Data Challenges in Adaptive Trials

PhUSE Annual Conference 2014

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October 2014
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Program Agenda

1. In scope / out of scope
2. Introduction to Adaptive Trials
3. Data challenges
4. Data architecture and data flows
5. Conclusions
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## In scope / out of scope

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Introduction to Adaptive Trials

**Preplanned** adaptations of one or more **trial elements** that are **modified** while the trial is underway based on an analysis of **interim data**
Introduction to Adaptive Trials

Adoption

- Across the industry, simple adaptive design trials (ADT) are used on approximately **one in five (20%)** trials. Most common:
  - Early study termination
  - Sample size re-estimation
  - Lower adoption for others (e.g. seamless phase II/III)

- Regulatory bodies (FDA, EMA) highly receptive of early phase adaptive trials (e.g. adaptive dose-finding studies in phase I/II)
Introduction to Adaptive Trials

Benefits

- Better chances of finding optimal dose / population
- Cost & time savings
- Better understanding of treatment effect
- Reduce patient exposure
Introduction to Adaptive Trials

Risks

Regulatory Trust
- Control type I error
- Results interpretation
- Not a replacement for lack of information

Study Planning
- Longer
- More complex
- Technology capabilities

Study Execution
- Operational bias
- Logistical issues
- More demanding

Not always the best option!
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Data challenges

Study flow

**Study Planning**
- Simulations
- Regulatory
- CIP, SAP, ...
- Tech Stack

**Study Execution**
- Recruitment
- Follow-up
- Data Collection
- Data Integration
- Data Cleaning
- Data Transformations

**Interim Analysis**
- Analysis Datasets to ISC
- Data Sharing
- Data Blinding

**Decision / Changes**
- ISC report to DMC
- DMC recommendation to SC
- SC to study team
- Data Changes
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Data architecture and data flows

An example

Study Team, Steering Committee

Data changes

Data collection

Data integration / cleaning / transformations / blinding

Data sharing / unblinding

Patients

Investigators

Core labs

DMC

ISC
Data architecture and data flows

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Patients

Electronic Data Capture

sFTP / other system

data collection

Data integration / cleaning / transformations / blinding

Data sharing / unblinding

DMC

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Data architecture and data flows

Data collection

Data integration / cleaning / transformations

Data sharing & blinding / unblinding

Study Team, Steering Committee

An example

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Clinical Data Repository

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Data architecture and data flows

An example

Study Team, Steering Committee

Activate pre-planned data changes

Clinical Data Repository

data integration / cleaning / transformations

data sharing & blinding / unblinding

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In short

• **One in five** trials is adaptive.

• Several benefits include substantial **cost** and **time savings**.

• **Risks** include data challenges, such as data collection, data integration / cleaning / transformation, and data sharing / blinding / changes.

• Electronic Data Capture (**EDC**) and Clinical Data Repository (**CDR**) systems **mitigate risks** associated with data handling in adaptive trials.
Conclusions

Moving forward

• Rise in use of wireless technology in clinical trials (e.g. sensors, wearable devices).

• Wireless technology can be used for automatic data capture.

• Benefits include reduction in the number of errors associated with manual entry, and real-time data capture (e.g. patient adherence, physiological parameters).
References

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