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Target trial emulation (TTE) for policy evaluation – *What, when, and how*?

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Acknowledgement of Country

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The Australian Institute of Family Studies acknowledges the Traditional Owners of Country throughout Australia and recognises their continuing connection to lands and waters. We pay our respects to Aboriginal and Torres Strait Islander cultures, and to Elders past and present.

I am an epidemiologist,

not an evaluator

Overview

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- What is target trial emulation (TTE)
- TTE for public policy
- Specifying the target trial
- Emulating the target trial
- TTE for Better Access using TTM
- TTE – Practical tips
- Summary & Future directions

What is TTE?

- TTE is a quasi-experimental approach to ***emulate*** a hypothesised, randomised experiment (***target trial***) using observational data
  - Idea originated in 1970's; progressed by Prof. Miguel Hernan (Harvard T.H. Chan) et al. circa 2015
- Why is this important?
  - RCTs are 'gold standard' for high-quality evidence of effect of intervention
  - However, RCTs can be costly, lengthy, or not ethical / feasible
  - TTE framework
    - High-quality, policy-relevant evidence (↓↓ cost, time)
    - *Data from under-represented population / groups*

TTE for public policy

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- Modern TTE initially focussed on medical research using clinical registries / Big Data
- Increasingly used for govt interventions in a range of policy areas (social, health, service delivery)

- TTE criteria
  - Sufficient sample sizes ✓
  - Well-characterised cohorts ✓
  - Clear population of interest ✓
  - Exposure of interest (e.g. smoking, policy) ✓
  - Clear outcome (e.g. ↑ health service) ✓

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Target trial emulation for evaluating health policy

Nicholas J. Seewald, PhD[1,2], Emma E. McGinty, PhD[3], Elizabeth A. Stuart, PhD[4]

Home › Current Epidemiology Reports › Article

Causal Inference Challenges and New Directions for Epidemiologic Research on the Health Effects of Social Policies

Epidemiologic Methods (PP Howards, Section Editors) | Open access | Published: 23 March 2022
Volume 9, pages 22–37, (2022) Cite this article

JOURNAL ARTICLE

Invited commentary: target trial emulation—a call for more widespread use

Amanda Hyre Anderson

American Journal of Epidemiology, Volume 194, Issue 3, March 2025, Pages 659–661,
https://doi.org/10.1093/aje/kwae222
Published: 25 July 2024 **Article history**

TTE – specifying the ‘target’ trial

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- ***Example***: Department wants to evaluate the impact of its policy (e.g. expanding access to mental health services) on a given outcome (e.g. mental health in at-risk men)

RCT Protocol		
A. Eligibility criteria		
B. Treatment strategy		
C. Assignment procedure		
D. Follow-up period		
E. Outcome measure		
F. Subgroup analyses		

TTE – specifying the 'target' trial

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- ***Example***: Department wants to evaluate the impact of its policy (e.g. expanding access to mental health services) on a given outcome (e.g. mental health in at-risk men)

RCT Protocol	Target trial	
A. Eligibility criteria	Men aged 18+years in Australia who meet policy criteria	
B. Treatment strategy	Intervention: Expanded services Comparison: Usual care	
C. Assignment procedure	Randomisation	
D. Follow-up period	Per protocol	
E. Outcome measure	MH symptoms	
F. Subgroup analyses	Per protocol	

TTE – specifying the 'target' trial

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- ***Example***: Department wants to evaluate the impact of its policy (e.g. expanding access to mental health services) on a given outcome (e.g. mental health in at-risk men)

RCT Protocol	Target trial	Target trial emulation
A. Eligibility criteria	Men aged 18+years in Australia who meet policy criteria	TTM participants aged 18+years at baseline who accessed policy
B. Treatment strategy	Intervention: Expanded services Comparison: Usual care	Intervention: Expanded services Comparison: Usual care
C. Assignment procedure	Randomisation	Confounder adjustment (per DAG)
D. Follow-up period	Per protocol	2013 - 2022
E. Outcome measure	MH symptoms	Depression & anxiety symptom scores
F. Subgroup analyses	Per protocol	Sub-populations

TTE for public policy

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- *Better Access* Initiative (DoHDA): Designed to improve access to MH professionals in people with mild-moderate symptoms
- **Policy question**: Does increasing the number of Better Access sessions improve outcomes?
- TTE criteria
  - Sufficient sample sizes ✓
  - Well-characterised cohorts ✓
  - Clear population of interest ✓
  - Exposure of interest (e.g. smoking, policy) ✓
  - Clear outcome (e.g. ↑ health service) ✓

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TEN to MEN

Evaluation of Better Access

MAIN REPORT

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8 December 2022

Ten to Men: TTE for Better Access

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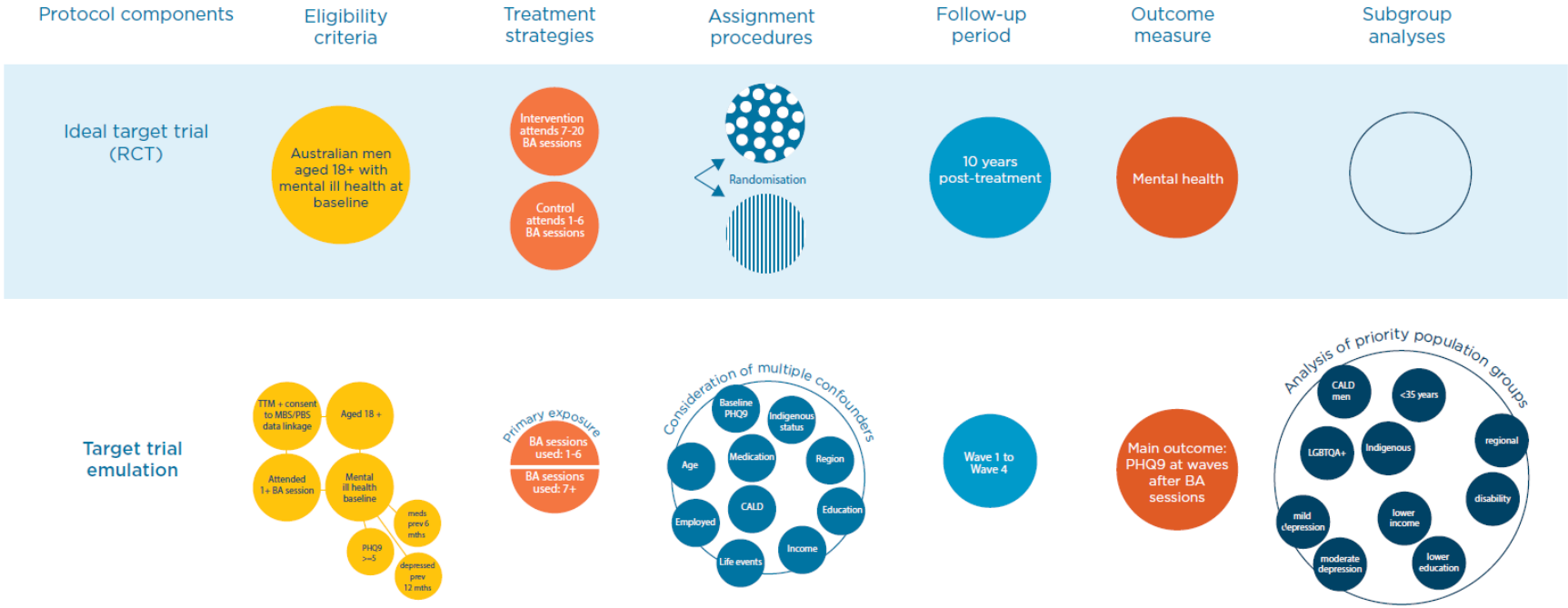

Ten to Men: TTE for Better Access

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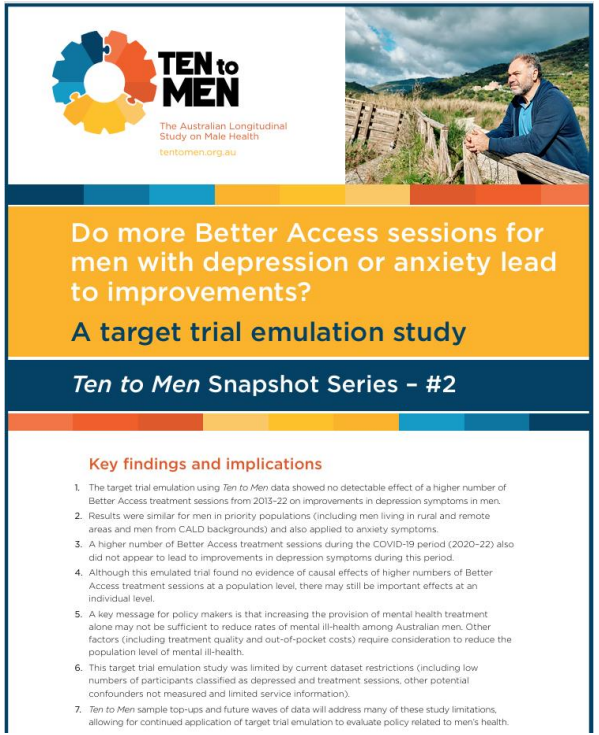
- No evidence **more** *Better Access* sessions leads to improvement in depression symptoms (PHQ-9) (*b* = -0.19, 95% CI [-1.15, 0.70], p = 0.70).

- Similarly, no evidence of an effect of **more** *Better Access* sessions on anxiety symptoms (GAD-7) (*b* = 0.85, 95% CI [-0.52, 2.22], p = 0.22).

- No evidence of **more** *Better Access* sessions for men in priority populations (CALD, Younger (<35y), Regional/Remote, Lower SES men) also did not effect depression symptoms



TTE: Practical considerations

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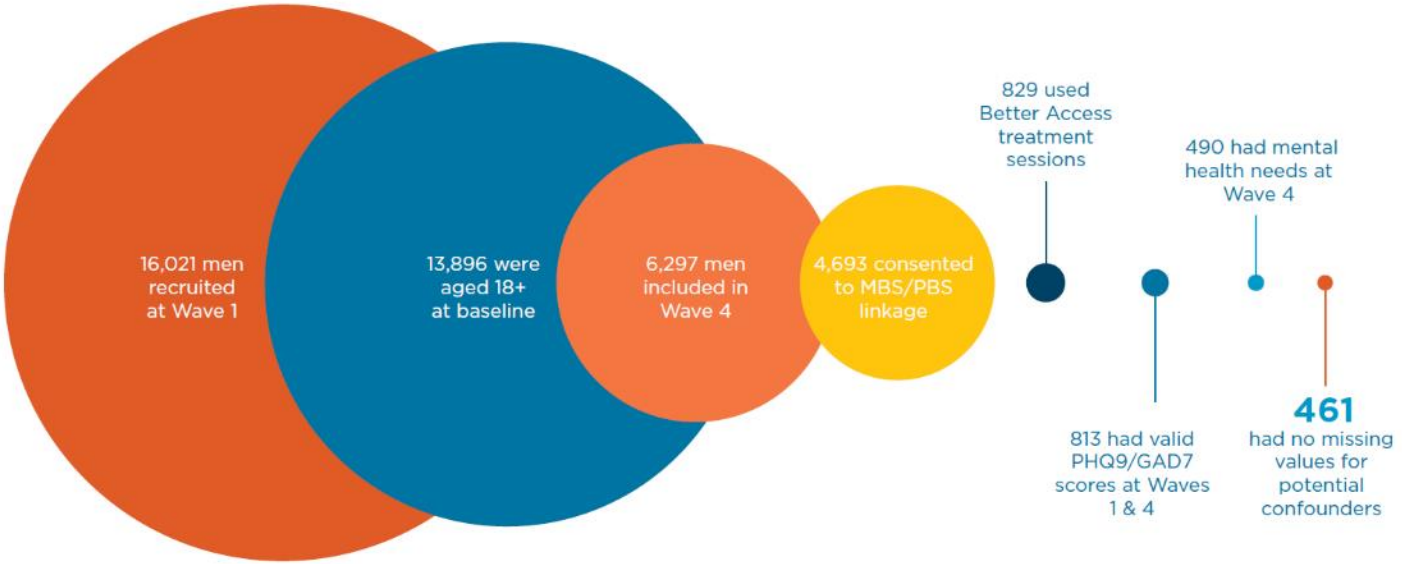
#1: Get to know your data



TTE: Practical considerations

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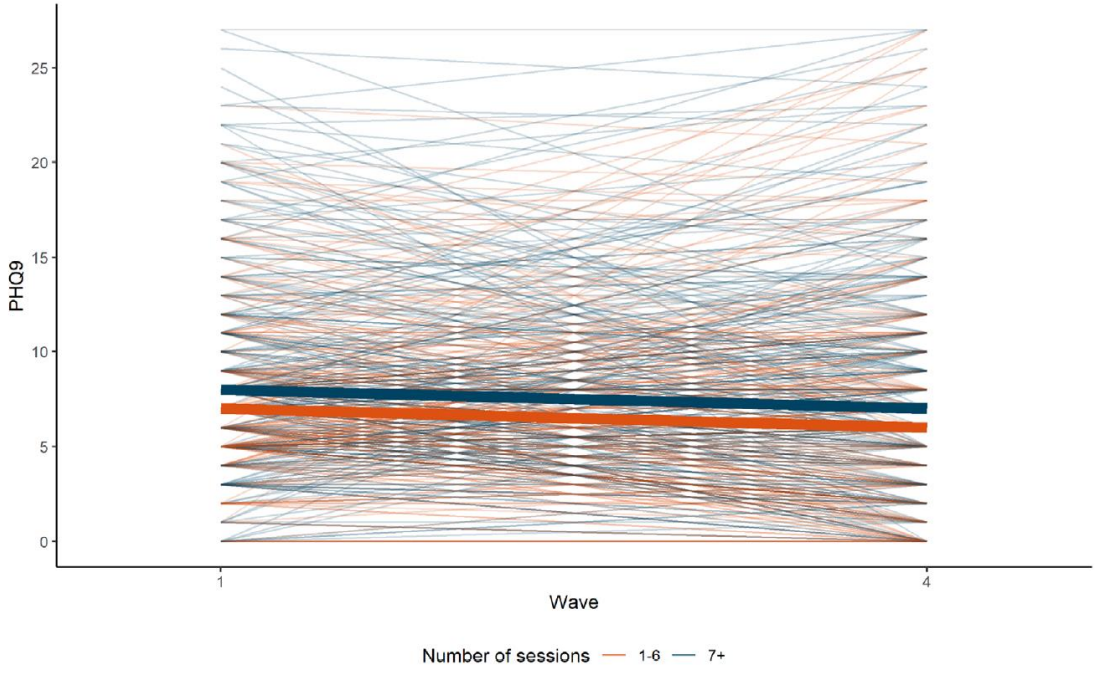
#2: Be as specific as your question allows



TTE: Practical considerations

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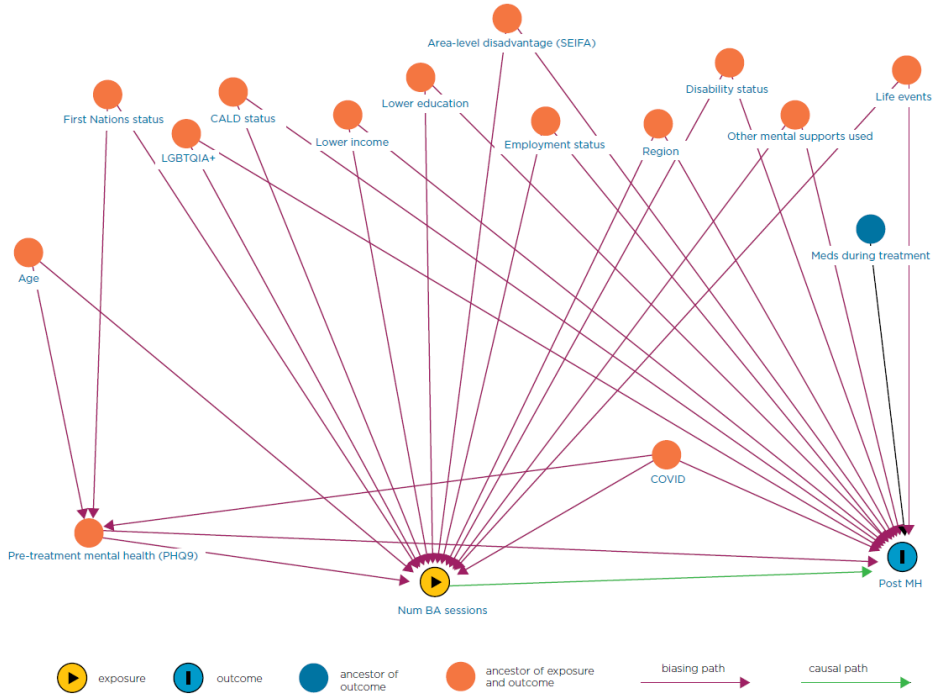
#3: Utilise available expertise



Summary

- TTE is an emerging quasi-experimental approach to providing high-quality, low-cost evidence for policy impact (and development) under certain conditions, in addition to existing evaluation tools

- TTE may particularly provide high-quality evidence to under-served / under-represented groups to provide more complete evidence-based policy

- Further work (& resourcing) is required to realise the application of TTE to public policy

Future directions

- TTE is being applied to an expanding range of policy fields (environment, criminal justice) and evaluations
- Enabled by increase in accessible tools, methodologies, and reporting standards (e.g. TARGET statement; Cashin et al., 2025 JAMA)
- Emerging applications to multi-policy evaluations & policy simulations (forecasting, pop^{n} impacts)
- Coincides with increase maturity & availability of large Gov datasets

Acknowledgements

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