Short Course

Navigating the Complexities of Platform Trials: Design and Simulation

J. Kyle Wathen
Cytel

ABSTRACT:

In the fast-paced and dynamic world of clinical research, adaptive platform trials have emerged as a powerful tool, offering flexibility and efficiency over traditional trial designs. However, their complexity presents unique challenges that require comprehensive simulation and thoughtful design. This course provides an in-depth exploration of these challenges and offers practical solutions for navigating this intricate landscape using OCTOPUS (https://kwathen.github.io/OCTOPUS/), an R package for simulation of platform trials.

The course will first introduce the concept of platform trials, a type of adaptive trial that tests multiple treatments within the same overall trial structure, and discuss their complexities as well as potential advantages. It will then delve into the critical importance of simulating the exact platform trial you plan to conduct, taking into account the addition and removal of new treatments over time as well as other sources of variation that may impact the performance of the platform.

The course will provide hands-on experience with OCTOPUs. Participants will have the opportunity to work through a hypothetical platform trial, building a simulation plan and executing the simulation using OCTOPUS. They will also explore the simulation results for different design considerations, gaining insights into the potential benefits of various options.

The concept of patient simulation will be introduced and examples of utilizing custom patient simulators as well as utilizing new analysis approaches not available in OCTOPUS. By the end of the course, participants will have setup the necessary R code to simulate a platform trial as well as build a selection of useful visualizations for understanding and presenting the results.