

Exploristics offers a suite of innovative predictive modelling modules for use in the design and implementation of clinical trials. The suite is built using a common analytic platform and has been validated using data from many trials. It will be of benefit to pharmaceutical companies, CROs and others wishing to maximise the output of their trials whilst minimising costs.

Drug Supply Logistics Module

The Problem

Large amounts of expensive drug are wasted due to inefficient supply planning. A solution is needed that accounts for the stochastic nature of recruitment, randomization and supply chain logistics.

Key Features

Computes the amount of supply needed to cover patient demand in a study with a given risk that a site may run out of stock

- Allows for different randomization schemes and treatment allocations, different distributions of local centres in regional depots, different delivery times, etc.
- Utilises multiple models including stochastic processes, patient recruitment models, randomization processes, and approximations

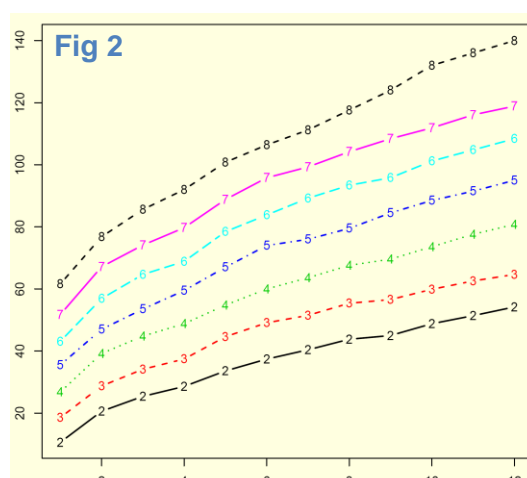
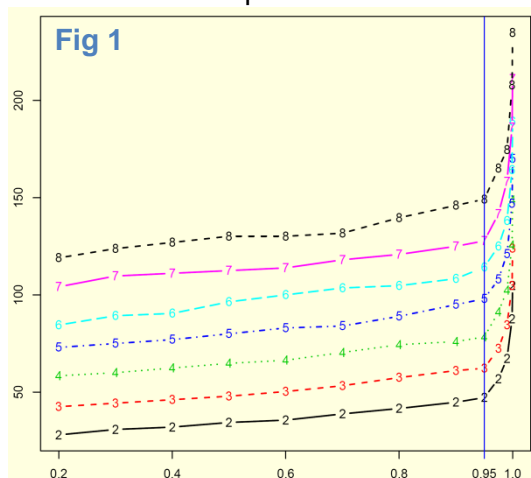
Case Study: Predicting supply coverage at the design stage of a trial

This tool was used in a study comprising 500 patients, 80 sites, five distribution depots and a recruitment duration of six months. Assuming a stochastic recruitment model and block randomization, the tool estimates the number of patients randomized to each treatment and predicts the upper bounds for the amount of drug needed to cover patient demand with a given confidence that all patients will receive the assigned treatments.

Results and Conclusion

Figure 1 shows the dependence of predicted supply coverage (in %) on the confidence level that all patients will receive treatment for different numbers of treatments (2, 3,...,8). Coverage increases with confidence level and with the number of treatments and sharply increases for confidence > 95% (risk < 5%).

Figure 2 shows the dependence of supply coverage on the number of depots for different numbers of treatments (2, 3,...,8) and risk = 5%. The coverage increases with the number of treatments and with the number of distribution depots.



Outcome

- The tool allows the evaluation of many scenarios in real time and the choice of the best one by optimizing study design (number of depots, sites, randomization scheme, etc.) and supply chain logistics, thereby minimizing supply waste.
- This dramatically reduces the planned amount of drug and can save millions across multiple studies.