# Using a time-varying covariate in the Cox proportional hazards model discerns early/late treatment efficacy. Use with caution.

Use of time-varying covariate in assessing disease remission in the early and late phases of treatment with application to RITAZAREM trial.

Marianna Nodale



### **BACKGROUND**

RITAZAREM, an open-label, multi-centre RCT, aims to assess the efficacy of rituximab compared to the current standard of care in the prevention of relapse in ANCA-associated vasculitis.

Design: N = 170 patients, 1:1 allocation, 90% power at  $\alpha$  = 5% for HR = 0.42.

Outcome: time to disease relapse.

Primary analysis: Cox proportional hazard model for overall efficacy & time-varying covariate to investigate during/post treatment efficacy.

### **METHODS**

- 1. Censoring and relapse times simulated with a Weibull distribution (sample N = 167, 83 events).
- 2. Simulated  $HR_{early} \neq HR_{late} \in (0.3-0.9)$
- 3. True change point for HR  $\tau = 20$ .
- 4. Relapse times after change point simulated with a conditional Weibull distribution.

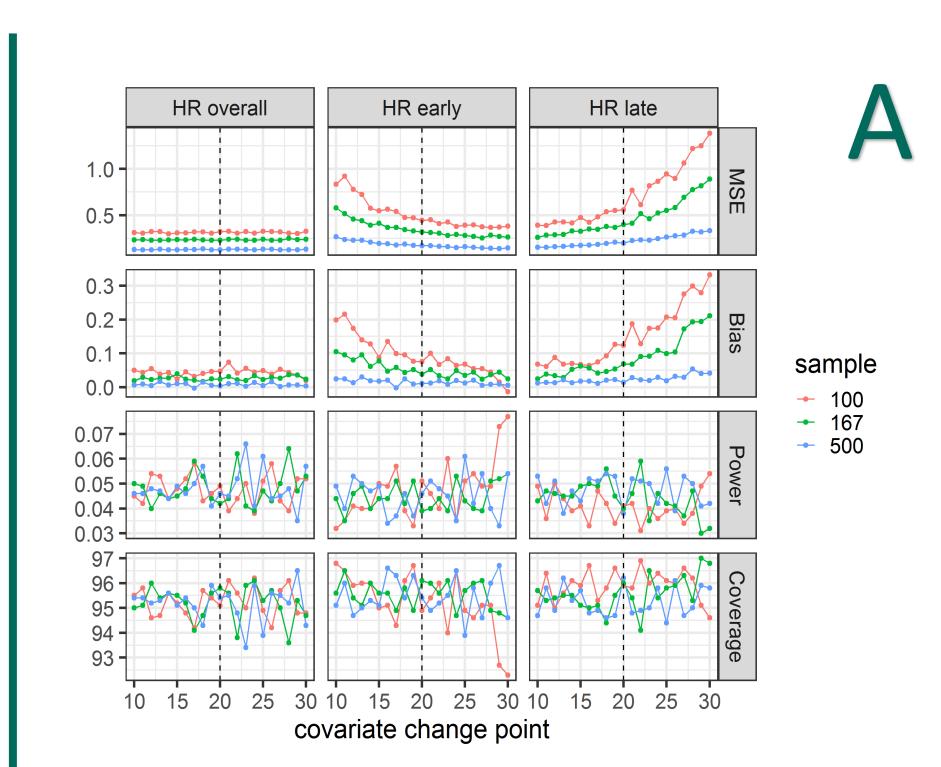
### RESULTS

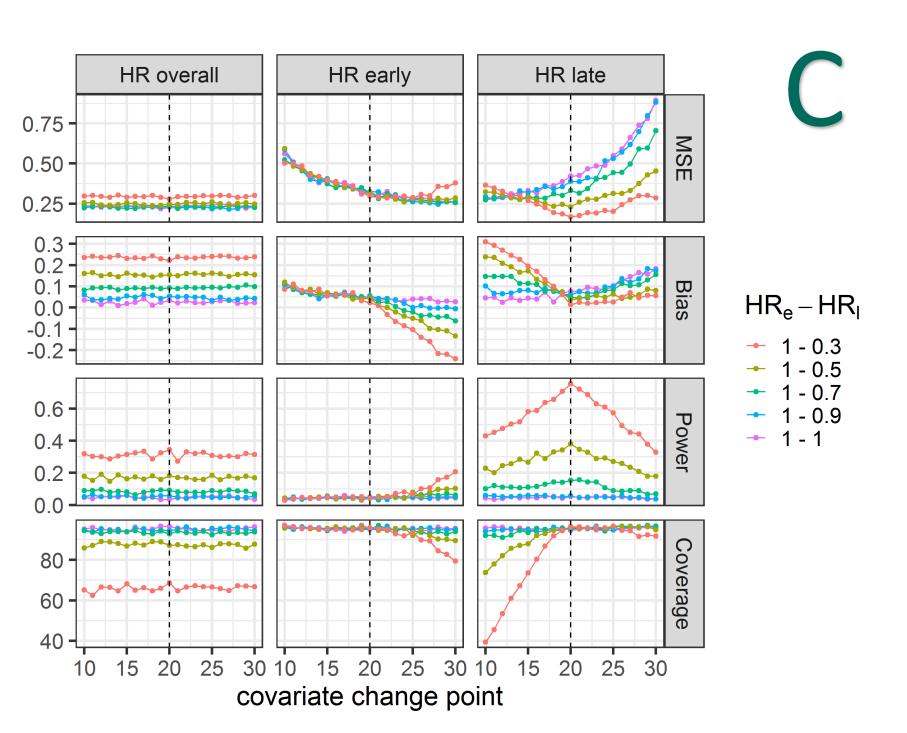
Simulations (n=1000) investigate the operational characteristics of the model under a variety of assumptions:

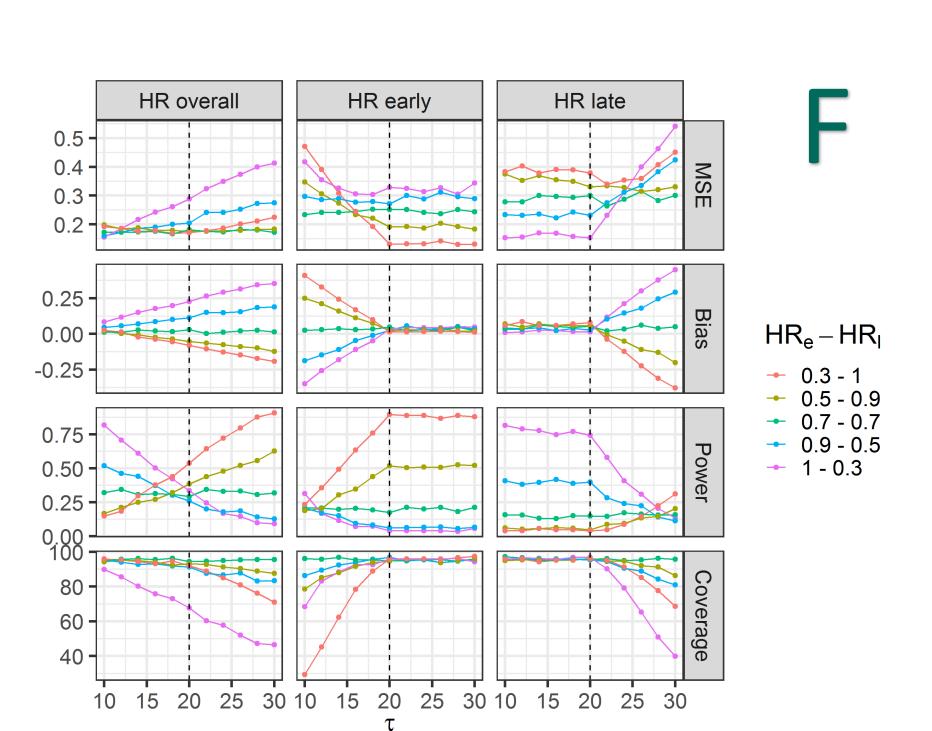
- A. Null hypothesis
- B. Constant overall efficacy
- C. Early efficacy
- D. Late efficacy
- E. Different early/late efficacy
- F. Wrong change point  $\tau$

### DISCUSSION

- First point
- Second point
- Third point











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## Main finding goes here, translated into plain English. Emphasize the important words.

Use of time-varying covariate in assessing disease remission in the early and late phases of treatment with application to RITAZAREM trial.

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### **BACKGROUND**

- Just give context for the gap you're filling
- You're not going to get yelled at if you don't cite the 5 papers from 1937 that defined this construct. They'll download your paper if they want that.

### **METHODS**

- 1. N = ###,
- 2. Collected this
- 3. Tested with X statistical test

### **RESULTS**

- Graph or table with essential results only.
- All the other correlations in the ammo bar.

### **DISCUSSION**

 "If this result actually generalized and I didn't have to humbly disclaim the possibility of a thousand confounds and limitations, it would imply that...."

### **AMMO BAR**

## Delete this and replace it with your...

- Extra Graphs
- Extra Correlation tables
- Extra Figures
- Extra nuance that you're worried about leaving out.
- Keep it messy! This section is just for you.



