

All India Institute of Medical Sciences, Rajkot (Gujarat)



World Hypertension Day (WHD)-2022

Theme "*Measure Your Blood Pressure Accurately,
Control It, Live Longer*"

e – Bulletin

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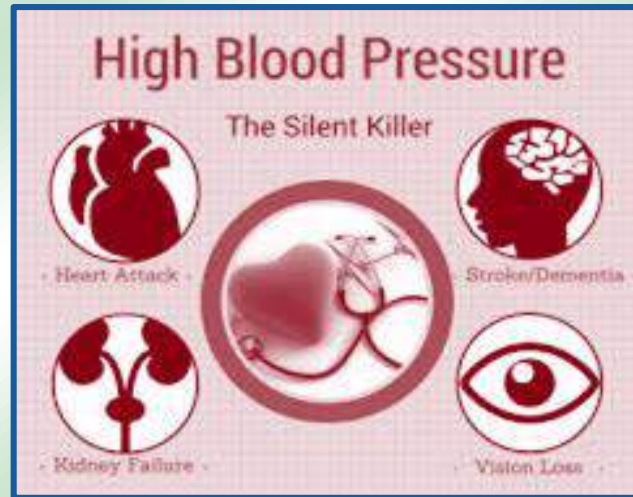


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All India Institute of Medical Sciences (AIIMS), Rajkot

According to a recent study, the prevalence of hypertension in the general Indian population (1) is 30.7.



Accurate Blood Pressure measurement –
The first Step for hypertension management!

What are the challenges in accurate measurement of blood pressure?

- Wide variety in techniques and Devices of measurement of blood pressure:
- It involves various types of devices like the gold standard traditional sphygmomanometers, aneroid BP machine, digital equipment etc.
- How to select?





❖ Following aspects to be considered while selecting devices (2).

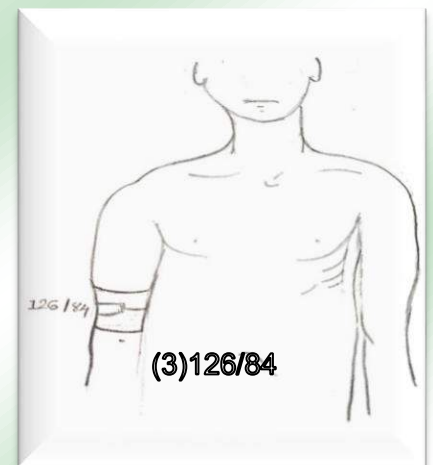
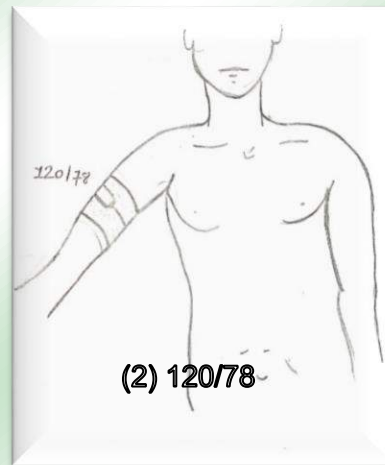
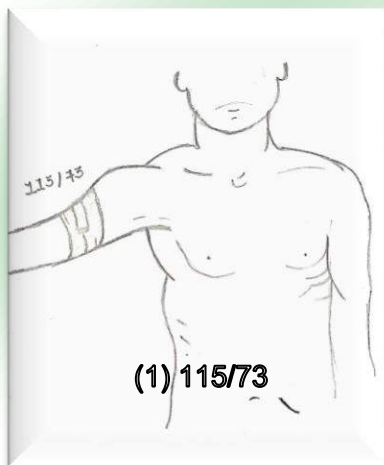
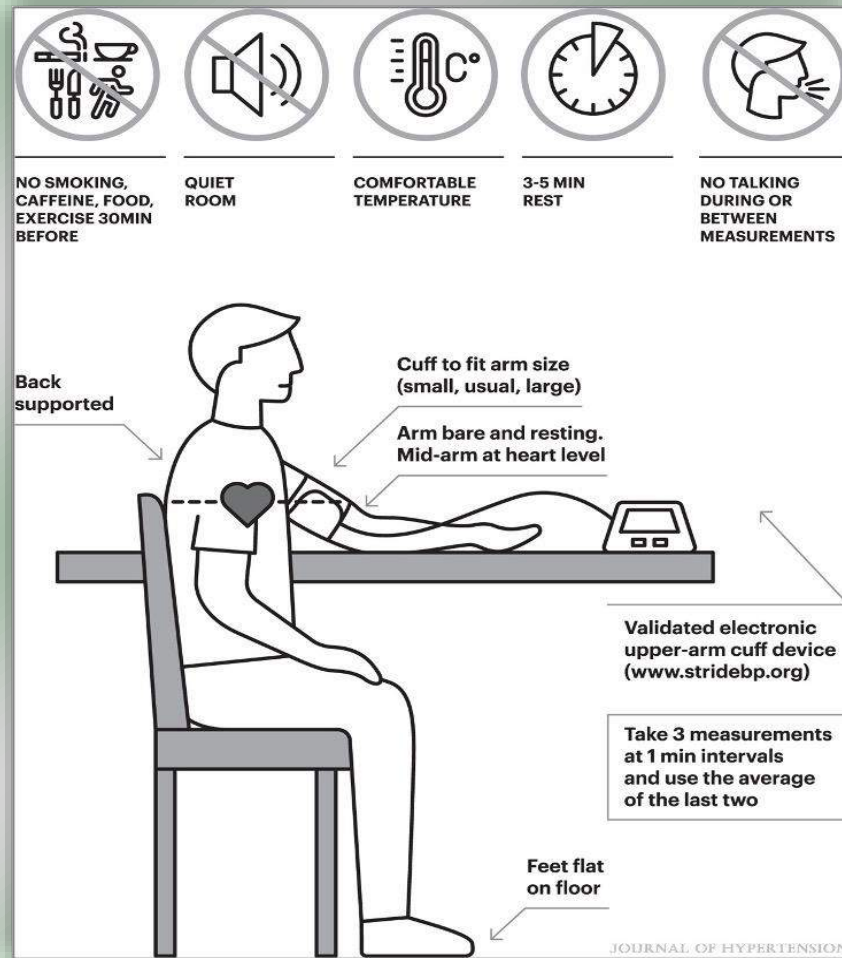
Device and Cuff characteristics:

- A single cuff cannot fit the range of arm sizes of all adults.
- *Manual auscultatory devices*: use a cuff with inflatable bladder length which is 75–100% of the individual's middle upper-arm circumference and width 37–50% of the arm circumference.
- *Automated electronic devices*: select cuff size according to the device's instructions.
- *People with large arms (mid-arm circumference >42 cm)*: prefer a conic-shape cuff as a rectangular cuff may overestimate BP.

Procedure:

- Place the center of the bladder over the brachial artery pulsation in the antecubital fossa.
- The lower end of the cuff should be 2--3 cm above the antecubital fossa.
- The cuff should exert comparable tightness at the top and bottom edges. One finger should easily fit under the cuff at its top and bottom.

• **Ideal technique to measure blood pressure (2)**



The effects of varying arm position on BP recorded from the brachial artery (4)

Device error



Out of 4000 devices in the market only 10% are validated. Most of the devices available for measuring blood pressure are inaccurate, with a minority of devices on the market having been subjected to independent validation using an established protocol.

How to select reliable devices?



<https://stridebp.org/bp-monitors>

- How to check that a blood pressure monitor has been properly tested for accuracy?
- Please check that a blood pressure monitor has been properly tested for accuracy using the Stride BP registry or Medaval registry or similar as given below.



Organisation	Device Lists (language)	Scientific Association	Website
STRIDE BP	International (English, Chinese, Spanish)	European Society Of Hypertension- International Society Of Hypertension- World Hypertension League	www.stridebp.org
BIHS	UK/Ireland	British and Irish Hypertension Society	www.bihsoc.org/bp-monitors
VDL	USA (English)	American Medical Association	www.validatebp.org
Hypertension Canada	Canada (English)	Hypertension Canada	www.hypertension.ca/devices
Deutsche Hochdruckliga	Germany (German)	German High Pressure League	www.hochdruckliga.de/betroffene/blutdruckmessgeraete-mit-pruftsiegel
JSH	Japan (Japanese)	Japanese Society Of Hypertension	www.jpnh.jp/com_ac_wg1.html

Human Error: -



The methodology for blood pressure measurement is very poor whether performed by doctors, nurses, pharmacists or patients themselves. <https://www.stridebp.org>

Where to learn and get certified?

HEARTS
 Virtual course on accurate automated blood pressure measurement

Logos at the bottom: PAHO, RESOLVE TO SAVE LIVES, TEPHINET, World Hypertension League



• White Coat Hypertension (WCH) & Masked hypertension (MH) (2)

	White-Coat Hypertension ^a	Masked Hypertension ^a
Diagnosis	Elevated OBP, but not 24 h ambulatory and/or home BP ^b	Elevated 24 h ambulatory and/or home BP, but not OBP ^b
Management	Lifestyle changes and annual follow-up. Consider drug treatment in patients with high or very-high CVD risk.	Lifestyle changes and consider drug treatment.

a-These diagnoses require confirmation with repeat OBP and out-of-office BP measurements.

b- Elevated based on OBP threshold $\geq 140/90$ mmHg, 24 h ambulatory BP $\geq 130/80$ mmHg, home BP $\geq 135/85$ mmHg.

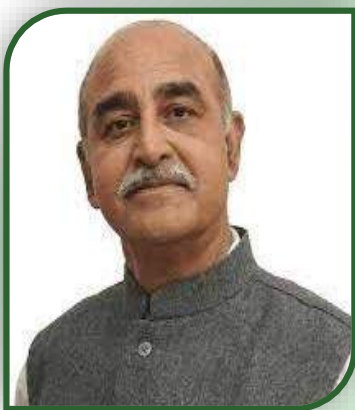
What is new in High Altitude medicine related to hypertension?

High Altitude Systemic Hypertension (HASH) –

- HASH a type of secondary hypertension following sustained exposure to high altitude.
- Proposed Mechanism: Sympathetic activation, endothelial dysfunction and hormonal imbalance.
- Management: De-induction to lower altitude/ sea levels can reverse the pathology with recurrence on re- induction to HA. ACE inhibitors and calcium channel blockers are preferred agents in studies with no proven literature on the ideal agent.
- **Our research in high altitude physiology:** we have developed high altitude hypoxia simulator which can simulate hypoxia at high altitude including measurement of various physiological responses to it.

References:

- 1) Ramakrishnan S Et al. Prevalence of hypertension among Indian adults: Results from the great India blood pressure survey. Indian Heart J. 2019 Jul-Aug;71(4):309-313
- 2) 2021 European Society of Hypertension practice guidelines for office and out-of-office blood pressure measurement: Consensus Document
- 3) <https://www.who.int/about-us/world-hypertension-day/world-hypertension-day-2022>
- 4) Ogedegbe G, Pickering T. Principles and techniques of blood pressure measurement. Cardiol Clin. 2010 Nov;28(4):571-86.
- 5) Stergiou, George S. et al on behalf of the European Society of Hypertension Council and the European Society of Hypertension Working Group on Blood Pressure Monitoring and Cardiovascular Variability 2021 European Society of Hypertension practice guidelines for office and out-of-office blood pressure measurement, Journal of Hypertension: July 2021 - Volume 39 - Issue 7 - p 1293-1302



Message from the Executive Director:

I heartily congratulate the Department of Physiology for bringing this informative newsletter on "Measure Your Blood Pressure Accurately, Control It, Live Longer" in line with WHD-2022. My best wishes to the entire team.

**Prof. Dr. (Col.) CDS Katoch, Executive Director,
AIIMS, Rajkot.**

Buzz Your Brain...



1.	Which of the following is ideally recommended for measuring blood pressure?
	A. Immediately after food intake. B. Talking during and in between measurements. C. Lying down on the bed. D. Feet flat on the floor.
2.	Lower end of the cuff should be _____?
	A. 2-3 cm above the antecubital fossa. B. 2-3 cm below the antecubital fossa. C. 6-7 cm above the antecubital fossa. D. 6-7 cm below the antecubital fossa.
3.	Mr. Khali the famous wrestler, came to AIIMS, Rajkot OPD for routine check-up, which of the following BP cuff you will prefer?
	A. Rectangle shape cuff. B. Conic shape cuff. C. Round shape cuff. D. D-ring cuff.
4.	What is the theme of World Hypertension Day, 2022?
	A. Measure Your Blood Pressure Accurately, Control It, Live Longer. B. Hypertension free society. C. Diagnosis and treating hypertension. D. Covid and hypertension.
ANS: - 1- D, 2 - A, 3 - B, 4 - A	

Team Physiology, AIIMS, Rajkot

Message from HoD



This is an effort to bring forward important information on measurement of blood pressure accurately and control it. This initiative will definitely be useful for medical practitioners and all readers for effective, safe and accurate measurement of blood pressure. We hope that this e-bulletin will increase your knowledge on measurement of Blood Pressure.

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