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Low-birth-weight children should have their blood pressure checked, UT Southwestern researchers find

DALLAS – Sept. 4, 2008 – Blood pressure in low-birth-weight children younger than 3 years of age not only can be measured but should be, researchers at UT Southwestern Medical Center have found.

The findings appear in the September issue of *Pediatrics*.

Blood pressure has not been screened routinely in children with very low birth weights because the measurements were viewed as not feasible or unreliable in infants and toddlers; however, evidence has shown that low-birth-weight infants might develop hypertension later in life.

“Measuring and validating blood pressure in this population really has not been addressed,” said Dr. Charles Rosenfeld, professor of pediatrics at UT Southwestern and one of the study’s authors. “This is unfortunate because the earlier that hypertension is identified, the sooner appropriate medications and lifestyle changes can be introduced to stop the development of dangerous complications.”

The American Heart Association estimates that 25 percent of the world’s adults have high blood pressure, which contributes to 49 percent of ischemic heart disease and 62 percent of strokes.

Two groups of children aged 1 through 3 had their blood pressure taken for the study. The first group consisted of 28 children from the at-risk children’s clinic at Children’s Medical Center Dallas. Some children had been born preterm with low birth weights, while others were born at term. Each child’s blood pressure was taken twice randomly by two different trained raters who used a manual method similar to the one used to develop reference blood pressures for children.

The researchers found that just as in adults, children’s blood pressure is affected by their state of mind: Infants who were calm for at least one of the measurements had significantly lower blood pressures than those who were fussy or crying for both.

“This is an important factor to consider if you’re going to achieve accurate blood pressure measurements in this population,” said Dr. Rosenfeld. “It’s something professionals who are taking blood pressure should consider when recording results.”

Another preliminary finding in this group was that, when comparing children with similar mental states, premature low-birth-weight infants had higher blood pressures than infants who had been born at term.

In the second group, 120 very-low-birth-weight infants were observed at the low-birth-weight

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follow-up clinic at Children's. Again, blood pressure was measured twice, but this time five minutes apart by the same rater. As in the first group, infants who were not calm had significantly higher blood pressure than those who were tranquil.

The researchers also noted that although automated devices are now commonly used to measure blood pressure in pediatric outpatient settings, the devices might not be comparable to manual reference standards and tend to overstate systolic blood pressure. Dr. Roy Heyne, professor of pediatrics at UT Southwestern and senior author of the study, said newer models have not been tested extensively and require calibration. Children might also become irritated while having their blood pressure measured by such a device, which may skew the results.

"Although we know anxiety elevates blood pressure measurements, the extent of this elevation in young children is unclear," Dr. Heyne said. "If health providers record abnormal automated measurements, they should confirm the results with manual methods."

Drs. Rosenfeld and Heyne plan a larger study to determine why low-birth-weight children have higher blood pressure.

Other researchers involved in the study were Dr. Naveed Ahmad, a biostatistician in clinical research at UT Southwestern, and Janet Morgan, a registered nurse at Children's. Dr. Andrea Duncan, the study's lead author, is now a faculty member at the University of New Mexico.

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