MANC-RISK-SCREEN Basic User Guide

Running the model

In the MANC-RISK-SCREEN model, the modelling process is split into two sections: generating cost and outcomes data for a sample of women; and analysing the data to produce results. Generating the data involves running the MANC\_RISK\_SCREEN\_main\_script. This script simulates a sample of women going through the screening strategies chosen by the user and saves a series of tables containing the costs and outcomes for women in each strategy. The Base Case Analysis script in the Analysis folder then synthesises the data and produce cost-effectiveness planes and a results table.

The strategies to simulate can be chosen by changing the elements in the “controls” list at the start of the main script. There are a number of choices the user can make which affect how the model runs and which strategies are evaluated. The elements of the controls list that can be changed are described below:

1. **Strategies**

This element contains a vector of numbers relating to which strategies are to be evaluated. The model will loop through each of the strategies included. The table below shows the strategies which are currently programmed into the model and their codes:

|  |  |
| --- | --- |
| **Code** | **Strategy** |
| 0 or any other number not listed | No screening (only clinical diagnosis) |
| 1 | A risk-stratified screening approach using the PROCAS (Tyrer-Cuzick + Volpara breast density) strategy: high risk women (>8% 10 year risk) screened annually, moderate risk (5-8% 10 year risk) screened biannually, all others screened 3-yearly |
| 2 | Risk-tertiles whereby women are divided evenly into 3 risk groups using 10 year risk provided by the Tyrer-Cuzick questionnaire and Volpara breast density: the highest risk third receive annual screening, the middle group receive bi-annual screening, the lowest group receive 3-yearly screening |
| 3 | Universal 3-yearly screening |
| 4 | Universal 2 yearly screening |
| 5 | Universal 5-yearly screening |
| 6 | Universal 10-yearly screening (at age 50 and 60) |
| 7 | Risk-stratified approach, reducing screening for women at low risk of cancer (<1.5% ten year risk) such that these women receive 5-yearly screening and all other receive 3-yearly screening |
| 8 | Risk-stratified approach, reducing screening for women at low risk of cancer (<1.5% ten year risk) such that these women receive 6-yearly screening and all other receive 3-yearly screening |
| 9 | A fully risk-stratified screening approach using the PROCAS (Tyrer-Cuzick + Volpara breast density) strategy: high risk women (>8% 10 year risk) screened annually, moderate risk (5-8% 10 year risk) screened biannually, low risk (<1.5% ten year risk) screened 5-yearly, all others screened 3-yearly |

1. **Gensample**

Gensample tells the model whether to create a new sample of women to simulate. The first time you run the model this will need to be set to TRUE to create an initial sample. Note that if multiple strategies are chosen then the sample is only generated once and then re-used for each strategy.

If set the FALSE the last generated sample will be used instead of generating a new sample. This would potentially be useful when comparing the results for different strategies with or without misclassification or chemoprevention (see sections below).

NOTE: when changing the desired\_case (sample size), mcruns, or intervals you will need to set gensample to TRUE to update the number of women in the sample. If errors occur in the model after changing the sample size despite setting gensample to TRUE then try manually deleting the contents of the Risksample and Risksamplewithmisclassification folders in the repository.

1. **MISCLASS**

When predicting a woman’s risk of breast cancer, there will be uncertainty in the prediction. This uncertainty may mean that a woman’s risk is predicted to be higher or lower than it should be and may therefore receive more or fewer mammograms than would be intended if risk were perfectly predicted.

The user can ask the model to account for this uncertainty by setting MISCLASS to TRUE in the controls. If alternatively MISCLASS is set to FALSE then it will be assumed that the risk prediction is a perfect prediction.

1. **PREVENTATIVE\_DRUG**

One of the potential benefits of risk stratified screening is that by predicting risk it will be possible to offer risk-reducing medication to women at higher risk. The user can evaluate the impact of adding preventative medication (sometimes called “chemoprevention”) to risk-based screening programmes by setting PREVENTATIVE\_DRUG to TRUE or can omit this by leaving it set to FALSE.

1. **Supplemental screening**

NOTE: THIS SECTIONG NOT CURRENTLY PLUGGED IN AND UP TO DATE SO PLEASE LEAVE SET TO FALSE

It is possible that cancers can be masked on mammography in women with denser breasts. It has been argued that for women with denser breast tissue, additional screening with different technologies like ultrasound or magnetic resonance imaging may help to identify cancer. When set to TRUE the model will simulate the value of adding supplemental screening with ultrasound or MRI for women with denser breasts.