Course Title

Win statistics (win ratio, win odds and net benefit): introduction, properties, implementations, and applications

Category

Methodology

Target Audience

Biostatisticians and PhD/masters students in biostatistics

Prerequisites for Participants

No

Computer and Software Requirements

No

Course Description

Abstract

Over the past decade, win ratio (ratio of win proportions, Pocock et al. 2012), net benefit (difference in win proportions, Buyse 2010) and win odds (odds of win proportions, Dong et al. 2020) have been developed. "Win" is an attractive idea from Pocock et al (2012). Win statistics (win ratio, win odds and net benefit) are based on generalized pairwise comparisons (GPC) (Buyse, 2010), for analyses of multiple outcomes using their hierarchical importance order. Under GPC, each patient in Treatment group is compared with every patient in Control group; and each pairwise comparison starts with the most important outcome (e.g., death), then less important endpoints (e.g., a non-fatal outcomes) are considered only if higher priority outcomes do not result in a win. Therefore, win statistics have advantages compared to conventional time-to-first-event analyses. Moreover, win statistics can avoid multiplicity and competing risk issues, they can handle non-proportional hazards situations (e.g., delayed treatment effect in Immuno-Oncology). Their flexibility allows a composite of multiple endpoints in any data type (e.g., time-to-event, continuous, ordinal). Win statistics have been applied in practice (e.g., design and analysis of Phase III trials) and in support of regulatory approvals (e.g. tafamidis approval per the ATTR-ACT trial).

In this course, we will focus on introduction, properties, implementations, and applications of win statistics (see details in Teaching Plan)