

blood Pressure (BP), Pulse and Parkinson (PD)

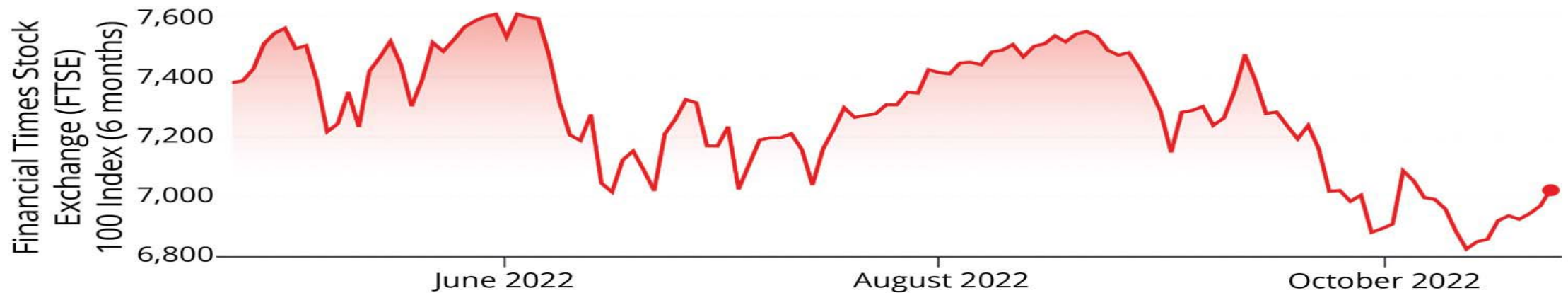
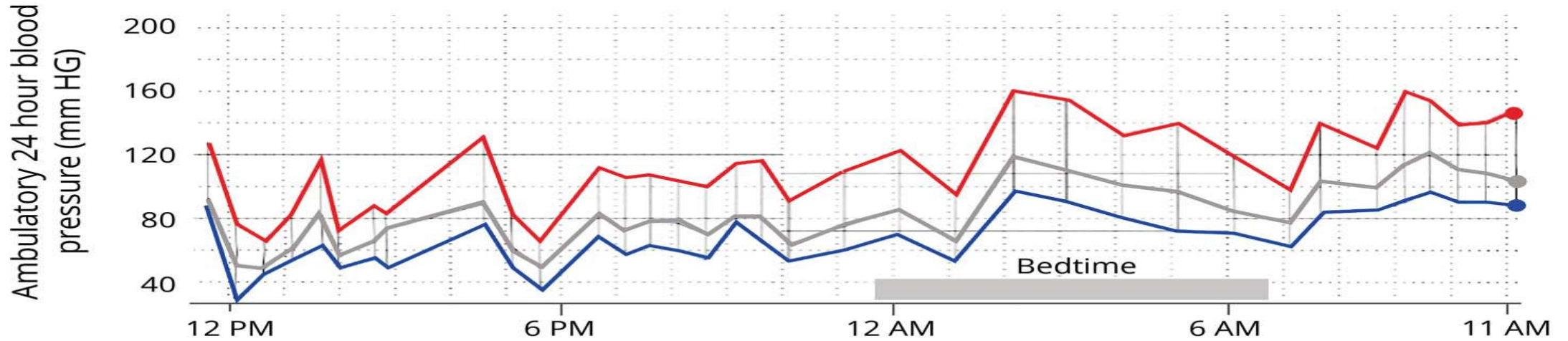
Maintaining Flow to our Moving Brains

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PD & BP problems: Why It Matters?

- Increases risk of falls
- Increases risk for dementia (14%/yr)
- Increases risk for heart attack and stroke
- Decreases quality of life, survival
- Why It Matters To You?
 - **You can do something about it!**
Take Action Points (TAP)
- What's one of the problems? Staring at the tip of the iceberg...

Tip of the Iceberg – One snapshot per day



Let's review... Pulse and Blood Pressure

- Pulse – heartbeat
- Heart Rate (HR) – beats per minute (BPM)
- Sinus Rhythm – normal rhythm (60-100)
 - Lower at rest, more efficient function
- Blood pressure (BP) – force on artery walls
 - Systolic (SBP) – heart contracting
 - Diastolic (DBP) – heart is relaxing
- Brain/body needs a steady supply of oxygen and nutrients to function
 - How do we adjust in 24-hour cycle?
- Heart Rate Variability (HRV)
 - HRV ↓ - ↑ CVD, depression, anxiety
 - HRV ↑ - HR flexibility and resilience
- Respiratory Sinus Arrhythmia
 - Inspire (breathe in) – HR ↑
 - Expire (breath out) – HR ↓
- Autonomic nervous system (ANS)
 - Sympathetic – alert, “fight or flight”
 - Parasympathetic – relax, “rest and digest”

TAP TO RELAX: Physiologic sigh!

2 fast inhales, 1 long exhale (and repeat): ↓HR

GOAL: Maintain blood pressure as steadier as possible. To allow this, our heart rate must adapt!

We are moving brains; we need to adapt!

Awake

- Sitting (at rest) – 120/80 ↔
- Standing – ↑, ↓, ↗ 20-30s
- Walking - ↑ BP, ↑HR
- Exercising – ↑↑BP, ↑↑HR
 - SBP: 160-220
- #1 - ↑BP, ↑HR (bladder full)
- #2 – standing, more complicated
- Eating - ↓BP, ↑HR

Asleep

- Lying down/supine
 - ↓BP, ↓HR, ↓ temperature
- Sleep stages – Don't mess with sleep!
 - Stage 1, 2: light sleep
 - Stage 3, 4: deep sleep – low BP variability
 - Important for memory/cognition
 - REM sleep
 - Important for ANS, BP/HR control

TAP: Target nighttime vitals!

TAP: Taking BP multiple times starts to fill in the picture

The Englishman that keeps on giving...

Non-Motor: Dysautonomia

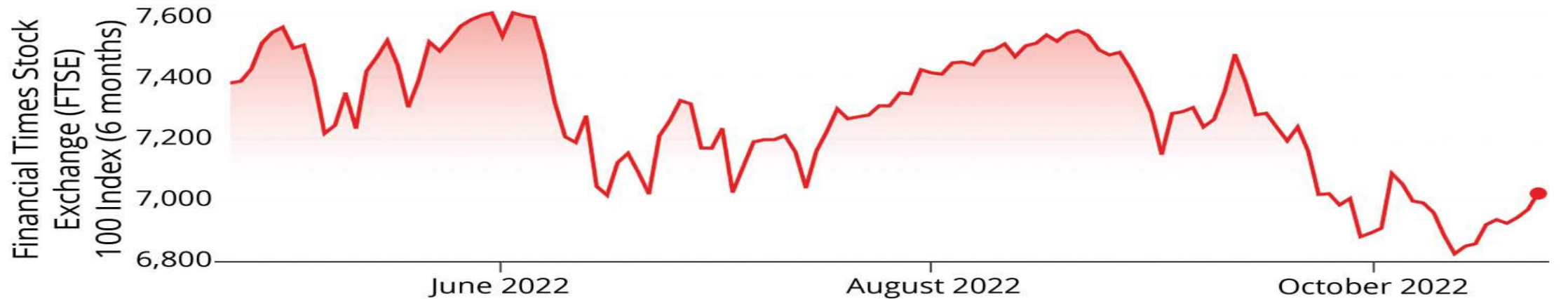
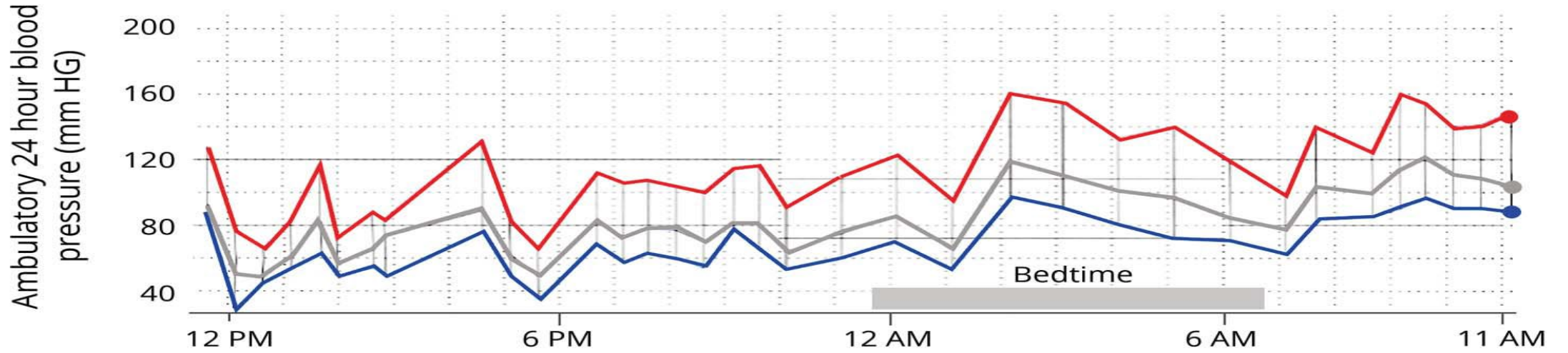
- Constipation
- Urinary problems
- Sexual dysfunction
- Sweating changes
- Unstable blood pressure*
 - MIBG scintigraphy
 - Cardiac sympathetic denervation
 - Parasympathetic dysfunction

• Cardiovascular alterations (80%)

- Cardiovascular dysautonomia
 - Neurogenic orthostatic hypotension (nOH)
 - 40% of PD pts, 80% MSA pts
 - Supine hypertension (SH)*
 - Postprandial hypotension
 - Nocturnal non-dipping profile
- Heart failure
- Atrial fibrillation

TAP: If you have Peter (nOH), worry about Paul (SH) too!

A Volatile Stock Market!



Challenges: Recognizing and Treating

Diagnosis the problem

- Symptoms
 - Dizziness, lightheadedness
 - Fatigue, orthostatic dyspnea & CP
 - Coat-hanger headache
 - Vision changes (darkened)
 - ASYMPTOMATIC
- Definition
 - Neurogenic orthostatic hypotension (nOH)
 - Delayed BP recovery (fall/dementia risk)
 - Initial orthostatic hypotension
 - Supine hypertension (SH)

TAP: Always take orthostatic BP measurements during visits. Don't wait for symptoms!

Treating the problem

- nOH: surrogate marker of SH?
 - Nocturia – urination at night
- Too many cooks!
 - Iatrogenic contributors/causes – reducing your pharmacy of medicines
- Treating nOH can worsen SH
 - Midodrine, fludrocortisone
 - Droxidopa, pyridostigmine

TAP: Urinating frequently at night? Worry about SH, don't just blame hydration!

Take Action Points (TAP)!

Low Blood Pressure (nOH)

- **Drink water first upon waking!**
 - Salt may be your friend
- **Eat small, more frequent meals**
- **Treat constipation, avoid straining**
- **Use your muscles!**

*Oral medications are difficult

High Blood Pressure (SH)

- **Scrutinize your BP medications!**
 - Type and timing, at night?
- **Monitor/treat SLEEP problems!**
 - Head of bed (HOB) elevated 30°
 - Apnea, RBD, insomnia, pain, etc...
- **Exercise as routine medicine!**

**GENERAL: ALWAYS CHECK BP
SITTING AND STANDING!**

