

PEDIATRICS

Raised blood-pressure measurements are under-recognized in children

The prevalence of hypertension in children has more than tripled in the past 20–30 years and is expected to continue to rise. Regular monitoring of children's blood pressure (BP) and recognizing high BP measurements is imperative to ensure further investigation and instigation of antihypertensive therapy, where appropriate. However, determination of a normal BP in children is not straightforward. As Tammy Brady explains, “to determine if a child's BP is normal, a provider needs to measure the child's height, plot the height on a growth curve to obtain the height percentile, then reference normative tables to determine the normal and abnormal cutpoints for that particular child.” She hypothesizes that this process might be difficult in a busy health-care setting. Indeed, in a recent study by Brady and her colleagues at Johns Hopkins University, high BP measurements, particularly elevated levels that were lower than the normal adult cut-off of 120/80 mmHg, were often unrecognized and, therefore, not further investigated.

Brady *et al.* conducted a cross-sectional study of records from all scheduled visits by children (3–20 years of age) to a large, academic, primary care practice in the first 6 months of 2006. In total, records from 2,501 scheduled clinic visits were assessed.

In contrast with current guidelines, which recommend BP measurement

in all visits to a health-care facility by children older than 3 years, one-fifth of documented visits had no associated BP measurement recorded. Moreover, although BP levels were determined by Brady *et al.* to be higher than the normal range in almost 40% of cases, only 17% of these elevated levels were recognized as being abnormal.

Systolic BP <120 mmHg and diastolic BP <80 mmHg were associated with under-recognition of elevated BP levels. The child's weight also had a major effect on the health-care worker's recognition of their patient's elevated BP; abnormal BP was recognized in only 7% of children with high BP measurements but who were in the healthy weight range, compared with 22% of those who were deemed to be obese. Logistic regression analyses determined that older age, male sex, absence of a family history of cardiovascular disease, lack of medical history of cardiovascular disease, being seen by a nurse practitioner, and being seen by a provider with a lower level of training were also associated with decreased recognition of a high BP measurement.

Given the many demands placed on providers of pediatric health care, and the complicated methods of determining normal BP levels in children, Brady *et al.* believe that innovative strategies are needed to aid pediatric health-care



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workers in recognizing high BP levels in their patients—a phenomenon that is set to become increasingly commonplace. “To improve recognition and ultimately to increase early diagnosis and treatment of children with hypertension,” the study investigators conclude, “it is imperative that systems, such as computerized alerts, be put into place to help improve provider recognition of elevated BP.” Indeed, the investigators are in the process of assessing the impact that a computerized alert has on recognition of high BP measurements in children.

Bryony M. Mearns

Original article Brady, T. M. *et al.* Patient-, provider-, and clinic-level predictors of unrecognized elevated blood pressure in children. *Pediatrics* 125, e1286–e1293 (2010)