

Hypertension and hypotension:

getting the balance right

Two articles in this month's *BJGP* examine different topical areas of interest in high blood pressure (BP) measurement and management. While seemingly distinct, the findings of both articles feed into a reappraisal of contemporary BP management.

POSTURAL HYPOTENSION

Postural hypotension (PH) is defined as a reduction in systolic BP ≥ 20 mmHg or diastolic BP ≥ 10 mmHg within 3 minutes of standing or head-up tilt to at least 60 degrees on a tilt table.¹ Recognition of PH is important because, whether symptomatic or not, it is associated with adverse outcomes such as falls, mortality, or cognitive impairment.

The expected prevalence of PH among older adults is around 20% in primary care and higher in residential settings.² We have previously noted that primary care records appear to suggest a much lower prevalence of PH in English primary care (unpublished Clinical Practice Research Datalink GOLD observations from 9 million linked records found only 95 000 records of patients with PH, equating to approximately 1% prevalence [Payne R, personal communication, 2020]). Cini Bhanu and colleagues set out to explore this paradox of missing cases using anonymised electronic primary care records for >18 million patients from >700 practices, in a sample broadly representative of UK practices.³ In this large retrospective cohort study they found a new diagnosis of postural hypotension for 24 973 of 2 911 260 patients aged ≥ 50 years between 2008 and 2018, which, again, equates to a cumulative 10-year prevalence no higher than 1%. As the authors acknowledge, retrospective analysis may suffer from misclassification bias; however, this is a large and representative sample, and the observed steep rise in incidence with increasing age is consistent with our previous meta-regression findings.² Consequently, it

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seems clear that the authors have confirmed that many cases of PH are not formally recorded. The important question raised, therefore, is whether PH is simply being poorly recorded, perhaps by preferential use of free text or other synonyms, or whether it is going unrecognised, risking missed opportunities to ameliorate risks for future falls or other adverse outcomes. Since PH is asymptomatic as often as it is symptomatic, detection cannot be led by patient-reported symptoms, so a proactive approach to recognition and management of PH is required.⁴ It is probable that the explanation for this paradox is complex, and the authors usefully set out the steps by which a diagnosis may be missed or not recorded. Worryingly, they also observed a (pre-pandemic) trend towards fewer annual diagnoses of PH over the decade studied. Given the rising prevalence of comorbidity with cardiovascular disease (a risk factor for PH) one might expect the opposite;⁵ the authors plausibly suggest that rising GP workload may be one barrier to finding the time for formal diagnosis of PH.⁶ Diagnostic thresholds based on lying-to-standing BP measurements may not be appropriate for use with the more practical sitting-to-standing practice that is supported in current hypertension National Institute for Health and Care Excellence (NICE) guidance and is usually adopted in primary care.^{7,8} Furthermore, inconsistency between relevant NICE diagnostic guidelines creates diagnostic uncertainty so, in fact, a range of barriers

to successful recognition and recording of PH exist.^{9,9} NICE are currently consulting on proposals to update relevant guidelines, and we are currently undertaking work to understand the barriers to PH detection and management in primary care with a view to informing practical future guidance.

REVERSE DIPPING

Ambulatory blood pressure monitoring (ABPM) can offer the chance to detect PH outside of clinical settings.¹⁰ Such 'masked hypotension' may go otherwise undetected due to white coat effects in the surgery; out-of-office measurements are the only way to detect and manage such patients. In a second retrospective analysis in this issue, Laura Armitage and colleagues report the prevalence of different 24-hour BP phenotypes for one hospital and one primary care cohort.¹¹ Analyses of both cohorts supported previous evidence to associate the 'reverse dipper' pattern of BP – whereby nocturnal BP rises, as opposed to falls, in comparison to daytime BP – with higher proportions of pre-existing cardiovascular disease. This pattern was seen in 11% of the community cohort with ABPM. This is important because current NICE hypertension guidance bases diagnosis on daytime ABPM, differing, as the authors note, from European and international society guidelines that do take account of nocturnal BPs.⁸ We have previously found that 30% of practices do not include nocturnal measurement in their ABPM protocols, perhaps in response to NICE guidance, which means that dipping status cannot be known for their patients.¹² The daytime BP of reverse dippers is lower than that for dippers, meaning that they are at risk of underdiagnosis due to masked hypertension if nocturnal BPs are not measured. Masked hypertension is associated with hypertensive target organ damage and elevated cardiovascular mortality in European and Black populations,

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so detection is important. Clues such as an association with obesity, the presence of metabolic syndrome, and high-normal office BP may help to select individuals who should especially be monitored for the full 24 hours.¹³

Reverse dipping can be viewed as one of several cardiovascular risk markers, like inter-arm BP difference, which indicate additional cardiovascular risk not accounted for by proprietary risk score algorithms.¹⁴ These factors may inform individual decisions to commence or intensify BP lowering treatment when BPs are close to guideline thresholds for intervention. It is tempting to consider the time of medication dosing for people with nocturnal hypertension. The large, newly published TIME trial has robustly confirmed that there is no difference in cardiovascular outcomes, after 5 years of follow-up, between people taking their antihypertensive medications

in the morning or the evening. The authors do, however, counsel that further research is needed to understand whether reverse dippers with nocturnal hypertension should be managed differently.¹⁵

CONCLUSION

In summary, there is a strong case for obtaining the full value of ABPM by ensuring that a full 24-hour measurement cycle is completed. Such additional information can inform individual judgements to start or intensify BP lowering, by identifying the subgroup of people with masked hypertension who are reverse dippers. Twenty-four hour ABPM may also inform investigation of people who are potentially overtreated by revealing masked hypotension. There is always a balance to be struck in optimising BP lowering treatment, and making full use of 24-hour ABPM can help to weigh that balance.

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Provenance

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Competing interests

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