

The art and science of working with biostatisticians: insiders' tips

Elena Losina
Jamie Collins
Misti Paudel

VERITY Course, 4/5/2024

Outline

- Pluses and minuses of adding a biostatistician to the team
- Types of collaboration
- Domains of research where biostatisticians could be helpful
- Tips to make the collaboration successful

Case study:
speaking the same language



<https://youtu.be/PbODigCZqL8>

When to engage a biostatistician

- It is never too early
 - But often somewhat late
- ‘What is the question’
 - Translating clinical problem into research question
 - Why the question important
 - What has been done
 - What are the gaps
 - How we can fill the gaps: feasibility, timing, means, data
 - Formulating clinical and statistical hypothesis

'Before' and 'after'

- Before:
 - Formulating the question
 - Grant preparation
 - Thinking of data sources
 - Sample size
 - Means of collaboration
 - Authorship
- After
 - Data collection
 - Participation in meetings
 - Data monitoring
 - Data analysis
 - Paper writing
 - Authorship

The art and science of ‘speaking the same language’

- Means of communication
 - Face to face meetings
 - Phone calls
 - Emails
- Setting expectations
 - Define the ‘rules of engagement’
 - NOTHING goes without saying
 - Summarizing discussion and laying out next steps
 - Creating reasonable timelines

**THE ULTIMATE HUNT FOR P-VALUE:
PUBLISH OR PERISH**



<https://youtu.be/8-PzD26WI4g>

10 things biostatisticians are trying
to tell you, but somehow are not
being heard...

The value of 'do you have a minute?' conversations

- Myth: if we can chat for a minute, I will get all I need to write my grant, finish my paper, submit my abstract....
- Reality
 - Very few things can be done in 'a few min'
 - Engaging into a 'minute' conversation distracts from planned activities
 - Somebody else's deadline may be at stake
 - Quick solutions are not always the best solutions

Half an hour for 'statistical analysis section' for the grant

- Myth: it won't take you more than half an hour to write stat section of the grant --- you have done so many of them, you can do it in no time
- Reality
 - The statistical analysis section should be congruent with the hypotheses
 - It needs to be specific to the gist of the grant
 - It needs to be well referenced
 - It needs to be well thought out
- Statistical analysis is the 'skeleton' of the 'approach'
 - Underdeveloped skeleton may lead to 'collapse' of the entire effort

24 hours for abstract submission

- Myth: I just realized the abstract submission deadline is in 48 hours. Could you, please, run a few t-tests for me
- Reality
 - Rush jobs may lead to unanticipated errors
 - Rushing analysis may lead to overstated conclusions
 - Hopes for signal may mask the issues with the data, missing data, outliers, errors in coding

My grant is due in a week....

- Myth: If you read my grant that I wrote, it will be sufficient to assume that everything is 'correct'
- Reality
 - Reading of the grant is not the same as thinking through the grant
 - Often extensive revisions could clarify the issues and improve the chance of better scoring
 - Time crunch may preclude meaningful improvements

The hopes of dreams of R&R

- Myth: if editors invited me to R&R my paper, I can write a brief rebuttal letter in 3 days and the paper will get accepted
- Reality:
 - Major revision is increasing your likelihood of acceptance from 20% to 50%
 - Often additional analyses are requested
 - The more detailed the rebuttal letter the higher the chances of acceptance
 - Detailed work takes time!

Parting thoughts: The road to success

- Defining success
 - Ultimate goal vs. intermediate goals
- Thoughtful timelines
 - Sharing is a part of the culture
 - Asking what else is on the biostatistician's plate
 - The issue of multiplicity
- The music of the communication
 - It is never too much appreciation
 - Evidence: extra 'thank you' reduces the wait time for half a day (every joke is only in part a joke, the rest is 'truth')
 - Emails: the good, the bad and ugly
 - It takes longer to build than break

Parting thoughts: Road to success

- Value of time
 - The traps of long e-discussions
 - Emails: succeeding in a ultimate game of ping-pong of research emergencies
 - Coming prepared, doing homework
 - Creating ‘action items’
 - Sticking to the timeline
 - Being on top of things
 - Keeping each other informed

Keep smiling!



<https://youtu.be/kMYxd6QeAss>

Questions?