk\_factors/BMI\_cat3/prevalences” and enter as name “UK-RF\_cat3\_Prev\_ex5”. Press “Import”, browse the file, press “open” and then “save and close”. If the format of the file is OK, and the prevalences add to 100%, the file is added.

## **Second make a new risk factor transitions file to get nett transitions**

If net transitions are asked from the model, the input file does not contain data, only the message that net transitions should be used. These will always be the net transitions of the reference scenario. However, when running the model, it makes a net transitions matrix and stores this as an XML file in the parameters directory under the “Simulation”. This XML file has the same format as a user specified transition matrix. Therefore it is possible to import these files as user specified transition matrixes. If you would want an intervention (alternative) scenario to use transitions that are the net transitions of the prevalence rates of this alternative scenario, you can do so by first running this scenario as a reference scenario, and then (after the model has run) use the import function to import these net transition rates from the parameter-directory.

- Make the net transitions of the prevalences “UK-RF\_cat3\_Prev\_ex5”. Name the file “UK-RF\_cat3\_Trans\_netex5”. You can use a model without any disease. Include the “RR from BMI-cat 3 to total mort” (see: User Guide page 76-77).

- Now configure a first simulation using “UK-RF\_cat3\_Prev\_ex5” and “UK\_RF-BMI-cat3\_transitions-netto”). The latter are the transitions of the reference scenario and hence this scenario assumes no change in future behaviour, only in the baseline prevalences.
- Configure a second simulation using “UK-RF\_cat3\_Prev\_ex5” and “UK-RF\_cat3\_Trans\_netex5”. This scenario assumes that the new (age- and sex specific) prevalences keep constant during the simulation interval.
- Compare the two simulations with the reference scenario (using: “UK-RF\_cat3\_Prev” and “UK\_RF-BMI-cat3\_transitions-netto”).
- Run the simulation and inspect the outcomes.

## **Exercise VI (for advanced users):**

**In this exercise you will use DYNAMO for a completely new problem. This is for more advanced users. It aims to illustrate how to use DYNAMO for a real life problem, targeting a risk factor and disease not already included in DYNAMO.**

**We use the predefined HIA case-study of the workshop “Quantifying the health impacts of policies – Principles, methods, and models” that was used at the HIA workshop in Düsseldorf, organized by LIGA, NRW in Düsseldorf march 2010. In this case-study, a policy is expected to increase the proportion of barrier free houses in a country, and is assumed to reduce the number of falling accidents and as a result to reduce the number of femoral fractures in the elderly in the Netherlands.**

The Excel file “data hipfracture.xls” on your USB stick gives you some data that were downloaded from Statistics Netherlands. Please look at the worksheet “original data”.

First we ask you to consider which of these available data you need and how they can be translated into the type and format of data in DYNAMO. Therefore, think through the following questions:

1a. Which of the data in the worksheet “original data” are needed to let DYNAMO calculate the number of deaths from hip fracture that will be prevented by changing the number of barrier free houses?

1b. What type of data are these data in DYNAMO-terms (where do they fit into the Dynamo data-tree)?

1c. What would you need to do to enter them into Dynamo-HIA?

2a. What data do you additionally need?

2b. Which of these are already in DYNAMO?

2c. What do you need to provide additionally?

After having assessed what type of data is needed, you will step by step create the missing input of DYNAMO.

3. Use the original data from the spreadsheet to make the required input files, using the Excel macros. Some of the work has already been done for you in the next sheets of the “data hipfracture.xls” spreadsheet.

4. Also make up two prevalence files for the risk factor “percentage of barrier-free housing”:

- a. make one file giving the current percentage of barrier-free houses in the Netherlands. Assume that this is the same for all age-groups (and the same for men and women).
- b. make a file giving the optimal percentage of barrier-free houses in the Netherlands (100%), again using this percentage for all age-groups (and the same for men and women).
- c. You can use the “success-rate” option of the DYNAMO-HIA model to calculate later also results for situations with a lower percentage of barrier-free houses: One for the reference situation, one for the situation after your intervention.

5. Make up the missing information.

- a. Make a relative risk file for the relative risk on hip fracture from having barrier free housing compared to housing with barriers.
- b. Make a file with DALY-weights for hip-fracture (that is: the disability of long-term survivors of a hip-fracture). Use 0.272 which is the GBD weight for femur-fracture long-term.

6. Make a file for the prevalence of hip fracture with zero prevalence in all age groups.

Prevalence in DYNAMO represents all persons who have ever had a hip fracture. This is not what you want, but we will use this file only to let DYNAMO estimate the prevalence of hip fracture (that is, the number of persons that ever have had a hip fracture) that would result if the incidences from Statistics Netherlands would apply through a whole life, in combination with case fatality from hip fracture and mortality from other causes (based on all-cause mortality).

7. Do this by running DYNAMO with the zero prevalence file for 95 years. On the “write output” tab save the data (cohort form) for men and women separately. Open the resulting file by right clicking and then use “open with...” and choose Excel to open.

Calculate the future prevalence by age of the cohort being 0 in 2010 by dividing the number of persons with hip fracture by the total number of persons. These are the prevalence rates by

age that you need. Use the Excel macros to make a prevalence file that can be imported by DYNAMO.

8. Now you have all data you need.

Now specify the baseline and intervention scenario for the intervention.

Select as working directory in the DYNAMO-HIA database the folder “Netherlands.

Start filling in the in top panel of simulation. Then complete the disease, risk factor, relative risk and scenario tabs.

Run DYNAMO with this configuration, and then study the effect of your intervention on different outcomes.