EDITORIAL

Is there a long-term legacy effect of intensive blood pressure control?

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THE SYSTOLIC BLOOD PRESSURE INTERVENTION TRIAL (SPRINT) FOUND THAT IN PATIENTS WITH hypertension who were at increased cardiovascular risk, intensive control (lowering systolic blood pressure (SBP) to < 120 mm Hg) resulted in significant cardiovascular benefit, reducing the risk of incident CVD and all cause mortality, compared with routine BP control (lowering SBP to < 140 mm Hg).[1] However, a secondary analysis showed that this benefit did not persist after completion of the trial.[2]

Between 2010 and 2015, the SPRINT study randomised 9,361 patients with hypertension (36% women) aged 50 or older, mean age 68 years, to two treatment groups. All participants had at least one other risk factor for CVD and an SBP 130 mmHg or greater. Participants were considered to have an increased cardiovascular risk if they had clinical or subclinical CVD, chronic kidney disease or a Framingham Risk Score ≥ 15% or if they were 75 years or older. A total of 4,678 patients were randomised to an intensive treatment target (SBP < 120 mm Hg) and 4,683 to a standard treatment target (SBP < 140 mm Hg). Median follow-up was 3.3 years.

The primary outcome was a composite of myocardial infarction, other acute coronary syndromes, stroke, acute decompensated heart failure, or death from cardiovascular causes.

Over a median intervention period of 3.3 (2.9-3.9) years, intensive treatment compared with standard treatment was beneficial for both cardiovascular mortality, HR 0.66 (95% CI: 0.49-0.89) and all-cause mortality, HR 0.83 (95% CI: 0.68-1.01).

This secondary analysis evaluated the long-term effect of randomisation to intensive treatment on the incidence of cardiovascular and all-cause mortality approximately 4.5 years after the trial ended. The trial intervention ended on 20 August 2015, and trial close-out visits took place in July 2016. Between October 2021 and February 2022 analyses were conducted of extended observational follow-up for mortality via the US National Death Index from 2016 through 2020.

In a subset of 2,944 trial participants, outpatient SBP from electronic health records during and after the trial were examined.

At the median total follow-up of 8.8 (8.3-9.3) years, there was no longer evidence of benefit for cardiovascular mortality, HR 1.02 (95% CI: 0.84-1.24) or all-cause mortality, HR 1.08 (95% CI: 0.94-1.23).

Time-varying estimates of the benefit of intensive treatment for all-cause mortality were attenuated at 2.8 years following randomisation, while the benefit for CVD mortality was attenuated at 5.6 years following randomisation.

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In the subset, the estimated mean outpatient SBP among those randomised to intensive treatment increased from 132.8 mmHg (95% CI: 132.0-133.7) at five years to 140.4 mmHg (95% CI: 137.8-143.0) at ten years following randomisation.

The study authors conclude that: 'While intensive treatment produced beneficial effects on mortality during the trial, there was no evidence that this produced sustained benefits on cardiovascular and all-cause mortality subsequent to discontinuing the intervention protocol.

'Given steadily increasing mean SBP levels in participants randomised to intensive treatment after the trial, these results suggest that maintaining more intensive BP targets throughout adulthood will likely be essential for long-term CVD risk management.'

These findings demonstrate the importance of consistency in the long-term management of hypertension and the tendency for treatment to regress to pretrial standards once the trial completes.

REFERENCES
1 Lewis CE, Fine LJ, Bedhu S et al; SPRINT Research Group. Final report of a trial of intensive versus standard blood-pressure control. *N Engl J Med* 2021;384(20):1921-30
2 Jaeger BC, Bress AP, Bundy JD et al. Longer-term all-cause and cardiovascular mortality with intensive blood pressure control: a secondary analysis of a randomized clinical trial. *JAMA Cardiol* Published online 12 October 2022

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