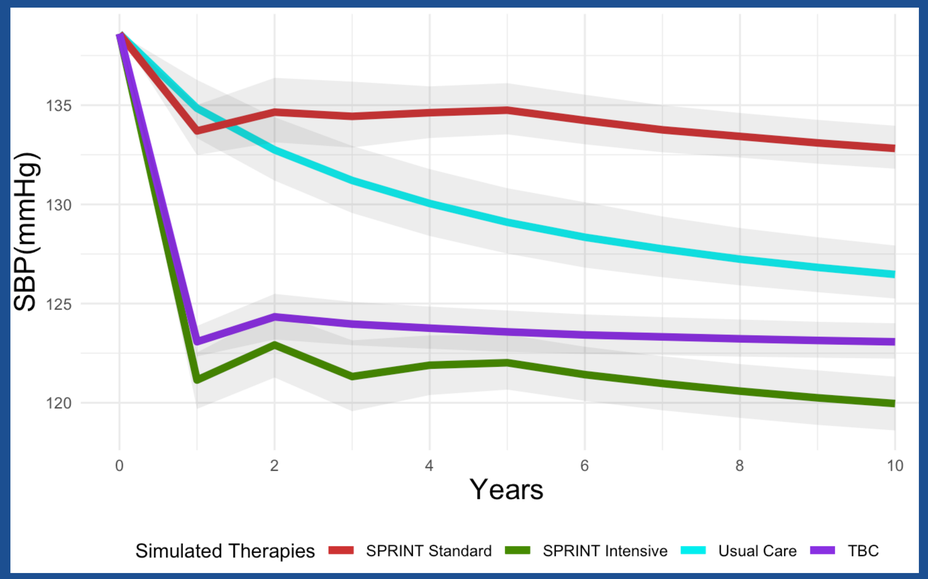
POSTER CODE: CO140

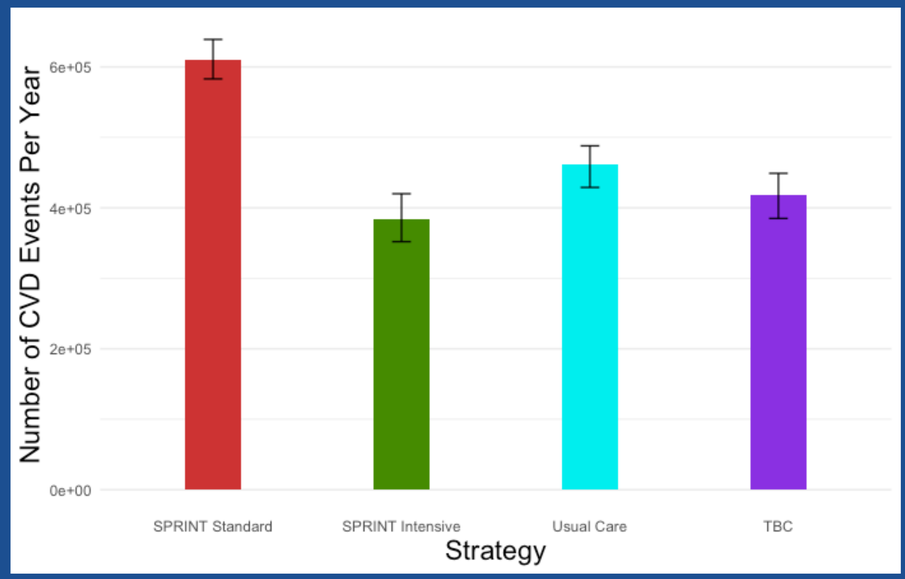
Usual Care and Team-Based Care (TBC) Vs. Trial Protocols for Hypertension Management in SPRINT Adults: A Simulation Study

Fengdi Zhang, MPH Candidate, fz2328@cumc.columbia.edu

Intensive trial protocol and TBC estimated to achieve lowest systolic blood pressure at 10 years



Intensive trial protocol and TBC estimated to prevent greatest number of cardiovascular disease events



Objectives

Despite reducing cardiovascular disease (CVD) events and mortality in the Systolic Blood Pressure Intervention Trial (SPRINT), intensive systolic blood pressure (SBP) goals are not readily used in the US. This analysis projected long-term SBP and CVD outcomes of hypertensive treatment strategies in SPRINT-eligible US adults.

Methods

Model: A discrete event simulation of healthcare processes was used to compare four hypertensive management strategies for blood pressure (BP) achievement and cumulative incidence of CVD at 10 years. The model was calibrated to reproduce the published SPRINT BP and CVD outcomes at median follow up of 3.26 years.

Modeled Healthcare Processes:

- Provider visit frequency
- BP measurement accuracy
- Probability of providers intensifying antihypertensives when BP is uncontrolled
- Patient adherence to antihypertensives

Simulated Population:

- 25,000 SPRINT-eligible patients from National Health and Nutrition Examination Survey

Comparators:

- SPRINT standard treatment protocol with BP goal < 140/90 mmHg
- SPRINT intensive treatment protocol with BP goal <120/90 mmHg
- Usual care with ACC/AHA BP goal < 130/80 mmHg
- Team-based care (TBC) management with ACC/AHA BP goal < 130/80 mmHg

Results

Table 1. Projected outcomes at 10 years

	Mean SBP (mmHg)	CVD (%)	Total Physician Visits	Total Non-Physician Visits
SPRINT Standard	132.8 (131.8 – 134.0)	24.2 (23.2 – 25.4)	27.2 (26.5 – 28.0)	-
SPRINT Intensive	120.0 (118.6 – 121.3)	19.4 (17.9 – 21.0)	31.6 (29.7 – 33.7)	-
Usual Care	126.5 (125.3 – 127.9)	22.9 (21.4 – 24.0)	22.8 (20.7 – 25.1)	-
TBC	123.1 (122.2 – 124.0)	21.0 (19.5 – 22.3)	16.6 (15.4 – 17.9)	7.2 (7.19 – 7.22)

Table 2. Estimated total number of events prevented annually among all SPRINT-eligible US population

	CVD Events	All-cause Mortality	Serious Adverse Events
SPRINT Standard	Reference	Reference	Reference
SPRINT Intensive	-109,000 (-126,000 to -93,000)	-31,000 (-47,000 to -14,000)	+82,000 (64,000 to 100,000)
Usual Care	-32,000 (-43,000 to -19,000)	-9,000 (-20,000 to 2,000)	+38,000 (30,000 to 48,000)
TBC	-74,000 (-88,000 to -62,000)	-28,000 (-38,000 to -18,000)	+32,000 (25,000 to 40,000)

Conclusions

TBC with pharmacists titrating antihypertensives may be a viable alternative to intensive trial-protocol hypertension care in SPRINT, achieving similar SBP and CVD outcomes.

COLUMBIA | COLUMBIA UNIVERSITY IRVING MEDICAL CENTER

Authors: Fengdi Zhang[1]; Andrew E. Moran, MD, MPH[1]; Yiyi Zhang, PhD[1]; Steven Shea, MD, MS[1]; Brandon K. Bellows, PharmD, MS[1]

[1]Columbia University, New York, NY