

# STANDARDS FOR RESEARCH IN (StaR) CHILD HEALTH

There are special considerations for undertaking health research with children. These include the ethical obligation to optimize the value of their participation and to safeguard them from avoidable harms.

In 2012, Standards for Research in (StaR) Child Health published Standards to guide the rigorous design, conduct, and reporting of child health research in six priority areas:

## SIX PRIORITY AREAS

### Consent and recruitment

Well-designed consent procedures are essential to ethically sound recruitment

### Containing risk of bias

Biases can lead harmful or ineffective treatments to be prescribed or effective ones to be withheld

### Appropriate age groups

Trials should account for age differences and consistently report age-related data to ensure valid, useful results

### Selection, measurement, and reporting of outcomes

Outcomes should be relevant to all stakeholders, including children and families

### Determining adequate sample sizes

The sample size calculation is a matter of Good Clinical Practice when designing a trial

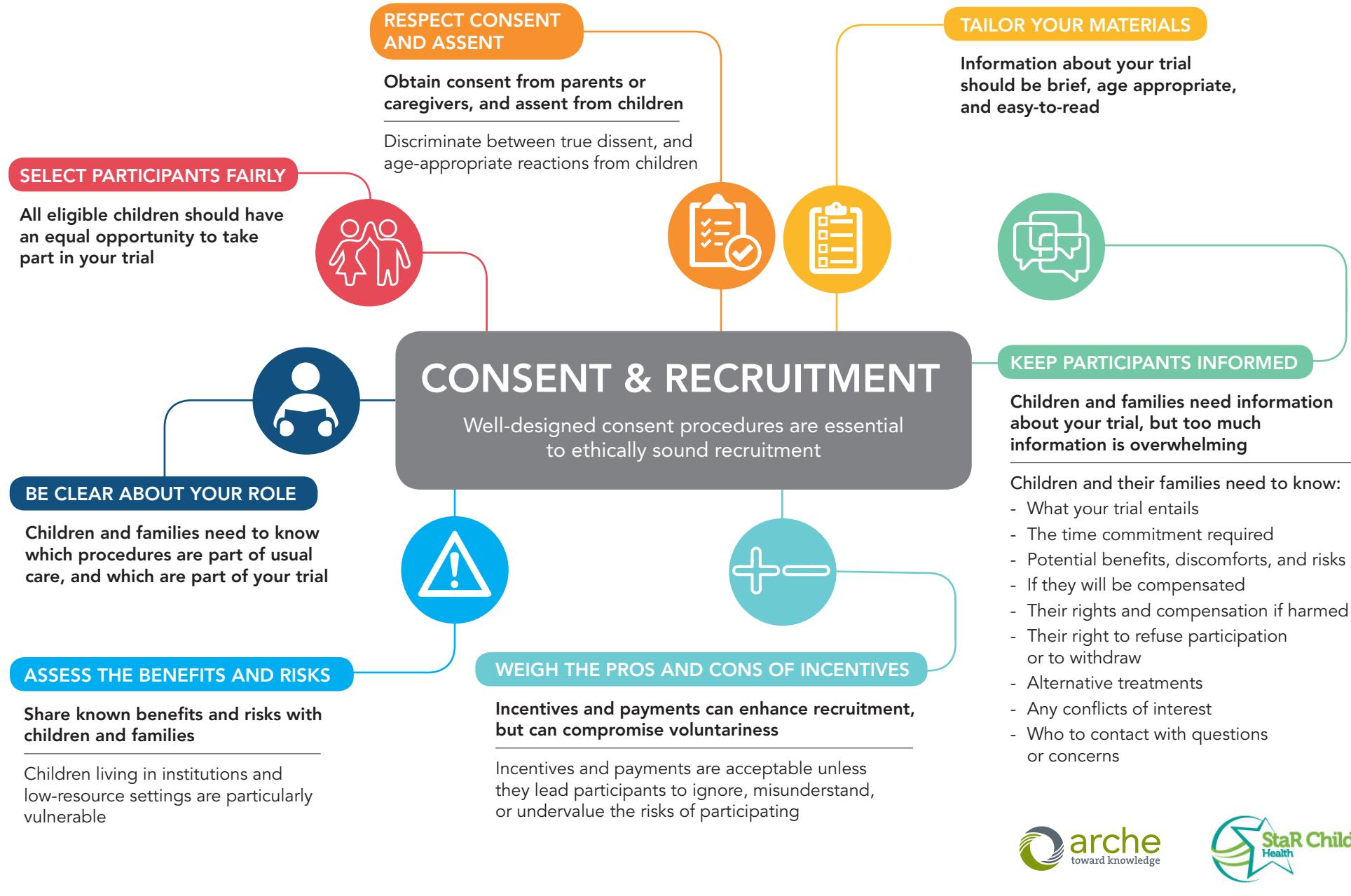
### Data monitoring committees (DMCs)

A DMC protects the safety of participants and the ability of the trial to yield reliable results

These summaries provide the key design, conduct, and reporting considerations related to each of the six priority areas. They are designed to complement the detailed guidance within each published Standard.

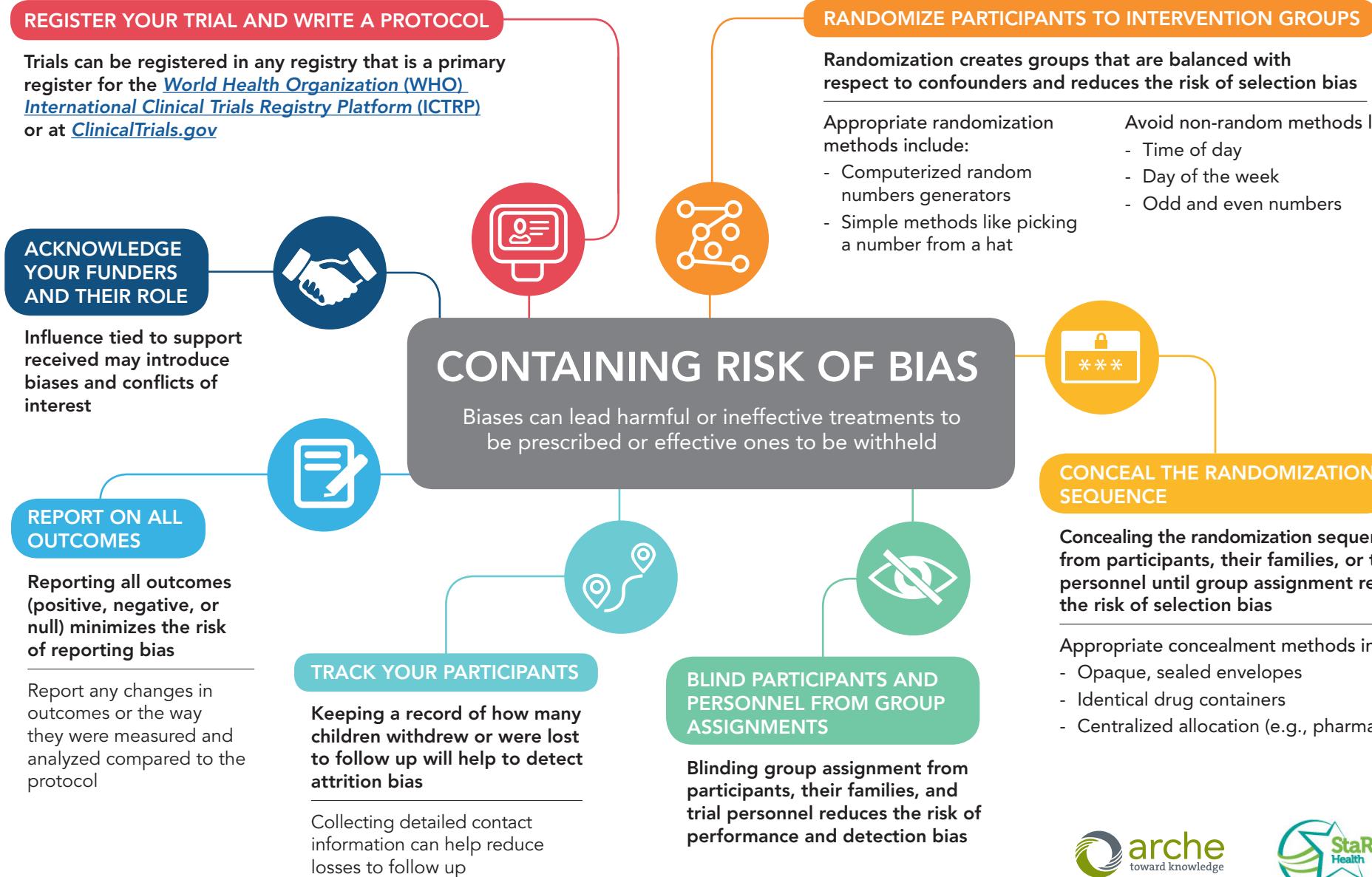
Trainees, clinicians, and researchers may find these summaries useful to learn about and guide the design, conduct, and reporting of child health research.





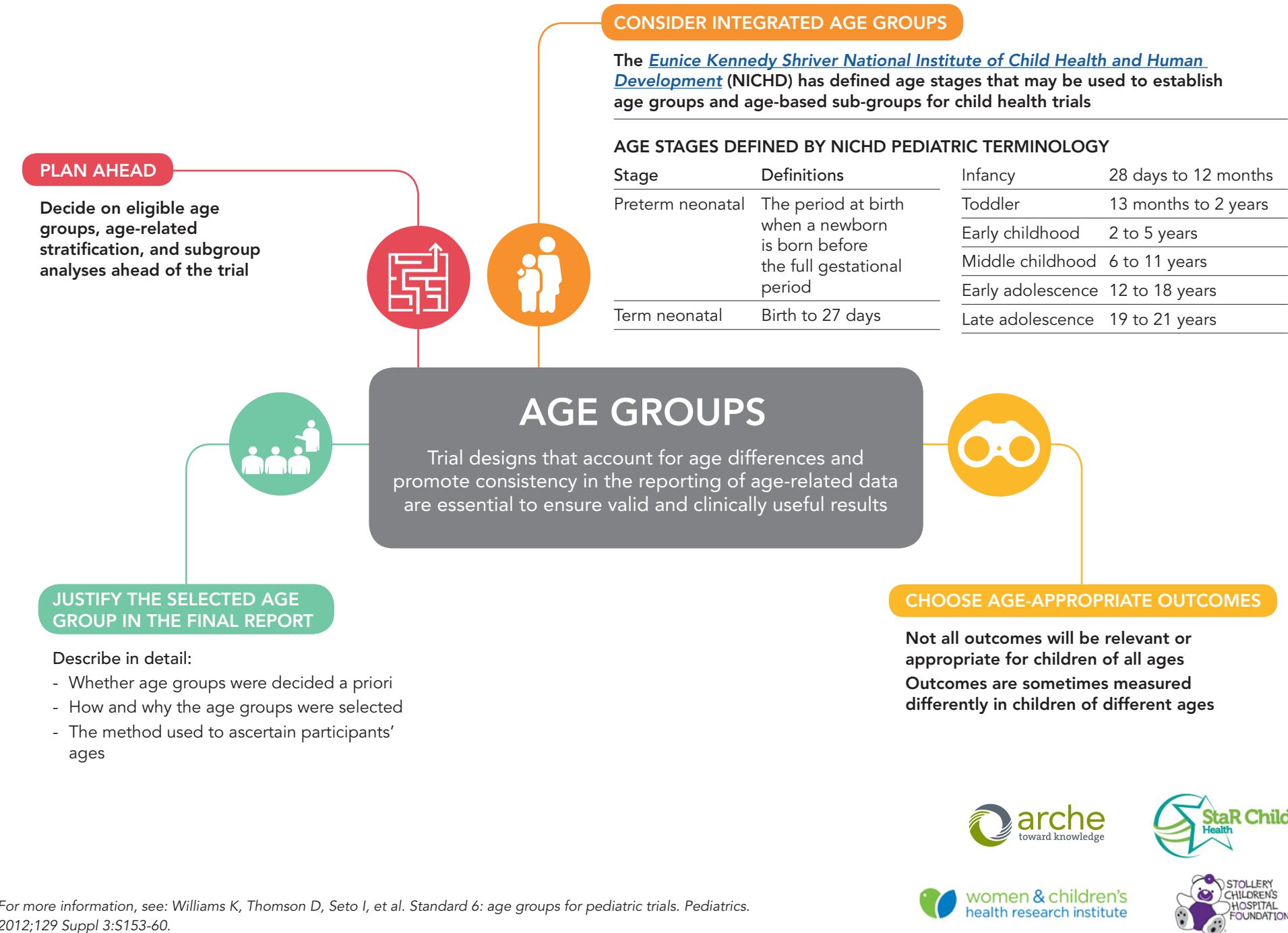
For more information, see: Caldwell PH, Dans L, de Vries MC, et al. Standard 1: consent and recruitment. *Pediatrics*. 2012;129 Suppl 3:S118-23.





For more information, see: Hartling L, Hamm M, Klassen T, et al. Standard 2: containing risk of bias. *Pediatrics*. 2012;129 Suppl 3:S124-31.







For more information, see: Sinha IP, Altman DG, Beresford MW, et al. Standard 5: selection, measurement, and reporting of outcomes in clinical trials in children. *Pediatrics*. 2012;129 Suppl 3:S146-52.



### CONSULT A STATISTICIAN OR METHODOLOGIST WHEN PLANNING YOUR TRIAL

A statistician or methodologist has the expertise to calculate an appropriate sample size

A statistician or methodologist can help overcome issues related to feasibility and resource or timeline constraints



### REPORT ON THE SAMPLE SIZE CALCULATION

Report the calculated sample size and the parameters used for the calculation



### EMPLOY GOOD FOLLOW UP PROCEDURES

Good follow-up procedures are essential to minimize losses to follow up

Effective strategies may include:

- Reminder e-mails
- Letters and self addressed stamped envelopes

- Monetary incentives
- Offering donations to charity
- Entry to a prize draw
- Telephone follow up



A statistician can help deciding on appropriate alternative designs

**Options include:**

- A crossover trial
- Repeated measures

### CALCULATE THE SAMPLE SIZE NEEDED FOR YOUR TRIAL

Standard procedures should be used when information from previous studies is available

You will need:

- The control event rate (for dichotomous outcomes)
- The minimum clinically important difference (MCID), or expected treatment event rate
- The MCID between mean outcomes
- The type I error rate ( $\alpha$ ) (probability of false positives)
- The statistical power ( $1-\beta$ )
- The standard deviation (for continuous outcomes)



## DETERMINING ADEQUATE SAMPLE SIZES

Recruiting too many children risks unnecessary exposure to potentially inferior treatments, whereas recruiting too few will lead to inconclusive or unreliable results

### CONSIDER ALTERNATE SOURCES OF DATA

Trials that evaluate similar treatments or use other designs may be suitable when research specific to your population is not available

If no reliable information exists, consider:

- Conducting an internal pilot study following an estimated sample size from adult trials
- Assuming a moderate treatment effect

### CONSIDER OTHER STUDY DESIGNS

If the number of available participants will be limited but a large sample size is needed, or if funding, feasibility or timeline constraints exist, alternative trial designs may be an appropriate solution

- Meta-analyzing N-of-1 trials
- An adaptive design (e.g., sequential or internal pilot design)
- Collaborating on a prospective meta-analysis



**CONSIDER IF YOUR TRIAL NEEDS A DMC**

In some trials, the monitoring of conduct, accruing results, and safety data should be undertaken by an independent panel of experts

You will need a DMC if:

- You are investigating a new intervention
- Few safety data are presently available
- Your trial addresses major morbidity or mortality endpoints
- The participating population is high risk
- You have planned interim analyses
- There is a possibility of early stopping
- Your sample size is large
- Your trial will be undertaken at multiple centers



## DATA MONITORING COMMITTEES (DMCs)

A DMC protects the safety of participants and the ability of the trial to yield reliable results

**IF YOUR TRIAL NEEDS A DMC, YOU SHOULD: REPORT ON THE DMC'S ACTIVITIES**

Reporting the DMC's activities allows readers to evaluate their impact on the validity of trial results

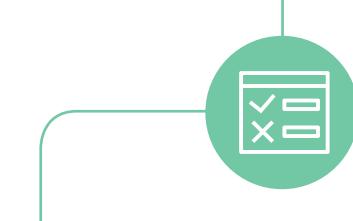
Reports must include the DMC roles, results of interim analyses, and if early termination occurred



**IF YOUR TRIAL NEEDS A DMC, YOU SHOULD: OUTLINE THE DMC'S ROLES**

The DMC should be governed by a DMC charter that outlines their roles and responsibilities

The charter is prepared by the sponsor and approved by the DMC before their review of any interim data



**IF YOUR TRIAL NEEDS A DMC, YOU SHOULD: KEEP THE DMC SMALL**

The DMC should include one or more relevant clinician experts and a statistician or clinical trial methodologist

A consumer/community advocate (often a parent) may also provide a helpful perspective

Report unavoidable conflicts of interest



**IF YOUR TRIAL NEEDS A DMC, YOU SHOULD: DEFINE THE DMC'S RESPONSIBILITIES**

The DMC should regularly review trial data and develop recommendations for trial modification and continuation

Broader responsibilities may include:

- Reviewing and approving the trial protocol
- Releasing interim data
- Reviewing and approving manuscripts and presentations

