

Question 39 evidence tables

**Question 39: What is the role of home blood pressure monitoring in managing vascular risk after a stroke?**

*NB Any discrepancies between reviewers in evidence quality and comment were discussed at the corresponding evidence review meeting*

CVD = cardiovascular disease, MI = myocardial infarction, SR = systematic review, MA = meta-analysis, RCT = randomised controlled trial, IPDMA = individual patient data meta-analysis, MDT = multidisciplinary team, PICO = patient/population, intervention, comparison and outcomes, OR = odds ratio, CI = confidence interval, QoL = quality of life, ADL = activities of daily living, OR = odds ratio, RR = relative risk, aOR = adjusted odds ratio, cOR = crude odds ratio, CI = confidence interval, RoB = risk of bias, I<sup>2</sup> = heterogeneity statistic.

Ref ID	Source	Setting, design and subjects	Intervention	Outcomes	Results	Evidence quality (SIGN checklist score) and comment
239	The Sprint research group (2015). A Randomized Trial of Intensive versus Standard Blood-Pressure Control. <i>New England Journal of Medicine</i> , 373:22 2103-2116	RCT, open-label, multicentre	Intensive v Standard BP Lowering	The primary composite outcome was myocardial infarction, other acute coronary syndromes, stroke, heart failure, or death from cardiovascular causes.	All-cause mortality was also significantly lower in the intensive treatment group (hazard ratio, 0.73; 95% CI, 0.60 to 0.90; P = 0.003)	<b>0</b> N/A - No relevance to PICO
240	R. C. Hermida et al. (2010). Influence of circadian time of hypertension treatment on cardiovascular risk: results of the MAPEC study. <i>Chronobiol Int</i> , 27:8 1629-51	Prospective randomised parallel design, open label, assessor blinded study. 2201 patients age >18 years with resistant hypertension (above ABPM threshold while on ≥3 antihypertensive, all medication taken in the morning) and untreated hypertension were recruited.	They were randomised to 1) taking all antihypertensive agents in the morning or 2) switching ≥1 antihypertensive to bedtime. Choice of antihypertensive agents were decided by local investigator	Primary outcome is total CVD events (death from all causes, myocardial infarction, angina pectoris, coronary revascularization, heart failure, acute arterial occlusion of the lower extremities, rupture of aortic aneurisms, thrombotic occlusion of the retinal artery, hemorrhagic stroke, ischemic stroke, and	There were 255 events (40 deaths, 35 myocardial infarctions, 43 angina pectoris, 26 coronary revascularizations, 31 cerebrovascular events, 41 heart failures, 17 cases of aortoiliac occlusive disease, and 22 thrombotic occlusions of the retinal artery) during follow up. The bedtime group consistently showed a significantly lower incidence of each of the study endpoint	<b>+</b> Adequate; Good quality study. There uncertainties whether there was cross-over from morning dose to bedtime dose or vice versa-not reported. Also the primary outcome is a composite of vascular events, including stroke, therefore there's indirectness of evidence whether taking antihypertensive agents at bedtime prevents stroke. The

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				transient ischemic attack. Patients were followed up every 3 months to a year for at least 6 months. Median follow up was 5.6 years	events. Particularly relevant is the finding that total deaths were significantly more prevalent among subjects who took all their hypertension medications upon awakening, explained mainly by the significantly ( $p=.008$ ) higher incidence of CVD deaths in this group. Relative risks (with 95% confidence intervals) of CVD events (adjusted by age, sex, and diabetes) were all $<1$ .	study however answers a different question than Q39.
240	R. C. Hermida et al. (2010). Influence of circadian time of hypertension treatment on cardiovascular risk: results of the MAPEC study. <i>Chronobiol Int</i> , 27:8 1629-51	Patients with untreated hypertension were randomly assigned to treatment groups, awakening in the morning or at bedtime at night. Treatment upon awakening (1109) vs treatment at bedtime (1092)	Bedtime chronotherapy with $\geq 1$ hypertension medications	Death and cardiovascular events at 5 years	Medication administration at bedtime compared to medication administration at awakening, RR (95% CI) (0.39 [0.29-0.51]). Major events (including CVD death, myocardial infarction, ischemic stroke, and hemorrhagic stroke) were also highly statistically significant (0.33 [0.19–0.55]; number of events: 55 versus 18; $p < .001$ ).	++
241	R. C. Hermida et al. (2020). Bedtime hypertension treatment improves cardiovascular risk reduction: the Hygia Chronotherapy Trial. <i>Eur Heart J</i> , 41:48 4565-4576	Primary care, RCT PROBE, 19084 HTN patients	Bedtime vs upon waking administration of antihypertensives	Ambulatory BP, primary CVD outcome (CVD death, MI, coronary revascularisation, heart failure, or stroke)	Bedtime administration reduced primary CVD outcome and each of its single components.	++ RCT but not relevant to this question

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241	R. C. Hermida et al. (2020). Bedtime hypertension treatment improves cardiovascular risk reduction: the Hygia Chronotherapy Trial. <i>Eur Heart J</i> , 41:48 4565-4576	Multicentre, controlled, prospective endpoint trial involving 19,084 hypertensive patients	Ingest the entire daily dose of $\geq 1$ hypertension medications at bedtime	Primary CVD outcome (CVD death, myocardial infarction, coronary revascularization, heart failure, or stroke)	Patients of the bedtime treatment compared with the upon-waking treatment-time regimen: CVD outcome [0.55 (95% CI 0.50–0.61), $P < 0.001$ ], CVD death [0.44 (0.34–0.56)], ( $P < 0.001$ ); myocardial infarction [0.66 (0.52–0.84)], ( $P < 0.001$ ); coronary revascularization [0.60 (0.47–0.75)], ( $P < 0.001$ ); heart failure [0.58 (0.49–0.70)], ( $P < 0.001$ ); and stroke [0.51 (0.41–0.63)], ( $P < 0.001$ ).	++
242	S. M. Kerry et al. (2013). Home blood pressure monitoring with nurse-led telephone support among patients with hypertension and a history of stroke: a community-based randomized controlled trial. <i>Cmaj</i> , 185:1 23-31	381 participants were randomly allocated to home blood pressure monitoring (n = 187) or usual care (n = 194).	Participants were given a monitor, brief training, and telephone support. Participants who had home blood pressure readings consistently over target ( $< 130/80$ mm Hg) were advised to consult their family physician.	Blood pressure, recurrent stroke, quality of life	Fall in systolic blood pressure from baseline did not differ significantly between the groups; Adjusted mean difference – 0.3 mm Hg, 95% confidence intervals -3.6 to 4.2 mm Hg. Recurrent stroke 6.1% vs 8.1% in the intervention vs control group. The quality of life was not statistically significant in both the groups. Home monitoring was associated with a significantly greater reduction in blood pressure at 6 months in patients without disability than in those with some disability. It was also associated with a significantly greater reduction in systolic blood pressure at 12 months in patients whose baseline blood pressure readings were	++

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					higher than 140/90 mm Hg and less than 200/100 mm Hg than in those with normal blood pressure at baseline.	
242	S. M. Kerry et al. (2013). Home blood pressure monitoring with nurse-led telephone support among patients with hypertension and a history of stroke: a community-based randomized controlled trial. <i>Cmaj</i> , 185:1 23-31	RCT; Home BP (n=187) vs usual care (n=194 participants)	Participants were given a monitor, brief training, and telephone support. Participants who had home blood pressure readings consistently over target (target < 130/80 mm Hg) were advised to consult their family physician	Blood pressure, stroke, quality of review	Fall in systolic blood pressure from baseline did not differ significantly between the groups; Adjusted mean difference – 0.3 mm Hg, 95% confidence intervals -3.6 to 4.2 mm Hg. Recurrent stroke 6.1% vs 8.1% in the intervention vs control group. The quality of life was not statistically significant in both the groups. Home monitoring was associated with a significantly greater reduction in blood pressure at 6 months in patients without disability than in those with some disability.	++
243	T. L. Breaux-Shropshire et al. (2015). Does home blood pressure monitoring improve patient outcomes? A systematic review comparing home and ambulatory blood pressure monitoring on blood pressure control and patient outcomes. <i>Integr Blood Press Control</i> , 8: 43-9	Systematic review; studies including patients having hypertension (studies = 13); kidney disease (studies = 3); other disease (studies = 4)	Home blood pressure monitoring	Ambulatory blood pressure monitoring	The data supports the routine use of home blood pressure monitoring in clinical practice. There was insufficient data to determine the benefit of using HBPM as a measurement standard for BP control.	AMSTAR score for systematic review, 8 YES and 2 partial- YES out of 16 questions.

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243	T. L. Breaux-Shropshire et al. (2015). Does home blood pressure monitoring improve patient outcomes? A systematic review comparing home and ambulatory blood pressure monitoring on blood pressure control and patient outcomes. <i>Integr Blood Press Control</i> , 8: 43-9	Systematic review of 20 studies in patients with risk factors (HTN n=13, kidney disease =3, other studies =4)	Home blood pressure monitoring	Ambulatory blood pressure monitoring	The data supports the use of home blood pressure monitoring in clinical practice.	AMSTAR score for systematic review, 8 YES and 2 partial-YES out of 16 questions.  Note: AMSTAR scoring done by Kailash Krishnan and Avtar Lal independently