

## ORTHOSTATIC HYPOTENSION

## NEED TO KNOW

- **Orthostatic hypotension (OH) is defined** as a sustained drop in blood pressure of  $\geq 20$ mmHg systolic and/or  $\geq 10$ mmHg diastolic occurring within 3 minutes of standing.
- It can be diagnosed in primary care using the '**active stand test**'.
- It is **incredibly common**, especially in our older populations - as many as 1:4 may have OH.
- **Symptoms are often very non-specific**, with patients describing a wide range of symptoms including feeling dizzy, light-headed and unsteady, as well as fatigue and cognitive impairment; but be aware **many patients may be asymptomatic**.
- A key management step involves **reviewing potential causative drugs**, especially antihypertensives and alpha-blockers, nitrates and CNS drugs e.g. TCAs.
- **Non-pharmacological steps** should be undertaken before considering medication e.g. fludrocortisone.
- If patients have a **significant postural drop**, treat to blood pressure **targets based on standing BP** (not sitting).



We see a lot of older people complaining of a symptom that can be variously described as dizzy, light-headed, unsteady, muzzy... Assessment of dizziness in primary care is difficult, and we often tend to focus on the vestibular system but **many patients complaining of these symptoms have undiagnosed orthostatic or postural hypotension**.

Two recent reviews of this condition have been published. A '*pragmatic guide to diagnosis and treatment*' published by the Drugs & Therapeutics Bulletin [DTB 2020;58:166](#) is very useful, and this includes an excellent, simple step-wise approach to management. The BMJ has also published a clinical update on postural hypotension [BMJ 2021;373:n922](#) and we have had a new systematic review on the evidence for fludrocortisone [Cochrane 2021](#) which was reviewed in the [DTB Dec 2021](#). We have recent data [BJGP 2023; 73 \(726\)](#) suggesting that postural hypotension is significantly under-reported in GP records, and an [associated editorial](#) highlights the implications of this together with the importance of identifying people with asymptomatic postural hypotension who are still at risk of the complications discussed below. Finally, NICE have updated their Hypertension guideline [NG136 in November 2023](#), **specifically addressing the issue of postural hypotension**.

Chronic OH is an incredibly common and disabling condition. Looking at the list of symptoms and potential complications of OH, we can see how important it is to look for and appropriately manage.

- **Symptoms of OH**
  - Dizziness
    - Light-headedness, vertigo, unsteadiness
  - Syncope and pre-syncope
  - Visual disturbance
    - Transient loss, blurring or dimming of vision
  - Shortness of breath
  - Chest pain
  - Fatigue
  - Cognitive impairment
- **Complications of OH**
  - Falls
  - Stroke
  - Dementia
  - Increased mortality

## ► *How is orthostatic hypotension defined, and diagnosed?*

- A sustained ↓ in BP of  $\geq 20$ mmHg systolic and/or  $\geq 10$ mmHg diastolic occurring within 3 minutes of standing
- The gold standard for diagnosis is a tilt table test but in primary care, an 'active stand' test of lying and standing BP is needed - see KISS box later in this topic
- This is a test that can be done by a trained Healthcare Assistant in a 10 to 15-minute consultation
- **Supine hypertension** is when patients supine have hypertension (SBP  $\geq 140$  and/or DBP  $\geq 90$ ) and yet orthostatic hypotension and has been addressed in the updated [NICE hypertension guideline NG136](#); it is common in people with neurogenic OH due to diabetes or Parkinson's, and it may be missed as a diagnosis as patients often have an acceptable BP when seated
  - Management of supine hypertension is challenging. Treatment of supine hypertension is still recommended to reduce CVD risk, but of course, it carries a risk of exacerbating OH so shared decision-making is essential
  - It may be necessary to accept a supine BP  $> 160$  mmHg to be able to achieve a standing BP that will support an upright posture

### The Active Stand Test for Postural Hypotension

- Test ideally done in the morning
- The patient lies supine for  $\geq 5$  minutes
- Measure baseline BP and HR
- Patient stands up
  - Measure BP and HR at 30 to 60 seconds
  - Measure BP and HR at 2 mins and 3 mins
- **Interpretation**
  - *Orthostatic hypotension is diagnosed if there is a postural drop of  $\geq 20$ mmHg systolic and/or  $\geq 10$ mmHg diastolic at any point within 3 minutes of standing*

## ► *How common is OH, and what are the implications?* [BJGP 2023; 73\(726\)](#)

- OH is incredibly common, affecting as many as 1 in 4 older people.
- A recent [large meta-analysis](#) suggests that the prevalence of OH is 17-19% in community and primary care populations and 31% in residential and nursing home residents.
- Symptoms are generally worse in the morning and exacerbated by prolonged sitting or lying, warm environments and eating.
- However, despite the high likely prevalence, reporting of OH remains low in GP records, as reported in this [recent study in the BJGP](#) and an [associated editorial](#):
  - This retrospective cohort study reviewed GP records and recorded diagnoses of postural hypotension in people aged  $\geq 50$  - only ~25,000 people out of a total of almost 3 million had a recorded diagnosis - **equivalent to a cumulative 10-year prevalence of only 1%**.
  - The authors and editor discuss the **myriad reasons for this significant discrepancy between the predicted prevalence of OH and recoded diagnosis** - some may be having this actively managed without a formal code, but many people with OH (as many as 2/3) may be asymptomatic, and rising workload pressures are all likely to be factors.
  - The implications are fairly obvious - a large group of people with undiagnosed and unmanaged OH with the consequent risks of OH complications, especially falls.
  - They call for a proactive approach to recognition of OH and wider use of ambulatory BP monitoring; this sounds good in theory, but given the aforementioned workload pressures and lack of access to ambulatory BP monitors in primary care, this is a way off being a reality.

► **NICE hypertension guideline** [NG136 November 2023](#)

NICE updated its hypertension guideline in **November 2023**, specifically regarding postural hypotension. Their definition is broadly as above, but the recommendations are a little less stringent than the requirements of the active stand test:

- If symptoms of postural hypotension (including falls or dizziness) measure BP lying (or sitting if lying is inconvenient) and again after standing for  $\geq 1$  minute.
- If BP falls by  $\geq 20$  mmHg systolic OR  $\geq 10$  mmHg diastolic postural hypotension is confirmed:
  - Look for causes etc and manage appropriately - see our postural hypotension chapter for more detail).
  - Importantly **NICE recommends we measure subsequent BP with them standing if postural hypotension is present.**
- If BP drop is less than the threshold above but readings are done from sitting position, repeat with the person lying initially.
- If symptoms are suggestive of postural hypotension but below the threshold above, consider specialist referral.

► **What causes OH?**

- Acute OH can, of course, be as a result of a sudden loss of blood volume and BP (e.g. GI haemorrhage) or it may be physiological (e.g. pregnancy)
- We tend to remember drugs as a common cause, but chronic OH may be caused by many other conditions, especially Parkinson's disease, dementia and diabetes
- Ageing-related physiology is a major contributor in a lot of patients and will be exacerbated by polypharmacy and other factors such as dehydration
- Medication as a cause: as well as antihypertensives other drugs can commonly cause OH; it is estimated that 250 medications can cause OH, but the DTB has compiled a pragmatic list of 'common culprits' - see box below
- Further investigation will be guided by individual clinical assessment and likely aetiologies, but likely to include ECG and blood tests

### Causes of Chronic Orthostatic Hypotension

- Alcohol
- Medication
  - Cardiovascular Drugs
    - Diuretics; ACEi and ARB; CCB; Beta Blockers; Alpha blockers
    - Nitrates, and other vasodilators such as sildenafil
  - CNS Drugs
    - Tricyclics; Antipsychotics; Anti-Parkinson's drugs
  - Antimuscarinic drugs e.g. oxybutynin, solifenacin, tolterodine
- Neurogenic OH
  - Neurodegenerative diseases, such as Parkinson's and dementia with Lewy bodies
  - Diabetes mellitus
- Cardiovascular disease
  - Heart failure, aortic stenosis, arrhythmia including paroxysmal AF
- Endocrine disease
  - Addison's and adrenal insufficiency, thyroid disease, chronic liver disease, diabetes insipidus

► **How should we manage chronic OH?**

The DTB paper proposes a simple 4-step plan (see KISS box below). They state the evidence base for this is poor due to lack of evidence, and it is a guideline that is based on low-quality evidence and expert recommendations. The evidence base for fludrocortisone is weak, and a recent systematic review [Cochrane 2021](#) which was reviewed in the [DTB Dec 2021](#) found very low certainty evidence of benefit. Importantly the aim of management is to reduce symptoms and fall risk, not necessarily to correct the drop in BP.

## KISS: CHRONIC ORTHOSTATIC HYPOTENSION

Based on [DTB 2020;58:166](#) and [BMJ2021;373:n922](#) & [BJGP 2023; 73 \(726\)](#)

### Assessment:

- **Common condition** with observational data suggesting prevalence ~20% of community-dwelling older adults and ~20%-31% of those living in long-term care; yet significantly under-reported in GP records.
- Be aware of conditions that increase the risk of OH - Parkinson's disease, diabetes, and dementia.
- **Symptoms of OH:**
  - Dizziness - light-headedness, vertigo, unsteadiness; syncope and pre-syncope.
  - Visual disturbance - transient loss, blurring or dimming of vision.
  - Shortness of breath, chest pain.
  - Fatigue.
  - Cognitive impairment.
- Check for **evidence of postural hypotension with the Active Stand Test** (ideally done in the morning):
  - The patient lies supine for  $\geq 5$  minutes, then measure baseline BP and HR.
  - Patient stands up - Measure BP and HR at 30 to 60 seconds, at 2 mins and at 3 mins.
  - **Interpretation:** Orthostatic hypotension is diagnosed if there is a postural drop of  $\geq 20$ mmHg systolic and/or  $\geq 10$ mmHg diastolic at any point within 3 minutes of standing.

### Management:

- **Step One, further investigation:**
  - Exclude acute or reversible causes e.g. alcohol
  - Investigations (ECG, bloods including FBC, U&E, LFT, glucose, TSH, B12, folate)
  - Other investigations as per clinical picture e.g. echo if structural heart disease suspected, specific tests if other endocrine disease suspected (adrenal insufficiency, diabetes insipidus)
- **Step Two, medication review:**
  - Review of likely 'culprit' medication including anti-hypertensives, nitrates and other vasodilators (e.g. sildenafil), diuretics, tricyclics, antipsychotics, antiparkinsonian drugs and antimuscarinics
  - Stop alpha-blockers, beta-blockers and diuretics in preference to other antihypertensives
  - Substitute any of the above with ACEi, ARB or CCB
- **Step Three, non-pharmacological measures:**
  - Change position slowly (!) and get up slowly and in stages from lying to standing
  - Avoid provocative factors e.g. increased temperature, alcohol, large meals etc
  - Lifestyle modification e.g. increased fluid intake, physical activity, sleep with head of bed elevated
  - Maintain good hydration and consider volume expansion e.g. bolus drinking of 500ml water on waking; increase water consumption to a total of 2-3L day; increase salt consumption by 1-2 teaspoons; caution in patients with hypertension, heart failure or oedema
  - Physical counter manoeuvres; compression stockings have weak evidence
- **Step Four, pharmacological management:**
  - Only consider when all of the above has not been effective
  - Fludrocortisone 50 - 300 mcg per day
    - Weak evidence, but most commonly used treatment and infrequent adverse events
    - Check serum K is in the normal range and 2 to 4 weeks after starting, thereafter 6 monthly
    - Start at 50 mcg daily in frailty, otherwise 100 mcg daily
    - Assess response at 1 to 2 weeks and increase by dose increments of 50-100 mcg
    - If bothersome oedema occurs, reduce the dose or stop; do not commence diuretic
- **Step five, referral:**
  - If symptom control is inadequate despite the above measures and/or recurrent falls and syncope
  - In specialist settings may also be prescribed Midodrine (a prodrug of an alpha agonist)



## LEARNING POINTS & QUALITY IMPROVEMENT

### Learning Points

- Chronic orthostatic hypotension is common, affecting upto 17-19% of older adults and as many as ~30% living in care settings.
- It is associated with common symptoms e.g. dizziness, lightheadedness and fatigue, but may be asymptomatic in as many as 2/3.
- For diagnosis in primary care, arrange an appointment for an Active Stand Test (see above).
- For patients with any possible symptoms of postural hypotension (including falls) do supine/sitting BPs and standing BPs - if either a significant postural drop is found ( $\geq 20$  mmHg systolic or  $\geq 10$ mmHg diastolic), treat to BP target based on standing blood pressure, not sitting BP.
- Management (see above) revolves around medication review and lifestyle guidance.
- Fludrocortisone may be considered as a trial in the community if simple measures fail.

### Quality Improvement Ideas

- **Audit patients who have suffered a fall in the last year:**
  - Have they been screened for OH with supine/sitting and standing BP, or ideally the Active Stand Test?
- **For patients with hypertension and at high risk of OH (aged >80, diabetes, risk of neurogenic OH e.g. Parkinson's Disease, dementia) are they having/doing both supine/sitting BPs and standing BPs for their annual reviews?**
  - They could potentially do this using home BP monitors.
  - If those patients have either significant postural drops or get symptoms of postural hypotension, treat BP target to standing BP levels and make sure this is noted in the GP record for future reviews.

