

“The ABCs of nOH”

By Dr. B

**Engaging Patients (and Caregivers)
in the Treatment of their Orthostatic
Hypotension**

Vanderbilt Autonomic Dysfunction Center

Italo Biaggioni, MD
Morgane Giesecke, NP
Ralf Haberman, MD
James Muldowney, MD
Amanda Peltier, MD
Cyndya Shibao, MD
Kishan Tarpara, MD
Yuliya Vance, NP
Bonnie Black, RN

Neurogenic Orthostatic Hypotension (nOH)

Autonomic Nervous System:

- Part of the nervous system that acts **automatically** to regulate blood pressure and many other function without you needing to think about it

Neurogenic Orthostatic Hypotension

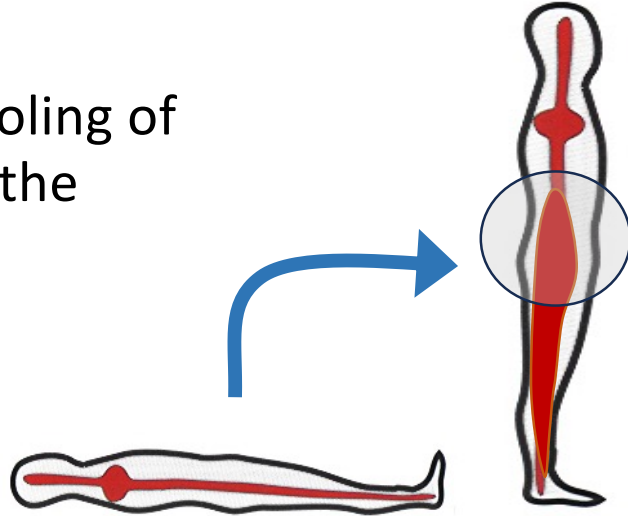
- A drop in blood pressure on standing due to impairment of autonomic function
- It impairs your ability to stand up, causes significant disability and impairs quality of life
- Increases the risk of fainting and falls.

➔ It is important to treat OH

➔ Patients should play an active role in their treatment

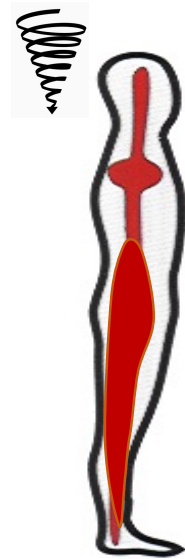
Why does OH occur?

- On standing there is pooling of ~24 ounces of blood in the abdomen



- Normally the autonomic (adrenaline) system kicks in and squeezes that blood back to the heart & brain

- These compensatory mechanisms are impaired in autonomic failure
→ less blood goes back to the heart → less blood goes to the brain → fainting



Its Important for Patients to be Engaged in their nOH Treatment

You need to:

- A. Recognize the warning symptoms of OH
- B. Recognize aggravating factors that make OH worse
- C. Play an active role in your treatment

A. Recognize Warning Symptoms

- The most important goal in the treatment of OH is to preventing falls and fainting
- Recognizing warning symptoms is the best way to prevent falls and fainting. Its more important that any medication we can give you
You should sit or lie down as soon as you feel symptoms of OH
- Inability to recognize symptoms increases risk of falls
- Warning symptoms can vary from patient to patient
 - Classic symptoms due to reduced brain blood flow:
Lightheadedness, dizziness, dimming vision
 - Other symptoms: pain in neck and shoulders (“coat hanger pain”)
- You need to learn to recognize **any symptom that gets worse on standing and improves by sitting down**

B. Recognize Aggravating Factors

... so you can avoid them or manage them

OH is not fixed but variable problem, worse:

1. Early in the morning

↑ nighttime blood pressure → ↑ Urine production →
↓ ~4 lbs in one night → worse OH in the morning

So, what can you do?

- Don't expect to be able to jump out of bed
- Drink 16 oz water (keep it at your nightstand). It will boost your blood pressure in 15 min.
- Take your pressor agents as soon as you wake up (and consider it takes at least 30 min to kick in)

2. After meals

3. If standing motionless

4. When exposed to heat

5. Medications

B. Recognize Aggravating Factors

... so you can avoid them or manage them

OH is not fixed but variable problem, worse:

1. Early in the morning

2. After meals

Digestion pools blood in the gut → ↓ BP by 20-40 points
Worse at 30 min, worse with sugars and carbs

So, what can you do?

- Eat smaller more frequent meals
- OK to take a nap
- Can be prevented with coffee and with a medication called **Acarbose** (delays absorption of sugars)

3. If standing motionless

4. When exposed to heat

5. Medications

B. Recognize Aggravating Factors

... so you can avoid them or manage them

OH is not fixed but variable problem, worse:

1. Early in the morning

2. After meals

3. If standing motionless

E.g., like waiting in line.

Leg muscles normally pump blood back to the heart

So, what can you do?

- Avoid standing still, cross your legs or move around

4. When exposed to heat

5. Medications

B. Recognize Aggravating Factors

... so you can avoid them or manage them

OH is not fixed but variable problem, worse:

1. Early in the morning
2. After meals
3. If standing motionless

4. **When exposed to heat**

OH patients are unable to sweat and dissipate heat → skin vasodilation and pooling of blood → ↓ BP

so what can you do?

- Avoid hot showers
- Avoid hot days, drink 16 oz water before going out
Even soldiers standing on attention faint on hot days

5. Medications



B. Recognize Aggravating Factors

... so you can avoid them or manage them

OH is not fixed but variable problem, worse:

1. Early in the morning
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5. Medications

Some commonly used medications can worsen OH

Drug	Use	Mechanism	Safer alternative
Carvedilol	Cardioprotection	Blocks noradrenaline	Metoprolol
Tamsulosin (Flomax)	Prostate symptoms	Blocks noradrenaline	Finasteride
Tizanidine	Muscle Relaxant	Lower sympathetic tone	Flexeril
Trazadone	Sleep aid	Blocks noradrenaline	various

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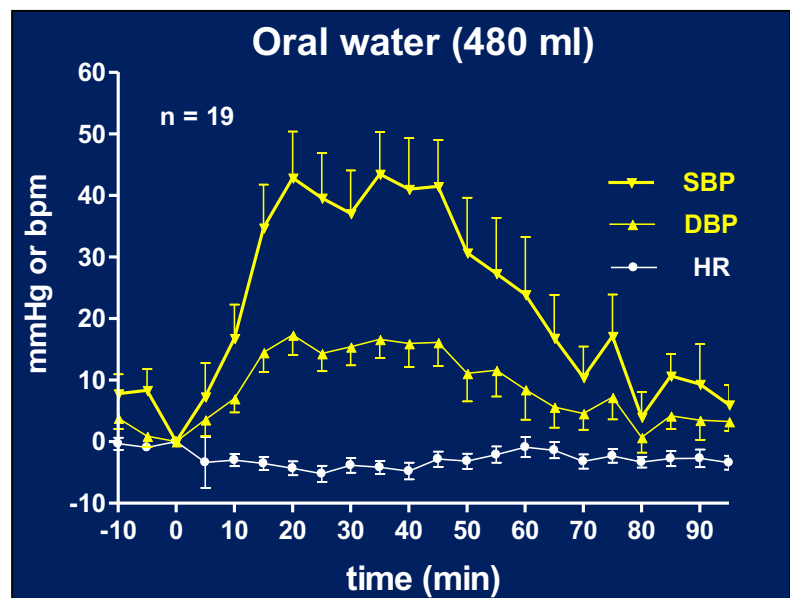
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- 6. Other factors**
 - Immobility and bed rest
(deconditioning sets in very quickly)
 - Infections and other stresses
(worsening of OH may be the only sign of a urinary infection)
 - Bearing down, e.g., during defecation
(bearing down – Valsalva maneuver - reduces the blood going back to the heart. We use it to diagnose OH)

Its Important for Patients to be Engaged in their nOH Treatment

You need to:

- A. Recognize the warning symptoms of OH
- B. Recognize aggravating factors that make OH worse
- C. Play an active role in their treatment**
 - 1. Start your day with 16 oz pure water**
 - Quick and dramatic increase in blood pressure
 - Kicks in in 10 min, peaks at 30
 - Can help other medications work better
 - Has to be pure water, not electrolyte solutions
 - Temperature makes no difference



Its Important for Patients to be Engaged in their nOH Treatment

You need to:

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- B. Recognize aggravating factors that make OH worse
- C. Play an active role in their treatment**
 1. Start your day with 16 oz pure water
 - 2. Use an abdominal binder while upright**
 - Wear loose while seated, tighten as much you can tolerate right before standing
 - Can be as effective as midodrine
 - E.g., copper fit advance back pro ~\$20-30
 - More effective than compression stockings (most of the blood pooling is in the abdomen)



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- C. Play an active role in their treatment**
 1. Start your day with 16 oz pure water
 2. Use an abdominal binder while upright
 - 3. Understand why, how and when drugs for OH work**
 - The goal is to increase **upright BP only** as necessary to prevent symptoms.
 - It makes **no sense** (and is counterproductive) to take pressor agents if you are going to lie down.
 - Take pressor agents 30-45 min before upright activities.
 - You can skip the afternoon dose if you are not going to be active

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... And you can help us diagnose and treat your OH by measuring blood pressures at home:

- Supine and after 1-3 min of standing, specially in the morning when OH is worse
(don't be a hero; sit down if you are having symptoms)
- Seated before and 30 min after a breakfast
(to diagnose post-prandial hypotension)
- While you are having symptoms that we are not sure are due to OH
(to document those symptoms are due to OH)
- At bedtime (to diagnose supine hypertension)
- Seated and standing before and after medications
(to help us determine if the medications are working)