

**Online Supplement for “Review of Recent Methodological Developments in
Group-Randomized Trials: Part 1 – Design”**

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GLOSSARY

This online supplement contains a glossary of terms arranged according to the sections of the manuscript.

DEVELOPMENTS IN FUNDAMENTALS OF DESIGN

Clustering

Coefficient of variation: A measure of between-group variation, defined in Table 1.

Intraclass correlation: A measure of between-group variation, defined in Table 1.

Cohort vs. Cross-Sectional Designs

Cohort GRT design: A cohort of individuals is enrolled at baseline and those same individuals are followed up over time.

Cross-sectional GRT design: A different set of individuals is obtained at each time point.

DESIGN OF PARALLEL-ARM GROUP-RANDOMIZED TRIALS

Baseline Imbalance of Group Sample Size

Design balance at the group level: When there are equal numbers of groups randomized to each study arm.

Baseline Imbalance of Covariates

Balanced candidate subset: In constrained randomization, where a subset of randomization schemes is chosen that has “sufficient balance across potentially confounding covariates” according to “some pre-specified balance metric.”¹

Baseline covariate balance: The group-level and individual-level covariate distributions are similar in all study arms.²

Candidate set size: “The number of possible randomization schemes in a specific implementation.”¹ “Simple randomization draws from the complete set of candidate schemes, while constrained randomization considers a subset of schemes.”¹

Choice of balancing criterion: Li et al. describe several balancing criteria to assess how well a GRT is balanced across covariates. These include the “best balance” (BB) metric of de Hoop et al.,³ the balance criterion (B) of Raab and Butcher,² and the total balance score introduced by Li et al.¹

Constrained randomization: Refers “to those designs that go beyond the basic design constraints to specify classes of randomization outcomes that satisfy certain balancing criteria, while retaining validity of the design.”⁴

Minimization in GRTs: When the researchers allocate groups to intervention arms based on groups-specific characteristics in order to achieve a high degree of balance by minimizing the differences between intervention arms.³ May be performed sequentially or all at once when group characteristics are known at the beginning of the study.

Pair-matching: At randomization, when groups are matched based on factors thought to be related to the outcome. Then within each pair of groups, one is allocated at random to one study arm and the other to the comparison study arm.⁵

Stratification: At randomization, when groups are placed into strata based on factors thought to be related to the outcome.⁶ Then groups are separately randomized within each strata.

Methods and Software for Power and Sample Size

Equivalence: Assessing whether the new intervention is equivalent to the comparison intervention.

Non-inferiority: When a trial is designed to show that the new intervention is not worse than the comparison intervention.

Superiority: When a trial is designed to establish whether a new intervention is superior to the comparison intervention (e.g., another drug, a placebo, enhanced usual care). However, the statistical test is still two-sided, allowing for the possibility that the new intervention is actually worse than the comparison.

DEVELOPMENTS IN THE DESIGN OF ALTERNATIVES

Stepped Wedge GRTs

Stepped Wedge GRT: A one-directional crossover GRT in which time is divided into intervals and in which all groups eventually receive the intervention (**Figure 1B**).⁷

Network-Randomized GRTs

Network-Randomized GRT: The network-randomized GRT is a novel design that uses network information to address the challenge of potential contamination in GRTs of infectious diseases.⁸⁻¹⁰

Pseudocluster Randomized Trials

Pseudocluster randomized trial: Intervention is allocated to individuals in a two-stage process. In the first stage, providers are randomized to a patient allocation-mix. In the second stage,

patients recruited to the PCRT are individually randomized to intervention or control according to the allocation probability of their provider.

Selection bias: In some GRTs, groups are randomized before participant recruitment. This can lead to selection bias if researchers (either consciously or unconsciously) recruit specific participants for inclusion in treatment and exclude others based on certain participant characteristics, even when the aforementioned participants are all eligible for participation in the trial (see Farrin et al.¹¹).

Individually Randomized Group-Treatment Trials

Individually Randomized Group-Treatment Trials: Studies that randomize individuals to study arms but deliver treatments in small groups or through a common change agent.¹²

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