

# Enhancing statistical methods in grants and papers

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## Seminar series on statistical reasoning in biomedical research

- ▶ Apr 30: P-values: What they are and what they are not (Fridtjof Thomas, PhD)
- ▶ May 07: Should We eliminate P-Values or Use More of Them: A Discussion on the P-Value Controversy (Saunak Sen, PhD)
- ▶ May 14: The Bayesian Approach to Data Analysis (Fridtjof Thomas, PhD)
- ▶ May 21: Multiple Testing and the False Discovery Rate (Saunak Sen, PhD)
- ▶ May 28: The Perfect Doctor: An introduction to Causal Inference (Fridtjof Thomas, PhD)
- ▶ Jun 04: Enhancing Statistical Methods in Grants and Papers (Saunak Sen, PhD)

# Outline

- ▶ Reporting guidelines
- ▶ NIH reproducibility initiative
- ▶ BERD clinic
- ▶ Biostatistics consulting
- ▶ Co-investigators
- ▶ Educational resources

# Equator network

The screenshot shows the Equator network website. At the top, there is a navigation bar with the logo and the tagline "Enhancing the QUALity and Transparency Of health Research". Below this is a menu with links to Home, Library, Toolkits, Courses & events, News, Blog, About us, and Contact. A green banner highlights "Essential resources for writing and publishing health research". The main content area is divided into three columns. The left column features a "Library for health research reporting" section with a description and four icons representing search, guidance, development, and resources. The middle column has a "Reporting guidelines for main study types" section with a checklist of categories and a link to view all 313 guidelines. The right column displays a book cover for "Guidelines for Reporting Health Research: A User's Manual" and a note that it is a new book edited by the EQUATOR team.

www.equator-network.org

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equator network

Enhancing the QUALity and Transparency Of health Research

EQUATOR resources in Portuguese | Spanish

Home Library Toolkits Courses & events News Blog About us Contact

Essential resources for writing and publishing health research

**Library for health research reporting**

The Library contains a comprehensive searchable database of reporting guidelines and also links to other resources relevant to research reporting.

- Search for reporting guidelines
- Not sure which reporting guideline to use?
- Reporting guidelines under development
- Visit the library for more resources

**Reporting guidelines for main study types**

<a href="#">Randomised trials</a>	CONSORT	Extensions	Other
<a href="#">Observational studies</a>	STROBE	Extensions	Other
<a href="#">Systematic reviews</a>	PRISMA	Extensions	Other
<a href="#">Case reports</a>	CARE		Other
<a href="#">Qualitative research</a>	SRQR	COREQ	Other
<a href="#">Diagnostic / prognostic studies</a>	STARD	TRIPOD	Other
<a href="#">Quality improvement studies</a>	SQUIRE		Other
<a href="#">Economic evaluations</a>	CHEERS		Other
<a href="#">Animal pre-clinical studies</a>	ARRIVE		Other
<a href="#">Study protocols</a>	SPIRIT	PRISMA-P	Other

See all 313 reporting guidelines

**Guidelines for Reporting Health Research**  
A USER'S MANUAL  
Edited by David Moher, Douglas G. Altman, Kenneth F. Schulz, Vera Terney and Elizabeth Hooper

New book edited by the EQUATOR team  
Guidelines for Reporting Health Research: a User's Manual

# Principles and Guidelines for Reporting Preclinical Research

[www.nih.gov/research-training/rigor-reproducibility](http://www.nih.gov/research-training/rigor-reproducibility)

- ▶ Rigorous statistical analysis
- ▶ Transparency in reporting
- ▶ Data and material sharing
- ▶ Consideration of refutations
- ▶ Consider establishing best practice guidelines for:  
image-based data, antibodies, cell lines, animals
- ▶ Endorsements from leading journals  
Nature, Science, Cell, PLoS, BMJ, Society for Neuroscience

# Biostatistics, Epidemiology and Research Design (BERD) unit of TN-CTSI

- ▶ Connects researchers
- ▶ Fills gaps in research methods expertise
- ▶ Provides access to commonly used research methodology (biostatistics, biomedical informatics, epidemiology, molecular bioinformmatics)
- ▶ Develops new methods for translational research
- ▶ BERD Clinic
- ▶ Biostatistics consulting
- ▶ Educational resources
- ▶ Co-investigators

## Collaboration vs consultation

Sometimes it is not clear whether to look for a collaborative or a consulting arrangement.

- ▶ Open-ended vs defined (time, deliverables) interaction
- ▶ Standard vs innovative methods
- ▶ Partner vs provider

For short projects with defined goals and using standard methods a consulting arrangement is preferred.

Note that authorship is independent of consulting vs collaborative arrangement.

Residents and fellows are eligible for a voucher worth 10 hours of consulting for projects.

# Collaborations

Collaborations are suited for long-term open-ended engagements or when methodological innovation is anticipated.

Typically collaborations are funded by research grants. Before a grant is submitted, one has to estimate the percent effort for each collaborator. This is tricky.

- ▶ How many similar projects can a single person handle at one time? Divide 100% by that number.
- ▶ How many hours per year (month or week) would the project consume? Divide that by the FTE equivalent.
- ▶ What is the understanding between collaborators? Higher percent effort should mean faster response times and dedicated time slots.



## Educational resources

- ▶ Masters in Epidemiology with three tracks (Biostatistics, Clinical Investigation, and Data Science (36 credit hours)
- ▶ Certificate Program in Clinical Investigation (12 credit hours).
- ▶ BERD seminars
- ▶ Data Science PhD program

# Resources

- ▶ TNCTSI BERD
- ▶ Equator network
- ▶ NIH on rigor and reproducibility
- ▶ NIH training modules
- ▶ ICMJE authorship guidelines

Slides at <https://tnctsi.uthsc.edu>