

Volume 2, Issue 2

Review Article

Date of Submission: 13 Apr, 2026

Date of Acceptance: 12 May, 2026

Date of Publication: 26 May, 2026

Longitudinal Blood Pressure Instability and Orthostatic Failure Following Viral Illness and Cardiac Intervention: A Patient-Investigator Case Analysis (2008–2026)

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Citation: Knox, B. H. (2026). Longitudinal Blood Pressure Instability and Orthostatic Failure Following Viral Illness and Cardiac Intervention: A Patient-Investigator Case Analysis (2008–2026). *Public Health Epidemiol OA*, 2(2), 01-09.

The musical expression of this paper can be found and enjoyed at the following link.

<https://heyzine.com/flip-book/21ece8d18a.html>

Abstract

This paper presents an 18-year longitudinal observation of blood pressure instability following viral infection, cardiac arrhythmia, and subsequent cardiac intervention. The timeline begins with Chikungunya virus infection in Indonesia in 2008, followed by viral cardiac involvement and hospitalisation in 2009. Persistent hypertension emerged in 2010 and proved resistant to conventional pharmacological management over the following decade. Progressive arrhythmia, including atrial fibrillation and frequent ectopic beats, culminated in ablation procedures in 2021 complicated by cardiac tamponade and emergency open-heart surgery. From 2022 onward, a new physiological pattern emerged characterised by severe supine hypertension combined with orthostatic hypotension without compensatory tachycardia. Orthostatic measurement demonstrated a drop from 215/105 mmHg supine to 145/85 mmHg within 30 seconds of standing, with heart rate increasing only from 55 to 58 beats per minute. The longitudinal dataset suggests impairment of autonomic cardiovascular regulation. These findings provide physiological support for the Knox Hypothesis, which proposes autonomic vulnerability as a systemic disease-modifying substrate following sequential physiological insults.

Keywords: Autonomic Dysfunction, Orthostatic Hypotension, Supine Hypertension, Baroreflex Impairment, Post-Viral Autonomic Instability, Cardiovascular Dysregulation, Chikungunya Virus, Knox Hypothesis

Introduction

Blood pressure regulation is one of the most tightly controlled physiological processes within the human body. The autonomic nervous system maintains circulatory stability through coordinated regulation of heart rate, vascular tone, and cardiac output. Central to this process is the baroreflex system, which rapidly compensates for changes in posture and blood distribution.

When a healthy individual moves from lying to standing, gravity causes blood to pool in the lower extremities. The baroreflex detects the resulting drop in arterial pressure and triggers immediate sympathetic activation, increasing heart rate and vascular resistance to maintain cerebral perfusion.

Failure of this regulatory mechanism results in orthostatic hypotension, a hallmark of autonomic dysfunction.

This paper presents a longitudinal patient-investigator case analysis in which cardiovascular regulation evolved through several distinct phases over an 18-year period. These phases include viral infection, persistent hypertension, progressive arrhythmia instability, cardiac surgical trauma, and eventual emergence of autonomic blood pressure dysregulation.

The observations provide a physiological anchor for the broader Knox Hypothesis, which proposes that systemic disease processes may converge through destabilisation of autonomic regulatory networks.

Figure 1. Longitudinal Conceptual Timeline (2008–2026)

Initial Viral Event (2008–2009)

In 2008 the author contracted Chikungunya virus (CHIKV) while in Indonesia. Chikungunya is a mosquito-borne alphavirus known to cause acute febrile illness accompanied by severe arthralgia and systemic inflammation.

In 2009 the virus appeared to affect the heart, leading to hospitalisation for cardiac complications. Although viral myocarditis is relatively uncommon in Chikungunya infection, cardiovascular involvement has been reported in the literature.

This event represents the first identifiable physiological insult within the longitudinal timeline.

Emergence of Persistent Hypertension (2010–2012)

Beginning in 2010, persistent hypertension emerged.

Typical blood pressure readings during this period were:

Year	Blood Pressure Trend
2010	165 / 85
2011	170 / 85
2012	170 / 85

Despite medical treatment, blood pressure remained elevated and difficult to control. During this period cardiac rhythm disturbances also began to appear, including atrial fibrillation, eventually requiring electrophysiological intervention.

Progressive Cardiovascular Instability (2013–2020)

Between 2013 and 2020 blood pressure became increasingly unstable and resistant to conventional therapy.

Observed ranges included:

140 / 70 → 210 / 100

Episodes of severe hypertension occurred intermittently.

At the same time the heart developed an increasing burden of ectopic beats, indicating electrophysiological instability. The combination of arrhythmia and fluctuating hypertension suggested progressive dysregulation within cardiovascular control mechanisms.

Major Cardiac Interventions (2021)

In 2021 the author underwent a premature ventricular contraction (PVC) ablation to reduce the ectopic beat burden.

The procedure was complicated by cardiac tamponade, requiring emergency intervention and ultimately open-heart surgery to preserve life.

Within the Knox Hypothesis framework, these events correspond to Hit Two and Hit Three in a sequence of physiological stressors affecting cardiovascular stability.

Emergence of Autonomic Blood Pressure Dysregulation (2022–Present)

From 2022 onward a distinct new cardiovascular pattern appeared.

Two opposing states began to coexist:

Supine Hypertension

While lying in bed

215/105 mmHg

Orthostatic Hypotension Upon Standing

100/50

sometimes 85/45

Typical Orthostatic Drop

35–55 mmHg

At the same time daytime blood pressure remained unstable, commonly ranging between:

145 / 85 → 190 / 95

Instability and unpredictability became the defining features of blood pressure regulation.

Orthostatic Haemodynamic Measurements

Formal orthostatic measurements were recorded during positional change.

Position	Time	Blood Pressure	Heart Rate
Lying	Baseline	215 / 105	55 bpm
Standing	30 sec	145 / 85	58 bpm
Standing	1 min	150 / 80	58 bpm
Standing	3 min	160 / 85	56 bpm

Table 1: Orthostatic Blood Pressure and Heart Rate Response

The Transition from Lying to Standing Produced A Drop of Approximately

70 mmHg systolic
20 mmHg diastolic

Despite this large drop, heart rate increased by only 3 beats per minute.

Under normal physiological conditions such a drop would typically produce a heart rate increase of 15–30 beats per minute.

The minimal chronotropic response observed here suggests impairment of autonomic baroreflex compensation.

Figure 2. Orthostatic Blood Pressure Response During Postural Transition.

Medication History

Multiple pharmacological strategies were trialed during the course of the illness in an attempt to stabilise blood pressure and cardiac rhythm.

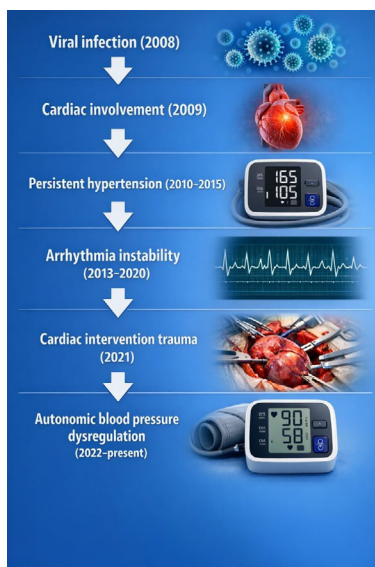
Medication Class	Clinical Purpose
Beta blockers	Cardiac rhythm control
ACE inhibitors	Hypertension management
Calcium channel blockers	BP and arrhythmia control
Midodrine	Support orthostatic blood pressure
Fludrocortisone	Volume expansion

Table 2: Medication Classes Trialed

Despite these interventions, blood pressure regulation remained highly unstable.

Interpretation within the Knox Hypothesis

When viewed longitudinally, the physiological sequence suggests progressive destabilisation of cardiovascular regulation.



Figure

The coexistence of supine hypertension, orthostatic hypotension, and minimal compensatory tachycardia strongly suggests disruption of autonomic cardiovascular control mechanisms.

Within the Knox Hypothesis framework, this pattern supports the proposition that autonomic regulatory networks may act as a systemic substrate linking multiple disease processes.

Limitations

This study represents a single patient-investigator observational dataset and therefore cannot establish causality.

However, the unusually long observation window and the presence of objective haemodynamic measurements provide valuable exploratory insights.

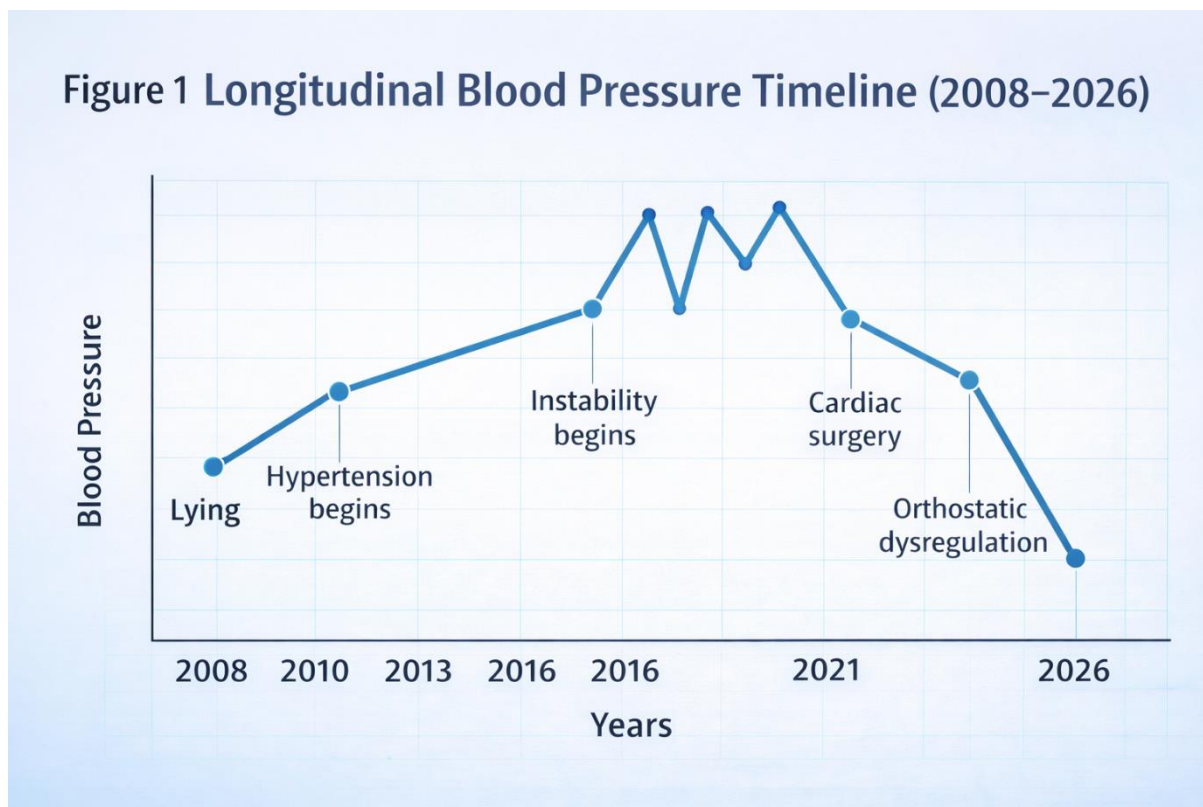
Conclusion

Over an 18-year period the author experienced a progression from viral illness through cardiac instability to a state characterised by severe supine hypertension and orthostatic hypotension without compensatory tachycardia.

Figure 3. The Knox Autonomic Instability Model

The orthostatic haemodynamic pattern strongly suggests impairment of autonomic cardiovascular regulation. These findings provide physiological support for the Knox Hypothesis, which proposes that systemic disease processes may converge through destabilisation of autonomic regulatory networks.

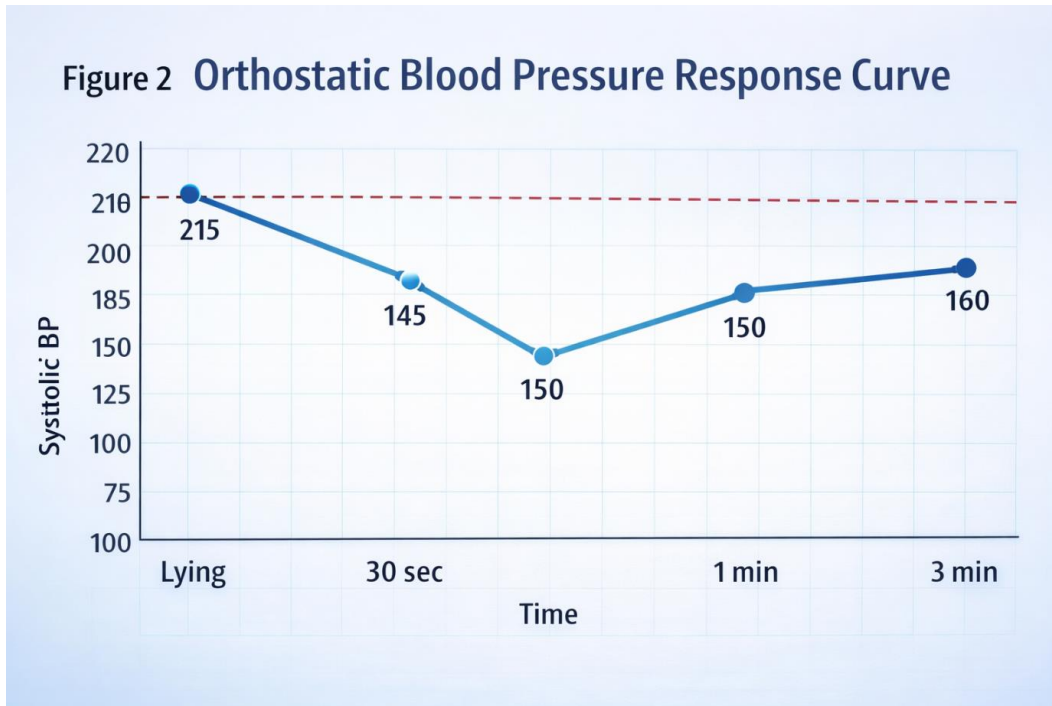
Further investigation into the long-term autonomic consequences of viral illness and cardiac intervention may therefore be warranted.



Figure

Figure 1: Longitudinal Conceptual Timeline (2008–2026)

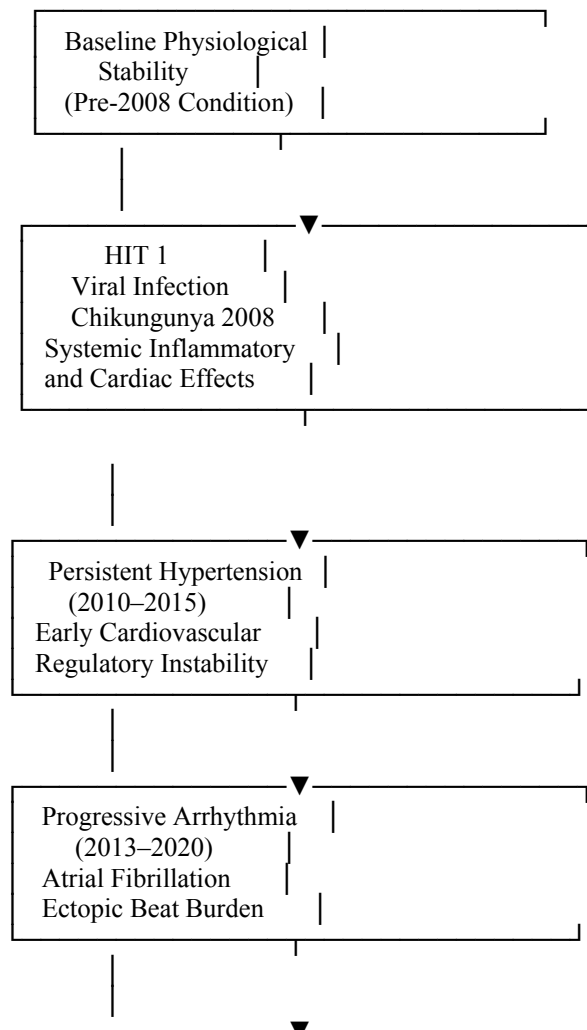
Conceptual representation of the progression of blood pressure instability across key clinical phases from 2008 to 2026. The timeline begins with a viral illness in 2008, followed by the onset of persistent hypertension around 2010. Increasing cardiovascular instability emerges from approximately 2013, with progressively wider fluctuations in blood pressure evident by 2016. A major cardiac intervention occurred in 2021, after which a new pattern of autonomic blood pressure dysregulation became apparent from 2022 onward. The figure illustrates the evolving trajectory from early post-viral cardiovascular disturbance through long-term instability and subsequent autonomic dysregulation.



Figure

Figure 2: Orthostatic Blood Pressure Response During Postural Transition

Orthostatic haemodynamic response demonstrating severe initial blood pressure decline on standing followed by partial recovery over three minutes. Minimal increase in heart rate indicates impaired baroreflex compensation.



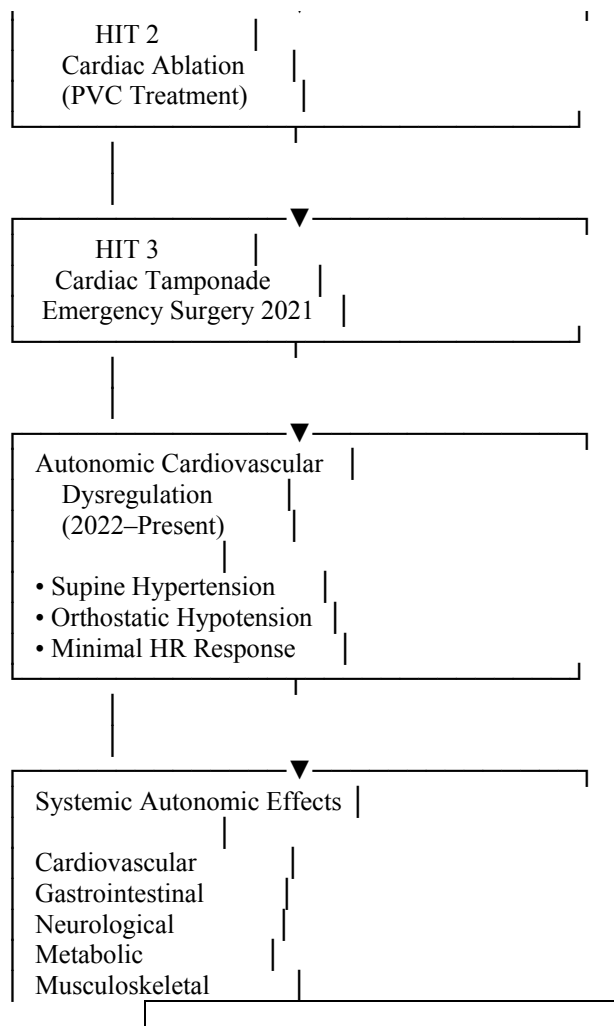


Figure 3: The Knox Autonomic Instability Flowchart Model. [Conceptual Model of Sequential Physiological Insults Leading to Autonomic Network Destabilisation]

Below is a Celtic lament ballad, with musical guidance in brackets to guide arrangement in the style of Irish or Scottish folk traditions.

“The Long Watch of the Heart”

A Celtic Lament for the Knox Hypothesis

[Slow air. Key: D minor. Solo voice with soft harp or piano. A distant fiddle enters between verses.]

Verse 1

In a distant eastern island
 Where the jungle breathes with rain
 Came a fever through the bloodstream
 Like a whisper edged with pain
 From the bite of unseen shadows
 To the breaking of the night
 Something stirred within the body
 Something shifted in its light

Verse 2

In the year that followed after
 Came the pounding in the chest
 Silent storms around the heartbeat
 Would not grant the body rest
 Doctors listened, charts were written
 Lines of numbers, lines of care
 Yet the pulse beneath the surface
 Held a deeper story there
 [Fiddle begins a low lamenting counter-melody]

Verse 3

Years of watching, years of waiting
Pressure rising like the tide
Medicines that fought the numbers
Still the hidden currents cried
Every dawn a quiet question
Every night a careful chart
For the rhythm of the arteries
Spoke in riddles through the heart

Verse 4

Then the trembling grew to thunder
Beats that wandered, beats that strayed
Atrial storms and restless echoes
Through the chambers that God made
So the surgeons traced the lightning
Seeking peace within the flame
Yet the healing road grew darker
When the sudden rupture came
[Music deepens. Low cello joins.]

Verse 5

There upon the edge of silence
Where the heart and breath divide
Steel and skill and hands of mercy
Held the fragile thread of life
Through the shadow of the theatre
Through the long uncertain night
Rose again the quiet breathing
And the slow returning light

Verse 6

But a stranger law awakened
In the body's hidden art
When the standing earth grew lighter
Than the resting of the heart
For the pressure fell like autumn
When the upright road began
Yet the pulse refused its rising
As though time itself had ran

Verse 7

Numbers whispered of a secret
Deep within the nerve's command
Where the silent watch of balance
Guides the vessels through the land
Something wounded, something altered
In the pathways we can't see
Left the body's ancient compass
Turning toward uncertainty
[Fiddle and pipes swell softly.]

Verse 8

From the long years of observing
From the charts of night and day
Came a fragile thread of meaning
Lighting one uncertain way
That the storms of many battles
Viral fire and surgeon's hand
May awaken hidden weakness
In the body's inner land

Verse 9

So the story now is carried

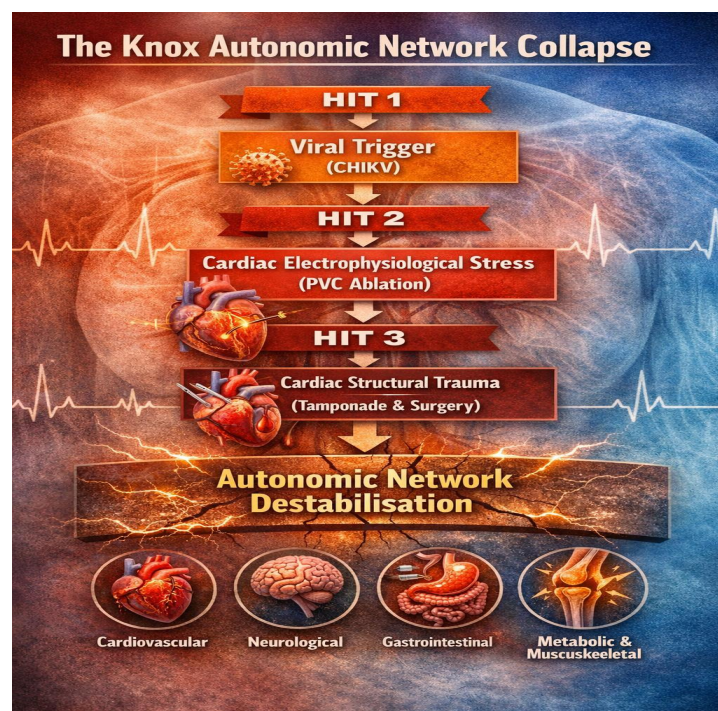
Not in sorrow but in flame
 For the trials of the body
 Gave a question to its name
 That the nerves which guard our balance
 May be wounded, yet remain
 Writing wisdom through the struggle
 And through every living vein
 [Final refrain – choir joins softly]

Final Refrain

Sing the long watch of the heartbeat
 Sing the years that would not yield
 For the road through pain and patience
 Brought a truth the charts revealed
 From the storms of human frailty
 May new understanding start
 For the quiet hand of science
 Listened long enough... to the heart
 [Music fades with solo fiddle and distant pipes]

Figure 3: The Knox Autonomic Instability Model

This conceptual model proposes that sequential physiological insults may progressively destabilise autonomic regulatory networks. In this case narrative, viral infection (2008), persistent cardiovascular instability, and major cardiac intervention (2021) precede the emergence of autonomic blood pressure dysregulation characterised by supine hypertension and orthostatic hypotension. The model proposes that once destabilised, autonomic dysfunction may manifest across multiple physiological systems.



Figure

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