

Das Konzept der Target-Trial-Emulation

Und die Bedeutung von Protokollen und Registrierung

Tim Mathes

Häufige Schwächen bei Auswertungen von Beobachtungsdaten

ORIGINAL ARTICLE

No inexplicable disagreements between real-world data–based nonrandomized controlled studies and randomized controlled trials were found

Oft selbst gemacht

- Intention-to-treat) häufig unklar
werden trotz fehlender Confounder durchgeführt
(Confounding Bias)
- Unklare Beobachtungszeiträume (time-related Biases)
 - Bias aufgrund von fehlenden Werten (Bias due to missing data)

Das Target-Trial-Konzept

2-Schritte:

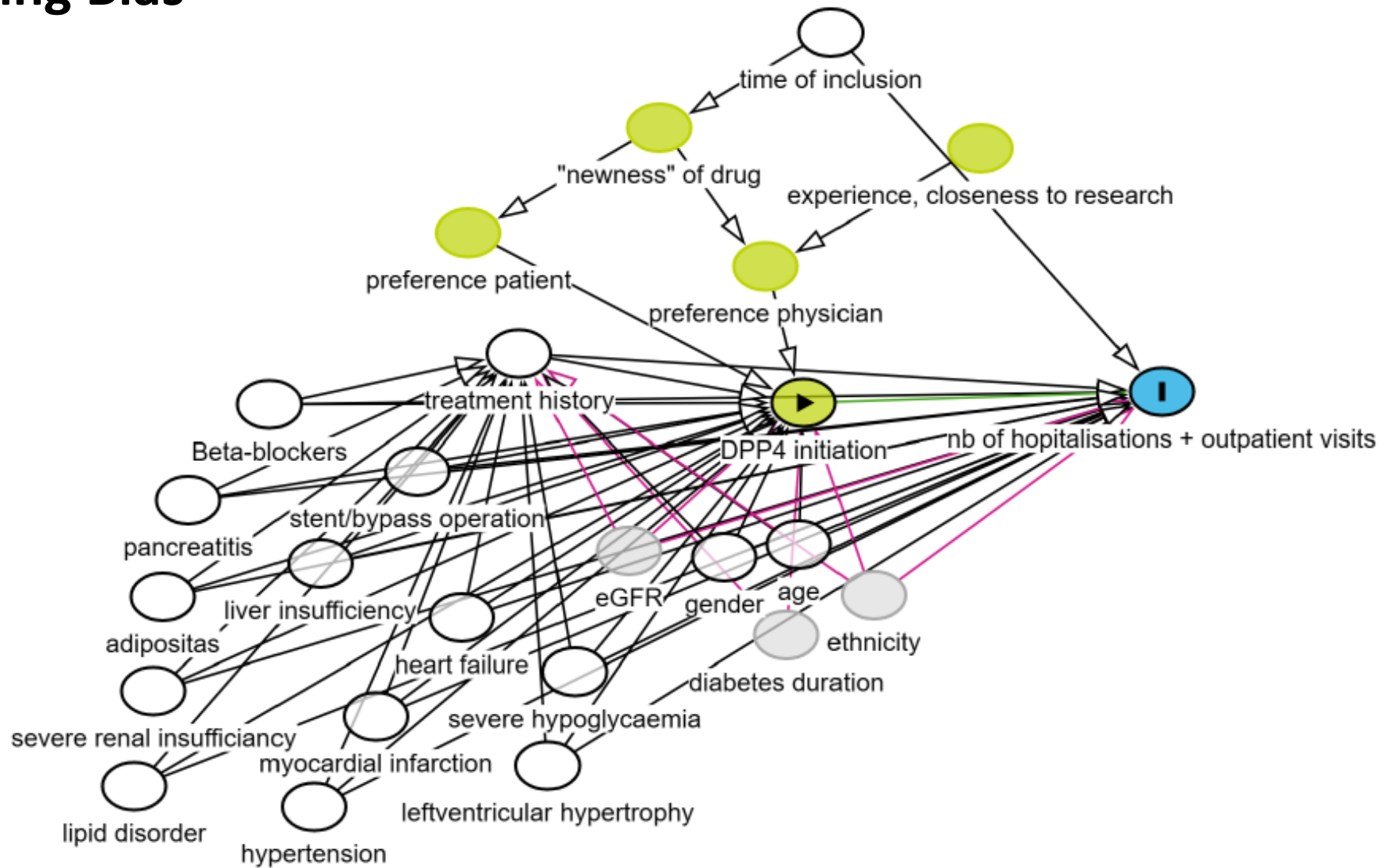
1. Formulierung der kausalen Fragestellung in Form des Protokolls einer **hypothetischen** (in der Praxis u.U. weder durchführbar noch ethisch vertretbar) randomisierten Studie (RCT).
2. Explizite Nachbildung der Komponenten dieses Protokolls anhand der Beobachtungsdaten.

	Target Trial	Emulation
Eligibility criteria		
Treatment strategies		
Treatment assignment		
Follow-up period		
Outcomes		
Causal contrast of interest		
Analysis plan		

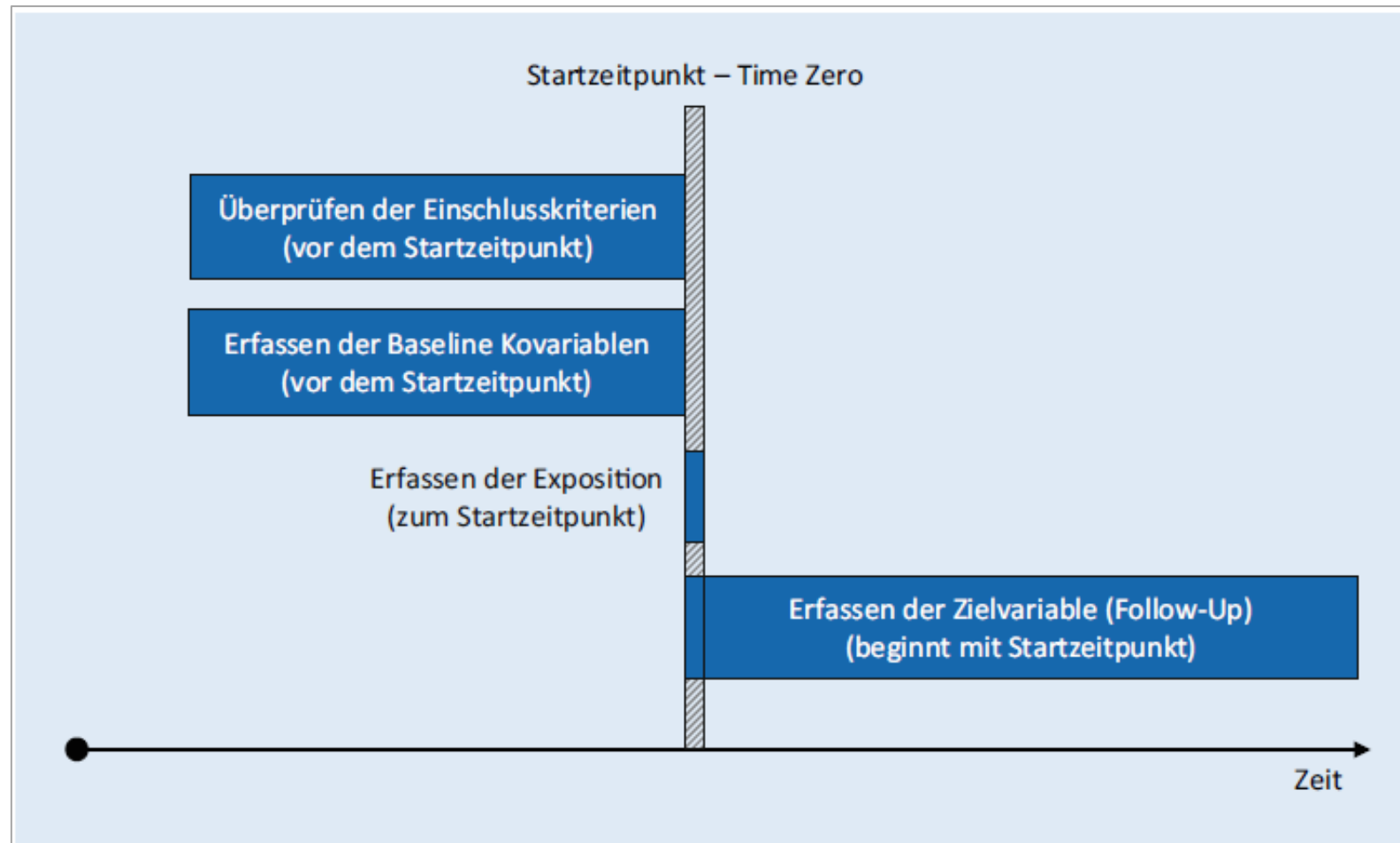
⇒ Vermeidung von selbst gemachtem Bias

⇒ Objektivierte und transparente Einschätzung des Bias bzw. Notwendigkeit von Sensitivitätsanalysen für Residual Confounding

Confounding Bias



Ausrichtung des Designs am Startzeitpunkt



Ist Target-Trial-Emulation die Lösung?

PubMed®

"target trial emulation"[tiab]

Advanced Create alert Create RSS User Guide

Search

Save Email Send to Sort by: Most recent Display options

MY CUSTOM FILTERS

543 results

RESULTS BY YEAR

2017 2025

PUBLICATION DATE

1

Cite

Share

Comparing the effectiveness of different vaccines in individuals with and without autoimmune diseases: a study protocol for a **target trial emulation**.

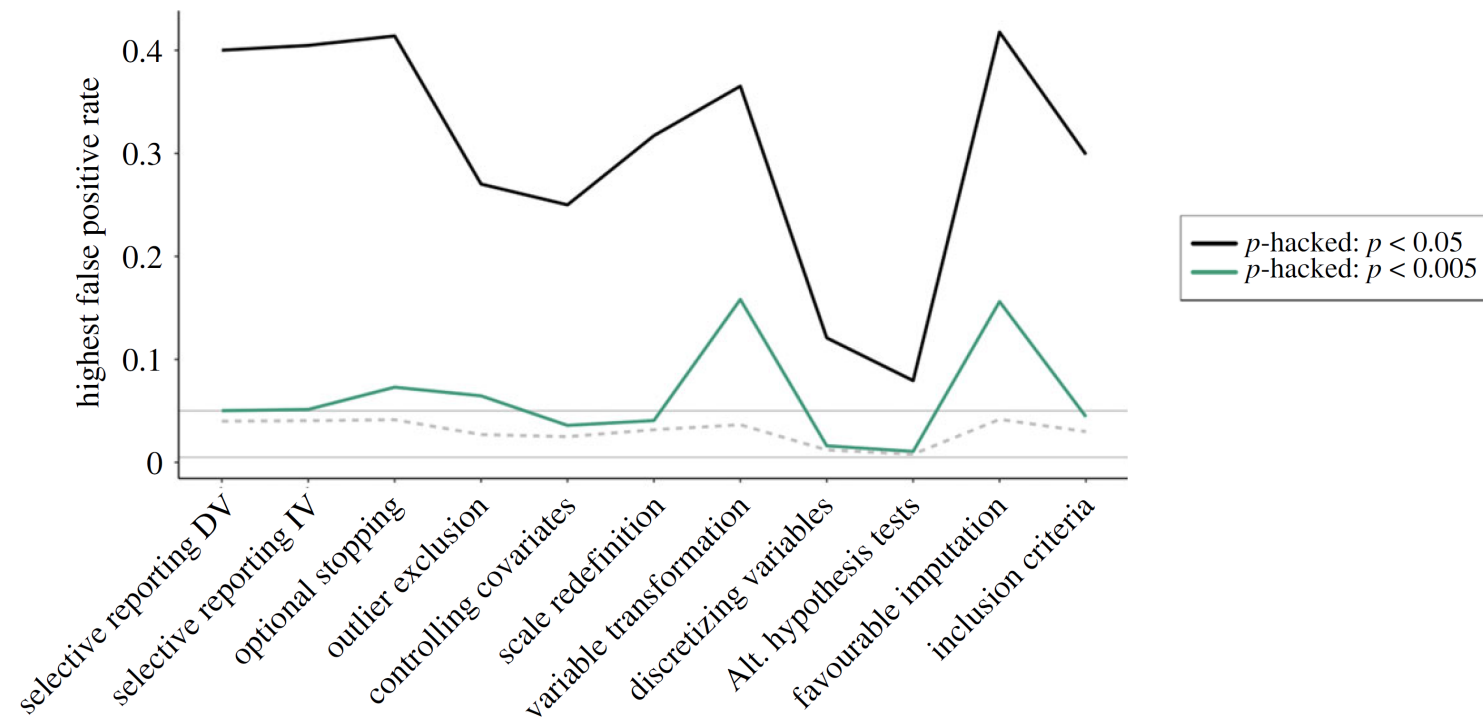
Denz R, van de Sand H, Basten J, Meiszl K, Tokic M, Oganowski T, Grüter T, Stock S, Simic D, Shukri A, Kiltz U, Zacharopoulou M, Vollmar HC, Otte IC, Giehl C, Lauer R, Suslow A, Stallmach A, Franz A, Marschall U, Saam J, Schumacher C, Blaschke K, Meyer I, Hellwig K, Timmesfeld N; VAC-MAC Consortium. Front Public Health. 2025 May 26;13:1583434. doi: 10.3389/fpubh.2025.1583434. eCollection 2025. PMID: 40492009 **Free PMC article.**

It is therefore unclear whether these vaccines are also effective for these patients. DESIGN: A **target trial emulation** based on observational claims data of a statutory health insurance company is proposed. ...

Protokoll und Registrierung

Big little lies: a compendium and simulation of p -hacking strategies

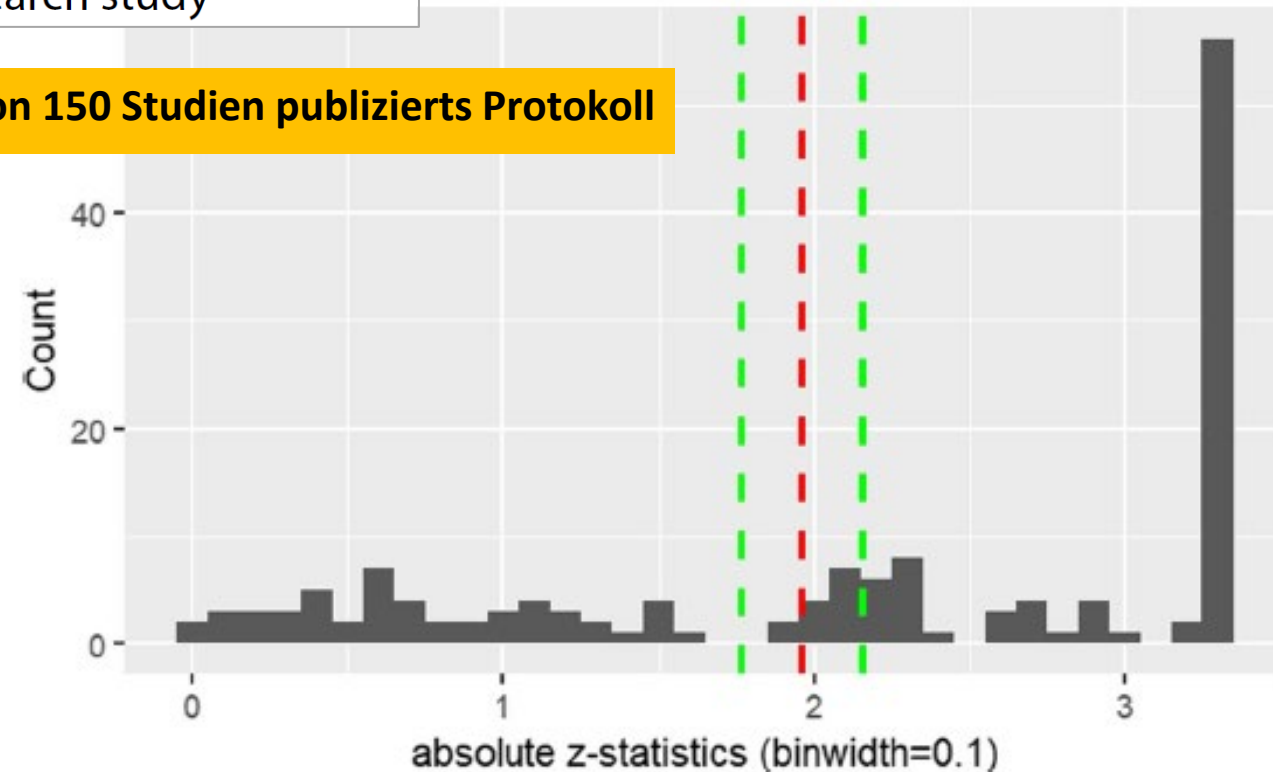
With regard to the different p -hacking strategies, we found that even with a single strategy, false-positive rates can typically be raised to at least 30% from the typical 5% threshold with 'reasonable effort', that is, without assuming that researchers automate data mining procedures



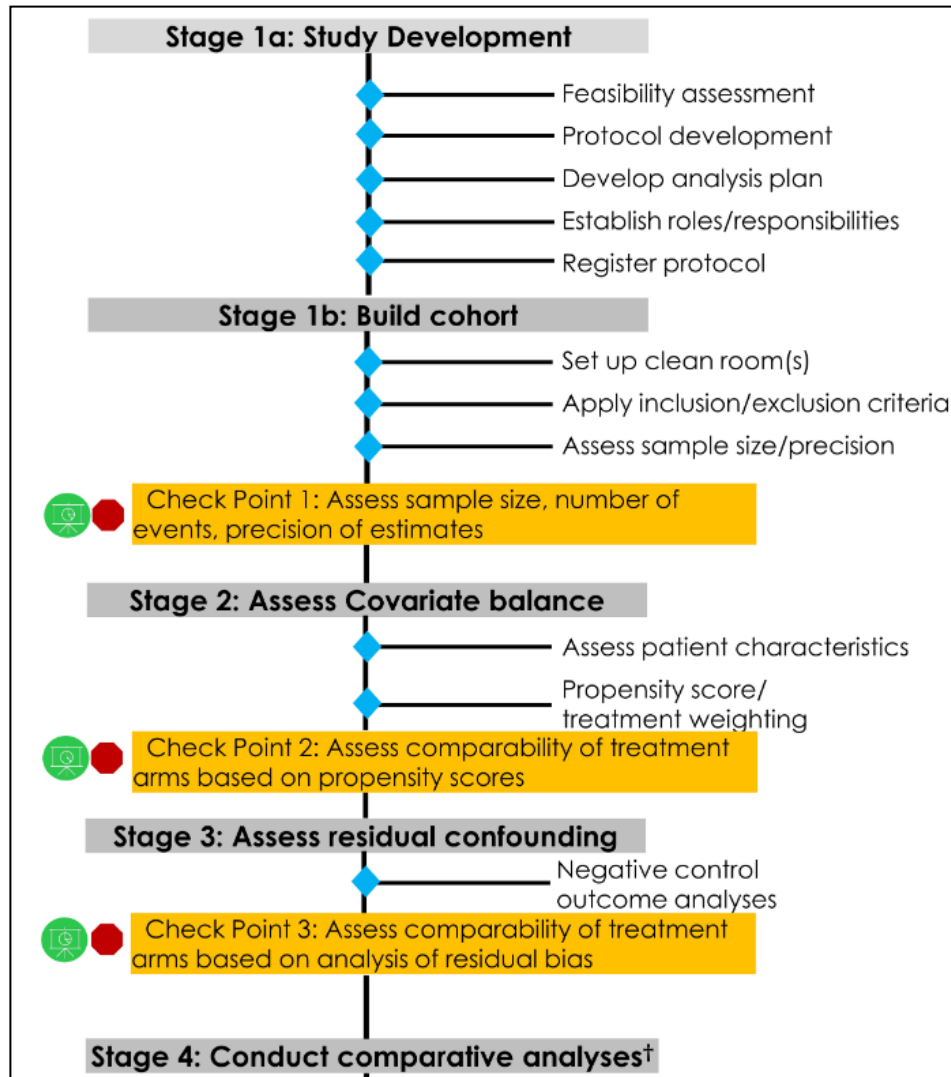
Protokoll und Registrierung

Analysis of indications for selectively missing results in comparative registry-based studies in medicine: a meta-research study

Nur 4 von 150 Studien publiziert Protokoll



„Staging and Clean Room“ Konzept



- ⇒ Transparenz und Replizierbarkeit der Analyse
- ⇒ Vermeidung von p-Hacking und Reporting Bias
- ⇒ Vermeidung von „unnötigen“ d. h. sehr verzerrten Analysen

Institut für Qualität und Wirtschaftlichkeit im Gesundheitswesen (IQWiG)

**Vielen Dank für
Ihre Aufmerksamkeit!**

Fragen und Anmerkungen:

Tim Mathes

Tim.Mathes@iqwig.de

**Siegburger Str. 237
50679 Köln**

Telefon

+49 221 35685 - 0

Telefax

+49 221 35685 – 1

Mail:

info@iqwig.de

www.iqwig.de

www.gesundheitsinformation.de

www.themencheck-medizin.de



Referenzen

- Mathes, T., Rombey, T., Kuss, O., & Pieper, D. (2021). No inexplicable disagreements between real-world data–based nonrandomized controlled studies and randomized controlled trials were found. *Journal of Clinical Epidemiology*, 133, 1-13.
- Hernán, M. A., & Robins, J. M. (2016). Using big data to emulate a target trial when a randomized trial is not available. *American journal of epidemiology*, 183(8), 758-764.
- Braitmaier, M., & Didelez, V. (2022). Emulierung von „target trials “mit Real-world-Daten. *Prävention und Gesundheitsförderung*, 1-8.
- Starke, P., Zhang, Z., Papmeier, H., Pieper, D., & Mathes, T. (2025). Analysis of indications for selectively missing results in comparative registry-based studies in medicine: a meta-research study. *Research Integrity and Peer Review*, 10(1), 2.
- Stefan, A. M., & Schönbrodt, F. D. (2023). Big little lies: A compendium and simulation of p-hacking strategies. *Royal Society Open Science*, 10(2), 220346.
- Muntner, P., Hernandez, R. K., Kent, S. T., Browning, J. E., Gilbertson, D. T., Hurwitz, K. E., ... & Brookhart, M. A. (2024). Staging and clean room: constructs designed to facilitate transparency and reduce bias in comparative analyses of real-world data. *Pharmacoepidemiology and drug safety*, 33(3), e5770.