

Morning Hypertension

A.M. Blood Pressure Surges Create Unique Risks

With significant links to heart attacks, strokes and diabetic complications, morning hypertension is jumping onto clinicians' radar screens as a potentially deadly condition. Yet despite the risks, more than 50 percent of high blood pressure patients still suffer from uncontrolled morning hypertension.¹ This overview is intended to offer proactive clinicians a better understanding of the condition and the crucial role at-home monitoring plays in exposing it and controlling associated risks.

What is Hypertension?

Affecting nearly one-third of Americans, high blood pressure carries serious health risks and is a widely treated condition.² Compared to normal blood pressure levels of 130/85 mmHg or lower, hypertensive patients' blood pressure measures higher than 140/90 mmHg.³ The causes of high blood pressure are not known in up to 95 percent of cases, although it can be hereditary and is linked to specific diseases and aging.² To make detection even more difficult, hypertension does not have any symptoms, so patients may be unaware that they have the condition.²

How is Morning Hypertension Different?

Although researchers have identified different stages of hypertension, the distinctive patterns and effects of morning hypertension are only now coming to light. This recently discovered condition is defined as a sharp increase in blood pressure in the morning.⁴ Affected patients have an average systolic blood pressure of 135 mmHg or higher, with a change of more than 20 mmHg from morning to evening.⁴

What are the Causes?

Due to the body's circadian rhythms, which also regulate hormone levels, body temperature and heart rate, blood pressure normally rises to its highest in the early morning and falls to its lowest close to midnight.⁵

Morning hypertension seems to occur in two different ways. For one type, patients either have consistently high blood pressure through the night or experience blood pressure increases while asleep.⁶ In the second type, patients experience extreme dips of blood pressure at night and extreme surges in the morning.⁶

For more information about morning hypertension, visit www.morningbp.com/dsn1

1 Inquirer News Service. "Reducing Risks of Heart Attack, Stroke." June 26, 2004. 2 Saseen, J.J., and Carter, B.L. "Hypertension." In Dipiro, J.T., Talbert, R.L., Yee, G.C., et al., eds. *Pharmacotherapy: A Pathophysiologic Approach*. New York: McGraw-Hill; 2005:185-218. 3 National Institutes of Health. Lower Blood Pressure. Available at <http://www.nhlbi.nih.gov/actintime/rhar/lhbp.htm> accessed on Jan. 9, 2007. 4 Jeffrey, Susan. "Early to Rise: Morning Blood Pressure Predicts Stroke." *NeurologyReviews.com*. March 2003;11:3. 5 Kario, Kazuomi et al. "Morning Surge in Blood Pressure as a Predictor of Silent and Clinical Cerebrovascular Disease in Elderly Hypertensives: A Prospective Study." *Circulation*. 2003;107:1401-6. Micardis. Corporate News Release. Available at <http://www.micardis.com/com/Main/newscentre/corporatenews/showNews.jsp?id=2974> accessed on Jan. 9, 2007. 6 Kario, Kazuomi. "Time for Focus on Morning Hypertension: Pitfall of Current Antihypertensive Medication." *American Journal of Hypertension*. 2005;18:149-50. 7 Imai, Yutaka, et al. "Characteristics of Blood Pressure Measured at Home in the Morning and in the Evening: the Ohasama Study." *Journal of Hypertension*. 1999;17:789-98. 8 Kario, Kazuomi, Shimada, Kazuyuki, and Pickering, Thomas G. "Clinical Implication of Morning Blood Pressure Surge in Hypertension." *Journal of Cardiovascular Pharmacology*. 2003;42(Suppl.1):587. 9 Kamoi, Kyuzi, Kaneko, Susumu, Miyakoshi, Masashi, Nakagawa, Osamu, and Soda, Satoshi. "Usefulness of Home Blood Pressure Measurement in the Morning in Type 2 Diabetic Patients." *Diabetes Care*. Dec. 2002;25:12:2218. 10 Kario, Kazuomi. "Morning Surge and Variability in Blood Pressure: A New Therapeutic Target?" *Hypertension*. 2005;45:486. 11 Ewald, S., vor dem Esche, J., Uen, S., Nelkes, F., Vetter, H., and Mengden, T. "Relationship between the Frequency of Blood Pressure Self-Measurement and Blood Pressure Reduction with Antihypertensive Therapy: Results of the OLMETEL (OLMEsartan TELemonitoring Blood Pressure) Study." *Clinical Drug Investigation*. 2006;26(8):439. Available at http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=pubmed&list_uids=17163276&cmd=Retrieve&index=google accessed on Mar. 1, 2007. 12 American Heart Association Scientific Standard.

Who is at Risk?

Because morning hypertension has only been recently recognized, all of the risk groups are still unknown. Currently, men, the elderly and hypertension patients appear to be most at risk.⁷

Since there are no distinct symptoms and because physicians cannot capture differences in blood pressure from morning to evening, at-home blood pressure monitoring provides an initial means to tracking changes in blood pressure between morning and evening. Patients in at-risk categories should be advised to monitor for morning hypertension and to share their readings with their doctors, who can then diagnose and treat the condition (see sidebar).

What are the Risks?

There are very real reasons why patients are being encouraged to differentiate between general hypertension and morning hypertension. It is well known that cardiovascular events and stroke are more common in the morning and both appear to be linked to morning hypertension.^{5,6,8} Organ damage and diabetic complications, too, seem to correlate to morning blood pressure surges.^{7,8,9}

Although researchers are still trying to understand how morning hypertension factors into such illnesses, the risk of cardiovascular events is higher for patients with a 20 percent increase in blood pressure from nighttime to morning.⁵ Proof that risk rises with age, a sharp increase in morning hypertension can increase elderly patients' chance of stroke by three times.⁵ And in diabetics, morning hypertension is associated with microvascular and macrovascular complications.⁹

What are the Treatments?

Because of the significant risks that distinguish morning hypertension, physicians will seek to protect patients by developing antihypertensive treatments specifically aimed at controlling morning blood pressure surges.¹⁰ Those might include nighttime administration of medication or the prescription of medications that sustain blood pressure. Patients have their own roles to play in assuring their future health, by making necessary lifestyle changes and charting treatment effectiveness through at-home blood pressure monitoring.¹¹ ●

Why Home Monitor?

A home blood pressure monitoring regimen may help improve the effectiveness of antihypertensive drug treatment since multiple measurements can help physicians chart variations in blood pressure and the effectiveness of treatment.¹¹ The American Heart Association recommends taking two to three blood pressure measurements in the morning and evening. The average of the multiple measurements helps provide a better indication of one's blood pressure.¹² Morning measurements typically are taken in a sitting position within an hour of waking, but before breakfast and before taking medication. Evening measurements are taken before bedtime.

Omron Healthcare's groundbreaking HEM-780 Blood Pressure Monitor is the only FDA-cleared morning hypertension monitor. The sophisticated unit calculates morning and evening blood pressure averages and displays a morning hypertension symbol if a user's weekly average is above 135/85 mmHg. The monitor is designed to automatically store eight weeks of separate morning and evening averages for up to two users. Monitor memory storage can provide physicians a more reliable record of accurate readings than self-recording, which may prove vital to patient health.⁷ ●



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