1725 I Street NW ▪ Suite 510 ▪ Washington, DC 20006
Tel 202-659-0599 ▪ Fax 202-659-0709 ▪ www.asn-online.org

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Contact: Shari Leventhal: 202-416-0658, sleventhal@asn-online.org

ARE PATIENTS LOSING SLEEP OVER BLOOD PRESSURE MONITORS?

Tossing and Turning May Affect Results of Nighttime Blood Pressure Measurement

Washington, DC (December 14, 2009) — A widely used test for measuring nighttime blood pressure may interfere with patients' sleep, thus affecting the results of the test, reports a study in an upcoming issue of *Clinical Journal of the American Society of Nephrology* (CJASN).

"Blood pressure (BP), measured during sleep correlates better with heart attacks and strokes compared to blood pressure measured in the doctor's office," explains Rajiv Agarwal, MD (Indiana University and Veterans Affairs Medical Center, Indianapolis). "However, if blood pressure measurement disturbs sleep, then it may weaken the relationship between 'sleeping BP' and these cardiovascular events."

Along with his data-manager, Robert Light, BS (also of Indiana University), Agarwal analyzed the results of 24-hour blood pressure monitoring in 103 patients with kidney disease. This ambulatory blood pressure monitoring test is commonly performed to assess variations in blood pressure from daytime to nighttime. Blood pressure normally "dips" at night—when it doesn't, the cardiovascular risks of high blood pressure are much greater. As part of a research study, the patients' activity levels were measured using a wristwatch-like device called an actiwatch.

“We were measuring activity, sleep and ambulatory BP for diagnosing masked hypertension and found this interesting observation,” explains Dr. Agarwal. The lack of the normal nighttime 'dip' in blood pressure was related to increased activity levels, because the blood pressure monitor was disturbing the patients' sleep. On nights when patients were using the blood pressure monitor, they spent an average of 90 minutes less time in bed. They also spent less time asleep and slept less efficiently.

Patients who awoke at night during blood pressure monitoring were ten times less as likely to have the normal nighttime 'dip.' "Nighttime blood pressure is lower not because of the time of the day, but because people are asleep," said Agarwal. "The ambulatory monitoring technique can disturb sleep, and therefore raise the nighttime blood pressure as an artifact.

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"Thus sleep quality should be taken into account when interpreting blood pressure during sleep," Agarwal added. He noted that the wristwatch actigraph provides a simple and useful way of measuring activity during 24-hour blood pressure monitoring.

This Veterans Administration study was limited to older veterans with kidney disease. "Whether similar results will be obtained in younger people remains to be seen," said Agarwal.

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The study entitled, “The Effect of Measuring Ambulatory Blood Pressure on Nighttime Sleep and Daytime Activity—Implications for Dipping,” will appear in an upcoming print issue of CJASN and online at http://cjasn.asnjournals.org/ on December 17, 2009, doi 10.2215/CJN.07011009.

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