

Abstract #24 (0346_0513_000033)

COMPARING THE 2004 NIH AND 2017 AAP BLOOD PRESSURE GUIDELINES IN CANADIAN CHILDREN 6-18Y USING CANADIAN HEALTH MEASURE SURVEYS

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Background:

American Academy of Pediatrics (AAP) blood pressure (BP) guidelines and reference charts were redesigned to better align with new 2017 adult guidelines. The US population prevalence of high BP (single-visit mean consistent with elevated, stage 1, or stage 2) increased from 32 to 46% in adults and 11.8 to 14.2% in children 5–18y.

Objective:

To assess the impact of the new guidelines on the prevalence of high BP in Canadian children and clinically characterize affected children.

Methods:

Four cycles of the Canadian Health Measures Survey (2007–2015) provided demographic, laboratory, and anthropometric data for a generally healthy, nationally representative sample of 7387 children aged 6–18y. From 6 single-visit BPTru measurements per child, BP stages were assigned using both the 2017 AAP and the 2004 National Institutes of Health (NIH) guidelines, with population means and prevalences calculated using inverse probability and bootstrap weights.

Results:

AAP percentiles shifted upwards significantly; mean population systolic BP and diastolic BP percentiles were 24.2 (95% confidence interval: 23.3–25.2) and 46.4 (45.3–47.6), respectively. The population prevalence of high BP increased from 4.5% (3.9–5.2, NIH) to 5.8% (5.0–6.6, AAP), substantially less than in US children (14.2%, 13.4–15.0). Children with high BP were more likely to be younger, overweight/obese, exposed to prenatal/household smoking, and to have hypertriglyceridemia – without differences in dietary salt, infant breastfeeding, neonatal hospitalizations, or exercise frequency.

Conclusion:

In the first nationally representative population survey outside the US, high BP affected approximately 5.8% of Canadian children, substantially less than in the US. These differences parallel differences in the prevalence of overweight/obesity and emphasize the preventable nature of high BP in childhood. Canadian children with high BP were more likely to be younger, overweight/obese, exposed to prenatal/household smoking, and to have hypertriglyceridemia (with additive cardiovascular risk).