BPLTTC - Blood Pressure Lowering for Prevention of Cardiovascular Events across Different Levels of Blood Pressure

Purpose: Clinical practice guidelines have traditionally recommended blood pressure (BP) treatment based primarily on BP thresholds. In contrast, using predicted cardiovascular risk has been advocated as a more effective strategy to guide treatment decisions for cardiovascular disease (CVD) prevention. This study aimed to compare outcomes from a BP-lowering treatment strategy based on predicted cardiovascular risk with one based on systolic blood pressure (SBP) level.

Method: from N = 348,854, used 48 randomized controlled trials with individual participant data (IPD), and estimated 5-y risk of CVD events using a multivariable Weibull model previously developed in this dataset. One-stage IPD meta-analysis with Cox proportional hazard models stratified by trial, standardized for 5mmHg systolic BP reduction.

Primary Endpoint: The primary outcome was number of CVD events avoided per persons treated.

	Intervention		Comparator			
Outcomes	**Events**	**Total**	**Events**	**Total**	**HR**	**95% CI**
Major cardiovascular events	18946	162201	24721	182682	0.90	[0.88;0.92]
Stroke	6148	162418	7935	182917	0.87	[0.84;0.90]
Ischemic heart disease	8438	162492	11251	183029	0.93	[0.90;0.96]
Heart failure	3516	147922	4894	168844	0.86	[0.82;0.91]
Cardiovascular death	5238	150857	6519	171811	0.95	[0.91;0.99]

Conclusion: The decision to prescribe BP-lowering medication should not be based simply on a prior diagnosis of CVD or an individual's current BP. Rather, antihypertensive medications are better considered as risk modifying treatments for prevention of incident or recurrent cardiovascular events, regardless of blood pressure values at baseline.